



FLATGLASS

2023

world directory

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- > **Supplier Profiles**
- > **Supplier Products & Yellow Pages**
- > **Suppliers Guide - Data Sheets**
- > **Supplier Sales Networks**
- > **Review A year of News**

Result of Forel's decades of experience in IG processing solutions, the "High Tech" IG line was conceived to offer an unrivalled choice of options for the production of insulating glass, for both the residential and the commercial destination, and also for production of IG façade. The "High Tech" IG line is equipped by exclusive devices and systems for processing offset panes, shaped panes and manufacturing double, triple and quadruple IG units, up to 6,000 x 3,300 mm in size weighing up to 400 kg per linear meter (assembled panel), and up to 100 mm in thickness. The automatic sealing robot Art. SR "High Tech" is designed to maximize productivity and reduce waste and downtime, thanks to features such as the no-stop mode and the automatic dosing unit change.



Suppliers • Yellow Pages • Sales Network • Data Sheets

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- bending furnaces
- fusion furnaces

IR fast medium wave twin tube emitters for:

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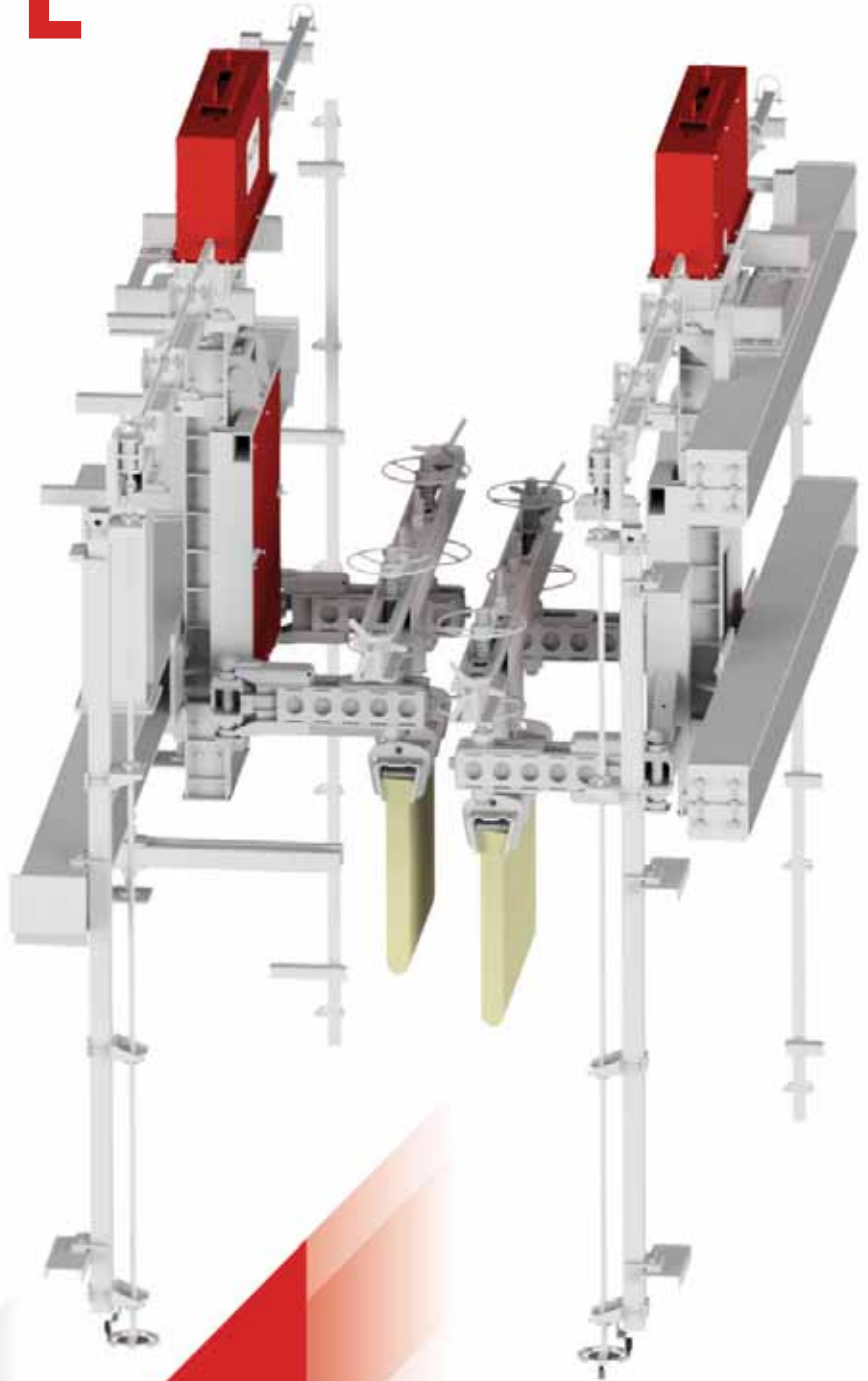
 **Rollmac**®

TWEEL

SUSPENDED TWEEL

The tweel is one of the most important control instruments within a float glass production plant. It adjusts the flow of the glass melt from the furnace into the tin bath. The tweel can also be used to completely shut-off the glass flow.

The suspended tweel is installed on the tin bath support steel structure. The robust and highly innovative design of the suspended tweel ensures a stable and smooth operation providing all the benefits of a freely accessible spout area. Additional air cooling protects the electrical and mechanical parts from the high temperatures.



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- // SPACER BAR PROCESS MACHINES
- // AUXILIARY EQUIPMENTS



- Start-up level for IG-SG production
- ≈ 800 sqm/shift capacity
- Short recovery time of investment



- Professional level for IG-SG production
 - Appropriate for mass production
 - Low labour cost via automated machines
- 1700x3000 mm**



- Continuous line for multi processes
 - Compatible for product tracking via ERP
 - ≈ 1000 sqm/shift capacity
- 2500x4000 mm**



- Continuous line for oversize panes
 - Extendable panel press length via tandem press
 - Heavy duty design for an overweight application
- 3300x6000-9000-12000 mm**

ALL INFORMATION
AT HERE!





Annual publication

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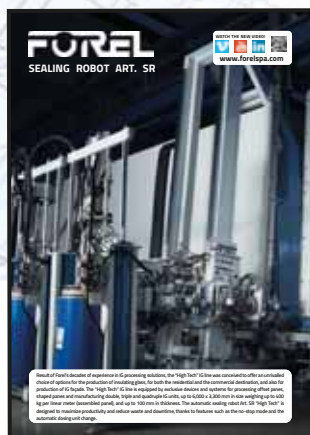
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Year	Event	Location	Start Date	End Date
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2	GLASS TECH	PIT BLOW		
3	GLASSWAY	INDONESIA GLASS		
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5	GLASSWAY	INDIA		
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suppliers to the glass industry

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suppliers guide

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153 DATA SHEETS

review - a year of news

281 OCTOBER, NOVEMBER, DECEMBER 2022 JANUARY 2023



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issue	exhibition/conference	date	venue	deadlines
2023				Editorial files: 30-01-2023 Deadline Adv files: 10-02-2023
2023	1	BAU 17-22 April GLASSPRINT 25-26 April CHINA GLASS 6-9 May	MUNICH Germany DÜSSELDORF Germany SHANGHAI China	Editorial files: 03-03-2023 Deadline Adv files: 13-03-2023
2023	2	GLASS TEXPO 11-12 May FIT SHOW 23-25 May CONSTRUMAT 23-25 May	SAN ANTONIO (TX) USA BIRMINGHAM UK BARCELONA Spain	Editorial files: 03-04-2023 Deadline Adv files: 11-04-2023
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2023	4	VITRUM 5-8 September ALL VITRUM EXHIBITORS ADVERTISING IN THIS ISSUE ALSO RECEIVE A FREE VITRUM PREVIEW  GLASSPRO INDIA 14-16 September	MILAN Italy MUMBAI India	Editorial files: 14-07-2023 Deadline Adv files: 24-07-2023
2023	5	GLASSBUILD AMERICA 31 October 2 November REFRIGERA GLASS 7-9 November EURASIA GLASS 11-15 November	ATLANTA (GA) USA BOLOGNA Italy ISTANBUL Turkey	Editorial files: 15-09-2023 Deadline Adv files: 22-09-2023
2023	6	ZAK GLASS TECHNOLOGY 23-26 November GLASSTECH ASIA 29 November 1 December GULF GLASS 4-7 December	MUMBAI India BANGKOK Thailand DUBAI UAE	Editorial files: 13-10-2023 Deadline Adv files: 20-10-2023

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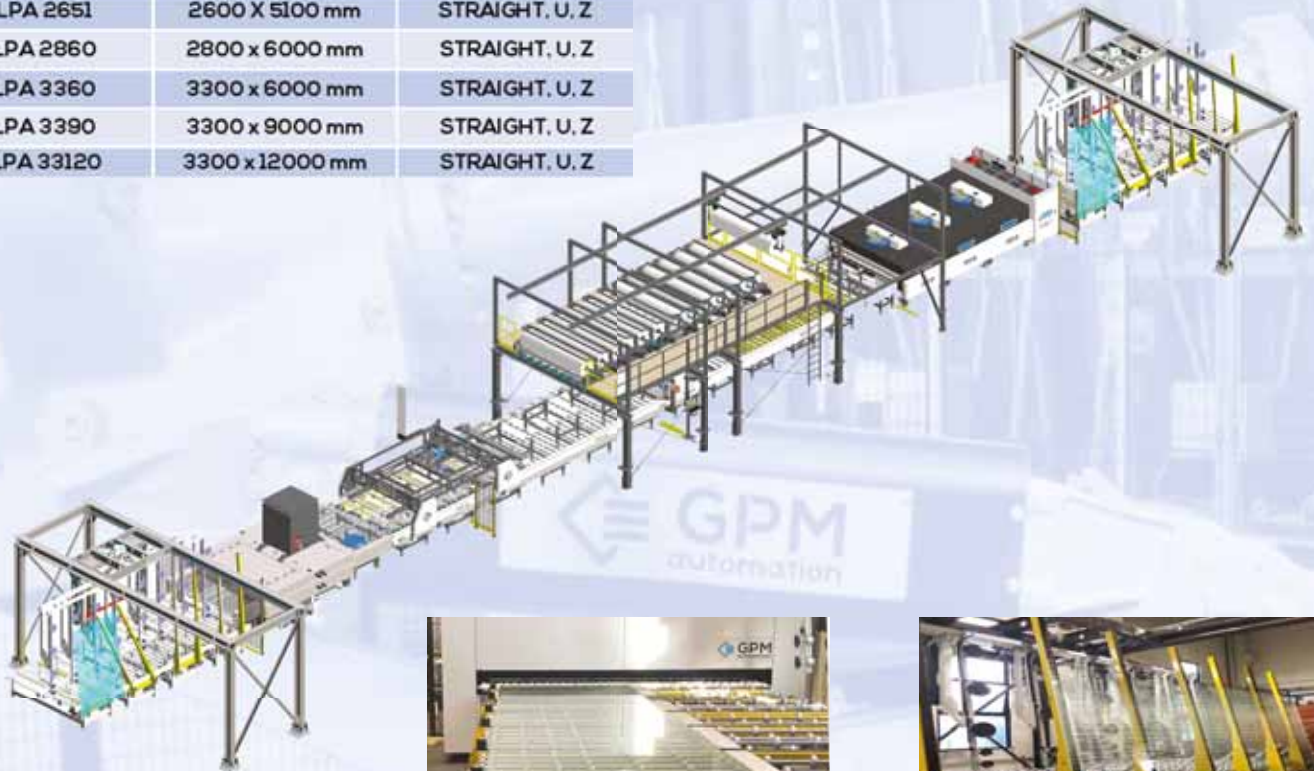
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LPA 2860	2800 x 6000 mm	STRAIGHT, U, Z
LPA 3360	3300 x 6000 mm	STRAIGHT, U, Z
LPA 3390	3300 x 9000 mm	STRAIGHT, U, Z
LPA 33120	3300 x 12000 mm	STRAIGHT, U, Z



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A+W Software

for Glass, Windows & Doors



A+W SOFTWARE GmbH

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Tel.: +49 6404 2051-0 - Fax: +49 6404 2051-877

E-mail: info@a-w.com • www.a-w.com

COMPANY DATA

Contacts

Peter Dixen - CEO
Julia Schmidt - CFO
Dennis Tiegs - COO A+W Clarity

Annual turnover

EUR 27,000,000

Percentage of turnover from glass (%)

75

Number of Employees

201

Founding Year

1977

Registered Trademarks

A+W DynOpt



COMPANY PROFILE

A+W

Software for Glass, Windows and Doors

A+W is the global market leader for software in the flat glass industry as well as the windows and doors business. The company develops ERP-, PPS- and optimization software in order to make glass and window manufacturers even more efficient.

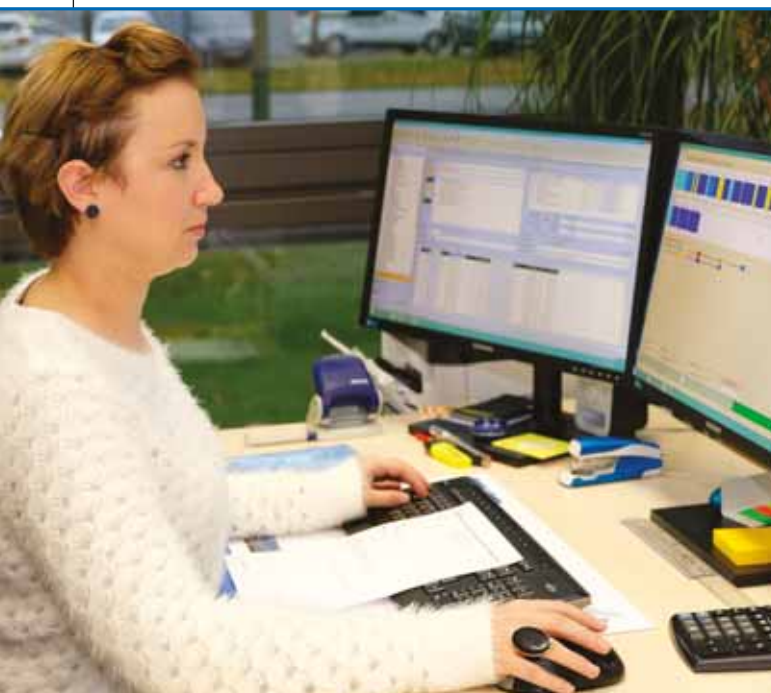
A+W solutions control and optimize the whole value chain, from basic glass to finished windows or façade elements. A+W products are suitable for small-, mid-sized and large companies.

Of course, A+W offers individual advice and consulting for its entire product range and supports users from the presentation of the systems through to live operation.

With automatic updates and upgrades, the global maintenance service makes sure that the installed software is always up to date. A+W optimizes its customers' yield, reduces production costs, shortens lead times, improves quality and thus increases customer satisfaction.

A+W has been active on the market for more than 40 years and sells its products worldwide. A+W cooperates with the most experienced and competent companies in the industry. This close networking helps A+W to always provide the best possible solution for its customers' demands.

A+W is a wholly owned company of Constellation Software Inc., which is listed on the Toronto Stock Exchange under the symbol 'CSU'. The Corporation acquires, manages and builds vertical market software businesses.



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A+W Sales- and Services Global Network

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Hertfordshire HP4 1EF

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Rosemont, Illinois 60018 USA

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QLD 4113

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Calle 18, 315
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Mérida (Yucatán)
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Vodovodna Pot 3 - Kromberg
Nova Gorica - Slovenia

MEA

Corpotrade (Cyprus) Ltd.

PO Box 42687, Larnaca 6501, Cyprus

SOUTH AFRICA

Glass Design (Pty) Ltd

1 Eugene Street - Malanshof - Randburg, 2196

JAPAN

Correns Corporation

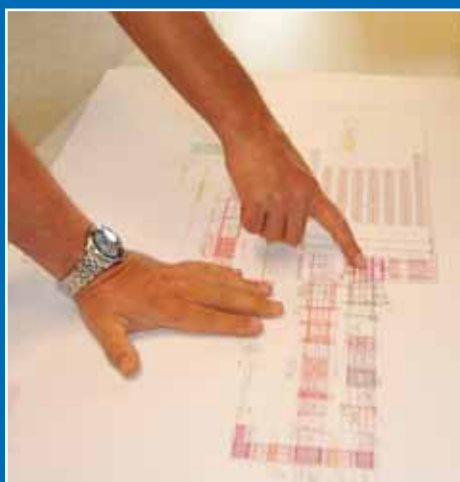
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COMPANY DATA

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Adelio Lattuada - President
Nicola Lattuada, Michela Lattuada - Partners

Sales

Domestic 5% / International 95%

Area

Office area 500 m² / Plant area 3,500 m²

Number of Employees

41

Founding Year

1978

Capital

EUR 90,000.00

Planned Exhibitions 2023

Glass Expo Rocky Mountain

Colorado, USA - 19 / 20 January

Mir Stekla - Moscow, Russia - 28 / 03 March

Seebbe - Belgrade, Serbia - 24 / 27 April

Vitrum - Milan, Italy - 06 / 09 September

GlassBuild America

Atlanta, USA - 31 October / 02 November

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ARGENTINA, URUGUAY

VETROTOOLS SRL

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COMPANY PROFILE

MADE IN LATTUADA INTEGRATED SOLUTIONS, TO MEET ALL YOUR NEEDS



**Fully automatic edger:
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into the world of Industry 4.0, by making every machine a fusion of precision, productivity and automation.

STONE SOLUTIONS

Lattuada's many years of know-how transferred to natural stone, ceramic and composite material processing: PetrA, vertical edge polisher - Works with precision and quality on all types of edges, and, thanks to its natural versatility, is perfect for Stone Professionals production facilities.

SPECIAL MACHINES SOLUTIONS

Any special needs? Any out-of-standard processes?

Do you treat composite materials? No problem.

We can find the most suitable solution for you and customise our machines to ensure you get the flexibility you need.

GLASS SOLUTIONS

Customisation, precision, versatility: all Lattuada glass processing lines ensure excellent performance and high productivity, integrating perfectly into company realities. A combination of experience and innovation to meet any kind of challenge.

- Grinding

Our strength, always. A variety of solutions taking the shape of a wide range of machines: more than 40 possible models.

- Washing

For over 15 years we have been studying and providing solutions for glass washing. We offer a full range of high-tech, vertical washing machines that are easy to use and maintain.

- Complementary processing

Need to drill or process corners? We can provide a complete range of horizontal drilling machines and automatic radius as well as straight corner grinding machines.

AUTOMATION SOLUTIONS

Robotics, A-WR & i-AL Systems, Augmented Reality and IoT: a beating heart of innovation and technology that's revolutionising glass and stone processing.

Lattuada Automation solutions bring companies





ADI Srl

a brand of **Surfaces Group**



Via Dell'Economia 12/16 - 36016 Thiene (VI) - Italy
Tel.: +39 0445 360244 - Fax: + 39 0445 366862

E-mail: info@aditools.com • www.aditools.com

COMPANY DATA

Contacts

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Lorenza Dal Maso - Glass Division Manager

Mother company

Surfaces Technological Abrasives SPA

Annual Group Turnover

EUR 220 million

Annual Company Turnover

EUR 47 million

Percentage of turnover from glass (%)

14

Sales

Domestic: 25% / International: 75%

Banks

Unicredit, Intesa San Paolo

Area

Office area: 3,710 m² - Plant area: 14,631 m²

Number of Employees

210

Founding year

1980

Paid-in capital

EUR 2,000,000.00

Patents obtained

3 for the Glass Industry

Registered brands

UHS ; ADI

Parent and Sister Companies

Domestic: 1 / International: 3

Planned Exhibitions 2023

Vitrum - Milan, Italy - 5 / 8 September
GlassBuild America - Atlanta, USA - 31 October / 2 November



COMPANY PROFILE

ADI Spa was founded in 1980 and now, after 40 years, the company has 4 plants in Italy and 3 abroad, 210 people in Italy and 12 abroad. Growth has been possible thanks to continuous R&D investments and a focus on real customer's needs. ADI manufactures diamond tools not only for glass, but also for stone, ceramics, mechanics and optics. The big advantage of this wide range of products is that the experience of one application can be transferred to the others. A good example of this is the **UHS bond**, which was studied initially for the Glass Automotive industry and now it has been successfully transferred to CNC tools for glass, stone and mechanics.

Since December 2016 ADI is part of the Surfaces Group. This larger structure is providing synergetic growth thanks to the multiple technologies available and stronger sales network.



SALES NETWORK

USA

IGP

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K & K ProVitrum GmbH

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COMPANY DATA

Contacts

Gianluca Bonfanti - General Manager

Raffaello Bonfanti - Technical Manager

Nardo Daniele - Sales Manager



COMPANY PROFILE

B Solution has 30 years of experience and has developed a complete range of products suitable for both small and large glassworks, satisfying the most modern production requirements.

B Solution is specialized in:

GRINDING LINES

- Vertical NC Speed Edge
- Vertical Speed Arris
- Bilateral grinding flat edge
- Bilateral grinding round edge
- Shape rounding
- Shape radius

DRILLING AND MILLING LINES

- Vertical NC Speed drilling and milling
- Multi-head vertical drill
- Vertical drill template
- Horizontal modular drill

AUTOMATION AND MANIPULATION

- Loading manipulator
- Unloading manipulator
- Rotating platform
- Shuttle
- Turning device
- Transfer
- Horizontal diverter 0-90

CUSTOMIZED LINES FOR:

- Home appliance industry
- Automotive industry
- Structural industry
- Furniture industry
- Small sizes

SPEED ARRIS



SPEED ARRIS

Speed Arris is B Solution's high-productivity vertical arrising machine specialized in rough grinding-arising.

The machine can arris/grind two rectangular glass with different size and thickness, this guaranteeing high Productivity for double-glazing lines and also thanks to the continuous production cycle.

Glass transport and handling is carried out with suction cups, especially important for today's high-performance glass types.

Regular arris is ensuring thanks to the oscillating spindle.

The Speed Arris can be integrated with IG or tempering line or as stand-alone machine.

A software for shaped glass is available upon request. Available in different size 2.0.3 - 2.6.4 - 2.8.5.



SPEED EDGE



BSolution's Speed Edge is a vertical compact grinder with the innovative patented follow-glass system, which carries out both rough and polished machining, flat and round edging, arising and milling.

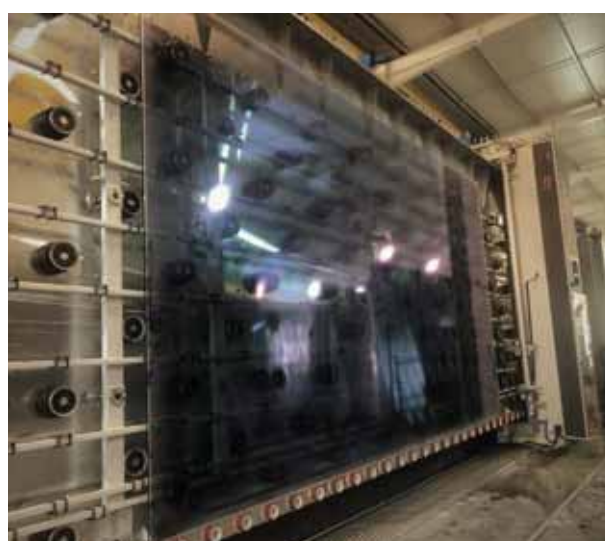
Processing of big glass sheets in a limited space thanks to the compact system that integrates the loading and unloading in a single solution.

The machine's suction cups have a locking system that involves the entire glass sheet.

Other features include:

- Maximum precision machining
- Best tool efficiency
- Loading of new glass sheets during the production cycle.

Available in different sizes 2.0.3 - 2.5.4 - 3.2.5 - 3.2.6 - 3.2.9



bestmakina



BEST MAKINA SAN. VE TIC. A.S.

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COMPANY DATA

Contacts

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Founding Year

1999

Area

22000 m²

Number of Employees

200

Planned Exhibitions

Mir Stekla - Moscow, Russia - 28 February 2023

FitShow - Birmingham, UK - 23 / 25 May 2023

Eurasia Glass - Istanbul, Turkey - 11 / 15 November 2023

Glasstec - Düsseldorf, Germany - 22 / 25 October 2024

COMPANY PROFILE

BEST MAKINA, has been solution partner for insulated glass production and glass processing companies in 95 countries since 1999. Best Makina has a great advantage by having in-house production, great stock of spare parts and making its own engineering. Mechanical and software R&D engineering teams are providing flexible and customised solutions for every single project. Best Makina sales team can also advise and share experiences with investors for upgrading to new technologies or start-up phases.

Simplified but durable mechanic systems and animated HMI units ointly make all machines in the production range more user-friendly. Best Makina provides 2 years of warranty independent of working hours!

Best Makina has the best price/performance ratio and best recovery time of investment in the machinery market!



PRODUCT RANGE

- GAS FILLING OR NON-GAS FILLING INSULATED AND STEPPED GLASS PRODUCTION LINES(1700X3000MM TO 3300X6000MM)
- VERTICAL & HORIZONTAL WASHING LINES(1700X3000MM TO 3300X∞)
- AUTOMATIC TWO COMPONENT EXTRUDERS FOR SECONDARY SEALING(1700X3000MM TO 3300X6000MM)
- GLASS LAMINATION LINE
- VERTICAL ARRISING LINES(1700X3000MM TO 3300X6000MM)
- COATING (LOW-E) DELETION MACHINES(1700X3000MM TO 3300X6000MM)
- MANUAL TWO COMPONENT EXTRUDERS FOR SECONDARY SEALING
- PIB EXTRUDERS
- AUTOMATIC SPACER BAR PROCESSING MACHINES
- MANUALLY OPERATED SPACER BAR PROCESSING MACHINES
- AUTOMATIC TRANSFER SOLUTIONS FOR I4.0 APPLICATIONS

Customise Your Machines!

**2 Years
Warranty!**

- // INSULATED GLASS PRODUCTION LINES
- // GLASS WASHING MACHINES
- // GLASS PROCESSING MACHINES
- // GLASS LAMINATION LINE
- // EXTRUDERS
- // SPACER BAR PROCESS MACHINES
- // AUXILIARY EQUIPMENTS



- Start-up level for IG-SG production
- ≈ 800 sqm/shift capacity
- Short recovery time of investment



- Professional level for IG-SG production
 - Appropriate for mass production
 - Low labour cost via automated machines
- 1700x3000 mm**



- Continuous line for multi processes
 - Compatible for product tracking via ERP
 - ≈1000 sqm/shift capacity
- 2500x4000 mm**



- Continuous line for oversize panes
 - Extendable panel press length via tandem press
 - Heavy duty design for an overweight application
- 3300x6000-9000-12000 mm**



BIESSE

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Founding Year

1969

Number of Employees

4,300



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COMPANY PROFILE

BIESSE is a global leader in technology for processing wood, glass, stone, plastic and metal. It designs, manufactures and distributes machines, integrated systems and software for manufacturers of furniture, door/window frames and components for the construction, ship-building and aerospace industries. It invests an average of € 14 million per year in R&D, boasting over 200 registered patents. The company operates through 12 industrial sites, 39 branches, and 300 agents and selected dealers, exporting 90% of its production. Its customers include some of the most prestigious names in Italian and international design. Founded in Pesaro in 1969 by Giancarlo Selci, Biesse S.p.A. has been listed in the STAR segment of the Italian Stock Exchange since June 2001 and is currently included in the FTSE IT Mid Cap index. It now has 4,300 employees worldwide.

PRODUCT RANGE

MULTI MACHINING CENTER
CUTTING
EDGING
DRILLING
FINISHING
INTRALOGISTICS



BOTTERO SpA

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COMPANY DATA

Contacts

Alberto Masoero - Flat Glass Sales Manager
Paolo Mazzone - Hollow Glass Sales Manager

Annual turnover of the company

Euro 220,000,000

Percentage of turnover from glass (%)

100

Sales

Domestic 10% / International 90%

Quality certification

ISO9001 - ISO14001 - ISO26000

Area

Plant area 44,000 m²

Number of Employees

650

Founding Year

1957

Capital

EUR 6,000,000

Patents obtained

110

Registered brands

4



SALES NETWORK

FRANCE & FRANCE DOM-TOM

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COMPANY PROFILE



The glass industry has undergone a global transformation in recent times. Glassworks are facing a much more variable request from the market: dimensions and order size are difficult to predict, while delivery times are becoming shorter and shorter.

The new challenge for glass makers is to keep pace, raising productivity and staying competitive. This means investing in new equipment, but mainly reshaping the workshop production flow following lean principles.

Bottero S.p.A. has solutions ready to go for all these challenges, based on three main pillars:

- modular machines and platform concept;
- integrated systems tailor-made to customer needs;
- Bottero 4.0: a comprehensive suite for machine learning and artificial intelligence.

For more than 60 years Bottero has been leading the flat glass industry in float and laminated glass with an in-depth and wide range of processing machines, from cutting tables to double edgers and CNC machines.

With more than 200 glass production equipment items, and more than 50,000 processing machines installed around the world for any type of glass, Bottero is the unmissable partner for everyone who wants to cut a piece of glass.

Our product range in cutting (BKM, BCS and EVO) is the widest and most in-depth available today in both stand-alone and dual-line with a laminated glass cutting table, or within an integrated line with stock management systems such as crane loaders or shuttle systems.

Thanks to their modular design, our customers can choose several options for their cutting tables, such as the Easy Deletion system

with baffle grinding wheel, low-E/TPF removal with peripheral grinding wheel, PPL labelling printer and CO2 laser marking, just to name a few.

Every Bottero cutting table gathers more than six decades of experience and know-how in the glass sector, ensuring not only perfect cutting quality and a user-friendly approach, but also remote support and preventive maintenance tools.

Bottero offers a wide range of solutions for laminated glass processing scalable in terms of modularity and automation level, suitable to process laminated glass with PVB (acoustic and/or refrigerated), EVA and special anti-hurricane interlayers.

Bottero's R&D department is continuously working to innovate its laminated glass product range to ensure that the company remains the undisputed leader in this field.

The company's most advanced equipment is the 548 LAM, a fully automated table that can process different laminated glass types with reduced cycle time and energy consumption.

Thanks to a great number of patents, Bottero's PVB heating system focuses energy on the PVB without heating the glass, thus reducing cycle time by 30%, saving up to 40% of energy costs and reducing the number of glass breakages.

Operator manual intervention is eliminated thanks to the patented squaring device for glass positioning and rotating, as well as by means of automatic loading and unloading arms.

With regards to laminated glass production, Bottero is currently market leader in the assembly line segment with a full range of solutions ranging from entry level, with manual loading and unloading, up to fully automated with automatic PVB unwinding and trimming with an output cycle time of 38s per JS plate of up to 6,000x3,300mm.

Bottero Flex Lamelines can manage shaped glass from 200x200mm up to XJS glass of 12,000x3,300mm in multiple layers of up to 100mm thickness.

Thanks to a great number of patents and more than 25 years of experience worldwide, Bottero offers state-of-the-art nip rolls and furnace area for laminated glass production, suitable for a huge variety of glass size and dimensions. Modularity and scalability are also applied to Bottero's wide range of horizontal double edgers and vertical edgers. While double edgers represent the best solution when high grinding and polishing quality is required, vertical edgers are more flexible and can be easily integrated with robots for loading, unloading and glass rotation.

Of course, double edgers ensure perfect parallelism, squareness and multiple profile finishing, including arrisses, engraving and polished radius corners. With Bottero new Flex Edge, customers can really customise their machines with up to 17 spindles per side, with an unlimited range of dimensions up to 12,000mm opening width. Remote service, cloud connection and preventive maintenance tools are the basic tool set of Bottero edgers.

Bottero is, and has been since 1957, customer centric. Our Pre-Sales and Sales Department pay special attention to understand customer expectations and limitation to develop the best proposal fitting with customer needs and reducing Total Cost of Ownership (TCO).

Fewer manual operations and more automation has allowed many of our customers around the world to improve their competitiveness and market leadership.



BOVONE DIAMOND TOOLS Srl

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COMPANY DATA

Contacts

Vittorio Bovone - Owner
Gianni Marengo - Technical Manager
Simona Repetto - Sales & Marketing

Sales

Domestic (15%) / International (85%)

Quality Certifications

ISO 9001:2008 QS - E-16-056

Area

Offices 200 m² / Plants 2500 m²

Number of Employees

22

Founding Year

2003

Parent and Sister Companies

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3) Bovone North America

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Athens - 14235

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Mansfield Qld 4122 - Australia

FINLAND

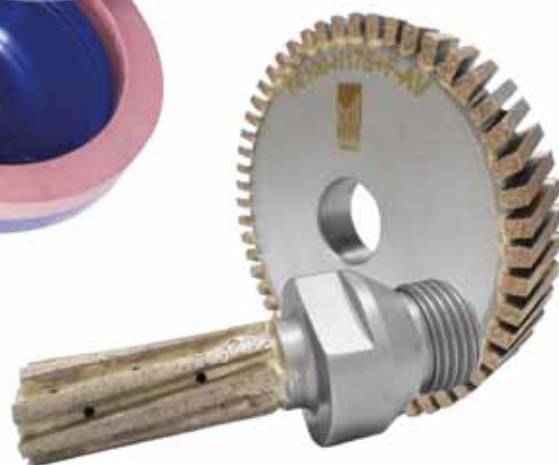
A. Palojoiki Oy
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Helsinki

CZECH REPUBLIC

Teknika-Cz
Spol. s.r.o. Jiránkova 329/31
618 00 Brno Ref. Robert
Zmeskal - Jiránkova
Czech Republic



Cup resin bond wheels



High Speed Wheels for CNC Machines

COMPANY PROFILE

BOVONE DIAMOND TOOLS was founded in 2003 to join and complete its Sister Company, Elettromeccanica Bovone, in order to manage in-house tools production for Bovone machines.

The synergy between Elettromeccanica Bovone, top level producer of glass machines since 1954, and Bovone Diamond Tools, producing metal, resin and polishing wheels for Bovone machines and other marks, grants since years very high quality standards and process reliability.

Bovone Diamond Tools wide range of products includes also accessories for manual, automatic drilling and CNC machines. In 2010 the new and revolutionary GOLDNET router was patented, and it is now one the most appreciated tools of the range.

Complementary products are also provided such as polishing wheels, felts, cerium oxide, together with many other products for the glass sheets manufacturing.

The large experience of our staff and BDT know-how regarding the complete operating process grant our Customer the highest production benefits. BDT always supplies the best tool suiting every process and adapts to working and market requests. On demand we can also produce special tailored tools in order to suit Customer's needs.

Product highest quality and continuous support and advising are always granted.

Today more than before thanks to the shared know-how and common experience Bovone Group aims at providing to Customers a step-by step support and a complete tailor-made customer service, going from machine purchasing to the most suitable tool setting.



Arris Polishing Wheels



Cup diamond metal bond wheels and peripheral wheels for all bevelling and edging machines

bovone
MADE IN EXCELLENCE



ELETTROMECCANICA BOVONE Srl

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COMPANY DATA

Contacts

Massimo Arata, Gianpiero Delucca,
Matteo Patalocchi
Sales Manager

Annual Group Turnover

EUR 18 million

Percentage of Turnover from glass (%)

95

Sales

Domestic (2%) / International (98%)

Quality Certifications

ISO 9001 - ISO 14000 - ISO 18000 - ISO 45001

Nominal Capital

EUR 1 million

Area

Offices 1,000 m² / Plants 12,000 m²

Number of Employees

110

Founding Year

1954

Registered Trademarks

Bovone

Parent and Sister Companies

BDT - Bovone Diamond Tools

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Planned Exhibitions 2023

China Glass - Shanghai, China - 6 / 9 May
Vitrum - Milan, Italy - 5 / 8 September
Marmomac - Verona, Italy - 26 / 29 September
GlassBuild America - Atlanta, USA 31 October / 2 November

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Innovation and Customization, Flexibility and Reliability, Performance, Quality and Process Speed are the characteristics of each Bovone product. Over 65 years of production at the highest levels, Bovone Group has established itself as an international leader in the supply of stand alone machines and full-line systems, accessories and tools for the second processing of glass and natural and synthetic stones.

The continuous analysis of the different and frenetic trends of each single application market originates the technological primacy of Bovone Group, which constantly studies new solutions that are able to provide clients with cutting-edge technologies for present and future challenges. In fact BRS, the Bovone robotic systems, born well in advance of the other players, expresses the trends of a market that is increasingly looking for automated solutions, to optimize resources without losing sight of workmanship quality. Highly technological solutions for application destinations mainly aimed at the construction, furniture and automotive sectors: the entire production takes place in the Ovada (AL) plants, which constitute an infrastructure of absolute excellence in the Italian and international industrial scene - all able to internally manage every step, from supply of the best raw materials to development and integration of management software, up to proposal of the most suitable tool, thanks to the synergy with its subsidiary BDT, Bovone Diamond Tools.

In addition to the Ovada headquarters, Bovone is present in the market with two direct branches, one in the United States dedicated to the North American market, the other in Brazil for coverage of South America, as well as a widespread network of distributors present throughout the world. An articulated and highly qualified system of technicians, supported by the almost unlimited availability of stock, provides an excellent after-sales assistance service, that responds promptly and competently in each geographical area.

On the commercial side, the choices that are building this strategy are the result of a clear and defined vision of business objectives: starting from 2020, the new headquarters in the United States



originates from this vision and is aimed at direct control of the market. The new General Manager who will lead the US office is called to consolidate the presence of the brand on such a strategic market as that of the US which continues to show real interest in Made in Italy technology. The action plan involves the structuring of an excellent sales service – faster responses and more efficient sales support – and the development of new opportunities.

Anticipating market needs and facing high production standards are the drivers that guide production choices:

Bovone machines and systems combine high quality with process speed, the continuous innovative drive with a drastic reduction of downtime thanks to very high reliability.

There are three production reference areas at Bovone:

Machines

Stand alone machines for the treatment of glass sheets: grinders, bevellers and washing machines. The main aspect of this area is its high level of customization which, today, is a fundamental strategic plus: whether it's Bovone machines are designed to solve each and every production need. They provide perfect finishes for increasing production results thanks to their high speed, and combine the most advanced electronic applications with the construction strength and reliability guaranteed over time: an entry level machine or a more advanced model, Bovone is able to guarantee excellent performance.



Lines

Complete systems for mirror silvering and laminated glass lines are fully customizable and can be integrated according to clients' specific needs: with respect to standard configurations, all construction details are customized and calibrated to meet every specific need. Bovone systems ensure high performance both for large numbers and for those where high flexibility is required.

BRS – Bovone Robotic System

Within the BRS area the production range also includes, fully automated Bovone robotic systems for grinding glass. The BRS integrates straight-line edging machines and articulated, multi-axis robots with different loading and application capacities. And, with regards to the field of applied industrial robotics, BOVONE is Kuka's Official System Partner. BRS conforms perfectly to Industry 4.0 protocols: islands work without the presence



of personnel and are fully connectable for the traceability and self-adjustment of all production parameters.



CMS SpA

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COMPANY DATA

Contacts

Carlo Propersi - Division Manager Glass,
Stone and Metal

Sergio Gervasoni - Business Unit Manager Glass

Alessandro Colella - Product Manager Glass

Mother Company

SCM GROUP

Annual Company Turnover

EUR 150 million

Number of Employees

700

Founding Year

1969

Parent and Sister Companies

1) CMS NORTH AMERICA

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2) CMS FRANCE

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Tel.: +33 450 028 391 - E-mail: commercial@cmsfr.fr

Planned Exhibitions 2023

GlassBuild America

Atlanta, USA - 31 October / 2 November

COMPANY PROFILE

CMS Glass Technology: high performance machining centers and exclusive integrated lines for glass processing

CMS Glass Technology is a leader in the flat glass machining sector with advanced solutions like the vertical and horizontal CNC machining centers, cutting tables, seaming machines and waterjet cutting systems.

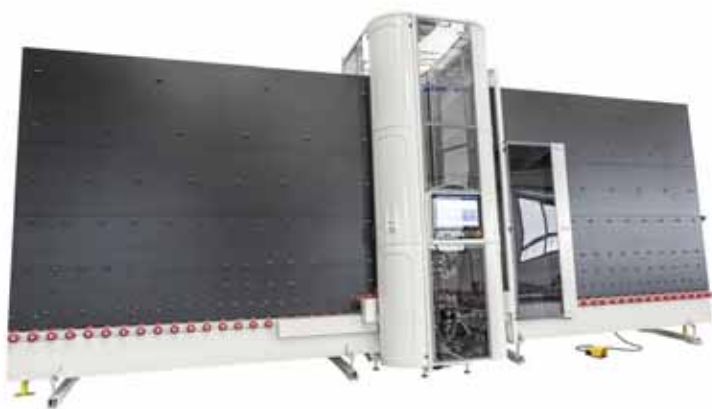
Some of the new entries of the range of CMS machines for processing glass include the innovative AGIL TR cutting table, the AURA seaming machine and the vertical machining center YPSOS.

AGIL TR is an innovative compact and versatile cutting table, easy to install, capable of automatically cutting monolithic (float) glass sheets, and laminated glass sheets in semi-automatic mode thanks to the double-zero system. Agil tr can cut sheets up to 3810 x 2600 mm, has 4 loading/unloading arms, a C axis for straight and shaped cutting and can be equipped with an automatic tool change, a low-e coating removal grinding wheel, and a vinyl removal system.





The new **AURA vertical**, dry seaming machine to process float, laminated or low-e glass has been specifically designed to process the edges without using water. It is practical to use (the operator loads the glass and starts the processing cycle, the machine automatically measures the incoming glass and processes the edge), fast to install, reliable and its plant management costs are low. It can be used as a stand-alone machine, in line with the other vertical machines or on a double-glazing line.



The **Ypsos cnc** vertical machining center and the vertical drilling machine Vertec are the flagships of the CMS range for processing glass.



Ypsos is the best vertical machining center developed by CMS to process float and laminated glass sheets and features a user-friendly software with a more efficient and intuitive interface. Depending on the configuration chosen, Ypsos can perform operations of seaming, polished and industrial grinding, milling and co-axial drilling. The machine combines absolute precision and quality with the advantages of productivity and versatility, typically found in vertical processing. Available in 3 standard

sizes, it allows for both large and small sheets to be processed up to a maximum of 6000 x 3300 mm (other maximum sizes that can be processed are available on request). Ypsos can be used as a stand-alone machine, in line with a drilling-milling machine or on a double-glazing line.



Lastly, CMS Glass Technology offers a wide range of 3 or 5-axis waterjet machines. Proline is the most innovative and advanced model offered by CMS: a genuine machining center, designed with specific solutions for waterjet technology to the extent that it guarantees superior technological performance. Proline features a stainless-steel base for dredge removal of used abrasive material and automatic water level. This innovative, easy configurable concept has not only the abrasive tank installed on-board, but also the electric servodriven high-pressure pump is integrated with the machine frame, a big saving in terms of overall layout. In order to keep abreast of the continually progressing production world and Industry 4.0, CMS has also introduced new applications and digital services by simplifying the daily operations of the operator and management of the entire production process. The digital services offered by CMS include CMS CONNECT, the IOT platform, perfectly integrated with the CMS machines, that allows for custom-designed services to be offered through use of the IoT Apps that support industry operators' everyday work, improving the availability and use of the machines or plants. The platform views, analyses and monitors all the data emitted from connected machines. The data gathered by the machines in real time becomes useful information to increase the machines' productivity, reduce operating and maintenance costs as well as reduce energy costs.

CMS has also decided to adopt the new HMI CMS ACTIVE software interface that allows the operator to easily manage different machines thanks to the same look&feel, the same icons and the same interactive approach.

All the CMS Glass Technology machines also come with a free on-line customer support program providing access to the CMS helpline which can assist the operator in resolving any problems, one step at a time.

At its headquarters in Zogno (BG), CMS has been providing its clients with access to the TECHNOLOGY CENTER. This is a space with a specific team where companies can follow demos (either in person or remotely) or customers can train with co-workers and sales staff working all over the world.



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Marino Bonetti - Sales Manager

Mother Company

Cugher Glass srl

Annual Company Turnover

EUR 14,000,000

Percentage of turnover from glass (%)

95

Sales

Domestic 5% / International 95%

Quality certifications

ISO 9001

Area

Office area 600 m² / Plant area 5,600 m²

Number of Employees

100

Founding Year

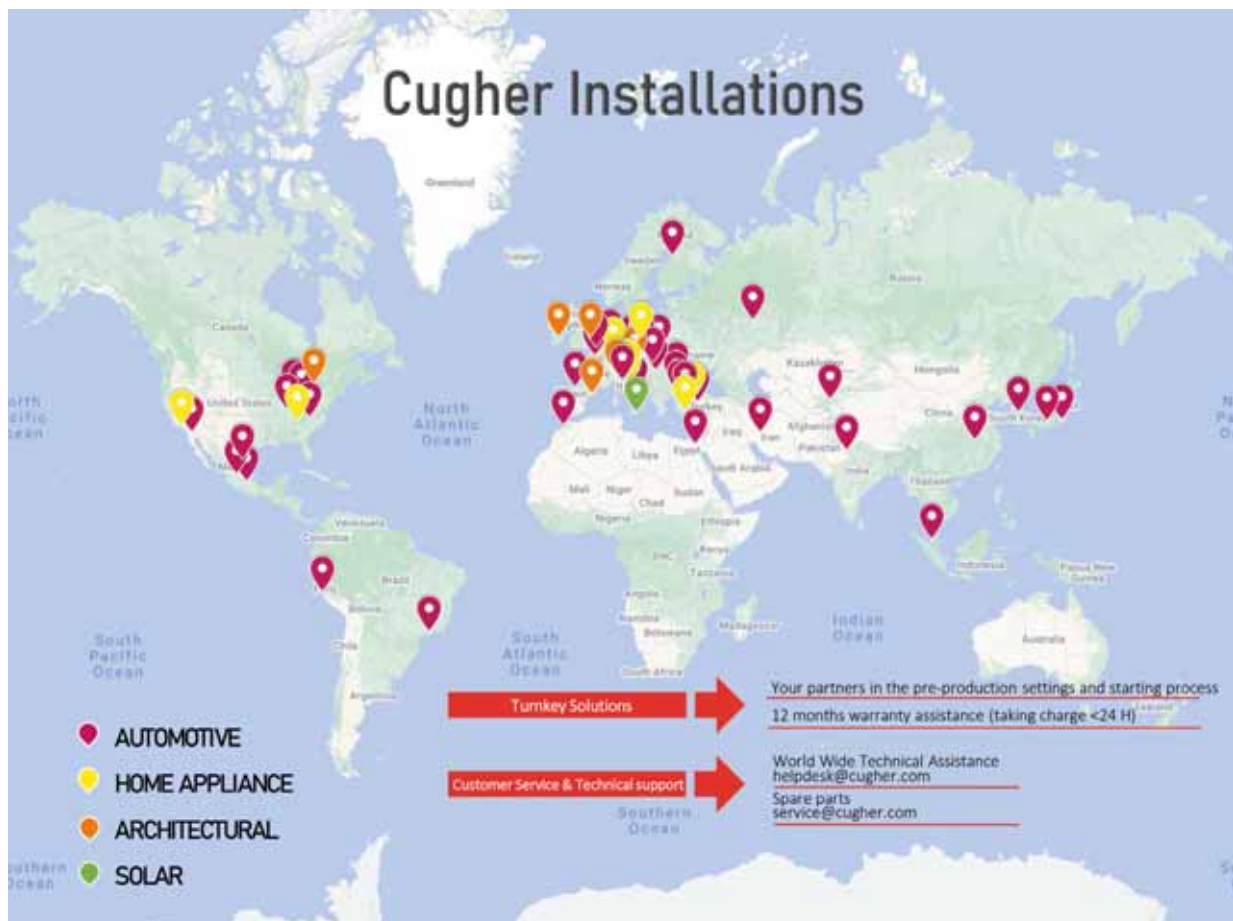
1967

Planned Exhibitions 2023

Glassprint - Düsseldorf, Germany - 25 / 26 April

Vitrum - Milan, Italy - 5 / 8 September

GlassBuild America - Atlanta, USA - 31 November / 2 December





PERFORMANCES DRIVING to the FUTURE

when excellence is needed
for Glazing Technology

COMPANY PROFILE

Cugher's over 50-year success with printing machines for silk-screen printing on glass is the result of an efficient mix of productive resources and cutting-edge technologies, deriving from the work of a team of high profile professional and derives from the work of a Team composed by high profile professionals. Production focuses on offering customized and performing solutions for each sector.

AUTOMOTIVE

Fully automated and integrated printing lines for tempered and laminated glasses of windshields, backlites, sidelites and rooftops. The plants guarantee extremely high productivity, print repeatability ($\pm 0,08\text{ mm}$) and short cycle time (from 6 to 15 seconds).

HOME APPLIANCE

Solutions for a sector where speed is essential. The production change-over is very simple and fast; it allows for very easy processing of different glass types, with operations relative to different batches all performed by a single operator.

BUILDING & INTERIOR DESIGN

Architectural LAB, the newest research center, is highly specialized in the creation of specific long-term solutions to manage float, tempered, laminated glasses of civil and industrial applications – from windows and balconies to furnishing elements and shower enclosures.

SOLAR

Development and engineering of machinery for handling solar panels along the production line as well as silk-screen printing of backsheets – all guaranteeing wet film uniformity, 98% good parts, a 7/7 working plant and high reliability.

Cugher's commercial offer is dedicated to a cutting edge product range composed of:

- **Machines for screen printing** that best fit production needs thanks to options ensuring excellent image definition, precision and uniformity of the ink. Cugher printing machines can either be integrated in a turnkey automated plant or used stand-alone with a high level of flexibility.
- **Dryers (IR, UV or combined)** with specific features and flexibility to satisfy both silk screen printing and digital printing on glass. Indeed, adapting air recirculation, dryers can accurately dry ink thicknesses from 15 to 100 microns.
- **Vision systems and quality control** provides opportunities to best control glass and print quality in every detail and to monitor and adjust the process through optical systems that are designed for automatic screen centering automatic control of broken screens.
- **Dedicated systems for handling, transport and storage** of every dimension and shape, guaranteeing excellent integration and synchronization with all line components.



DELTAMAX AUTOMAZIONE Srl

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Fulvio Rigotti - President
Gianluca Diener - Sales Manager

Mother Company

Delta Informatica Spa

Annual Group Turnover

EUR 25.000.000

Annual Company Turnover

EUR 1.500.000

Percentage of turnover form glass (%)

100%

Sales

National 35% / International 65%

Number of Employees

12

Founding Year

1989

COMPANY PROFILE

Born in 1989 as spin-off of the research centre Fondazione Bruno Kessler, **DELTAMAX** boasts wide experience in the development of **artificial vision solutions for quality control** in the industrial sector. Since 2010 we have devoted to flat glass quality control developing cutting-edge solutions thanks to continuous investment in Research&Development.

Since 2017 Deltamax has become part of the Delta Informatica group, a point of reference for ICT in the north of Italy. The common goal is to support the continuous growth of the inspection solutions application, with a more structured organization ready to face the new challenges that the markets propose.

Thanks to the strength of the group and to our thirty year experience, we can offer the necessary know how to renovate the manufacturing process, with hard-core solutions aimed at modernizing existing systems, replacing or integrating them with more innovative ones.



CUTTING LINES SOLUTIONS

The complex production of float glass involves the presence of structural defects in every sheet, defects that cannot be repaired. This results in significant costs that relate to waste management and client disputes. With a mission to make the whole float glass transformation process more efficient, Deltamax has developed OPT, the innovative solution destined to change the glass sector. It can detect defects before each processing without having to wash the sheets and guarantees numerous advantages and a quick return on investment.

IG LINES SOLUTIONS

The high demand for insulated glass by the building industry with increasingly larger, high-performance windows in terms of acoustic and thermal insulation has resulted in demand for higher quality, as close as possible to a "zero defect" result. Being the first company ever to engineer a functional solution for defects control in IG lines as well as the first designer of a scanner for defects detection such as halos, Deltamax is now a leader in the supply of technologies for supporting workers, such as augmented reality.

• **GLASSINSPECTOR**

Developed in 2007, this technology has constantly evolved to meet different needs, ensuring the detection of the typical glass defects such as bubbles, inclusions, scratches, coating defects, dirtiness, etc.

• **Q+**

Q+ integrates two different technologies of inspection in one solution: the standard system potential is improved by a second inspection channel which dramatically increases the capacity to detect superficial defects, such as halos

• **IGU SCANNER**

Any manufacturing company's goal is to certify the quality of a finished product and of the whole production line before delivering it to the client. Thanks to the IGU Scanner, Delta-max can offer a versatile solution for the control of single, double and triple glazing

FLAT GLASS CONTROL SOLUTIONS

The increasing speed in modern manufacturing systems makes the use of technology indispensable to ensure accuracy in the single production processes and the quality of the finished product.

This is no less true for flat glass production and processing lines. The level of automation has considerably increased over the years, thanks to the technological innovations which guarantee high performance together with simplified configuration and use.

That is the case of EVO, the most flexible and comprehensive solution for flat glass inspection which be easily adapted to any production line to carry out accurate controls which can even be combined one with the other. These controls include:

- DEFECTS DETECTION
- PRINTING CONTROL
- DIMENSIONAL AND SHAPE CONTROL



DIAMUT



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Biesse SpA

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DIAMUT DEUTSCHLAND

NORTH AMERICA & CANADA

DIAMUT AMERICA & CANADA

OCEANIA

DIAMUT AUSTRALIA & NEW ZEALAND

COMPANY PROFILE

DIAMUT is the Biesse brand that designs, manufactures and distributes a complete range of tools for machining glass, natural and synthetic stone. Its tools can be used on numerical control, automatic and semi-automatic machines. Founded more than 30 years ago, it's the trusted partner of successful companies working in a range of fields from aviation to domestic appliances, and from consumer electronics to furniture and architecture. Biesse designs, manufactures and distributes machines, integrated systems and software for manufacturers of furniture, door/window frames and components for the construction, ship-building and aerospace industries. It invests an average of €14 million per year in R&D, boasting over 200 registered patents. The company operates through 12 industrial sites, 39 branches, and 300 agents and selected dealers, exporting 90% of its production. Its customers include some of the most prestigious names in Italian and international design. Founded in Pesaro in 1969 by Giancarlo Selci, Biesse S.p.A. has been listed in the STAR





segment of the Italian Stock Exchange since June 2001 and is currently included in the FTSE IT Mid Cap index. It currently has 4,300 employees worldwide. Diamut has a specific product line for glass and stone processing.

CHEVRON
Ongoing performance

Chevron is the new arrow-cutting profile which has been specially designed to optimize the removal of plastic film while ensuring removal capabilities that have never been achieved previously with traditional tools. Furthermore, compared to a standard tool, the new V-shaped design limits and delays the generation of the classic cutting at the center of the groove caused by the plastic film which affects the performance of the tool. The new, innovative arrow profile allows the Chevron grinding wheel to channel the water to the center of the tool, facilitating cooling and thus improving the performance and final result. The tool is available in 100 mm, 150 mm and 200 mm diameters, and can be mounted on both CNC and vertical machines, for trapezoidal, flat and groove profiles.

PRODUCT RANGE

Glass tools

- CUP WHEELS FOR STRAIGHT LINE AND DOUBLE EDGER MACHINES
- CUTTING DISCS
- DRILLS, ROUTERS
- ENGRAVING WHEELS
- PERIPHERAL PROFILE WHEELS
- TOOLS FOR THIN GLASS SHEETS
- TOOLHOLDERS
- WHEELS FOR BEVELLED EDGES
- WRITING BITS AND SPHERICAL TOOLS

Stone tools

- CUTTING DISCS
- DRILLS, ROUTERS
- EDGE POLISHING TOOLS
- FUNERARY ART
- PERIPHERAL WHEELS
- PRESETTER MACHINE
- RECESS DRAIN TOOLS
- TOOLS FOR SINTERED MATERIALS, DEKTON
- TOOLHOLDERS
- WRITING AND BAS-RELIEF



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Enrico Bonanni - Sales Manager
Damelico Gianluca - Technical Manager

Percentage of turnover from glass

90%

Sales

Domestic: 50% / International: 50%





COMPANY PROFILE

DIEFFE MACCHINE designs and develops targeted solutions for water treatment and for the micro-filtration of water for the glass industry.

Thanks to years of experience in solid/liquid separation since 2002, DIEFFE MACCHINE is highly specialized in the development, manufacture and turnkey installation of plants using the most updated and reliable technologies.

The technical staff at DIEFFE MACCHINE carries out exhaustive feasibility analyses, in order to offer clients an accurate technical and economical assessment of the viability of the project and to build plants tailored to clients' specific needs.

DIEFFE MACCHINE provides technical assistance across all phases of machine construction, from order commissioning to plant operation and on-site personnel training.

DIEFFE MACCHINE offers a reliable, easy to operate, wide range of solid/liquid separation equipment:

- Manual centrifuges
- Automatic centrifuges
- Fine filtration
- Micro-filtration
- Reverse osmosis
- Complete plants

Many glass makers are still cleaning out their coolant tanks by hand, or using ineffective underground settling tanks.

These traditional methods simply don't solve the problems, and continue to result in lost machine time (and profits) during clean-outs, increased labour, disposal and coolant costs, and the typical problems caused by dirty coolant (slower operating speeds, decreased cutting/bevelling quality, decreased life of diamond wheels, conveyor bearings and other components, and increased maintenance costs.

- Decreased production costs
- Greater life for diamond wheels, conveyor bearings and other components
- Extended coolant life
- Reduced settling tank clean-out

- Reduced maintenance costs
- Reduced disposal costs
- Reduced labour costs
- Increased productivity ND quality
- Less machine/line downtime
- Cleaner coolant increases running speeds
- Less scratches caused by dirty coolant, so less scrap





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Joachim Stoss

Vice President International Sales IG

Chris Alderson

Managing Director IG International

Mother company

Quanex Building Products Corporation

Area

Cambridge, Ohio - USA: 38,740 m²

Heinsberg, Germany: 4,368 m²

Coventry, UK: 2,522 m²

Number of Employees

490

Founding Year

1989

Registered brands

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Warm edge contributes to energy cost reduction

Today, the exorbitant energy price increases have catapulted the energy optimisation of buildings back to the top of the agenda in legislation and the construction industry. What can the flexible warm edge Super Spacer® made of silicone foam contribute to this?

Improvement of the Uw value

Modern thermal insulating glass achieves up to 0.5 W/(m²K) as triple glazing with thermally optimised glass edge. A study by the VFF shows, the average Uw value for the most recently reported period between 2017 and 2020 is still far from the passive house standard, which requires triple glazing with a thermal transmittance $U_w < 0.8$ W/(m²K). There is therefore considerable potential in the thermal optimisation of insulating glass. Here, the warm edge is the solution that is easiest to implement and requires neither complex coatings nor changes in the profile construction.

The conductivity of an insulating glass spacer in the edge seal also determines the thermal insulation values of a window. The heat loss is quantified by the Psi value Ψ , a linear heat transfer coefficient in the unit W/mK. It describes the heat loss per metre of thermal bridge per degree of temperature difference. With a thermal conductivity of only 0.15 W/mK, silicone foam, for example, has a thermal conductivity 1000 times lower than aluminium.

Benefits for thermal insulation and heating costs

As a rule of thumb, a difference of 0.04 W/mK in the Psi value means an improvement of 0.1 W/mK in the Uw value.

A study conducted by the Passive House Institute Darmstadt (PHI) for Edgetech in 2019 proves the sustainability and cost-effectiveness with concrete savings in annual heating demand and CO₂ footprint. In a low-energy house with double glazing, the annual heating requirement is reduced by 5.8%. Due to the improved insulation provided by triple glazing, the savings can increase to 8.2%.

What remains as a conclusion: the energy-efficient refurbishment of buildings is the sum of many small parts. With over 8% possible energy savings, and benefits even in already low-energy houses, the warm edge spacer is a potential that should not be ignored. In addition, the minimisation of condensation and mould formation as well as the noticeable increase in comfort are irrefutable arguments in favour of the thermally optimised glass edge and Super Spacer®.

Planned Exhibitions 2023

We value direct contact with our clients, that is why we will try to attend as many trade fairs as possible.

Euroshop - Düsseldorf (Germany) - 26 February / 2 March
Hearth, Patio & Barbeque Expo - Louisville, KY (USA) - 11 / 13 March
Zak - Istanbul (Turkey) - 16 March
BAU - München (Germany) - 17 / 22 April
China Glass - Shanghai (China) - 6 / 9 May

Vitrum - Milan, (Italy) - 5 / 8 September
GlassBuild America - Atlanta, GA (USA) 31 October / 2 November
Windoor North America - Toronto, ON (Canada) - November
Zak Windows & Doors - Mumbai, (India) - 23 / 26 November
Glasstec Asia - Bangkok, (Thailand) - 29 November / 1 December

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COMPANY DATA

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COMPANY PROFILE

EUROTECH WAY is a leading company in the production of automatic machinery for the glass sector since 1996, but the experience of Eurotech Way technicians team in the industrial automation sector began in 1970.

MANUFACTURED MACHINES:

- Patented ROBOT for cleaning the rollers in glass tempering furnaces with dry technology, directly inside the furnace in a completely automatic way.
- Screen Printing Machines for medium, large and very large formats, with bridge technology for quick and easy use.
- Dryers for glass enamels with an innovative heating technology for high production and low energy consumption.

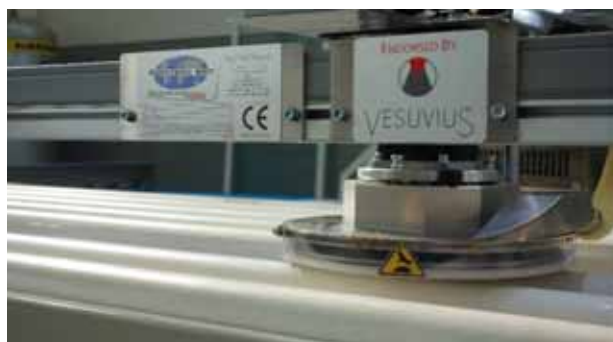
- Edges Roller Coating Machines with a particular design of the roller to optimize the overlapping of the glaze.

ROBOCLEAN

IS THE ONLY WAY to clean and polish rollers fully automatically, perfectly guarantee 100%, with high final cleaned result, and ENDORSED BY VESUVIUS.



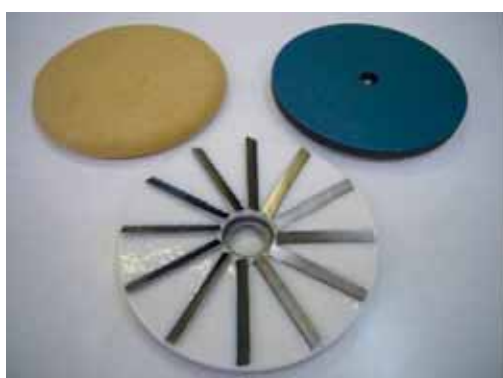
ROBOCLEAN IN ACTION INSIDE FURNACE



Set of discs for RoboClean

Rollers dirty with paint

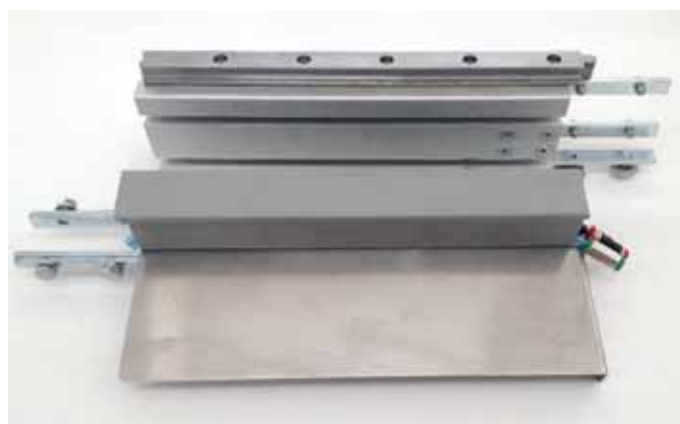
Cleaned with RoboClean



MAIN ROBOCLEAN PERFORMANCE:

- With the same RoboClean, and proper kits, you can clean multiple roller furnaces and of any type!
- With this kits you can change the RoboClean set-up in a very fast and simple way.
- Using the RoboClean you save manpower, reduction productions stop time, and avoid any defect on the glass, coming from dirty rollers.
- The RoboClean could be equipped with different type of discs able to remove any kind of dirty materials from rollers surface.

EXTENSION KIT



Have a look to Eurotech Way RoboClean New Release here:



ROLLERS KIT PITCH



FOREL



FOREL SpA

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Founding Year

1976

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COMPANY PROFILE

FOREL, established in 1976, is an Italian company of solutions for flat glass and double-glazing processing (vertical cutting, sorting systems, edge processing line, laminating glass lines and IG line). Forel has its headquarters and production plants in Italy, but the company owns commercial branches and offices in USA, Canada, United Kingdom, South Africa, Russia. The sales network is worldwide present and has developed sales relations with over 70 countries, exporting the technological tradition and dynamism of Italian engineering. Forel's core philosophy is innovation: every year, a remarkable part of the incomes are invested in R&D.





SALES NETWORK

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CASA FIGINI

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AUSTRALIA / NEW ZEALAND

OVERSEAS GLASS AGENCIES PTY.

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BELGIUM

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GERMANY-AUSTRIA-SWITZERLAND

CZECH REPUBLIC

PRO-GLAS

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JAPAN

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INDIA

THORNGATE SALES CORP

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MIDDLE EAST

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OSAMU E.I.R.L

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ROMANIA - HUNGARY - MOLDOVA

IMROGLASS

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SERBIA - MONTENEGRO - MACEDONIA

GLASMIK BEOGRAD

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SLOVENIA - BOSNIA - CROAZIA KOSOVO - BULGARIA

GLASMIK SI

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SOLUTEC GLASS

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COMPANY DATA

Contacts

Michela Pezza - President
Paolo De Borzatti - Sales Director
Fabio Gabrieli - Technical Director

Percentage of third-party turnover (%)

5

Percentage of turnover from glass (%)

95

Sales

Domestic 20% / International 80%

Area

Office 280 m² / Plants 1250 m²

Number of Employees

7

Founding Year

1970

Patents Obtained in

4

Registered Brands

2

Suppliers Name

Fratelli Pezza Srl

Planned Exhibitions 2023

Glasstech Mexico - Mexico City, Mexico - 19 / 21 July
Vitrum - Milan, Italy - 5 / 8 September
Glassbuild America - Atlanta, USA - 31 October / 2 November

SALES NETWORK

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GLASSMAK - ADAM MAKAROWSKI

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BALKANS

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ROMANIA

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NEW ZEALAND

GLASSCORP LIMITED

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COMPANY PROFILE

FRATELLI PEZZA s.r.l., founded 1970, is undisputed market leader in the manufacture of **sandblasting cabins and marking equipments for flat glass**. The company has always focused on the development of its products following the trends and the needs of the sector and has recently launched on the market the new **Mistral EV+** series, full optional sandblasters that comply with the standards of **Industry 4.0** and allow to perform many blasting effects, in particular **shading and zonal blasting**. Interconnection, digitalization of the production process and constant monitoring of performance represent key factors for the competitive development of any glasswork. The cabins, equipped with an **abrasion-resistant touch screen display**, enable to manage an unlimited number of working programs, copy, rename, delete them or, on the contrary, backup them. There will be **counters** for monitoring the process, a report of any alarms and **predictive maintenance information**. In addition to this, when a sandblasting area is entered into the program it is displayed through a graphic simulator. Pezza has recently presented **MistralApp**, a new web application that allows the Mistral EV + series sandblasters to be programmed directly from a PC. With MistralApp, glass companies will be able to optimize programming and processing times, significantly reducing production costs and consumption. Fratelli Pezza product range is also vast and varied and truly adapts to the needs of any customer. The **ZEPHIR+** series, for example, is simple and economical and it is ideal for small glazing companies. All automatic cabins are available in **three sizes** (1200 mm, 1800 mm and 2600 mm, open topped) and are also equipped with a revolutionary system that prevents the accumulation of static electricity in the cabin, **MirrorProtection**: this system enables mirror manufacturers to no longer have to worry



about the phenomenon of static electricity sparks. Considered the growing demand of marking on glass, a result of the increasingly stringent regulations for glass items to be used in the building sector, the company has devoted resources to the expansion of its original line of **sand-jet marking equipments**. The product range now includes two manual and portable devices, the **MARKER T** line, and four fully automatic equipments, the **EASYMARKER** series. All models are available in two versions that provide a maximum diameter of the logo of 25 mm (0.984 in) and 30 mm (1.18 in) respectively, with the latter that enables to convey a large number of information. Fratelli Pezza marking devices provide a clear, sharp and permanent mark, and can be used on any type of glass. Fratelli Pezza has recently invested a lot of resources to expand the range of **glass coatings**. **MIX 30 PRO** and **GHOSTGLAZE** are two water-repellent, anti-fingerprint and stain resistant coating products for the protection of sandblasted glass and transparent or acid-etched glass respectively.

MISTRAL 260 EV+





GIARDINA GROUP

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COMPANY DATA

Contacts

Stefano Tibè - Sales Manager

COMPANY PROFILE

GIARDINA GROUP – 70 employees, a turnover of around 20 million euros and 95% of exports – is a world leader in technologies for painting glass, wood, composite materials, plastic and metal.

It was born from the merger of Mauri Macchine and Giardina Finishing, companies founded in the early seventies, and from the very recent acquisition of De Stefani, all companies that have been protagonists for decades in the various sectors of surface finishing. Skills, professionalism and experience that since 2017 have been brought together in a single, large technological hub in Figino Serenza, in the province of Como, where the largest production program in the sector is designed and implemented:

from the treatment of glass plates "Jumbo" to the impregnation of the beams, from the finishing of the profiles to sophisticated robot plants for the painting of doors and windows or furniture. A 360-degree experience which – through the work of Giardina Group Glass Division – has made it possible to develop specific solutions, with strong innovative contents, also for the world of glass.

A vocation that since 2019 can count on the structures of the Giampiero Mauri Innovation Center a large, well-equipped showroom/laboratory - named after the founder of the group - where customers and partners can test all the available technologies.

For the glass sector Giardina Group Glass Division offers:

- Heavy-duty Roller Coaters suitable for lacquer application on glass (standard working widths from mm 1,300 to 2,500; wider machines on request);
- Roller Coaters for special glass decoration;



- Automatic Spray machines, either with disposable paper belt conveyor or with paint recovery belt;
- Curtain coaters with double bed and 1 or 2 coating heads on fix or removable trolleys;
- 3D Glass Finishing with combined systems MOS® IR for water-based products;
- Quick drying systems such as MOS® UV dryers;
- Flash-offs and hot air tunnels;
- Cooling tunnels.

In recent years, Giardina Group Gass Division has further perfected its drying and preheating technologies, capable of fur-

ther optimizing cycles for high productions and offering an important added value in terms of efficiency, energy saving and sustainability. The new ovens allow to manage the preheating of several glasses at the same time, leading to a homogeneous temperature in the glass, with important energy saving factors and quality of subsequent processing.

The mixed IR and forced air drying systems guarantee superior performance compared to the ovens in use today in the mirror sector, just as the lateral radiation of the glass guarantees total drying of the coating at every point.



PRODUCT RANGE

- ENAMELLING EQUIPMENT AND PLANTS
- HOT AND COLD COATING SYSTEMS AND MATERIALS (ROLLERS, CURTAIN COATERS, DRYERS)
- POWDER OR LIQUID APPLICATION SYSTEMS FOR PROTECTING FLOAT GLASS

GLASSCOMPANY



GLASS COMPANY Srl

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COMPANY DATA

Contacts

Claudio Bernabucci - CEO

Annual turnover of the Company

EUR 4,000,000

Sales

International > 70%

Banks

BPER - CREDEM - Banco BPM

Area

Offices 250 m² / Plants 550 m²

Number of Employees

9

Third-party suppliers

Pesaro area, as well as international suppliers

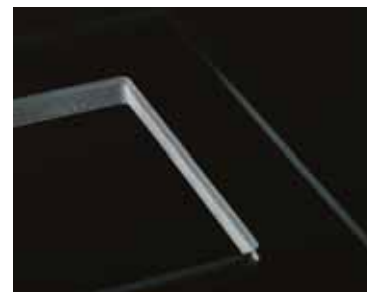
Planned Exhibitions 2023

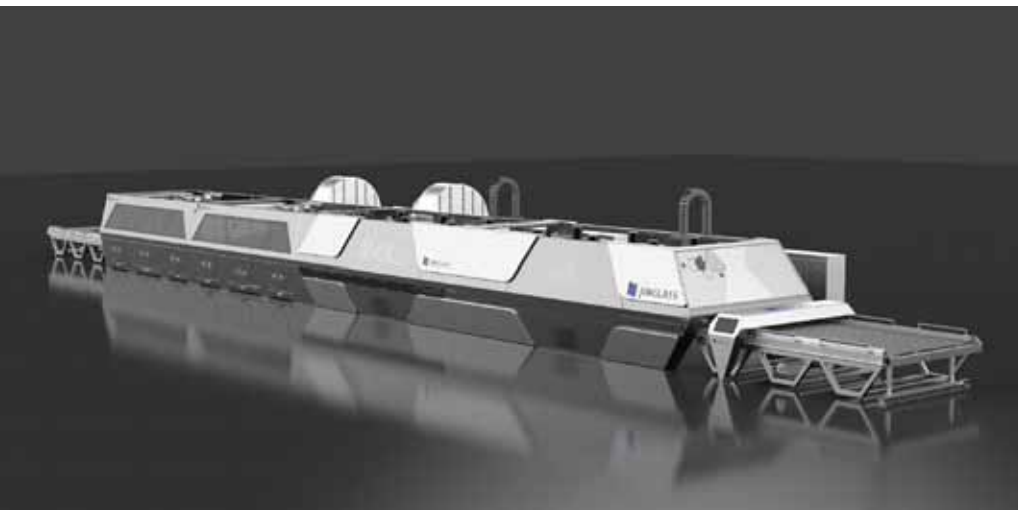
Vitrum

Milan, Italy - 5 / 8 September

PRODUCT RANGE

- Laser cutting, drilling, engraving and ablating machines
- Fire resistant glass production systems
- Flat and bent glass tempering furnace
- Vertical and horizontal washing machines
- Laminating furnaces and turnkey plants
- Glass coating systems
- IG Lines





COMPANY PROFILE

Founded in 2001 thanks to more than 30 years experience of its owner Claudio Bernabucci and the continuous research and development in innovative products **GLASS COMPANY** has become one of the leading companies in Italy for special glass processing machines and equipment.

Glass Company designed plants are equipped with highly advanced technology and receive extremely positive feedback from the sector.

For the research and innovation purposes Glass Company has introduced **GlassMek division**:

- **LASERMEK**, a highly-configurable modular machine for the laser engraving and ablation of any type of coating and silvering on glass. The machine has been improved with Scanner technology which allows to engrave paint or coating leaving the glass surface completely transparent, with a very



high processing speed. Particular interest has been addressed to the Low-E coating engraving, to produce heating glass for refrigeration sector and for any other sector where anti-fog glass are required, thanks even to a dedicated software HG SoftMek for the automatic calculation of the coating cutting to determine the glass temperature.

Also LaserMek has been expanding with a **DRILLING** Laser which allows to obtain even notches and grooves on the glass edge. The drilling can be of any shape starting from the classic round hole to holes of any geometry (oval, rectangular, trapezoidal, etc.) with a maximum size of 80x80mm which can reach

100x100mm by using very sophisticated optics.

Thanks to a Laser source advanced technology and a dedicated software various solutions have been developed for **CUTTING** monolithic glass up to 25mm thickness. The cut is perfect and without chipping and is suitable for tempering the glass

- **FIREMEK**, is an automated turnkey system designed to Fire-resistant glass production. Particularly appreciated for its ease of use and affordable price which makes **E, EW** and **EI** glass production not only the prerogative of a few producers, but even of small and medium firms.
- **PLASMEK**, an innovative technology, created thanks to Glass Company's experience, uses atmospheric pressure plasma for cleaning and treatment of flat glass surface, increasing the adhesion of the applied products in the immediate subsequent stages of processing.

Glass Company Srl has been continuing for over 15 years its collaboration with Jinglass for flat and bent glass Tempering furnaces supplying with very high technology plants such as the new glass tempering furnace VULCAN

Also Glass Company has been collaborating with HANJIANG since 2022 to supply the full automatic IG Lines

Not at last Glass Company directly supply assistance and technical advice from Italy to give customers a quick response to their needs with the high professionalism already known in the glass field.





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TECHNOLOGY CENTER

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TECHNOLOGY CENTER

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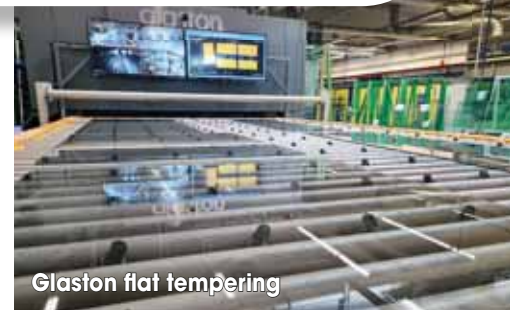
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Glaston MULTI'ARRISSER



Glaston flat laminating



Glaston flat tempering

COMPANY DATA

Contacts

Anders Dahlblom - President, CEO
All contacts:
<https://glaston.net/contacts/>

Annual Group Turnover

EUR 213,5 million

Number of Employees

750

Registered Patents

257

Planned Exhibitions

Glaston will be present at major glass exhibitions in 2023

COMPANY PROFILE

Glaston in brief

Glaston is the glass processing industry's innovative technology leader supplying equipment, services and solutions to the architectural, automotive, solar and appliance industries. The company also supports the development of new technologies integrating intelligence into glass. Glaston is committed to providing its clients with both the best know-how and the latest technologies in glass processing, with the purpose of building a better tomorrow through safer, smarter, and more energy-efficient glass solutions. Glaston operates globally with manufacturing, services and sales offices in 9 countries and its shares (GLA1V) are listed on NASDAQ Helsinki Ltd.

NEW DIGITAL SOLUTIONS ENABLE BETTER BUSINESS

Digital solutions have always been – and continue to be – integral to the machinery and services we provide. They allow our customers to fully prepare for the future by generating significant business value. At Glaston, we keep investing in our digital capabilities to keep pace with the latest technological developments, such as the cloud, automation, remote connectivity, and big data.



Glaston heat treatment



Glaston TPS® Applicator



Glaston CHAMP EVO

Glass heat treatment

Bringing you built-in intelligence with our machinery has been our core focus for quite some time. The latest versions of Glaston flat glass tempering furnaces **Glaston FC Series, RC Series** and **Jumbo Series** incorporate high levels of automation and intelligent process control. Some of the latest innovations in the automation of the flat tempering process are the online fragmentation prediction for every glass and the white haze detection using Artificial Intelligence (AI). The **tempering process autopilot** reduces the operator's influence and offers process control without parameters.

By taking advantage of intelligence, our customers can gain higher bed utilization, leading to higher energy efficiency and capacity, better repeatability in quality, and also greater operational safety which is thanks to online stress calculations, traditionally manual work for occasional glass inspections. Based on data, every machine will be also able to take care of its own predictive maintenance and suggest spare parts, when needed.

Glaston ProL flat glass lamination line provides unprecedented flexibility for mixed production. The ProL convection heating chamber makes switching between glass types and different 'sandwiches' easier than ever. The whole line, from glass handling to the latest PVB cutting technology, has been designed for flexible operations.

The trend in flat lamination is a growing use of structural interlayers and for that Glaston has introduced the new convection control technology, offering a significantly wider operating window even with complex laminates.

A higher degree of automation is also on the agenda for the laminating process and with the lamination process autopilot, the furnace will learn to achieve the most optimal way of running instead of operators having to do adjustments manually.

Insulating glass manufacturing

The advanced architectural glass **TPS® (Thermo Plastic Spacer)** technology provides processors with end products to satisfy the toughest warm edge demands. Insulating glass units made with TPS® improve energy efficiency in buildings, increase durability and reduce energy costs.

A major advantage of TPS® is its production flexibility: the direct application of the Thermo Plastic Spacer onto the glass lite significantly simplifies the processes for I.G. manufacturers. The entire production mix can be manufactured on one line on the various TPS® I.G. production lines – from individually configurable solutions via fast system solutions with shortest cycle times, up to maxi size solutions for glass sizes up to 9 m in length.

Irrespective of whether a fully automatic line for I.G. production with warm-edge spacers or an entry-level solution: At Glaston every I.G. manufacturer will find the line or machine that meets their requirements.

The benchmark in this sector is the modern **Glaston SPEED** production line, which can be used to produce triple I.G. units at the same time it takes other lines to produce double I.G. units. At the other side of the product range is the **Glaston COMFORT**, the ideal entry-level solution to industrial I.G. production. It cannot be overlooked – the trend is always heading towards bigger I.G. units and facade elements.

With the **Glaston JUMBO** production line, XXL units up to 18 meters.

The arripping machine **Glaston MULTI'ARRISSER**, is a fast and user-friendly solution for the high-quality arripping of straight glass

edges. The proven Glaston cup wheel technology, guarantees the best arripping quality at low operating costs.

The cup wheels adapt individually to different edge geometries of rectangular and shaped formats. Glaston's cup wheel technology has a 5 to 10 times longer lifetime than other systems, leading to higher productivity. One cup wheel can be used for multiple functions – arripping of the edge, basic edge planing, and corner dubbing.

Additionally, the cup wheels allow a maximum arripping speed of 60 m/min, making MULTI'ARRISSER the fastest single-head machine worldwide.

Premium Low-E glass can be processed without any coated surface contact. Due to its compact design, MULTI'ARRISSER has a small footprint. It can be used as a standalone solution or integrated into an IG production line, enabling a wide range of applications in tempered, laminated, or insulating glass manufacturing.

Automotive & Display glass processing

Glaston CHAMP EVO automotive glass pre-processing solutions enable to enhance efficiency in the daily production of windshields, sidelites, backlites or quarterlites. This means a yield greater than 98%, shorter cycle times, reaction-fast software to minimize downtime, and an excellent cost-per-unit ratio.

The new CHAMP EVO machine generation includes two optimization features: a linear drive instead of the spindle on the grinding machine for higher precision and more dynamic movements, and also a honeycomb table on the grinding machine for higher precision and more dynamic movements.

With significantly improved performance parameters, the new **Glaston HYPERFEX grinding wheels** represents a revolution in edge grinding, with a holistic view of the overall process in pre-processing of glasses for different application areas.

Glaston BRIGHT EVO display glass solutions are individualized production systems for automatic cutting, breaking, grinding, and drilling of thin glass down to 0.4 mm in thickness. These thin glasses are used for monitors, TV screens, mobile devices as well as automotive glass displays. The machine configuration offers not only a process-optimized line layout but also various expansion options using upgrade kits.

Glaston MATRIX EVO, the automatic windshield bending furnace for fast, efficient, and high-performance windshield production, features a new windshield press for bending deep sags and wraps around corners to match the tightest tolerances. MATRIX EVO is available with different size and capacity configurations to reduce cycle times. Glaston's active convection technology in automotive glass heat treatment improves the process with coated, printed, and complex glass types and enables faster heating.

Glaston HTBS bending and tempering system covers a wide range of application areas in the automotive, appliance, and furniture glass industries. With its flexibility and high end-product quality, the HTBS furnace allows meeting evolving market requirements and processing multiple glass sheets in one production load. Glaston HTBS is available with the most dense control matrix in the market to meet the highest quality standards with bent tempered glass.

More about our products and services: www.glaston.net



GPM AUTOMATION Srl

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COMPANY DATA

Contacts

Alessandro Grando - CEO and board member
Loris Grando - CEO and board member

Annual Company Turnover

EUR 4 million

Sales

National (5%) / International (95%)

GPM automation operates in two main business areas:

1- glass processing machineries: turnkey laminated glass plants including autoclave and climatic room, horizontal and vertical washers;

2- automation: sorting and stocking systems for glass, window, stone and ceramic tiles; robotic solutions for loading/unloading of third party lines such as insulating glass line, double edger, painting line, vertical CNC line, tempering furnace.

Our staff is made up of highly qualified people with decades of experience in the glass and automation world.

We focus on customer needs by proposing tailor made solutions. GPM automation is committed to providing reliable technologic machineries with customized to the specific design of each project.

We think that innovation and continuous improvement are keys on equipment development.



ROBOT FOR IG UNLOADING



SALES NETWORK

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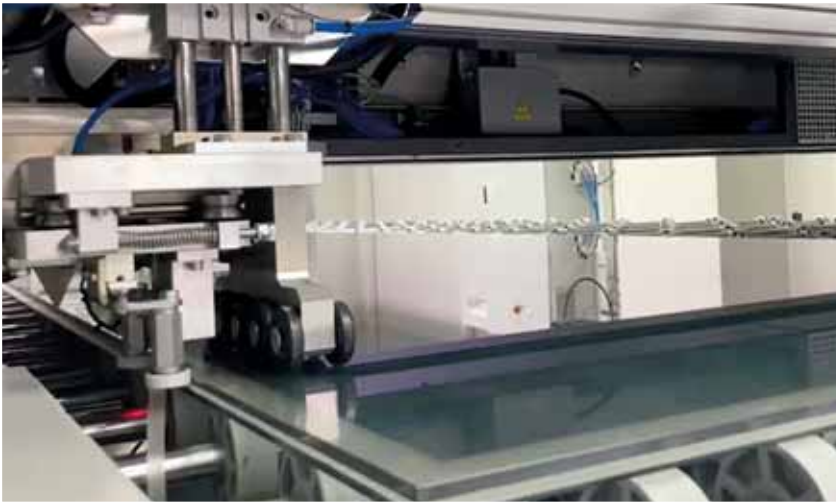
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ROBOT FOR IG LOADING

LAMINATED GLASS LINE



HORIZONTAL WASHER AND TILTING TABLE



HEGLA[®]

HEGLA

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COMPANY DATA

Contacts

Bernhard Hötger - CEO
Jochen H. Hesselbach - CEO
Dr. Heinrich Ostendarp - CTO
Ingolf Ripberger - COO

Annual Group Turnover

EUR 104,000,000

Percentage of Turnover from Glass

100%

Quality Certifications

DIN EN ISO 9001:2015

Number of Employees

800

Registered Trademarks

SortJet, ReMaster, Optimax

Planned Exhibitions 2023

Big 5 - Riyadh, Saudi-Arabia - 18 / 21 February

China Glass - Shanghai, China - 13 / 16 April

Vitrum - Milan, Italy - 5 / 8 September

GlassBuild America - Atlanta, USA - 31 October / 2 November

Eurasia - Istanbul, Turkey - 11 / 15 November

COMPANY PROFILE

Loading

For loading **HEGLA** offers different solutions such as Automatic Floor Loading Systems, Compact and Gantry Loaders. Double sided floor loaders of 3 x 2 metres and 6 x 3 metres are available with up to 6 positions (12 racks), while the gantry systems are infinitely variable and can use 'A' and 'L' frames as well as compact storage systems. 6 x 3-metre gantry loaders can also load directly from Float Liner delivery racks dropped in the crane area.

Float Glass Cutting

With its wide range of cutting systems, **HEGLA** offers a perfect solution for each and every customer needs. For the industrial volume cutting of float glass for example the Galactic with its shortest processing time and full automation was invented. **RA-PIDLINE**, with its optional grinding device for low-E, is **HEGLA's** universal cutting machine for float glass.



Linear Driven Cutting Machine for float glass: Hegla Galactic

ProLam LSR – Greater productivity for LSG Cutting

With the ProLam LSR, LSG cutting is faster than ever before. Thanks to the newly developed laser separation technology, the film can be heated up much faster than before. The overall process has also been accelerated, increasing productivity by 20 per cent or more compared to conventional cutting systems. The system's high performance is not only reflected in its cycle time and precise cutting results - with the new laser technology the surrounding glass area remains cold. This systematic improvement counters downstream delamination and visible blurring around the edges.



SALES NETWORK

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ITALY

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POLAND

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SPAIN

R. Meyer S.L., Rolf Meyer

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E-mail: rolf.meyer@rmeyersl.com



ProLam LSR: Improved productivity and edge quality thanks to laser diode heating technology

Laser Markings for Glass

The ES-Guard laser marking system of HEGLA boraident enables a non-destructive marking of coated and uncoated glass surfaces. The glass is marked using our reliable and patented laser transfer technology, UniColor. As an added advantage, the machine is designed for fully automatic operation on production or cutting lines. Besides, thanks to the laser technology the markings are attached within the panel for its entire life cycle, giving us important information that is collected and saved.

ReMaster

The ReMaster for optimised processing of remnant sheets is an innovative system that allows sub-plates of any type be stored without manual handling above the cutting line. Without interrupting the production process the remnant can be used for following glass runs, thus reducing sub plate waste drastically. This creates the basis for efficient production of IG-units of all glass



HEGLA SortJet: Invented to reduce material costs and improve production flow

types and thicknesses. It offers optimal utilization of subplates, decreases material costs and reduces unnecessary handling.

SortJet

With the need for more and more automation and high-speed operations in glassworks, HEGLA invented the SortJet – An innovative product that not only improves material flow but also reduces material costs to a minimum. After cutting the glass in random order to reduce offcuts, all panes are stored in the dynamic buffer of the SortJet. Just 250 bays can accommodate multiple panes to buffer all the glasses in the production process for an insulation glass line. When the panes for an IG-unit are required on the line, the individual panes are handed over directly in production orientation and sequence. The separate processes in front of and behind the dynamic buffer contribute towards a production process that significantly reduces downtime while at the same time accelerating the material flow and reducing cutting costs.

helios quartz



HELIOS ITALQUARTZ Srl

Production Site / R&D and Technical Center

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Tel.: +39 02 95349318 - Fax: +39 02 95345085

E-mail: italy@heliosquartz.com • www.heliosquartz.com

COMPANY DATA

Contacts

Armando Giro - Chairman
Luigi Gastaldo - CEO

EUROPE (Headquarters)

HELIOS QUARTZ GROUP SA

Production Site / R&D and Technical Center

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Sister Companies

AMERICA

HELIOS QUARTZ AMERICA INC.

**Distributor - Logistic and Technical center
for North America region**

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for China Mainland region**

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Suite 3002, 30/F, Oxford House,

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TURKEY

HELIOS QUARTZ TURKEY

Commercial branch for Turkey region

Mimaroba Mh. Mustafa Kemal Bulvarı.

Colorist A Blok. Kat 3 D.50

Mimaroba, Büyükçekmece - Istanbul

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www.heliosquartz.com



Planned Exhibitions 2023

Ice Europe

Munich, Germany - 14 / 16 March

Plastico Brasil

San Paolo, Brazil - 27 / 31 March

China Plas

Shenzhen, China - 17 / 20 April

China Glass

Shanghai, China - 6 / 9 May

The Battery Show Europe

Stuttgart, Germany - 23 / 25 May

Plast

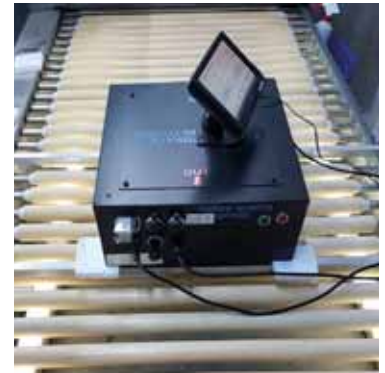
Milan, Italy - 5 / 8 September

Vitrum

Milan, Italy - 5 / 8 September

Fakuma

Friedrichshafen, Germany - 17 / 21 October



COMPANY PROFILE

HELIOS QUARTZ was founded in 1940 as a family-owned company in the busy city of Milan. Since then, it has grown and developed, becoming an important group of companies with two production plants, the historical one in Italy (Helios Italquartz S.r.l.) and the new facility in Switzerland (Helios Quartz Group SA), combined with distribution channels in the US, South America and Asia. Helios Quartz is now an international player and a well-known supplier for Quartz Glass processing and the manufacturing of Infrared Emitters and Ultraviolet Lamps. Helios Quartz also produces Specialized Equipment for Industrial, Scientific and Medical applications. TÜV certified, Helios Quartz is a very flexible and dynamic group which is deeply oriented towards internationalization and which is living a strong and stable growth phase with great momentum: in the last 10 years, Helios Quartz has opened commercial branches in the US (Helios Quartz America), in China (Shenyang Helios Tech) and Hong Kong (Helios Quartz Asia). Thanks to its experience in different fields and to its cutting-edge testing laboratory

located in the historical Helios Italquartz S.r.l. plant in Cambiago (Italy), Helios Quartz can advise customers and provide them with the best solution for each and every specific application.

The focus of all HELIOS QUARTZ companies is to be a partner for their customers, not only a regular supplier.

Helios Quartz product range for the glass industry includes:

- QUARTZ INFRARED HEATERS in short, medium and fast medium wavelength, in single and twin tube, with or without gold reflector for:
 - **Laminating lines** (plastic film coupling);
 - **Screen printing lines;**
 - **Bending furnaces;**
 - **Fusion furnaces;**
 - **Laminated glass cutting tables;**
- INFRARED MODULES: complete infrared solutions, designed and customizes according to customer needs, and ready to be integrated in existing machines and production lines;

- UV POLYMERIZATION EQUIPMENT: UV high and medium pressure lamps for drying screen printing of reactive inks, paints, coatings and adhesives for the decorating and furnishing sector;
- TIN DETECTOR EQUIPMENT: UV black light devices which are able to detect the tin coated side of the float glass even under high brightness conditions. This kind of detection is crucial before processes such as laminating, mirroring, printing and decorating. Helios Quartz offers two type of device:
 - MANWOOD 25-N: manual equipment.
 - AUTOMATIC TIN SIDE DETECTOR: compact automatic version of this device. It can be fixed directly on the glass transportation line, before the production process, in order to check each and every piece of glass. A user-friendly PLC helps the operator in calibrating and managing the different recipes.



HORN GLASS INDUSTRIES AG

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COMPANY DATA

Contacts

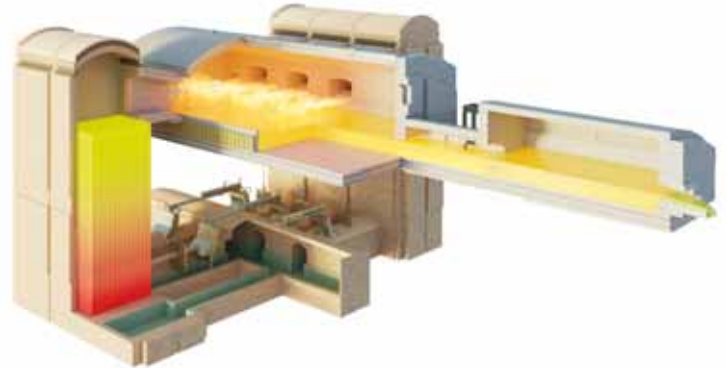
Stephan Meindl - President and CEO
Ekaterina Firsova - Executive Director Glass
Plant Technology
Ulrich Imhof - Executive Director Container/
Special Glass
Andreas Kopp - Managing Director
HORN Bau & Service GmbH

Number of Employees

Approx. 450 (worldwide)

Company founded

1999





COMPANY PROFILE

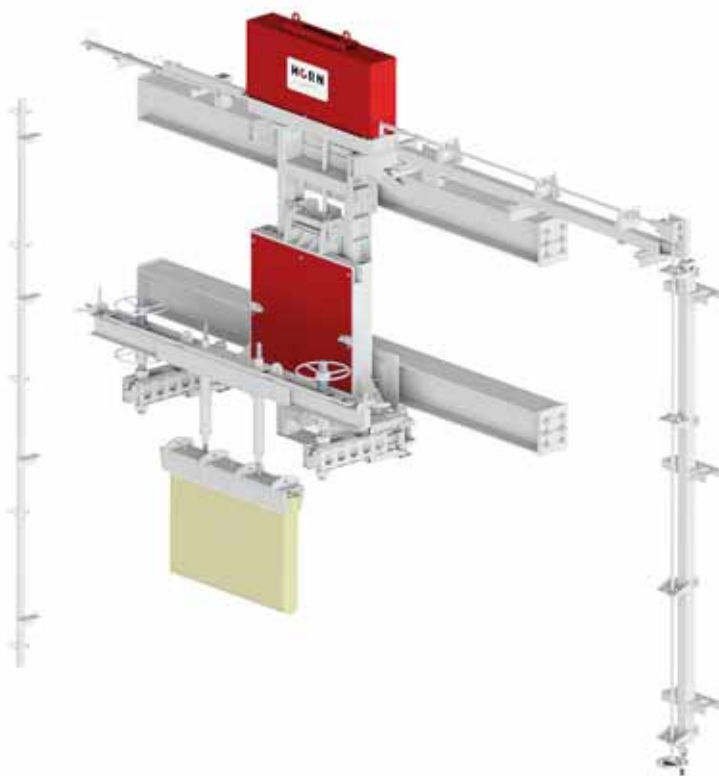
At its location in Plößberg, Germany, **HORN Glass Industries AG** designs and makes glass melting technology and turnkey projects for the float and container glass industries. The company's high-performance glass melting furnaces and turnkey projects are installed at glass manufacturers all over the world and serve the production of beverage bottles, food containers, drinking glasses, glass panes, glass tubes, glass fibres and special glass.

With more than 135 years of experience, HORN has been the specialist and expert in the field of the construction of glass melting furnaces for many years, and is now one of the industry leaders in the implementation of turnkey projects.

Subsidiary companies in China, Malaysia, India, Croatia, Ukraine, Brazil and the Czech Republic add value to global customers, offering proximity and prompt response in the global market. Almost 90% of HORN's products are exported from Plößberg in Upper Palatinate to more than 75 countries worldwide.

HORN offers its customers complete support and a helping hand at all times. HORN can offer tailor-made solutions because we have a very high level of vertical integration for all our products. HORN has ventured into unknown areas, e.g. in the construction of its own tin baths and associated equipment. HORN manufactures a large number of products in its workshops in Plößberg:

- Glass melting furnaces (container glass, float glass, etc.)
- Tin baths
- Batch chargers
- Stirrers
- Gas, oil and heavy oil heating for melting furnaces
- Tin bath equipment such as top roller, pusher, flags, fences
- Tweel
- Dross boxes
- Shield gas supply stations



PRODUCT RANGE

MELTING FURNACES
TURNKEY TECHNOLOGICAL
PLANTS
PROJECT ENGINEERING
FINANCING & AUTHORISATIONS
PROJECT MANAGEMENT ON SITE
TRAINING
OPERATIONAL SUPPORT

TIN BATHS
HEATING EQUIPMENT
CONTROL EQUIPMENT
ELECTRIC BOOSTING SYSTEMS
BATCH CHARGERS
MEDIA SUPPLY EQUIPMENT
SERVICE WORKS
FOREHEARTHES



IMMMES Srl

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COMPANY DATA

Contacts

Paolo Reffo Scarso - Sales Director

Annual Group Turnover

EUR 7.8 mln

Annual Company Turnover

EUR 7.8 mln

Percentage of turnover from glass (%)

80

Percentage of third-party turnover (%)

20

Sales

Domestic (25%) / International (75%)

Banks

Unicredit Bank Group - Italy

Area

Offices 550 m² / Production 4000 m²

Number of Employees

30

Founding Year

1989

Registered Brands

IMMMES - DTP - SRS

Parent and Sister Companies

IMMMES BRASIL

San Paolo - Brasil

Planned Exhibitions 2023

Glasstech Messico - Mexico City, Mexico, 19 / 21 July

Vitrum - Milan, Italy, 5 / 8 September

Glass Build America - Atlanta, USA, 31 October / 2 November

Eurasia Glass - Istanbul, Turkey, 11 / 15 November

Gulf Glass - Dubai, UAE, 4 / 7 December

COMPANY PROFILE

Founded in 1989, **IMMMES** initially built and assembled wooden structures of medium-heavy dimensions.

The young company grew quickly, thanks to a passion for work coupled with the great carpentry industry experience of business partners Giuseppe Comberlato and Giulio Vettorato. A technical office was soon opened to begin planning and producing innovative plants and machinery whilst jointly offering to clients customized, advantageous solutions.

Being directly managed by the two partners, technical and design solutions accompanied by acute attention to detail as well as prompt assistance service all united to afford the company great opportunities - thus confirming IMMMES as a quality brand. By the 90's it already counted more than 20 employees, which precisely coincided with the years that saw the first system for industrial water treatment - an event that was to profoundly mark the company's future.

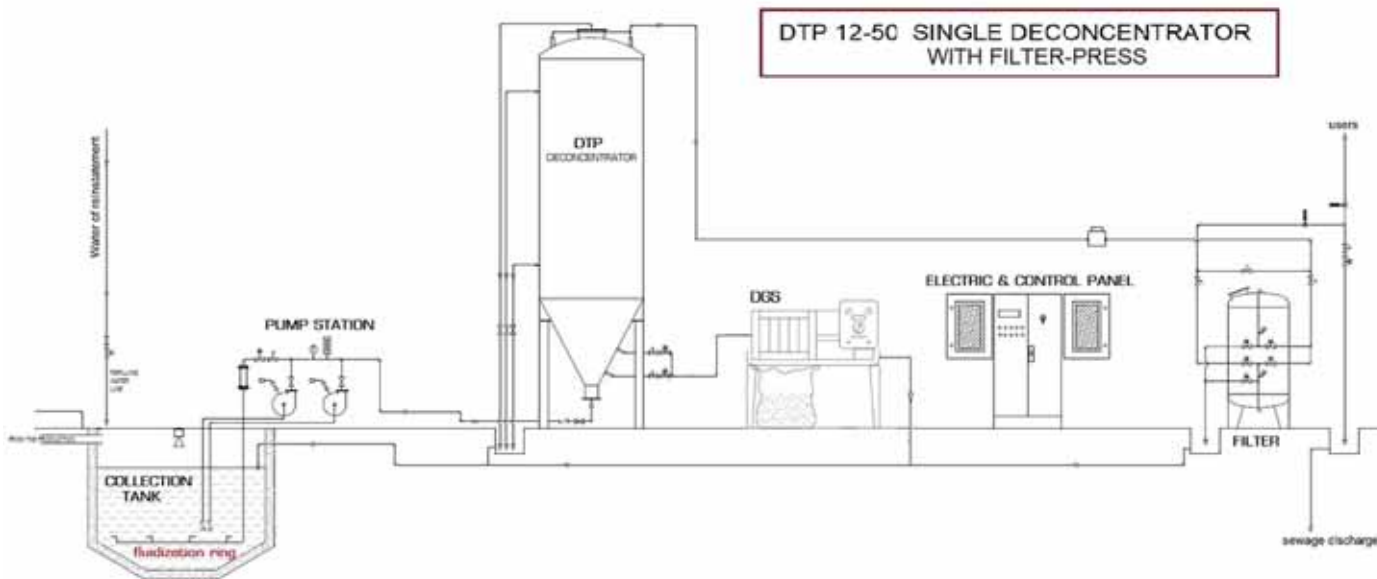
At that, the water treatment sector grew exponentially, leaving



IMMMES unaffected by the initial years of the crisis that spread from 2007, both throughout Italy and Europe-wide. The company then attained to 150 installed water treatment systems by 2009, further realizing many plants for the glass industry. The following years marked the start of IMMMES' relations with foreign markets, leading up to 2022 and an excess of 500 installed plants - and the story goes on!

DTP TREATS WATER BY A COMBINATION OF PHYSICAL-DYNAMIC SEPARATION AND A PROCESS OF FILTRATION

Technical scheme



IMMES
THE TOP IN WATER DEPURATION FOR GLASS INDUSTRY





ITALCARRELLI SpA

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COMPANY DATA

Contacts

Agostino Negrin - President
Alessandro Negrin - President
Stefania Negrin - Vice-President
Ivan Lambertucci - CEO
Davide Schiavon - Sales Manager

Annual Turnover of the Company

EUR 10 / 50 mil

Sales

Domestic (3%) / International (97%)

Quality Certifications

ISO 9001:2015

Banks

Intesa San Paolo - Arzignano

Number of Employees

> 100

Founding Year

1962

Registered Patents

Telescopic Arm for rack handling in autoclaves, Collar Handling Device, ABV Device/EN BOX for glass handling in containers, Battery Exchange System, Side-loader telescopic cab, Side-loaders equipment for handling glass boxes, PTN inloader with adjustable trailer width, Laser guided jumbo frame transporter PTN 330 LGV and laser scanners self-regulation support

Registered Trademarks

Italcarrelli

Planned Exhibitions 2023

China Glass - Shanghai, China - 6 / 9 May
Vitrum - Milan, Italy - 5 / 8 September
GlassBuild America - Atlanta, USA
 31 October / 2 November



SIDE-LOADERS



SPECIAL-APPLICATION SIDE-LOADERS



LAMINATED GLASS HANDLING



PLATFORM TRANSPORTERS



CONTAINER LOAD/UNLOAD



INLOADER TRANSPORTERS

COMPANY PROFILE

SMART WORKING, SAFE WORKING WITH TOP HANDLING SOLUTIONS

ITALCARRELLI® designs and builds special machines, technology and accessories for the transport and storage of glass. After many years of hard work, the Company has put into practice its idea of smart work.

- Smart – with clients to create personalized machines responding to their precise needs and demands;
- Smart – with suppliers to have the constant availability of top class material and components;
- Smart – solutions both with regards to technology and energy savings;
- Smart – for safety each and every day.

Thanks to the perfect synergy between the company's design departments and software development, Italcarrelli's machines have the highest levels of performance and ease of use, with low energy consumption levels.

PRODUCT RANGE

- PLATFORM TRANSPORTERS
- INLOADER TRANSPORTERS
- SIDE-LOADERS
- SPECIAL SOLUTIONS
- CONTAINER LOAD/UNLOAD
- LAMINATED GLASS HANDLING



ITALMATIC PRESSE STAMPI SRL

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COMPANY DATA

Contacts

Roberto Frediani - Managing Director

Adriano Frediani - CEO

Massimo Ghitturi - Member of Board of Directors

Annual Group Turnover

EUR 50 million

Annual Company Turnover

EUR 20 million

Percentage of turnover from glass

20%

Sales

National (30%) / International (70%)

Quality certifications

ISO 9001

Banks

Intesa S. Paolo

Area

Offices 600 m² / Plants 8000 m²

Number of Employees

60

Paid-in capital

EUR 46.481,12

Founding year

1987

Registered Trademarks

Italmatic - Comfort





COMPANY PROFILE

New autoclaves for curved glass and windshield

ITALMATIC, leader in the research, design and construction of autoclaves for various applications, has developed a new generation of advanced and innovative machines for the treatment of curved glass and windscreens.

These autoclaves, the result of research, development and experience acquired over the years, have been designed with the aid of the most sophisticated structural and thermodynamic calculation programs, such as the new dynamic flow simulator C.F.D. (Computational Fluid Dynamics).

In the design, particular attention was paid to energy saving, adopting innovative materials for thermal insulation, high efficiency motors controlled by inverters, heating systems (electric, diathermic oil or steam) with infinitesimal control, as well as new control systems capable of managing power and flow distribution, thus allowing significant reductions in operating costs.

The machine can also be made with two doors, one on each side, to allow the automatic and/or manual introduction and

unloading of the glass holder carriages, thereby speeding up the loading and unloading operations, especially for continuous production of both 24/24h and 7/7g.

For a better internal chamber uniformity, according to the different loads and positioning of the glass under treatment, the motor fan units have been positioned in the upper part in direct contact with the heating and cooling exchangers.

This innovation has made it possible to work for defined areas within the chamber, managing each area according to the load and with the best uniformity.

Orientation and modulation of the ventilation, with variation of the fluid transfer speed on the products, ensures that glass quality conforms to even the most restrictive market requirements.

The control system, called **ICS (Italmatic Control System)**, allows you to program, supervise and have complete traceability of production batches - both automatically and manually, in order to allow for analysis of all process cycles.

The control system meets every industry 4.0 requirement and can also be interfaced with the company MES.



ITALMOLE Srl

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COMPANY DATA

Contacts

Ivan Rossi - Owner Partner / Sales and Technical Manager
Graziano Venturi - Senior Owner Partner

Sale

Domestic (20%) / International (80%)

Area

Office 50 m² / Production unit 2000 m²

Founding Year

1978

COMPANY PROFILE

ITALMOLE S.r.l., founded in 1978, has more than 40 years of experience and has developed a complete range of polishing wheels for all types of machines, satisfying all requests coming from the glass market.

Every day is a new challenge and new inspiration: trying to propose products leads to improving the work of end users, supporting and assisting dealers in recommending the right wheel for each and every application, and guaranteeing the best service, technical assistance and fast production of orders.

The strongpoints of Italmole are a fusion of experience and innovation that it has earned with the awareness and good results obtained in the past that have become the key to maintain and guarantee the continuity of success in the future.

Italmole is also a group of people who work together to reach the same goal, to provide a very high standard of quality with precise products, in a constantly evolving way for their customers.



The company's most popular products are peripheral wheels type "BD" and engraving wheels type "BD2".

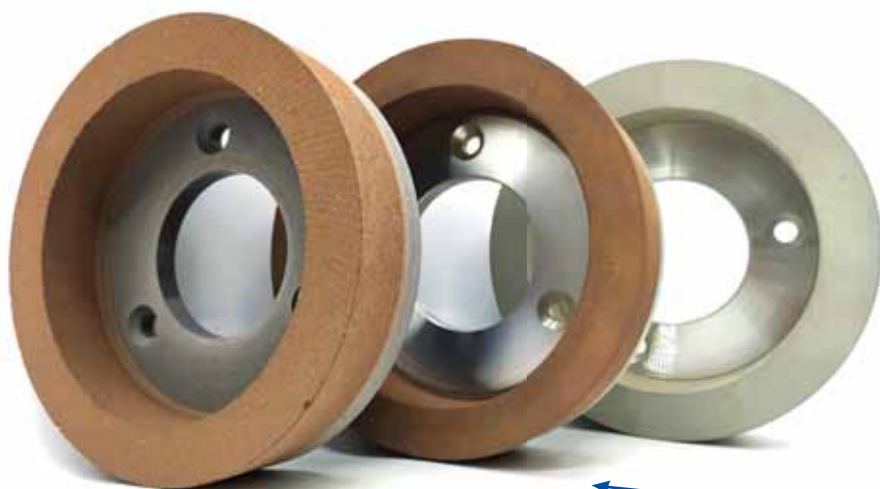
These ranges of polishing wheels are, and have been right from the start, synonymous of adaptability, ease of use and high-level polishing.

Italmole has created numerous ranges of cup wheels, polishing wheels for arris, cerium wheels and wheels for removing low-E glass.

Italmole has recently expanded the range of cup wheels and introduced the new "ALFA" line which guarantees a longer life and a better polishing quality. These wheels are produced for all types of machines and for all types of fixing in the grits 40,60,80 and 120. They are available with rigid plastic plate, aluminum plate and special Baveloni "J40" plate. On request with sectors for laminated glass.



CUP WHEEL LINE «X» IN DIFFERENT DIMENSION FOR ALL TYPES OF MACHINES, WITH SPECIAL PLATES AND ALL FIXING



PRODUCT RANGE

- Peripheral wheels
- Engraving wheels
- Cup wheels
- Edge-deletion wheels

BDCUP AND BLACK WHEELS FOR ARRIS WITH ALUMINIUM AND PLASTIC PLATE FOR BENTELER MACHINE



keraglass



KERAGLASS Srl

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COMPANY DATA

Contacts

Stefano Spezzani – Founder, Vice President
Maicol Spezzani – Director, Sales & Marketing Officer
Luca Calanca – Director, Administrative & Operating Officer
Paolo Righi – Technical & Service Manager

Mother Company

Voiláp

Annual Group Turnover

EUR 350,000,000.00

Annual Company Turnover

EUR 43,000,000.00

Sales

Domestic (20%) / International (80%)

Parent and Sister Companies

Keraglass South America do Brasil Ltda

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Keraglass USA Inc.

20 Murray Hill Parkway, Unit 120 - East Rutherford - NJ 07073
USA - Tel.: +1 201 561 2191 - E-mail: info.usa@keraglass.com

Planned Exhibitions 2023

Glass Expo Rocky Mountain

Denver (CO), USA - 19 / 20 January

Mid-Atlantic Glass Expo

Greenbelt (MD), USA - 26 April

Glass Texpo

San Antonio (TX), USA - 11 / 12 May

Vitrum

Milan, Italy - 5 / 8 September

GlassBuild America

Atlanta (GA), USA - 31 October / 2 November

Glasstech Canada

Toronto, Canada - 6 / 7 November

Gulf Glass

Dubai, UAE - 4 / 7 December



deluxe - PVB laminating line



Vision - oscillating tempering furnace

vivida - high-definition digital printer with ceramic ink



COMPANY PROFILE

Keraglass is the world's leading Italian manufacturer of glass processing plants and equipment, thanks to the design and production of a range of high-tech glass tempering, laminating and decorating solutions. An all-round approach that makes this company an ever higher performing and more competitive player on the global market.

SALES NETWORK

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ITALY: EMILIA ROMAGNA - TOSCANA - MARCHE - UMBRIA - LAZIO - ABRUZZO - MOLISE - CAMPANIA - PUGLIA - BASILICATA - CALABRIA - SICILIA - SARDEGNA
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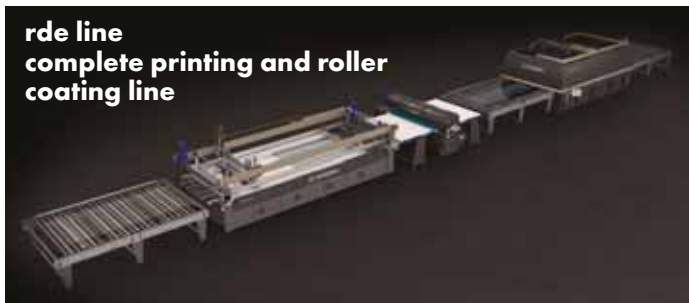
THAILAND
MOTECH MACHINERY SERVICE CO., Ltd
E-mail: p.huailai1@yahoo.co.th

ARGENTINA - CHILE - PARAGUAY
URUGUAY - BOLIVIA
OFICINA COMERCIAL VOILÀP - CONO SUR SUDAMÉRICA
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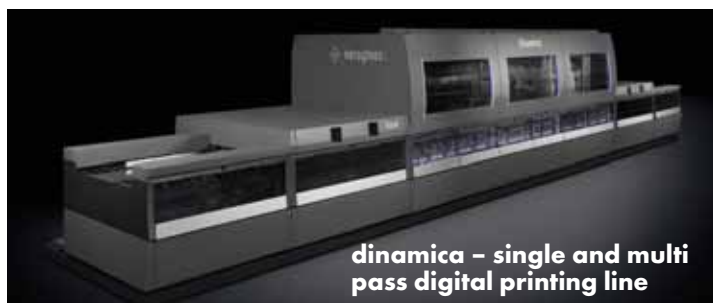
BELGIUM - LUXEMBOURG - THE NETHERLANDS
GKSERVICE BVBA
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INDIA - INDONESIA - PAKISTAN
BANGLADESH - NEPAL - SRI LANKA
ARCVS Technology
E-mail: info@arcvsprojects.com

rde line
complete printing and roller coating line



dinamica - single and multi pass digital printing line



LandGlass



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E-mail: marketing@landglass.com • www.landglass.net

COMPANY DATA

Contacts

Zhao Yan - General Manager

Planned Exhibitions 2023

China Glass - Shanghai, China - 6 / 9 May

Vitrum - Milan, Italy - 5 / 8 September

GlassBuild America - Atlanta, USA - 31 October / 2 November

Eurasia - Istanbul, Turkey - 11 / 15 November

ZAK Glass Technology Expo

Mumbai, India - 23 / 26 November

Glasstech Asia - Bangkok, Thailand - 29 November / 1 December

Gulf Glass - Dubai, UAE - 4 / 7 December

COMPANY PROFILE

Landglass: Ideal partner for tempered glass manufacturers

All-New Cyclone™ Series Glass Tempering Furnaces

The legendary and benchmark product in the intelligent glass tempering field with thirteen innovative technologies and nearly a hundred innovations and creations

Capable of providing systematic solutions for flat and curved tempered glass for architecture and furniture, vehicle, home appliances, and solar power industries, fulfilling the ultimate demand for top quality tempered glass!

All-New UltraJet™ Series Glass Tempering Furnaces

With the inherited advantages of the classic JetConvection™ Glass Tempering Furnaces, the all new UltraJet™ series, equipped



For your next leap

Intelligent Glass Tempering Furnace Solutions

- Five Major Advantages
- Hundreds of Innovations
- Remarkable Outcome
- Stimulate the Development of Four Industries



Cyclone™ Series Glass Tempering Furnaces

UltraJet™ Series Glass Tempering Furnaces

JetConvection™ Series Glass Tempering Furnaces

TIGER Smart Factory Solutions

Vacuum Insulated Glass Solutions



Efficient Production



Cost Effective



Quality Improvement



Extremely Energy Efficient



Outstanding Noise Reduction



Condensation-free

www.landglass.net
+86-379-80890369

with six major innovative technologies, fulfills the diversified demands from architecture and furniture, vehicle, home appliances, and solar power industries for flat and curved tempered glass with both quality and capacity guaranteed.

All-New JetConvection™ Series Glass Tempering Furnaces

As the pioneer in Forced Convection Technology, LandGlass' high quality and efficiency advantages revealed in high-performance Low-E Glass Tempering made the JetConvection™ series glass tempering furnace a two-time winner of the National Patent Gold Award and an iconic product in the forced convection glass tempering machinery.

At present, more than one thousand furnaces of this series have been sold to over sixty countries and regions worldwide, becoming one of the legendary products of LandGlass.

LandGlass TIGER™ Smart Factory

LandGlass TIGER™ Smart Factory employs the new generation enterprise resource planning system, intelligent manufacturing technology and identification technology to interconnect all machinery throughout the entire process from float glass to finished products. It has realized digital and intelligent processing of supply, manufacturing, and sales information during production, achieving lean and efficient manufacturing and management.

About LandVac

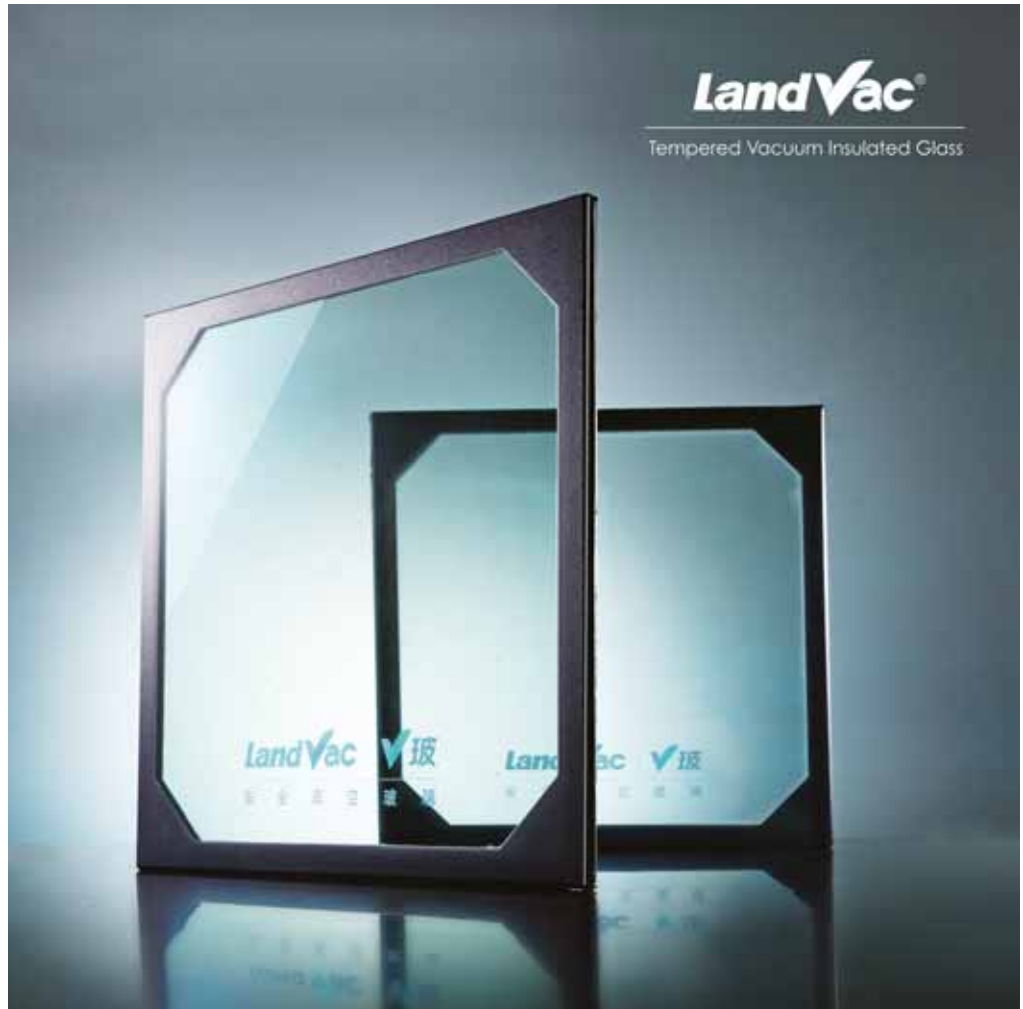
LandVac®: fully tempered vacuum insulated glass
LandVac® is a wholly-owned brand of LandGlass. LandVac® Tempered Vacuum Insulated Glass, is backed by eight major technologies:

Noise Reduction: With its weighted sound reduction index exceeding 39dB, LandVac makes rooms in downtown quiet like a library.

Energy Conservation: U-value as low as 0.4W/(m² • K). A 8.3 mm thick LandVac has better thermal insulation effect than the 1.5m thick brick wall.

Free of Condensation: Remain condensation-free when the temperature difference between the two sides exceeds 70°C, keeping away from condensation

Tempered and Safe: Completely retains the high strength, impact resistance, and other safety characteristics of tempered glass with its unique FLAS Flexible Lead-free Alloy Sentry technology.



Outstanding Adaptability: Since there is no thermal expansion or contraction in the high vacuum chamber of LandVac, the use of LandVac is not limited by geographical locations, elevation, or installation angle.

Super Long Life: The service life expectancy of Landvac exceeds 25 years.

Thin and Lightweight: A piece of 8.3 mm thick LandVac weighs only 20kg/m². It reduces the use of materials while extending the service life of hardware. The costs on storage and logistics are also significantly reduced.

Lead-free: The Testing Report from CTI, which is authorized by RoHS EU, has witnessed the outstanding environmental-friendly performance of Landvac.

PRODUCT RANGE

- Cyclone™ Series Glass Tempering Furnaces
- UltraJet™ Series Glass Tempering Furnaces
- JetConvection™ Series Glass Tempering Furnaces
- TIGER™ Smart Factory
- Landvac® Tempered Vacuum Insulated Glass

LiSEC



LiSEC AUSTRIA GMBH

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COMPANY DATA

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Dipl.-Ing. Gottfried Brunbauer
CEO

Founding Year

1961

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web: glastronic.lisc.com

Schraml Glastechnik GmbH

Lumplgraben 49 - 4463 Grossraming - Austria

E-mail: schraml@lisc.com - web: www.schraml.com

Number of Employees

1,150

Planned Exhibitions 2023

China Glass - Shanghai, China - 6 / 9 May

Vitrum - Milan, Italy - 5 / 8 September

GlassBuild America

Atlanta, USA - 31 October / 2 November

TPA

Automatic processing
of thermoplastic spacer bars



COMPANY PROFILE

LiSEC, with headquarters in Seitenstetten/Amstetten, Austria, is a globally operating group that has offered individual and complete solutions in flat glass processing and finishing for more than 60 years.

The performance portfolio includes machines, software solutions and services.

In 2021, with about 1,100 employees and over 20 locations, the group achieved an export ratio of more than 90 percent. LiSEC develops and manufactures glass cutting and sorting systems, single components and complete production lines for fabricating insulating glass and laminated glass, as well as glass edge processing machines and tempering machinery.

With reliable technology and intelligent automation solutions, LiSEC sets standards in quality and engineering and significantly contributes to the success of its customers.



PLUSLAM

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You can find a full list of
our Sales Network on:
www.lisc.com



PRODUCT RANGE

- Glass Cutting machines
- Insulating Glass Production machines
- Sorting & Logistic Systems
- Laminated Glass Production machines
- Flat Glass Processing machines
- Glass Processing & Washing machines
- Tempering
- Business Software
- After Sales / Service



LOVATI Srl

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Tel.: +39 02 4880276

E-mail: info@lovatimail.com • www.lovatif.com

COMPANY DATA

Contacts

Corinna Lovati - Director
Rolando Locatelli - Technical Manager
Lory Lovati, Mauro Carrano - Sales Manager

Founding Year

1939

Sales

National (5%) / International (95%)

Planned Exhibitions 2023

Vitrum - Milan, Italy - 5 / 8 September
GlassBuild America
Atlanta, USA - 31 October / 2 November
Gulf Glass - Dubai, UAE - 4 / 7 December

COMPANY PROFILE

LOVATI Srl: more than 80 years of experience and continuous innovation.

Lovati Srl manufactures machines to process shaped glasses, marbles and stones. Its wide range starts from simple manual edgers up to the most sophisticated CNC.

Lovati produces also drillers and routers, semiautomatic bevelers, loading and unloading units, custom built CNC and multi spindle CNC.

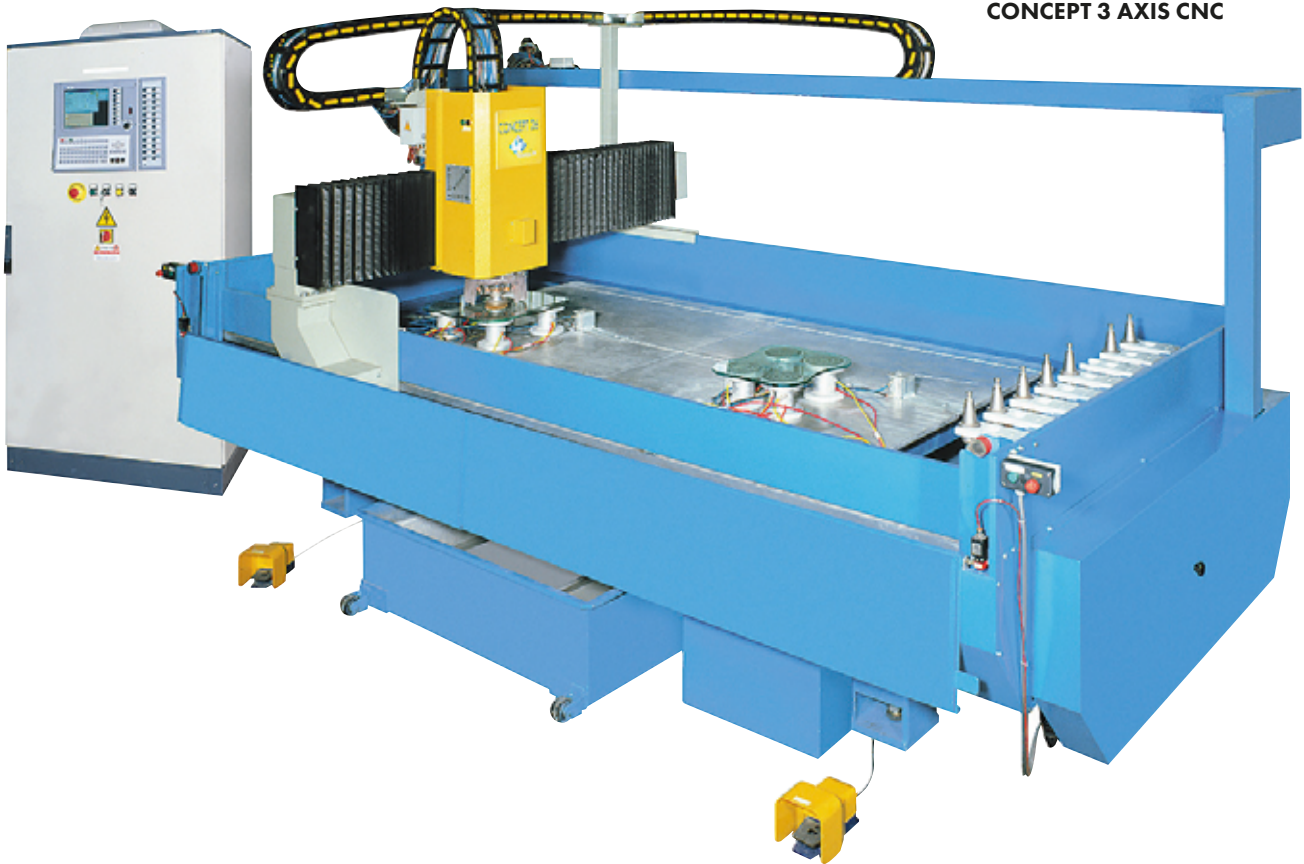
All the machines are specifically designed to meet the requirements of heavy production with superior performance and minimal maintenance, allowing customers high productivity and cost reduction. CNCs are tailor-made according to such specific requests as dimension, or type and material to be processed (glass, stone, marble). Lovati CNC are high quality precision machines that are designed and built to last over time.

Lovati's philosophy is to be extremely close to the client's needs, not only for construction of the machine, but also for assistance. Lovati Srl can produce at large scale and claims a precise and



LOV622-2TS MULTISPINDLE CNC

CONCEPT 3 AXIS CNC



efficient client assistance through an on-the-ball and dedicated line between customers and the technical assistance team. Lovati Srl is always looking to new technology in order to continuously improve its products and machines.

Lovati production count on more than 30 models of machines that can be adapted to different customer requests.

Lovati is recognized all over the world, as an Italian excellence manufacturer.

LOV622-2TS multispindle CNC

This kind of CNC can be equipped with 3 or 4 axes. It has two spindles and double sliding tables. The CNC can grind and polish two glass sheets simultaneously on each table. The working table is divided in two parts which slide on hardened guides with high precision ball-sliding blocks; this ensures perfect flatness and a complete absence of vibrations.

LOV622-2TS is equipped with CAD-CAM, remote assistance, touch screen and an automatic tool store (16 positions) and can be equipped with a 4th axis for beveling. This CNC is very fast and precise and guarantees high productivity. It can be built

to work for different glass dimensions based upon customer needs and is well suited to marble processing as well.

CONCEPT 3 AXIS CNC

This machine has 3 axes and can process any shape and profile, also doing holes, internal and external millings and routings. It can be provided with a 4th axis for beveling, grooving and sowing.

The machine is equipped with a high precision spindle and aluminum working table which can be divided in two areas. The machine can work in two ways: by using the whole working table for a big glass sheet or by sharing the table in two areas for smaller sheets. In this last case, the operator can easily load/unload glasses on one of the working areas in completely safe conditions, just as the machine is processing glasses on the other area. The double working area eliminates loading and unloading idle times. CONCEPT comes complete with CAD-CAM, remote assistance, touch screen and automatic tool store. CONCEPT is available in two different size versions.



MAPPI
BEYOND GLASS PERFECTION

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COMPANY DATA

Contacts

Nancy Mammaro - Managing Director
Ermanno Petitti - Sales Manager
Giulio Dalla Costa - Automation Manager

Annual Turnover of the Company

EUR 13,000,000

Percentage of turnover from glass (%)

100

Sales

Domestic (10%) / International (90%)

Area

Offices 1000 m² / Plants 4000 m²

Number of Employees

55

Founding Year

1993

Registered Trademarks

Mappi

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- BELGIUM - SWITZERLAND - AUSTRIA

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USA: see MAPPI AMERICA

VIETNAM - LAOS - CAMBODIA - PHILIPPINES - SINGAPORE - MALAYSIA - THAILAND - INDONESIA - MYANMAR

EUROTECHCORP

E-mail: eurotechline@gmail.com

COMPANY PROFILE

MAPPI INTERNATIONAL: CONTINUOUS SEARCH FOR INNOVATION

Mappi International has been designing and manufacturing high quality tempering systems for the glass industry since 1993. Hundreds of plants installed all over the world are a demonstration of the company's steady growth, important investments in research and development, uncompromising quality, and attention to the specific needs of each and every customer.

Mappi International manufactures each and every product in-house and therefore has complete quality control of all components, guaranteeing the highest quality performance and functionality of its machines – constantly. Mappi America, located in Florida, enables the customer service department to reach each and every plant within 24 hours.

Thanks to collaboration with Siemens, Mappi machines are, first in the entire glass industry, recognized as 'Powered by Siemens'. This means that they are ready to implement all MindSphere applications, ready to enter the world of Industry 4.0, ready to change the way of working in the glass industry, with total integration between the furnace and all production processes, from planning to quality reports. Mappi's path of innovation continues with Supertemper, the exclusive feature that opens up a new frontier of fireproof glass: a furnace equipped with Supertemper can produce E30 certified glass for fire resistance.

From design to assistance, quality is at the centre of every thought and action of Mappi. This quality is found both in the design and in the range of products, where machines are different in size, technical solutions, mechanical engineering, and software solutions. User-friendly machines that have been designed to minimize downtime during shutdown and subsequent restart, along with the constant perfection of glass and important energy savings, show just how Mappi produces tempering furnaces that go beyond perfection day after day. Nancy Mammaro, CEO of Mappi says: "Our payoff, 'beyond glass perfection', sums up in three words our everyday aim shared at every level and in every area in Mappi." Over the years, Mappi has never changed its aim: to become the leader in tempering furnaces and manufacturing, and to constantly increase quality and customization to satisfy the specific needs of each customer.

Main features:

MHS | MULTIZONE HEATING SYSTEM

Automatically manages the temperature of the furnace by means of a network of electronically controlled sensors that maintain temperatures constant and focus heat only in areas where there is glass.

IHS | INTELLIGENT HEATING SYSTEM

The internal temperature of the furnace is controlled with an accuracy of +/- 1 C, preventing overheating of the ceramic rollers and avoiding downtime for the adaptation of the furnace temperature.

ESS | ENERGY SAVING SYSTEM Heating and forced ventilation stages are coordinated and managed by a computerized system optimizing consumption and significantly reducing the installed power required by the entire system.



SYNCR0 | TRASMISSION TECHNOLOGY

The ceramic rollers are driven accurately within 1/1000mm by DC drive motor with a friction transmission between iron/rubber (avoids slack time gaps, gear lash, with resulting risks of marks on the glass).

This eliminates the need of SO₂. Brushless motors control roller drives to guarantee accurate roller position and speed.

Automatic speed management of the ceramic roller oscillation avoids distortions and damage to the glass surface. Full ceramic rolls, which can be easily replaced.

ITS | INTEGRATED TOUCH SYSTEM

The system monitors the parameters of the tempering process and immediately prints the compliance report for CE and ANSI glass standards at the same time, automatically storing this information for each production cycle.

AC | ADVANCED COOLING

A particular design of the blowing system that allows even more specific control while tempering, and substantially decreases the iridescence of the glass.

ATI | ACTIVE THERMAL INSULATION

The ATI completely reduces thermal dispersion thanks to continuous research in the best performing materials for thermal insulation, in association with the most prestigious research centres in Europe, as well as with Knauf and Morgan.

GHBS | XTREME PROFILE CONVECTION GHBS allows to process all last-generation coated glass, including low-E with 0.01 Emissivity.

HEATING CHAMBER EXTRACTION

Mappi is the only tempering equipment manufacturer that has this feature for easier maintenance and better finished product quality. ATS 4.0 is available from 1500 x 3800 to 3300 x 6000 mm and also in customizable sizes.






MARVAL

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COMPANY DATA

Contacts

Gianluca Ceriani - Sales manager

COMPANY PROFILE

MARVAL, since 1985 advanced insulating glass solutions and technologies

MARVAL was founded in 1985 in Mariano Comense (Como, Italy), in the heart of the Brianza industrial area and today it's managed by new owners who have planned an industrial path for a strong relaunch.

Over the years it has become a worldwide point of reference in the Insulating glass sector.

Marval was born as a mechanical workshop and was brought to success thanks to the determination and experience of its staff in designing simple and reliable machines with excellent technology.

Today, Marval uses all the advanced technologies in the production of insulating glass, producing machines and equipments that are appreciated and exported all over the world. Everything about Marval is planned, manufactured and tested in the new headquarter in Villa Guardia (Como).

PRODUCT RANGE

Today Marval offers a wide range of products:

- vertical and horizontal washing machines;
- automatic panel presses with gas;
- automatic sealing robots;
- complete semiautomatic and automatic lines;
- automatic profile bending machines;
- automatic desiccant filling machines;
- butyl extruders;
- manual single component and two components extruders;
- accessories;
- special and customized installations.



Automatic insulating glass line



Panel Presses

Butyl Extruder

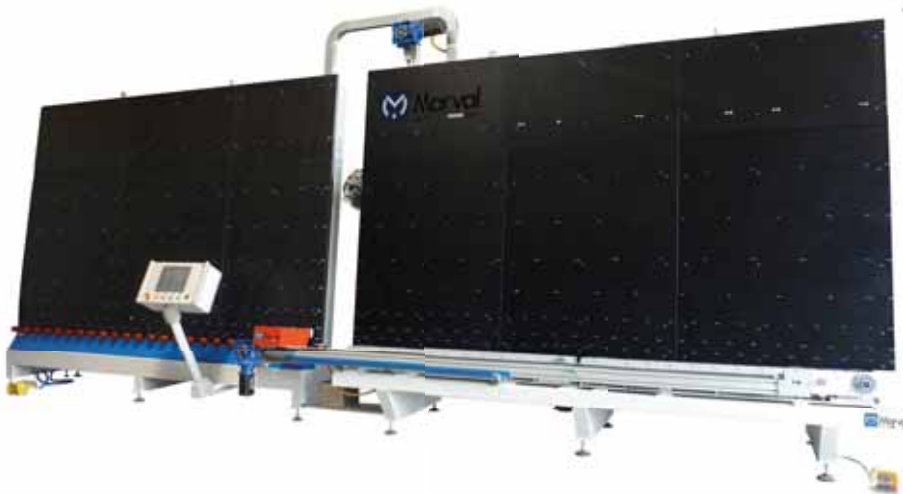




Automatic Sealing Robot



Washing machine



Automatic Sealing Robot

Automatic profile bending machine



Turning table





MAZZAROPPI
HIGH PERFORMANCE. ALWAYS



MAZZAROPPI ENGINEERING Srl

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COMPANY DATA

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Antonio Mazzaroppi - General Manager
Federico Mazzaroppi - Marketing Manager
Michele Spano - Service Manager

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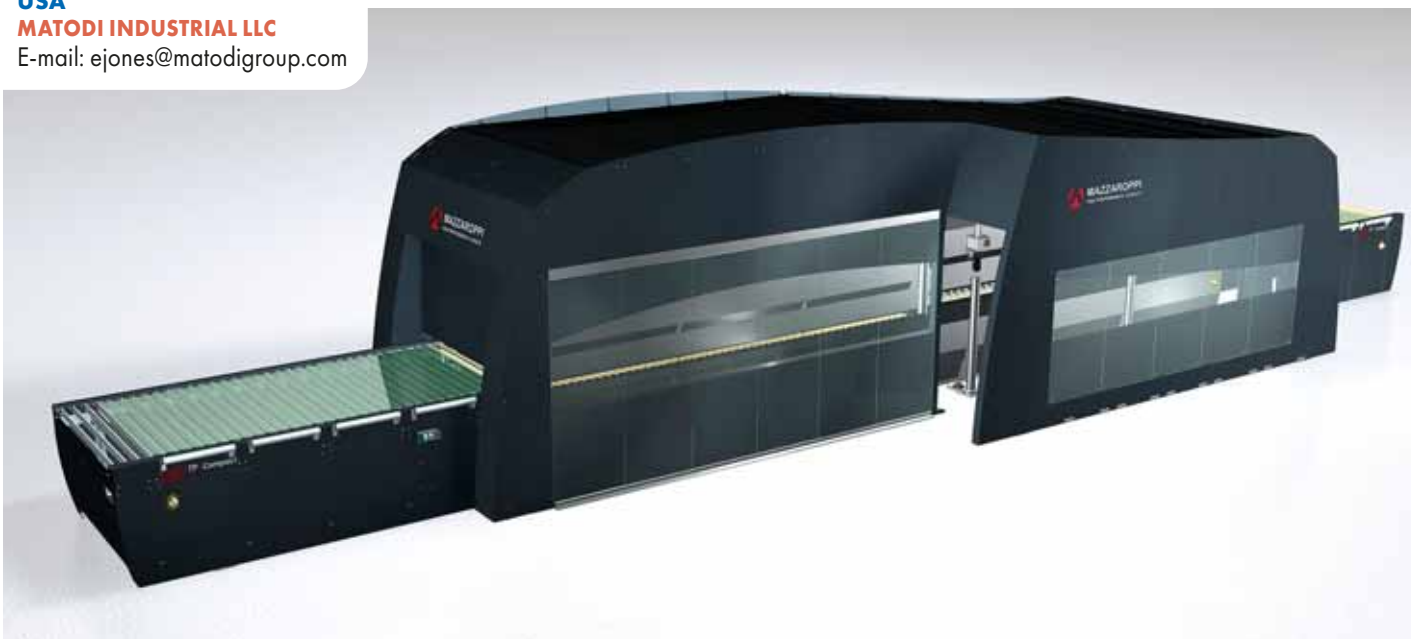
E-mail: ejones@matodigroup.com

COMPANY PROFILE

The history of the **MAZZAROPPI** family has been closely linked to the glass industry since 1958. From the beginning excellence, high quality of the products, and passion were the values thanks to which the brand was recognized and appreciated all over the world. More than 60 years of experience have led three generations of the family to share the passion for glass processing and to grow exponentially this company, which still stands as a reference point in the field of tempering, bending and laminating glass.

Reliable quality, constant research and excellent customer service are our three main qualities, which we are proud to see reflected in our customers' feedback. Each machine is built to be used for more than 30 years and our specialized team is constantly ready to support our customers at any time. It's extremely important for us to receive constant feedback, thus creating a new generation of innovative machinery that are ever closer to our customers' needs.

We are a family company and we strongly believe in the importance of human relationships. Every customer is part of our family, becoming a business partner that shares decades of history with us. The construction of a new machine represents the birth of another of our creations, to whom we are as close as a daughter; in fact, each of our machines has its own name





that identifies it and we usually celebrate its birthday with the customer who bought it.

WHY CHOOSE OUR MACHINES?

To answer this question, we list just a few of the recurring features in our products:

ENERGY SAVING APPROACH

- **M PSS4.0:** POWER SAVING SOFTWARE
- **M I-ZONE:** INTELLIGENT HEATING ZONE
- **M OPTICON:** OPTIMIZED CONVECTION PROCESS
- **M EXACT AIR:** OPTIMIZED AIR CHARGE STUDY
- **M HI-REACT:** HIGHLY RESPONSIVE FURNACE STUDY
- **M 1H680°:** JUST IN TIME IGNITION FROM 20° TO 680° IN 1H
- **M MULTI-CORE:** RESPONSIVE THICKNESS SYSTEM
- **M SAVE 70%:** POWER SAVING UP TO 70% COMPARED TO COMPETITORS

These features allow us to reduce energy consumption, and consequently allow our customers not only to optimize production but also to make significant savings. With our machines we are able to demolish the old concept of enormous energy consumption typical of obsolete tempering furnaces.

MAXIMUM QUALITY

- **M NOTROPHY:** 97% ANISOTROPY REDUCTION
- **M EDGE CARE:** EDGE LIFTING REDUCING SOFTWARE
- **M ARIS:** ROLLER WAVE INTELLIGENT SETTING

To guarantee the quality and high performance of our products we constantly subject them to meticulous tests, which show that we have been able to obtain a decrease in anisotropy of -97%. Thanks to the technology present on our machines, the heat is distributed in a homogeneous and precise way on the glass surface in order to minimize the phenomenon of roller wave and Edge lifting.

REDUCED MAINTENANCE

- **M LESSCOST:** EXTRA SAVING MAINTENANCE
- **M NOSO2:** LESS POLLUTION, LESS MAINTENANCE, SAFE OPERATORS

• M PILOT: UNIQUE REMOTE CONTROL REAL TIME ASSISTANCE

The manufacture of our machinery is based on the choice of the highest quality and certified European materials, so they require rapid maintenance or in some cases nothing. The quality of the machinery is consequently guaranteed and for any problem we have a team of specialized engineers remotely connected to support our customers at any time, so that the problem can be solved promptly and machine downtime reduced.

USER FRIENDLY

- **M SMART USE:** USER FRIENDLY FURNACE, NO SPECIALIST NEEDED
- **M M-ANALYTICS:** AUTOMATIC AND REAL TIME REPORTS OF EACH PROCESS

All our machines have been built to follow the customer's production needs and adapt very quickly to any thickness or size of the glass without waiting times. Moreover, they store and compose an automatic report with the characteristics of every load in order to facilitate the work of the operators. Thanks to the use of intelligent software 4.0, the machinery adjusts itself according to the different production in an automatic and fast way, so it doesn't need highly specialized operators to be used to its full potential.

RESIDUAL VALUE

M VALUE40: 40% VALUE GUARANTEED AFTER 10 YEARS
All the machine produced by Mazzaroppi Engineering are built with top quality European materials, assembled with an artisan attention to detail and meticulously tested in the production site before being shipped to the customer. These characteristics mean that our machines have an average life that exceeds 30 years and consequently we can say that one of our tempering machine after 10 years of use has a residual value of 40% on the market.

For us, our work is a real mission: to accompany our customers on a path of stable and lasting growth in the future, putting our passion, expertise and experience at their service.



MOLE MORESCHI

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COMPANY DATA

Contacts

Marco Moreschi - Owner

Barbara Doda - Sale Department

Yuri Cattabriga - Technical Department



COMPANY PROFILE

Mole Moreschi has know-how and direct experience in the production of diamond wheels and tools for glass processing, that are the result of more than 100+2 years of production. The company was first in the production and development of the resin wheels and, today, Mole Moreschi has a complete range of standard and special tools for the glass industry, with very high quality.

Some Italian and international glass machinery manufacturers have chosen Mole Moreschi as their preferred partner and found that the company's wheels have the best reliability and constant quality. This means that tools can be tested and new products developed to increase machine performances.

Mole Moreschi uses the most advanced technologies in tool

production to guarantee the highest quality level possible.

The research and development activities of the company are dedicated to improving tool quality and guaranteeing production level.

Mole Moreschi's target is to maintain this very high level of quality, while guaranteeing the highest possible performance of customers' machines.

Mole Moreschi is always available to study and manufacture tools as per specific customers' requests for special production.

The company's sales and distribution network is a winner not only for the quality and timing of service, but also with regards to the technical knowledge of its distributors who can assist and suggest the best tools.





Neptun Srl

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COMPANY DATA

Contacts

Stefano Bavelloni - Director of Operation
Matteo Rolla - Finance & Sales Director
Fabio Palella - Sales Manager

Sales

Domestic (10%) / International (90%)

Area

Production unit 4000 m²

Planned Exhibitions 2023

Mir Stekla: Moscow, Russia - 28 February / 3 March

Vitrum: Milan, Italy - 5 / 8 September

GlassBuild America: Atlanta, USA - 31 October / 2 November

Eurasia Glass: Istanbul, Turkey - 11 / 15 November

Gulf Glass: Dubai, UAE - 4 / 7 December

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Linares
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PHILIPPINES & SRI LANKA

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THAILAND

Leotech

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COMPANY PROFILE

NEPTUN Srl was founded in late 2008 as a machines and equipment manufacturer for flat glass cleaning. It quickly established itself thereafter as a key player for creating solutions for glass processing. Neptun's Mission is to produce new technical solutions that can provide a competitive advantage to its customers - for which it invests more than 12 percent of its turnover in Research and Development. Together with its sales distribution, the company's customer support is strengthened by its network of experienced collaborators. Neptun stands out as an ideal partner for all glass industry companies that require proven quality, performance and reliability. The company has a trio of product lines, namely straight-edging machines, washing machines and vertical NCs for drilling and milling. All three have a full range which spans both width and depth, while each can be fully-integrated - whether in-line or thanks to the company's anthropomorphic 'Bravo' series manipulators.

QUICK SERIES

Neptun has the widest range of vertical NCs on the market for drilling/milling and glass grinding for any type of processing and company size. From the entry-level milling machine to the latest generation fully-automatic Quick2 T10, up to the brand new Quickedge, the Quick series includes over 10 models that can work individually or combined in line.

Neptun offers work solutions from the small glass shop to the industry that works 24/7 with the NC machines inside robotic cell.



ROCK

Neptun's line of straight line edgers is the very definition of tradition and innovation - being characterized by a truly robust structure in thick steel and cast iron which guarantees long-lasting reliability. Rock also offers many patented solutions and cutting-edge functions, ETS squaring systems, the RC-4 for parallelogram processing and, lastly, the AWA version for fully-automatic wheel management.



WASHING MACHINES

As for glass washing, Neptun displays its expertise in a wide range of available washers. The company offers 3 horizontal washing machine models, namely the economical TORNADO EASY, the HP for high performance and the HP-S series for special applications (solar, ceramic ink, ultra-thin glass, medical). Neptun further proposes 4 vertical washer models - from the economical LV Top, going up in performance and automation terms to the LV EVO model and Wave before finally rising to the top-of-the-range, super-equipped standard Superinox.





OPTIMA SRL

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COMPANY DATA

Contacts

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Cristian Zanca - General Manager

Annual Group Turnover

EUR 6,000,000.00

Annual Company Turnover

EUR 3,500,000.00

Percentage of turnover from glass (%)

100

Sales

Domestic (30%) / International (70%)

Banks

Unicredit – Intesa Sanpaolo

Area

Offices 350 m²

Number of Employees

42

Founding Year

1994

Registered Trademarks

OPTY-WAY

Planned Exhibitions 2023

China Glass

Shanghai, China - 6 / 9 May

Glasstech Mexico

Mexico City, Mexico - 19 / 21 July

Vitrum

Milan, Italy - 5 / 8 September

GlassBuild America

Atlanta, USA - 31 October / 2 November

Gulf Glass

Dubai - UAE, 4 / 7 December

COMPANY PROFILE

OPTIMA is a leading company specialized in providing software solutions for the glass industry.

Born from the experience and professionalism of its founding members as a result of an efficient synthesis of dynamism, competence and motivation, the Optima family is constantly expanding. Our close collaboration with the world's leading machinery manufacturers has allowed us, as it continues to do, to fully integrate with all automatic systems for the management of the various processing phases.

We offer a wide range of software products and services designed to meet the specific needs of glass manufacturers, including glass cutting optimization software, CAD/CAM software for glass processing, production management systems and ERP/MES systems Industry 4.0.

Our 30 years of experience in the glass industry has ensured that we are currently present all over the world and known for the quality of our software products and our commitment to customer satisfaction.

We develop our ideas together with as it continues to do in order to achieve a shared success that leads to economic benefits for both sides. Our common goal is to increase the productivity of your company through a long and lasting partnership.

PRODUCT RANGE

- **ERP solution for Sales, Purchase & Production management**
- **MES for Production Tracking systems**
- **Web-based solutions (Web Orders and Web Quote)**
- **WEB based Dashboards for statistics report (WEB Dashboard)**
- **Production Planning and Processing Time calculation**
- **Optimization modules and output to all processing plants in the flat glass sector**
- **Parametrical CAD\CAM software**
- **Cutting table supervisor and re-optimization systems**
- **Defect detection systems (Defect-OPT)**

SALES NETWORK

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U.A.E.

ADVANCED PROCESS TECHNOLOGIES

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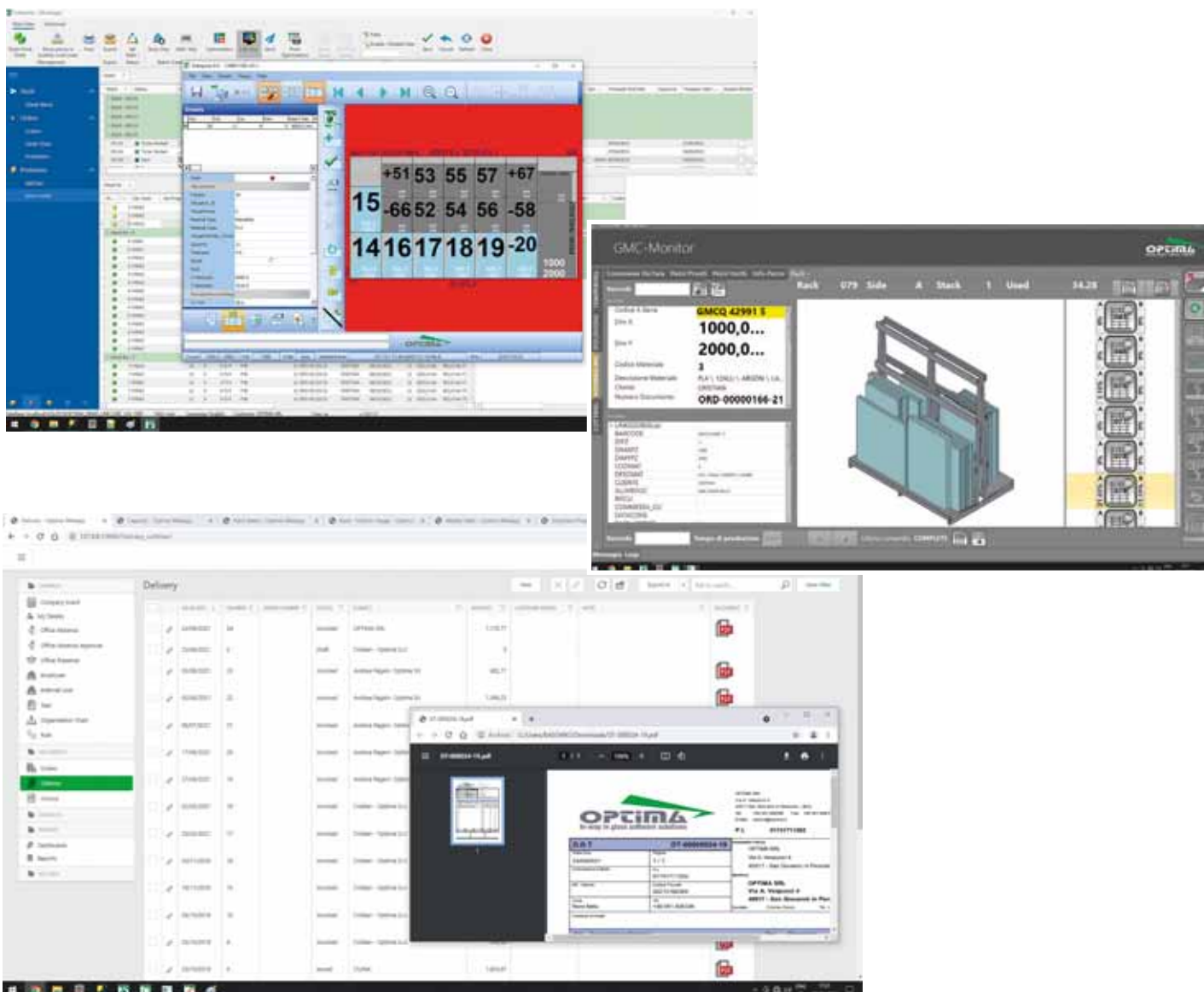
Dubai

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WE HAVE SEVERAL AGENCIES LOCATED ALL OVER THE WORLD, PLEASE CHECK OUR WEB SITE FOR ANY FURTHER:

<https://www.optima.it/en/network/>





OPTRIS GMBH

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COMPANY DATA

Contacts

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Torsten Czech - Head of Marketing
Ingo Stahlkopf - Head of Sales

Number of Employees

115

Company founded

2003

Planned Exhibitions 2023

Glass Performance Days - Tampere, Finland - 14 / 16 June

SALES NETWORK

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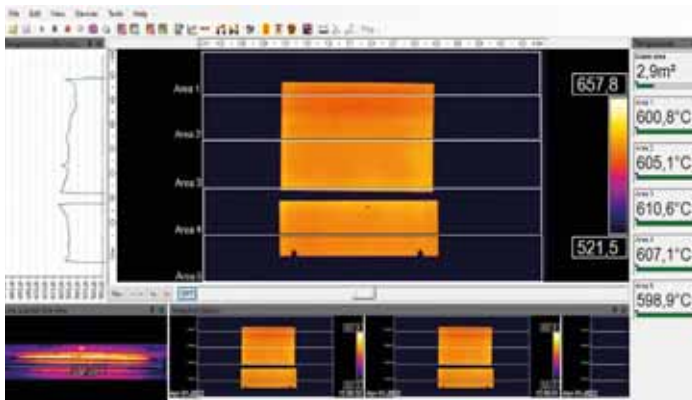
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COMPANY PROFILE

Optris is and has been, one of the leading innovative companies in the field of non-contact temperature measurement by means of infrared radiation since its establishment in 2003. The company's product range covers fixed industrial thermometers, infrared cameras, as well as accessories.

TRADITION AND INNOVATION

Thanks to their extensive know-how and innovative concepts, our experienced engineers and physicists continuously inspire with outstanding solutions.

TOP QUALITY AT REASONABLE PRICES

We provide cutting-edge infrared technology. Cost advantages arising from bulk purchasing of semiconductor products and from the production process are passed directly on to our customers.

PROCESS OPTIMIZATION VIA TEMPERATURE MONITORING

In many manufacturing processes (e.g. the glass industry), product and process temperatures are important physical variables. Non-contact temperature measurement with Optris sensors and thermal imaging cameras ensures high production line quality standards.

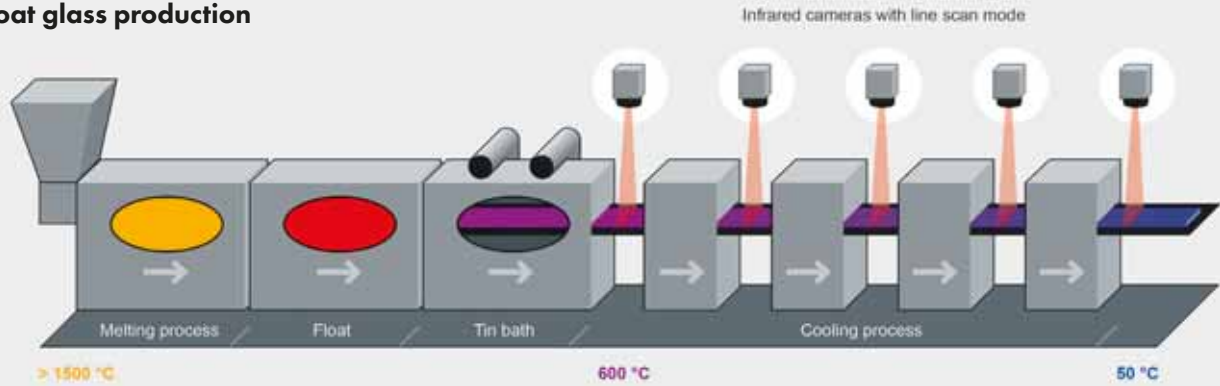
In order to ensure the highest level of quality, the glass industry and its energy-intensive production process relies on dependable means of temperature monitoring.

Our glass thermometers and IR cameras are optimally suited to non-contact temperature measurement of glass surfaces and use innovative double lasers to indicate the exact measurement spot.

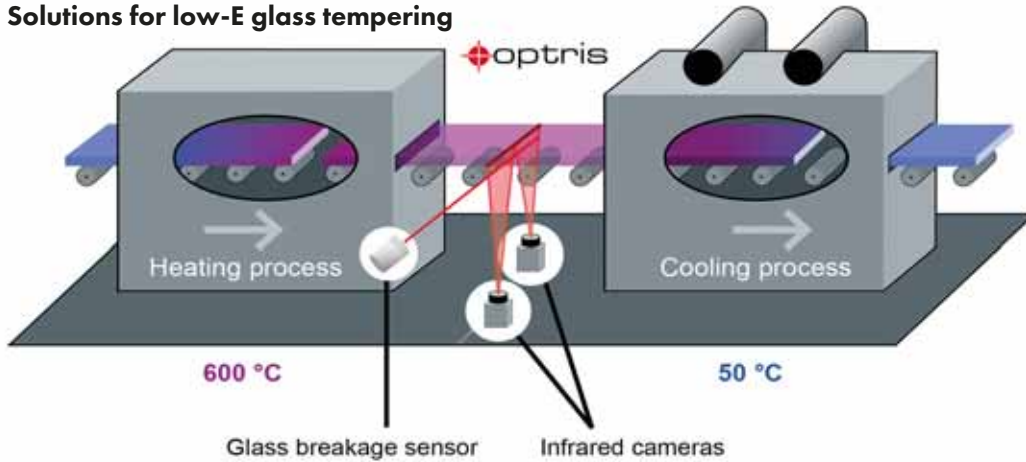
All kinds of glass, coated and uncoated, change their emissivity behavior in dependency of the angle of view. Especially low-E coatings show an unusual behavior. The new Bottom Up Glass inspection system solves this problem by having two infrared imagers installed underneath the tempering line which measure the temperature on the non-coated high emissivity side of the glass.

Thermal image of monitoring temperatures of glass sheets

Measurement areas at float glass production



Solutions for low-E glass tempering



mal treatment, which is ensured by the application of the correct temperature measurement technology.

Ensuring the quality of laminated safety glass

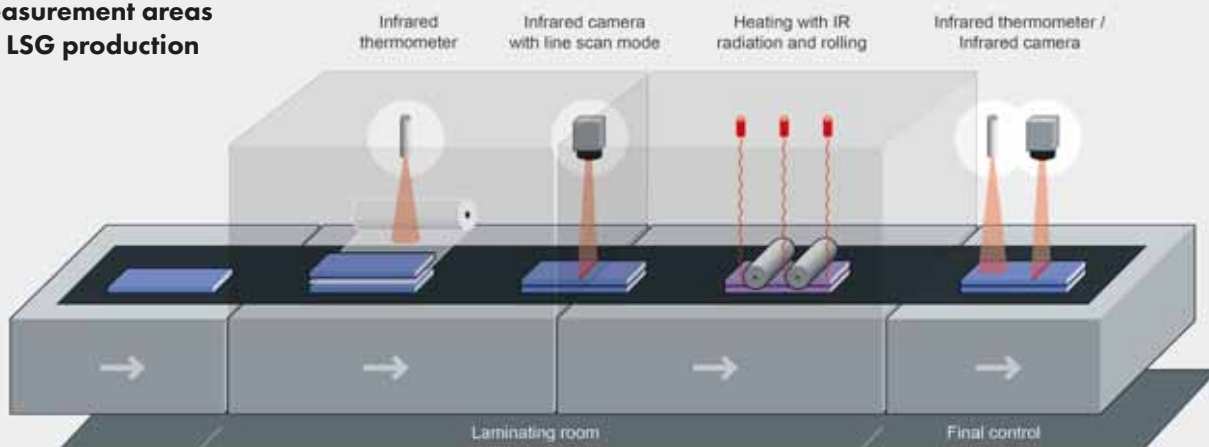
Laminated safety glass (LSG) consists of at least two flat panes of glass, which are laminated in a clean room with a sheet of PVB film between them. The temperature of the film can be monitored with infrared

Single-pane safety glass production with correct temperature measurement technology

For the production of single-pane safety glass (SPSG), the cut and processed flat glass is heated in a furnace under continuous movement at over 600°C. During the transport of the heated glass in the pretension zone, an infrared camera monitors the temperature distribution on the glass surface in line scan mode. Inhomogeneities can thus be compensated during the tempering process, in which the glass is air-cooled. The quality of the SPSG mainly depends on a homogeneous ther-

ermometers. In the pre-heating furnace, the glass panes are heated in order to melt the film and simultaneously press the "sandwich" together, to prevent air pockets. During the transition to the autoclaves, the temperature distribution is monitored with an infrared camera, in order to adjust the heating elements in the pre-lamination furnace for subsequent panes, when necessary.

Measurement areas at LSG production





R.B.M. ITALIA SRL
a brand of Surfaces Group



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COMPANY DATA

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Simona Biamino - Sales
Miriam Munari - Sales
Lorenzo Cannella - Technical Assistance & R&D

Mother Company

Surfaces Technological Abrasives SPA

Annual RBM Turnover

EUR 6 million

Annual Group Turnover

EUR 220 million

Sales

Domestic 20% / International 80%

Area

Offices 200 m² / Plants 4500 m²

Number of Employees

30

Founding Year

1963

Registered Trademarks

RBM/10S / 9R

Planned Exhibitions 2023

Vitrum - Milan, Italy - 5 / 8 September



COMPANY PROFILE

RBM ITALIA is an Italian company that produces rubber polishing wheels for flat glass used on both the most common edgers as well as on double-edger machinery. Its extensive product range includes many different formulations of wheels with different grit and sizes, commercialized by a global sales network. Nowadays the RBM brand means 100% made in Italy, high consistent quality and reliability. The company has its factory in Baldichieri, Asti, in North West Italy and has still a background of a manufacturing company with a long history of technology and experience. Now it has become part of a bigger group, which offers significant growth opportunities and the possibility to invest always more in R&D and human resources - as never before. With a strong focus on customized solutions, which is going to become one of the strongest points for RBM, the partnership with the customers is enriched.



PRODUCT RANGE

- Cup wheels
- Peripheral wheels
- Edge-deletion wheels
- CNC polishing wheels



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COMPANY DATA

Contacts

Elena Calvi - CEO
Davide Ricchi - Owner
Simone Vecchi - Sales Manager
Roberta Cometti - International Department

Annual Company Turnover

EUR 5,500,000

Percentage of Turnover from Glass

80%

Percentage of Third-Party Turnover

20%

Sales

Domestic (20%) / International (80%)

Area

Offices 500 m² / Plants 2000 m²

Founding Year

1993

COMPANY PROFILE

R.C.N. SOLUTIONS is a manufacturer of machinery focusing attention on Made in Italy and giving priority to quality, assistance and care for details.

The company seeks to focus on the importance of keeping active and supportive to give customers the utmost cooperation. Great flexibility in customization, together with the ability to innovate, are two of the main strengths that make RCN different from other market choices.

Laminating glass > A quality product is the combination of different elements supplied by RCN: kiln, REVA BF interlayer, RD CLEAN CONCEPT PATENTED, EASY CONNECT APPLICATION.

They are fundamental elements to grant precise laminations at top level. Especially, remote control of our installed machines and of the production process, in case of doubts, input of recipes and general assistance, allows a tight cooperation together and assures a supportive post-sale service.

Our know-how and our skills have generated a multi-layered experience based on creativity, method, quality standard and the desire of constant renewal.

We generated a know-how embodied by machines that are solid, durable, and succeed in tasks that prove impossible for others.



RCN production includes laminating kiln and interlayer, bending kiln, chemical tempering lines and the last news: RD CLEAN CONCEPT – PATENTED SYSTEM. The last generation laminating bag manufactured with special materials selected for a special purpose: to limit the overflow of the interlayer from the edges of the laminated glass.

NEW: Multiplied – laminating kiln that can be composed in oversize, over 6 metres.

“RIVA by RCN” chemical tempering furnaces

“RIVA by RCN” – the chemical tempering line under the name of “RIVA by RCN”, has now particular importance for the production of special products for the aviation and naval industry; for electronic devices, optical instruments but also for some architectural installation.

Based on an over 40-year experience and technical expertise of Mr. Gianfranco Rivaroli, "Riva by RCN" is a double winning solution with the possibility of customizing the machines according to production requirements.

The small model CT80S is particular suitable for both laboratory test but also for those companies who want to approach the chemical tempering, experimenting on small scale before deciding to invest for bigger.

All RCN machines are manufactured with an eye on energy saving and do not need high power and consumption is very limited.



**POWERLAM and LAMMY SYSTEM
laminating furnaces**

Powerlam line, it is a range of special machines that differ from the more traditional bagging laminating ones. Powerlam has no bags and it is based on a semi-automatic turn-around system for lamination in 35 minutes.

The traditional laminating machines, Lammy System line, with bags, comes in different layout and sizes to satisfy small and large productions, for lamination in 75 minutes.



**"ECO SPECIAL"
bending furnaces**

The important comeback in the request for bending furnaces has enabled RCN to start-up and up-grade its production of bending furnaces, now with the possibility of customization and an increase in the number of independent heating zones, a fundamental feature to enable to carry out more complex bending, thanks to independent controls and temperature zones. Curved glass is becoming more and more important, for scientific purposes too.



**REVA BF
lamination interlayer**

Exclusive chemical formula to combine adhesion quality, high transparency rate and product

constancy, thanks to the choice of fresh raw materials supplied by one of the most prestigious international chemical companies and production controls and inspections.

REVA BF has been validated by international certifications Institute and recently by Rosenheim Ifft too.





ROLLMAC A DIVISION OF GEMATA SpA

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COMPANY DATA

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Michele Fassina, Giovanni Posenato, Federico Dalla Benetta
Sales Managers

Mother Company

GeMaTa Spa

Sales

Domestic (13%) / International (87%)

Quality Certifications

ISO9002, 14001, 9001:2000

Number of Employees

111

Founding Year

1979

Planned Exhibitions 2023

Vitrum - Milan, Italy - 5 / 8 September
GlassBuild America - Atlanta, USA - 31 October / 2 November
Eurasia Glass - Istanbul, Turkey - 11 / 15 November





COMPANY PROFILE

ROLLMAC is the branch of Gemata Spa, primary group in the leather finishing manufacturing sector, devoted to the production of machinery for the enameling and satin-coating of flat glass. Its specific expertise, acquired over years on the global market, means it can offer the final user a complete know-how service and support from individual machines to complete lines. All the products are designed in-house by the R&D division and tested both internally and later at the premises of those clients with whom it has established close cooperation.

Production

Gemata/Rollmac creates complete systems that integrate the "GlassLine" system, for coating of the edges of glass sheets, "Multiglass" for coating the entire glass sheet, and the IR drying furnace "GlassDrier IR". The latest innovation launched on the market is the Jumboglass machine for the enamelling of float glass sheets "jumbo" size.

According to specific factors such as production needs, sheet size, and high automation levels requirements, a wide range of accessories and options are also available.

In compliance with current standards, all Rollmac machines come with remote assistance as standard, thereby meeting the requirements for Industry 4.0.

Rollmac-Gemata is certified as per ISO 9001, ISO 14000, and Italian "Safe Work" standards.



SATINAL



SATINAL SPA - TK - STRATO

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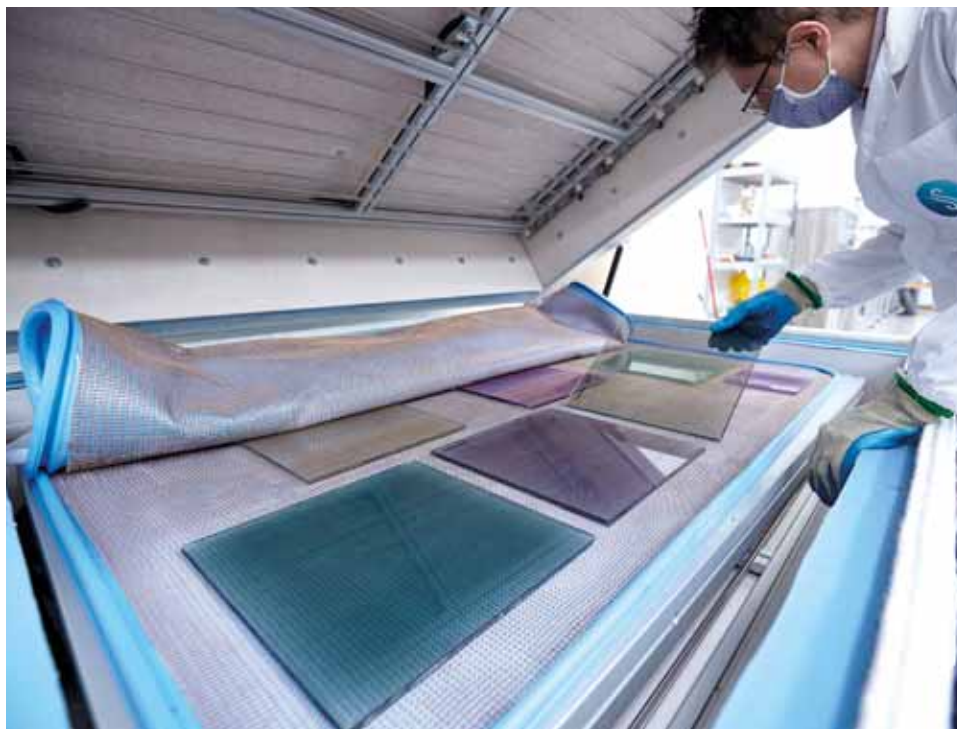
COMPANY PROFILE

Innovative solutions and total support – each and every day, at global level – is what **SATINAL** provides for its customers. The company supplies the widest range of EVA films for safety glass in interior and exterior projects and high-quality glass processing machinery worldwide. SATINAL never stops innovating: in a few years, Satinal established the biggest European production capacity for safety glass EVA film and launched some different innovative products with STRATO® brand. In 2021 the TK brand launches the most advanced technology learning hub for the chemical tempering & glass lamination industry, becoming the European Center of



Excellence in the essence of Satinal's continuous innovative ideas in safety glass technology. Also, some new products have been launched with TK Glass Machinery.

STRATO® is the first ever EVA glass interlayer 'Made in Italy'. SATINAL's proprietary and innovative EVA interlayers are processed from the granular raw material into a cast film that is then used to manufacture laminated safety glass. TK is the SATINAL brand with which it designs and builds furnaces for glass lamination, tempering, chemical tempering and Heat Soak Testing: the Italian brand of innovative and high-quality glass machinery appreciated throughout the world. The glass furnaces are intended for small-, medium- and large companies that need to start or increase their production capacity and improve the quality performance of their finished products.





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COMPANY DATA

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Cinzia Schiatti - Sales Manager
Emanuela Schiatti - Account Manager
Alessandro Schiatti - Technical Manager

Sales

Domestic (25%) / International (75%)

Number of Employees

44

Founding Year

1950

COMPANY PROFILE

The Schiatti Elia company manufactured the first glass machine in 1950.

Today the **SCHIATTI ANGELO** (Angelo is Elia's son) designs and produces, for Small, medium and large glassworks from furnishing, construction and photovoltaic sectors, a complete range of glass processing machines, including:

- 7 models of straight grinding machines for the processing of pencil, flat and arris, ogee and waterfall edges. Cerium oxide finishing.
- 25 models of straight-edge grinding machines for the processing of flat edges and arris - 45° mitres – cerium oxide polishing on the edge.
- 16 models of double edging machines for the processing of polished pencil and flat +arris profiles, available in different sizes.
- Corner machine for the production of variable radii or cant corners.
- Straight-edge bevelling machines for the processing of bevels from 0° to 45° - with cerium oxide polishing.
- Glass loaders/unloaders especially suitable for medium/large glass companies for coupling with horizontal edging or drilling machines.
- Drilling machines with opposite heads suitable for the production of mirrors,



Planned Exhibitions 2023

Vitrum

Milan, Italy - 5 / 8 September

GlassBuild America

Atlanta, USA - 31 October / 2 November

Glass Canada

Toronto, Canada - 6 / 7 November

Eurasia

Istanbul, Turkey - 11 / 15 November

shelves for furniture, laminated glass, tables tops and household appliances.

- Multi-head drilling machines for the execution of 2, 3 or 4 holes at the same time. Especially suitable for the production of mirrors, shelves for furniture, laminated glass and household appliances.
- Vertical drilling machines for the execution of holes and notches. Especially suitable for medium/large glass companies for the production of mirrors, shelves for furniture, laminated glass, table-tops, household appliances and doors.
- Special machines such as complete vertical grinding lines composed of 4 straight edgers and 3 turnover units for the complete processing of the 4 sides of the glass, drilling centers customizable according to customers' needs and special solutions for smart factories.

Reliability, innovation, service, sustainability are the features that distinguish our way of work and our machines.

Those who choose us do so for the attention we dedicate to the real needs of our interlocutor, even for after-sales service (periodic maintenance, revamping), for a high-performance and innovative technology, always aimed to best adapt the circular economy and the industry 4.0.



Automatic straight edging line mod. TURNOVER



Straight grinding machine mod. SME10

Vertical milling/drilling machine mod. TFFV2000



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BOSNIA, BULGARIA, CROATIA, MACEDONIA, MONTENEGRO, SERBIA, SLOVENIA

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COMPANY DATA

Contacts

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Percentage of turnover from glass (%)

100

Sales

Domestic (20%) / International (80%)

Founding Year

2003

COMPANY PROFILE

Products

SCHIAVO machines are well-known in the market for their quality, reliability and advanced technology. As of today, more than 5.000 machines have been installed in over 50 countries. Every machines are 100% Made in Italy with 100% high-quality European components.

Washing machine

SCHIAVO horizontal and vertical washers have been developed to offer high-quality and high-performing machines, for clients requiring affordable and quality machinery. Our washing machines can be equipped with 2 to 6 brushes or more, and are made entirely of stainless steel.

Milling - Drilling machine

Very precise and CNC controlled, the new FV1000 model is a vertical machines very versatile in order to obtain each and every type of cuts, notches and holes needed for the installation of hinges, handles, locks and accessories on glass doors and glass furniture. Our machine is industry 4.0.

Storage systems

Glass storage systems are essential for glassworks to organize production efficiently and to optimize available space.

PRODUCT RANGE

- Vertical and horizontal washing machines
- Manual, Semi-automatic, Automatic Storage Systems
- Vertical Milling Machines
- Vertical and horizontal drilling machines
- Fixed, Manual, Motorized Vacuum Lifters
- Manipulators
- Unloaders for packs



HYDRO



FV1000 vertical milling machine

In this area, SCHIAVO is a leader, with highly reliable solutions for the needs of its clients. CLO is a sideways-moving storage system available in manual or semiautomatic version.

UCS is the new, ultra-compact, ultra-low storage system for glass sheets and offcut glass, patented by SCHIAVO.

Vacuum lifters

SCHIAVO offers a wide range of products to lift glass sheets: from simple clamps to vacuum lifters (manual, motorized or hydraulic) for all kinds of flat glass including IG glass, manipulators, jib cranes, package unloaders.



Horizontal glass washing machine HTL2600



GEBI



SKILL GLASS S.R.L

Via Egidio Gregori, 2 - 36015 Schio (VI) - Italy
Tel.: + 39 0445 500 202 - Fax: + 39 0445 500 203

E-mail: info@skillglass.it • www.skillglass.it

COMPANY DATA

Contacts

Beniamino Dal Santo - President
Matteo Dal Santo - Sales Manager
Andrea Dal Santo - Technical Manager

Sales

National (5%) / International (95%)

Founding year

1999

Planned Exhibitions 2023

Vitrum - Milan, Italy - 05/08 September
GlassBuild America - Atlanta, USA - 31 October/02 November
Eurasia Glass - Istanbul, Turkey - 11/15 November

COMPANY PROFILE

SKILL GLASS is specialized in the manufacture and design of high technology numerical control machines for the processing of flat sheet glass, which, combined with special software with dedicated functions and modern and functional design, are simple and quick to use. From their head offices in Schio (VI), in the north of Italy, the company designs and creates advanced solutions, focusing on the intuitive and practical machines with high technology, that are innovative and at the top for quality and ease of use.

SKILL GLASS has created the best expression of vertical processing, promoting optimal use of space for the glass industry. Machines that are particularly appropriate for large production of architectural and structural glass and that have the strongest features and best advantages on the vertical glass processing sector.

The SKILL GLASS brand range includes large machines that can be used either in stand-alone settings or in line with other systems: vertical CNC centers, drilling and milling machines, machines for grinding and polishing, as well as machines and systems built to specific requests.

VERTICAL CNC CENTERS

SKILL E-D is the vertical CNC center for grinding, milling, drilling and polishing rectangular and shaped flat sheet glass. The machine can process both rectilinear and shaped flat sheet glass

and combines all the technology for vertical drilling and milling with the features of a vertical grinding machine. Its main feature is its versatility, which allows for different types of processes at high speeds and optimal precision.



DRILLING AND MILLING

DRILL 1600FF is a 5-axis CNC drilling and milling machine designed for producing holes, inserts and countersinks on rectangular flat sheet glass with a thickness of 3-20 mm. The machine

is composed of five axes, X Y V Z W, and two electro-spindles which, as opposite drilling heads, create a double-sided drilling system that drills perfect holes.



GRINDING, ARRISING AND POLISHING

SKILL SFILL is the vertical center for arissing, grinding and polishing straight and shaped glass panes.

The machine is composed of nine axes and two electro-spindles mounted in parallel, allowing to process the pieces with two heads at the same time.

Edging is done using diamond wheels with a diameter of 150mm and can be carried out on straight and shaped glass, including laminated or treated glass.





TALAMONI Srl

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Tel.: +39 0323 836198 - Fax: +39 0323 836900

E-mail: info@talamoni.com • www.talamoni.com

COMPANY DATA

Contacts

Tomasino Talamoni - Owner - Production Director
Rosella Mitidieri - Owner - Sales Director
Laura Broggio - Export Sales Manager
Elisabetta Talamoni - Production Manager
Omar Bettini - Technical Manager

Sales

Domestic: 60% / International: 40%

Banks

Banco Popolare

Paid-in capital

EUR 20,000

Area

Offices 100 m² / Plants 150 m²

Founding year

1994

Planned Exhibitions 2023

Vitrum - Milan, Italy - 5 / 8 September

COMPANY PROFILE

An Italian partner for cutting tools known worldwide

TALAMONI was founded in 1994 and is specialized in the production of cutting tools in hard metal for the glass and ceramics industry.

Craftsmanship, flexibility and customer focus are all Talamoni's strong points. Thanks to our well-stocked warehouse, your order for any destination in the world leaves today.

The know-how of the owner, together with his young dynamic organisation, has enabled the company to grow and to make an impact on the market. Today, Talamoni is a trusted and proactive partner for many companies, with 50% of its turnover coming from exports.

Raw materials and Operations, Quality Standards

Talamoni cutting wheels and discs, sintered with state-of-the-art

technology are turned by machines that guarantee consistent high-quality batches.

In the quality assurance unit, the physical characteristics of materials, metallurgical properties and all stages of production up to finished products, are examined before being assembled into tool-holders also produced by Talamoni, so as to guarantee ready to use and performing cutting heads.

The "Diamant" line of wheels is produced in various sizes and finishes depending on the type of glass to be cut. The advantages of using "Diamant" wheels are multiple: better quality of cut, easy breakout, triple lifetime and the same cutting angle allows greater thicknesses to be worked.

Talamoni is delighted to be presenting its cutting tools at Glasstec 2022.



Talamoni products are used in the following fields:

FLAT GLASS PROCESSING

- wheels in hard metal with diameter of 3.0 to 12.4 millimetres for automatic- or semi-automatic cutting tables, available with angles from 90° to 165° for cutting monolithic, stratified, laminated, and special glass.
- plastic wheel holders with various wheel models, suitable for installation on Bystronic, Bottero, Bavelloni, CMS, CSM, Euromec, Hegla, Intermac, Lisec, Gfpm, Macotec, OCS, Turomas cutting tables...
- wheel holders in metal or steel in various models for all cutting tables, CNC-controlled machines and hand-held cutters on the market.
- metal modules complete with wheels for safe, fast and secure tool changes.



LUBRICATION

Talamoni cutting fluid mixtures are formulated to guarantee ideal lubrication of the cut and to optimise the working lifetime of the wheel, the oil enters the cut, maintaining the tension of the glass, facilitating the opening of the cut easy.

Talamoni offers four different types of synthetic fluid for cutting glass:

- T-OIL 3125 for cutting thick glass – low volatility;
- 3130 T-OIL for cutting shaped glass – medium volatility;
- 3133 T-OIL for cutting monolithic glass – high volatility;
- 3232 T-OIL for magnetronic, stratified, coated glass etc. – super volatility.

All products are registered and checked to ensure safe a working environment in work areas and on cutting tables.



MANUAL CUTTING

The company produces a complete line of oil-reservoir cutters for manual cutting.

Various models of oil-reservoir hand-held cutters with handles in plastic or anodised aluminium all rigorously “Made in Italy”. Talamoni glass cutters are produced with wheels sharpened to different angles to satisfy diverse cutting requirements – the manual tools are destined for professional use in glassworks or artistic workshops.



HOLLOW GLASS PROCESSING

wheels in hard metal with diameters of 5.0, 5.6 and 6.0 are used for engraving hollow glass in automatic crack-off lines. Talamoni also produces tool-holders for these lines, as well as a series of diamond tools for edge processing and glass beakers.



TEKNIK ELMAS



TEKNIK ELMAS IMALAT SAN.TIC.LTD.STI.

Akçaburgaz Mah.3080.Sokak No: 3 Kırac, Esenyurt - 34522 Istanbul - Turkey
Tel.: +90 542 500 3463 / +90 212 485 59 60

E-mail: export@teknikemas.com / info@teknikemas.com • www.teknikemas.com

COMPANY DATA

Contacts

Yusuf Aldirmaz- Foreign Trade Manager

Ahmet Topalan - Factory Manager

Servet Topalan, Yasar Yerlikhan, Hasan Topalan
Shareholder

Mother company

Teknik Elmas Imalat San.tic.ltd.sti.

Area

Plants 2,700 m²

Number of Employees

70

Founding year

2004

Registered Trademarks

Teknik Elmas

Parent and Sister Companies

Tesir Makine San.tic.ltd.sti.

Akçaburgaz Mah. 3047 Sokak No: 6 .

Ekoteks İş Merkezi B1 Kat Kırac – Esenyurt

34522 Istanbul - Turkey

Tel.: +90 542 500 3463 - E-mail: export@tesirmakine.com





**Monoblock drills for Automotive:
Bystronic and Bando Benteler**



COMPANY PROFILE

TEKNIK ELMAS was founded in 2004 by Servet Topalan, Yasar Yerlikhan and Hasan Topalan with 30 years of work experience in the glass processing market.

TEKNIK ELMAS emphasizes efficiency and quality in diamond tools and polishing wheels production within the framework of high quality product standards and free market economy rules, which are increasing in parallel with the rapidly developing technology in the world. With our young, dynamic and strong research and development activity structure, we have increased our product range in a short time and have become the most prestigious brand of the glass processing market. Our company operates in an area of 2700 m2 in Istanbul Esenyurt Industrial Zone, in Istanbul

Our greatest motivation is to carry this success further and to ensure long-term customer satisfaction with the understanding of product quality and 24/7 after-sales service. The trademark of Teknik Elmas is registered by Turkish Patent Institute.

Teknik Elmas brings its knowledge and experience of glass processing to the manufacturing of glass processing machines and offers competitive, reliable and innovative solutions to the glass processing market under the name of TESIR MAKINE in the year 2014.



TESIR MAKINE SAN. VE TIC. LTD. STI.



Akçaburgaz Mah. 3047 Sokak No: 6 Ekoteks İş Merkezi B1 Kat Kıraç – Esenyurt - 34522 İstanbul - Turkey
Tel.: +90 542 500 3463

E-mail: export@tesirmakine.com • www.tesirmakine.com

COMPANY DATA

Contacts

Yusuf Aldirmaz- Foreign Trade Manager

Vedat Topalan - Factory Manager

Servet Topalan, Yasar Yerlikhan, Hasan Topalan
Shareholder

Mother company

Tesir Makine San. Ve Tic. Ltd. Sti.

Area

Plants 3,000 m²

Number of Employees

50

Founding year

2014

Registered Trademarks

Tesir Makine

Parent and Sister Companies

Teknik Elmas İmalat San. Tic. Ltd. Sti.

Akçaburgaz Mah.3080.Sokak No: 3 Kıraç, Esenyurt

34522 İstanbul - Turkey

Tel.: +90 542 500 3463

E-mail: export@tesirmakine.com / info@tesirmakine.com



COMPANY PROFILE

TESIR MAKINE was founded by Servet Topalan, Yasar Yerlikhan and Hasan Topalan with 30 years of work experience in the glass processing market in 2014.

TESIR MAKINE is one of the leading glass processing machinery manufacturers in Turkey.

We produce technologies based on competitive, reliable and innovative solutions for the glass processing industry. Since the beginning our journey, we have aimed to produce value-added solutions at global standards by bringing together customer demands and market needs with innovative thinking and instant solution engineering.

We are proud of providing a perfect integration with the age of Industry 4.0 by producing innovative, time and cost-saving, user-friendly, smart and advanced engineering solutions. We esteem very highly pre-sales consultancy and after-sales technical support to our dealers and business partners so that they can get maximum efficiency from our solutions.

Our company operates in an area of 2900 m² in Istanbul Esenyurt Industrial Zone, in Istanbul- Turkiye.

Our future goal is to lead the global glass processing industry with our technology, by further strengthening the sustainable growth with our stem of technical knowledge and creative engineering experience.

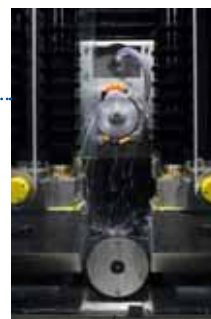
We would like to thank all our customers and our business partners with whom we are cooperatin and will cooperate in the future for choosing our solutions. We are aware and also specifically remind the importance of our strategic location advantage in reaching Europe, CIS, Asia and Africa in a faster and more efficient way.



**DO YOU WANT
TO BE DEALAR
IN YOUR
COUNTRY?**

**SUPER
FAST
ARRISING
GRINDING**

**SV 1000 VERTICAL ARRISING &
GRRINDING & POLISHING MACHINE**



Super- Fast SV 1000 Vertical Seaming & Grinding machine is double headed with the purpose of increasing the productivity and decreasing time in processing. Thanks to its speed in edge processing, it is perfectly fitting to be installed the beginning of IG lines. This is one of the prior reason of being preferred in high level by the market. The automation system is Schneider, which also allows our technicians to be connected control panel remotely in case of updates and similar cases. Additionally, the control panel is user friendly for the operators to be trained and while using.



**AUTOMOTIVE
GLASS DRILLING**

HS 500 VERTICAL DRILLINGMACHINE



6 ROTARY DRILLING



CLAMP MODE



The FULLY SHAPED
GLASS DRILLING
CAPABILITY is a game
changer for your
AUTOMOTIVE GLASS
drillings operations



CK 200 STRAIGHT LINE EDGING MACHINE



**BD 400 HORIZONTAL DRILLING MACHINE
FOR SHOWER GLASS**



**SK 500 VERTICAL WASHING
MACHINE**



**RD 100 MANUAL
DRILLING MACHINE**



**ST 200 MANUAL
SEAMING MACHINE**



**SUPER FAST SV
1000 Vertical
Arrising &
Grinding
Machine + SK
500 Vertical
Washing
Machine Line**

TEXPACK®



TEXPACK Srl

Via Galileo Galilei, 24 - 25030 Adro - (Bs) - Italy
Tel.: +39 030 7480168

E-mail: info@texpack.it • www.texpack.it

COMPANY DATA

Quality Certifications

ESA (European Sealing Association)
ISO 45001:2018 – Safety System Certification
ISO 9001:2015 – Quality System Certification

Founding Year

1993

COMPANY PROFILE

TEXPACK® is a manufacturer of packings, tapes, twisted ropes, cloths and sleeves for thermal insulation, for static use, and also manufactures special types of packing and braided packing for dynamic use for pumps and valves. The company manufactures and markets industrial gaskets of different types and sizes, offering a complete range of sealing systems and products for high temperatures, as well as a range of products for the maintenance of fireplaces and stoves dedicated to the consumer market. Texpack® was founded in 1993 as a result of the business experience of Giorgio Lanza and Simonetta Ghisi, who began specializing in the manufacture of textile products in glass, silica, Texil®, Biotex®, Thermaltex, Pyrotex®, Tenack and Aramtex® for thermal insulation at temperatures from 200°C up to 1,200°C. Since 1993, Texpack® has continued making constant and continuous investments, following the direction of technological research and using cutting-edge production methods. Texpack® has always looked towards the future, using speciali-

zed technical staff for each individual process. This strategy has led to its transformation from its first small premises to occupying its current production and commercial headquarters of over 10,000 sq.m., selling products in Italy and around the world. Since its foundation, the company has changed continuously with the market to meet the needs of customers, becoming an established reality. The company is deeply rooted in the local area, where, since its foundation, it has always maintained its corporate headquarters.

Texpack® continues to give the highest importance to its staff members, which are an integral part of the results achieved and an asset to the company. The success achieved is the result of the synergies, knowledge, abilities and skills of its staff. The combination of skills, their application and commitment, are one of the pillars of the company. Investment in training, refresher courses, specialized development courses, as well as courses regarding production techniques, is an on-going strategy of Texpack®. The best preparation and quality of its staff are a guarantee for the continual improvement of quality, products and services supplied by Texpack® to its customers.

Texpack® manufactures specific products for the glass industry, used in the production lines of glass bottles, flat glass and tempered curved glass mould coating.

Tenack products are ideal for covering stacker rods in the hollow glass industry and for lining moulds for the production of car windows, covering rollers and pipes in tempering furnaces, and in lamination furnaces for flat glass.

Aramtex® products are used in the industrial sector where extremely high mechanical resistance is required to running temperatures of about 350°C.



COD. 1204T Tenack square packing

Tenack square packing is made by braiding wires of AISI 316 L stainless steel. This type of packing, which withstands high temperatures and has excellent mechanical properties, is suitable for the glass industry as protection for parts that may come into contact with hot glass that is still soft, to prevent thermal shock and microcracks. The packing is very flexible, elastic and easy to handle, and is an excellent substitute for Aramtex® products when temperatures exceed 350°C.



COD. 1204CM Tenack knitted sleeves

Tenack sleeves are made by braiding AISI 316 L stainless steel wires. These sleeves, which withstand high temperatures and have excellent mechanical properties, are suitable for the glass industry as protection for parts that may come into contact with hot glass that is still soft, to prevent thermal shock and microcracks. They are an excellent substitute for Aramtex® products when temperatures exceed 350°C.



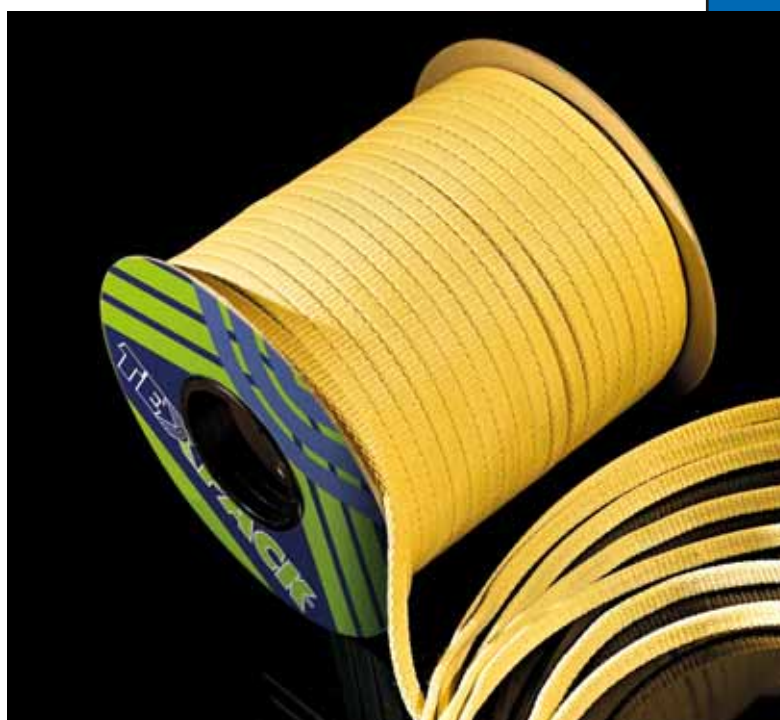
COD. 1203N PBI Tapes

PBI tapes are fire-retardant textile products made of PBI yarns, which are particularly suitable for high temperatures. To improve the use of this tape, a double-sided adhesive has been added, which helps to ensure correct positioning.



COD. 12010N Aramtex® discontinuous filament tapes

Aramtex® tapes are produced using 100% pure para-aramidic yarns with continuous filaments, and are usually woven in several layers, using particularly fine yarns that render the positioning surface extremely homogeneous and smooth, thus preventing the still hot sheets of glass from being scratched. Aramtex® tapes have excellent mechanical characteristics (excellent resistance to cutting, abrasion, tearing and compression) while their heat resistance characteristics remain unaltered.



TUROMAS

OUR PASSION, YOUR PROGRESS



TUROMAS

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E-mail: info@turomas.com • www.turomas.com

COMPANY DATA

Founding Year

1985

Registered brands

Turomas

Planned Exhibitions 2023

Glasstech Mexico

Mexico City, Mexico - 19 / 21 July

Vitrum

Milan, Italy - 5 / 8 September

Glassbuild America

Atlanta, USA - 31 October / 2 November

Zak Glass Technology

Mumbai, India - 23 / 26 November



COMPANY PROFILE

Since 1985, **TUROMAS** has been manufacturing equipment for glass storage, loading and cutting, becoming an undisputed industry reference through its continuous R&D investment and commitment to reliability, versatility and performance. Nowadays the company has an intensive and strong presence in Europe and America, and its products are increasingly acclaimed in Africa, Asia and Oceania.

PRODUCT RANGE

- SMART GLASS STORAGE AND LOADING SYSTEMS
- FLOAT GLASS CUTTING SYSTEMS
- LAMINATED GLASS CUTTING SYSTEMS
- CUSTOMIZED PROJECTS
- SOFTWARE SOLUTIONS





100% EUROPEAN MACHINERY

Quality, reliability and service are a must. TUROMAS production is carried out 100% in its Spanish factories, using only top rated European components and following the highest quality controls to ensure reliability and performance over the years.

READY FOR THE FUTURE

A future-proof investment needs machines able to integrate with other equipment, flexible enough to adapt to new requirements and even capable of growing with the company. Automation and the philosophy of Industry 4.0 are leading the glass industry towards a new model to be prepared for.

SMART STORAGE AND LOADING MACHINERY

TUROMAS provides an entire range of intelligent warehouses to achieve more performance, reliability and flexibility. The new range of automatic storage systems SR and LA have re-

volutionized the concept of storage space utilization, while significantly reducing the loading cycle, making it the current market benchmark. As no two factories or two customers are the same.

TUROMAS designs and optimizes smart glass storage and loading systems individually according to available space, current production needs and future projections in order to generate the ideal solution for each particular case.

PIONEERS IN MAGNET DRIVEN CUTTING TABLES

TUROMAS presented the first-ever cutting table with linear drives back in 2000, enabling

to achieve an accuracy of $\pm 0,1$ mm, maximum speeds of 310 m/min and, most importantly, accelerations of up to 19 m/s², which allowed for unprecedented performance. Since then, many of the world's leading glass processing companies have relied on the reference technology and expertise offered by Spanish machinery.

4-TOOL: CUTTING 4 PERFECTION

The exclusive 4-TOOL cutting technology by TUROMAS offers unparalleled cutting quality in any glass from only 0.55mm to 25mm thickness. It uses specific pressure cylinders, lubrication and cutting wheels for each glass thickness, automatically adjusted without the operator intervention.

The result is a perfect and vertical cutting of any thickness, achieving the famous TUROMAS Open Cut and optimizing the company's time and resources.





VINCENT SRL

a brand of Surfaces Group



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E-mail: info@vincent.tools • www.vincent.it

COMPANY DATA

Contacts

Carlo Crescini - Sales Manager Glass Division
Franco Di Nardo - Product Specialist Glass Division

Mother Company

Surfaces Technological Abrasives SPA

Annual Group Turnover

EUR 220 million

Annual Company Turnover

EUR 41 million

Percentage of turnover from glass

17%

Sales

Domestic 35% / International 65%

Banks

Unicredit, BNP Paribas, B PER

Area

Offices 2500 m² / Plant 6000 m²

Number of Employees

155

Founding Year

1974

Paid-in capital

EUR 7,021,000.00

Patents obtained

2 for the Glass Industry

Registered Brands

VINCENT

Planned Exhibitions 2024

Glasstec

Düsseldorf, Germany - 22 / 25 October

SALES NETWORK

EUROPE

AUSTRIA

SCHLEIFTECHNIK NEURURER GMBH
E-mail: office@schleiftechnik-neururer.at

BELGIUM

GEM Europe
E-mail: info@gemeurope.be

CZECH REPUBLIC & SLOVAKIA

ROVER s.r.o.
E-mail: rover@rover-lbc.cz

FRANCE

EC GLASS
E-mail: ec.glass@neuf.fr

GERMANY AND SWITZERLAND

W.FRITZSCHING GMBH & CO. KG
E-mail: information@fritzsching.de

LITHUANIA

UAB Glasspro
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SPAIN AND PORTUGAL

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Diamond Service AB
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YGM
E-mail: info@ygm.com.tr

UNITED KINGDOM

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E-mail: sales@marrose.com

POLAND

KERATEK Sp. z o.o.
E-mail: m.kolodziejski@keratek.pl

ROMANIA

According Group Srl
E-mail: contact@according.ro

EGYPT

Polychem
E-mail: polychem.egypt@tedata.net.eg

MIDDLE EAST

Jolico trading
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ASIA PACIFIC

AUSTRALIA

Innovync PTY LTD
E-mail: pierre@innovync.com.au

NEW ZEALAND

JDM Machinery Ltd
E-mail: sales@jdmachinery.co.nz

MALAYSIA, PHILIPPINES, SINGAPORE

USE Electronics (Malaysia) Sdn Bhd
E-mail: enquiry@use2u.com

CHINA / ASIA PACIFIC

Vincent (Suzhou) Tools Co., Ltd.
E-mail: sarah.zeng@vincent.tools

AMERICA

NORTH AMERICA USA & CANADA

IGP Inc
E-mail: vincent@igptools.com

Marc Prevost Inc
E-mail: info@mpm.ca

BRAZIL

Luna Abrazil
E-mail: info@lunabrasil.net

ALL COUNTRIES

Product: Optics
COSIMCO S.R.L.
E-mail: sales@cosimco.it

COMPANY PROFILE

VINCENT has been a leading manufacturer of diamond tools since 1974: tools that are used for cutting and grinding, as well as polishing natural stone, quartz agglomerate, glass and ceramic tiles. Our organization, which includes production sites in Italy and Asia, currently counts over 300 highly qualified employees and a sales force present in over 70 countries, serving more than 1400 customers around the world.

Our customers value us for the quality and consistency in the performance of our tools.

This recognition is thanks to our quest over the past 50 years to find advanced technical solutions to develop innovative and performance geared products. More than just a supplier, we like to distinguish ourselves as partners, an active part of our clients' production process.

We work together with our customers to apply and help define the tool most suited to their needs. The goal is to get the best possible solution to manage the customer's entire production process.

VINCENT was founded in Thiene, a small town in the Northeast of Italy, in 1974. The company is specialized in the production of diamond tools for cutting, grinding and polishing stone, natural stone, quartz agglomerate, flat and automotive glass, optic and ceramic tiles. Twenty years after its foundation, in 1994, VINCENT caught the attention of the Austrian Swarovski family, who acquired the company and brought it into the TYROLIT group, manufacturers of abrasives. TYROLIT thus enforced its presence in the world of natural stone, and made its debut in ceramics and glass tools. Over the years, there have been many innovations, covering all applications for the processing of glass.

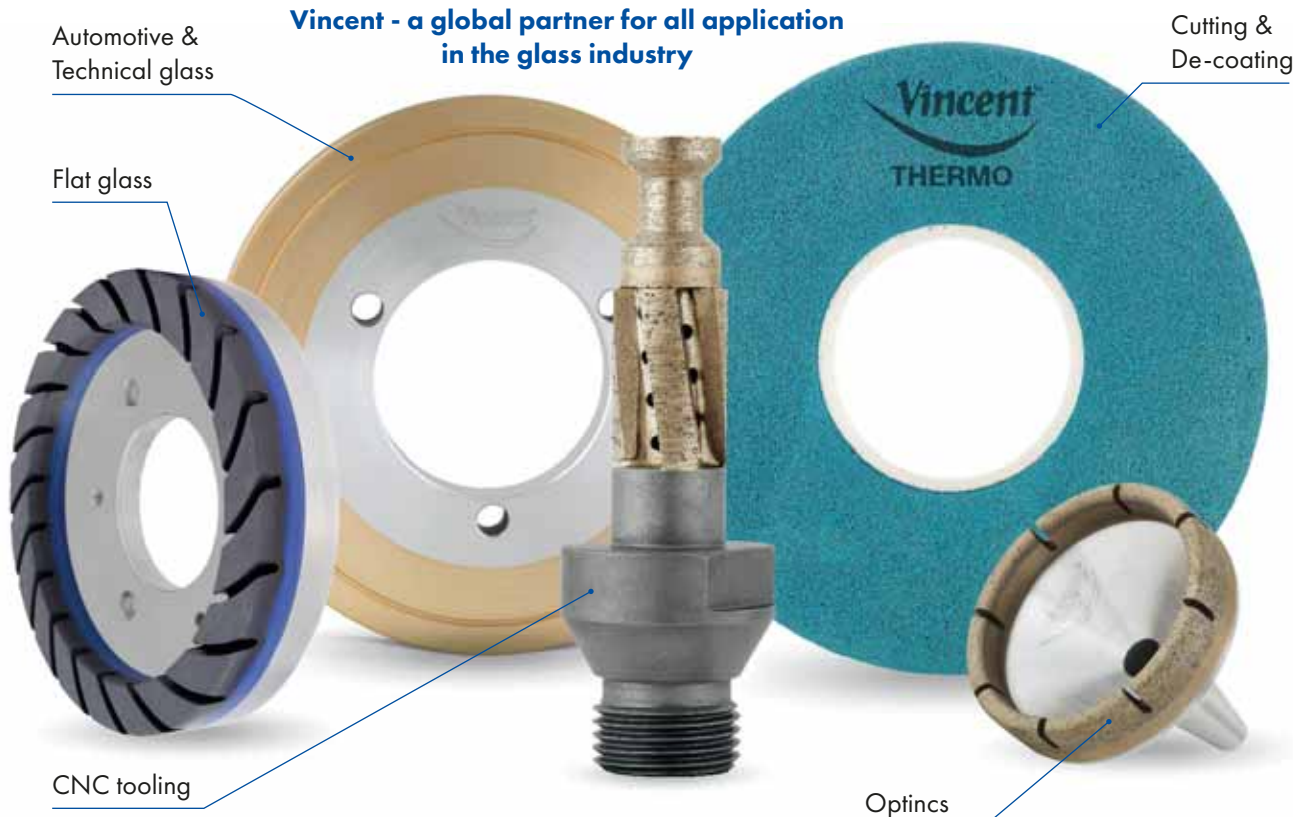


In 2021, the Quartz Industries division left the TYROLIT group to become part of Surfaces group, reviving the historical "VINCENT" brand.

In Glass Industry VINCENT plays an active role in developing innovation and impressive milestones show it in the daily work of the customers all over the world.

- 2010 high speed automotive edge grinding
- 2013 high speed solar glass edge grinding
- 2014 first single-use automotive wheel: **HALO**
- 2017 new peripheral wheel named **HYLAS**
- 2018 **STARFLEX** the universal set of metal and resin cup wheels for flat edge glass processing
- 2019 **SAVA-ACTIVE** – patented – dressing stick
- 2020 **REVERSE** – patented – peripheral wheel for laminated glass grinding

Vincent - a global partner for all application in the glass industry





ZIPPE INDUSTRIEANLAGEN GMBH

P.O. Box 1665, 97866 Wertheim - Alfred-Zippe-Str. 11, 97877 Wertheim - Germany
Tel.: +49 - 9342 - 8040 - Fax: +49 - 9342 - 804138

E-mail: info@zippe.de • www.zippe.de

COMPANY DATA

Contacts

Dr. Philipp Zippe - CEO

Percentage of turnover from glass (%)

100

Sales: Domestic (%) / Foreign (%)

Domestic: 20% / International: 80%

Quality certifications

ISO 9001

Number of Employees

approx. 200

Founding Year

1920





COMPANY PROFILE

Our core business is the development and construction of batch and cullet plants. We pride ourselves on being amongst our customers' most reliable partners, with an infrastructure, the expertise and capability to deliver projects of any magnitude. As one of the few full-service providers in our industry, our spectrum covers all service areas within plant construction – engineering, planning, design, production, automation technology, installation, site management for all disciplines, commissioning, training for personnel, and services for ongoing operations.

Be it flat glass or hollowware, Zippe batch plants ensure that the batch for every glass type is fully automatically fed into the furnace with the exact consistency and homogeneity needed, at the required amount and at the right point in time – 24 hours a day, every day. Our state-of-the-art control technology is a key element for optimal operation of a batch plant.

We design systems to minimize energy and material consumption – even decrease it in existing plants. The longevity of the Zippe systems and machines, as well as their good maintainability and reparability go a long way to ensure sustainability. We can also help with the modernization of plants and plant checks, software updates and system extensions that Zippe offer, help to further reduce wastage of resources.

There are around 40 Zippe automation and control systems specialists hard at work for you. This means we are one of the few companies able to develop and realise complete control systems in house. Our 24-hour support service enables our customers to contact an expert around the clock either by phone or email.

Zippe has been focused on the future for more than 100 years and, having realised well over 650 batch plant projects, has the longest standing experience in our industry sector.

Zippe – right from the start.

PRODUCT RANGE

BATCH PLANTS	GLASS RECYCLING
CULLET PLANTS	BATCH CHARGING
ENGINEERING	GLASS LEVEL
AUTOMATION	PREHEATING
MODERNIZATION	MAINTENANCE AND SERVICE
FACTORY CULLET RECYCLING	

DAILY NEWS

Tuesday, February 14, 2023



Glaston invests in reducing its carbon footprint



sedak relies on green energy



New Designs for Trosifol® and SentryGlas® bird-friendly solutions



AGC glazing gives iconic Tunis landmark a sparkling makeover



NSG Group: Quarter 3 results of Financial Year ending March 2023



Company news
RCN Solutions at Viridian Glass, Australia
13 February 2023



Company news
Guardian gets Bronze level Cradle to Cradle re-certification in Europe
13 February 2023

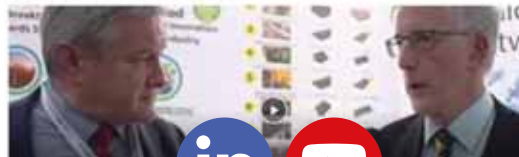


Company news
Glass Futures announces the appointment of two new Board Members
13 February 2023



Customers involve IOCCO in feasibility studies for whole car glass sets

Among IOCCO's contribution in the manufacture of systems for the air extraction during the lamination of windscreens, laminated sidelights and sunroofs is the notable improvement for both concept and fabrication of vacuum bag furnaces...



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East Rutherford - NJ 07073 - USA
Tel.: +1-201-5612191
E-mail: info.usa@keraglass.com
Agent for: Keraglass


LATTUADA NORTH AMERICA INC

6967 Wales Road, Suite F
43619 Northwood (OH) - USA
Tel.: +1-567-2494486
E-mail: joe.g@lattuada-na.com
 www.lattuada-na.com
Agent for: Adelio Lattuada


MAPPI AMERICA

3888 Mannix Drive #314
Naples, FL 34114 - USA
Tel.: +1-336 878 7460
E-mail: info@mappi.us
 www.mappi.us
Agent for: Mappi

OPTRIS INFRARED SENSING

200 International Drive - Suite 170
Portsmouth NH 03801 - USA
Tel.: +1-603-7666060
E-mail: sales@optris-ir.com
 www.optris.global
Agent for: Optris

QUANEX IG SYSTEMS

800 Cochran Avenue
Cambridge, Oh 43725 - USA
Tel.: +1-740-4392338
Fax: +1-740-4390121
E-mail: igsales@quanex.com
 www.quanex.com
Agent for: Edgetech

VENEZUELA

CIGTRA

Calle 15 No. 68D78 - Bogota
Venezuela
E-mail: emorenoa@cigtra.com
Agent for: Neptun

PROTECH COLOMBIA

Cr. 62 no.74-61 ap.14
Baranquilla - Colombia
Venezuela
E-mail: paocol@hotmail.it
Agent for: Keraglass

VIETNAM

EUROTECHCORP

No 192/8 Tam Trinh Street
Yen so Ward, Hoang Mai District
Hanoi City - Vietnam
Tel.: +84-24-32336210
Fax: +84-24-32336211
E-mail: eurotechline@gmail.com
 www.eurotechcorp.vn
Agent for: Mappi International

NBH TECHNIC

No 84 - Lot B3 - New Dai Kim Urban Zone
Dai Kim Ward - Hoang Mai District
HaNoi City - Vietnam
Tel.: +84-983-282095
E-mail: jone.nguyennbh@gmail.com
Agent for: Forel

NINH SERVICE & TRADING DIVISION - HOANG SON CO. LTD

20/20B Tan Long Zone
Tan Dong Hiep Ward
Di An District, Binh Duong Province -
Vietnam
Tel.: +84-650-3-731636
E-mail: n.ninh@keraglass.com
 www.ninh.net.vn
Agent for: Keraglass

YEMEN

IBA MIDDLE EAST FZE

PO BOX 261193 - Jebel Ali
Dubai - UAE - Yemen
E-mail: sudip@iba-me.com
Agent for: Keraglass

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DELTA MAX AUTOMAZIONE

www.deltamax.eu



ADELIO LATTUADA

www.lattuada-na.com

DIAMUT

DIAMUT - BIESSE

www.diamut.com



ADI - SURFACE GROUP

www.aditools.com



DIEFFE MACCHINE

www.dieffemacchine.it



B SOLUTION

www.bsolutionsrl.com



EDGETECH EUROPE

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BEST MAKINA

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EUROTECH-WAY

www.eurotech-way.com



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www.biessegroup.com

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FOREL

www.forelspa.com



BOTTERO

www.bottero.com

FPE FRATELLI PEZZA

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www.fratellipezza.com



BOVONE DIAMOND TOOLS

www.bovonediamond.com



GIARDINA GROUP

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ELETTROMECCANICA BOVONE

www.bovone.com

GLASSCOMPANY

GLASS COMPANY

www.glasscompany.com



CMS

www.cms.it



GLASTON

www.glaston.net



CUGHER GLASS

www.cugher.com



GPM AUTOMATION

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www.heliositalquartz.com



MARVAL

www.marvalgl.com



HORN GLASS INDUSTRIES

www.hornglass.com



MAZZAROPPI ENGINEERING

www.mazzaroppi.com



IMMMES

www.immmes.com



MOLE MORESCHI

www.molemoreschi.com



ITALCARRELLI

italcarrelli.eu



NEPTUN

www.neptunglass.com



ITALMATIC PRESSE STAMPI

www.italmatic.eu



OPTIMA

www.optima.it



ITALMOLE

www.italmolesrl.com



OPTRIS

www.optris.com



KERAGLASS

www.keraglass.com



RBM ITALIA - SURFACE GROUP

www.rbmitalia.it



LANDGLASS TECHNOLOGY

www.landglass.net



R.C.N. SOLUTIONS

www.rcnsolutions.it



LiSEC

www.lisec.com



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SCHIAVO
www.schiavotech.it



TEXPACK
www.texpack.it



SKILL GLASS
www.skillglass.it



TUROMAS
www.tuomas.com



TALAMONI
www.talamoni.com



VINCENT - SURFACE GROUP
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TEKNIK ELMAS
www.teknikemas.com



ZIPPE
www.zippe.de

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Glaston Group
Hegla
IOCCO Group
Keraglass
Lisec Group
North Glass Technology
Macotec

Biesse Group
Schiavo
Torgauer Maschinenbau
Tuomas

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Bando Kiko
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Cugher Glass
CMS
ECOL
Biesse Group
Glaston Group
GPM Automation
Hegla
IOCCO Group
Keraglass
Lisec Group
Macotec
North Glass Technology
Schiavo
Torgauer Maschinenbau
Tuomas

MACHINES FOR HANDLING GLASS SHEETS
Ashton Industrial Sales

Bando Kiko
Bavelloni
Bottero
CMS
Di Gregorio
ECOL
Forel
Glaston Group
GPM Automation
Hegla
IOCCO Group
Italcarrelli
Keraglass
Lisec Group
Lovati
Macotec
Schiavo
Torgauer Maschinenbau
Tuomas

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Ashton Industrial Sales
Bavelloni
Bottero
CMS
ECOL
GPM Automation

Hegla
IOCCO Group
Lisec Group
Neptun
Schiavo
Torgauer Maschinenbau
Tuomas

HANDLING EQUIPMENT FOR FLOAT GLASS

Bovone Elett.
Bottero
Di Gregorio
ECOL
Glaston Group
Hegla
IOCCO Group
Italcarrelli
Lisec Group
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Di Gregorio
Forel
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Hegla
Italcarrelli
Lisec Group
Schiavo

VACUUM LIFTING EQUIPMENT

Bottero
CMS
Di Gregorio
ECOL
Fenzi
Forel
Glaston Group
Hegla
Lisec Group
Schiavo
Si.Ste
Torgauer Maschinenbau
Tuomas

CRANE SUCTION CUPS FOR LARGE SHEETS

Bottero
Di Gregorio
Fenzi
Glaston Group
Hegla
Lisec Group
Schiavo
Tuomas

TRANSPORTATION TONGS

Bottero
Fenzi
IOCCO Group
Schiavo
Tuomas

SUCTION CUPS

ADI - Surface Group
Bottero
CMS
Fenzi
Glaston Group
Hegla
Schiavo
Si.Ste
Tuomas

CONVEYOR BELTS

Ashton Industrial Sales
Cugher Glass
Di Gregorio
ECOL

Glaston Group
Schiavo
Tuomas

PACKAGING MATERIALS AND SYSTEMS

ECOL
Hegla
Schiavo
Vismara

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Bottero
CMS
Fenzi
Hegla
Helios Quartz
Mole Moreschi
Schiavo
Tuomas

Straight-edge and shape cutting

COMPLETE STRAIGHT-EDGE LINES

Bando Kiko
Bavelloni
Bottero
CMS
Euromec
Biesse Group
Glaston Group
Hegla
Lisec Group
Neptun
Schiavo
Schiatti Angelo
Teknik Elmas
Tesir Makine
North Glass Technology

COMPLETE SHAPE CUTTING LINES

Bando Kiko
Bavelloni
Bottero
CMS
Glaston Group
Hegla
Lisec Group
Macotec
Schiavo
North Glass Technology
Teknik Elmas
Tesir Makine
Tuomas

AUTOMATIC CUTTING MACHINES FOR AUTOMOTIVE GLASS

Bando Kiko
Bottero
CMS
Glaston Group
IOCCO Group
Lisec Group
Macotec
Schiavo

LOADING AND TILTING MACHINES

Bando Kiko
Bavelloni
Bottero
CMS
ECOL
Euromec
Forel
Glass Company
Glaston Group
GPM Automation
Hegla
Biesse Group
IOCCO Group
Lisec Group
Macotec
Neptun
Schiavo
Tuomas

CUTTING TABLES

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Bavelloni
Bottero
CMS
Euromec
Fenzi
Forel
Glaston Group
Hegla
IOCCO Group
Lisec Group
Macotec
Schiavo
Tekno Kilns
Triulzi
Tuomas

CUTTING OPTIMIZERS

Bando Kiko
Bavelloni
Bottero
CMS
Deltamax Automazione
Euromec
Forel
Glaston Group
Hegla
IOCCO Group
Lisec Group
Macotec
Optima

Schiavo
Tuomas

CUTTING PATH OPTIMIZERS

Bando Kiko
Bottero
CMS
Euromec
Glaston Group
IOCCO Group
Lisec Group
Macotec
Optima
Schiavo

CAD SYSTEMS

Bavelloni
CMS
Lisec Group
Prodim
Schiavo

ARMOURED AND LAMINATED GLASS CUTTING MACHINES

Bando Kiko
Bavelloni
Bottero
CMS
Glaston Group
Hegla
Lisec Group
Macotec
Schiavo
Tuomas

ROUND OR SHAPE CUTTING MACHINES

Bando Kiko
Bavelloni
Bottero
CMS
Fenzi
Glaston Group
Hegla
Lisec Group
Macotec
Schiavo
Tuomas

CUTTING ACCESSORIES

ADI - Surface Group
Ayrox
Bando Kiko
Bottero
Fenzi
Lanzetta
IOCCO Group
Macotec
Schiavo
Softeco
Talamoni
Teknik Elmas
Tesir Makine
Tuomas

Vincent - Surface Group

SAW MACHINES

Di Gregorio
Schiavo
Tecno Glass

AUTOMATIC SAWS FOR CUTTING LAMINATED AND BULLET-PROOF GLASS

CMS
Schiavo

BREAKING SYSTEMS

Bando Kiko
Bavelloni
Bottero
CMS
Euromec
Glaston Group
Hegla
IOCCO Group
Lisec Group
Macotec
Schiavo
Teknik Elmas
Tesir Makine
Tuomas

CUTTING MACHINES WITH BREAKING AND EDGE DELETING DEVICES

Bando Kiko
Bottero
CMS
Euromec
Glaston Group
Hegla
IOCCO Group
Lisec Group
Macotec
Schiavo
Teknik Elmas
Tesir Makine
Tuomas

GLASS CUTTING FLUIDS

Schiavo
Tuomas

ACCESSORIES

Schiavo
Schiatti Angelo
Talamoni
Teknik Elmas
Tesir Makine
Tuomas

Edging and bevelling

COMPLETE EDGING LINES

Adelio Lattuada
Ashton Industrial Sales
B Solution
Bando Kiko
Bavelloni
Bottero
CMS
Forel
Biesse Group
Hiseng Glass Machinery
IOCCO Group
Lovati
Neptun
Schiavo
Schiatti Angelo
SKG - Skill Glass
Teknik Elmas
Tesir Makine

COMPLETE BEVELLING LINES

Adelio Lattuada
Bando Kiko
Bottero
CMS
Hiseng Glass Machinery
IOCCO Group
Lovati
Schiavo
Teknik Elmas
Tesir Makine

COMPLETE AUTOMOTIVE GLASS EDGING AND BEVELLING LINES

Adelio Lattuada
Bando Kiko
Bavelloni
Bottero
Glaston Group
Hiseng Glass Machinery
Biesse Group
IOCCO Group
SKG - Skill Glass
Teknik Elmas
Tesir Makine

DOUBLE-EDGE GRINDING MACHINES

Ashton Industrial Sales
B Solution
Bando Kiko
Bavelloni
Bottero
CMS
Biesse Group

Hiseng Glass Machinery
Biesse Group
IOCCO Group
Schiatti Angelo
Teknik Elmas
Tesir Makine

VERTICAL-EDGE GRINDING MACHINES

Adelio Lattuada
B Solution
Bando Kiko
Bavelloni
Bottero
Di Gregorio
Forel
Glass Company
Glaston Group
Hiseng Glass Machinery
Neptun
Schiavo
Schiatti Angelo
SGM - Special Glass Machinery
North Glass Technology
SKG - Skill Glass
Tesir Makine

GRINDING SPINDLES

Schiavo
Tecno Glass
Teknik Elmas

BEVELLING MACHINES FOR ROUND AND SHAPED GLASS

Adelio Lattuada
Bando Kiko
Bavelloni
CMS
Hiseng Glass Machinery
Biesse Group
Lovati
Schiavo
Teknik Elmas
Tesir Makine

STRAIGHT-EDGE BEVELLING MACHINES

Adelio Lattuada
Bando Kiko
Bavelloni
Bovone Elett.
CMS
Glass Company
Hiseng Glass Machinery
Schiavo
Schiatti Angelo
Teknik Elmas
Tesir Makine

BEVEL POLISHING MACHINES

Adelio Lattuada
Bando Kiko

Bavelloni
Bovone Elett.
CMS
Hiseng Glass Machinery
Biesse Group
Lovati
Teknik Elmas
Tesir Makine

STRAIGHT-EDGE ENGRAVING MACHINES

Bavelloni
Bottero
CMS
Biesse Group
SKG - Skill Glass
Teknik Elmas

SHAPED GLASS ENGRAVING MACHINES

Bavelloni
Bottero
CMS
Biesse Group
Lovati
Teknik Elmas
Tesir Makine

CORNER GRINDING MACHINES

Adelio Lattuada
Ashton Industrial Sales
B Solution
Bavelloni
CMS
Biesse Group
Lovati
SGM - Special Glass Machinery
SKG - Skill Glass
Teknik Elmas
Tesir Makine

SHAPED GLASS GRINDING MACHINES

Adelio Lattuada
Ashton Industrial Sales
Bando Kiko
Bavelloni
Bottero
CMS
Forel
Glass Company
Hiseng Glass Machinery
Biesse Group
Lovati
Teknik Elmas
Tesir Makine

BELT GRINDING MACHINES

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Hiseng Glass Machinery
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CMS

Fenzi

PORTABLE MACHINES

Fenzi

Helios Quartz

Si.Ste

Tecno Glass

DIAMOND TOOLS

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ADI - Surface Group

Ashton Industrial Sales

Bando Kiko

Bovone Diamond Tools

Bottero

Diamut - Biesse

Fenzi

Glaston Group

Lanzetta

Marrose Abrasives

Mole Moreschi

Neptun

Schiavo

Talamoni

Teknik Elmas

Vincent - Surface Group

DIAMOND BELTS

Mole Moreschi

SEAMING LINES

Ashton Industrial Sales

MANUAL LINES

Ashton Industrial Sales

POLISHING WHEELS

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ADI - Surface Group

Bando Kiko

Bovone Diamond Tools

Diamut - Biesse

Dogo

Fenzi

Glaston Group

Italmole

Marrose Abrasives

Mole Moreschi

RBM Italia - Surface Group

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Bovone Diamond Tools

Fenzi

Schiavo

Teknik Elmas

Vincent - Surface Group

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Fenzi

Schiavo

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COOLANTS

Adelio Lattuada

Bovone Diamond Tools

Fenzi

Schiavo

GLASS GRINDING AND BEVELLING

COOLANTS

Schiavo

Teknik Elmas

SEPARATORS FOR GLASS-SOLIDS

Ashton Industrial Sales

Dieffe Macchine

Filtraglass

Immnes

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Vitrosep

ACCESSORIES

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CMS

Fenzi

Helios Quartz

IOCCO Group

Lanzetta

Mole Moreschi

Schiavo

Schiatti Angelo

Teknik Elmas

Vincent - Surface Group



Washing



HORIZONTAL WASHING MACHINES

Ashton Industrial Sales

Bando Kiko

Bavelloni

Bovone Elett.

Di Gregorio

ECOL

Forel

Glass Company

Glaston Group

GPM Automation

Hiseng Glass Machinery

IOCCO Group

Lisec Group

Neptun

Schiavo

SGM - Special Glass

Machinery

Si.Ste

Triulzi

VERTICAL WASHING MACHINES

Adelio Lattuada

Ashton Industrial Sales

Bavelloni

Best Makina

Di Gregorio

ECOL

Forel

Glass Company

Glaston Group

GPM Automation

Hiseng Glass Machinery

IOCCO Group

Lisec Group

Neptun

Schiavo

SGM - Special Glass

Machinery

North Glass Technology

Si.Ste

S.T. Group

Stefiglass

Teknik Elmas

Tesir Makine

Triulzi

WASHING MACHINES FOR AUTOMOTIVE GLASS

Bando Kiko

ECOL

Glaston Group

IOCCO Group

Tesir Makine

Triulzi

WASHING PURIFICATION SYSTEMS

Dieffe Macchine

Forel

Glass Company

Glaston Group

Immnes

IOCCO Group

Schiavo

LIQUID WASHING CONCENTRATES

Schiavo

ACCESSORIES

Helios Quartz

Idrotecnica

Neptun

Schiavo

S.T. Group

Mirror production

COMPLETE PLANTS & CONVEYORS FOR MIRROR PRODUCTION

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Triulzi

PAINTING EQUIPMENT

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IOCCO Group

Triulzi

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CMS

AUTOMOTIVE MIRROR BENDING FURNACES

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Tecnosens

MANUAL SILVER- SPRAYING EQUIPMENT

Fenzi

Glass Company

PAINTS AND CHEMICAL PRODUCTS

Fenzi

ACCESSORIES

Fenzi

Helios Quartz



Insulating glass

COMPLETE INSULATING GLASS LINES

Ashton Industrial Sales

Bavelloni

Best Makina

Di Gregorio

Forel

Glass Company

Glaston Group

Marval

Neptun

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Marval
S.T. Group
Teknik Elmas
Tesir Makine

AUTOMATIC SPACER BENDING MACHINES

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Best Makina
Fenzi
Forel
Glaston Group
IOCCO Group
Lisec Group
Marval
Schiavo
S.T. Group
Thermoseal Group

DESICCANT SALT FILLING MACHINES

Ashton Industrial Sales
Bavelloni
Best Makina
Di Gregorio
Fenzi
Forel
Glaston Group
Lisec Group
Marval
Neptun
Schiavo
Stefani
S.T. Group
Tecno Glass
Thermoseal Group
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Best Makina
Di Gregorio
Fenzi
Forel
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Tecno Glass
Tesir Makine
Thermoseal Group

BUTYL EXTRUDERS

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Best Makina
Di Gregorio
Forel

Glaston Group
Lisec Group
Marval
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Stefani
S.T. Group
Tecno Glass
Thermoseal Group
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HOT-MELT EXTRUDERS

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Best Makina
Di Gregorio
Easy Automation
Fenzi
Forel
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Neptun
Schiavo
Si.Ste
Stefani
S.T. Group
Tecno Glass
Thermoseal Group
Triulzi

POLYURETHANE EXTRUDERS

Bavelloni
Best Makina
Easy Automation
Fenzi
Forel
Glaston Group
Lisec Group
Marval
Schiavo
S.T. Group
Tecno Glass

POLYURETHANE ENCAPSULATION

Glaston Group
Lisec Group
Marval
Schiavo

SILICONE EXTRUDERS

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Fenzi
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Glaston Group
Lisec Group
Marval
Schiavo
S.T. Group
Tecno Glass
Triulzi

POLYSULPHIDE SEALANT EXTRUDERS

Best Makina

Fenzi
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Glaston Group
Lisec Group
Marval
Schiavo
Stefani
Tecno Glass
Triulzi

GAS FILLING EQUIPMENT

Di Gregorio
Fenzi
Forel
Glaston Group
Lisec Group
Marval
Neptun
Schiavo
Si.Ste
Sparklike
Stefani
S.T. Group
Tecno Glass
Thermoseal Group

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Neptun
Schiavo
Stefani
S.T. Group
Tecno Glass
Thermoseal Group

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Edgetech Europe
Fenzi
Schiavo
S.T. Group
Tecno Glass
Thermoseal Group

GEORGIAN BARS

Ashton Industrial Sales
Hegla
Tecno Glass
Thermoseal Group

BUTYL

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Fenzi
Stefani
Thermoseal Group

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Fenzi
Stefani

HOT MELT

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Fenzi
Stefani

Thermoseal Group

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Stefani

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Forel
Helios Quartz
Schiavo
Sparklike
Stefani
S.T. Group
Tesir Makine
Triulzi

Tempering

TEMPERING FURNACES (ARCHITECTURAL GLASS)

Glass Company
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Glaston Group
Hornos Industriales Pujol
Jinglass
Keraglass
Landglass Technology
Lema
Lisec Group
Mappi International
Schiavo
North Glass Technology
Tecnosens
Tekno Kilns
Texpack

TEMPERING FURNACES (AUTOMOTIVE GLASS)

Glass Company
Glasstech Inc.
Glaston Group
Jinglass
Keraglass
Landglass Technology
Mappi International
Mazzaroppi Engineering
Satinal
SGLASS
North Glass Technology
Taifin
Tecnosens
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CHEMICAL TEMPERING EQUIPMENT

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Eurotech Way

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Glaston Group
Helios Quartz
Hornos Industriales Pujol
Keraglass
Landglass Technology
Mappi International
Mazzaroppi Engineering
R.C.N. Solutions
Satinal
SGLASS
Taifin
Tekno Kilns
Torgauer Maschinenbau

Bending

BENDING FURNACES (ARCHITECTURAL GLASS)

Hornos Industriales Pujol
Jinglass
Keraglass
Mappi International
Mazzaroppi Engineering
R.C.N. Solutions
SGLASS
Tecnosens
Tekno Kilns
Texpack

BENDING FURNACES (AUTOMOTIVE GLASS)

Glass Company
Glasstech Inc.
Glaston Group
Jinglass
Keraglass
Mappi International
Mazzaroppi Engineering
R.C.N. Solutions
Satinal
Si.Ste
Taifin
Tecnosens
Texpack

ACCESSORIES

Ayrox
Deltamax Automazione
Glass Company
Glasstech Inc.
Glaston Group
Hornos Industriales Pujol
Keraglass

Mappi International
Satinal
Softeco
Tekno Kilns

Laminated glass production

COMPLETE PLANTS

Bovone Elett.
Bottero
Forel
Glass Company
Glaston Group
GPM Automation
Hornos Industriales Pujol
IOCCO Group
Italmatic
Lisec Group
Mazzaroppi Engineering
R.C.N. Solutions
Satinal
Si.Ste
Texpack
Triulzi

LAMINATED WINDSCREEN BENDING FURNACES

ECOL
Glass Company
Glasstech Inc.
Glaston Group
Keraglass
Mappi International
Taifin
Texpack

AUTOCLAVES

Bürkle
Glass Company
Glaston Group
GPM Automation
Hornos Industriales Pujol
Italmatic
Lisec Group
Triulzi

AUTOCLAVE-FREE LAMINATED GLASS PRODUCTION

CLIMATIC CABINS

Forel
Glaston Group
GPM Automation
IOCCO Group
Lisec Group
Triulzi

INFRARED OVENS

ECOL

Forel
Glass Company
Glaston Group
GPM Automation
Hornos Industriales Pujol
IOCCO Group
Lisec Group
Satinal
SGLASS
Triulzi

MANGLES

GPM Automation

PRESSES/BENDING MACHINES

Forel
IOCCO Group
Lisec Group
Triulzi
RESIN LAMINATING
MATERIALS AND EQUIPMENT
IOCCO Group
Satinal
Teknik Elmas
Torgauer Maschinenbau

EVA (ETHYLENE VINYL ACETATE)

Satinal

PVB

Everlam
Kuraray - Trosifol
Tecnosens

PVB - SHAPING AND CUTTING EQUIPMENT

Ayrox
ECOL
Forel
Glaston Group
GPM Automation
IOCCO Group
Lisec Group
Softeco

PVB - WIRING TECHNOLOGY FOR HEATABLE LAMINATES

Ayrox
Easy Automation
ECOL
Softeco

EVA (ETHYLENE VINYL ACETATE)

Tecnosens

ACCESSORIES

Ayrox
Bottero
Deltamax Automazione
Eurotech Way
Glaston Group
Helios Quartz
Hornos Industriales Pujol

IOCCO Group
Lisec Group
Satinal
Softeco
Taifin
Triulzi

Drilling

AUTOMATIC DRILLING LINES

B Solution
Bando Kiko
Bavelloni
Biesse Group
Glaston Group
Biesse Group
IOCCO Group
Neptun
Schiatti Angelo
SKG - Skill Glass
Teknik Elmas
Tesir Makine
Vismara

MULTI-SPINDLE DRILLING MACHINES

B Solution
Bando Kiko
Bavelloni
CMS
Biesse Group
Glass Company
Glaston Group
Biesse Group
IOCCO Group
Neptun
Schiavo
Schiatti Angelo
SKG - Skill Glass
Teknik Elmas
Tesir Makine
Vismara

DRILLING MACHINES WITH OPPOSITE DRILLING HEADS

B Solution
Bando Kiko
Bavelloni
Bottero
CMS
Di Gregorio
Fenzi
Biesse Group
Glaston Group
Hiseng Glass Machinery
Biesse Group
IOCCO Group
Lovati
Neptun
Schiavo
Schiatti Angelo
SKG - Skill Glass

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Teknik Elmas
Tesir Makine
Vismara

COLUMN DRILLING MACHINES

B Solution
Bottero

Di Gregorio
Fenzi

Neptun
Schiavo

Si.Ste
Tesir Makine
Vismara

PORTABLE DRILLING MACHINES

CMS

Fenzi

Schiavo

Si.Ste

Teknik Elmas
Tesir Makine

DRILLING AND MILLING MACHINES

Bavelloni

Bottero

CMS

Biesse Group

IOCCO Group

Lovati

Neptun

Schiavo

SGLASS

Teknik Elmas

Tesir Makine

Vismara

DIAMOND DRILLS

ADI - Surface Group

Bovone Diamond Tools

Diamut - Biesse

Fenzi

Glaston Group

Lanzetta

Mole Moreschi

Neptun

Schiavo

Si.Ste

Teknik Elmas

Tesir Makine

Vincent - Surface Group

ACCESSORIES

CMS

Fenzi

Neptun

Schiavo

Si.Ste

Teknik Elmas

Other equipment and plants

TURNKEY PLANTS / ENGINEERING - FOR BUILDING GLASS

Bando Kiko

Bottero

Cugher Glass

Glaston Group

Horn

Biesse Group

IOCCO Group

Keraglass

Lisec Group

Torgauer Maschinenbau

TURNKEY PLANTS / ENGINEERING - FOR AUTOMOTIVE GLASS

Bando Kiko

Bottero

Cugher Glass

Easy Automation

Horn

Glaston Group

Biesse Group

IOCCO Group

KEY PLANTS / ENGINEERING - FOR DISPLAY GLASS

Bando Kiko

Cugher Glass

Torgauer Maschinenbau

EDGES ROLLER COATING MACHINE

Eurotech Way

WORK CENTRES - CNC CONTROLLED

Bando Kiko

Bavelloni

Bottero

Glass Company

Glasstech Inc.

Glaston Group

Hegla

Biesse Group

Neptun

SKG - Skill Glass

FLOAT PLANTS/ LINES (EQUIPMENT & ACCESSORIES)

Bovone Elett.

Horn

IOCCO Group

CULLET HANDLING SYSTEMS

ECOL

COMPLETE BATCH PLANTS

Zippe

VACUUM COATING EQUIPMENT AND PLANTS

Giardina Group Glass Division

Glass Company

North Glass Technology

chnology

ENAMELING EQUIPMENT AND PLANTS

Giardina Group Glass Division

Glass Company

Rollmac division of

GeMaTa

DRYERS AND ENAMELING FURNACES

Bürkle

Giardina Group Glass Division

SPRAYING TECHNOLOGY

Bürkle

Giardina Group Glass Division

HOT- AND COLD-END COATING SYSTEMS AND MATERIALS (CYD, ROLLERS, CURTAIN COATERS)

Bürkle

Giardina Group Glass Division

SANDBLASTING SYSTEMS, EQUIPMENT AND PLANTS - OPTIMIZERS

Di Gregorio

Fenzi

Fratelli Pezza

Glass Company

Schiavo

SKG - Skill Glass

DIGITAL INKJET PRINTERS

Glass Company

System Ceramics

TecnoFerrari

SCREEN PRINTING EQUIPMENT AND PLANTS

Ayrox

COMSS

Cugher Glass

Deltamax Automazione

ECOL

Eurotech Way

Glass Company

Keraglass

Rollmac division of

GeMaTa

North Glass Technology

Softeco

TecnoFerrari

SCREEN PRINTING FRAMES

COMSS

SCREEN PRINTING DRYING SYSTEMS

COMSS

Cugher Glass

Glass Company

Rollmac division of

GeMaTa

EDGES ROLLER COATING MACHINE

Giardina Group Glass Division

ACIDING GLASS

EQUIPMENT AND PLANTS

Lisec Group

Rollmac division of

GeMaTa

LASER DECORATING MACHINES

Ashton Industrial Sales

Glass Company

LASER MARKING

Ashton Industrial Sales

Artistic glass production

CERMAMIC INKS

Glass Company

CHAMBER ELECTRIC

KILNS

Glass Company

Keraglass

Tekno Kilns

ACCESSORIES

Deltamax Automazione

Helios Quartz

CUTTERS

Si.Ste

CUTTING WHEELS

Si.Ste

MANUAL GRINDING MACHINES

Di Gregorio

UV ADHESIVES

Si.Ste

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Miscellaneous

ADHESIVES FOR GLASS BONDING

Si.Ste

AUTOMATION

Ashton Industrial Sales
Easy Automation

Horn

IOCCO Group
Tecnosens
Torgauer Maschinenbau
Zippe

AUTOMOTIVE GLASS APPROVAL SERVICES

Ayrox
Softeco
Tecnosens
Teknik Elmas

AUTOMOTIVE GLASS QUALITY CONTROL

Ayrox
Bando Kiko
Cugher Glass
Deltamax Automazione
Glaston Group
IOCCO Group
Softeco
Tecnosens

CE MARKING - QUALITY CONTROL EQUIPMENT FOR GLASS IN BUILDING

Ayrox
Softeco

COATING OF GLASS SHEETS - SYSTEMS & MATERIALS - HOT / COLD END

Bürkle

COLOURS & ENAMELS - OTHER APPLICATIONS

Ayrox

CUTTERS

Tesir Makine

CUTTING WHEELS

Teknik Elmas
Tesir Makine

DEIONIZING AND WATER SOFTENING EQUIPMENT

Fenzi
Forel
Glass Company
Idrotecnica
Lisec Group
Triulzi

DEIONIZING AND WATER SOFTENING EQUIPMENT

Immes

DIAMOND ROUTER EQUIPMENT - PORTABLE

Teknik Elmas
Tesir Makine

FLAT GLASS QUALITY CONTROL DEVICES

Ayrox
Deltamax Automazione
Forel

IOCCO Group
Softeco
Tecnosens

FURNACES

Glass Company
Horn
Texpack

FURNACES / HYDROGEN GENERATORS (WATER ELECTROLYSERS)

Nel Hydrogen

GLASS COATING AND TINTING

Bürkle
Glass Company
Rollmac division of
GeMaTa

GLASS TREATMENT FILMS

Glass Company

HEATING EQUIPMENT - STANDARD (GAS FIRING, BURNERS, AIR GAS MIXERS, SAFETY DEVICES, ELECTRICAL RESISTORS)

Horn
Keraglass
Texpack

HINGES FOR GLASS DOORS

Si.Ste

INSPECTION INSTRUMENTS & INTENSIMETERS

Tecnosens

INFRARED TUBES

Helios Quartz
Deltamax Automazione

KILNS

Glass Company
Keraglass
Lisec Group
Tekno Kilns
Fenzi

METAL ACCESSORIES

Si.Ste
Teknik Elmas
Tesir Makine

METALLIC SECTIONS

Fenzi
Tesir Makine

NUMERICAL CONTROL SYSTEM (CNC) FOR ALL GLASS PROCESSING MACHINES

Glass Company
IOCCO Group
Prodim

OPTICAL DISTORTION ANALYSERS FOR AUTOMOTIVE GLASS

IOCCO Group
Keraglass
Tecnosens

OPTICAL INFRARED THERMOMETERS

Optris

POWDER OR LIQUID APPLICATION SYSTEMS FOR PROTECTING FLOAT GLASS

BOST
Cugher Glass
Glass Company

PUMPING AND APPLICATION SYSTEMS (AUTOMOTIVE GLASS)

IOCCO Group

PURIFIERS FOR REFLUENT WATER

Dieffe Macchine
Immes

PUTTIES AND SEALANTS

Fenzi

QUARTZ EQUIPMENT

Helios Quartz

SHAPE CHECKING DEVICES

Easy Automation
IOCCO Group

RAW MATERIALS

BOST



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SHOWER ENCLOSURES

Vismara

SIC HEATERS

Helios Quartz

SOFTWARE SYSTEMS FOR PRODUCTION CONTROL

A+W Software
CMS
Cugher Glass
Deltamax Automazione
Edgetech Europe
Forel
Lisec Group
Optima
Prodim

SOLDERING EQUIPMENT FOR ELECTRICAL CONNECTORS FOR WINDSCREENS AND BACKLITES

Ayrox
Easy Automation
Softeco

SORTING SYSTEMS

Glaston Group
GPM Automation
Lisec Group

SURFACE STRESS MEASUREMENT INSTRUMENT

Ayrox
Glass Company
Tecnosens

WINDSCREEN STRESS MEASUREMENT INSTRUMENT

Tecnosens

WINDSCREEN AND BACKLITES

Tecnosens

TESTING FOR SOLDERINGS

Ayrox
Easy Automation
Softeco

TESTING DEVICES OF BACKLITES ELECTRICAL HEATING

Ayrox
Easy Automation
Softeco

THERMAL IMAGING SYSTEMS

Glass Company

Easy Automation Optris

TIN FLOAT BATH FURNACES

Horn
IOCCO Group

TIN FLOAT BATH SIDE DETECTION DEVICES

Tecnosens

TRADE ASSOCIATIONS

Teknik Elmas
Tesir Makine

UV LAMPS

Helios Quartz

UV PORTABLE MACHINES

Helios Quartz

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Annual Guides

1990

Glass Industry Directory 2022

The **GLASS INDUSTRY DIRECTORY** is a unique international annual guide which gives a complete overview of international glassworks and suppliers involved in hollowware and special glass manufacturing. About 300 pages of complete company profiles: addresses, management, sister companies, plants, number of employees, turnover, banks, year of company foundation, capital, trademarks, areas of activity, innovations, product-by-product and country-by-country breakdowns. The **GLASS INDUSTRY DIRECTORY** is the annual reference point for the international glass manufacturing industry comprising bottles and containers, domestic glassware, tubing, vials and ampoules, lighting glassware, technical and industrial glassware, scientific, laboratory and medical glassware and much more.

Section for advertisers,
with presentations of their machinery and
accessories, and technical data sheets

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A+W SOFTWARE GMBH

Am Pfahlgraben 4-10 - 35415 Pohlheim - Germany
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E-mail: info@a-w.com • www.a-w.com

A+W BUSINESS

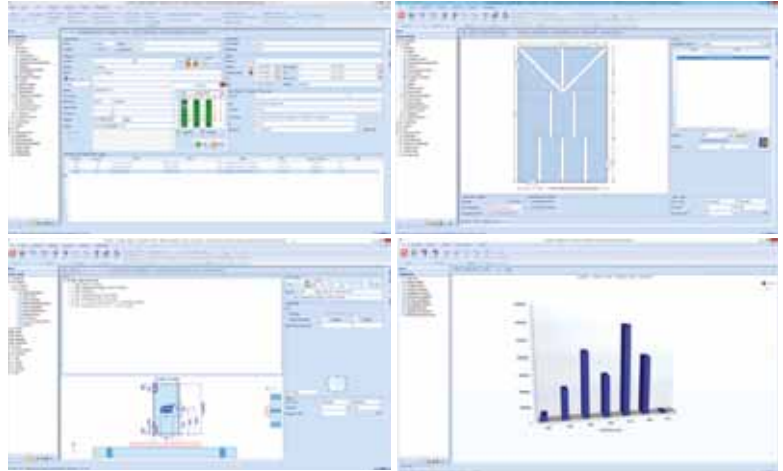
THE PERFECT SOLUTION THAT GROWS WITH YOU

A+W Business is a complete ERP system for small and medium-sized companies in the flat glass industry. The A+W commercial solution allows not just the entry of quotations, orders, credit notes, complaints, delivery notes, and the management of purchase orders and inquiries, but also control of other company areas (e.g. stock, purchasing, dispatch, etc.).

The main functions are master data management, quotation creation, order processing, the creation of partial deliveries and complaints, and all associated documents and evaluations. With its graphic interface, A+W Business is easy and quick to use, and it simplifies all company-internal processes relating to order processing.

FUNCTIONS AND BENEFITS

- Modern look & feel like MS Outlook: multi tasking, multi dialogue, easy usage, everything graphical
- Construction & processing via BOM Concept: every level and part of a product can be processed (processing = article number)
- Easy order handling: copy documents (order -> P.O.), automatic purchasing
- User and/or automated order/P.O. processing: define work flows and user rights, time and cost savings thanks to automation
- Interconnection with A+W Production: transfer of orders & P.O.'s, production status & feedback



- Full integration of CAD Designer (Shapes & Bars): easy Technical Order Entry (TOE)
- Integration of A+W standard shape & standard processing catalogue
- Simple master data replication (in the case of several subsidiaries)

A+W PRODUCTION

EVERYTHING PERFECTLY PLANNED AND OPTIMIZED

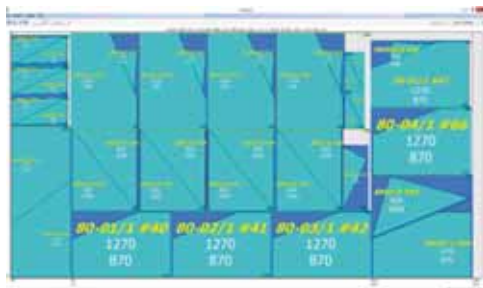
An expanded product line and state-of-the-art machines are placing ever-higher demands on organizational concepts, as well as planning and control software. These machines, which are highly complex and sensitive high-tech systems, enable high cycle rates and thus quick throughput times, but only if the overall concept is right and the production process is optimally planned and controlled. Therefore, scalable software systems and integrated solutions are the key to an optimized production environment.

A+W Production is an extremely flexible PPS solution for complete rough and detailed scheduling for insulated glass, tempered glass, and laminated glass production. The system allows planning and control of even the most demanding multi-level production flows.

The latest improvements within capacity planning and scheduling such as campaign planning, simplified rescheduling possibilities, and improved scheduling algorithms have expanded A+W Production's functions and simplified the daily business of production management and work preparation.

FUNCTIONS AND BENEFITS

- Production planning and control by means of various restrictions (machines, process sequence ...)
- Job management using predefined and self-defined views thanks to open database and views
- Yield optimization by state-of-the-art optimization kernel
- Sequence optimization, rack and stacking organization and optimization
- Optimization directly onto racks and boxes in despatch sequence (Add-On A+W Rack Optimizer)
- Cutting plan visualization and modification
- Easy machinery management and direct machine control
- Efficient and graphical Capacity Planner (Add-On)
- Full integration of barcoding and tracking (Add-On A+W Barcode Manager)
- Always up to date statistics using Crystal Reports or QLIK
- Printout of production papers, bender texts and barcode labels
- Possibility to grow with your company based on add-ons such as Capacity Planner, Barcoding, Production Terminal





A+W IQOTE

GLASS ORDERS 24/7

A+W iQuote brings your online shop into the future. Your customers can enter and manage quotations and orders 24/7 and view quotation/order status – even when they're on the road. This not only gives you an additional sales channel, it also provides competitive advantages. It reduces the work involved in recalculating quotations and orders and making changes, for, depending on the status, your customers can make these changes themselves and also enter notes (for example, different delivery address or requested delivery date).

A+W iQuote relies on your ERP system, which means that the data comes directly and online from your database. There are no more delays due to e-mails or telephone calls only to find out that a customer inquired about a product that cannot be built. The products and prices that your customers see online are always up-to-date and you can manage them in your ERP system. A+W iQuote follows the rules of your A+W ERP system, with the same prices, feasibility and plausibility checks that you have defined there. Functions and Benefits

BROWSER-BASED PRODUCT CONFIGURATION

- Online construction and price calculation
- Data directly calculated and saved in A+W ERP
- Products, prices and discounts from your A+W ERP System
- Integrated authorization based on A+W ERP
- Paperwork done by ERP
- Interface for touch screen
- Order history
- Attractive design
- Responsive Design: made for modern and portable devices (tablets)
- Creation of orders and quotes
- Restrictions and prices from ERP for that customer (login)
- Entry of single glass, Lami and IG (including exchange of glasses and spacer), stock sizes and boxes (cases)



A+W SMART COMPANION



SCAN SMARTER WITH SMART DEVICES

Barcode scanners have established themselves as indispensable tools in the flat glass industry. From incoming goods receipt in the warehouse to status registration in production, on through to delivery confirmation; data is recorded via barcode scanning and transmitted to ERP and production systems. However, the industrial scanner as we know it is quickly becoming obsolete. Smart devices, equipped with the A+W Smart Companion app, great computer power, and outstanding algorithms for handling graphics, is taking its place. The A+W Smart Companion assists along the entire value-creation chain and contributes to its digitalization, saving time and money.

With its A+W Smart Companion app, A+W is demonstrating where software development is heading. Scanning via a smart device app is easier than with customary scanners, it offers a multitude of possibilities, and is cheaper too.

FUNCTIONS AND BENEFITS

- Scan, inform, evaluate – securely and efficiently
- Use on mobile, user-friendly devices
- No learning required – familiar hardware that everybody uses every day
- Runs with iOS and Android
- Depending on requirements, can be used on different smart devices
- Scanning of several bar codes in continuous mode
- Easier work for employees – higher productivity





ADELIO LATTUADA Srl

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Tel: +39 0331 832713 - Fax: +39 0331 833886

E-mail: info@adeliolattuada.com • www.adeliolattuada.com

AUTOMATIC MACHINES

All Lattuada edgers can be equipped with **A-WR** and **i-AL** packages to increase machine automation to the top level.

The exclusive A-WR System introduces a completely automatic wheels setting management, which includes:

1. Automatic pre-setting "ZERO" procedure of diamond and resin wheels, without glass in less than one minute
2. Automatic recover of the polishing wheels' wear
3. Automatic positioning for the wheel's replacement
4. Jog increase/decrease of the spindle position (accuracy 0.01 mm)
5. Automatic positioning on setpoint
6. Automatic backlash recovery
7. Automatic spindle cleaning procedure
8. Wheels wear warning
9. Spindle's problems warning
10. Manual unlocking for any situation
11. Motorized adjustable inlet conveyor
12. Digital ammeters and automatic alert system for the polishing wheels wear
13. Automatic detecting and compensating procedure of the inlet conveyor belt wear

Advantages of the Lattuada A-WR system:

- Wheels setting in less than 1 minute, instead of an average 20/30 minutes manual setting.
- Homogeneous wheels setting regardless of the work shift and the operator on the machine.
- Extremely simple to use, no sample glass needed.



- Homogeneous wheels wear and consistent processing quality.
- Increased spindles cleaning thanks to the automatic cleaning function.
- Reduced exit conveyor belt wear or damaging due to an incorrect wheels "zero" setting.
- Early warning on potential maintenance issues.

3. Automatic management of wheels pressure, glass removal and speed according to the thickness
4. Proportional valves for pressure regulation of the polishing spindles
5. Glass length measurement
6. Remote assistance

The main advantages of i-AL are:

- Reduced machine set-up time
- Constant quality and productivity throughout the shift or day, regardless of different operator's skills.
- Early warning on potential maintenance stops.
- Remote management
- More quality, more productivity, less maintenance, less errors... more marginality.

i-AL is a comprehensive pack of mechanical, electronic and software systems especially designed to deliver the maximum possible automation in glass processing and a full integration with your entire production system.

i-AL pack includes:

1. Digital ammeters displayed on the touch-screen panel
2. Motorized glass removal setting with portable push-button panel



TLR 13 AVC

Electronic straight-line edging machine for the processing of flat edges with arris, and with variable angle from 0 up to 45°, polished by liquid cerium oxide.

Read-outs placed on the control panel enable to set adjustments such as glass thickness, working speed, mitre inclination and edge thickness. A centralized lubrication system avoids wheel wear and tear. The conveyor is composed of pads, made of a special material, which are mounted on precision chains. Mechanic glass clamping system. Automatic polishing wheel intervention thanks to PLC-control. Automatic adjustment of the arris wheels when the glass thickness changes. Adjustable inlet conveyor with which glass removal can be adjusted up to 5 mm.

VERTICAL EDGE POLISHERS (petrA SERIES)

petrA by Adelio Lattuada: a line of vertical edge polishers dedicated to the processing of stone, ceramic and composite materials.

Thanks to decades of experience in the processing of these types of materials, the petrA series of machines can perform high precision and quality processing in an extremely simple way: flat edges, mitres up to 45° or 60°, grooves for drips or other uses and alternate arrises for perfect coupling of two angled slabs. All these processes can also be performed on very small strips or pieces.

Available in standard versions from 9 to 13 spindles, with many options and accessories available (including innovative automation solutions and robotic integrations) and with the possibility of including customized features according to customer needs.

petrA machines are strong, reliable and easy to use, designed to work continuously for many hours a day in continuous cycles. Maintenance is extremely simple and economical, with immediate and customized assistance.



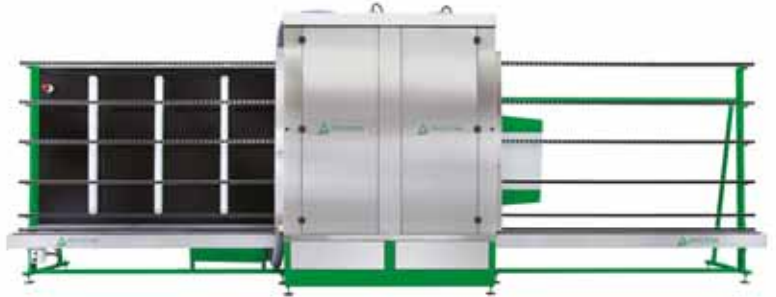
www.adeliolattuada.com

ADELIO LATTUADA

OT 1600/500/4S

Open top vertical washing and drying machine for glass with a thickness from 3 up to 25 mm and with minimum dimensions of 350 mm.

The body of the machine and all parts in contact with water are made of stainless steel while an anti-corrosion covering is granted by epoxy and polyurethane paints. The machine is equipped with four brushes which are also available in the special version for low-E coated glass. Hot water can also be required. Drying is carried out by a pair of blowers powered by a high-pressure soundproof ventilator. The inlet and outlet conveyors, as well as glass thickness adjustment, are motorized, thus guaranteeing improved washing quality on every thickness. A black panel with inspection lamps can be applied on the outlet conveyor.



LATTUADA ROBOTIC SOLUTIONS

Adelio Lattuada, together with its strategic partner Knittel Glass, is offering robotic solutions for any type of need and application.

Increased automation levels, higher flexibility, big increase of the productivity, production optimization, costs reduction and increased safety are only few of the main characteristics.

Any kind of robotic application related to the glass industry can be evaluated (CNCs, double-edges, cutting, tempering or IG lines, etc.).

Regarding the pre-processing area, many different solutions and configurations can be offered: from the most sold solution with 2 edgers and 1 robot to fully automated cells with 2 machines and 2 or 3 robots. Also other configurations can be offered like 1 machine and 1 robot or 4 machines and 3 robots, for example.

Lattuada vertical washers as well as other new or already existing (Lattuada or third party) machines can be added to the lines.

Lattuada Robotic Solution is part of Lattuada's cyberAL project, which includes also A-WR and i-AL packages to increase machines automation to the top level.



The advantages of this solution are many, some examples:

- The quickest solution available on the market, a couple of real examples
 - 44 pieces/hour (1000 x 2000 mm)
 - 375 m/hour (1000 x 2000 mm) including dubbed corners
 - Up to 5 m/min
- The most sold and installed (more than 150 projects already installed by Knittel Glass)
- The widest experience in this field (since 2000 Knittel supplies robotic application in the glass industry)
- Easy use and reduced maintenance. What happens if the line stops? Our lines can, in most of the situations, continue from the point they have been stopped or resume and empty the line automatically
- Integration with third party software and many different ways to receive or read glass dimensions to be processed

TLR 10 C DD

Electronic straight-line edging machine for the processing of flat edges with arris, polished by liquid cerium wheels. The machine is also equipped with a dubbing device.

Read-outs placed on the control panel enable to set adjustments such as working speed and glass thickness. Mechanic glass clamping system. A centralized lubrication system avoids wheel wear and tear. The conveyor is composed of pads, made of a special material, which are mounted on precision chains.



Automatic adjustment of the arris wheels when the glass thickness changes. The wheels are fitted on spindles to which the movement is transmitted via toothed belts linked to the motors. Automatic polishing wheel intervention thanks to PLC-control. Adjustable inlet conveyor with which glass removal can be adjusted up to 5 mm.

AL 10 M

Electronic straight-line edging machine for the processing of flat edges with arris, polished by cerium wheel. Read-outs placed on the control panel enable to set adjustments such as working speed and glass thickness. Mechanic glass clamping system. A centralized lubrication system avoids wheel wear and tear. The conveyor is composed of pads, made of a special material, which are mounted on precision chains. Automatic adjustment of the arris wheels when the glass thickness changes. The wheels are fitted on spindles to which the movement is transmitted via toothed belts linked to the motors. Automatic polishing wheel intervention thanks to PLC-control. Adjustable inlet conveyor with which glass removal can be adjusted up to 3 mm.



CTS 3300/1000/6S

Closed-top vertical washing and drying machine for glass with thicknesses from 3 up to 80 mm and minimum dimensions of 400 mm.

The body of the machine and all parts in contact with water are made of stainless steel, while an anti-corrosion covering is granted by epoxy and polyurethane

paints. The machine is equipped with six brushes, which are also available in the special version for low-E coated glass. Hot water can also be required. Drying is carried out by a pair of blowers powered by a high-pressure soundproof ventilator. The inlet and outlet conveyors, as well as glass thickness adjustment, are motorized, thus guaranteeing improved washing quality on every thickness. A black panel with inspection lamps can be applied on the outlet conveyor.



GAMMA 614

Straight-line bevelling machine for the processing of bevels polished by liquid cerium oxide.

Available both with electronic systems and PC.

This machine, conceived in order to satisfy the medium production levels, is equipped with all the devices that are necessary to simplify its use and maintenance. Read outs placed on the control panel enable to set adjustments such as glass thickness, bevel inclination and edge thickness in order to process the desired bevel.

The wheels are fitted on spindles in order to allow rotation homogeneity and to avoid vibrations; movement is transmitted thanks to toothed belts

linked to the motors. The mechanical seal, an essential element of the spindle, is obtained thanks to the application of diaphragms. The conveyor is composed of pads, made of special material, which are mounted on precision chains. One of the peculiarities of the GAMMA 614 is that it is the first machine with four felts, positioning it at the top as far as working quality and speed are concerned.





ADI Srl

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ADI is one of the very few companies in the world with all sintering technologies in house. ADI is in fact able to manufacture metal bond, resin bond, vitrified and plated bonds and is able to offer a complete range of tools for multiple applications.

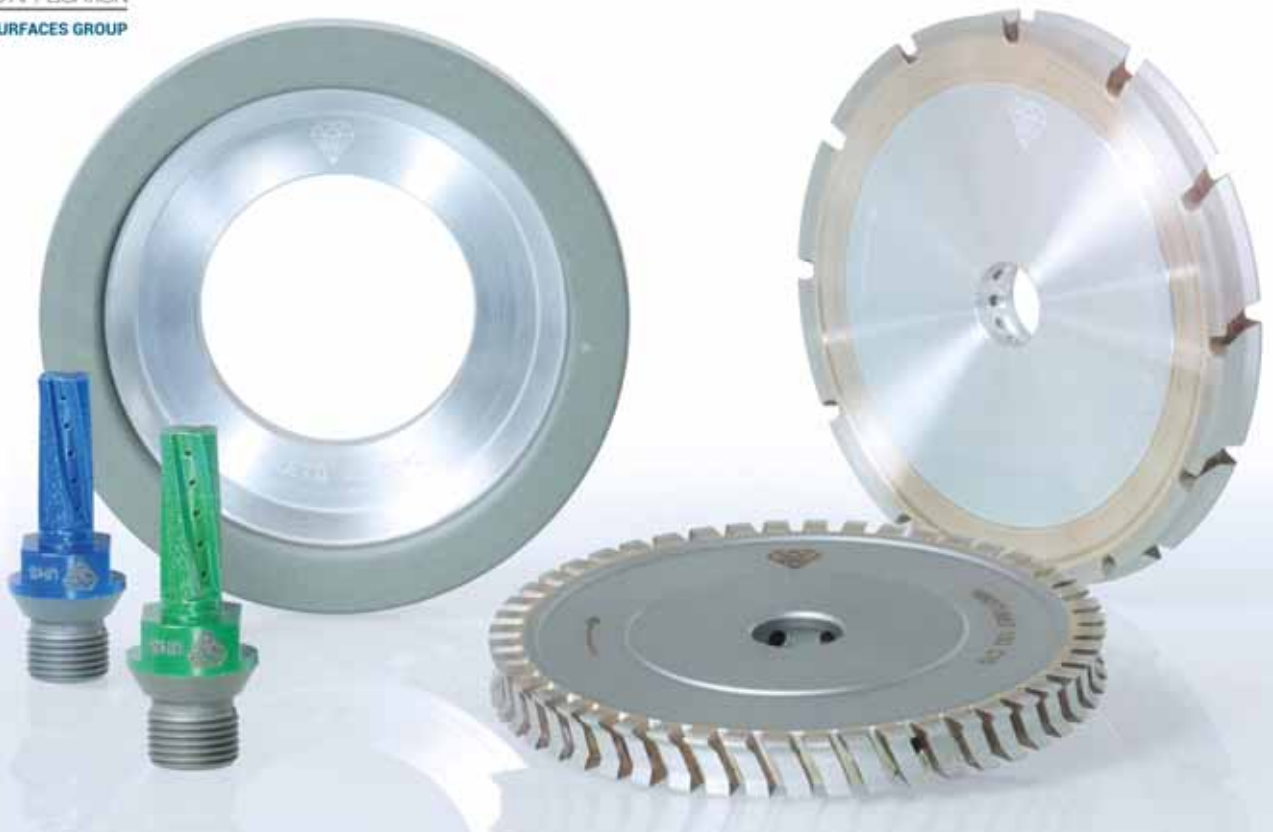
In the last years an increasing number of patents has been registered worldwide. In particular, related to the glass industry, ADI has developed:

- the UHS® BOND, which is just one of the many achievements. Initially used in the Automotive industry, this bond is now used in the routers and in the CNC wheels, to grant high feeding speed and long profile retention.
- Specific tools for the Vertical CNC machines. These tools are engineered to guarantee high stock removal, very good finishing surface, specially dedicated to the insulating lines.
- New EVO wheels which has been developed for the straight edging machines. This segmented wheel enables to process different kind of glass with excellent results with the same wheel, with the important advantage of not being obliged to change tool every time the glass thickness changes
- Last but not least, ADI offers to the glass fabricators the GLASS RENU System. It is an absolutely exclusive patented system that responds to an important market need. Designed for the naval, automotive and furniture sectors, allows the removal of scratches without the need to remove the affected glass. It works completely dry, and restores the glass surface in significantly lower times and with lower cost than any other system, since it eliminates the need for disassembly, refurbishing and reassembly of the damaged sheet.

ADI is extremely proud to offer products that are 100% Made in Italy.

ADI reduces the customer's Total Cost of Ownership with products innovation and always updated solutions.

Since Dec. 2016 ADI is part of the Surfaces Group. This larger structure is providing synergetic growth thanks to the multiple technologies available and the stronger sales network.





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SPEED ARRIS FOR INSULATED AND TEMPERED GLASS

Arrissing or rough grinding in continuous cycle by two spindles follow-system.
 Equipped with transport system with suction-cups for high performance glass types.
 Automatic survey of glass sizes and thickness.
 High-productivity guaranteed for double-glazing and tempering lines.
 System with oscillating spindles which ensures the regular execution of threads.
 Possibility of stand-alone installation or integrated with existing lines.



Mod.	Min glass size mm.	Max. Glass size mm.	Arris glass thickness mm.	Rough grinding glass thickness mm.	Spindle	Kw	Process
VAS 2.0.3	380 x 500	2000 x 3200	4 ÷ 19	4 ÷ 12	2	2.5	Arrissing/ Rough grinding
VAS 2.6.4	380 x 500	2600 x 4000	4 ÷ 19	4 ÷ 12	2	2.5	Arrissing/ Rough grinding
VAS 2.8.5	380 x 500	2800 x 5000	4 ÷ 19	4 ÷ 12	2	2.5	Arrissing/ Rough Grinding
VAS 3.2.6	380 x 500	2800 x 5000	4 ÷ 19	4 ÷ 12	2	2.5	Arrissing/ Rough Grinding

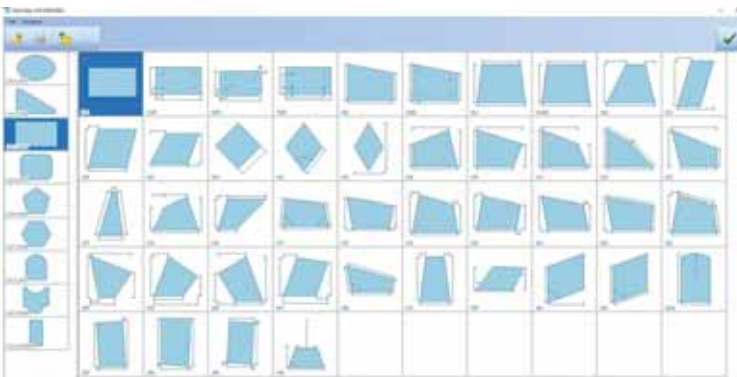
OPTIONAL: Z AXIS DOUBLE TOOL

Flexible automatic system with tool holder cone which houses up to two wheels allowing to work float or laminated glass with different thicknesses.



OPTIONAL: SOFTWARE FOR SHAPED GLASS

Optiway (Optima) software it's a CAM program provided with functions for the two-dimensional drawing and with a 3D graphic simulator of the working process allowing generation of arrissing/rough grinding cycles.



STANDARD SHAPED

OPTIONAL: PRE-WASHING

Stainless steel pre-washing device by pressure sprayed clean water washes the front and rear faces of the glass sheet, eliminating the glass powder produced during the processing.



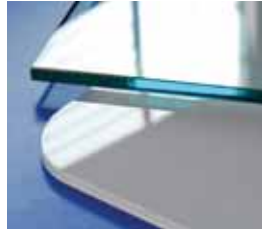
TURBO OUTLET CONVEYOR WITH DOUBLE MOTORIZATION

Turbo outlet conveyor is divided in two section allows an accelerated transport speed in the second section for a quick evacuation of the glass.



SPEED EDGE

High-production vertical grinding machine for rough or polished grinding, round or flat edges, low-E glass with the possibility of performing shaped glasses with a straight horizontal support side and a maximum vertical angle of 90°.



The innovative suction cup system guarantees the locking of the entire sheet to be machined, allowing higher processing of squaring and respect of the size of the glass being machined.

Processing of big glass sheets in a limited space thanks to the compact system that integrates the loading and unloading in a single solution.

Ideal for series and to be combined with drilling lines or as stand-alone machines.



Mod.	Min glass size mm.	Max. Glass size mm.	Glass thickness mm.	Max. Tool ø	Spindle	Kw	Rapid tool holder	Process
VAS 2.0.3	420x500	2000x3200	3 ÷ 21	1 ÷ 50	1	7.5	ISO 40	Arrissing - Rough grinding - Polishing
VAS 2.5.4	420x500	2600x4000	3 ÷ 21	1 ÷ 50	1	7.5	ISO 40	Arrissing - Rough grinding - Polishing
VAS 3.2.5	420x500	3200x5000	3 ÷ 19	1 ÷ 50	1	7.5	ISO 40	Arrissing - Rough grinding - Polishing
VAS 3.2.6	420x500	3200x6000	3 ÷ 19	1 ÷ 50	1	7.5	ISO 40	Arrissing - Rough grinding - Polishing

OPTIONAL: SOFTWARE FOR SHAPED GLASS

Optiway (Optima) software it's a CAM program provided with functions for the two-dimensional drawing and with a 3D graphic simulator of the working process allowing generation of arrissing/rough grinding cycle.



OPTIONAL: PRE-WASHING

Stainless steel pre-washing device by pressure sprayed clean water washes the front and rear faces of the glass sheet, eliminating the glass powder produced during the processing.



BIESSE

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MASTER + ROS

The Master Series is the range of Made in Intermac work centres dedicated to glass machining for the products that are typical of the furniture, automotive, building and domestic appliance sectors. It represent the best solution in terms of performance and productivity, and is suitable for high-speed machining of small and large production batches.

Intermac offers its customers pragmatic solutions for factory automation.

ROS robotised solutions ensure a marked increase in production and total reliability of both the production process and loading/unloading operations, even in a wider context of industrial automation.



VERTMAX

Vertmax is Intermac's range of vertical machining centres based on the revolutionary concept of work piece movement: ideal both for single-batch production and large-scale manufacturing, it also enables less experienced operators to start producing immediately.

Vertmax is the perfect solution for the 'just-in-time' creation of doors, shower cubicles, display cases, cupboard doors, furnishing items, household appliances, windows for industrial vehicles, and structural façades.



- Maximum ergonomics and optimised space thanks to the vertical position of the glass;
- All machining operations in a single machine;
- Tooling times reduced to zero thanks to the automatic configuration of the suction cups which hold the glass in place;
- Extensive scope for machining sheets of both small and large dimensions;
- Maximum flexibility thanks to fully-automated machining and tool setting;
- Ideal for machining monolithic, laminated and low-E glass.

COMBIFLEX

Combiflex, a multi-purpose machine able to execute multiple glass processes in reciprocal synergy. Glass dimension up to 1500x3000mm with different type and quality of edge finish can be processed on each glass side in less than 32m².

The machine performs automatic loading, grinding, polishing, drilling, notching, water jet cutting, rounding corners, chamfering, washing and automatic unloading operations on flat glass, even out of square or shaped.

Combiflex has been designed to be self sufficient in the execution of all processes. From the loading of the raw glass to the unloading of the completely processed glass, the operator is not required to perform any adjustment during all processes, even with regards to thickness, shape or dimensional changes.

The machine configuration can also be implemented with optional equipment such as:

- Water jet technology
- Compact washing machine
- Automatic loading and unloading system
- MC - CNC work centre
- MC - CNC working centre.



GENIUS CT-NEXT

Genius CT-NEXT is the new range of 3-axis cutting tables for making straight and shaped cuts on sheets of float glass. They combine perfectly with loading systems and can be interfaced with shearing tables in small and medium sized firms.

- Unprecedented reliability over time
- Machining productivity with top class components
- Perfect integration with production lines with dependent loading/unloading systems
- User-friendly technology.



GENIUS LM

Genius LM is the range of cutting tables for laminated glass aimed at companies that wish to auto-mate their laminated glass cutting processes, and which require superior ease of use and an intuitive approach to machining for all glass thicknesses. The Genius LM family is designed to facilitate the handling of glass sheets and of the machine crosspiece, significantly improving productivity. The perfect combination of quality, productivity and flexibility, with maximum efficiency guaranteed.



GENIUS COMBY

The Comby PLUS are high productivity lines which are integrated into small spaces for the cutting of both float and laminated glass, and are the product of the intelligent combination of the Genius CT-PLUS cutting table (for cutting float glass) and the Genius LM-A cutting table (for cutting laminated glass). The CombyPlus Lines represent the perfect integration of the two float/

laminated cutting tables which guarantee high productivity in small spaces thanks to the addition of: Intermac-patented vertical buffer on float table belts on laminate cutting module manual break-out on float glass addition of break-out bars integrated with the belts possible.



PRIMUS

The Primus Series is the range of waterjet cutting machines designed to meet the needs of companies looking for maximum versatility.

- Ideal for cutting any type of material and for performing all complex shaping operations
- high quality and precision and optimum cut finish
- excellent performance and optimisation of cutting costs
- cutting-edge technology thanks to the patented intermac c-axis infinite rotation system
- set-up times reduced to zero thanks to the simplicity of the fixing and setting systems.

BUSETTI F

Competitive and efficient, those are the key words when responding to an increasingly demanding market: Intermac meets the expectations of the glass industry with highly personalised solutions and elevated reliability. Intermac develops cutting edge machines and systems for bilateral grinding, allowing our customers to exploit the Fourth Industrial Revolution and become "Smart Factories".

The Intermac technological solutions guarantee high-quality, reliable performance over time. The Busetti F of double-edging machines and systems that ideal for applications such as structural façades, interior structural elements, glass for furnishings, household appliances and solar panels, which call for reliable and customisable solutions that provide for the highest quality and precision along with total flexibility, with minimum operator intervention. Our spindles allow for several configurations, which means they can be completely personalised to achieve special machining of borders for furniture, the structural sector, and dividing walls. Innovative solutions, including automation, make for a production line that is flexible and performs well even for small batches and a variety of thicknesses. At the same time, innovate systems like the presetter for diamond grinding wheels, automatic management of polishing pressures, motorised lubber lines and other optionals help reduce setting times and simplify use of the lines.



CHIARA SERIES

The Chiara has been designed to achieve flexibility and productivity for glass from 2000x3000mm up to 3300x18000mm with 8/10 spindles grinding heads working on multiple sides and out of square. The possible integration with a CNC work centre on the Multiflex model, allows to perform polished radii in the corners, notches, milling, drilling, without having to reposition the glass. Moreover, it allows to obtain both flat and round edge profiles. The overlapping of two different machining processes on a stationary sheet doesn't require any large sheets handling thus eliminating the risk of damage during transport and zeroing errors, with the consequent dimensional inaccuracies of the machining. Moreover, the machine is able to handle two pieces simultaneously, even if they are different from each other. What really makes the Chiara a unique solution in the configuration for large glass sizes is its small footprint on the shop floor. In fact, when comparing a Chiara straight line to a double edger with the same maximum dimensions, the Chiara will only use 1/3 of the space required.



FRANCESCA FC

The Francesca FC 1250 H.O. and Francesca FC 16M 1600 Mill are Numerically Controlled (NC) glass processing drilling centres, capable of performing drilling, countersinking and milling operations on flat glass sheets, including "out of square" pieces.

The Francesca FC 2000/2600/3000 is Forvet's response to large glass sheet processing problems.

The Francesca FC 16M 1600 WJ NC work centre is a new machine concept combining two production technologies, managed by a single Numerical Control.

The brilliant news conceived by Forvet is to join the drilling basis realized with diamond tools with water jet cutting technology. This results in an important advantage for production, and operators can choose which type of cuts to use, depending on the work to be carried out. Forvet water jet technology, developed according to company philosophy, allows to perform two different processes (water jet, drilling and milling) on the same machine with fully automated loading, positioning, processing and unloading operations.

The Francesca FC 16M 1250 H.O. and FC 16M 1600 Mill can be equipped with the AIR option which allows vertical loading and unloading. The Francesca FC 32M 3300 Mill is a fully Numerically Controlled (NC) glass work centre, capable of performing drilling, countersinking and milling operations on flat glass sheets, ranging in thickness from 3 to 19 mm. (25 mm optional), including "out of square" pieces.

Francesca FC 3300 can load, work and unload two glass panels simultaneously, without intermediate handling.

The maximum useful working field for width is 3300 mm. and without limits for length (according to conveyors sizes) It is possible to operate on this machine either one piece of glass max. 3300x6000 mm. (according to the conveyors size) or two simultaneous pieces of different sizes (within 1600mm of width).

The Francesca FC 32M 3300 WJ is the first machine in the world that automatically controls the positioning of the glass, executing drilling, countersinking and milling operations both with diamond tools and water jet.

Another advantage of the combination of the two technology is that the water jet will not need to switch between two pressures to carry out the break through the glass thickness, as it can simply use a drill bit, and then start the cutting motion, leaving the pump working with a single pressure i.e. reducing the pump wear and increasing the maintenance intervals.



AQUA

The Aqua series is the Intermac range of washing machines which can be fully integrated with vertical machining centres, enabling processed glass to be washed and dried in accordance with the highest standards. Aqua guarantees extreme cleaning of all the impurities accumulated during the machine operations carried out on glass sheets, preparing these perfectly for subsequent processing operations or for leaving the machining cycle.

- Perfect in line integration with vertical machining centres
- dedicated technology for automatic management of all types of glass on the market
- long-term reliability thanks to a robust stainless steel structure
- ideal for infinite work cycles
- extremely user-friendly.



STATIC STORAGE | AUTOMATIC CLASSIFIERS

Movetro automatic classifiers are the perfect solution for those wanting to gain more space on their business premises, ensuring safe and highly automated handling operations.

READY FOR AUTOMATIC LOADING OPENING WITH A SINGLE MOVEMENT

Automatic, high-tech magazines entirely managed and moved by a single command console with a touchscreen panel where the operator only needs to key in the number of the required element in order to have it available for loading or unloading operations.



TELESCOPIC LOADING DEVICES ADVANCED DYNAMIC STORAGE FOR POWERFUL PRODUCTION

Movetro offers a wide range of single-direction or twin-direction telescopic loading devices for loading regular, jumbo - or extra-jumbo sheets. The supervisor software shows the magazine situation in real time and receives the instructions for loading, moving and returning sheets in an entirely automatic manner thanks to its integration with the cutting line optimiser. This same information can be shared with the materials provisioning office.

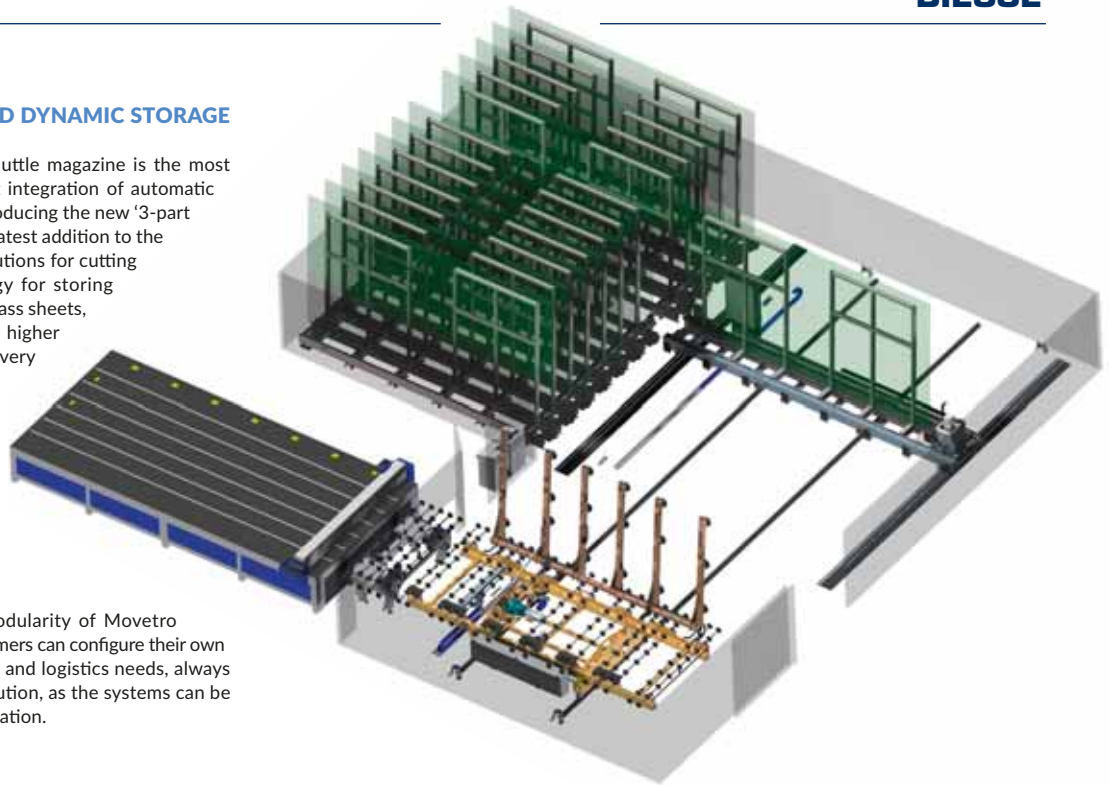
SWIFT SHUTTLE ADVANCED DYNAMIC STORAGE FOR MASS PRODUCTION

The automatic Movetro Swift Shuttle magazine is the most compact solution for the perfect integration of automatic loading with cutting systems, introducing the new '3-part line' concept. Swift Shuttle is the latest addition to the range of integrated magazine solutions for cutting lines, and is the ideal technology for storing and handling jumbo and regular glass sheets, purposely designed to provide a higher number of cutting references in a very compact space.

INSERTING THE SWIFT SHUTTLE IN THE PRODUCTION CONTEXT, THE ADVANTAGES CAN BE SEEN IMMEDIATELY:

- Footprint reduction
- Increased productivity
- Greater safety

The design and construction modularity of Movetro shuttle systems ensures that customers can configure their own magazine to suit their production and logistics needs, always keeping abreast of company evolution, as the systems can be expanded at any time after installation.



SORTIFLEX

Sortiflex is Forvet's response to glass flow sequencing control and optimization requirements.

It has been designed to meet the flexibility requirements of various processes, thus it can work with Forvet machinery or integrated with all the other major equipment in flat glass field.

It works as a temporal buffer to optimize glass flows from different origins toward single output, or from single origin toward multiple outputs.

The patented double-deck storage area doubles, improving the number of available slots on the same footprint, and increasing the storage area without requesting more factory floor space.

The extremely fast and reliable cycle time allows various processes to be directly linked in full automatic mode. Sortiflex can work only with Forvet Navetta 45 system (loading/unloading shuttle).





BOTTERO Spa

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CNC PRATICA PLUS

PRACTICALLY PERFECT IN EVERY SITUATION

Bottero machining centres are extremely powerful and flexible machines that can perform many processing operations with precision and reliability, such as profiling, drilling, edge finishing, cutting and much more. The ease and intuitiveness of the software are a great strong point for these machines that can be used in any high-tech glass factory. Bottero machining centres can operate both on glass and on stone, making their use even more flexible.

After the success of the first version, the Bottero Pratica CNC workcentres have evolved with the new PLUS version.

Both 3- and 4-axes versions are equipped with the new high performance pressurised spindle.

THE STANDARD VERSION OF THE MACHINE IS ABLE TO PERFORM THE FOLLOWING OPERATIONS ON GLASS SHEETS:

- Milling on the sheet with a rectilinear and/or curvilinear path.
- Edging and radial polishing on a straight and/or curved path on the edge of the sheet.
- Drilling and/or countersinking perpendicular to the surface of the sheet.
- Writing and drawing on the top side of the sheet.

BY USING OPTIONAL EQUIPMENT, THE POSSIBILITIES ARE EXPANDED TO:

- Cutting with a straight diamond disc.
- Cutting with a straight diamond disc angled at 45°.
- Writing and drawing on the side surface of the sheet.
- Straight and/or curved bevelling on the top side of the sheet.
- Straight and/or curved engraving on the top side of the sheet.
- Straight and/or curved cup grinding on the side surface of the sheet.
- Drilling on the underside of the sheet.



Electro spindle		2500	3300	4000
Maximum rotation speed	rpm	10.000	10.000	10.000
Power in continuous service (S1)	Kw	9,2	9,2	9,2
Torque in continuous service (S1)	Nm	30,3 up to 3.000 rpm	30,3 up to 3.000 rpm	30,3 up to 3.000 rpm
Power in intermittent service (S6)	Kw	11,04	11,04	11,04
Torque in intermittent service (S6)	Nm	36,4 up to 3.000 rpm	36,4 up to 3.000 rpm	36,4 up to 3.000 rpm

Tools magazines		2500	3300	4000
Magazine type	-	fixed	fixed	mobile
Without C axis	pos.	10 + 10	13 + 13	18 + 18
With C axis	pos.	max. 8 + 8	max. 11 + 11	max. 15 + 15
Maximum tool diameter	mm	150	150	150

Weight		2500	3300	4000
Weight		3.990 Kg	4.180 Kg	4.800 Kg

Maximum glass processing *		2500	3300	4000
Standard configuration **	mm	2545 x 1620	3300 x 1620	4300 x 2320

* With 100 mm tool diameter

** Standard configuration for 3300 = left fixed tools storage / 3 axis

Standard configuration for 4000 = left mobile tools storage / 3 axis. For all the other configurations check the technical specifications



DOUBLE EDGERS FLAT EDGE

THE IDEAL CHOICE FOR INTENSIVE APPLICATIONS

Bottero produces a complete range of solutions for flat edge bilateral grinding, which can satisfy the requirements of small-, medium- and large glass factories with fixed or flexible production, thanks to the vast possibilities of choice and configuration of the products.

Bottero machines are ideal for processing structural glass, partition walls, shower cubicles, shelves, balustrades, steps and furnishing elements, providing productivity, precision and reliability over time to operate on multiple shifts, up to 24/7 service.

The Bottero flat edge bilateral machines are designed to support the high production flows typically required by the industry. Thanks to the significant flexibility, however, these machines are effective and profitable even when applied in small- and medium glass factories with flexible production.

TwinEdge

The four configurations that make up the Twin-Edge range enable the processing of flat edges, threads and possible edge-removal.

Twin Edge	220 N	222 D	222 L	224 N
Minimum glass dim	160 x 160 mm	160 x 160 mm	160 x 160 mm	160 x 160 mm
Glass thickness	3 ÷ 30 mm	3 ÷ 30 mm	3 ÷ 30 mm	3 ÷ 30 mm
Speed	0,6 ÷ 6 m/min (1 ÷ 10 m/min opt.)	0,6 ÷ 6 m/min (1 ÷ 10 m/min opt.)	0,6 ÷ 6 m/min (1 ÷ 10 m/min opt.)	0,6 ÷ 6 m/min (1 ÷ 10 m/min opt.)
Installed power	55 KVA (45 KW)	61 KVA (45 KW)	61 KVA (45 KW)	66 KVA (45 KW)
Weight	6090 Kg	6170 Kg	6170 Kg	6250 Kg

Minimum glass dim*	115 x 115 mm
Glass thickness	3 ÷ 40 mm
Speed	up to 12 m/min
Max glass weight	1000 Kg
Worktable height	970 ± 50 mm
Max opening speed	30 m/min

* the minimum glass dimension can change depending on options included

Flex Edge

Flex Edge bilateral edging machine can be configured with 10, 12, 14,15 or 17 grinding wheels. The machine is particularly suited to process large sizes and thickness and the double edger platform can be integrated with totally automatic lines for flexible production, in small or large batches, with automatic dimension changeover managed by dedicated software.

DOUBLE EDGERS PENCIL EDGE

TECHNOLOGY AT THE SERVICE OF THE INDUSTRY

Bottero pencil-edge bilateral machines are the ideal machines for processing at high production rates, typical of the household appliance, automotive, industrial refrigeration, TV screen and solar panel production sectors. In these contexts, where the demand for productivity is accompanied by the need for reliability and automation, the solutions offered by Bottero have been chosen by some of the largest industrial groups in the world for the implementation of plants that can treat thousands of square metres of product per day.

Bottero's pencil-edge bilateral machines contribute to the treatment of glass elements used in numerous industrial manufacturing products.

The Bottero range of double edgers for pencil edge machining has been designed to guarantee high precision and to minimise maintenance.

Gemini

The Gemini double edger is a safe and reliable machine, designed to guarantee high precision and limit maintenance as much as possible.

Gemini	306 N	306 HP	308 N	308 HP
Minimum glass dim	80 x 80 mm	80 x 80 mm	80 x 80 mm	80 x 80 mm
Glass thickness	2 ÷ 12 mm	2 ÷ 12 mm	2 ÷ 12 mm	2 ÷ 12 mm
Speed	1 ÷ 12 m/min	2 ÷ 20 m/min	1 ÷ 12 m/min	2 ÷ 20 m/min
Installed power	24,5 KVA (19,2 KW)	47,5 KVA (38KW)	28 KVA (22,4KW)	47,5 KVA (38KW)
Weight	2420 Kg*	2420 Kg*	2500 Kg*	2500 Kg*
Worktable height	900 ± 50 mm	900 ± 50 mm	900 ± 50 mm	900 ± 50 mm

*Max glass 1600 mm



FLEX LAMILINES

FLEX LAMILINES - PRODUCTIVITY AND FLEXIBILITY AT THE HIGHEST LEVELS

Bottero's Flex lines offer high performance and great flexibility, thanks to the possibility of laminating jumbo sheets with particularly short production cycles that laminate already shaped glass of up to 10 layers. Bottero technology, chosen by the world's largest laminated glass producers, is now available to all state-of-the-art glassworks thanks to the Flex lines. Laminated glass finds new and ever more interesting applications every day, offering architects and designers unique and expressive opportunities. Bottero is committed to supporting the development and diffusion of this material, constantly researching and developing technologies to improve its processing, thus widening its horizons of use.

Bottero experience

Since its first line in 1989, Bottero has always been partner of companies worldwide for laminated glass production.

In 25 years, Bottero has reached and maintained an undisputed technological leadership in laminated glass processing, serving all multinational companies and developing top-performance devices for maximum productivity and the highest quality.

Today, all this know-how is also available in custom-sized production at an affordable price.

- 25 years of experience
- 52 lines worldwide
- Complete process know-how

Bottero flex Lamilines are the most advanced custom-sized laminated assembly systems in the market today. The nip rolls and furnaces, which are provided as standard, are the same ones up and running all over the world by the most important glass manufacturers.

The IR furnace and the patented mechanical press system on the nip rolls are just two of the several patents and innovations which guarantee the best final result in lamination.

Bottero produces laminated glass lines both for stock sheets, high capacity production, as well as for the custom market of cut-to-size laminated glass. These lines are capable of easily manufacturing different product types irrespective of dimensions, shape and make-up. This key factor is achieved



by implementing a strategy focusing on quality, reliability and total flexibility of the manufacturing plant.

Unique features

Flex Lamiline is equipped with the most advanced solutions for the pre-lamination process, such as the nip roller with anti-torsion system and forced air convection furnaces. Moreover, it can easily be adapted according to customers' needs with optional equipment and accessories such as automatic loaders, additional PVB rolls, automatic PVB foil application, cutting and trimming... Bottero is capable of providing complete turnkey packages, including autoclaves, climatic rooms and all accessories required.

Technical features

Bottero Flex Lamiline is a modular system which is completely configurable, according to each customer needs from small to large glass sheets.

Most options and upgrades can also be added later with a simple and effective intervention.

	Metric	Imperial
Glass sizes (min)	350 x 180 mm	14" x 7"
Glass thickness	3 - 19 mm	8/64" - 48/64"
Type of glass allowed	Float Low-e Tempered Coated	
Glass thickness output (max)	100 mm	4"
Glass weight output (max)	1350 kg	2980 lb
Interlayers thickness	0,38 mm 0,76 mm 1,14 mm 1,52 mm	1/64" 2/64" 3/64" 4/64"
Type of interlayers allowed	Interleaved PVB EVA SentryGlass Plus	

FLOAT CUTTING BKM

BKM, THE ART OF CUTTING GLASS

Designed for glassmakers who want to evolve their business by adopting automated and flexible cutting systems, BKM tables offer all the quality and ease of use typical of Bottero products.

Thanks to the shared single development platform, common to all cutting systems, BKM tables use technological solutions and components that are also adopted on top of the range Bottero systems, thereby ensuring uncompromising performance and reliability.

BKM cutting systems can perform linear cuts and shapes on sheets with a thickness of up to 19 mm, thereby offering the possibility of carrying out small and medium production runs in series, as well as special pieces.

Working speed	
Maximum bridge speed	150 m/min
Maximum carriage speed	150 m/min
Maximum grinding speed with Easy deletion	80 m/min

Accuracy	
Cutting accuracy on straight processes	± 0,15 mm

Thicknesses which can be cut	
Glass thickness	2 ÷ 19 mm

Work table	
Worktable height	930 ± 40 mm



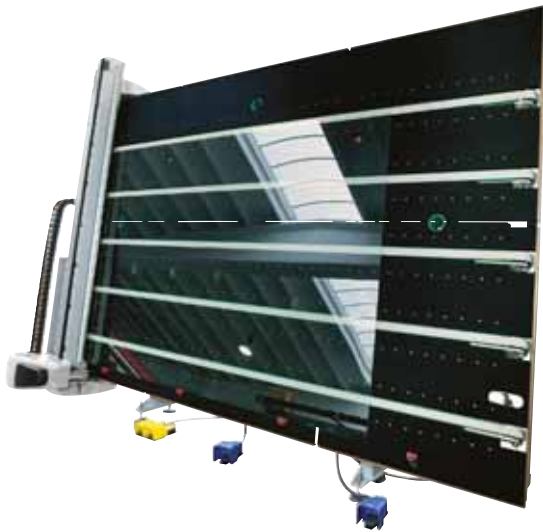
BKM cutting systems are available both in stand-alone versions, for loading, cutting and breakout of material on the table, as well as in fixed structure version for high productivity in-line integration. All models can be equipped with a wide range of accessories.

Each constructive and functional feature of the BKM range is designed to ensure extreme processing precision and maximum productivity, at the service of each specific production requirement.

Performance

A complete, modular and versatile range, fully configurable according to each specific production requirement.

Bottero tables guarantee top performances at 360°: cycle execution speed, accuracy and reliability over time.



FLOAT CUTTING BCS

BCS: THE HIGHEST PRODUCTIVITY AND QUALITY STANDARDS IN THE INDUSTRY

BCS cutting tables are designed to withstand the high workloads typically adopted during single- or even multiple-shift production of windows or panels in the furniture sector, as well as components for household appliances, in the automotive industry and in many other areas. BCS cutting tables are among the most popular and sought-after in the world, representing a major benchmark in terms of production capacity and reliability in today's market.

The BCS range stands out due to its modularity and versatility, thanks to which the float cutting tables can be configured completely according to specific customer requirements: from stand-alone cutting tables intended for small production runs, up to intensive high automation level production systems, fully integrated with low-E grinding devices and marking, as well as loading and breakout modules.

With the aim of meeting all production needs, the BS cutting tables also enable the fitting of the cutting carriage with one of the numerous accessories available. Each constructive and functional feature of the BCS range is designed to ensure extreme processing precision and maximum productivity, at the service of each specific production requirement.

Performance

A complete, modular and versatile range, fully configurable according to each specific production requirement. Bottero tables guarantee top performance at 360°: cycle execution speed, accuracy and reliability over time.

Working speed	
Maximum bridge speed	140 m/ min
Maximum carriage speed (*)	200 m/ min
Maximum grinding speed with Easy deletion	80 m/ min
Maximum grinding speed with LMT	160 m/ min

(*) the maximum carriage speed is 160 m/min in the presence of LMT, PPL or LAM Shape set-ups.

Thicknesses which can be cut	
Standard thicknesses	2 ÷ 19 mm
Optional thickness	19 ÷ 25 mm

Accuracy	
Cutting accuracy on straight processes	± 0.15

Work table	
Worktable height	930 ± 40 mm

FLOAT CUTTING EVO

EVO, THE PLATFORM THAT GOES BEYOND CUTTING

The EVO cutting platform is the top of the range of Bottero cutting systems, offering exclusive performance and flexibility. Thanks to the option of equipping the machines with two additional tools besides the cutting tool, EVO systems can, in addition to low-E glass grinding, also be equipped with laser cutting or labelling of the processed pieces. This option makes EVO systems ideal to form part of automated and controlled production flows, typical in high-tech glass factories and indicated in "Industry 4.0" regulations.

The EVO range stands out due to its modularity and versatility, thanks to which the float cutting tables can be configured totally according to specific customer requirements: from stand-alone cutting tables intended for small production runs, up to intensive high automation level production systems, fully integrated with low-E grinding devices and marking, as well as loading and breakout modules.

Each constructive and functional feature of the EVO range is designed to ensure extreme processing precision and maximum productivity, at the service of each and every specific production requirement.

Working speed	
Maximum bridge speed during cutting	160 m/min
Maximum carriage speed during cutting	200 m/min
Maximum carriage speed during cutting	200 m/min*
Maximum carriage speed with 2 tools (Cut + PPL)	200 m/min
Maximum carriage speed with 2 tools (Cut + Laser)	160 m/min
Maximum cutting bridge speed with 2 tools	160 m/min*
Maximum cutting bridge speed with 3 tools	160 m/ min*

(*)100 m/min with TPF

Thicknesses which can be cut	
Standard thicknesses	2 ÷ 19 mm
Optional thickness	2 ÷ 25 mm

Accuracy	
Cutting accuracy on straight processes	± 0,15 mm

Work table	
Worktable height	930 ± 20 mm



Performance

A complete, modular and versatile range, fully configurable according to each specific production requirement. Bottero tables guarantee top performance in terms of cycle execution speed, accuracy and reliability over time.

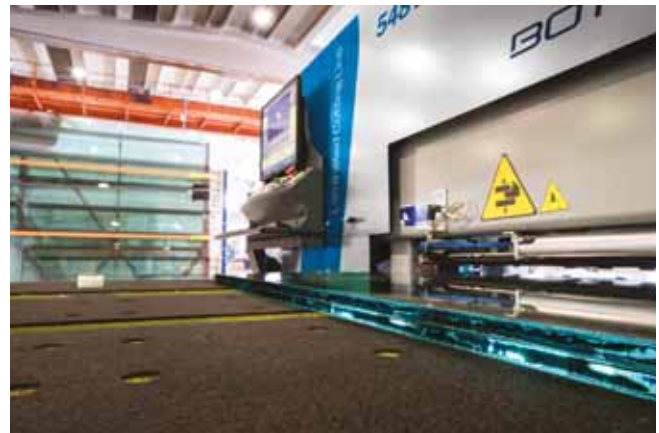
LAMINATED CUTTING MACHINE

THE VALUE OF A UNIQUE EXPERIENCE

Bottero was among the first companies in the industry to believe in the potential of laminated glass, and started developing automatic cutting machines as early as the 1970s. For over 25 years, Bottero has been, and still is, the only company in the world with the know-how and organisation required to manufacture both machines and lines for the production of laminated glass, and can therefore provide its customers with a unique experience, which turns into excellent processing results and extremely reliable solutions.

Bottero's range of applications of laminated glass is becoming more and more interesting and diverse, thus offering architects and designers unprecedented expressive opportunities. Bottero is committed to promoting the development and popularity of this material by constantly researching and developing new technological solutions able to improve processing opportunities and thus increase its possible range of applications.

All manufacturing and running features of the laminated glass series have been designed in order to grant top level accuracy in glass processing and the highest production level aimed at meeting any production need.



Dual Line

Combined lines for cutting laminated and float glass.

Semi-Auto

520 LAMe + 353 BCS

The 520 LAMe cuts and breaks trims with a minimum width of 20 mm. In addition to scoring the float glass, the BCS cutting bridge can be used to label, cut the laminated glass to shape, remove low-E on all types of sheets based on the chosen set-up (see specific BCS catalogue) and, when combining the two machines, can assist the 520 LAMe during sheet positioning, thanks to a specific suction cup system.

Fully-Auto

548 LAM + 363 BCS/EVO

The 548 LAM can be combined with a belt loading table. Breakout and detachment of 20 mm trims and automatic positioning for diagonal cuts ensure fully automatic, high production levels. If combined with the float glass cutting table, the bridge can also be used to label, cut the laminated glass to shape, remove low-E on all types of sheets based on the chosen set-up (see specific BCS/EVO catalogues).

Performance

Bottero tables provide 360° top level performance in all areas: cycle time speed, accuracy and reliability in the long term.

	515 LAMe	520 LAMe	548 LAM
Cutting speed	100 m/min	100 m/min	140m/min
Grinding speed with Easy deletion	N/A	up to 80 m/min*	N/A
Grinding speed con opt. Low-E	N/A	N/A	140m/min
Max cut	3700 4600 mm	3700 4600 mm	3800 4950 mm 6100mm
Min cut	250 mm	250 mm	150 mm
Min thickness	2.2.0,38 PVB mm	2.2.0,38 PVB mm	2.2.0,38 PVB mm
Max thickness	8.8.4,56 PVB mm	8.8.4,56 PVB mm	8.8.4,56 PVB mm
Opt. thickness	N/A	10.10.2,28 PVB mm	12.12.2,28 PVB mm
Max squaring length	3210 mm	3210 mm	6100 mm**
Max weight loadable on arms	450 Kg	450 Kg	700 Kg
Tolerance	+/- 0,5 mm	+/- 0,5 mm	+/- 0,5 mm
Height of working table	930 +/- 20 mm	930 +/- 20 mm	930 +/- 20 mm

(*) Depending on type of glass and quality requirements.(**) With optional unloading table.

GLASS STOCK MANAGEMENT SYSTEMS

THE SOLUTION TO ALL REQUIREMENTS

Bottero solutions for material storage and handling are the answer to the requirements of all glass factories that want to make the connection between material storage areas and production lines more efficient and rapid. Bottero systems make warehouses compact and optimised, and speed up the connection between the storage area and processing lines, while offering the possibility of quickly managing sheets that differ in material, format and thickness.

Automation or optimisation of the warehouse management system is an important development element for any glass factory.

The widest range of products for any production and storage management requirement with any automation level. Whether you have large or small spaces, whether you process numerous types of glass in variable formats, or whether you produce a single product, Bottero can provide the machine or combination of machines that is suitable to improve work flows.



605 Movable racks

An extremely cost-effective and flexible solution for compact automated glass storage. The comprehensive range of racks keeps floor space requirements to a minimum.

636 Rack system

Reliable and practical stand-alone, or automated overhead loader integrated warehouse systems. Every rack system is made up of one fixed rack and one motorized rack, whereas the following are movable racks.

620|630|640 Loaders

These machines are recognized worldwide for their high degree of flexibility, reliability and ease of use. They can handle glass from 2 up to 25 mm with a Glass rack depth of 1200 mm. Unique system for pneumatically assisted glass detachment, with mechanically actuated arm movements.

621|631 Loaders

These loaders are suitable for standard line configuration to handle glass sheets from 3 up to 19 mm with a Glass rack depth of 1000 mm.

650 Shuttle system

Ideal system for the management and storage of different types of glass and for buildings with restricted height not suitable to accommodate overhead type loaders. The ultimate solution to manage an unlimited number of racks feeding an unlimited number of cutting lines.

695 Gantry system

A unique telescopic frame system allows to organize a very flexible storage area with a combination of jumbo and regular sized glass positions: in particular it



is possible to load only one regular glass size, when needed, from racks with two rows of regular sheets placed at the side. This system provides the most versatile solution for warehouse management and is designed to load glass sheets from any rack with any pack depth.

680 Management system

Simple vertical type storage system to manage remnant sheets efficiently and minimize waste. It can handle glass sheets with minimum dimensions of 1500 x 2000 mm and maximum dimensions of 6100 x 3300 mm with maximum weight of 1000 kg.

STRAIGHT LINE EDGING & BEVELLING

UNCOMPROMISED QUALITY

Bottero's vertical edge grinding and bevelling machines allow the highest quality results to be achieved when processing edges, thereby guaranteeing perfect finish in the most elegant applications, in which quality is considered an essential element.

Bottero's vertical edge grinding and bevelling machines offer great expressive possibilities and are well suited to produce sophisticated furnishing elements.

These vertical edgers and bevelling machines are designed to ensure maximum production and maximum reliability. The availability of numerous machine set-up configurations allows to choose the right product for both simple and extremely advanced processing operations.

Victralux

Victralux is Bottero's range of Straight Line Edgers. The five models available within this range of machines enables to process edges with arrisses, as well as the possible dubbing system.



Victralux	108 FX	108 FX-HP	110 FX	110 FX-HP	111 FX	111 FX-HP	109 CDX	109 CDX-HP	112 FX	112 FX
Minimum glass dim	40 x 40 mm	100 x 100 mm	40 x 40 mm	100 x 100 mm	40 x 40 mm	100 x 100 mm	40 x 40 mm	100 x 100 mm	40 x 40 mm	100 x 100 mm
Glass thickness	3 ÷ 30 mm	3 ÷ 30 mm	3 ÷ 50 mm	3 ÷ 50 mm	3 ÷ 50 mm	3 ÷ 50 mm	3 ÷ 30 mm	3 ÷ 30 mm	3 ÷ 30 mm	3 ÷ 30 mm
Speed	0,6 ÷ 6 m/min	0,6 ÷ 6 m/min	0,6 ÷ 6 m/min	0,6 ÷ 6 m/min	0,6 ÷ 6 m/min	0,6 ÷ 6 m/min	0,6 ÷ 6 m/min	0,6 ÷ 6 m/min	0,6 ÷ 6 m/min	0,6 ÷ 6 m/min
Installed power	23,5 KVA	23,5 KVA	27 KVA	27 KVA	27 KVA	27 KVA	23,5 KVA	23,5 KVA	29 KVA	29 KVA
Weight	3200 Kg	3200 Kg	3600 Kg	3600 Kg	3600 Kg	3600 Kg	3200 Kg	3200 Kg	3600 Kg	3600 Kg

SUPPLIERS GUIDE Data Sheets

www.bottero.com

BOTTERO

Variant

Variant is Bottero's range of variable angle Straight Line Edgers.

The eight models available within this range of machines allows to process the flat edges of an angle up to 45° as well as to remove arrisses.

Variant	810 BC-BR	810 BCS-BRS	810 CD	810 CDS	814 BC-BR	814 BCS-BRS	815 BC-BR	815 BCS-BRS
Minimum glass dim	100 x 100 mm	40 x 40 mm	100 x 100 mm	40 x 40 mm	100 x 100 mm	40 x 40 mm	100 x 100 mm	40 x 40 mm
Glass thickness	3 ÷ 55 mm	3 ÷ 55 mm	3 ÷ 55 mm	3 ÷ 55 mm	3 ÷ 55 mm	3 ÷ 55 mm	3 ÷ 55 mm	3 ÷ 55 mm
Speed	0,4 ÷ 6 m/min	0,4 ÷ 6 m/min	0,4 ÷ 6 m/min	0,4 ÷ 6 m/min	0,4 ÷ 6 m/min	0,4 ÷ 6 m/min	0,4 ÷ 6 m/min	0,4 ÷ 6 m/min
Processing angle	0 ÷ 45°	0 ÷ 45°	0 ÷ 45°	0 ÷ 45°	0 ÷ 45°	0 ÷ 45°	0 ÷ 45°	0 ÷ 45°
Installed power	27 KVA	27 KVA	27 KVA	27 KVA	36 KVA	36 KVA	38 KVA	38 KVA
Weight	4600 Kg	4600 Kg	5200 Kg	5200 Kg	5200 Kg	5200 Kg	5400 Kg	5400 Kg

Vision

The five models available within this range, produce bevels on the front face of the glass and either simple pencil edge profiles on the edge of the glass, or with the 913T, full flat edges and arris profiles.

Vision	907	910	913
Minimum glass dim	40 x 40 mm	40 x 40 mm	40 x 40 mm
Glass thickness	3 ÷ 30 mm	3 ÷ 30 mm	3 ÷ 30 mm
Speed	0,4 ÷ 6 m/min	0,4 ÷ 6 m/min	0,4 ÷ 6 m/min
Processing angle	3 ÷ 45°	3 ÷ 45°	3 ÷ 45°
Max corner edge dim.	40 mm (50 mm opt.)	40 mm (60 mm opt.)	40 mm (60 mm opt.)
Installed power	23,5 KVA	32 KVA	40 KVA
Weight	3600 Kg	4600 Kg	5200 Kg





BOVONE DIAMOND TOOLS Srl

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HIGH SPEED WHEELS FOR CNC MACHINES BY BDT



Three types of wheels are available: flat edge wheels, trapezoidal wheels and routers.

The particular feature of the flat profile wheels is the new design of the sectors, which are smaller and set more closely together; as a result, they can reach speeds of 10 metres/minute, operating at 7,500 RPM.

Trapezoidal wheels are made differently compared with traditional ones and have a different grit size.

Accordingly, they can reach speeds of up to 8 metres/minute, again at 7,500 RPM.

New routers also feature the modified sector design and can reach speeds 50% higher than traditional ones, being estimated to operate at around 12,000 RPM.

ARRIS POLISHING WHEELS - MADE IN BDT

Our range is available for all machines in the market equipped with these tools.

Two kinds are offered: wheel SD and wheel CD.

Diameter 150mm and 100mm.

Wheel SD: it is suitable for arris processing without diamond wheels.

Wheel CD: it is suitable for arris polishing after diamond wheels.

The wheels diameter 150mm are mounted on aluminum plate granting maximum rigidity and duration of the geometric tolerances.

These characteristics are fundamental for the high performances of the wheels in terms of life and process quality.



GOLDNET ROUTERS FOR LAMINATED GLASS OR HIGH THICKNESSES - BDT PATENTED



- Less Chips And Breakages
- Even Wearing
- Noiseless
- No Vibrations
- High Cutting Power
- Longer Life

CUP DIAMOND METAL BOND WHEELS AND PERIPHERAL WHEELS FOR ALL BEVELLING AND EDGING MACHINES

BDT produces wheels for all machines for flat glass working.

The cup metal bond wheels for bevelling and edging machines have diamond band from 4 to 20 mm and the band is continuous or segmented, open or closed segments.

The peripheral wheels for bevelling machines, edging machines and double edgers are produced in diameters going from 100 to 200 mm, with different shapes and grits accordingly to their position on the spindle.

Also in this case we can supply special wheels on request.



CUP RESIN BOND WHEELS

Cup resin bond wheels for bevelling and edging machines are supplied with band 10-12-15-20 mm and with different band thicknesses and can be continuous, open segments or closed segments.

Customer can also ask for standard wheel thickness or, to improve life, can find other two types with higher diamond band. We think that the advantage of finding by only one supplier so many kinds of wheels and the possibility of asking for special tools for special production is very important, giving the opportunity of having a very high quality of the final product.



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 MADE IN EXCELLENCE

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EDGING MACHINES

The Bovone ELB series straight-line edging machines guarantee the highest quality of both flat and inclined edges, even at the highest working speeds, optimizing customers' production. Most machine models are also equipped with Cerium oxide processing, elevating polishing quality to the utmost.

The machines' solid cast iron base and cutting-edge construction solutions are integrated with high-end electronics, while the dedicated software allows a very intuitive use of the machine.

The wide range of models enables to satisfy each and every need, from the processing of 'micro' pieces with extraordinary finish, up to large panels for outdoor architecture. The very high customization potential of each individual model is then oriented towards maximizing the response to specific customer needs.

The edging machines of the ELB series can be integrated into fully automated robotic systems: the Bovone Robotic Systems - BRS.

Machine type	Wheels number	Min piece dimension	MAX Speed	MAX thickness
Straight	10 to 14	35 x 35 25 x 50	from 5.4 m/min to 10 m/min	From 30 mm to 100 mm
45° miter	10 to 17	65 x 65 at 0° 105 x 105 at 45°	Up to 5.4 m/min	From 30 to 90 mm



Wheels number	Min piece dimension	MAX Speed	MAX thickness
From 8 to 12	35 x 35 25 x 50	from 5.4 m/min to 10 m/min	25 mm



BEVELLING MACHINES

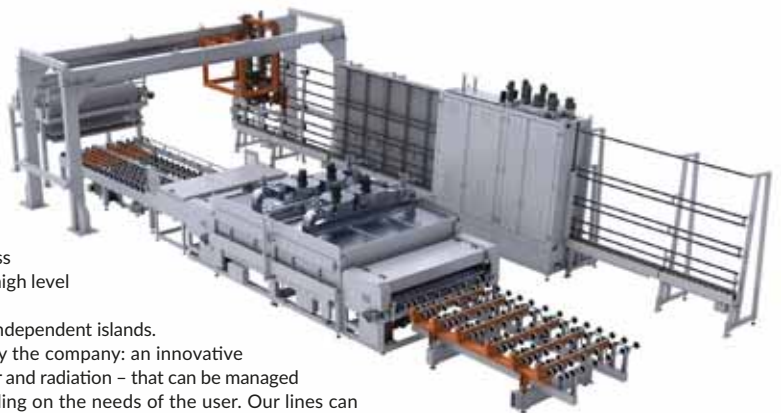
On the market since 1974, Bovone's range of straight-line bevelling machines have, since then, been unbeaten for quality, performance and durability – the trend setter and reference point for the whole market, always a step ahead of competition. Bovone bevelling machines are internationally recognized for their extreme reliability: they are, in fact, solid machines capable of ensuring minimum maintenance levels and reduced downtime. The finishing quality obtained with a Bovone machine is first-rate: this aspect is in synergy with the very fast execution times, the versatility of the models and the high customization potential work to guarantee the final customer higher productivity. The bevelling machines, like the whole range of Bovone machines, are driven by dedicated software for simple and immediate use.

LAMINATING LINES

In the 1980's Bovone introduced its first laminated glass lines, which, right from the start, were already one of the most accurate and fastest lines manufactured, and also by far the most reliable – as always with Bovone products. The lines are:

- **Modular:** in fact, they are configured according to the customers' specific needs, who can also gradually integrate their line in different steps;
- **Versatile:** ensuring excellent performance both in the production of large numbers and for those in which high flexibility is required;
- **Reliable:** with minimal maintenance, they allow very short machine down-times; they guarantee high precision and quality of the finished glass sheets, thus increasing the productivity of the system together with the high level of automation;
- **Automated:** they can be integrated with robotic elements, configured in independent islands.

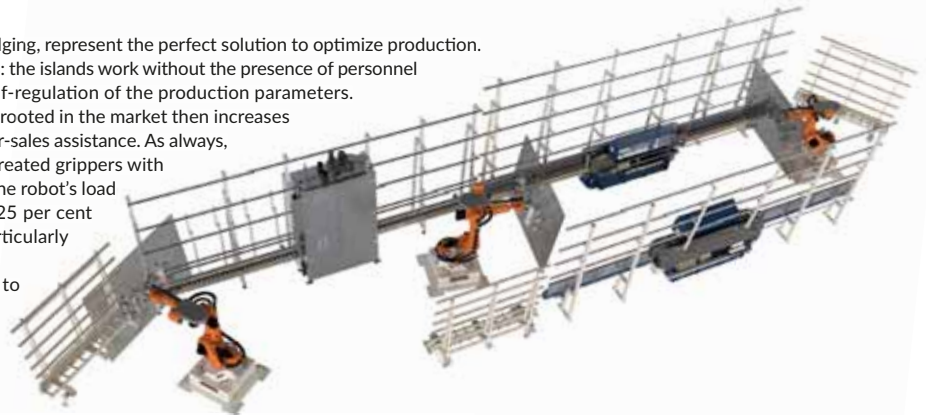
The lines are equipped with the latest generation of furnaces developed by the company: an innovative technology that integrates two heating systems – convection of forced hot air and radiation – that can be managed either completely independent from each other or in combination, depending on the needs of the user. Our lines can process 'sandwiches' of glass and PVB up to 80 mm and glass width from 1600 mm up to 3300 mm and length up to 6000 mm.



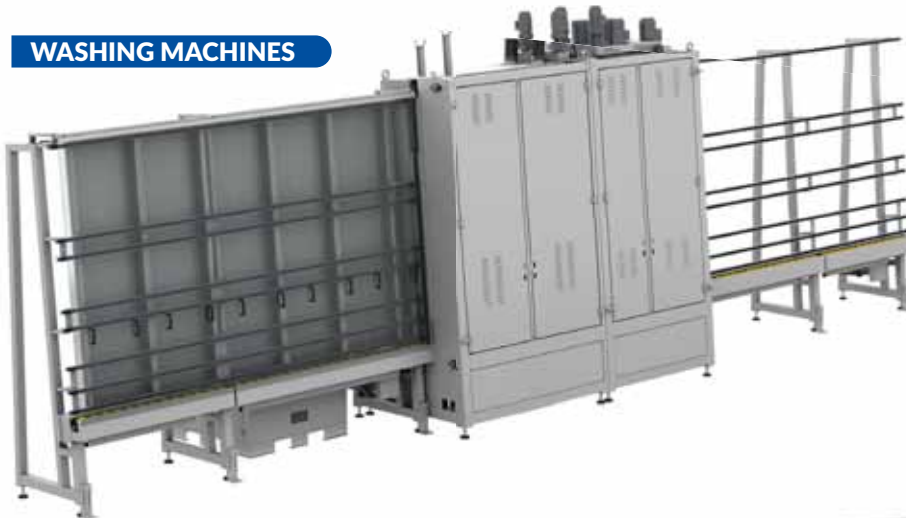
BRS

Bovone Robotic System, the automated islands for edging, represent the perfect solution to optimize production. The systems are compliant with Industry 4.0 protocols: the islands work without the presence of personnel and are fully connectable for the traceability and self-regulation of the production parameters. The use of robotic elements produced by companies rooted in the market then increases the levels of safety and reliability, also in terms of after-sales assistance. As always, with a view to safety and productivity, Bovone has created grippers with reduced weight and size that allow to weigh less on the robot's load capacity, improving performance in terms of time (25 per cent less) and energy used during the processing of particularly heavy plates.

The robots can be supplied stand-alone, applied to existing edgers or as customized robotic islands according to specific needs.



WASHING MACHINES



Bovone offers a full and complete range of glass washing machines for every need and purpose. The company's product range includes both vertical and horizontal washing machines that can be stand-alone or integrated with other machinery such as robotic systems, laminating or silvering lines, all with high quality, especially with regards to finishing – which is, as with all Bovone products, a fundamental strong point.

	Speed	Maximum glass size	Minimum glass size	Glass thickness	Electrical power	Brushes	Air-knives
2LAS 30	1,5 m/min (optional 2 m/min)	300 mm	30 x 45 mm	1,5 ÷ 8 (optional 4 ÷ 12)	5 Kw	2	2 ÷ hot air
2LAS 130 VE	4 m/min	1300 mm	80 x 150 mm	2 ÷ 12 (optional 2 ÷ 19)	9 Kw	2	2
BMW 1.6	0,4 ÷ 12 m/min	1600 mm	150 x 300 mm	2 ÷ 25 mm	19 ÷ 27 Kw	2-3	2-3
BMW 2.3	0,4 ÷ 12 m/min	2300 mm	250 x 390 mm	3 ÷ 25 mm	21 ÷ 40 Kw	2-3	2-3
BMW 2.6	0,4 ÷ 12 m/min	2600 mm	250 x 390 mm	3 ÷ 25 mm	23 ÷ 43 Kw	2-3	2-3
BMW 3.3	0,4 ÷ 12 m/min	3300 mm	250 x 470 mm	3 ÷ 25 mm	37 ÷ 60 Kw	2-3	2-3



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GEA

3-4-AXIS HORIZONTAL MACHINING CENTER

3 or 4-axis (optional) Numerically Controlled machining center to machine both thin and thick flat glass as well as laminated glass and bullet-proof glass. This machine can perform all types of grinding, polishing, drilling, milling, sawing with diamond blade, V-Grooving, engraving, and 5° bevelling.

- gantry system on the Y-Axis provides the bridge motion via two brushless servo motors synchronized by the Numeric Control, in order to ensure extreme accuracy by reducing positioning errors caused by mechanical elasticity
- large duraluminum work surface. The 780 mm (31 in) worktable height makes it easier to load and unload
- monoblock, ribbed, electrically welded, and stress relieved ultra-thick steel base guarantees sturdiness and rigidity for difficult machining work and the longevity of the machine
- pre-setting is integrated into the tool magazine as to not infringe on the working area of the table
- dynamic compensation of the polishing wheels for excellent machining quality



X AXIS STROKE	3800 mm	
Y AXIS STROKE	2550 mm	
Z AXIS STROKE	420 mm	
MAXIMUM WORKABLE PART SIZE	3700 x 2000 mm	
ROTARY AXIS (OPTIONAL)	C = 360° stepless	
TOOL CHANGE STATIONS	12 ÷ 120	
ELECTROSPINDLE	13,5 KW (S1) - 21 KW (S6) 0 ÷ 15000 rpm	30 KW (S1) - 36 KW (S6) 0 ÷ 12000 rpm



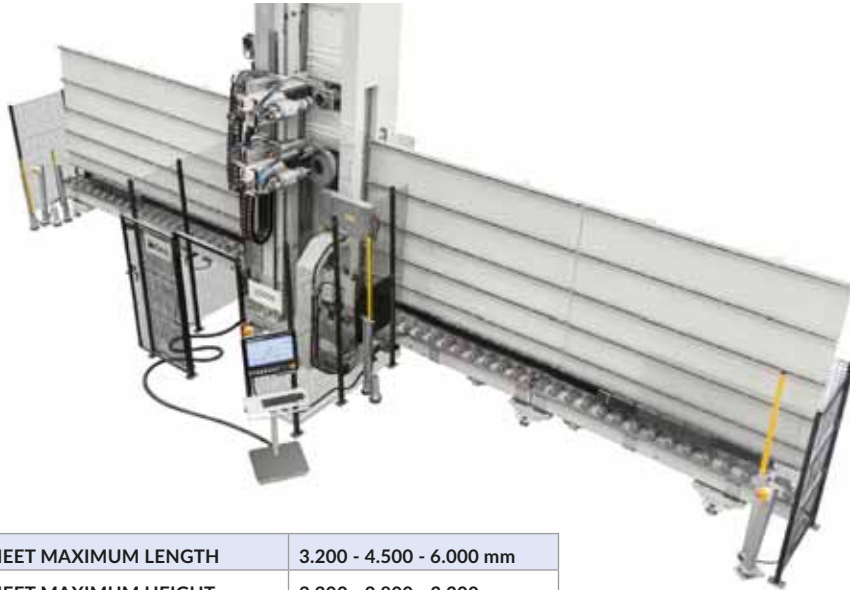
X AXIS STROKE	3800 mm	
Y AXIS STROKE	2400÷7200 mm (configuration available Y>7200 mm)	
Z AXIS STROKE	460÷900 mm	
MAXIMUM XY WORKING DIMENSIONS	It changes according to the configuration	
ROTATING AXES (OPTIONAL)	B = ± 100° / C = ± 270° (540°)	
TOOL CHANGE POSITION	13÷180 + 1 blade holder Ø 500 mm	
ELECTROSPINDLE	13,5 KW (S1) - 21 KW (S6) 0÷15000 rpm	30 KW (S1) - 36 KW (S6) 0÷12000 rpm

MAXIMA

5-AXIS CNC MACHINING CENTER

5-axis interpolated Numerically Controlled machining center with automatic tool change for the working of flat glass sheets of all thicknesses and bent glass. It carries out all types of edge grinding and polishing, arising, milling, cutting with disk, drilling, contouring, engraving, writing, variable-angle beveling operations and special machining. It's the sturdiest machining center in the field, which makes it ideal for any type of working condition.

- wide rotation of axes C (4th axis) and B (5th axis) for the realization of 0-90° variable-angle beveling and dynamic variation of the bevel depth. The configuration with diamond disk is also available for straight and inclined cuts
- Z-axis stroke from 460 to 900 mm for the most demanding works on bullet-proof, military, aerospace and special glass sheets
- thanks to the high configurability of the machine, it is possible to process glass sheets in massive sizes



YPSOS

THE NEWEST VERTICAL MACHINING CENTER

Ypsos is the newest vertical machining center developed by CMS, ideal to process float and laminated glass sheets, entirely designed thanks to many decades of experience in the glass industry. This is the first and only vertical CNC machining center capable of grinding and polishing with two heads at the same time. This project was conceived to reach the best reliability ever in the vertical CNC category. The new software has been designed to make the user interface more efficient and intuitive than ever. Based on the configuration selected, Ypsos can carry out seaming, polished and industrial grinding, milling and coaxial drilling operations. This machine provides absolute accuracy and quality, accompanied by the classic benefits in terms of productivity and versatility given by the vertical machining process. Available in 3 standard sizes, it allows the processing of small and large-sized parts up to 6,000 x 3,300mm max. (additional maximum processable sizes available upon request). Ypsos can be used as a stand-alone machine, in line with a drilling-milling machine or inside an insulating line.

SHEET MAXIMUM LENGTH	3.200 - 4.500 - 6.000 mm
SHEET MAXIMUM HEIGHT	2.200 - 2.800 - 3.300 mm
SHEET MINIMUM LENGHT	420 mm
SHEET MINIMUM HEIGHT	270 mm
SHEET THICKNESS	3÷30 mm
GRINDING WHEEL PACK MAXIMUM THICKNESS	50 mm

VERTEC

CNC VERTICAL DRILLING MACHINE

CNC vertical machine for drilling, countersinking, milling and notching operations on monolithic, laminated and Low-E glass.

- possibility to work both rectangular and shaped glass sheets (one rectilinear side required)
- two coaxial opposed electrospindles and tool cooling system with internal and external water, which enables a higher finishing and machining quality
- two 9+9 stations NC-controlled rotating tool crib installed on a carriage fixed to the electrospindle, ensure tool change operations in the shortest time
- high-pressure water cushion (patented)



MAXIMUM WORKABLE LENGTH	3200 - 4500 - 6000 - 7500 mm
MAXIMUM WORKABLE HEIGHT	1600 - 2220 - 2600 - 3300 mm
MINIMUM WORKABLE DIMENSION	420x180 mm
GLASS WORKABLE THICKNESS	3 ÷ 30 mm
DRILLING BITS DIAMETER	3 ÷ 70 mm
ELECTROSPINDLE	3,7 KW (S1) - 4,4 KW (S6)

AURA

VERTICAL SEAMING MACHINE

Cms Aura is the vertical dry seaming machine specially developed to machine edges without the use of water (dry seaming). Aura can be used as a stand-alone machine, in line with a vertical washing machine and is the perfect machine to be part of a double glazing line.

Aura can seam monolithic, laminated or low-e treated glass.

Aura is designed to meet the needs of customers who demand ease of use, quick installation, reliability and low cost of system ownership.

The operator loads the glass and starts the processing cycle, the machine automatically measures the incoming glass (height, length and thickness) and machines the edge.

Aura also adapts its operating units to different thicknesses.



MAXIMUM HEIGHT	3845 mm with roller height 450 mm from the ground	4045 mm with roller height 650 mm from the ground
MAXIMUM LENGTH	8250 mm (without additional modules)	
STANDARD POWER SUPPLY	400 V - 50Hz 3Ph + Earth + Neutral	
AIR, MINIMUM WORKING PRESSURE	6 bar	
MINIMUM SHEET HEIGHT	240 mm	
MAXIMUM SHEET HEIGHT	2700 mm	
MINIMUM SHEET LENGTH	450 mm	
MAXIMUM SHEET LENGTH	4000 mm	
MACHINABLE THICKNESS RANGE	4 - 22 mm	

AGIL TR

CUTTING TABLE

Agil TR is the most compact and versatile ever made by CMS. It is a table that can automatically cut monolithic (float) glass sheets and semi-automatically cut laminated glass sheets thanks to the double-zero system.

The table is equipped with 4 arms for loading/unloading the sheets and a c-axis to perform both straight and shaped cuts. Easy to install and compact in size, it can cut large sheets up to 3810 mm x 2600 mm.

The table can be equipped with an automatic tool change and a low-e coating removal grinding wheel, and a vinyl removal system.



MAX. WORKABLE SHEET DIMENSIONS	3810 x 2600 mm
WORKABLE SHEET THICKNESS	2 - 19 mm
MAXIMUM POSITIONING SPEED	200 m/min
MAXIMUM ACCELERATION	10 m/s ²
AXIS POSITIONING ACCURACY	± 0,15 mm
STRAIGHT AND SHAPED CUT OPTIMISATION SOFTWARE	yes
BREAKOUT BARS	2+1
MAXIMUM UNLOADABLE SHEET	350 kg
WORKING SURFACE HEIGHT	925 mm (-25 + 30)
INSTALLED POWER	10 kVa

KART

AUTOMATIC LOADING SYSTEM

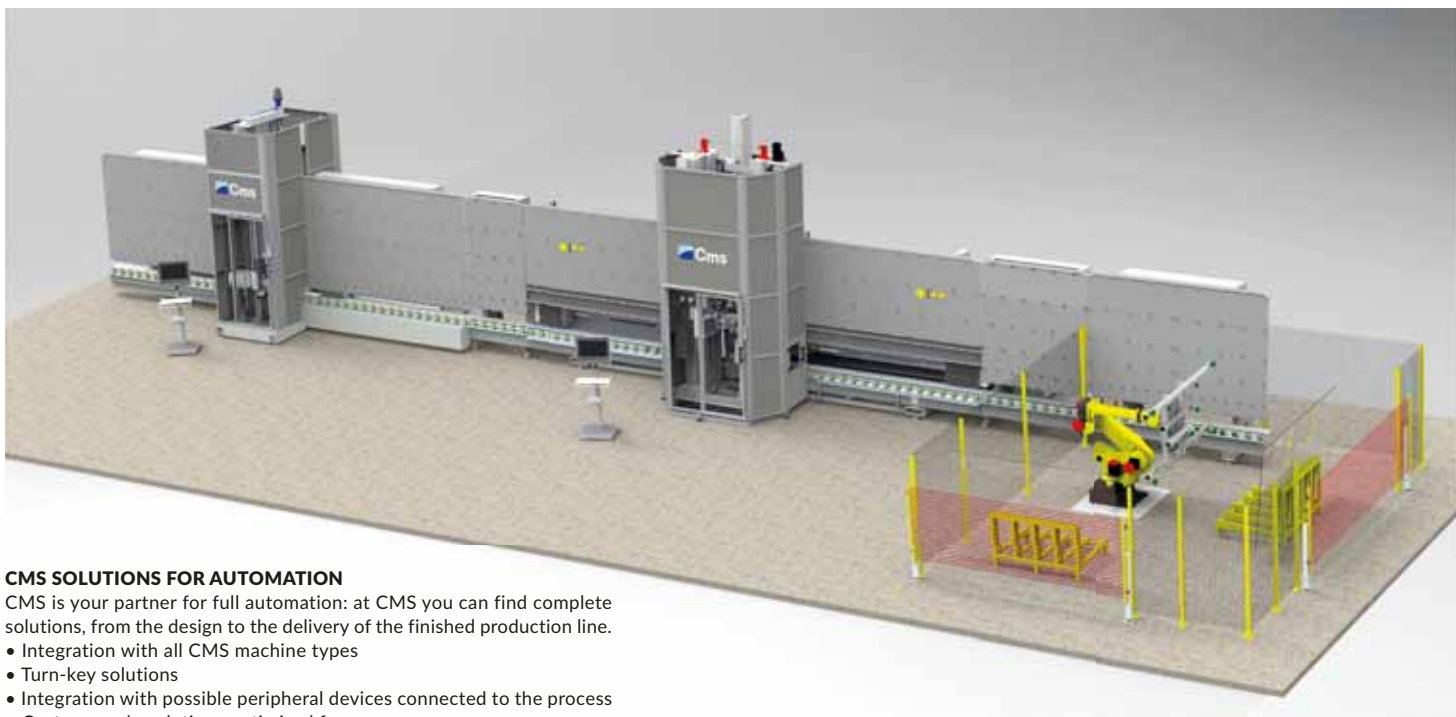
CMS Glass Technology offers a wide range of Kart model loaders/unloaders for the automatic handling of glass sheets. All such systems are easily integrated into any straight line edger (vertical or horizontal), machining centers and double edge machines. They enable the operator to carry out loading/unloading operations in complete safety, minimizing all risks of breakage and increasing productivity.

- the movements (approach, pick-up, lifting, tilting, release, etc.) are managed by a CMS designed PLC
- the glass sheet is picked up by a suction cup group connected to the vacuum circuit through a Venturi system or a liquid ring pump; according to the sheet dimensions, the software decides on the number of suction cups to use
- it is possible to load/unload two or more glass sheets simultaneously from butted rows and/or overlapping surfaces
- the (optional) brushless motors make movements smoother and faster
- they can be easily integrated into other manufacturers' plants

MODEL	Max loading dimensions	Min Loading dimensions	Max loading weight
50	2200x1200 mm	300x200 mm	50 kg
150	3000x1600 mm	300x200 mm	150 kg
200	4000x2200 mm	500x200 mm	200 kg
400	4800X2800 mm	500X200 mm	400 kg



AUTOMATION



CMS SOLUTIONS FOR AUTOMATION

CMS is your partner for full automation: at CMS you can find complete solutions, from the design to the delivery of the finished production line.

- Integration with all CMS machine types
- Turn-key solutions
- Integration with possible peripheral devices connected to the process
- Custom-made solutions optimised for your success

www.cms.it

PROLINE

HYDRO-ABRASIVE WATERJET CUTTING SYSTEM

The ultimate machine tool specifically conceived and designed with advanced technical solutions for the waterjet cutting technology, in order to achieve unmatched performance. Proline is built around a stainless-steel frame ready for integration with the "Dredge", a fully automated and maintenance free abrasive removal system, an automatic water level control for submerged cutting and rotary option. This innovative, easy configurable concept has not only the abrasive tank installed on-board, but also the electric servodriven high-pressure pump is integrated with the machine frame, a big saving in terms of overall layout. The overall machine structure, especially the rugged gantry system, offers unmatched rigidity and thus consistent cutting accuracy over time, thanks also to the ground helical rack and pinions, combined with high precision gearboxes.

The linear guides are protected by the innovative "Powder free" system composed of overlapping way covers, which ensures the highest protection against moisture, dirt and dust.



MODEL	1730	2040
X AXIS STROKE (1 HEAD)	3250 mm	4250 mm
Y AXIS STROKE	1700 mm	2000 mm
Z AXIS STROKE (3-AXIS HEAD)	300 mm	300 mm
Z AXIS STROKE (5-AXIS HEAD)	200 mm	200 mm
C AXIS (5 AXIS ONLY)	Infinite	Infinite
B AXIS (5 AXIS ONLY)	± 62°	± 62°
XY AXIS RAPID SPEED	40000 mm/min	40000 mm/min
WORKTABLE SIZE XY	3820 x 1920 mm	4820 x 2220 mm
WORKTABLE LOAD CAPACITY	1000 kg/m ²	1000 kg/m ²
POSITION ACCURACY	± 0,035 mm	± 0,035 mm
POSITION REPEATABILITY	± 0,025 mm	± 0,025 mm
INSTALLED POWER	6 kW	6 kW
FOOTPRINT LXPXH	6930 x 3180 x 3900 mm	7290 x 3480 x 3900 mm
WEIGHT MAX (EMPTY)	6500 kg	8000 kg

EASYLINE

3- AND 5-AXIS WATER JET CUTTING SYSTEM

easyline is a high-performance, versatile, modular water jet cutting system - either pure or hydroabrasive - which can be employed in a number of application fields for the most diverse production demands.

- the cantilever structure, with a separate tank, allows an easy access to the worktable. Loading and removing material is quick and easy.
- all axes' motions are carried out through hardened and ground rack and pinion.
- the thermowelded bellows provide complete protection of the guides and the rack from water and dust.
- the steel structure undergoes an anti-rust treatment through sandblasting and ceramic painting, which results in a higher resistance against corrosion.
- the tank is set up for the installation of a dredge system for the abrasive removal



MODEL	1010	2020	2040	2060
X AXIS	1000 mm	2000 mm	4000 mm	6000 mm
Y AXIS	1000 mm	2000 mm	2000 mm	2000 mm
Z AXIS	220 mm (150 mm with 5 axis head)	220 mm (150 mm with 5 axis head)	220 mm (150 mm / with 5 axis head)	220 mm (150 mm with 5 axis head)
B AXIS	±60°	±60°	±60°	±60°
SUPPORT PLANE	1210x1225 mm	2210x2225 mm	4210x2225 mm	6210x2225 mm
OVERALL DIMENSIONS WITH LIGHT BARRIERS	4680x4174 mm	5680x5174 mm	5689x7208 mm	5680x9242 mm

REFRIGERA

2023

3RD
EDITION

THE INTERNATIONAL
EVENT DEDICATED
TO THE ENTIRE
INDUSTRIAL,
COMMERCIAL
AND LOGISTICS
REFRIGERATION
INDUSTRY

7-9
NOVEMBER
2023

BOLOGNA
EXHIBITION
CENTRE
ITALY



ORGANIZED BY:



Via Antonio Gramsci 57
20032 Cormano, Milan (Italy)
Tel.: +39-02-66306866

INTERNATIONAL TRADE FAIR
CERTIFIED BY:



162/2019
RFGX19E

IN COOPERATION WITH:



WWW.REFRIGERA.SHOW



CUGHER GLASS Srl

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 Tel.: +39 02 66207762 - Fax: +39 02 66202917
 E-mail: info@cugher.com • www.cugher.com

J SERIES

The fully automatic silk-screen printing machine is composed of an entry/pre-alignment conveyor, the printing machine body and an exit synchronized conveyor. The machine has a firm structure with the printing table made by a specially treated aluminum and it is equipped with a belt transport system and an auto-centering. It is ideal for glasses of medium and large dimensions, typical of Automotive and Architectural sectors.



Glass size: from 400x300 mm to 6000x3200 mm

G SERIES

The printing machine transports the glasses through a shuttle with two independent cross shaped holders and centring out of the printing table. The system consists in one cross shaped holder with a vacuum cups system. The glass is collected by the walking beam while it is still in the centring device of the inlet conveyor; thanks to this operation it is possible to transport the glass with great accuracy. This solution enables reaching the maximum speed of the printing process for glasses with small and medium dimensions, guaranteeing high productivity required in the Automotive sector.

Glass size: from 250x150 mm to 2500x1600 mm



FLEXY SERIES

The printing machine manages multiple glasses type (thin, standard, coated, polycarbonate) and it is extremely versatile for small and different lots. The stainless-steel magnetic table, worked with micro holes, is equipped with vacuum and blow system for easy nesting.

The Flexy Series is a stand-alone machine with manual loading/unloading and finds application in all type of sectors.

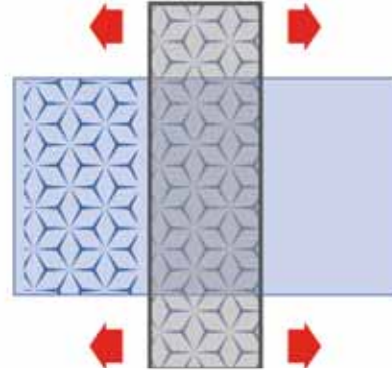
Max glass dimensions 1300x2000 mm - Min. printing size 200x200 mm



SKETCH SERIES

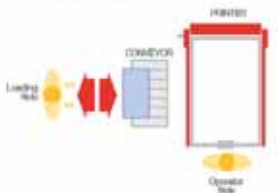
The printing machine is completely stand-alone and ready for in line operations. The frame is usable for several glass dimensions with reference on left-front side and the movable screen allows to personalize the print. In fact the image can be printed on different parts of the glass. It is Ideal for interior design sector, in particular for shower doors.

From small to big glasses with rectangular shape – from 500x200 mm to a maximum of 2700x1600 mm

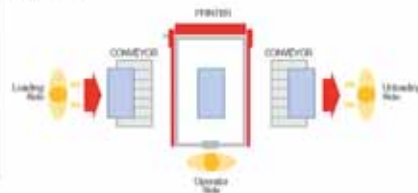


Stand-Alone

Version 1
Manual loading and unloading, on the same side.

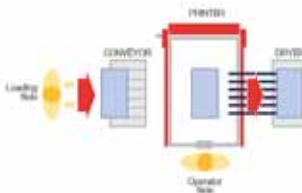


Version 2
Manual loading upstream, manual unloading downstream.



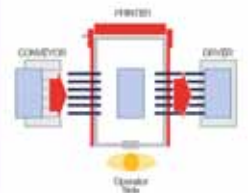
Semi-Automatic

Manual loading of the glass on the loading side. Automatic rear discharge with transport belts.



Full-Automatic

Automatic glass loading and unloading by a belt transportation system.



COMPACT SERIES

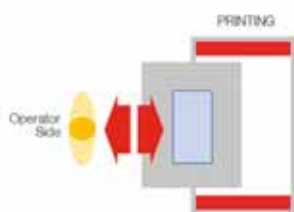
The printing machine has the flexibility to be used as a stand-Alone printing machine or to become the heart of a full automatic printing line. A real solution for the high productivity demands, being, at the same time easy to use. The Compact Series is able to satisfy specific production needs and represents the perfect solution for huge batches and squared/rectangular glasses that have to be printed quickly and precisely, characteristic of home appliance sector.

Glass size: from 100x35 mm to 1300x700 mm



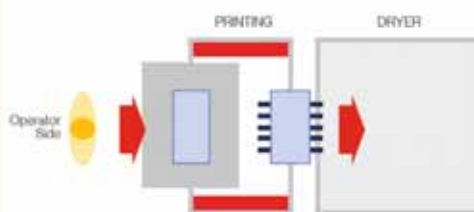
Stand-Alone

Manual loading and unloading, on the operator side, with extractable printing table.



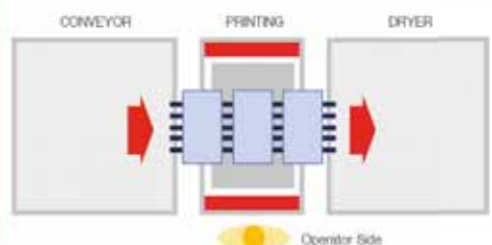
Semi-Automatic

Manual loading and unloading of the glass, on the operator side, with extractable printing table. Automatic rear discharge with transport belts.



Full-Automatic

Automatic glass loading and unloading by a belt transportation system.



www.cugher.com

CUGHER GLASS

DRYERS

Cugher Dryers (IR, UV or combined) with specific features and flexibility are able to satisfy both silk screen printing and digital printing on glass. Indeed, adapting air recirculation, dryers can accurately dry ink thickness from 15 to 100 microns. Moreover, dryers are able to accelerate the drying process through the efficient transfer of energy to the ink/enamel and the capability of evacuating vapours generated by solvents during the drying process.



SYMPHONIA

The Automated Harps Rack System is the ideal glass handling solution for small and medium glassworks. Symphonia is created to facilitate the loading and/or the unloading of glass sheets onto vertical production lines, such as those for insulating glass, for glass dimensions up to 3000 mm x 1500 mm. The solution enables:

- Eliminate the need for manual loading/unloading
- Modularity: it includes as many positions as the production needs of each customer
- Customized engineering as per the available space in the warehouse and the processed glass dimensions



VISION SYSTEMS

AUTOMATIC GLASS QUALITY INSPECTION VISION SYSTEM

The system, typically installed downstream the washing machine, is able to scan the whole glass and detect any defect present on the raw glass such as scratches, breakages, air bubbles, chips, contaminations, water drops, wet edges.

AUTOMATIC PRINT QUALITY VISION SYSTEM

The system, installed immediately after the printing machine, recognizes any "slavering" or "widening" of the design's details due to an excess of ink coming from the screen.

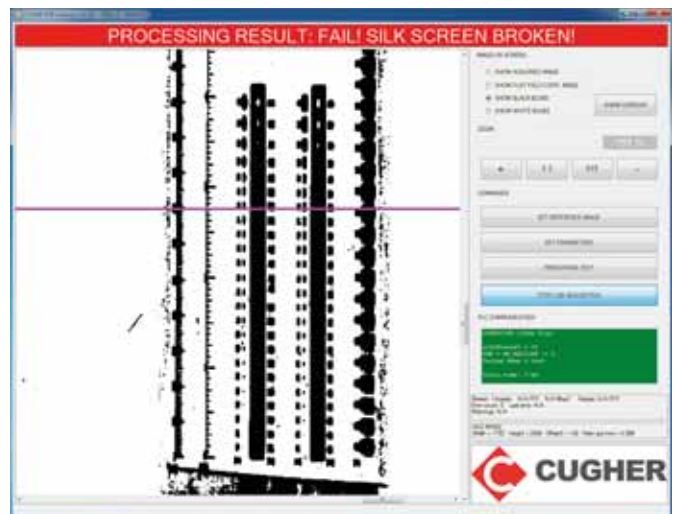


AUTOMATIC SCREEN REGISTRATION SYSTEM WITH CAMERAS

The system allows to automate the register of the screen with the glass to be printed, performing a complete model changeover in an extremely short time.

BROKEN SCREEN DETECTION SYSTEM

This unit is positioned just downstream the printing machine; it detects automatically if there is a broken screen, by controlling the presence of ink spot on the lower surface of the glass.





DELTAMAX AUTOMAZIONE Srl

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Vision Inspection Solutions for Flat Glass

CUTTING LINES SOLUTIONS

From the very initial stages the system has been conceived to be versatile and flexible enough to easily adapt to any cutting process without needing any alteration.

OPT inspects glass sheets during the transit from the loader to the cutting. The software elaborates the image, detects its defects (bubbles and inclusions) and excludes those of acceptable dimension. Clients have full control on the minimal dimension parameters they wish to assign to defects.

OPT makes it possible to waste just a limited area around the defect, instead of the whole sheet. Only sheets without defects will proceed with further processing. This will reduce machinery wear, the whole processing time as well as the need to cut again defective sheets.

ADVANTAGES

Detects structural defects such as bubbles and inclusions in monolithic and laminated glass

Compatible with the cutting table for fully automatic management

Checks unwashed glass sheets before starting the cutting process

Reduces the glass refuse area because defects are placed in the shrinkage areas provided by the cutting pattern of each sheet

Saves energy and prevents excess machinery wear because non-compliant sheets will not be processed
 Rationalizes cycle time thanks to reduced waste on the line and increased time saved for their management



TECHNICAL FEATURES

- Can work with any kind of transparent glass, apart from sandblasted, mirrored, frosted sheets.
- Usable with both regular and jumbo format, but also, with different various widths.

- Images resolution: 0,2 mm\pixel.
- Minimum dimension of detectable defects: 0,4 mm.

DETECTABLE DEFECTS

Structural defects (bubbles, inclusions)
 Scratches that affect the glass surface

IG LINES SOLUTIONS

Deltamax is constantly improving its solutions which have multiplied to meet the different needs over the time and which can now be installed in various places along the production line.

The extreme care devoted to the design phase has made it possible to combine simplicity of installation, maintenance and use with a high level of customization. System parameters can be programmed according to the desired quality level of defect evaluation, so that every scanner becomes an invaluable support to production quality improvement.

GLASSINSPECTOR

Over 300 installations across the world are proof of the versatility and reliability of GLASSINSPECTOR. Developed in 2007, this technology has constantly evolved to meet different needs, thereby improving its defects detection performance to the highest levels, for example at the time of replacing the only component subject to wear, the lighting unit.

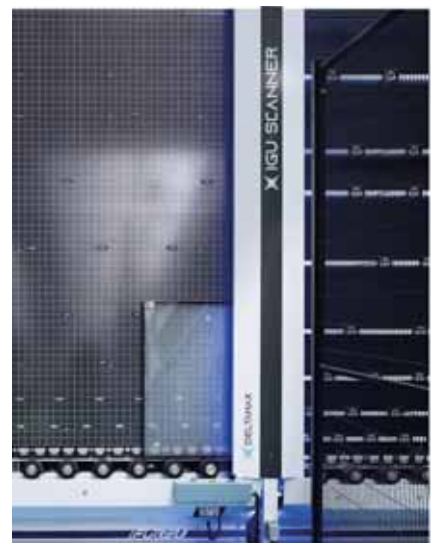
This is the result of Deltamax's mission to seek an innovative solution that could also be applied to previously installed products
 Easy to install, easy to use, easy to maintain
 GlassInspector is the easiest way to start working with an automatic system for glass control to improve the whole production quality.

TECHNICAL FEATURES

- Can work with any kind of transparent glass (including low-e, selective and colored paste glass).
- Can inspect any glass shape.
- Image resolution: 0,2mm/pixel.
- Minimum dimension for defect detection: 0,4mm/ pixel.
- Maximum thickness for defect detection: 50mm.
- Maximum line speed: 60mt/min.

DETECTABLE DEFECTS

Glass defects: bubbles, inclusions, knots
 Process defects: scratches, stains, prints
 Coating defects: holes, abrasions, scratches, burns



• **Q+**

Released in 2019, Q+ represents a considerable step forward in the world of glass inspection systems, as it has defined a new standard in the field of flat glass defects detection.

ADVANTAGES (as compared with GlassInspector)

- More precise and sensitive in the detection of defects
- Double inspection channel with a single camera array that guarantees performance at an affordable price

TECHNICAL FEATURES

- Integrates two systems in one solution, by improving the standard system with a second inspection channel.
- High precision in detecting the most difficult defects such as halos, slight stains, roller scrapes on tempered glass, thin scratches.
- Makes it possible to customize parameters for each defect class.

- Does not slow down production thanks to the new 64-bit technology.
- The Production Analyzer software enables the processing of the data collected by the scanner to obtain production statistics, personalized reports and an insight into the different defect categories identified.

DETECTABLE DEFECTS

(in addition to the defects detectable with GlassInspector)

- Halos cause by water / incomplete drying
- Halos caused by the tempering process
- Prints of suckers in laminated glass
- Remains from insulated tape, oils or other substances.
- Prints or light stains
- Thin scratches

• **IGU SCANNER**

Any manufacturing company's goal is to certify the quality of a finished product and of the whole production line before delivering it to the client. The entire IG production sector has undergone incredible innovation which has resulted in a great variety of finished products, made of different types of glass and of spacers. Thanks to the IGU Scanner, Deltamax can offer a versatile solution for the control of single, double and triple glazing.

CONTROLS CARRIED OUT

Visual defects in the transparent area, or detection of bubbles, inclusions, scratches, dirt, remains of various kinds including butyl
Correctness of the spacer position, i.e. detection of bulging or out of square
Correctness in the laying of the Georgian bars, comparison with the drawing for the verification of the position as well as of the offset between the bars and the offset between the single glazing.

FLAT GLASS CONTROL SOLUTIONS

A standard but highly customizable solution. It may sound like a contradiction but that's the perfect description of EVO. The system can easily adapt to various defect detection needs by changing the number and type of video cameras or lighting unit while at the same time being based on a reliable and well-tested software enabling clients to choose among different quality levels by setting different parameters. Thanks to the interface with the production line and with the different ERP software, EVO is fully integrated with the production line thereby improving its automation.

ADVANTAGES

The scalability guaranteed by the system enables clients to obtain the best quality/price ratio, while still giving the possibility of a hardware and software upgrade to increase performance and functionalities at a later stage.

TECHNICAL FEATURES

- Defect detection on glass, coating, printing, sheet edges.
- Highly customizable: clients can set different levels of quality and control parameters.
- High adaptable to any production line, be it horizontal or vertical, small in volume and with minimal maintenance.
- Can interface with the production line e.g., can manage an automatic discard system of non-compliant products.
- Can save results and defect images.
- Can generate personalized statistics and production reports.
- Offers a full support and software update service.

• **DEFECTS DETECTION**

The high customization degree permit to adapt the sensitivity of the control, changing both the type and/or the minimum dimension of the detectable defects. Thanks to this characteristic, Evo could be installed on any processing line to improve the quality of each process, from lamination to tempering.

• **DIMENSIONAL CONTROL**

The increasing use of glass in various sectors with an increasing demands of non-conventional shapes has resulted in more and more meticulous processing of the sheets. Particular outlines request high levels of precision in processing if they are to become part of complex products. The speed of modern production together with the peculiarity of processing often make human control impossible to perform, thereby we must rely on automated systems.

CONTROLS CARRIED OUT

- External dimension control
- Shape control
- Hole position and diameter control
- Processing control



• **PRINTING CONTROL**

The use of glass in particular sectors, such as the automotive, household appliance or interior design industries, has dramatically increased the use of serigraph or digital printing in glass production processes. A careful and precise quality control is a time-demanding process which is hardly compatible with the cycle times of the production process and requires the use of optical systems enabling the detection of repetitive irregularities due to machinery wear or damage

BLACK BAND CONTROL

- Completeness
- Position and rotation
- Scratches, void or lack of ink detection

LOGO CONTROL

- Completeness
- Position and rotation
- Character legibility
- Presence of traces
- Drop of ink in the transparent area



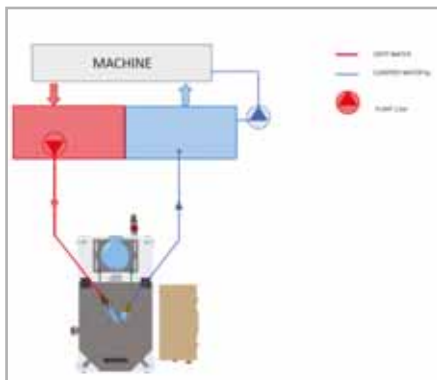
DIEFFE MACCHINE Srl

Via delle Industrie Due, 58 - 30020 Meolo (VE) - Italy
 Tel.: +39 0421 345300
 E-mail: info@dieffemacchine.it • www.dieffemacchine.it

DFL 50 M

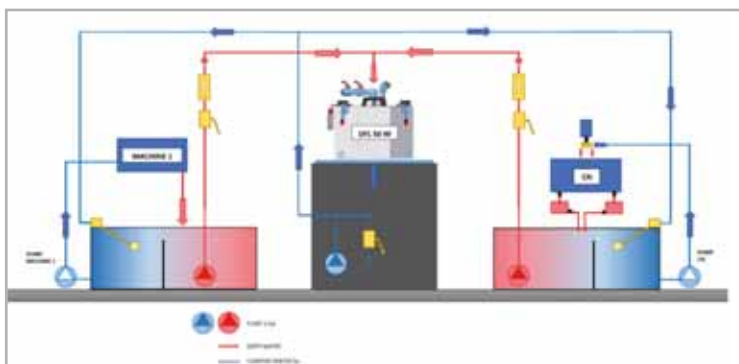
Manual centrifuge for a single machine

Manual centrifuges



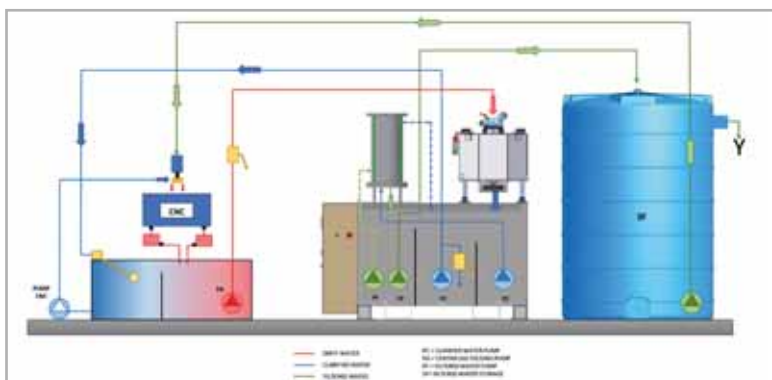
DFL 50 M DUPLEX

Manual centrifuge for two machines



DFL 50 MMF S3

Manual centrifuge for machine with additional microfilter and storage tank



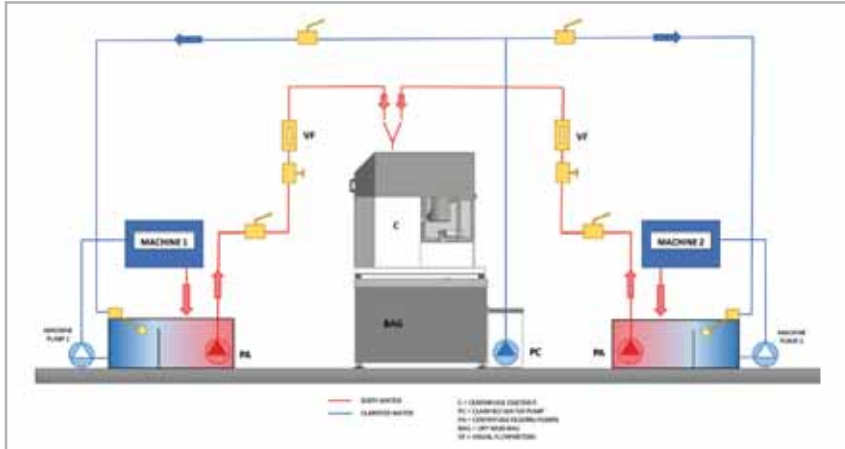
www.dieffemachine.it

DIEFFE MACCHINE

Automatic centrifuges

DFL 150/250 A DUPLEX

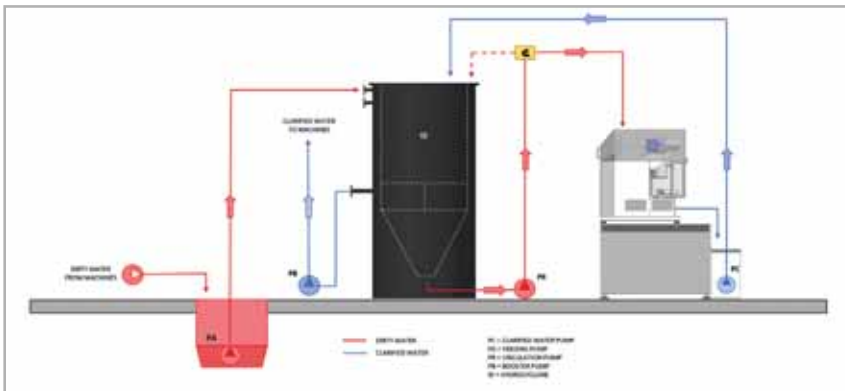
Automatic centrifuge for two machines



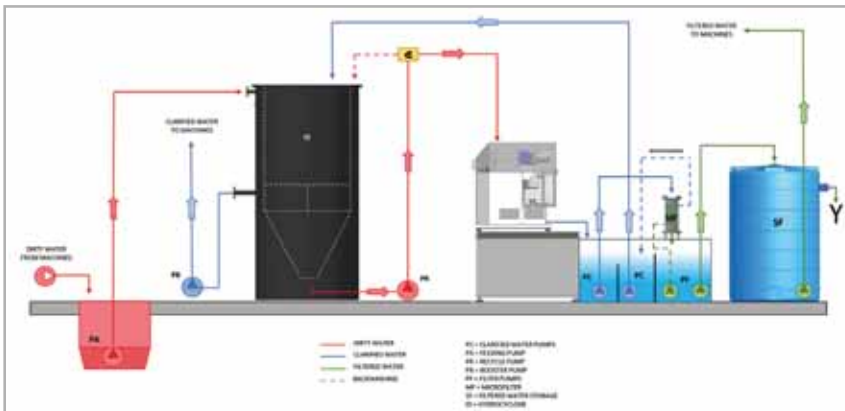
COMPLETE PLANT

Plant includes:

- Automatic centrifuge
- Hydro cyclone



- Automatic centrifuge
- Hydro cyclone
- Spindle water microfilter



DIAMUT

DIAMUT - BIESSE Spa

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 E-mail: sales@diamut.com • diamut.com

EVOX 10

EVOX 10: NEW PERIPHERAL WHEELS FOR CNC MACHINES - RENEWED DESIGN FOR GUARANTEED PERFORMANCE



The Diamut EVOX 10 peripheral diamond wheels for CNC machines are Diamut's high tech product to obtain maximized performance. The design has been completely renewed: the wheel body has been reduced to allow the assembly of different wheels on the same tool holder (packed wheels). Thanks to the new bond and cuts through the diamond crown, the tool guarantees improved processing performance: +20% in working speed.

EVOX 15

EVOX 15: NEW PERIPHERAL DIAMOND WHEEL FOR VERTICAL MACHINES - A NEW ERA FOR GLASS GRINDING



The new line peripheral diamond wheel EVOX 15 made by Diamut for vertical machines (diameter 15 mm) is the perfect change to carry out an uncompromising glass grinding.

A shape with innovative features: cut through the diamond crown to guarantee a unique and perfect grinding on all types of monolithic glass. A new formulation allows to use EVOX 15 with the new parameters that guarantee optimized processing performance, reducing the effort of spindle machines. Savings also for maintenance and energy consumption costs.

HYBRID

HYPER-SPEED, UNMATCHED PERFORMANCE

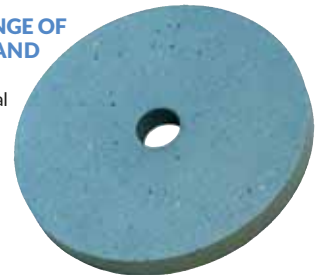
Hybrid is a new range of high-speed tools, ideal for vertical and horizontal grinding machines, developed to help customers boost the productivity of their production cycles. The set of grinding wheels consists of an innovative segmented grinder with filler, the newly designed continuous band grinder and the polishing grinder. Another strength of Hybrid grinder is the new high-performance binder, derived from the Automotive sector. The binder was obtained through new sintering technology that allows for increases in temperature and pressure to be controlled constantly during the cycle. Hybrid is the answer to the market's unmet need for ever-higher speed and performance levels, while maintaining high quality standards.



SHINY LINE

SHINY LINE: DIAMUT'S NEW RANGE OF POLISHING WHEELS FOR CNC AND VERTICAL MACHINES

A new wheel that no longer needs internal water holes: this ensures a significant improvement to the final polishing wheel.



EVOX 20

PERIPHERAL GRINDING WHEELS WITH A DIAMETER OF 200 MM FOR MONOLITHIC GLASS.

EVOX20: for float glass (both segments and continuous rim) with a diameter of 200 mm. Available for all thicknesses from 3 mm to 19 mm, and in various diamond grains to obtain both a rough edge finish and a high-quality finish for subsequent polishing. Covers all needs, on the basis of the final use of the finished glass.





EDGETECH EUROPE GMBH

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THE ADVANTAGES OF THE SUPER SPACER®

- low thermal conductivity
- fast dew point drop
- durable edge seal, continuous vapour barrier at corners
- moisture-adsorbing, flexible foam matrix
- high desiccant content adsorbs more moisture than two-sided and generally also more than four-sided filled conventional systems
- no chemical fogging*
- various widths between 3.2 and 32mm
- new colour variants
- high-quality silicone for superior resistance to UV-light and oxidation
- very good gas-loss rate values according to EN 1279 part 3
- optimum values for energy efficiency (Psi-Values up to 0.031**)
- enhanced comfort and well-being near windows
- excellent condensation resistance, shape retention and colour stability
- excellent durability for sustainable performance
- higher productivity through ease of processing (only three process steps)
- North America ASTM E2188/E2189/E2190
- Passive House ph A+ certificate for Arctic Climate
- Europe EN 1279
- Canada CGSB 12.8
- CEKAL - certified for France
- RAL Quality Label
- ISO 5001 Energy Management
- ISO 9001 Quality Management
- ISO 14001 Environmental Management
- P1 Industry standard USA

* safe up to approx. +80°C, higher depending on the test method

** Super Spacer® T-Spacer™ Premium Plus made from structural foam processed in triple-pane insulating glass; source: Bundesverband Flachglas e.V. (German flat glass association)



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EUROTECH-WAY Srl

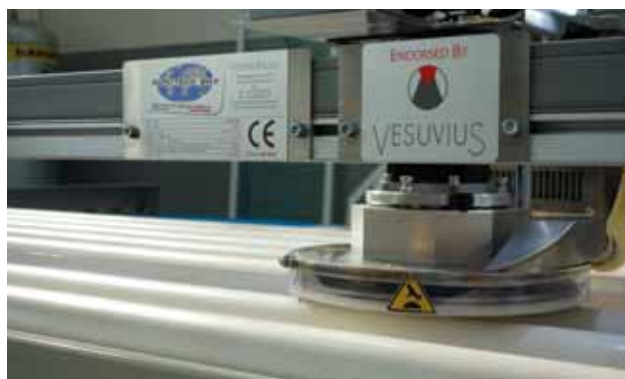
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ROBOCLEAN

IS THE ONLY WAY to clean and polish rollers fully automatically, perfectly guarantee 100%, with high final cleaned result, and ENDORSED BY VESUVIUS



SET OF DISCS FOR ROBOCLEAN

ROLLAERS DIRTY WITH PAINT

CLEANED WITH ROBOCLEAN



MAIN ROBOCLEAN PERFORMANCE

- With the same RoboClean, and proper kits, you can clean multiple roller furnaces and of any type !!
- With this kits you can change the RoboClean set-up in a very fast and simple way.
- Using the RoboClean you save manpower, reduction productions stop time, and avoid any defect on the glass, coming from dirty rollers.
- The RoboClean could be equipped with different type of discs able to remove any kind of dirty materials from rollers surface.

EXTENSION KIT



ROLLERS KIT PITCH



AUTOMATIC SCREEN PRINTING MACHINE

This new series of screen printing machines with bridge technology has been developed from Eurotech Way team to have more flexible and fast machines with large free spaces for the operator and to make production changeover easier and faster with very low maintenance using high quality materials confirmed from our customer.

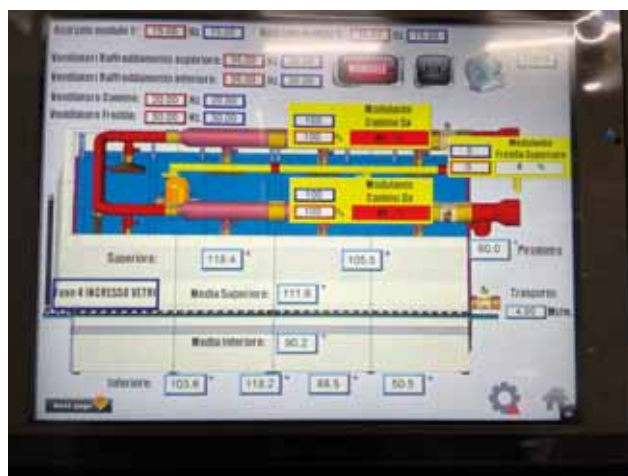
Indeed, when changing production, the operator only has to position by hand the spatulas and the screen.

The positions of all the other parts of the machine are stored in the recipe, therefore by recalling the recipe all the parts of the machine automatically position themselves in the correct position.



DRYER

The conveying system is equipped with ground and polished ceramic aluminium rollers. Motorization takes place by means of dry bevel gear, with quick rollers coupling/release, controlled by an inverter. The heating elements are IR lamps positioned in the upper part and lower part of heating chamber. Temperatures are controlled separately on each heating element, and between the upper and lower parts of the rollers, by means of special thermocouples and related self-regulators.



The thermal insulation of the heating elements is made of high quality 100 mm thick insulation matter, which allows the machine to work at a temperature of 250°, ensuring maximum thermal insulation. The internal insulation panels are positioned in such a way that they do not create any contact with the external structure, avoiding the normal passage of heat and, therefore, natural dissipation towards the outside. A capillary suction system placed on the entire perimeter of the heating elements prevents leakage of drying fumes generated by the paints, thanks to separate regulation at each suction point. The cooling system consists of a set of separate high-pressure electro-fans for the system above the glass and for the system below the glass.



EDGE ROLLER COATING MACHINE

This machine can be equipped with applicator roller for different enamels and processes.

The head is fitted with devices for manual or automatic enamel feeding, with a closed protective case for operator safety.

There is installed a new system developed by Eurotech Way allows to deal with the problem of enamel overlapping during the intersection of edges, solving it almost completely.

The roller conveyor is equipped with a lifting bench, which guarantees free movement of the glass panels by means of supporting free spheres.

Close attention has been paid to the applicator and dosing rollers, as well as to the enamel containment system that allows to keep the inside of the rollers perfectly clean without damaging them.





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Arrissing Machine

ART. EG ARRISSING MACHINE

The vertical arrissing machines series Art. EG remove the sharp edges of glass sheets by eliminating irregularities, ensuring safe and smooth finishes. Art. EG significantly increases the productivity of arrissing operations as is equipped with **two operating heads**, that are capable of working simultaneously on two different sheets of glass, or by synchronizing both operating heads onto one sheet of glass. The **"self-learning"** mode automatically acquires the dimensions for

	EG04020HT	EG04025HT	EG05028HT	EG06033HT
Height (mm)	3.670	4.170	4.470	4.970
Length (mm)	9.650	9.650	9.650	9.650
Depth (mm)	3.260	3.260	3.260	3.260
MAX glass length (mm)	4.000	4.000	5.000	6.000
MAX glass height (mm)	2.000	2.500	2.800	3.300
MAX glass weight (kg/linear meter)	200			



the square shapes, while a separate device measures the thickness of the glass being processed. During the arrissing process, **the double suction cup carriages** secure the sheets of glass and move them forward. Depending on the sizes of the glass sheets being processed, the suction cup carriages automatically move to the correct position.

The presence of two independent suction cup carriages allows Art. EG to **reduce processing cycle time, guaranteeing high productivity.**

Art. EG can also process different shapes of glass sheets. (shape must be linear, such as triangles, trapezium, etc.). Art. EG is equipped with two operating heads with **"V" shape diamond tools ø 200 mm.**

The arrissing machine is able to process **glass thickness between 3 and 21 mm with processing speed up to 300 mm/sec.**

Edging -Drilling -Milling Line

ART. EM EDGING MACHINE

The edging machine Art. EM, one of the most appreciated of the Forel range, is for the edge processing of monolithic and laminated glass sheets.

The machine can perform three different processing operations: arrissing, grinding, polishing. Thanks to the different technological measures used, Art. EM guarantees total stability and high processing speed during the different processes. It can also process low-E glass without damaging the coating.

The operating head of the **Art. EM** edging machine is equipped with a **patented system for the localized holding of the glass sheets.**

The device consists of **two self-adjusting glass-pressing wheels** that rest on the glass sheet and hold it in place. The system guarantees a perfect hold, centring with respect to the tool, as well as the absence of vibrations during processing. Thanks to this device, **Art. EM** offers precise processing even when the glass sheet is not perfectly flat.

The **Art. EM** vertical edge processing machine is equipped with an exclusive feeler that controls the edge of the sheet locally during processing, 'guiding' the grinding wheel.

It can therefore operate in **dynamic self-learning mode for rectangular glass**, guaranteeing consistently uniform results in both arrissing and edging.

The edging machine is equipped with a pre-setting system that controls consumption and the contact of the tool.

	EM04020HT	EM04525HT	EM05028HT	EM06033HT	EM09033HT
Height (mm)	4.000	4.000	4.300	4.800	4.800
Length (mm)	10.800	10.800	10.800	11.900	20.170
Depth (mm)	2.600	2.600	2.600	2.600	3.180
MAX glass length (mm)	4.000	4.500	5.000	6.000	9.000
MAX glass height (mm)	2.000	2.500	2.800	3.300	3.300
MAX glass weight (kg/linear meter)	200	200	200	200	200



ART. DM DRILLING AND MILLING MACHINE

Enriched with specific features to guarantee precision and stability, the vertical drilling and milling machine art. DM represents an irreplaceable resource, both for stand-alone use and in line with an edging machine art. EM. The quality of processing of the glass sheets depends mostly on the stability of the glass while the various tools are being used. For this reason, the art. DM is equipped with **two opposite operating heads (which are independent and equipped with an automatic tool change system, with 6 rear positions + 8 front positions) and two exclusive suction cups systems**, both patented. The first group of **fixed suction cups** offers a strong grip on the glass sheet, while a



	DM04020HT	DM04525HT	DM05028HT	DM06033HT	DM09033HT
Height (mm)	3.950	3.950	4.250	4.750	4.750
Length (mm)	12.085	12.085	13.185	15.085	21.920
Depth (mm)	3.500	3.500	3.500	3.500	3.450
MAX glass length (mm)	4.000	4.500	5.000	6.000	9.000
MAX glass height (mm)	2.000	2.500	2.800	3.300	3.300
MAX glass weight (kg/linear meter)	200				
Automatic tools change	8 tools (front) + 6 tools (rear)				

second group of smaller **adjustable suction cups** offers greater stability close to the processing tools. These suction cups can be positioned differently depending on needs.

An additional system of suction cups can be applied directly on the rear spindle. In addition to ensuring greater stability during drilling and milling, the rear suction cup group holds the cuts and releases them in the bottom tank. Alternatively, a **buffer** can be set in contrast to the tool for the execution of particular processing operations. This tool can be applied **both on the rear spindle and on the front spindle**.

ART. EM-DM COMBINATION

Art. DM vertical drilling and milling machine can work together with the **Art. EM** vertical edging machine. This configuration, by far one of Forel's most popular solutions, combines the **arrising, rough or polished edging, drilling and milling** processes in a single line. The line can be completed with an Art. VV vertical washing machine. As well as demonstrably improving the quality of the finished product, spreading the workload of edge processing over more machineries also over offers significantly better productivity than other solutions: indeed, while a glass sheet is being grinded or polished, another one is already being drilled and another one is being washed.



Sorting System

ART. SS SORTING SYSTEM

The Art. SS Sorting System is the complete solution for the automation of the handling, storage and reordering of products in glass factories.

The **Art. SS Sorting System** consists of highly customizable handling and sorting units.

Its modularity allows it to adapt to the specific needs of glass factories. However, it is not just a matter of 'moving' the glass sheets: **Art. SS organizes and manages the progression of outgoing pieces** depending on the work programs (both previous and subsequent lines), contributing immediately in terms of productivity, speed and efficiency. Made up of glass sheet handling shuttles and storage units, the Sorting System solves the problem of so-called 'bottlenecks'.

In fact, different production lines often have different production times: thanks to its automated storage system, **Art. SS** guarantees order within the glass factory and allows to **optimize available space**.

Several advantages are obtained by decreasing manual **handling** of the glass sheets in favour of **automated** handling:

- **more rapid flow**, with time saving in supplying processing lines.
- **less risk of breakage or damage**.
- reduction of **waste**.
- **fewer risks for operators**.

The installation of the Sorting System results in a clear improvement in the order and efficiency of glass factories.

In fact, the Sorting System assigns a **unique ID (identification number)** to all glass sheets: **the sheets are constantly tracked, localised and managed according to the program**. The position of each single sheet can be monitored at any time from a PC station and the progress of each single order is therefore always known.



	SS04028HT	SS05028HT	SS05033HT
Shuttle height (mm)	3.570	3.570	4.070
Shuttle length (mm)	4.200	5.270	5.270
MAX glass length (mm)	4000	5000	5000
MAX glass height (mm)	2800	2800	3300
MAX glass weight (kg/linear meter)	200		

Vertical Cutting For Laminated Glass

ART. VC VERTICAL CUTTING LINE FOR LAMINATED GLASS

The vertical cutting line for laminated glass Art. VC combines high productivity and excellent quality: equipped with two cutting bridges and an automatic sheet rotating element, it has been designed to process Jumbo size sheets, optimizing cutting on X, Y, Z axes. The Art. VC offers precise, fast and safe processing. During cutting, the sheet remains in a vertical position throughout the duration of the production cycle, for high productivity in a reduced space. Cutting optimization is elaborated by means of a special software that reorganizes data, speeding up processing and assisting operators.

The line offers absolute precision, showing to be a true top product for the cutting of laminated glass. Each of the two cutting bridges has **two opposite ripping units** for the scoring of the glass and two breaking bars (front and rear), to also allow the uniform opening of the sheet along its



	VC04533HT	VC06033HT
Height (mm)	5500	7000
Length (kg)	26000	26000
MAX glass length (mm)	6000	
MAX glass height (mm)	3300	
MAX glass thickness	from 6,3 mm to 20,5 mm	

entire length. In the case of Low-E glass, the cutting bridges can also be equipped with a **special coating removal system**. After scoring, the two pieces of the sheet are pulled, uncovering the PVB film. A **special infrared emitter** heats and softens the PVB film without heating the glass. A **patented motorized drawing system** totally or partially detaches the two panes. In the case of thick interlayer, a blade can also operate.

COMPLEMENTARY EQUIPMENT

The art. VC cutting line can be combined with:

- The automatic stock selector unit **Art. ST** has been developed for a quick and safe handling of the Jumbo size glass sheets, up to 12 tons each one. The shuttle is also equipped with a clamping system for the glass packs, allowing fast and safe positioning. Art. ST is equipped with an automatic glass storage with multiple racks.
- **Art. VL** automatic glass loader manages large size sheets, up to Jumbo size (6,000 x 3,300 mm).
- **Art. TT** tilting table at the end of the line.

IG Lines

The extensive choice of insulating glass solutions is the pride of the Forel range. Versatile and configurable to cater to a wide variety of needs, these machines are the result of over 45 years of research and development in this sector. Boasting a host of exclusive, patented technological solutions, Forel's products are a strategic choice, helping businesses attain the highest possible productivity and process quality. Forel offers three different series of solutions for insulating glass production: 'Residential', 'High Tech' and 'No Limits'.

THE RESIDENTIAL IG LINE

The Residential IG line is mainly designed for the production of double- and triple insulating glass units, with sizes, thicknesses and conveying weight capacity suited to residential architecture. This range consists of Forel's classic offering of machines for the industrial production of insulating glass. Designed to offer Forel quality in a version focused on a specific goal: IG units in commonly-used sizes, with rigid or flexible spacers. Compact but still with outstanding performances, this is the ideal solution for standardised production. The line is capable

MAX glass length (mm)	4.000
MAX glass height (mm)	2.500
IG unit thickness (mm)	65
IG unit weight (kg/linear meter)	200
Number of chambers	up to 2 (triple glazing)
Spacer	rigid/flexible
Gas filled	argon
Sealing products	up to 2



of working with individual glass sheets of up to 4.000 mm length and 2.500 mm height, weighing up to 200 kg/linear meter. It can also process up to two chambers and using up to two different sealing products.

THE HIGH TECH IG LINE

The cornerstone of Forel's product range for insulating glass. The result of Forel's decades of experience in this field, the "High Tech" range is complemented by a choice of exclusive devices and systems for work with offset and shaped glass



MAX glass length (mm)	6.000
MAX glass height (mm)	3.300
IG unit thickness (mm)	100
IG unit weight (kg/linear meter)	400
Number of chambers	up to 3 (quadruple glazing)
Spacer	rigid or flexible
Gas filled	argon and krypton
Stepped unit	up to 100 mm (leading and lower edge) up to 300 mm (trailing and upper edge)
Sealing products	up to 3

sheets, as well as for double, triple and quadruple IG units. This line can process assembled glass units up to 6.000 x 3.300 mm in size, weighing up to 400 kg per linear metre (assembled panel), and thicknesses up to 100 mm. Equipped with a flat plate coupling press with gas filling function (argon/krypton) and sealing machines, the High Tech line can process rigid or flexible spacers and can use up to three different sealing products. Special technology also enable the management of possible curvatures of the glass sheets.

THE NO-LIMITS IG LINE

The "No Limits" IG line meets all requisits for the ultra large sizes and facade markets: capable of managing the pane curvatures, weights and stepped units required by the extra-jumbo format, "No Limits" IG line goes beyond the restrictions of commercial architecture. It can process extra-Jumbo units up to 12 meters of length and 3,3 meters of height, with a capacity per linear meter of up to 350 kg for single panes and 550 kg for assembled panes, with thicknesses up to 40 mm single glass and 100 mm single glass. "No Limits" IG Line can also assemble units with up to 3 chambers and is able to handle offsets up to 250 mm on the upper and lower edge and 1.000 mm on the leading and trailing side, thanks to the dynamic support of the coupled panes. Each machine that makes up the line is equipped with devices developed specifically to handle large dimensions, substantial weights and any non-planarity throughout every phase. The line can process both rigid and flexible spacers and the sealing robot can use up to 3 different sealing products in a "continuous sealing" mode, offering an astonishing quality.

MAX glass length (mm)	12.000
MAX glass height (mm)	3.300
IG unit thickness (mm)	100
IG unit weight (kg/linear meter)	550
Number of chambers	up to 3 (quadruple glazing)
Spacer	rigid or flexible
Gas filled	argon and krypton
Stepped unit	up to 1.000 mm (leading and trailing edge) up to 250 mm (upper and lower edge)
Sealing products	up to 3



THE HIGH SPEED IG LINE

The "High Speed Insulating Glass" project had a precise aim right from the start: slashing insulating glass production times while still maintaining the high-quality levels of the finished unit. The new High Speed line optimises every single processing stage without renouncing anything at all in terms of precision. It's designed to produce insulating glass primarily for residential use, in units measuring up to 2,000 x 2,500 mm and with single or double chamber, shaped units and Georgian bars if required. The spacer is a flexible profile and the panel sealing is hot melt. During the development of this solution, it was decided not to accelerate the processing time, so as not to compromise the final quality: rather, the entire line process was optimized, reducing downtime and making the sequences smoother, so as to gain in productivity.

The flexible spacer applicator offers a non-stop working continuity, thanks to devices like the buffer for the automatic preparation of the profile to be applied and the automatic reel changeover system. The coupling press is a special compact version, so the transit of glass through this station is as fast as possible. In the sealing robot, indeed, a new axis has been introduced with a second (rear) suction cup, which replaces the master (front) one during sealing. In this way, the master suction cup can release the glass earlier and move for the next panel. The high speed of the High Speed line is not due to accelerations on the single machinery but to the optimizing of the overall cycle: in this way, Forel can offer a fast production, while keeping the same final quality.



MAX glass length (mm)	2500
MAX glass height (mm)	2000
IG unit thickness (mm)	65
IG unit weight	200 kg / linear meter
Chambers	1-2
Spacer	Flexible (high speed mode) – rigid (manual mode)
Gas filled	argon and krypton
Sealing products	up to 3

Lamination Line

ART. LL LAMINATION LINE

The Lamination Line Art. LL is Forel solution for the production of laminated glass with PVB and SentryGlas® interlayer. The line is capable of a flexible production, processing different sizes, shapes and types of glass. Like the entire Forel range, the Lamination Line Art. LL follows the company's product philosophy, offering automation, innovation and quality. Forel's Art. LL line can process multi-layer panels up to a maximum thickness up to 80 mm, size up to Jumbo (6,000 mm x 3,300 mm), whether rectangular, stepped or

shaped units. The automatic unloader can manage a finished panel weight up to 1,500 kg. The glass sheet is loaded onto the tilting table, which carries the sheet horizontally. From here, it proceeds to the horizontal washing machine. Thanks to a system of self-learning sensors, the washing machine detects the size, thickness and presence of Low-E coating on the incoming glass. The machine automatically adjusts the action of the brushes, avoiding the use of hard bristles on the Low-E coating. Then, the glass pane proceeds down the line, where a system of belts and rollers brings it into proper alignment and then positions it in the center of the line. Once aligned and brought to the center, the glass sheet is picked up by system of suction cups, which transports it to the assembly area, where the PVB roll storage (capable of holding up to 8 PVB rolls) is located. The positioning of the PVB over the glass is fully automatic, and takes advantage of the movement of the suction cup, when it gets back to pick up the second glass. Thanks to the automatic pane centering system, the positioning of the two panes is perfect. The lamination oven consists of two zones, pre-heating and reheating, which operate with progressive temperatures. Two sets of pressing rollers are in operation inside and at the end of the oven. They're conical-shaped to facilitate the expulsion of air to the outside.



	LL04526HT	LL05026HT	LL06033HT
MAX pane length (mm)	4600	5000	6000
MAX pane width (mm)	2600	2600	3300
Max laminated unit thickness (mm)	80 mm		
PVB Storage	up to 8 Roll		

*Forel is constantly working on the development of new solutions.
Some data present in this report may differ from the models available on the market.



CHINA GLASS 2023

32nd China International Glass Industrial Technical Exhibition

Shanghai New International Expo Centre

May 6th-9th, 2023

Organizer: The Chinese Ceramic Society

Sponsor: China Architectural & Industrial Glass Association

China National Association For Glass Industry

Shanghai Ceramic Society

Contractor: Beijing Zhonggui Exhibition Co., Ltd.

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AUTOMATIC SANDBLASTING CABINS FOR FLAT GLASS

Sturdy and compact machines with small overall dimensions, easy to use by any operator, they are characterized by **high productivity** and **low consumption** of electricity and compressed air, and provide a wide range of processing options. It is possible to operate both automatically and manually and the maximum working height can be doubled thanks to the fact that the cabin is **open topped**. As an option, all versions can be equipped with additional **extensions for glass support**, which are 1400 mm long/each. The sandblasters are equipped with a high efficiency **filtration system** with automatic recovery and recycling of the abrasive material and separation of waste dust. The **rubber gaskets** ensure airtight seal, preventing the dust from escaping into the surrounding environment.

CIRCULAR ECONOMY PERSPECTIVE

Sandblasting machines are also proving to be very interesting from a perspective of **circular economy**. Glasses with surface defects can in fact be sandblasted and put back on the market, giving them new life and at the same time generating **added value for the glassworks**.

SANDBLASTING WITHOUT STICKING A MASK ON GLASS

The **Amacor stencils** are purpose-made masks for the automatic carrying out of modular patterns on the glass plate (strips, squares, small circles ...). This system (supplied as an optional item) allows to sandblast without sticking a mask on each glass, with huge reduction of both process cost and production time.



TIMELY CUSTOMER SERVICE & E-SHOP

Fratelli Pezza has ex-stock availability of all consumables, from nozzles to technical **spare-parts**. Original spare-parts are made of highly abrasion resistant materials to ensure long lifespan and safeguard proper machine operation. Customers can also count on the **shop.fratellipezza.com** portal through which it is possible to consult the complete spare parts catalogue, make orders and take advantage of many other complementary services.

FpLAB

FP LAB is an area inside the factory in Clusone (BG) dedicated to the carrying out tests and trials with our machines. Taking advantage of it is very simple: glaziers just have to contact the company and make an appointment.

MISTRAL EV+ SERIES, top of the range automatic sandblasting machines for flat glass and mirrors

The automatic sandblasters of the **MISTRAL EV+** series represent the top of Fratelli Pezza's product range. This series is available in 3 models: **MISTRAL 120EV+**, **180EV+** and **260EV+** (max. working height 1200, 1800 and 2600 mm).

#MISTRALAPP: PROGRAM THE SANDBLASTER FROM REMOTE

The company has recently presented the new web application that allows the MistralEV+ series sandblasters to be programmed directly from a PC.

With MistralApp, glass companies will be able to optimize programming and processing times, significantly reducing production costs and consumption.

The main advantages are:

- create programs remotely while the machine is running, without interrupting the process;
- view a preview of the glass to be processed and of the sandblasting areas in order to facilitate programming and limit consumption;
- name, modify and copy programs adapting the same process to different glass formats;
- make a backup of the programs directly on the PC; share the programs with Pezza to identify the best settings for each process.



NO MORE SPARKS WHILE BLASTING MIRRORS

Mistral EV+ is the most used sandblaster by LED mirrors manufacturers. They take advantage of the custom-made software (in particular of the zonal blasting feature) which allows to effectively remove the silvering and optimize the process. Moreover, all models are equipped with "MirrorProtection", a unique system available on the market that limits the accumulation of static electricity within the cabin avoiding sparks, a phenomenon that often occurs during sandblasting on mirrors.

ZONAL BLASTING FEATURE

The software of the Mistral EV+ series enables to set several sandblasting areas on the same glass plate, and this allows to optimize the processing times and reduce the consumption of abrasive material. A graphic simulator shows the programmed blasting areas so that the operator can verify if the programming was properly performed.

A NEW WAY TO DESIGN PRIVACY

The shading effect on glass, in particular for shower

boxes, has become a trend in bathroom furniture design. Mistral EV+ allows to carry out different kinds of gradient effect, giving a wide range of decoration options to interior designers.

PREDICTIVE MAINTENANCE

Proper predictive and preventive maintenance allow to avoid premature wear of some of the main components of the machine and contributes to minimizing the risk of anomalies or damage to some parts of the same. For this reason, the

software indicates the recommended maintenance operations to be performed to keep the equipment running properly and monitor the lifespan of each item.

READY FOR INDUSTRY 4.0

All automatic versions are compliant with the requirements of Industry 4.0. thanks to the SandConnection software. Interconnection, digitalization of the production process and constant monitoring of performance are key factors for the competitive development of glass companies. The software allows you to monitor production times and costs in an analytical way, which translates into more precise estimates and immediate diagnosis of any faults.



		260 EV+	180 EV+	120 EV+
GLASS PROCESSING				
Max working high	mm	2600	1800	1200
Max. glass thickness	mm	50	50	50
Open top		•	•	•
SANDBLASTING TYPES				
Light		•	•	•
Normal		•	•	•
Shading / gradient		•	•	•
Deep engraving		•	•	•
Zonal		•	•	•
FEATURES				
Automatic gun	nr	3	1	1
Optional automatic gun	nr		1	1
Manual gun	nr	1	1	1
Self-cleaning filter		•	•	•
MirrorProtection		•	•	•
Ethernet port		•	•	•
USB port		•	•	•
SOFTWARE				
Storable programs	nr	•	•	•
Multiple blasting passes (for deep engraving)	nr	99	99	99
Adjustable forward step		•	•	•
Adjustable gun speed		•	•	•
Automatic adjustment of the working pressure		•	•	•
Pause&Check		•	•	•
Predictive maintenance		•	•	•
Counters		•	•	•
4.0 ready		•	•	•
CONSUMPTION & PERFORMANCE				
Electrical consumption	kW	3	2	2
Compressed-air consumption (for each gun)	L/min.	500	500	500
Working pressure (line pressure)	Bar	6-8	6-8	6-8
Max working speed / 1 m ² *	Min.	2	2,5 -3	2,5 -3
OPTIONALS				
Extensions		•	•	•
Amacor stencils		•	•	•
Wi-fi antenna		•	•	•

* This data is purely indicative as it is influenced by several factors.



MISTRAL 260 EV+



MISTRAL 180 EV+



MISTRAL 120 EV+

ZEPHIR+ SERIES, entry-level automatic sandblasting machines for flat glass

ZEPHIR+ automatic sandblasters represent the best compromise between quality and cost.

It is the best-selling model among those customers who are used to fully sandblasting the surface of the glass plate and just need surface quality finish without any other particular functions. This series is available in 3 models: ZEPHIR 120+, 180+ and 260+ (max. working height 1200, 1800 and 2600 mm).

ZEPHIR 260+, SANDBLAST LARGE GLASSES WITH A SMALL BUDGET

The new architectural trends have required an increase in the size of the windows and for this reason Fratelli Pezza has decided to add to its product range ZEPHIR 260+, a cheaper version than the top of the range MISTRAL260EV+, for those companies that need to process large glasses but have a **limited investment budget**. The ZEPHIR+ series has always been the ideal choice for those companies that do not have complex decorative needs but simply need to sandblast entire glass sheets quickly and with quality.



ZEPHIR 260+



ZEPHIR 180+



ZEPHIR 120+

		260+	180+	120+
GLASS PROCESSING				
Max working height	mm	2600	1800	1200
Max. glass thickness	mm	50	50	50
Open top		•	•	•
SANDBLASTING TYPES				
Light		•	•	•
Normal		•	•	•
Shading / gradient				
Deep engraving		•	•	•
Zonal				
FEATURES				
Automatic gun	nr	2	1	1
Optional automatic gun (on request)	nr	1	1	1
Manual gun	nr	1	1	1
Self-cleaning filter		•	•	•
MirrorProtection		•	•	•
Ethernet port		•	•	•
USB port		•	•	•
SOFTWARE				
Storable programs	nr	1	1	1
Multiple blasting passes (for deep engraving)	nr	99	99	99
Adjustable forward step		•	•	•
Adjustable gun speed		•	•	•
Automatic adjustment of the working pressure		•	•	•
Pause&Check		•	•	•
Predictive maintenance				
Counters		•	•	•
4.0 ready				
CONSUMPTION & PERFORMANCE				
Electrical consumption	kW	3	2	2
Compressed-air consumption (for each gun)	L/min.	500	500	500
Working pressure (line pressure)	Bar	6-8	6-8	6-8
Max working speed / 1 m ² *	Min.	2 min.	2,5 -3	2,5 -3
OPTIONALS				
Extensions		•	•	•
Amacor stencils		•	•	•
Software FPSandConnection4.0		•	•	•
Wi-Fi antenna		•	•	•

* This data is purely indicative as it is influenced by several factors.

GHIBLI SERIES, manual sandblasting cabin for flat and hollow glass



GHIBLI 70



GHIBLI 140M



		140M	70
GLASS PROCESSING			
Max working height	mm	1400	700
Max. glass thickness	mm	50	50
Open top		•	•
FEATURES			
Manual gun	nr	1	1
Self-cleaning filter		•	•
Foot-pedal control		•	•
CONSUMPTION			
Electrical consumption	kW	1,2	1,2
Compressed air consumption/gun	L/min.	500	500
Working pressure	Bar	6-8	6-8
OPTIONALS			
Turning table		•	•
Easel		•	•

GLASS ARTISTS CAN EXPRESS THEIR CREATIVITY

Ghibli manual sandblasters are the perfect solution to express one's creativity; thanks to the double aperture in front door, the operator can easily handle the glass piece and work on it in the desired way. Fratelli Pezza is proudly supplier of the main Italian glass artists and decorators. An example? "Un artigiano Sognatore", alias Umberto Tofoni, third generation of a family of glassmakers from the Marche region, has created the first **glass bow tie** making it a cult object thanks to the sandblasting technique and the Pezza "Ghibli" sandblasting cabin.

THE IDEAL SOLUTION TO SANDBLAST SHAPED ITEMS

An inclinable platform and a turntable, on which to place shaped objects (vases, sculptures, plates, glasses, etc.) can be assembled into the cabin, this making the manual sandblasting process even easier.

SANDER FP 101, portable sandblasting unit

SANDBLASTING IN YOUR HANDS

SANDER FP 101 is a portable sandblasting unit ideal for **small glass pieces** and artistic purposes. It is equipped with an automatic system for recovery of abrasive material which allows to optimize consumption. A brush, installed on the blasting gun, prevents the abrasive material from being spread around during operation.

SANDER FP 101		
FEATURES		
Manual gun	nr	1
Built-in filter		•
Brush for dust protection		•
CONSUMPTION		
Electrical consumption	kW	1,3
Compressed air consumption/gun	L/min.	350
Working pressure	Bar	6-8



FRATELLI PEZZA, SAND-JET MARKING EQUIPMENTS FOR GLASS AND MIRRORS

GLASS MARKING, A KEY REQUIREMENT

Glass identification requirements, and increasingly stringent regulation in the field of glass for the building industry, make glass marking an important factor today. These equipments represent the ideal solution for every marking need on any type of glass.



A CLEAR AND PERMANENT MARK ON THE GLASS

Sand-jet marking equipment allows to carry out a clear and permanent mark on the glass. This fact, together with the high cost-effectiveness of the process, make this technique advantageous in comparison with other marking techniques. Considered the low investment needed and the minimal process costs, this method can represent a convenient solution for large companies as well as for small and medium sized enterprises

EXAMPLES OF POSSIBLE LOGOS

- Company's logo
- Numbers
- Safety standards
- Codes
- Indication of glass type
- Small designs

GLASS MARKING GETS BIGGER

Marker 101T, Easymarker EV30 and Easymarker UP30 enable to imprint on the surface of glass and mirrors a mark with a diameter of up to 30 mm in a totally automatic way, ensuring the same quality and sharpness of marking as the standard version with 25 mm diameter. This new solution was designed to respond to the needs of a leading international company in the production and processing of flat glass, which needed to imprint on the glass surface extensive information about the compliance of their products with the international standards related to material safety in the building industry (ANSI, CFR, SCGG, UNI, EN, CE, etc.).

OPTIMIZATION OF THE STEEL MASK

All devices are equipped with a timer to ensure proper use and optimize the production times as well as the life of the steel masks.



MARKER T line, portable sand-jet glass marking units

MARKER 101T / 301T



		101	301
WORKING FEATURES			
Portable		•	•
Max. marking area (ø)	mm	25	30
FEATURES			
Manual timer	nr	•	•
CONSUMPTION & PERFORMANCE			
Electrical consumption	kW	1,3	1,3
Compressed air consumption/gun	L/min.	350	350
Working pressure	Bar	6	6
Indicative lifespan of the steel mask (marks)*	nr	500-900	200-400
OPTIONALS			
SQ 101 - Metal Bracket		•	•

* This data is purely indicative as it is influenced by several factors.

EASYMARKER LINE, AUTOMATIC SAND-JET GLASS MARKING EQUIPMENTS

		EASYMARKER UP 25	EASYMARKER UP 30	EASYMARKER EV 25	EASYMARKER EV 30
WORKING FEATURES					
Fixed		•	•	•	•
Max. marking area (ø)	mm	25	30	25	30
Vertical operation		•	•		
Horizontal operation				•	•
FEATURES					
Electronic timer		•	•	•	•
Mark counter		•	•	•	•
Regulation of gun run		•	•	•	•
Foot pedal		•	•	•	•
Start button		•	•	•	•
Connectivity with other machinery		•	•	•	•
CONSUMPTION					
Electrical consumption	kW	1,3	1,3	1,3	1,3
Compressed air consumption/gun	L/min.	350	350	350	350
Working pressure	Bar	6	6	6	6
Indicative lifespan of the steel mask (marks)*	nr	500-900	200-400	500-900	200-400
OPTIONALS					
SQ EMUP - Metal bracket + column		•	•		

* This data is purely indicative as it is influenced by several factors.



EASYMARKER UP 25 / 30



EASYMARKER EV 25 / 30

CONNECTIVITY

A further advantage given by this device is the possibility to totally automate the process by connecting the equipment to other machinery such as washing machines, cutting tables, double-glazing lines, tempering and laminated furnaces, etc.

ALUMINIUM OXIDE FOR AN EXCELLENT SANDBLASTING QUALITY

In a very particular and complicated period as regards the availability of raw materials, FRATELLI PEZZA, "one-stop supplier" for everything related to sandblasting and glass marking, is able to offer **immediate availability of aluminum oxide** thanks to consolidated agreements with one of the main international players in the sector and to the wide logistic structure it has at its disposal.

Aluminum oxide is the most suitable abrasive material for glass sandblasting and its quality is crucial for the correct functioning of the machinery. The aluminum oxide supplied by FRATELLI PEZZA S.r.l. guarantees to always obtain **maximum performance** from the sandblaster and also offers an excellent ratio between cost and yield. Other abrasives available on the market can perform up to 3 or 4 times lower and often produce an excessive amount of dust, which can compromise the smooth operation of the filtration system.

The material is packaged in **25 kg bags** and is available in **different grains**, from the finest to obtain satin effects to the most consistent ones suitable for engraving work. The price varies according to the size of the order, with great economic advantages for the higher quantity ranges. FRATELLI PEZZA makes its experience available by offering a **free consultancy** service thanks to which it is possible to identify the most suitable grain for the processing to be carried out.



PROTECTIVE COATINGS FOR TRANSPARENT AND SANDBLASTED GLASS

Fratelli Pezza has recently launched on the market **MIX 30 PRO** and **GHOSTGLAZE**, two coating products for the protection of sandblasted glass and transparent glass respectively. These products make the glass surface water-repellent, anti-fingerprint and stain resistant. The treatment makes the surface "easy to clean", which is crucial in a period of time in which surfaces must be regularly cleaned to ensure proper sanitation.

READY TO USE AND QUICK DRYING TIMES

Both products are **ready to use** and must not be diluted. For a proper application it is necessary to clean the surface to be treated and wait until the surface has completely dried before applying the product. After that, the operator has to spray the product onto the surface and spread it with a clean microfiber cloth until it dries evenly over the surface. Once sprayed, the liquid must be immediately spread. The drying process is very quick, about 1 minute to the touch.

HIGH COMPATIBILITY WITH MOST OF THE MATERIALS

Both products are compatible with many materials: aluminum, steel, gaskets, ceramic, marble, wood, corian, etc. The treated surface can be installed with the use of neutral silicone, acetic or MS polymer.

The products can be applied on glass that has previously undergone nano-ceramic inks digital printing (after oven treatment). The coatings do not yellow and resist to UV rays.

YIELD & DURATION OF TREATMENT

The coverage is **about 100 m² / liter** with a single pass even on etched or very porous sandblasted surfaces. With proper maintenance, the treatment lasts for more than 6500 washes. The product can be easily reapplied. To ensure a proper maintenance of the treated surface only use water and neutral detergents with a soft cloth.

GHOSTGLAZE, PROTECTIVE AND WATER-REPELLANT COATING FOR TRANSPARENT GLASS



IDEAL FOR SHOWER ENCLOSURES

GHOSTGLAZE is a new nanotechnology product for the protection of transparent glass and it has been formulated to protect the glass surface by making it water-repellent and more resistant to the action of atmospheric agents, without altering its mechanical and aesthetic characteristics. Ease of application, quality of protection and a highly competitive price make GHOSTGLAZE the ideal product to be applied on **float glass, shower enclosures** and any other type of untreated glass, to protect the surface and facilitate cleaning. The glass can be installed and wet after 24 hours from the treatment and can be cleaned with neutral detergents after 72 hours using a soft microfiber cloth.

MIX 30 PRO, PROTECTIVE AND ANTI-FINGERPRINT COATING FOR SANDBLASTED GLASS

A PROTECTIVE COATING FROM THE WORLDWIDE LEADING MANUFACTURER OF SANDBLASTING MACHINES

Sandblasting is one of the most used techniques for glass decoration as well as to ensure privacy in public and private environments. The sandblasted surface, becoming porous, tends to capture fingerprints and impurities, with unsightly results. For this reason, Fratelli Pezza, leader in the production of sandblasting machines for flat glass, has been offering quality products for the care and protection of sandblasted surfaces for more than 20 years, so that its customers can create design solutions suitable for any environment. **MIX 30 PRO** is the enhanced version of the protective coating for sandblasted glass Fratelli Pezza has been selling for many years. The new formula is the result of an innovative nanotechnology which creates a filler that prevents the adhesion of **dirt, limescale, fingerprints and impurities** that tend to deposit into the micropores created by the sandblasting process. The treated surface can be immediately handled, packaged or laid on site.

APPLICATION

The product can be applied on entirely, partially, lightly decorated sandblasted glass or frosted glass. It is ideal for partition walls, shower boxes, doors, parapets, stairs, windows, tables, furnishing elements, kitchen tops and splash guards, bathroom furniture, floor tiles and many other items.



LONGCARE30: CLEANING AND MAINTENANCE OF SANDBLASTED GLASS

LONGCARE30 is the NEW product dedicated to the care and maintenance of sandblasted glass surfaces. In addition to effectively cleaning sandblasted glass, the product is suitable for use on sandblasted surfaces treated with protective and anti-stain products such as MIX30PRO. The product does not remove the protective layer but on the contrary revives it and extends its duration over time. It is also available as a do-it-yourself kit for home use.





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SPRAYING MACHINE DUALTECH 400 SBC GLASS

The machine has been designed to spray on glass surfaces. The conveyor system consists of a PVC belt which is protected by a paper film unwound from the infeed reel and wound at the outfeed by a drive unit, which ensures its constant speed. The "Dualtech" spraying technology is guaranteed by two opposite reciprocating arms joined together. The system can accommodate up to 4 spray guns and includes the lacquer feeding and lacquer return, in order to make easy and quick the flushing and to minimize the quantity of the cleaning solvent. The spraying parameters are independent for each gun. A reading bar at the infeed of the machine manages the spray control. The air distribution plenum box ensures efficient air flow, thus reducing the paint overspray.



ROLLER COATING LINE FOR GLASS ROLLTECH G05-GL

The line is designed for roller painting and drying of small or large glass sheets (working widths from 1300 to 3300). The line consists of a Heavy-duty roller coater G05-GL, a Drying Tunnel GP/JET IR with Cooling GP/Cool. The connection roller conveyors are equipped with transversal bars with revolving wheels installed on a pneumatically liftable frame for workpiece alignment. The roller coater G05-GL it's a machine for the application of water-based coating products both organic and ceramic on glass.

The Drying Tunnel Mod. GP/JET IR with Cooling GP/Cool has a conveyor made by high temperature resistant rollers. After the passage in the preheating section the IR lamps optimize the curing of the coating product: the air is blown on the coated glass as high-speed air blades. The ambient air cooling section, by means of high-speed air blades, ensures a quick and homogenous temperature drop of the glass.





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LASERMEK FOR CUTTING AND DRILLING

LASERMEK is expanding with a new technology for float glass straight and shaped CUTTING for thickness up 8/10mm, in an optimal area of 200x200mm adjustable on the customer needs

The cutting laser is suitable to process any geometrical shape cutting for hinges, square holes and similar processes with a perfect cutting result and without chippings, suitable even to glass tempering.

The DRILLING laser allows the holes creation of any shape starting from the classic round hole to holes of any geometry and also of notches on the edge of the glass, with a maximum size of 80x80mm that can reach 100x100mm using very sophisticated optics.

The work times are close to the classic waterjet cutting systems but with a great advantage, in addition to work in the absence of water and abrasive, do not generate waste to be disposed of and above all work with a power of about 3Kw against the power required by the waterjet which is about 40 Kw

Type	Useful dimensions
	1500 x 3000mm
	2000 x 3000mm
	Others on request



LASERMEK SCANNER

LASERMEK SCANNER, laser developed for engraving and ablation of any kind of coating on glass surface.

Able to remove by ablation portions of coatings, including Low-E, which vary from 0.05mm to several tens of millimeters in a single step

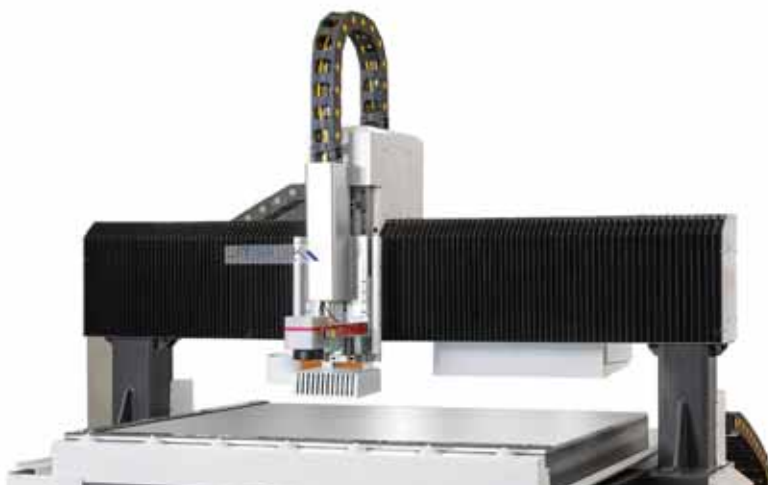
For the furniture sector, in particular bathroom furniture and in general where the mirror is required, the laser is able to remove the silvering from the mirror leaving the glass completely transparent, to enhance decorations, for the insertion of TVs, etc.

By choosing an adequate laser source, it is possible to create graphic and decorative workings on the glass surface with matt effect, particularly appreciated for the furniture and building sector, to create logos on already tempered glass, to create partitions, glass doors, windows, etc. .

Ultra fast process, it is an innovative technology for all those companies that are looking for quality and perfection.

Available in various sizes, also on specific customer request.

Type	Useful dimensions
Scanner	1300 x 2500mm
	1500 x 3000mm
	2000 x 3000mm
	Others on request



LASERMEK BEAM

LASERMEK with Beam technology, is a Laser machine designed for the straight and shaped engraving and ablation of the electroconductive coating, pfor all those sector where heating glass is requested. By micro-ablation of Low-E glass for both hard and soft coating is suitable for:

- Refrigeration
Processing of electro-resistive tracks on coating for various types of anti-fog heating glass such as fridge doors and so on.

- Transport
Low-E coating ablation to increase the radio waves permeability for personal passengers devices, in trains, campers, aeroport facades, etc.
- Heating
Engraving of invisible heating coils on heating glass products for heated towel rails. Sophisticated laser process which allows to set the glass temperature with decorative effect
Available in diverse dimensions even on specific customer request.



Type	Useful dimensions
Beam	1000 x 2100mm
	1500 x 3000mm
	2000 x 3000mm
	Others on request

FIREMEK

Firemek is a turnkey Fire resistant glass production system for the production of fire resistant glass appreciated for its use of innovative technology combined with its ease case of use which makes the EI glass production no longer exclusive and even thanks to its affordable price which makes it suitable for medium/small business. The transition from semi-automatic system to an automated system was the natural result of Glass Company continuous desire to research and develop this product. An intumescent and extremely transparent mixture based on Silica is prepared using a vacuum mixer following a process controlled by PLC and by a special dispensing pump is poured between two or more glass sheets according to the fire resistance to be obtained E130, E160, E190, etc. The process is completed in the furnace, where cross-linking takes places by means of specially designed technology.

The Silica intumescent gel under normal conditions, is perfectly transparent and in case of fire the intumescent gel swells creating a rigid and opaque thermal insulation foam that guarantees both fire resistance and mechanical resistance (stability).

Fire resistant glass protects by flames, smoke and toxic gases, prevents the heat transmission through the glass surface and are approved to meet the European and international EI fire prevention standards requirements.





PLASMEK

Plasmek is the most recent Glass Company innovative technology.

Plasmek uses atmospheric pressure plasma for flat glass surface treatment.

It is a cleaning and treatment cell that allows an alteration of the surface tension of the glass in a single step, increasing the adhesion of the products applied in the immediate subsequent stages of processing. Among its many applications, the cleaning and preparation of glass, fundamental prior to digital printing or spray painting, as well as coating of any kind such as antibacterial, antiviral, etc. with the use of technical gases if necessary, in addition to compressed air, are the most impressive characteristics of this technology.

This processing is, also essential for certain gluing and adhesion processes with other materials, or in flat glass lamination processes to obtain highly performing finished products compared to standard ones.

HORIZONTAL GLASS WASHING AND DRYING MACHINES

Glass Company Srl, knows how excellent glass cleaning and drying are fundamental in the manufacturing process and offers horizontal Washing and Drying machines that combine high-performance technology, ease of use and competitive price, with functions designed for noise reduction and energy saving, both in terms of the drying fan power consumption and for the water use.

- Especially suitable for float, reflective, Low-E (soft coating) glass and solar glass
- Glass deep cleaning, by means of disc brushes or cerium oxide pads before digital printing, silk screen printing or enameling, lamination both with PVB and EVA
- Water-resistant construction materials (stainless steel)
- Manually operated by selectors or equipped with an intuitive touch screen system controlled by PLC.



IG LINES AND VERTICAL GLASS WASHING MACHINES

Glass Company has been collaborating since 2022 with HANJANG to supply the customers a full automatic IG Line, an intelligent unit insulating glass production, to run by one only operator and complying with Industry 4.0. The line can be combined with the Vertical washing and drying machines of high-performance technology, ease of use and competitive price, with functions designed for noise reduction and energy saving, both in terms of the drying

fan power consumption and for the water use. Our vertical washing machine is composed of loading section, washing section (pre-washing, washing and drying) and quality inspection section and is equipped with:

- Double pair of powerful air blades for fast drying
- Stainless steel pre-ashing and washing tank
- Soft brushes for Low-E glass

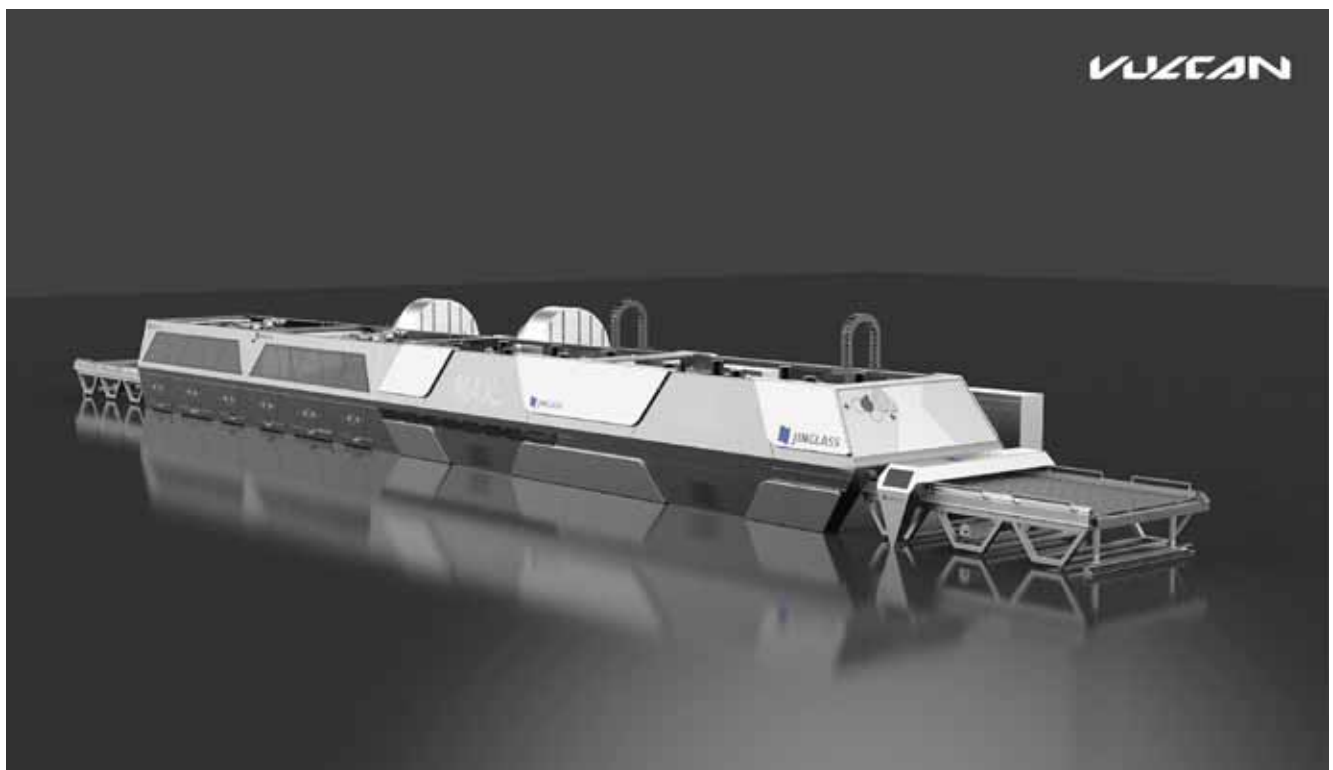


FLAT AND BENT GLASS TEMPERING FURNACES

Glass Company Srl has been continuing for over 15 years its collaboration with Jinglass for flat and bent glass Tempering furnaces and proposes tempering furnaces for all the glass types in the market, also for thin glass sheets of 2.5mm and semi-tempering for 2.2mm glass, used in the solar and furniture sectors. The furnaces are also suitable for large-sized glass sheets compared to the glass thickness. Our furnaces can be supplied in different sizes and models, for both flat and bent glass.

The tempering furnaces proposed by Glass Company carefully take into consideration the technical needs of the customers and are equipped with a patented real convection Matrix technology suitable for all Low-E glass including triple-silver coating

The new tempering furnace VULCAN combines excellent glass optical quality with very low energy consumption thanks to a very high technology.





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HORIZONTAL AND VERTICAL WASHERS

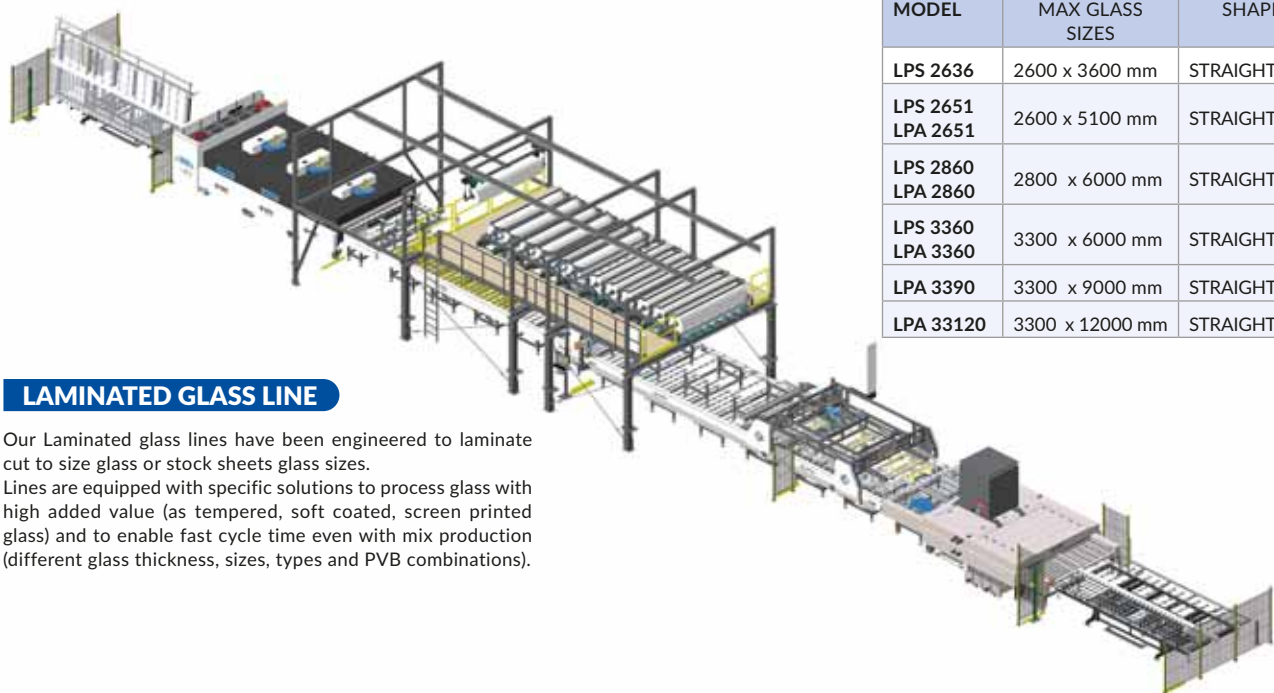
Washers are specifically designed to wash and dry flat glass after grinding or edging process (double edger, vertical arising, CNC lines) or before processing lines as insulating glass line, laminating, tempering or printing lines.

- Washing frame totally stainless steel made
- High pressure pumps 150-180 bar to remove glass dusts and residuals after edge or surface processing
- Each brush is driven by specific motor
- Motorized opening system for glass thickness adjustment
- Soft Coated brushes for washing sensitive coated glass
- Automatic glass thickness checking and opening adjustment
- Conductivity system to check water quality on tanks
- Electronic components (PLC, I-O boards, HMI and inverters) easy to find in the market



HORIZONTAL WASHERS			
MODEL	MAX GLASS WIDTH	GLASS THICKNESS	BRUSHES
HW 2000	2000 mm	3-25 mm	4-6-8
HW 2600	2600 mm	3-25 mm	4-6-8
HW 2800	2800 mm	3-25 mm	4-6-8
HW 3300	3300 mm	3-25 mm	4-6-8

VERTICAL WASHERS			
MODEL	MAX GLASS HEIGHT	GLASS THICKNESS	BRUSHES
VW 2000	2000 mm	3-40 mm	4-6-8
VW 2500	2500 mm	3-40 mm	4-6-8
VW 2800	2800 mm	3-40 mm	4-6-8
VW 3300	3300 mm	3-40 mm	4-6-8



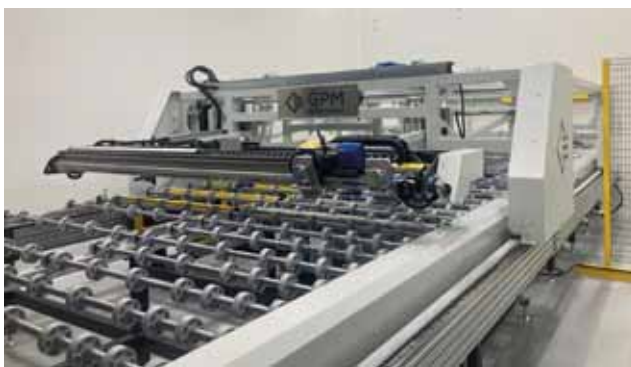
LAMINATED GLASS LINE		
MODEL	MAX GLASS SIZES	SHAPE
LPS 2636	2600 x 3600 mm	STRAIGHT, U, Z
LPS 2651 LPA 2651	2600 x 5100 mm	STRAIGHT, U, Z
LPS 2860 LPA 2860	2800 x 6000 mm	STRAIGHT, U, Z
LPS 3360 LPA 3360	3300 x 6000 mm	STRAIGHT, U, Z
LPA 3390	3300 x 9000 mm	STRAIGHT, U, Z
LPA 33120	3300 x 12000 mm	STRAIGHT, U, Z

LAMINATED GLASS LINE

Our Laminated glass lines have been engineered to laminate cut to size glass or stock sheets glass sizes. Lines are equipped with specific solutions to process glass with high added value (as tempered, soft coated, screen printed glass) and to enable fast cycle time even with mix production (different glass thickness, sizes, types and PVB combinations).

- LPS model includes fully automatic glass squaring and assembly; PVB laying and trimming process is done manually by operator.
- LPA model includes fully automatic glass squaring, assembly, PVB laying, PVB cross cutting and PVB trimming on leading glass edge; as option we can offer automatic loading/unloading with gantry system or with robots, and fully automatic PVB trimming on all glass sides.

- Accurate glass squaring system by means of pop-up tables with belts system to push glass on reference locators and laser beam sensors for precise glass stop on the reference positions. Multiple glass squaring option for squaring and assembly 2/3/4 glass panes simultaneously.



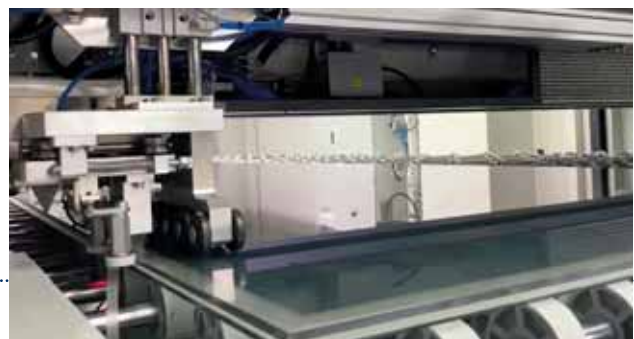
- Suction cups transfer lifts and lowers with motorized belts system, it ensures fast speed and accurate glass assembly, since speed and releasing positions are controlled by encoder to avoid glass floating during the assembly process.

- Automatic PVB laying on the glass through specific motorized bridge or with clamps system integrated on the suction cups transfer (for straight line configuration).



- Innovative system for PVB cross cutting, that is done after the assembly and over the leading glass edge to enable simultaneous PVB trimming on the leading glass side (low PVB waste and faster trimming cycle time).

- Automatic PVB trimming on all glass edges, by means of specific cutting heads that adjust according to glass sizes.



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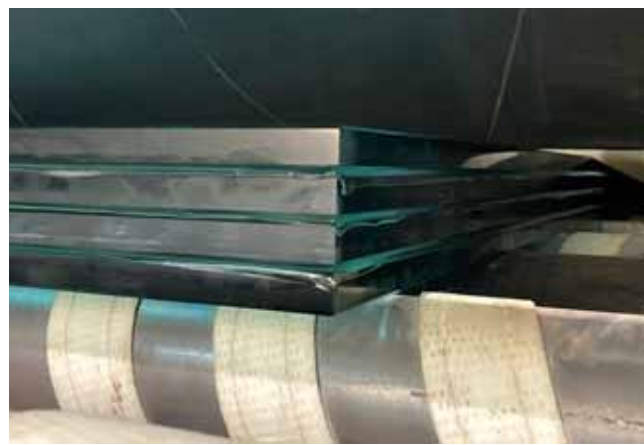
- PVB UNWINDER 6÷18 ROLLS: overhead platform for easy PVB rolls change, loading and maintenance (standard in the LPA line, option for LPS line).



- Heating furnaces work with combination of infrared lamps (with SCR power regulation) and forced air convection system by means of top and bottom fans, that blow and recirculate the air through specific designed channels. Forced air convection system ensures to uniformly heat soft coated, reflective or painted glass, heavy thickness glass panes. Infrared lamps heating ensures fast adjusting speed during the lamination of clear and extra clear glass with thin thickness. Each module is equipped with accurate temperature control sensors and exhaust fan on top part in case of overheating.

- Nip roll has been designed to laminate tempered glass and shape glass with sharp corners, very easily in fully automatic mode according to set recipes by means of accurate control system.
- Press top roll adjusts automatically through Bosch Rexroth ball screws, servomotor and gear system.

- Servomotors work in electric axis and check continuously the flatness positioning of the top roll in order to ensure correct and uniform pressing distribution and to avoid different pressing power force on the working width size. Pressing power with very accurate control and synchronization for processing shape glass without breaking the tight corner.



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- Hydraulic tilting table for loading/unloading glass up to 12 m (no. 2 tables working together).



- As option gantry loader for automatic loading/unloading glass up to 9 m.

ROBOTIC TRIMMING FOR LAMINATED GLASS FINISHING

Robotic line enables to trim PVB, Sentryglas and EVA film that overhangs glass edge after laminating process.

- Max processing glass size: 2700x4000 mm (bigger sizes can be designed if require).
- Complete line including inlet and outlet conveyors (as alternative rotating conveyors system can be supplied for a square layout configuration).
- Vertical trimming conveyor with back supporting suction cups to let robot trim bottom glass edge.



- Blade and engraving tool for removing the inner interlayer on grinded edges.



TURNKEY SOLUTIONS FOR AUTOMATIC LOADING/UNLOADING

Features	Sizes
Max glass sizes	3.300x6.000 mm
Max glass weight	700 Kg

Glass process	Application
Cutting line	Loading/Unloading
Insulating glass line	Loading/Unloading
Double edgers	Loading/Unloading
Vertical arrising/grinding line	Loading/Unloading
Tempering oven	Loading/Unloading
Printing/painting line	Loading/Unloading
CNC vertical/horizontal	Loading/Unloading

a) IG AND GRINDING LINE AUTOMATIC LOADING/UNLOADING

- Turnkey solutions for automatic loading: including vertical motorized conveyors, that are synchronized to vertical arriser, grinder, or integrating our vertical washer.



- Turnkey solutions for automatic unloading; including vertical motorized conveyors, that are synchronized to sealing robot.

- Suction cups gripper with bottom brackets for supporting heavy IG units up to 500 kg and size 2,7x5 m.



- Automatic shutter door and safety gate enable to replace racks without stop robot loading/unloading process.

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b) DOUBLE EDGER AND PAINTING LINE AUTOMATIC LOADING/UNLOADING

- Double edger configuration: «U» shape with one robot or «L» shape with 2 robots.



- Loading conveyor with automatic adjustable reference line.

- Including horizontal washer and unloading conveyor with glass aligning system.
- Rotating platform for storing 2 racks and enabling to replace racks without stopping robot loading/unloading process.
- Paper strips applicator for separating glass sheets.



SORTING SYSTEM FOR IG UNITS WITH ROBOTIC LOAD

- Sorting system by means of high speed shuttle (100 mt/min).
- WMS - warehouse management software.
- No. 110 storing slots (more slots can be added according to available space).
- 90° turning station enables to transfer the IG unit on PVC window assembly line.





- Robotic loading into the storage.
- Barcode/QR code reader enables to track IG units ID with our WMS.
- Underfloor rotating platform enables to turn A shape rack automatically.

STOCKING SYSTEM FOR CERAMIC TILES AND GLASS

Features	Sizes
Max glass/ceramic tiles sizes	3.000x3.300 mm
Max glass/ceramic tiles weight	600 Kg



- Glass and ceramic tiles are automatically unloaded from delivery racks to storage slots through the robot and shuttle system.
- No. 70 storage slots (more can be added according to available space); each slot with capacity 3 t.
- Integration with cutting/processing line: robot unloads the glass/ceramic tiles from the storage and load into the cutting/processing line.



WAY TO GROW

Glass Performance Days 2023 Finland

GPD Finland 2023

June 14–16 Tampere Finland

We are calling for

Abstracts

Sponsors

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Deadline for submitting abstracts is 20 November, 2022.

More info at www.gpd.fi
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helios quartz



HELIOS ITALQUARTZ Srl

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INFRARED MODULES



Complete infrared solutions, designed and customized according to customer needs, and ready to be integrated in existing machines and production lines;

QUARTZ INFRARED HEATERS

In short, medium and fast medium wavelength, in single and twin tube, with or without gold reflector for:

- Laminating lines (plastic film coupling);
- Screen printing lines;
- Bending furnaces;
- Fusion furnaces;
- Laminated glass cutting tables;



UV POLYMERIZATION EQUIPMENT



UV high and medium pressure lamps for drying screen printing of reactive inks, paints, coatings and adhesives for the decorating and furnishing sector;

AUTOMATIC TIN SIDE DETECTOR



Compact automatic version of this device. It can be fixed directly on the glass transportation line, before the production process, in order to check each and every piece of glass. A user-friendly PLC helps the operator in calibrating and managing the different recipes.





HORN GLASS INDUSTRIES AG

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HORN Tweel

A tweel is one of the most important control instruments within a float glass production plant. It adjusts the flow of the glass melt from the furnace into the tin bath, and can also be used to completely shut-off the glass flow.

HORN tweel type TW is distinguished by its highly robust mechanical design. With HORN tweel, a glass plant is fully prepared for any situation.

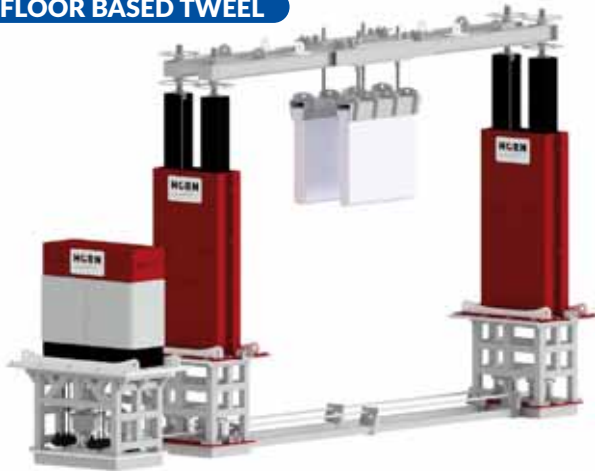
HORN offers two different types of tweels:

- Floor based tweel, which is installed as standard on the working floor
- Suspended tweel, which is installed on the tin bath support steel structure

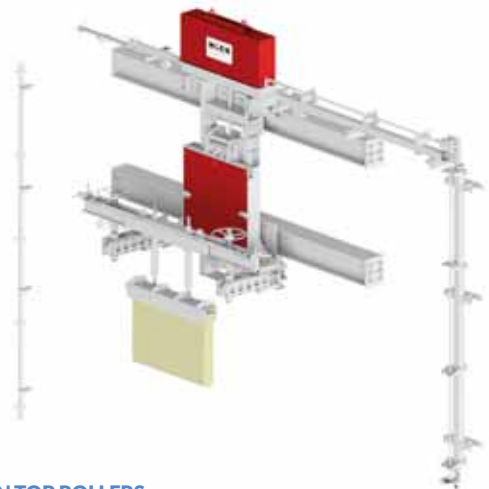
BENEFITS FLOOR BASED AND SUSPENDED TWEEL

- High positioning accuracy of 0.1 mm
- Fast installation due to compact design
- Emergency tweel can be made of refractory material or stainless steel at choice
- Manual adjustment option in the case of failure of power supply of the control system
- Completely free access to spout area with the suspended tweel type

FLOOR BASED TWEEL



SUSPENDED TWEEL



HORN Top Roller

Top rollers are among the most important machines of a tin bath. Top rollers are used in pairs to form the glass ribbon with precise control of its width and thickness. Each pair works synchronously and thereby creates optimal conditions for a smooth production process.

Top rollers are used to produce a glass ribbon that is thinner or thicker than the equilibrium thickness of around 7 mm.

HORN offers two different types of top roller machines:

- The HRTM-F type floor-based top roller, which is installed on the hall floor
- The HRTM-S type suspended top roller, which is suspended from the tin bath steel structure

BENEFITS OF HORN TOP ROLLERS

- Easy and quick installation, operation and maintenance
- Optimised set-up operation and on-site control by means of a mobile touch panel
- Compact design with integrated switch cabinet: the complete wiring and internal pipework up to the interfaces are pre-installed by the manufacturer
- Supplied fully mechanically and electrically tested
- Possibility of installing the periscope on the top roller support frame
- Complete media supply from below at the pivot point of the machine - no bothersome hoses, etc. in the work area
- High safety standard for handling and operation

TOP ROLLER TYPE HRTM-F



TOP ROLLER TYPE HRTM-S





IMMMES Srl

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DTP100

Filtration system for dirty water from glass process.
 Size: 100.000 litres/hour.



Subdivided phases follow here:

PROCESSING WATER COLLECTION

Dirty factory water flows through channels to the Collection Tank with possible big parts and extraneous material stopped from entering by an initial filter in a small pit before the collection tank. A fluidization ring with several water jets fed by the primary pump operates at the bottom of the collection tank (see **PUMP STATION**), preventing sludge from collecting within the tank at its corners and bottom.

PUMP STATION

Two identical pumps operate with alternate daily cycles, conducting the water from the tank to the treatment system - each installed with a non-return valve, filter and anti-cavitation system fitted on its intake pipe. To supply the fluidization ring, a small part of the pumped flow returns into the collection tank. The entire DTP system is filled with water, operating completely by pressure from the initial pump, which is maintained right through to the processing machines. Several visual, electronic pressure meters control pump work, so providing information to the main CPU.

DECONCENTRATOR

The physical-dynamic water and glass mud separation occurs within the main tank. Dirty water is pumped into a small hole at the bottom part of the tank before flowing out almost completely cleaned from the tank top. The Deconcentrator has a particular fixed circuit that forces different water flow speeds, so achieving the separation of the suspended solids and glass particles from the main body of water. The glass mud remains automatically in two chambers within the lower part of the Deconcentrator and the clean water at the end of this circuit flows out from the tank top. The glass mud is regularly disposed of from the Deconcentrator by the programmed operation of 2 pneumatic valves (see **SLUDGE DISPOSAL**) whose sequence is controlled at scheduled times by data from the flow controls.

MICRO FILTRATION

Upon exiting, the Deconcentrator water -still pushed by the initial pump pressure- is filtered through a traditional multi-mineral filter whose filtration quality results from this MICRO FILTRATION. Residual solid particle dimensions that are less than 10 microns and total ppm are now at less than 10 mg/lit, leaving the water quality clear (LIMPID). After filtration, the clean water flows directly to the processing machines through an existing distribution ring (always with the pressure generated by the initial pump). Taking about 35/40 minutes,

this mineral filter is self-cleaning on a daily cycle and is typically programmed for night operation at some convenient time (set to automatic start, which can also take place at weekends or during holidays). In automatic-mode, the mineral filter combination of circuits allows for the following: WORK - SELF-WASHING - RINSE - FILTER BYPASS - the last being only in safety mode). The rinse (back-flushing) water is dumped to waste. The filter has 2 iron plates inside with dozens of holes on each one - all fitted with an ejector that holds the minerals within the unit and lets the water pass through during the WORK, SELF-WASH and RINSE cycles. Dirty water discharged during the self-washing cycle returns into the initial collection tank.

DECONCENTRATOR SLUDGE DISPOSAL

With water heavily charged with glass mud, the Deconcentrator's two sludge discharge lines lead to a "Big-Bag" filtration station. Two disposable big bags filter the water, keeping the solids (sludge) inside and filtering the residual water into a base tank/basin and, from there, back to the initial collection tank. The removal of the big bag, when filled with solid sludge, is made with a simple forklift and replaced with a new one. For a faster dried sludge extraction, the Filterpress (DGS) is available as an OPTION to replace the Big-Bag station. The DGS is given as standard for the systems from 70 m3/hour and bigger.

ELECTRIC PANEL AND CONTROLS

All functions are selectable in Manual or Automatic mode, with normal use being in Automatic. Switches from the control cabinet for each single function enable all these options and a PLC touchscreen enables the management of all parameters and system controls, divided into several user menus. To ensure appropriate power supplied for required water flow, an inverter manages the pump/s RPM and power consumption. The main control board registers all warnings or alarms and a combination of warning lights and/or sounds will raise any situation alerts (customizable). The system includes a connection board to enable aftersales assistance Remote Control or for Remote Staff Control of the system, as desired. The DTP system is equipped with a station for real-time pH measurement and, if necessitated, an automatic adjustment or maintenance system of the value within limits preset by the customer can be performed.

OPTIONAL EXPANSION AND MODULES

The DTP system is perfectly expandable by simply adding other purification modules (Deconcentrator + Filter) to the existing system. Here it's advisable to install the **Predisposition**, where pumps and control systems already support future expansion. If necessary, the DTP can take water to be treated either from the underground tank or from one above-ground (point 1). On request, the system can be controlled remotely, whether directly by management or via mobile devices/PC by operators based at home or in the office (user authentication required). Should the factory be operational 24/24 then there are various ways to keep the system active around the clock - even during the Backwash phase (points 20 and 21). Fully-automatic management, based upon constant analysis and work parameter processing, renders a DTP interface with any machine or central control system possible. On the basis of settable values, expansion is available for data-export or bidirectional consent management (e.g. sending a message to some machine operator -or to the machine itself- in the event of pressure dropping below the 2.0 bar).

GENERAL INFORMATION

In a single water outlet, the DTP supplies its nominal water capacity - all treated and cleaned with the abovementioned quality parameters (see **MICRO FILTRATION**) and suited to 23.5 hours of work on a 24 cycle. If required, a 24/24 (continual operation) module can be an option. To satisfy all requirements from the small laboratory to the giants of glass processing, the system is available in different sizes from 12 to 250 m3/hour (see table). Finally, we invite readers to refer to the **DTP Advantages** sheet to match the above info to a collection of unique benefits and performances. A **Business Plan** template, available upon request, will afford a comparison of current investments and operating costs - either with your existing system or with potential competing choices.

DTP

DTP size from 12 m³/h to 50 m³/h with a single Deconcentrator/Filter. The application of a Filterpress DGS350 is possible in replacement of the Big-Bag Station.



DTPs

The smallest of the DTP family, is particularly configured to permit an easy access for all factories with few machines.



REVERSE OSMOSIS s

Reverse Osmosis s for water demineralization. Sizes: from 100 to 500 litres/hour.



REVERSE OSMOSIS

Reverse Osmosis plant for water demineralization. Sizes: from 1.000 to 10.000 litres/hour for washing machines and cooling systems.



FILTERPRESS DGS

Filterpress unit for extraction and compaction of grinding sludges. Size: 350-630. Can be used either as standalone filtration unit or as DTP-type systems component.



ANTEAONE

Unit for purifying water contaminated by paint and varnish, residue from washing the painting machines.





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PLATFORM TRANSPORTERS

Self-propelled transporters with loading capacity ranging from 5 to 60t and beyond, used for handling flat glass on stillages.

They find application in the handling of glass racks from the stackers to processing lines and warehouse handling.



INLOADER TRANSPORTERS

Vehicles for transporting glass on jumbo size stillages from the stackers of the float line to the warehouse, as well as for performing normal handling within premises.

They are usually equipped with a 33t loading capacity; upon request, versions with a loading capacity of 45t and over can be made available.



SIDE-LOADERS

Machines for transporting glass packs within the factory. They have independent PLC-controlled wheels for moving in all directions.

Versions with loading capacity ranging from 3 to 20t and more are available, which can transport all glass sizes, from DLF or LES to jumbo and XXL jumbo sheets.



SPECIAL-APPLICATION SIDE-LOADERS

By continuing to design innovative vehicles that are applied in different sectors of the glass industry including laminated and solar glass, Italcarrelli develops tailored side loaders with hydraulic equipment, attachments and clamping devices, for handling packed glass or on special racks.





CONTAINER LOAD / UNLOAD

The patent by Italcarelli for the loading and unloading of box glass from closed top containers thanks to its hydraulically extensible arm which can rotate by 90° to the right or to the left. This machine finds application in the handling of glass from containers and 40ft containers, on warehouse racks, from containers on loading deck or on truck.

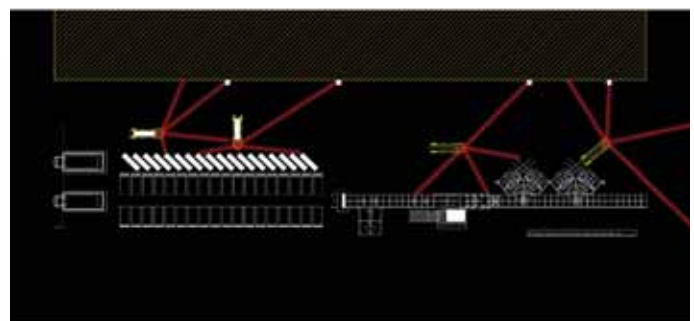
LAMINATED GLASS HANDLING

Available with load capacity beyond 60t, these lift trucks can be used in the handling of laminated glass within the autoclave, depositing the rack with glass inside the autoclave and moving it again once the process is finished.



AGVS/LGVS

Italcarelli can transform its machines into Automated Guided Vehicles, featuring inductive and optical guidance systems, yet above all Laser Guided Vehicles.



The laser guidance is an innovative and smart system that can be installed on any vehicle to turn it into a self-driving machine. This system provides very high accuracy, even more than 5 mm in terms of positioning. It is very flexible since the routes can be easily generated, modified or extended, without particular impact on the facilities.



ITALMATIC PRESSE STAMPI Srl

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AUTOCLAVES AIV SERIES 3.000 - 3.300 - 3.800



The new line of autoclaves, "Industry 4.0 ready", designed to process curved and flat glass with the best loading flexibility both horizontally and vertically, with silicone bags or disposable bags.

The autoclave can be placed on the floor without needing to be pits and can produce laminated glass up to 3210mm sheets.

The vacuum is controlled automatically by means of an advanced control system that satisfies the most restrictive process requirements.

The plant can be supplied with automatic or manual loading systems complete with all operating safety devices.

AUTOCLAVES AIV SERIES 4.000 - 4.200 - 4.400

Where production needs become important Italmatic presents the new line of autoclaves for large glass production "Industry 4.0 ready", with load capacity up to 40 tons.

The autoclave is pits into the floor and served by an automatic loading system that allows effective handling of the glass to be processed and processed, in the shortest time and in complete safety.

Laminated glass up to 3210mm sheets can be treated in both curved and flat versions. The lamination cycle is controlled automatically by an advanced control system **ICS (Italmatic Control System)** which allows the complete traceability of the process with identification of the production batches.

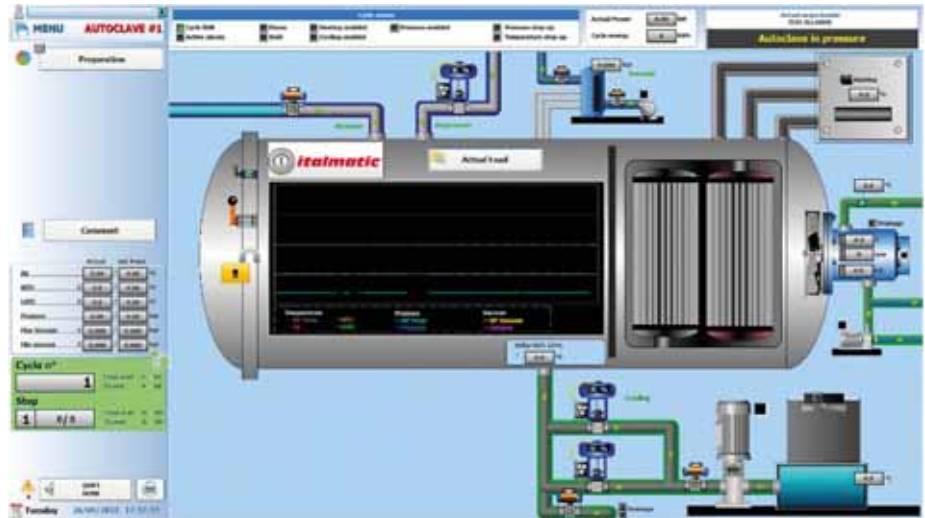
The plant can be supplied with integrated MES systems for interfacing with factory management systems.



ICS (ITALMATIC CONTROL SYSTEM)

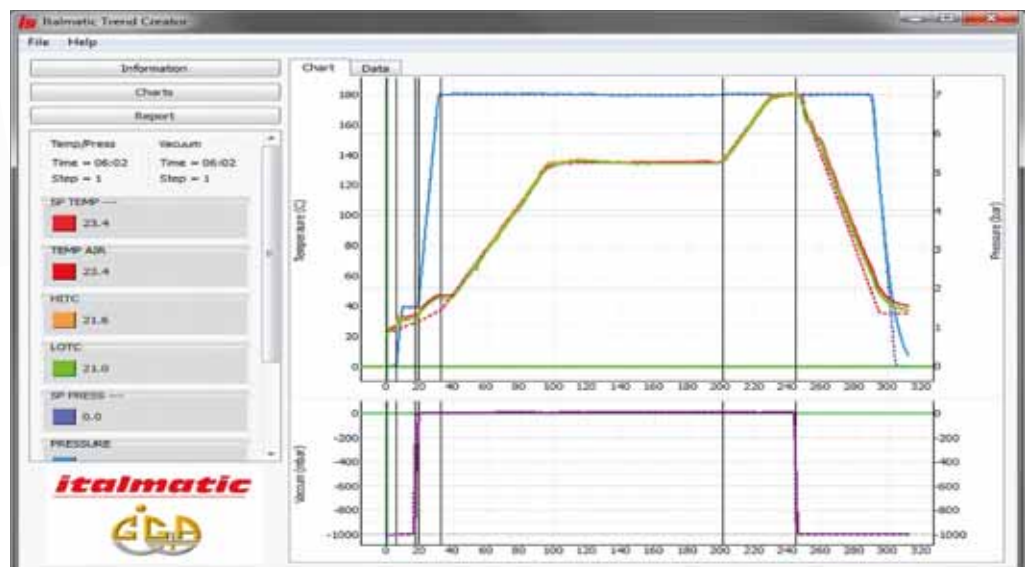


ITALMATIC has its own "software house" which develops all the control systems for all its machines. This means that ITALMATIC always ensures direct assistance and possible customized development to all its customers, not having to resort to third-party companies that can create delays or even waivers to assist customers. The ITALMATIC advanced control system **ICS (Italmatic Control System)** consists of a software application package dedicated to the application of glass lamination with PVB and EVA, which fully satisfies the most restrictive regulations on the market in terms of quality and traceability. All our software is "Industry 4.0 ready" and interfaceable with company management systems with dedicated MES, and all our machines are assisted with remote assistance from our dedicated technical service, which supports all our customers anywhere in the world.



ITW (ITALMATIC TREND VIEWER)

ITALMATIC offers its customers free of charge a special software called "Viewer" that can be installed on any PC, which allows you to view all the cycles carried out in the autoclave in order to carry out qualitative tests and / or in-depth reporting for each batches produced.





ITALMOLE Srl

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ASTRA

A new technology wheel: high performance, super polishes with excellent adaptability, excellent durability with much lower price. Available with internal cooling and in peripheral form, excellent on vertical CNC machines such us Vertmax, CMS, Skillglass and horizontal machine such us Master, CMS and Bottero-Bimatech.



ARRIS WHEELS LINE

Types BLACK/AR2 are advised to polish the arris after diamond wheel, types RED/AR1 are advised to make the arris without diamond wheel. All types it can be supplied with any type of plate for all type of machines.

AB4 type, becomes very famous in recent times, is advised to polish arris on double edger and straight machine. It guarantees a perfect and brilliant result.



CUP WHEELS LINES



Wheels product for all type of machines in grit 40-60-80-120, available with rigid plastic plate, aluminium plate and special plate J40 for Bavelloni. On request with slots for laminated glass.





KERAGLASS Srl

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VISION 800

OSCILLATING TEMPERING FURNACE TO TEMPER THE LATEST GENERATION GLASS SHEETS

Regarded as a revolutionary machine in the flat glass tempering sector due to its high quality and efficiency standards (particularly its ability to produce low-E and large panes with an emissivity of 0.01), combined with an aesthetic profile that ensures functionality, high performance and visual appeal all in one. This marvel of innovative technology is the result of long-term research backed up by ongoing dialogue and discussion with client companies. The heart of the machine is the Supervision Intelligent system with live-sight control, which allows the operator to clearly see and precisely monitor each stage of the process. The result is a glass end-product without any hidden defects that is made to measure and tailored to clients' requirements, with all the requisites needed to decorate the walls of modern buildings while ensuring energy saving and environmental sustainability. Numerous installations around the world confirm the immense success of this machine, which is recognised as a best-seller in the production of the latest generation tempered glass.



CHARACTERISTICS

- Big size low-E glass sheets E=0.01
- Tronik System: modular convection system based on blowing air preheated to 700°C
- Minimises optical distortion of the glass
- Dynamic heating cycle (DHC)
- Thermal insulation up to 1250°C
- Scanner control for constant monitoring of glass surface temperature, with storage of loads and product certification
- Supervision Intelligent: live-sight control system with large touchscreen monitor providing perfect visibility, plus a simple and intuitive user interface for fast and accurate diagnostics
- Kerasoft: software interface to control power consumption and scheduled maintenance
- Compatibility with RCK, an extremely precise roller cleaning machine with a rapid system of interchangeable pads

VIVIDA

HIGH-DEFINITION DIGITAL PRINTER WITH CERAMIC INK

Vivida combines flexibility, practicality, and quality.

Vivida is a high-definition digital printer that uses ceramic ink. It is ideal for reproducing any kind of image on the glass surface and can be used in all sectors, especially in furnishing, architecture and automotive.

The innovative software can process the graphical designs to be printed on the glass in a simply and intuitive manner. The propriety software and industrial computer installed on the machine manage all of its operating parameters through a simple and direct user interface.

CHARACTERISTICS

- a glass cleaning system can be installed upstream of the print room to remove contaminants and dust from the glass surface before printing
- the glass is transported through the printing process on calibrated belts driven by a brushless motor controlled with absolute precision
- an electromechanical system allows automatic glass centring of various types without requiring operator actions
- the head is moved by a linear motor

- rapid colour change and tank cleaning, automatic colour mixing system with motor and magnets
- use of xaar heads
- option of working with various ink makers
- an exclusive system mounted below the printing heads magazine allows operation of the heads to be paused without necessitating unscheduled maintenance actions





LISEC AUSTRIA GMBH

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KSD-A

VERTICAL EDGE SEAMING AND GRINDING MACHINE WITH LiTEC SLIDER TECHNOLOGY

The new KSD-A from LISEC is currently the fastest vertical seaming and grinding machine with peripheral wheels. The machine combines massive processing flexibility with stable and reliably high quality.

HOW IS THE KSD-A CONFIGURED?

Depending on the machine length, the KSD-A consists of several elements in a modular construction. At the heart of the system is the processing tower with a high-speed X-axis for glass transport and optionally one or two processing heads mounted on separate vertical axes. The perfect waterproofing of the axes ensures long-term stability and easy accessibility.

HOW DOES THE KSD-A WORK?

The KSD-A was developed for the fastest possible cycle times and the greatest possible flexibility. The sheet is received by a high-speed axis with suction cups, which measures the position of the sheet a tall times. After automatic measurement of the height of the glass sheet "on the fly", the edge is seamed or ground in an arbitrary number of cycles. The flexible tool configuration allows processing of different glass thicknesses without changing tools.

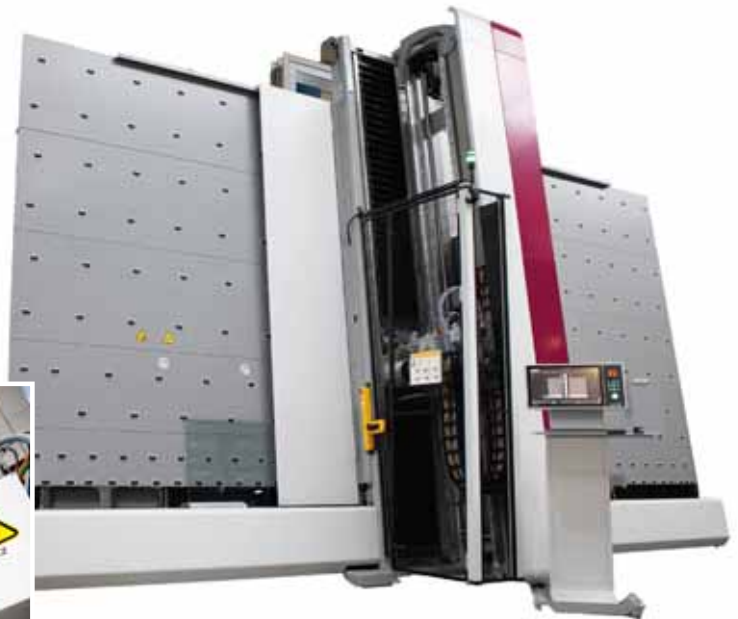


WHAT ADVANTAGES DOES THE MACHINE OFFER?

The two greatest advantages of the system are the perfect seaming quality - independent of the quality of the cut glass - and the outstanding processing flexibility. The newly developed and patent-pending floating tool of the LiTEC slider series ensures perfect edge seaming and grinding results even with poorly cut or faulty glass. LiTEC slider seaming and grinding tools use water pressure to feed the tool. This enables highly ergonomic and efficient feeding of the processing tool to the glass.

HIGHLIGHTS

- Perfect seaming quality every time, thanks to the use of LiTEC slider technology.
- Rapid seaming and grinding of a wide variety of glass lites sheets in one machine.
- Maximum dynamics and speeds of all axes.
- Optimised for use in insulating glass lines and after glass cutting.
- Automatic measurement of rectangles possible as standard.
- Flexible tool configuration for processing without tool change.
- Tool holder change directly from the front side of the machine. Tool set-up on the tool holder is possible during processing.
- Optional: Second processing head for even faster cycle times.
- Modular extension of the glass length possible with additional transport sections.
- Perfect waterproofing of all axes for maximum system availability.
- Easy access to all components for service and maintenance work.



PERFECT SEAMING QUALITY IN EVERY SITUATION

By using the LiTEC slider technology, the seam quality is no longer dependent on the quality of glass cutting. Even glass sheets with poorly cut or broken edges are processed reliably on the KSD-A.

RAPID AND RELIABLE

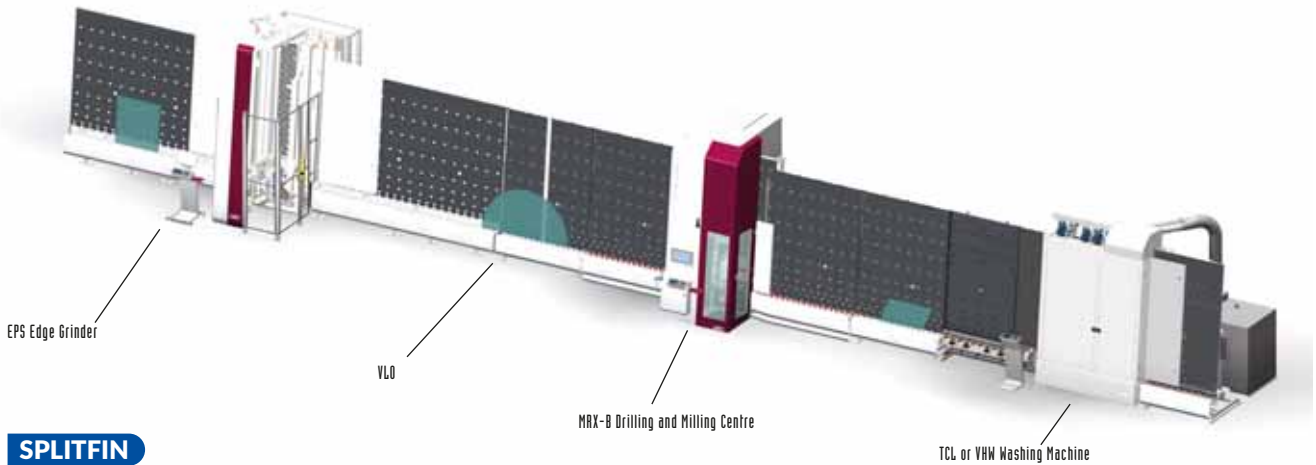
The machine was developed for use in highly productive lines, based on decades of experience in processing glass sheets. The KSD-A is a dual system for edge seaming and grinding applications in the flat glass processing industry, delivering the shortest cycle times in combination with the utmost in reliability and complete flexibility.

DIVERSE CONNECTION OPTIONS

The machine's control options are as diverse as the customers' requirements. From the manual input and the automatic measurement of rectangles, to direct connection via production control systems, the KSD-A enables every form of integration.

TECHNICAL DATA

	KSD-A20	KSD-A25	KSD-A30	KSD-A33
Maximum glass height (mm)	2,000	2,500	3,000	3,300
Maximum glass length	Modular			
Minimum glass dimension	Seaming 350 x 180 mm / grinding with material removal 700 x 180 mm			
Glass thickness	2.3-19 mm (seaming from 4 mm glass thickness)			
Number of processing heads	One processing head is standard, with the option of a second head			
Transport height	520 mm / other transport heights on request			
Tilt angle for glass transport	6°			
Tools	LiTEC slider - diameter: 150 mm / holder: HSK-50			



SPLITFIN

THE TURBO FOR YOUR GLASS PROCESSING

The SplitFin is a vertical processing line for edge and inner processing of flat glass lites sheets, and is currently the fastest vertical processing line on the market.

HOW IS THE SPLITFIN CONFIGURED?

To significantly reduce the cycle time for processing, the SplitFin is divided into two processing towers. The first tower - the EPS-B - performs the sheet grinding and polishing, i.e. the complete edge processing. The second tower - the MRX-B - implements all internal processing and is optionally equipped with a water jet unit. After processing is complete, the VHW reliably cleans the sheets. The line is flexibly configurable and can also be designed with only one processing tower. Subsequent integration of the second machine is possible at any time.

HOW DOES THE SPLITFIN WORK?

Loading can take place either manually or by means of automation (sorting / robot / etc.). Inputting the processing data is also flexible (simple graphic input at the machine / DXF import / data interfaces), whilst the processing that follows is fully automatic. The entire weight of the sheet is borne in the EPS-B by a stable suction axis and it is polished with the utmost precision using either one or two processing heads.

Once edge processing is complete, the sheet is automatically transported to the MRX-B. Here, internal processing is also carried out fully automatically. This takes place either using diamond tools or by means of a modern water jet unit. A combination of both is also possible.

Following automatic transport to the washing machine and successful cleaning of the sheet, it is removed from the line or automatically transferred to downstream processes. In line operation, both processing machines outwardly appear to operate as a single unit. Data is automatically transferred between the machines, which can also be operated individually or in combination mode. It is therefore additionally possible to load sheets from other edge processing machines (e.g. DOUBLE-EDGING Grinding-Machines) directly at the MRX-B inlet.

FOR WHOM IS THE SPLITFIN SUITABLE?

The SplitFin is modular by design. This applies to both the machine sizes and the available options. Due to this broad scope of possibilities, the SplitFin is designed for all glass processors who specialise in high-quality processing in interior areas, as well as for roofing, railings, etc. The rapid cycle times equate to correspondingly high sales levels, and the focus is therefore on industrial applications.

WHAT ADVANTAGES DOES THE MACHINE OFFER?

The biggest advantage of the machine is the high productivity and the associated rapid ROI. The SplitFin is currently the fastest vertical processing line on the market, and even the standard version is able to achieve incredibly short cycle times thanks to the cycle time-optimised systems and the split processing. By integrating the second grinding spindle on the EPS, cycle times of < 200 seconds for a finished door (polished edge, 2 Mickey Mouse cut-outs and handle hole) can be achieved in real production. An output of 80 to 120 sheets per shift is realistic in average production.

The SplitFin impresses with high flexibility, both in application and processing. Operation in stand-alone machine mode is possible in equal measure to the subsequent extension of the line with the second tower or the retrofitting of certain options (automatic tool changer, water jet) to increase the output. The SplitFin can be operated entirely flexibly from a batch size of 1. With this system it is irrelevant whether a small sheet is followed by a large one, or if a rectangle is followed by a shape. Each sheet is finished fully automatically with the highest quality and speed.

The SplitFin is also setting a new standard when it comes to operability and ease of maintenance. The automated system reviews the actual situation on the machine constantly and detects deviating process parameters fully autonomously (incorrect sheet dimensions, deviating forces during processing, deviating vacuum values, etc.). The deviations are resolved independently by the machine if possible, for example through an autonomous reduction of the feed rates. Thanks to the intelligent design, all maintenance positions are readily accessible and important components are kept completely separate to the wet area. Machine maintenance and cleaning are simple and straightforward.

Further advantages:

- Fastest cycle time with complete flexibility and stability
- Glass surface is not touched throughout edge processing
- Final polishing possible without a tool change (three tools on one tool holder)
- Two equivalent processing spindles are installed at the front and rear of the MRX-B
- Rapid tool changer on the MRX-B internal processing unit, tools always carried along with the spindle
- Autopilot for processing (speed adjustment, validation systems, etc.)
- Production of sheets from other edge processing machines possible on the MRX-B, even during line operation
- Possible to produce polished round corners and bevelled corners without lost cycle time
- Cycle time pre-calculation for operators facilitates simplified planning

TECHNICAL DATA	
Glass thickness	4 - 20 mm
Maximum glass height (mm)	2,000 / 2,500 / 3,000 / 3,300
Maximum glass length (mm)	3,300 / 4,000 / 5,000 / 6,000 / 8,000
Minimum size	600 x 180 mm
VLO (second vertical transport lane)	Yes / No
Water jet	Yes / No
Washing machine	TLC / VHW



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LOV622-2TS MULTISPINDLE CNC

Numerical control working centre with 3 axis, equipped with two spindles and two sliding tables.

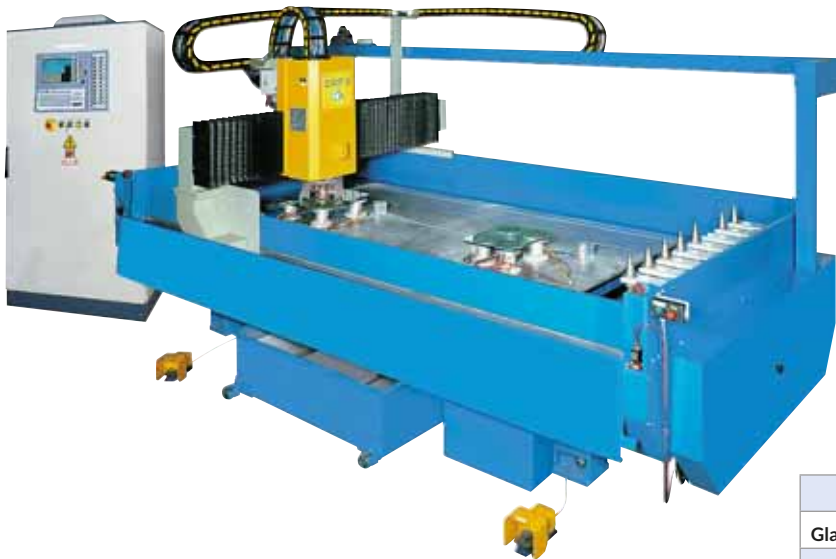
This kind of CNC can be equipped with 3 or 4 axes. It has two spindles and double sliding tables. The CNC can grind and polish two glass sheets simultaneously on each table. The working table is divided in two parts which slide on hardened guides with high precision ball sliding blocks; this assures perfect flatness and complete absence of vibrations. LOV622-2TS is equipped with CAD-CAM, remote assistance, touch screen and automatic tool store (16 positions) and can be equipped with the 4th axis for beveling. This CNC is very fast, precise and guarantees high productivity. It can be built to work different dimensions of glasses basing on customers needs. It can be suitable for marble processing too.



max. glass size on each sliding table	Up to customers requests
max. glass size with tables fastened together	Up to customers requests
glass thickness	2-50 mm
max. wheel's diameter	150 mm
spindle power	2 x 15 kW

CONCEPT 3 AXIS CNC

Numerical control working centre to grind and polish shaped glasses. The machine has 3 axes and can process any shape and profile, doing also holes, internal and external millings and routings. It can be provided with the 4th axes for beveling, grooving and sowing. The machine is equipped with high precision spindle and aluminum working table which can be divided in two areas. The machine can work in two ways: by using the whole working table for a big glass or by sharing the table in two areas for small glasses. In this last case, the operator can easily load/unload glasses on one of the working areas in completely safe conditions, while the machine is processing glasses on the other area. The double working area eliminates loading and unloading idle times. CONCEPT is complete with CAD-CAM, remote assistance, touch screen and automatic tool store. CONCEPT is available in two different size versions. This machine is also available for stone and marble processing.



	CONCEPT26	CONCEPT32
Glass Size	2600x1200 mm	3200x1600 mm
Glass Thickness	2-50 mm	2-50 mm
Max. Wheel's Diameter	150 mm	150 mm
Spindle Power	15 kW	15 kW
Tool Store	8 positions	20 positions

IZAR 3/4 AXIS CNC

Numerical control working centre with 3 or 4 axis to grind and polish shaped glasses stones and marble. The machine has 3 axes and can process any shape and profile, doing also holes, internal and external millings and routings. It can be provided with the 4th axes for beveling, grooving and sowing. The machine is equipped with high precision spindle and aluminum working table, on which several glass, stone and marble sheets can be positioned. IZAR is supplied complete with CAD-CAM, touch screen and remote assistance. IZAR CNC are available in different sizes.



	IZAR25-N	IZAR25	IZAR32	IZAR42
Glass Size	2700x1300 mm	2500x1300 mm	3250x1700 mm	4200x2300 mm
Glass Thickness	2-12 mm	2-80 mm	2-80 mm	2-80 mm
Max Wheel's Diameter	150 mm	150 mm	150 mm	150 mm
Spindle Power	4.8 kW	15 kW	15 kW	15 kW
Tool Store	-	9 positions	20 positions	24 positions



ALCOR 100

Numerical control machine with one double head to perform holes, routings, notches, pins and screw inserts and to grind and polish round and shaped corners. Alcor 100 is equipped with automatic centering bars, CAD-CAM, laser system for hole centering and remote assistance.

Glass thickness	2-30 mm
Corner ground and polished	5-110 mm
Max. hole diameter	80 mm
Max. routing X / Y axis	200 mm

LOV 07 CNC FOR CORNERS

Numerical control machine to grind and polish round and shaped corners. LOV07 can process corners on hexagonal and octagonal glasses, too. Type and dimension of corners and type of wheels have to be inserted into the computer to work a corner; basing on glass thickness, the operator can choose the most appropriate working speed on the numerical control.

Round corner radius	5-200 mm
Shaped corner size	10-200 mm
Glass thickness	3-20 mm



TWIN 07 DOUBLE SPINDLE CNC FOR CORNERS

Numerical control machine to grind and polish two round or shaped corners at the same time. TWIN07 is equipped with two grinding heads: one movable on right side and one fixed on left side. Three diamond wheels and one polishing wheel can be stacked on each spindle. The machine is complete with ball castor bearing table. Type and dimension of corners and type of wheels are memorized into the computer; basing on glass thickness and edge profile, the operator can choose the most appropriate working speed.



Round corner radius	5-200 mm
Shaped corner size	10-200 mm
Angle	90°-135°
Glass thickness	3-20 mm



GROOVE CNC FOR GROOVING

Numerical control working centre with 4 axis (X, Y, Z and C) to grind and polish straight-line and shaped grooves/engraves. This CNC is a machine completely dedicated to groove. It's built with our best technology and it has special stops to center the glasses and a suction vacuum system to fix them. The CNC is equipped with automatic tool store (8 or 16 positions), CAD-CAM, remote assistance and touch screen. GROOVE is available in two different versions, basing on maximum glass size.

	GROOVE215	GROOVE315
Max. Glass Size	2500x1500 mm	3300x1500 mm
Glass Thickness	3-60 mm	3-60 mm
Max. Wheel's Diameter	150 mm	150 mm
Spindle Power	5.5 kW	5.5 kW

RIGEL 120 AUTOMATIC DRILL

Automatic drill with one double head to perform holes on glass sheets. RIGEL120 can work both in automatic and manual mode. The machine is equipped with position bars on X and Y axis, laser system for hole centering and pivot loading table. The upper / lower spindle is driven by electric motor with inverter with continuous speed variation (500-3000 rpm).

Arm depth	1200 mm
Max hole diameter	100 mm
Max glass thickness	30 mm



www.lovatif.com

LOV 01 MANUAL EDGER

Manual machine to grind and polish edge on shaped glasses. On the spindle it is possible to stack up to 2 wheels. Up and down movement to position the wheels is done by pneumatic cylinder with adjustable stops.

Glass thickness	2-15 mm
Wheel's diameter	150 mm max
Spindle power	2,2 Kw
Working table	800x700 mm (other sizes upon request)



Glass thickness	3-25 mm
Glass dimensions	100-2300 mm
Bevel width	5-40 mm
Bevel angle	0°-45°
Plate rotation speed	0-4 rpm variable in both directions



LOV 1000 SEMIAUTOMATIC BEVELLER AND EDGER

Semiautomatic machine to grind and polish edge and bevel on shaped glasses with internal and external curves, straight-line sides and corners. Bevel is obtained by means of cup wheels (150 mm) and polished with felt and nebulized cerium oxide.

Edge is obtained by means of peripheral wheels (100 mm).

It is possible to stack up to three diamond wheels and one polishing wheel on the spindle to process glasses with different thickness.

LOV1000 series machines are available in two versions:

- **LOV1000ES:** electric motor, 4 HP spindle power, two different wheel rotation speed (1400 and 2800 rpm) and mechanical adjustment stop device for wheels' positioning (8 positions). On request, the machine can be equipped with 3 HP spindle power and electric motor with continuous variation speed;
- **LOV1000EES:** electric motor, 3 HP spindle power, wheel rotation speed from 800 to 3600 rpm and electronic adjustment system for wheels' positioning (99 positions).

CAL NUMERICAL CONTROL LOADING/UNLOADING UNIT

Numerical control loading unit to transfer glass sheet from vertical plane to horizontal plane. Available as unloading unit, too. All movements are done by numerical control. X, Z and W axes are moved by means of Brushless motors and their positioning is controlled by individual rotary encoder. Single large glass sheet or several small sheets can be loaded during each cycle. The loading unit is complete with a motorized roller conveyor.

Glass centering/positioning is accomplished by electrical sensors and pneumatic cylinder. CAL can be equipped with a special system to rotate the glass through an angle of 90° and can be complete with two pallets carousel.

The loading units CAL are available in different versions, basing on glass size; all can be produced as unloading units (SCAL series).



	minimum glass size	maximum glass size
CAL2010-S	180x150 mm	2000x1000 mm
CAL2212	220x220 mm	2200x1200 mm
CAL2214	220x220 mm	2200x1400 mm
CAL2516	220x220 mm	2500x1600 mm
CAL3015	220x220 mm	3000x1500 mm
CAL4025	400x500 mm	4000x2500 mm

Other versions upon request.

CAL - M AUTOMATIC LOADING UNIT

Automatic electromechanical and pneumatic loader to transfer glass sheets from vertical pallet to horizontal conveyor. X and Y axes are moved by electric motor with inverter, while Z axes is moved by pneumatic cylinder. A single glass sheet as well as several glass sheets can be loaded during each cycle. CAL-M is complete with a motorized roller conveyor and can be equipped with two pallets carousel. CAL-M are available in two versions, basing on maximum glass size; both versions can be produced as unloading units, too (SCAL-M).

	CAL-120M	CAL-160M
minimum glass size	250x150 mm	250x150 mm
maximum glass size	2500x1200 mm	2500x1600 mm



BEM

CNC machine with 3 axis to grind and polish the edge on shaped glasses with internal curves, external curves, straightline sides and mitred corners, particularly suitable for low-emissivity. Different shapes and sizes of glasses can be worked in succession: the machine will automatically position and activate the suction cups required to fix the glass and an electronic measuring system will check the glass dimensions. This machine has tool crib with automatic selection for tool withdrawal and deposit.

BEM can be equipped with bar code scanner to transfer all necessary data for automatic selection of the grinding program and with an automatic washing system to rinse the suckers and the grinding table. This system can also be used to prewash the ground glasses. Other machine sizes upon request.

	BEM 31	BEM 42
Minimum glass size	600x400 mm	800x400 mm
Maximum glass size	3200x1650 mm	4800x2500 mm
Glass thickness	3-20 mm	3-20 mm
Tools number	15	15
Wheel diameter	150 mm max	150 mm max
Compressed air pressure	10 bar	10 bar

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TÜYAP FAIR CONVENTION AND CONGRESS CENTER | BÜYÜKÇEKMECE İSTANBUL



THIS FAIR IS ORGANIZED WITH THE AUDIT OF TOBB (THE UNION OF CHAMBERS AND COMMODITY EXCHANGES OF TURKEY) IN ACCORDANCE WITH THE LAW NO. 5174.



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ATS XTREME PROFILE CONVECTION

ATS 4.0 is the series of furnace for tempering architectural glass that includes all Mappi International technology: their use guarantees great production results and quality thanks to innovative solutions that meet the most demanding market standards.

This tempering furnace has been designed for medium and large glassworks, which want to add an extremely flexible and efficient machine into their production. Some of the features that make each ATS 4.0 furnace unique:

- **Minimize the tempering cycle and maximizes productivity:** ATS 4.0 guarantees high production volumes, as set-up times for each workload are nearly zero. Equally important, the time required to cold start the tempering furnace is minimized to just an hour. This translates into many more production hours saved each year which, when multiplied by the lifetime of the Mappi furnace (estimated at least 20 years) - best expresses its superb production efficiency.
- **GHBS Xtreme Profile Convection:** Real Convection, top and bottom, is the State of the Art in Convection Systems allowing reliable processing of "Low E" glasses down to 0.01.
The new GHBS Xtreme Profile Convection was developed following an in-depth study on the upcoming coated glass that will be soon on the market. There is precise control of convection air distribution in the upper and lower heating chambers separately.
- **Extraction of the heating chamber :** allows maintenance operations quickly and efficiently.
- **ATI Active Thermal Insulation:** No energy loss thanks to **Hi-Tech 350mm State of the Art Insulation.** The furnace is perfectly insulated thanks to excellent insulation materials and state-of-the-art construction - so much so that you can even touch it with your hands while it is in operation.
- **Energy saving:** Thanks to the coordinated use of software solutions (such as MHS, ESS, IHS etc.) the furnace only heats up to the right temperature in the area where the glass is located. Here energy saving can be up to 40%.

- **Advanced Cooling:** a new quench cooling nozzle design and a new angle empathize the already very low anisotropy and iridescence of the glass.
- **Use of the best components on the market:** we use the best components and the latest technology to be unrivalled in quality and product life cycle. This is also great for the customer who can source components from any market.
- **First in the glass industry to be appointed "POWERED BY SIEMENS":** all Mappi tempering furnaces are certified "Powered by Siemens", ready to be integrated with a potentially infinite number of software applications compatible with Siemens MindSphere, and to communicate in real time with other machines and with the Company Management, Logistics, Maintenance and Planning.
- **Safety first:** Mappi furnaces do not use SO₂, a material that is harmful to the health of the workers and the furnace. In fact, being dangerous and corrosive, the use of SO₂ causes the deterioration of the rollers handling the glass and makes it necessary to stop the machine for maintenance every 15 days.
- **Made in Italy:** Completely manufactured at Mappi's Cisterna di Latina headquarters
- **SUPERTEMPER™**



LOADING AREA	1500x3800	1800x3000	1800x3800	1800x4200	2200x3800	2200x4200	2500x4200	2500x5000
mm	1500x3800	1800x3000	1800x3800	1800x4200	2200x3800	2200x4200	2500x4200	2500x5000
inches	60x150	70x120	70x150	70x165	86x150	86x165	98x165	98x196
thickness	3 to 19 mm	3 to 19 mm	3 to 19 mm	3 to 19 mm	3 to 19 mm	3 to 19 mm	3 to 19 mm	3 to 19 mm

MTH



Furnaces MTH series, designed for those who have to manage large load volumes and process very large slabs without sacrifice quality, flexibility, energy savings. MTH has a maximum load floor of 3300 x 6000 mm, a true "giant". Such a large furnace demonstrates even more what it means to have the exclusive Mappi solutions that allow you to obtain excellent results and the maximum optimization of energy.

Last but not least new MTH is really beautiful, its angular lines, highlighted by LED lights, have a charm that had never before been seen in glassworks.

- **Minimize the tempering cycle and maximizes productivity**
- **GHBS Xtreme Profile Convection**
- **ATI Active Thermal Insulation**
- **Energy saving**
- **Advanced Cooling**
- **Use of the best components on the market**
- **First in the glass industry to be appointed "POWERED BY SIEMENS"**
- **Safety first**
- **Made in Italy**

LOADING AREA	2500x6000	2700x5000	2700x6000	3300x6000
mm	2500x6000	2700x5000	2700x6000	3300x6000
inches	98x236	106x196	106x236	130x236
thickness	4 to 19 mm	4 to 19 mm	4 to 19 mm	4 to 19 mm

www.mappi.it

MAPPI INTERNATIONAL

FOX SERIES

Fox is a series of compact tempering furnaces, with loading dimensions starting from 1050x2300 mm, designed for medium and small glass processing companies. The Fox series has the most advanced features offered by technology in the industry.

Some of the features that make each Fox series furnace unique:

- Minimize the tempering cycle and maximizes productivity
- GHBS Xtreme Profile Convection
- ATI Active Thermal Insulation
- Energy saving
- Advanced Cooling
- Use of the best components on the market
- First in the glass industry to be appointed "POWERED BY SIEMENS"
- Safety first
- Made in Italy
- SUPERTEMPER™



LOADING AREA	1050X2300	1250X3200	1500X3200
mm	1050X2300	1250X3200	1500X3200
inches	41X90	49X126	60X126
thickness	3 to 19 mm	3 to 19 mm	3 to 19 mm



HST

The heat soak test is used to minimize the risk of spontaneous breakages of heat-treated glass caused by nickel sulfide inclusions. In this process, glass panels are placed inside a chamber and subjected to a furnace temperature of 290°C for two hours (with a tolerance of $\pm 10^\circ\text{C}$) to accelerate the expansion of the nickel sulfide. This causes the glasses containing nickel sulfide inclusions to break in the heat soak chamber, thus reducing the risk of potential in the field breakages. The full heat soaking process involves testing all glass in order, virtually eliminating any possibility of nickel sulfide breakage. Heat soak testing is recommended for all tempered glass intended for outdoor applications subject to variable temperatures. It is not normally required for interior applications.

The furnace is manufactured in accordance with European standard EN 14179-1.



SUPERTEMPER™

SUPERTEMPER™ the latest technical solution we have developed to meet a precise market requirement for fire-resistant glass (Certified E30). The higher mechanical resistance required for this type of glass (160 MPa) led us to study a unique and innovative solution.

Thanks to **SUPERTEMPER™**, through the use of a different management of heating and cooling phases, anyone with a MAPPI furnace will be able to:

- Enter a niche market with high profit margins.
- Offer fire resistant glass with the same production costs of normal tempering.
- Open new commercial horizons as this type of glass is making its way into a wide range of applications (Construction and Interior Design)

All this without adding boosters or compressors, changing the layout of the furnace or needing more electrical capacity.



MARVAL

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PANEL PRESSES

Marval panel presses allow to couple and press double and triple glasses thanks to the action of two panels, one fixed at the rear and the other, movable, at the front.

These are fully automated solutions, managed by plc and equipped with a convenient touch-screen panel from which it's possible to control the entire process, view and diagnostics of each work cycle and set the values of all machine function quickly and easily.

The machine is equipped with:

- Automatic infeed frame with special reference bars for precise positioning of the butylated frame;
- "coupling body" and press capable of producing double-glazing up to 80 mm thick;
- Cleaning and maintenance facilitated by the possibility of opening the front movable table;
- Outlet fold-in table or conveyor.



WASHING MACHINES

The vertical washing machines "made in Marval" are the best the market has to offer today in the glass washing sector, thanks to a particularly solid structure and brushes with large diameter. These machine boasts a solid structure, which is indispensable to guarantee high production on sheets from 2 to 50 mm thick.

The motorization of the drive and brushes is entirely located in the upper part; the inner part is made of stainless steel, the same material used for the three tanks equipped with pumps. These washing machines are structured in three sections: inlet, washing body with fan and outlet.

The Marval washing machines - available in 1,600, 2,000, 2,500, 2,800 and 3,200 mm versions - are fully motorized and the speeds are adjustable with inverters up to 10 meters per minute. The process could be fully automatic and easily managed thanks to a plc with touch-screen.



AUTOMATIC SEALING ROBOT

The automatic sealing robot designed by Marval performs the final sealing of rectangular insulating glass panels, previously laminated and pressed, ensuring perfect corner sealing and maximum speed.

A chain transport system, separated with dowels supporting the glass, prevents contact with the sealed parts, while a front suction cup allows precise and correct movement of the glass. The sealant is fed through a hydraulic extruder supplied with the machine.

A numerically multi-axis controller allows programming and control of every step of the process.





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TOOLS FOR GLASS ONLY

The company started its activities 102 years ago, with artisan based production, and now has more than 75,000 different items in its product range.

We are probably the only company that produces diamond wheels exclusively for the glass sector and so we can certainly be defined as 'specialists'! In fact, our entire R&D, production etc., are focussed totally on glass and - in some cases - materials very similar to glass, aiming at supplying the complete range of glass grinding tools.



PERIPHERAL WHEELS

Mole Moreschi has invested a lot in the development of a complete and performing range of peripheral wheels.

In addition to the traditional, widely tested products, we have added new ranges capable of effectively covering all areas of use.

We have developed solutions and services able to support even the most demanding customers, we are today confident of being able to offer a highly performing product, capable of satisfying any type of need.



POLISHING WHEELS

The polishing wheels were created to replace the felt wheels with cerium where management is much more complex; in fact, the management of a normal polishing wheel has no type when it is managed except to be replaced when the ability to use the wheel ends. In this area, then, the water must not be particularly hard and contain a saline concentration that must not exceed certain parameters.



CUP WHEELS

Diamond and resin cup wheels Mole Moreschi has a very wide range of cup wheels among which you can surely find the most suitable tools for your machine and your specific processing. A wide variety of binders, grits, geometries are available, each of which can be completed with a specific fixing body for each individual machine model. In addition to domestic production, we also sell the polishing wheels of the main international manufacturers. Moreschi cup wheels are products of the highest quality, widely tested, known and appreciated all over the world.



ROUTERS

In addition to a complete range of products able to effectively meet the most common needs, in terms of speed, finish, durability, we offer "customized" tools, optimized to the specific needs of the customer. To the sintered tools we add tools with electroplated diamond, to offer solutions also to the requests of geometries not achievable with more traditional technologies (diameter 4,5)





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TP COMPACT

Try to imagine a glass tempering machine so compact that it can enter in a small glassworks.



It shall let the owners of the business to manage the whole tempering productive system without outsourcing it. This machine is so **efficient** and **adaptive** that it can guarantee you the best quality on the market combined with the **lowest energy consumption** of the category. Now try to imagine that you can use this machine whenever and however you want and also you do not need to be an engineer or a specialized technician.

To use this machine proficiently, you just need to handle a user-friendly touch screen interface as you do every day with your smartphone.

We are pleased to introduce you the new **Mazzaroppi TP Compact**. The result of the experience and the hardworking of our creative atelier, is just the tempering machine you always wanted and even more. The new Mazzaroppi TP compact, **is the first tempering machine** which is specifically designed and built to offer to our customers who are owner of a **small-medium glassworks** and want to reach the following goals:

- **Internalizing the tempering productive process**
- Combining the improving of the **quality** of the final product and the **lowest price** of the market
- Tempering their own glasses with an **average consumption of 100 kWh**
- Streamlining and speed up the whole manufacturing process without upsetting your business structure.
- Providing a fast and timely service to the customers.

Model	Loading area	Minimum dimensions	Thickness	Plant dimension	Avarange consumption	Load/hour
	mmxmm	mm	mm	mt	kWh	4mm
TP 130L	1300x3200(3600) mm 51x125 inch	Ø 200 mm 7,87 inch 140x140 mm 5,5x5,5 inch	3.8-19 mm 5/32 - 3/4 inch	17,15 x 5,8 x 4,2 mt 56 x 19 x 13 ft	100	≈20
TP 160	1600x3200(3600) mm 60x125 inch	Ø 230 mm 9 inch 160x160 mm 6,30x6,30 inch	3.8-19 mm 5/32 - 3/4 inch	18 x 6,13 x 4,6 mt 60 x 20 x 15 ft	130	≈20
TP 190	1900x3600 mm 74x141 inch	Ø 230 mm 9 inch 160x160 mm 6,30x6,30 inch	3.8-19 mm 5/32 - 3/4 inch	18,75 x 6,5 x 4,6 mt 61 x 21 x 15 ft	170	≈20

TP ADVANCED

Tp advanced is a tempering machine for processing flat glass. It has been specifically designed for **medium-big glass making companies** which produce glass panes for different fields (furniture, architectural glass, household appliances, shower stalls and automotive glasses). This machine has been built for those glassmakers who are planning to buy a tempering oven for reaching the following goals:

- **Cutting the energy cost up to 70%**
- Increasing the productivity
- Increasing the **quality** of the final product
- Streamlining and speed up the whole manufacturing process.

The machinery has a minimum size of 1900mm x 4200mm and a maximum size of 3200mm x 6000mm.



Thanks to the "Ultimate Convection" a Mazzaroppi Engineering patented system, this machine can process every kind of hardenable glass with a thickness by 2,8mm up to 19mm, including the Low-e glasses which have emissivity e=0,01. TP Advanced, can also be customized in many ways according to the requirements of individual customers in order to let them to meet their needs.

We are going to offer you the best technical option that can guarantee you the **highest level** of performance with the **lowest energy consumption** of the glass field.

Model	Loading area	Minimum dimensions	Thickness	Plant dimension	Consumption	Load/hour
	mmxmm	mm	mm	mt	kWh	4mm
TP 1942	1900x4200 74x165	Ø 230 mm 9 inch 160x160 mm 6,30x6,30 inch	3.8-19 mm 5/32 - 3/4 inch	21 x 5,5 x 3 68 x 18 x 10 ft	200	≈20
TP 2242	2200x4200 mm 86x165 inch	Ø 250 mm 9,84 inch 175x175 mm 6,89x6,89 inch	3.8-19 mm 5/32 - 3/4 inch	21 x 5,8 x 3,4 mt 68 x 19 x 11 ft	230	≈20
TP 2550	2500x5000 mm 86x165 inch	Ø 260 mm 10,24 inch 185x185 mm 7,28x7,28 inch	3.8-19 mm 5/32 - 3/4 inch	24,35 x 6 x 3,5 80 x 19,5 x 12 ft	330	≈20
TP 2851	2800x5100 mm 110x200 inch	Ø 280 mm 11,02 inch 198x198 mm 7,79x7,79 inch	3.8-19 mm 5/32 - 3/4 inch	26,7 x 6,2 x 4mt 85 x 20 x 13 ft	370	≈20
TP 3162	3100x6200 126x244 inch	Ø 350 mm 13,77 inch 250x250 mm 9,84x9,84 inch	3.8-19 mm 5/32 - 3/4 inch	28,7 x 6,6 x 4 mt 94 x 21,6 x 13 ft	550	≈20

T+C (TEMPERING AND BENDING MACHINES FOR FLAT GLASS)

The tempering and bending machine for flat glasses have always been one of the **flagships of the Mazzaroppi's product portfolio**, as demonstrated by the **several machines installed** all over the world.

This range of product needs a very deep and **accurate preliminary study** case in order to meet the specific productive needs of the customer.

In this way, every T+C machine is **tailored** to each individual customer.

The tempering and bending machineries can be of three different types:

- Transversal bending by means of rollers with regular radius and CNC-controlled.
- Longitudinal sector bending by means of rollers with regular radius and CNC-controlled.
- Bending by means of press with variable radius and CNC-controlled.

The target of this machines are all those companies that operate in the field of shower stalls, refrigeration, automotive, furniture, solar panels, architectural glass, household appliances.

These machines have been built for those glassmakers who are planning to buy a tempering oven for reaching the following goals:

- Cutting the energy cost up to 50%
- Increasing the productivity
- Increasing the quality of the final product
- Streamlining and speed up the whole manufacturing process.



Model	Loading area	Minimum dimensions	Thickness	Max glass arrow	Min. bending radius	Plant dimension	Consumption	Load/h
	mmxmm	mm	mm	mm	mm	mt	kWh	4mm
TCP 2212 2C	2200 x 1200 mm 86 x 47 inch	250 x 500 9,84 x 19,68 inch	4 - 8 mm 5/32 - 5/16 inch	300 mm 12 inch	100 mm	20 x 9,5 x 3,6 mt	350	≈20
TCP 2518 1C	2500 x 1800 98 x 70 inch	350 x 600 mm 13,77 x 23,62	4 - 8 mm 5/32 - 5/16 inch	300 mm 12 inch	100 mm	15 x 10 x 3,6 mt	380	≈20
TCR 2212 2C	2200 x 1200 mm 86 x 47 inch	250 x 400 9,84 x 15,74 inch	4 - 8 mm 5/32 - 5/16 inch	300 mm 12 inch	100 mm	23 x 6,5 x 3,6 mt	350	≈20
TCR 2518 1C	2500 x 1800 98 x 70 inch	300 x 550 mm 11,81 x 21,65 inch	4 - 8 mm 5/32 - 5/16 inch	300 mm 12 inch	100 mm	14 x 7 x 3,6 mt	380	≈20

CS

The bending oven CS allows to bend the glass resting on moulds by heat. A lot of shapes can be realized in order to differentiate the production. The oven consists of several workstation called "Box" in which are positioned the moulds and the related glass package.

The special features of this machine are:

- The ground of each Box is covered by heat proof metal grid which make it possible to walk on it.
- The height of the perimetral walls allows the moulding process to be carried out completely inside the box.

This limits any thermal shocks that may occur at the beginning of the cooling phase.

- Vision system: special portholes are positioned on the side of the box to check the laying of the glass on the mould during the heating process.
- Heating section: This module is mobile and moves on the boxes by means of special rails, so that the moulds that support the glass are not affected by any movement or vibration during positioning. The closing system of the heating section has been designed for reducing the friction to a minimum and therefore having a longer lifespan.

These machineries are designed for those companies that operate mainly in the architectural glass field and are planning to purchase a moulded glass bending system for the following reasons:

- Reducing the energy consumption
- Increasing the quality of the final product
- Simplify and speed up the entire production process
- Increasing their productive capacity.



The CS, moreover, like all the machines produced by Mazzaroppi, can be customised according to the customer's needs. In this way we can offer the best technical option that allows our customers to satisfy their production requirements with the lowest operating costs of the glass field.



HST: HEAT SOAK TEST OVEN

This oven is used for checking the tempered glass panes. The test consists in heating the glass panes up to 290°C ±10°C and then keeping those glasses at that temperature according to the European reference standards.

This oven uses an advanced temperature control system that allows it to regulate both the internal air of the oven and the real temperature of the glass panes.

At the end of each process the machine generates a detailed report like the ones the authority draws up at the end of the preliminary calibration test of the oven.

The heating system consist of several independent sections and each of them is equipped with its own resistor, thermocouple, a fan for the air circulation system and another set of fans for the cooling cycle at the end of the test.

Another important feature of this HST machine is the archive of all the reports generated at the end of the thermal tests in a printable format, so whenever you want you will be able to examine all the parameters of each test you run in the past and sharing this documents with your customers.

Thanks to all these special features Mazzaroppi HST fully complies the European standards for the heat soak test and offers an efficient and reliable solution.

CUSTOM MACHINERY

The special machineries are the **highest expression** of the **technology**, of the **creativity** and the **experience** of the **Mazzaroppi Engineering** in the field of the glass industry.

These are machines that have been designed from scratch, thanks to the joint venture between our skills and the specific needs of our customers.

In fact, these are **tailored machines** and even the single **detail** can be **customizable**.

The great international glass corporations often chose Mazzaroppi as partner to realize their projects.

Our technical staff cooperate with the customer for drawing up a technical specification that includes: the size of the machine, the maximum and the minimum size of the glass that can be processed, the capacity of the machine, which kind of process the machine will do or if the machine will be able to do more than one kind of process.

For example, one of the customised machinery made by Mazzaroppi Engineering is called **"Multifunction"** and was created from a specific customer request: the need to have a single machinery made up of several production lines to allow the customer to have a roller bending line, another die bending line and finally a line for flat tempering, in a "all in one" solution.

Another type of machinery we find in this section is that of furnaces with **several heating chambers**.

These systems with two or more independent heating chambers make it possible to **reduce the thermal shock** during the tempering process significantly, in order to obtain an **unrivalled quality** of the final product in terms of glass flatness, absence of optical distortions and, above all, a **97% decrease** in the phenomenon of **anisotropy**.

These machines are regarded by **Europe's largest glass manufacturers** as the only way to **achieve** the very **high quality standards** to which they aspire.

The machines in the "custom" section are suitable for those who **cannot find the best solution** for their production needs on the **market**, and therefore are looking for a **product designed exclusively** for their specific needs, unique in its kind.



LM

LM Revolution is the new glass laminating furnace patented by Mazzaroppi Engineering and indicated for all companies that need to produce laminated glass with different thicknesses. Laminated glass complements tempered glass in an important way, giving greater resistance to impact and safety against falling/shattering, given by the ability of glass to retain fragments even after breakage.

LM Revolution allows us to laminate 2 or more sheets of glass with one or more sheets of EVA plastic in order to achieve a higher degree of safety in full compliance with regulations.

With our **2 patented systems** we have a **higher speed** in the production cycle and we obtain a product with **low plastic spillage**.

With regard to this type of product, our team of engineers has upgraded the standard LM revolution model by creating the "LM Tower" oven, which offers, in addition to the features described above, the possibility of **optimising production** thanks to **two or more independent worktables**, capable of laminating different types of product at the same time.

Model	N° Platform	Platform dimension	Glass dimension	Max weigh on platform	Machine dimension (LxWxH)	Power
		mmxmm	mmxmm	kg	mm	kW
LM Revolution 1.1	1	1750 x 3400 69 x 134 inch	1600 x 3250 63 x 128 inch	200	2350 x 4300 x 1500 7,7 x 14 x 4,9 ft	16
LM Revolution 2.1	2	2200 x 3400 86 x 134 inch	2050 x 3250 80 x 128 inch	250	2450 x 4300 x 1500 8 x 14 x 4,9 ft	30
LM Tower 2.2	2+	2350 x 4350 92 x 171 inch	2200 x 4200 86 x 165 inch	500	4554 x 3000 x 2600 15 x 9,8 x 8,5	26+26
LM Tower 2.2	2+	2750 x 4650 108 x 183 inch	2600 x 4500 102 x 177 inch	600	4850 x 3100 x 2650 16 x 10 x 8,7	35+35
LM Tower 2.2	2+	3000 x 5000 118 x 196 inch	2850 x 4850 112 x 190 inch	650	5580 x 3470 x 2700 18 x 11 x 8,8	40+40



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ROCK 10-45

Straight-line edger with 10 wheels, for flat edge, polished arrises and wide chamfer up to 54 mm with variable angle $0^{\circ}\div 45^{\circ}$. Neptun's line also propose Rock 14-45 with variable angle, Rock 8 and Rock 11.

Rock stands out for its extraordinary production speed combined with high precision and processing quality. The structure is fully made of cast iron and high thickness steel processed with innovative technological solutions aimed to maintain precision and reduce mechanical wear and thus maintenance costs. This also leads to an unprecedented low noise level. Many advanced and patented solutions, such as the conveyor pad in double material, the ETS squaring system and the RC-4 system for parallelogram shaped glass, are the result of a consolidated know-how and heavy investment in R&D.



ROCK 11 AWA

The Rock AWA version is added to the vertical straight-line edging machine segment, which now has automatic management of both diamond and polishing tools AWA (Automatic Wheels Adjustment), in order to guarantee constant quality and also be used by non-expert operators. AWA system is applicable to all Rock models.

Rock AWA allows:

- Automatic adjustment of diamond and polishing wheels
- Management of processing recipes in order to immediately set different sets of wheels which, require different settings: tool sets for standard glass, for laminated glass, or for small thickness



- Possibility of storing specific processing recipes
- The peculiarity of the AWA system is the hydraulic spindle management system without electrical and electronic components in the spindle area, with a water resistance class IP68, thus ensuring high reliability.
- Indication on the control panel of the need to replace a tool when worn
- Clear and accurate diagnostics with online troubleshooting guide

LV EVO

In the washing machine segment, the entry level range is now enhanced with the new LV EVO series which, while maintaining the simplicity of the well-known LV Top, it has a high level of automation and superior performance with processing speed increased by 50%.

The new peculiar features are:

- Machine body entirely in stainless steel and with base frame in hot-dip galvanized steel
- Touch screen with PLC for managing all functions
- Workable thicknesses $3 \div 30$ mm with automatic adjustment by means of an input thickness reading sensor
- Speed regulation $1 \div 8$ m / min by inverter
- Brushes $\varnothing 140$ mm with 350 RPM speed (500 RPM with brush inverter option)
- Automatic water quality management and relative replacement

- PLC interface for in-line integration with other upstream or downstream machines via ethernet and production data export that can be integrated with Industry 4.0
- Energy consumption control with precise and graphic indication of the last 8hrs
- Available in 1600 Open Top, 2200 and 2600mm sizes.



WAVE HP



The main strength of Wave HP is its maximal flexibility of configuration. The entry-level Wave comes with a very robust structure, suitable for intensive processing. Controlled by PLC, this version can be enriched with several solutions, up to the full-optional model, Wave HP, for total automation and superior performances in all fields: output, washing quality, integration in business processes. In both cases, the construction and components ensure the highest reliability over time. Wave can meet the requirements of each specific production context, respecting the required level of investment.

Wave HP is equipped with a powerful touch screen control unit for managing machine functionality, remote diagnosis, scheduled maintenance and numerous innovative functions: **A-Qual** water quality control, **Ecosave** energy saving, **SmartSpeed** for differentiated speed management and optimal drying of the tail of the glass, **NightCare** for water heating pre-ignition and automatic water change programming out of order. Wave can be supplied in Heavy Duty configuration for Jumbo sheets up to 3.3 x 6 meters size and 80 mm thickness.

TORNADO HP

Tornado HP is ideal for intensive industrial processing where **maximum production efficiency** is required in terms of quality and speed. The total management, even remotely, of the production and maintenance parameters, makes it suitable for the Industry 4.0 environment. Tornado HP is equipped with a powerful PLC with touch screen that allows the management of numerous advanced functions, for glass with thickness up to 38mm and width from 1 to 3.3 meters.. The high level of **automation and flexibility** places no limits on integration into all existing production lines of different manufacturers. Lamination, tempering, painting, screen printing, double edger grinding, all processes become smooth with Tornado washers.



QUICKLINE

QuickLine consists of two Quick modules combined according to the type of production required:

- QuickDrill with QuickMill to perform milling, drilling and countersinking on the entire work area, without any shadow area;
- QuickEdge with Quick2 to have a complete cycle of polished grinding, milling and drilling.

The Quickline has 3 working modes: in line for maximum productivity, in single mode with the processing of two different production batches simultaneously for maximum flexibility, or you can work with a single machine when the other has no work or is in maintenance, for maximum return on investment. Although there is an optimal working direction, glass loading / unloading can take place at any point on the line depending on the operator's needs of the day. The Quickline can be combined with our wide range of vertical washing machines type LV or Wave and completed with loading and unloading automatic for an unmanned work island.

The investment is also flexible because the line can be completed in steps as production needs grow.



QUICK 2 T8

Quick2-T8 combines the drilling and milling phases in a single machine. All the advantages of the Quick series now also within reach of who, due to lack of space, cannot opt for the solution with the two units. Powerful numerical control with touch panel 15" for fast programming directly on board of the machine.

- DCS (Dynamic Control System): innovative tool management system for automatic management of the feed rate in function of the cutting capacity of the tool.
- High precision thanks to the system for measuring the effective position of the glass by means of a linear encoder, guaranteeing an accuracy of $\pm 0.15\text{mm}$ constant over time.
- Still glass milling, thanks to the solid glass locking system, the milling and grinding operations of the notches guarantee high quality and speed, up to 0.5
- Axes speed up to 30 meter/minute



- Available in sizes 160-30 or 280-45 for large glass sheets
- Brushes $\varnothing 140\text{mm}$ with 350 RPM speed (500 RPM with brush inverter option)
- Automatic water quality management and relative replacement
- Available in 1600 Open Top, 2300 and 2800mm sizes.
- PLC interface for in-line integration with other upstream or downstream machines via ethernet and production data export that can be integrated with Industry 4.0
- Energy consumption control with precise and graphic indication of the last 8hrs

QUICKMILL 100

The smallest three-axis machining center for milling, grinding and one side drilling. Quickmill 100 has as its primary processing the milling and grinding of notches and cut-outs, but is also able to perform holes with high quality finishing. Programming on the machine with a simple and fast CAD / CAM. Possibility of having the optional CAM WAY with over 1000 parametric shapes and the work station for programming in the office.

Derived from the famous best seller model Quickmill 160-30, despite being the entry level version for milling, it is designed with industrial solutions and a high degree of automation.

Compact and robust construction, the main features are:

- Automatic handling of the slabs
- Possibility of in-line insertion with upstream or downstream machines
- Maximum glass size 1800x3200 mm in open top configuration
- Workable dimensions 1000x2400 / 3200mm open top for 15 mm thickness
- Simple and parametric programming from touch screen
- Made mostly of stainless steel and galvanized steel.
- Convenient glass scrap extraction drawer

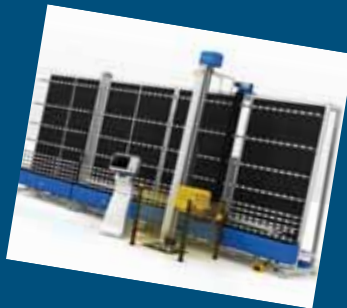


Glasstech Mexico Glass Technology Expo Mexico

JULY 19-21 2023

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Optima – OPTY-WAY ENTERPRISE

Opty-Way Enterprise is an ERP solution designed for exclusive use within a glass factory and allows management of the entire production cycle in a simple and extremely effective way.

The verticality on the glass world makes it the best program for the management of orders and production cycles with a specific and extremely effective order entry. With Enterprise, the compositions requested by the customer are entered directly in the order menu without the need to create articles, bills of materials or specific elements for each product as occurs with general purpose ERPs.

Based on a centralized Database, it allows a shared and complete management of customers, orders, processing cycles and production progress.

All versions of the Enterprise include features such as cutting optimization (Opty-Way®, the most widely used glass cutting optimizer all over the world), production management and real-time

monitoring of glass processing (GMC-Monitor additional module).

For those who manage a portfolio with many shaped glasses, the addition of the Nest-Way module (automatic nesting of two shapes, even different from each other), makes the daily raw material savings even more significant.

Enterprise has a unique modular structure that allows each glassworks to tailor the solution that best suits its reality and is appreciated for its user-friendly interface, numerous functionality and ability to integrate with other software systems. Our customers praise its ability to help them increase their productivity, achieving significant improvements in their processes and daily operations of a glassworks.

Once the base version has been chosen (the choice is between Basic, Production, Sales or Essential), all and only the specific modules required to improve and better manage the needs of individual departments can be added.

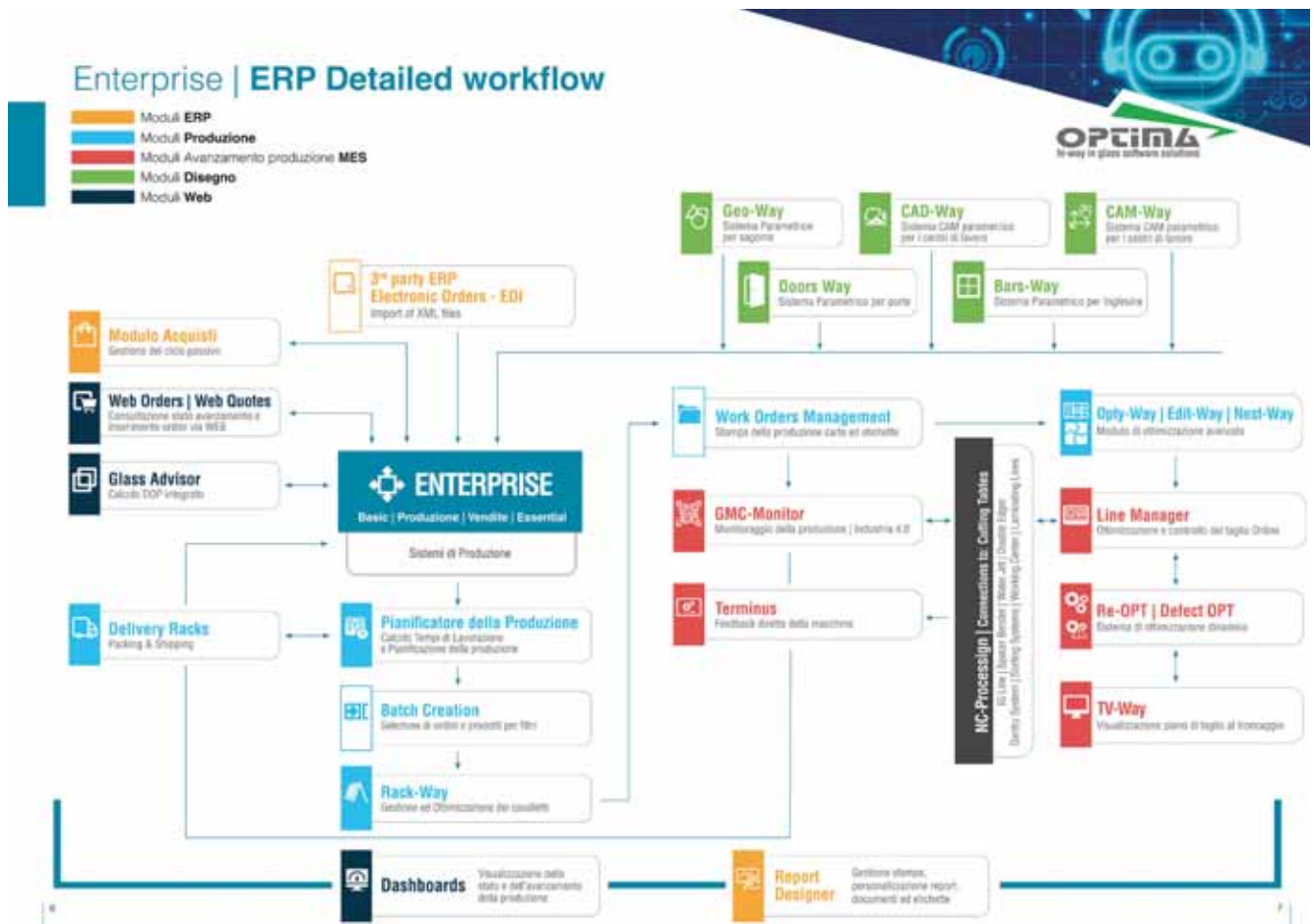
All modules are seamlessly integrated with each other and adding new modules or upgrading to a higher basic version can be done at any time without loss of data or the need to switch to a different application.

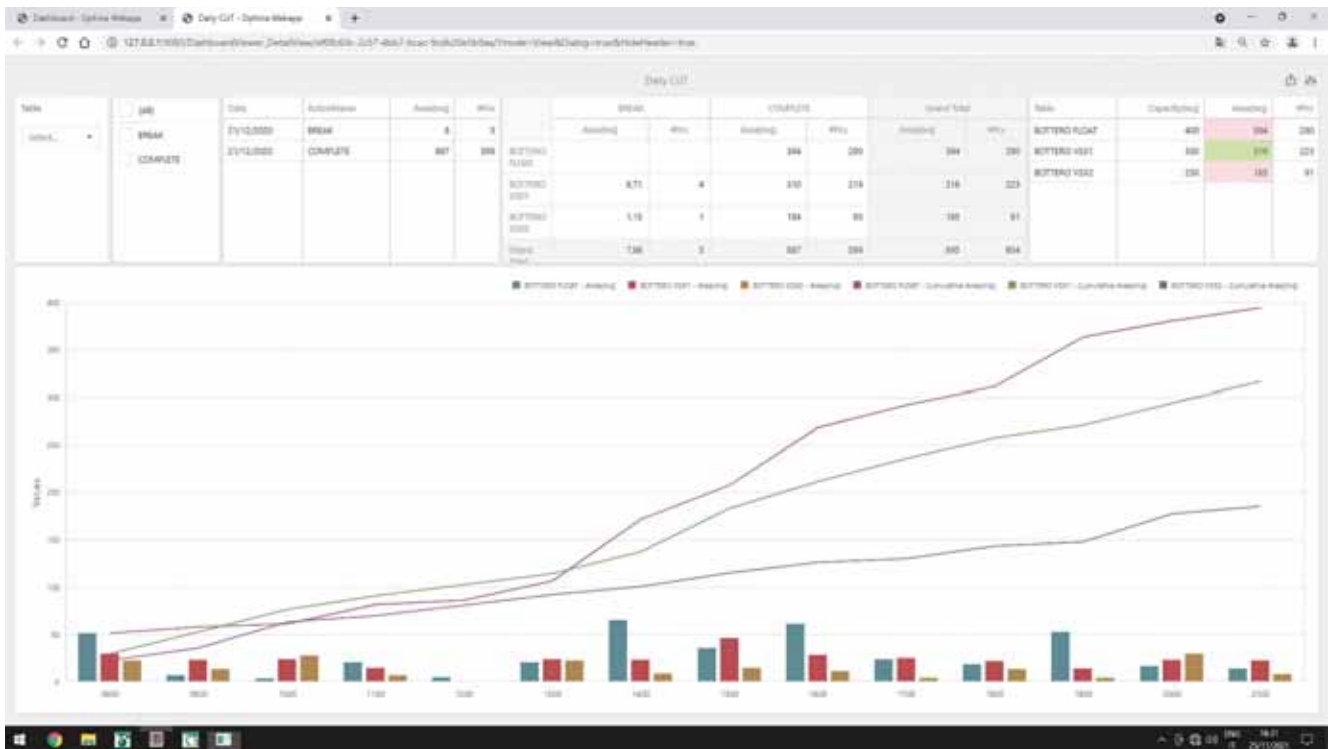
Enterprise products allow detailed logging of each operation with automatic historicization of user, creation, printing and modification dates, status changes and actions.

OPTY-WAY ENTERPRISE – Additional Modules

The range of functionalities in our ERP allows the customer to configure the system so that the software solution adapts to his specific needs and not vice versa.

The choice of the modules that make up the solution is made only after a careful analysis of the needs of the individual production reality. Flexibility and scalability are the strengths of our offering: Our products, designed exclusively for use in glassworks, are continually expanded and updated to incorporate





new industry directives or to meet new and evolving needs in the field.

At today, we made possible to integrate production modules such as Geo-Way for pattern management, our Opty-Way optimization module or even MES for production monitoring with existing third-party ERP software. On the other hand, it is always possible to integrate our basic ERP Enterprise modules with third-party production management systems, optimization programs or CAD/CAM.

“MES for controlling Production Progress Monitoring Industry 4.0”

GMC-Monitor has been designed to supervise and control the input and output flows of each work center, controlling the production status of the various production phases both in terms of managing the progress of the phases and in terms

of historicizing the various operations (traceability). This module makes it possible to manage queues of incoming and outgoing pieces, calculate the processing time of each individual piece, display error messages in the event of previous non-validated processing, declare breakages and so on. Depending on the type of plant or the type of production, it is able to manage different progress modes: production of single pieces where each piece has its own barcode, series production with a single barcode for a set of pieces, mixed production where the two types alternate.

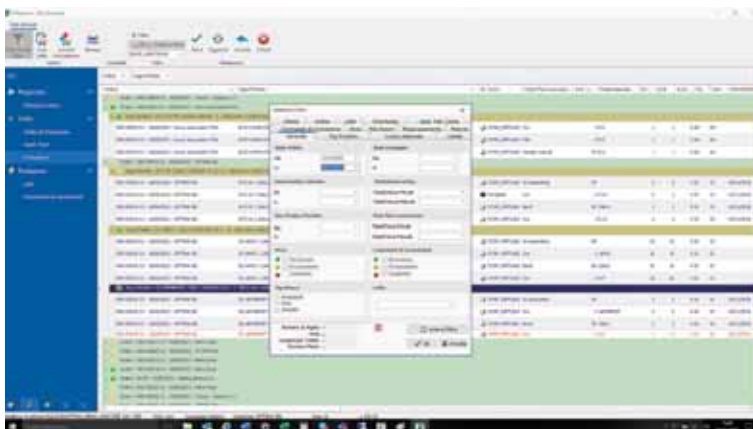
GMC-Monitor Benefits

- MES fully integrated with ERP
- Indispensable tool for Industry 4.0
- Multiple production management

- Full-scale display of work sheets and attachments
- One simple and intuitive interface for each plant

“Terminus”

With the arrival of Industry 4.0, Optima immediately took steps, in parallel and in conjunction with equipment manufacturers, to integrate all the information coming from the machine into the centralized system in the office using our MES software. By using protocols such as Modbus, TCP-IP, OPC-UA or file exchange, we are able to establish two-way communication with all modern machines that are “set up” and retrieve what is needed to complete processes automatically, saving time and errors and increasing productivity.





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The most popular product is still the 10S, a wheel that can be considered universal, easy to be used on every type of machinery, while the top product is the cerium wheel X5000 for buffing. The range of products can count on new entries:

X510

X510 which is a semi-rigid bond with cerium oxide. This wheel grants an excellent shine finishing, with extremely long life and very low water consumption. This is specific for double edger machines.



RP320

RP320 is the new wheel for the arris polishing. It is suitable for very high speed applications on all machines. It performs well at all RPM and grants an extremely long life.



CL600

CL600 is the last development made by RBM and it gives the best performances on CNC machines, both vertical and horizontal. The special composition with Cerium Oxide, grants an extra shine to the edge of the glass.
Rigid wheel with the addition of cerium oxide (hybrid-semi rigid bonding).

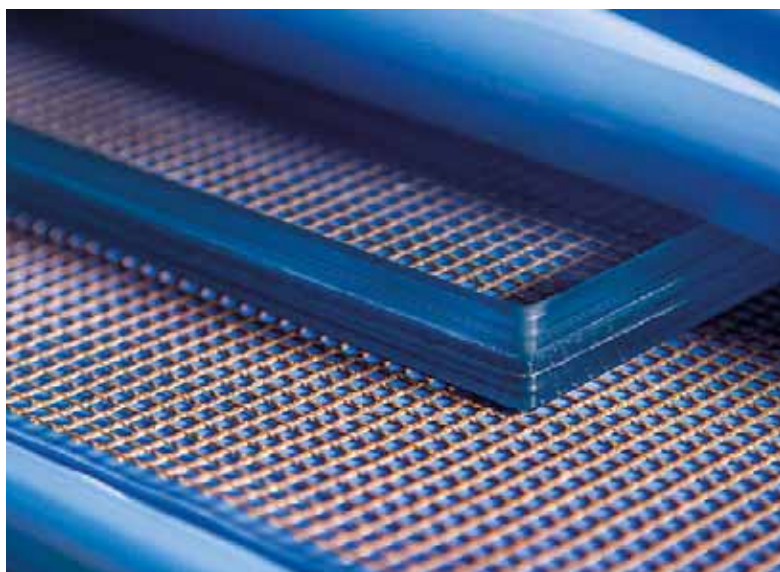




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RD CLEAN CONCEPT - PATENTED SYSTEM



Laminating furnaces in multiple combinations, customization and oversized dimensions



The innovative post-lamination, clean-edges system based on a laminating bag of last generation. It is a real system manufactured with special materials, selected to respond to a particular scope: to limit the excess of the laminating interlayer from the glass edges after lamination.

This system provides several benefits in production among which:

- Saving time and labor by removing one step in lamination
- Safety of the operator who does not need to use sharp tools
- Installed in different kilns with excellent results

RIVA BY RCN

CHEMICAL TEMPERING FURNACES

"Riva by RCN" is a double winning solution if we consider the possibility of customizing the machines along with the technical expertise of Gianfranco Rivaroli who has, in fact, more than 40 years of top level professional activity

Model	Active Size (mm)	Handling	KW
CT 320	700 x 450	Manual	16+6
CT 330	700 x 450	Automatic	16+6
CT 331	1000 x 1000	Automatic	39+12
CT 900	2000 x 1000	Automatic	60+24
CT 950	3200 x 2200	Automatic	100+40



'EASY CONNECT APPLICATION'

Latest generation man/machine interface:

- product process checked from smartphone, tablet or PLC
- exclusive FTP Cloud for automatic download of the daily production process
- chat and technical assistance with RCN from remote



In compliance with ASTM G155-13* UNI EN ISO 12543-4:2011
 SGCC List Approved UNI EN 12600:2003
 AINSI Z 97.1-2009; CPSC 16 CFR 1201
 AINSI Z97.1-2015 Section 5.4.2



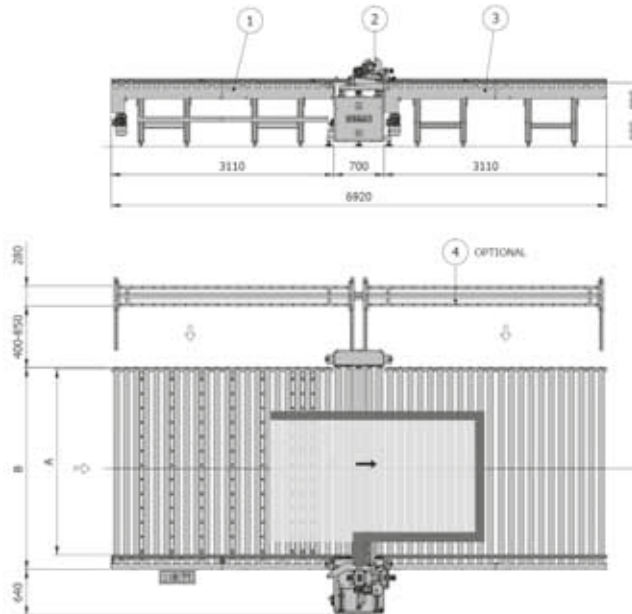
ROLLMAC A DIVISION OF GEMATA Spa

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GLASSLINE

ROLLERCOATER MACHINE FOR THE ENAMELING OF FLOAT GLASS EDGES

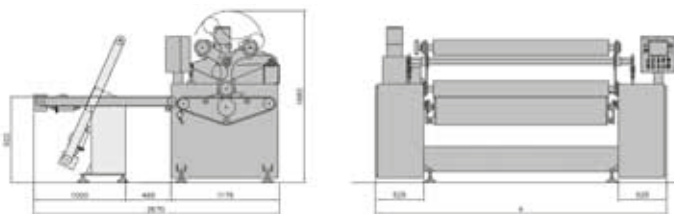
GlassLine is a machine based on the technologies of enameling the edges of float glass sheets by means of a reverse roller. It has been designed in response to a special need of glasses for building and interior decoration, i.e. the coating of a frame on the four edges of the sheet. Frame sizes: min. 5 mm max. 300 mm. This operation is performed in 4 passes with the return and 90° rotation of the sheet between one pass and the next. After all four sides have been processed, the sheet is sent to the oven for drying. The machines grant enable to enamel sheets with thicknesses from 2 mm. to 25 mm. and sizes up to 2,600 mm. A constant and uniform quantity of enamel can be applied up to 400 g/sq.m. in a single pass. It is possible to coat by ceramic enamels and organic paints.



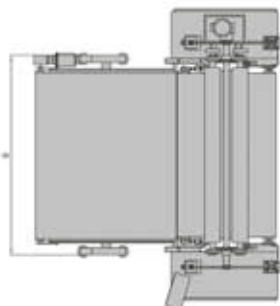
Working Width	A	B
1300	1300	1525
1800	1800	2025
2200	2200	2425
2600	2600	2825
3400	3400	3625

MULTIGLASS

THE MULTI-ROLLER MACHINE FOR THE ENAMELLING AND DESIGN PRINTING OF FLOAT GLASS SHEETS



Working Width	Maximum Sheet Width	Machine Weight without cylinders	Engraved cylinders max n°	Engraved cylinders weight	Conveyor belt weight
1300	1200	1660 kg	4	157 kg	219 kg
1800	1700	2180 kg	4	197 kg	303 kg
2200	2100	2280 kg	4	233 kg	370 kg
2600	2500	2540 kg	3	271 kg	437 kg



Working Width	A	B	Installed Power	Air consumption with 7 bar supplyng		Sheets Thickness
				Production pump	Mixer Piston	
1300	1200	1200	4	1620 L/h 55 Cycles/min	285 L/h	1-19 mm
1800	1700	1700	4			
2200	2100	2100	4			
2600	2500	2540	3			

MULTIGLASS is the multi-roller machine that combines the latest technical innovations with high operational flexibility. It is used for enamelling, painting and design printing operations of small and large float glass sheets, by means of an engraved roller. The machine is particularly suitable for companies that need to make frequent item changes. The machine allows both

www.rollmac.it

ROLLMAC A DIVISION OF GEMATA

reverse processing, for generic coating, and synchro processing, to obtain design effects, with easy coating all types of flat glass sheets on the market, with sheet thicknesses from 2 to 25 mm and working width from 600 to 2600 mm.

As in all Rollmac machines, for MULTIGLASS was paid special attention to ergonomics and easy-to-use features:

- moving mechanisms have been reduced to significantly minimize wear parts, spare parts and maintenance operations;
- on request, the machine can be equipped with a motorized entry belt which facilitates both the coating of large sheets and the cleaning operations.



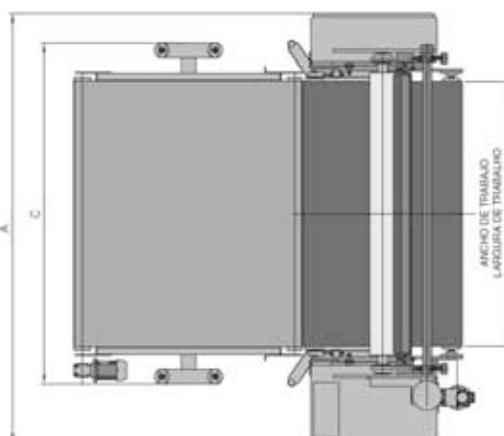
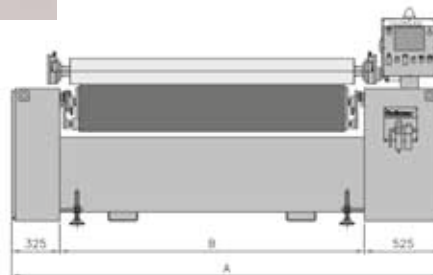
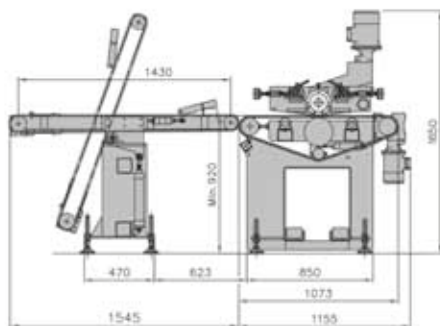
COLORGLASS

QUICKER AND EASIER ENAMELLING AND DESIGN PRINTING

COLORGLASS is the single-roller machine for the enamelling and design printing of glass sheets by means of an engraved cylinder. It is suitable from small dimensions such as tiles and decorations to big sizes such as internal walls, doors and façades.

Its single-roller design makes it particularly suitable for companies that work with large production quantities and do not need frequent articulation changes.

With COLORGLASS it's possible to easily enamel and print any kind of flat glass on the market with sheet thicknesses from 2 mm to 25 mm and sizes from 600 mm to 2600 mm; in addition, it is the ideal working tool for in-house laboratory and production lines.



Model	Useful Working Width	A	B	C	Installed Power	Absorbed Power	Working Speed	Working Speed Engraved Cylinder
COLORGLASS 600	600	1830	950	1100	2,00 kW	1,3 kW	m/min min. 0,5 max. 6	m/min min. 1 max. 35
COLORGLASS 1000	1000	2230	1350	1500	2,00 kW	1,3 kW		
COLORGLASS 1300	1300	2420	1650	1800	370 kg	1,3 kW		
COLORGLASS 1800	1800	2900	2050	2300	2,00 kW	1,3 kW		
COLORGLASS 2200	2200	3300	2450	2700	2,00 kW	1,3 kW		
COLORGLASS 2600	2600	3700	2850	3100	2,00 kW	1,3 kW		
COLORGLASS 3400	3400	4585	3735	3900	2,00 kW	1,3 kW		



SATINAL SPA - TK - STRATO

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TK KILNS

LAMIJET CONVECTION

Innovative fast curing and fast cooling laminating oven with forced-air convection for high production volumes, interlayer flexibility and lower operating cost. It allows laminating EVA, PVB and SentryGlas without the use of autoclave. The modular system allows quick and easy loading of the trolleys for laminating or for HST processes.

KEY FEATURES

- Lower operating costs
- High production volumes
- Fast curing and fast cooling through forced-air convection system
- Up to a maximum of 6 trays
- TK Connect 4.0
- Real time production analysis
- Maximum temperature uniformity
- Independent heating areas with automatic temperature adjustment
- Smart heating areas with automatic temperature adjustment
- Smart heating system for lower energy consumption
- Intelligent vacuum system that adapts to the requirement of the laminating interlayer
- TKlean Bag for clean glass-edges after lamination



LAMIJET CONVECTION							
18/36	1800 x 3600	71" x 142"	4	87	10000 x 3100 h 3400	33'x10' h 11'	
24/36	2400 x 3600	94" x 142"	4	97	5700 x 7000 h 3400	19'x23' h 11'	
25/50	2500 x 5000	98" x 1997"	5	192	15000 x 3100 h 3300	49'x10' h 11'	
LAMIJET CONVECTION + HST							
18/36*	1800 x 3600 laminating 2000 x 3600 hst	71" x 142" 79" x 142"	4	121	10000 x 3100 h 4070	33'x10' h 13'	
24/36*	2400 x 3600 laminating 2000 x 3600 hst	94" x 142" 79" x 142"	4	162	5700 x 7000 h 4070	19'x23' h 13'	

* Max loading capacity for HST is 2000 kg.

LAMIJET BREVA						
LE 200	1000 x 2000	39" x 79"	56	7300 x 3000	24' x 10'	
LE 300	1800 x 3200	71" x 126"	125	11000 x 4500	36' x 15'	
LE 400	2100 x 4500	83" x 177"	176	16000 x 6000	52' x 20'	
LE 500	2500 x 4500	98" x 177"	176	16000 x 6000	52' x 20'	

LAMIJET BREVA

The design of Lamijet Brevia is the synthesis of technical knowledge acquired through years of design and construction of glass ovens. The peculiarities of this system are the speed of lamination and the lamination of EVA, PVB and SentryGlas without using any autoclave, which allows to quickly meet any production requirement. With the new technology applied to Lamijet Brevia cycle times can be reduced by 50%. This oven is suitable for those customers who do not have high productive capacity but however want to keep high degree of flexibility and agile production.



TK CHEMICAL TEMPER

Automatic Kiln for glass chemical tempering

KEY FEATURES

- Electrical heating
- TK Connect 4.0
- Touch screen programmable operator's panel
- Salts melting tank in thick stainless steel
- Power failure security system - UPS
- Pre-heating hood
- Electromechanical glass lifting system
- Maximum temperature 500° C

APPLICATIONS

- Aeronautical
- Architectural
- Automotive
- Electronics
- Military
- Naval



CHEMICAL TEMPER

MODEL	TANK DIMENSIONS	PLANT DIMENSIONS (L x W x H)	MAXIMUM GLASS SIZE	Kw	ELECTRIC FEEDING	SALTS' WEIGHT (KNO)
CT 75	700 x 700 x 700 mm 27" x 27" x 27" inch	2,3 x 1,5 x 2,3 m 7,5' x 5' x 7,5'	600 x 550 mm 23" x 21" inch	50	400V / 50Hz / 3Ph	0,7 tons
CT 200	2300 x 900 x 1300 mm 91" x 35" x 51" inch	10 x 4,5 x 4,2 m 33' x 15' x 14' ft	2000 x 1000 mm 78" x 39" inch	180	400V / 50Hz / 3Ph	5,2 tons
CT240	2700 x 900 x 1600 mm 106" x 35" x 63" inch	10,7 x 4,5 x 4,2 m 10,7 x 4,5 x 4,2 m	2400 x 1300 mm 94" x 51" inch	210	400V / 50Hz / 3Ph	6,5 tons
CT320	3600 x 900 x 2500 mm 142" x 35" x 98" inch	11 x 4,5 x 8,7 m 36' x 15' x 28,5' ft	3200 x 2200 mm 126" x 86" inch	500	400V / 50Hz / 3Ph	23 tons
CT 360	4470 x 1870 x 2900 mm 176" x 74" x 114" inch	22 x 4,5 x 8,7 m 72' x 15' x 28,5' ft	4000 x 2500 mm 157" x 98" inch	650	400V / 50Hz / 3Ph	42 tons

* Temperable glass: minimum thickness 0,5 mm

TK SERVICES & PRODUCTS

TK Glass Machinery offers additional services and products in addition to the ovens' range to increase customer care activities.

TKCONNECT 4.0

Process traceability, remote process control, quality and data analysis: the TKconnect 4.0 remote system from Satinal allows to follow the production process of TK Glass Machinery via Smartphone or computer, no matter how far away from your factory you are. The new software connects TK Glass Machinery controllers safely to the internet, combining a new concept of fully intuitive user interface with the latest technology available. TKconnect 4.0 allows also to monitor production lines with the swipe of a finger: thanks to the smartphone app plant operations can be observed in real time.

TKARE

Remote technical assistance designed for your training: hassle-free remote H24 technical service from Satinal team, access machinery from everywhere without the need of any software, data Connection- Download production reports over the Internet from any type of device in CSV and Excel format. This latest innovation is based on a powerful



microprocessor-based controller for continuous process supervisory and continuous auto tune. The new innovative TKconnect 4.0 system enables fully flexible programme profiles, actual power measurement and energy consumption, Email alerts on defined deviations and much more.

TKLEAN BAG

The innovative laminating vacuum bag that avoids edge cleaning in any glass lamination oven: TK Glass Machinery has introduced TKlean Bag that, combined with STRATO® Glass Interlayers, allows

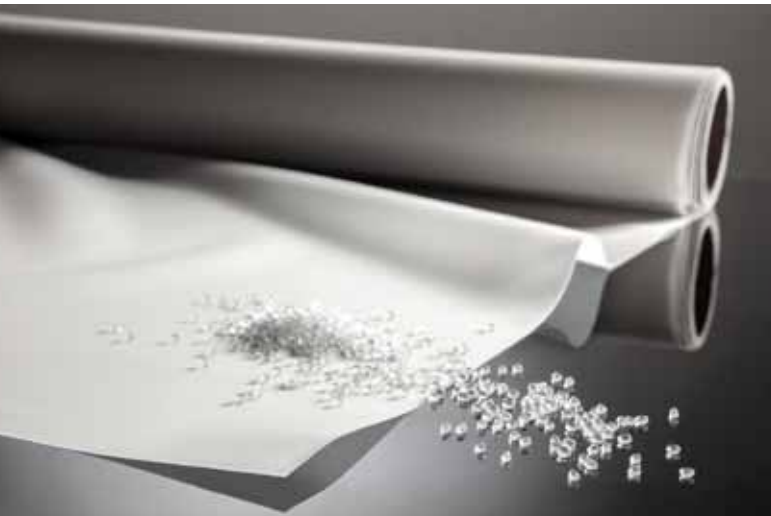
perfect edge finishing and improved glass flatness after the lamination process, drastically reducing the need of expensive labor and cleaning operations. TKlean Bag is compatible with any brand of glass laminating machinery and can be easily installed by Satinal technicians worldwide, without the need of any capital investment.



STRATO® EVA FILMS

SATINAL, faithful to its vocation as a market innovator, launches the line of transparent colored EVA films, suitable for high-end indoor and outdoor applications. All the Italian quality of safety glass with STRATO® EVA interlayers is now available for architects and designers also in 4 transparent colors designed for the contemporary and to reflect global color trends:

- **STRATO® BRONZO SICILIA**, to express comfort, kindness, human care, to finally gain the trust of the customer.
- **STRATO® GRIGIO DOLOMITI**, to express a shift from global efficiency to local resilience, the disruption of global supply chains and decoupling economies. To express a new balance between daily working hours and time for oneself, in this new world where past habits have been disrupted.
- **STRATO® AZZURRO MEDITERRANEO**, to express pride in supporting local brands and a renewed localism: your purchase is produced locally. Support to human-to-human relations, a new human dimension of the post-pandemic world.
- **STRATO® VERDE TOSCANA**, to respond to the new trends of sustainability, green, proximity to nature and changes in our habits: a revolution of what we do and how we do it. It expresses a new concept of home-office, integrated with nature.



The mechanical performances remain unchanged from the STRATO® CLEAR range, such as the anti-burglary, adhesion to glass, acoustic insulation and UV resistance properties, shielding up to 99% of UV rays.

All this thanks to the intense research and Development activity of the SATINAL laboratory, S-LAB.

Thanks to the quality of SATINAL's EVA film, the colours have an extreme durability over time, they remain stable giving light and charm to the project. This prodigious collection has all the advantages of safety glass on the façade, such as resistance to atmospheric agents, weathering, safety in the event of impact, protection against UV rays and acoustic insulation qualities from the external environment.

In interior and exterior architectural projects, the new colours are added to the STRATO® DECORATIVE range, which includes products such as:

- **STRATO® SATINATO**: it makes the glass very elegant, refined and adaptable to any type of environment and internal and external element. Furthermore, it gives the glass a special and charming privacy effect.
- **STRATO® LEGGERO**: formulated to makes glass with a slightly satin finish, with a special see-through effect. It allows natural light to freely cross the environments of homes and offices, at the same time safeguarding privacy. It is functional and adapts to any type of application.
- **STRATO® BIANCO**: the ideal solution for designers who want to create bright-white glass elements. It gives rooms a sense of brightness, as well as amplifying the sense of space. It guarantees uniform colour and coverage, while giving character to classic safety glass.



- **STRATO® LATTE**: it gives a glass a glossy, milky-white effect. It captures and diffuses the light in the environment, without creating reflections. It is the perfect solution for all those products that are used in environments that require a soft diffusion of light.
- **STRATO® NERO**: par excellence, it is the colour of elegance, it gives surprising effects, guaranteeing an always appreciated refinement and uniqueness. In addition, it gives a uniform coverage to the glass.
- **STRATO® COLOUR STUDIO**: in glass, colour can take on a particular beauty and intensity, in combination with the light that passes through it. They are coloured inserts developed by Satinal with high performance. Each film is characterized by an advanced colouring technology and is produced through a coating process controlled with precision using the most innovative technological solutions.

Among the latest new products, we can find:

- **STRATO® RIGIDO**: is a special structural interlayer that ensures one of the highest grades of protection against strong impacts: even if the glass component breaks, the laminated structure is not weakened, so the stability and safety is preserved. Perfect for needs related to anti-hurricane glass, building facades, glass balustrades and stairs, partition walls, bulletproof glass or ballistic resistance.
- **STRATO® NATURAL UV**: it transmits the full natural spectrum of solar radiation and is a specially formulated EVA film that allows a total UV transmission for solar radiation with enhanced permeability for short wave UV A and UV B radiation. Thanks to its outstanding clarity, it provides a completely natural and neutral-looking glass while providing exceptional durability when exposed to weathering conditions.





OFF. MECC. SCHIATTI ANGELO Srl

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After more than 50 years, we can say that Schiatti Angelo srl has a tradition as a manufacturer of machines for the glass processing. Over the years, it has acquired the necessary experience to manufacture innovative, reliable and quality machines.

The company's core business is the production of straight- and double edgers for the processing of the flat and pencil edges, as well as drilling machines.

EDGING MACHINES

The FPS range of vertical edgers is able to process the finest flat edges and arrisses. The most important part of these machines is the conveyor-track composed of rubber pads-bearings-chain that assure high performance in terms of glass holding and durability, without requiring continuous lubrication.

Some models are equipped with cerium oxide polishing on the edge and the arrisses for extra bright finishing, while all models are equipped with a PLC touch screen to adjust and display the machines' working parameters and diagnosis fault situation.



	Wheels number	Min workable dimension	Max workable thickness	Max speed
Straight	From 4 to 13	45x60mm	Up to 90mm	5 m/min
45° miter	From 8 to 14	50x100mm	Up to 55mm	5 m/min

A wide range of optional equipment is available for machine customizing, including the automatic adjustment of the diamond wheels and Industry 4.0 solutions as to interconnection to remote control and maintenance.

DOUBLE EDGING MACHINES



Since 1969, main improvements have been made both in mechanical and software developments in order to enhance the machine's performances. In this age of 'digital manufacturing', Schiatti Angelo srl would like to highlight its Industry 4.0 solutions with particular attention on the BFT and BFP ranges of double edging machines. Complete lines can be integrated in smart factories production process. The software offered by Schiatti provide smart solution in order to optimize the production cycle and increase customer satisfaction by reducing operational costs and increasing productivity; thanks to the continue technological improvements and digitalization in manufacturing, it has been developed to improve automation machine-to-machine and human-to-machine.

	Wheels number per side	Min /max workable dimension	Max workable thickness	Max speed
BFT	From 2 to 6	80 - 3000mm	Up to 12mm	10 m/min
BFP	From 5 to 11	100- 4500mm	Up to 35mm	10m/min

DRILLING MACHINES

	Max workable thickness	Max drilling Ø
Horizontal	28mm	3 - 200 mm
Vertical	19mm	3 - 40 mm

Also the drilling is an important part of the Schiatti's production. The offered solutions are various in order to satisfy any customer's need; from the small/medium to large glassworks of furnishing, construction and photovoltaic sectors. In the drilling range you find drillers with opposite heads, multi heads drillers, drilling centres and vertical drilling/milling machines.





SCHIAVO Srl

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Washing Machines

Customisation, long working life and high quality have always been the features that make Schiavo washing machines stand out in the market. The company's range of glass washing machines includes vertical and horizontal machines, those for straight line grinders, as well as machines for special applications.

VERTICAL WASHING MACHINES

EASY is Schiavo's entry-level series of vertical washing machines, with good quality and an affordable price. These machines are suitable for small glassworks or low production runs, and are available with 4 or 6 brushes, and for maximum glass heights of 1,600 or 2,000 mm.

TOP is a high-quality range of vertical washing machines. These machines, made entirely in stainless steel, to process glass thickness from 3 up to 40mm, and glass heights from 1600 up to 3300 mm.

HYDRO is a no-compromise series of full-option, made entirely of stainless steel, to process glass thickness from 3 up to 40mm, and glass heights from 1600 up to 3300 mm. The HYDRO series is equipped with touchscreen, and can work in-line with vertical, work centres, drillers, as well as straight line millers and grinders. This machine adjust both speed and glass thickness automatically, depending on the previous machine. HYDRO washing machines are equipped with remote assistance and are Industry 4.0 ready.

HYDRO - Technical features

- High quality of materials
- High energy efficiency motors

- Long working life
- 24/7 intensive machine use
- Low maintenance
- Low noise levels
- Low water consumption
- High quality washing and drying

HYDRO



Horizontal glass washing machine HTL2600



HORIZONTAL WASHING MACHINES

HTL is Schiavo's series of horizontal flat glass washing machines, with structure and casing entirely made of stainless steel. The HTL series has been designed for intense production runs, ensuring high washing quality. This machine can work stand-alone and inline, such as, for example, in-line bilateral grinding, lamination lines and digital printing. HTL is available from 4 up to 8 brushes, glass width from 500 to 3,400 mm.

WASHING MACHINES FOR STRAIGHT-LINE EDGERS

The LVM400 washing machine can be installed on the output rack of any type of beveller or straight-line edger. This machine washes glass heights up to 400 mm, and is equipped with a fan to dry the glass sheets. This compact washing machine is the ideal solution to remove cerium from the glass immediately after polishing, without taking extra space.

SPECIAL WASHING MACHINES

FIRE is a series of washing machines designed especially for washing fire-resistant glass, which requires machines with special technical features. Schiavo is, and has always been, in the forefront in offering special machinery for all types of application.

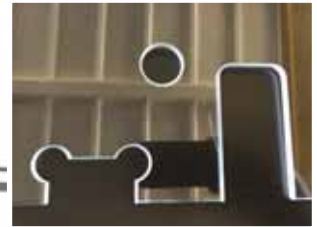


Vertical milling and drilling machine

FV1000

FV1000 is a CNC vertical milling and drilling machine, equipped with four CNC-controlled axes that enable any type of drilling, milling and countersinking operation on glass sizes of 200x1000 mm. This machine is equipped with an automatic response system, and includes a memory base of editable shapes.

With the optional for fast remove spindle you can change tools in 30 seconds, cutting wasted time and allowing faster and smoother operation while changing tools.



Storage systems

CLO

The CLO Series is a sideways-moving storage system available in manual or semi-automatic version and it could be made with countless racks according to customers' requirements. Sturdy anti-overturn system with underneath bearing allow it to operate even in case of unbalanced weight.

Vacuum lifters

LIFTER SERIES

Schiavo boasts a wide range of vacuum devices that cover many of the application where it's required a lifter. We have the fixed, manual operated, motorized or even the hydraulic one or manipulators. All of that to be able to supply to our customer, every single time, the perfect machine to do their job. Our machine are well designed and well produced, each one of our machine are tested before leaving our warehouse to ensure that each machine that goes to our customer are always perfect.



GEBI



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 E-mail: info@skillglass.it - www.skillglass.it

Vertical CNC Centers

SKILL E-D

SKILL E-D is the vertical CNC center for grinding, milling, drilling and polishing rectangular and shaped flat sheet glass. The machine can process both rectilinear and shaped flat sheet glass and combines all the technology for vertical drilling and milling with the features of a vertical grinding machine. Its main feature is its versatility, which allows for different types of processes at high speeds and optimal precision.



E-D 101

E-D 101 is the new vertical CNC center for grinding, milling, drilling and polishing flat sheet glass. This machine has all the technology of SKILL E-D but it is designed to process pieces with a thickness from 3 to 12mm. On these centers, the double working heads process the long sides of the pieces at the same time saving a lot of time on the grinding and polishing; The tool magazines, one rack of 10/12 positions for each working head, are placed in vertical columns close to the working head and allow a faster automatic tools change.

SKILL E-D and **E-D 101** work with 150mm diamond wheels grinders on sheet glass also laminated or treated. Polishing can be performed on large surfaces with 150mm wheels as well as on small inserts with diameters of 30 or 50 mm. Oppositely placed heads ensure drilling is at maximum speed with top quality

and precision, and countersinking can be performed with individual diamond tipped tools or with accessories mounted on the drill bits.

The vacuum belts system is one of the best advantages of these machines because, besides guarantees the drilling and milling without any limitation, it allows to work in continuous mode without idle time that is a big issue on the solution with a suction cups carriage that has to wait the unloading of the finished piece before to load the new one.



Drilling and Milling

DRILL 1600FF

DRILL 1600FF is a 5-axis CNC drilling and milling machine designed for producing holes, inserts and countersinks on rectangular flat sheet glass with a thickness of 3-20 mm. The machine is composed of five axes, X Y V Z W, and two electro-spindles which, as opposite drilling heads, create a double-sided drilling system that drills perfect holes.



DRILL 101FF

DRILL 101FF is a 6-axis CNC drilling and milling machine designed for drilling and milling in continuous mode on rectangular and shaped flat sheet glass. Thanks to his special vacuum belts system it guarantees a very high speed of the cycles and no limits on the drilling and milling because there are not the high limitations that the others systems has due by the presence of the suction cups where is not possible to make holes or notches. These vertical drilling and milling centers are able to operate with extreme speed and precision thanks to the management of all the processes by numerical control and also thanks to the support of the double tool change. The milling on this machine is a simple and quick operation and by using multiple tools can mill and grind an insert in just a few seconds like the polishing that can be carried out in small inserts with 50 or 30 mm grinders.

Grinding, Arrissing and Polishing

SKILL SFILL

SKILL SFILL is the vertical center for arrossing, grinding and polishing straight and shaped glass panes.

The machine is composed of nine axes and two electro-spindles mounted in parallel, allowing to process the pieces with two heads at the same time. Edging is done using diamond wheels with a diameter of 150mm and can be carried out on straight and shaped glass, including laminated or treated glass.

SKILL SFILL has the possibility to process pieces with different heights, widths and thicknesses without any intervention by the operator and with also the top quality of polishing achievable even with several passes and a different pressure of the polishing wheels on the glass managed automatically by the numerical control.





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WHEEL HOLDERS

Steel and metal wheel holders: our holders guarantee a perfect cut.

Talamoni holders are made of high quality metal alloy - precision worked and compatible with all cutting tables models. The right wheel and axes are in hard metal or diamond.

For Armatec, Bavelloni, Bottero, Bystronic, Hegla, Intermac, Laser Lisecc, MacoTec, Maver, Pannkoke, Tecnometal, Tuomas.



Hard metal and diamond wheels - totally "made in Italy".

Cutting wheels are available in a variety of different dimensions, cutting angles and grinds. A range of the most commonly used types is listed below. Other sizes and angle are produced to order.

For Bystronic, Bavelloni, Bottero, CMS, Hegla, Intermac, Lisecc, MacoTec, Maver, Pankoke Tecnometal, Tuomas, etc.

Wheel Holder Module with h.m.wheel

For Bystronic Bavelloni Bottero Hegla Intermac Lisecc MacoTec Pankoke Tecnometal Tuomas...



CSHM METAL HOLDERS WITH WHEELS

CSHM series: The new metal wheel holder can be used with all the cutting tables, that normally use the plastic clips. By using this product it is possible to optimize the cutting tolerance of your wheel due to it being more precise than a plastic model. The special wheel type in diamond are used to ensure a perfect cut whether its cutting straight, shape, laminated or float glass.

TALAMONI METAL CSHM HOLDERS ARE UNIVERSAL

Plastic coloured rings helps to identify the cutting angle of the wheel, we can supply it as a spare part as the axes.

The CSHM holder can be used on the following cutting tables: Bystronic Bavelloni, Bottero, Copmes, CMS, GFPMeccanica, Lisecc, MacoTec, Hegla, Tuomas etc...



PLASTIC HOLDERS WITH WHEEL (CLIPS)

CSM clips with hard metal wheels allow to work precisely and give outstanding results - float, laminated, shaped, stratified... This model fits all shapes and glass types to be cut.

CSM clips, made of high quality plastic to ensure wheel slide and ideal lubrication, have the further advantage of being colour-coded to identify the respective cutting angle.

The internal part of CSM wheels have a diameter of 5.8 mm, which is the perfect choice for all glass thickness.

CSM is suitable for Bavelloni, Bottero, Bolla, CMS, GFP Meccanica, Intermac MacoTec, Hegla, Tuomas, etc...



CUTTING FLUIDS FOR AUTOMATIC CUTTING

Use of the correct oil is essential to have the perfect cut.

The formation of dust and glass particles is an unavoidable part of glass processing. A cutting oil is the ideal solution to keep residual pieces of cut glass together. Using cutting oil does not only reduce dust formation, but also helps maintain the tension of the glass surface by entering into the cutting trace. The

oil helps keep the opening cut of the glass clean and safe.

Talamoni fluids are formulated to ensure perfect lubrication of your cuts, also giving longer life to your cutting wheels, by cooling and protecting them from erosion.

Choose from our four different types of cutting liquids

T-OIL3125	Slow	For straight and shaped cuts. Facilitates the opening of the cut and the removal of the glass does not damage washing machines. Maintains glass pieces while cutting, the wheels are cooled. Technical sheet of product T-OIL3125
T-OIL3130	Medium	For straight and shaped cuts in thick glass. Facilitates the opening of the cut and maintains glass pieces. Solid breaking edges thanks to its low surface tension. Synthetic bases and tension-decreasing substance, optimizing processing quality. Technical sheet of product T-OIL3130
T-OIL3132	Super fast	Synthetic bases and tension-decreasing substances, optimizing processing quality. Especially suitable for coated glass • evaporates after use without leaving residues • small glass particles are bound • low surface tension • for mirrors, patterned and float glass as well as painted or printed glass. Odourless, neutral to glass, residue-free. Technical sheet of product T-OIL3132
T-OIL3133	Fast	100% evaporation, Appropriate for use in processing lines, (screen printing, automotive glass etc.) The low surface tension allows a better break and reduces the formation of small particles of glass. Technical sheet of product T-OIL3133

Manual glass cutting: oil glass cutters

Talamoni's product range includes a selection of products for manual glass cutting.

Our hard metal tool production experience guarantees the quality of our manual glass cutters

Proper cuts requires cutting fluids - to open the cut more easily (the cutting fluid penetrates into the fissure) and to lubricate the wheel and axle.

Talamoni produces the following model of manual oil glass cutters



MANUAL CUTTING

The company produces a complete line of oil-reservoir cutters for manual cutting. Various models of oil-reservoir hand-held cutters with handles in blue or transparent plastic or blue or grey anodised aluminium all rigorously "Made in Italy". Talamoni glass cutters are produced with wheels sharpened to different angles to satisfy diverse cutting requirements - the manual tools are destined for professional use in glassworks or artistic workshops.



EXAMPLE OF CUTTING WHEELS DATA

CUTTING WHEELS FOR: Bystronic, Bavelloni, Bottero, CMS, Hegla, Inytermac, MacoTec, Maver, Pankoke, Tecnometal and Tuomas tables

	Wheel Part. No.	Ø x hole bore x thickness	Angle	Holder Part No.
	RO5614			
	RO5614R135	5.6 x 1.42 x 1.08 mm	135°	CP4, T245 or B50
	RO5614R140	5.6 x 1.42 x 1.08 mm	140°	CP4, T245 or B50
	RO5614R145	5.6 x 1.42 x 1.08 mm	145°	CP4, T245 or B50
	RO5614R150	5.6 x 1.42 x 1.08 mm	150°	CP4, T245 or B50
	RO5614R155	5.6 x 1.42 x 1.08 mm	155°	CP4, T245 or B50
	RO5614R160	5.6 x 1.42 x 1.08 mm	160°	CP4, T245 or B50
	RO5614R165	5.6 x 1.42 x 1.08 mm	165°	CP4, T245 or B50

CUTTING WHEELS FOR: Bystronic, Bavelloni, Bottero, CMS, Hegla, Inytermac, MacoTec, GFP, Meccanica, Maver and Tuomas tables

	Wheel Part. No.	Ø x hole bore x thickness	Angle	Holder Part No.
	RO6015			
	RO6015R135	6.0 x 1.50 x 1.06 mm	135°	CSH
	RO6015R140	6.0 x 1.50 x 1.06 mm	140°	CSH
	RO6015R145	6.0 x 1.50 x 1.06 mm	145°	CSH
	RO6015R150	6.0 x 1.50 x 1.06 mm	150°	CSH
	RO6015R155	6.0 x 1.50 x 1.06 mm	155°	CSH
	RO6015R160	6.0 x 1.50 x 1.06 mm	160°	CSH
	RO6015R165	6.0 x 1.50 x 1.06 mm	165°	CSH

CUTTING WHEELS FOR: Lisec tables

	Wheel Part. No.	Ø x hole bore x thickness	Angle	Holder Part No.
	RO5013			
	RO5013R135	6.0 x 1.3 x 1.0 mm	135°	T45
	RO5013R145	6.0 x 1.3 x 1.0 mm	145°	T45
	RO5013R155	6.0 x 1.3 x 1.0 mm	155°	T45
	RO5013R160	6.0 x 1.3 x 1.0 mm	160°	T45
	RO5013R165	6.0 x 1.3 x 1.0 mm	165°	T45

CUTTING WHEELS FOR: Bystronic, and Bottero tables

	Wheel Part. No.	Ø x hole bore x thickness	Angle	Holder Part No.
	RO6016			
	RO6016R127	6.22 x 1.60 x 3.05 mm	127°	T255
	RO6016R135	6.22 x 1.60 x 3.05 mm	135°	T255
	RO6016R145	6.22 x 1.60 x 3.05 mm	145°	T255
	RO6016R155	6.22 x 1.60 x 3.05 mm	155°	T255
	RO6016R160	6.22 x 1.60 x 3.05 mm	160°	T255

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COMPLETE SOLUTIONS TO THE GLASS PROCESSING INDUSTRY - WIDE RANGE OF TOOLS

TESIR MAKINE and TEKNIK ELMAS are twin companies. In addition to glass processing machinery, we also produce glass processing diamond and polishing tools with our TEKNIK ELMAS brand. Our TEKNIK ELMAS Company is specialized in production of high-quality diamond tools and polishing wheels since 2004 in Istanbul.



STANDARD DRILLS



MONOBLOCK DRILLS- AUTOMOTIVE GLASS (Bando, Bystronic, Benteler Machines)



ROUTERS



COUNTERSINKS



DIAMOND CUP WHEELS



SEGMENTED WHEELS



DIAMOND CUP WHEELS



PERIPHERAL WHEELS



POLISHING WHEELS





TESIR MAKINE SAN. VE TIC. LTD. STI.

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E-mail: export@tesirmakine.com • www.tesirmakine.com

SV 1000 VERTICAL FAST SEAMING + GRINDING + POLISHING MACHINE

Super- Fast SV 1000 Vertical Seaming & Grinding machine is double headed with the purpose of increasing the productivity and decreasing time in processing. Thanks to its speed in edge processing, it is perfectly fitting to be installed the beginning of IG lines. This is one of the prior reason of being preferred in high level by the market. The automation system is Schneider, which also allows our technicians to be connected control panel remotely in case of updates and similar cases. Additionally, the control panel is user friendly for the operators to be trained and while using.

ADVANTAGES

- Remote Access to Control Panel
- Double Head Fast Processing
- Servo-Driven Technology
- Grinding + Arrising + Polishing
- Corner Breaking/ Dubbing
- Automatic Thickness Detection
- Low-E and Coated Glass Processing
- Complementary with IG Lines



TECHNICAL SPECIFICATIONS

DOUBLE SPINDLE



USER FRIENDLY CONTROL PANEL



KART



CORNER DUBBING& BREAKING



www.tesirmakine.com

TESIR MAKINE

HS 500 VERTICAL DRILLING MACHINE

HS 500 is your ideal solution partner with its clamp mode, 6 rotating drilling heads, stainless steel structure and Schnieder automation system. In serial production, this model provides great advantage with speed and accuracy, and it reduces the processing costs to a very low level with a single operator. Suitable for flat and shaped glasses, this model results in low maintenance and spare parts cost due to its strong construction and corrosion resistant mechanical design.

ADVANTAGES

- Shapped Glass Drilling
- 6 Magazine in Different Sizes
- Clamp - Mode
- Torque-Controlled Drilling
- Remote Control Panel
- Automatic Redressing
- Automatic Lubrication
- Servo-Driven Technology



DOUBLE SIDED DRILLING BY 6-SLOTS



CLAMP MODE



COMPLETE SHAPED GLASS



RD 100 HORIZONTAL DRILLING MACHINE

Our RD- 100 machine is a super ergonomic, user friendly, easy to load-unload. The purpose of Laser Marking feature is defining the holes' exact position. Internal water system of RD- 100 machine works similar to any vertical& drilling machine. The drilling bits are fixed manually by tightening the drills with the using a screw wrench tool. After fixing the drilling tools by using a screw wrench, the operator uses rotating handle to go through drilling operation. During drilling operation, spindles are able to move through only up-down.

ADVANTAGES

- Glass Fixing backrest
- 2 Heads (Top- Bottom)
- Easy to Install and Use
- Laser System
- Pumping Motor for the Water Cycle
- Glass Table
- Positioning Detection



SK 500 VERTICAL WASHING MACHINE

SK 500 Vertical Washing Machine has a precision brush structure, with its powerful fan system that can perform quickly wash Low-E and coated glass. The user-friendly touch-screen control panel, with its compact and powerful design, enables quick and high quality glass washing. Due to its strong construction and corrosion-resistant material construction, the cost of maintenance and spare parts of our machine is extremely low. Our SK 500 Vertical Washing Machine can be used as a line with our SV- 1000 Vertical Seaming & Machine and HS-500 Vertical Drilling Machine.



ADVANTAGES

- Two Units Of Stainless Steel Water Tank
- Noise Insulated Washing Cabin
- Automatically Stopping The Brushes Pumps
- Low-E and Coated Glass Washing
- Two Dryer-Wair Kives
- Nozzle System
- Special Bearing
- Water Hated System For Pre-Washing
- Automatic brush positioning according to glass thickness



ST 200 HORIZONTAL ARRISING MACHINE

ST 200 Horizontal Arrising Machine performs double- side arrising process before tempering. Thanks to its strong construction, ST 200 provides vibration-free machining. Glass loading wheels are designed to support a very comfortable mobility without leaving any scratching on the glass. ST 200 is user friendly and ergonomic machine.

ADVANTAGES

- Double- Sided Arrising
- Vibration-Free Processing
- Comfortable Mobility of Glass
- Fits in Small Spaces
- Ergonomic
- User- Friendly
- Easy to Load and Install





BD 400 SHOWER GLASS DRILLING MACHINE

BD- 400 Shower Glass Drilling Machine is specially designed to perform drilling operation for shower glasses by one operation. Drilling process is performed with a single operation as 6-holes at the sametime in only 20 seconds. BD-400 is servo-controlled which makes the drilling process faster and allows a higher quality of drilling. Moreover, the quality of countersinking is at the same time at the highest level.

ADVANTAGES

- 6 Holes in ONLY 20 Seconds Simultaneously
- 6 Servo motors for Top Drilling
- 6 Servo motors for Bottom Drilling
- 2 Servo Motors to Pick and Push Forward the Glass
- PLC Touch Screen
- Easy to Use
- Solution Oriented
- Special for Shower Glasses



CK 200 STRAIGHT LINE EDGING MACHINE

CK 200 STRAIGHT LINE EDGING MACHINE has 9 spindles that is consist of 4 arrising and 5 polishing stations to achive perfect edge processing. Special mechanism allows you to have optimal result from your edge processing.

ADVANTAGES

- 9 Spindles in Total
- 4 Arrising Stations
- 5 Polishing Stations
- Ergonomic
- Optimum Result in Edge Processing
- User- Friendly
- Easy to Load and Install



TEXPACK SRL

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COD. 1204T TENACK SQUARE PACKING

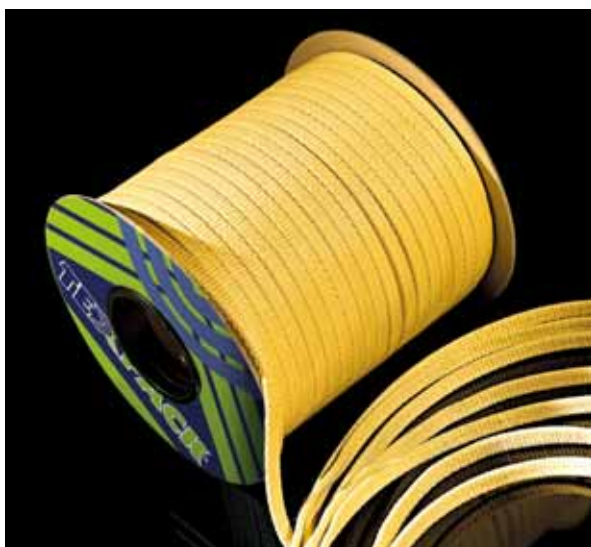
Tenack square packing is made by braiding wires of AISI 316 L stainless steel. This type of packing, which withstands high temperatures and has excellent mechanical properties, is suitable for the glass industry as protection for parts that may come into contact with hot glass that is still soft, to prevent thermal shock and microcracks. The packing is very flexible, elastic and easy to handle, and is an excellent substitute for Aramtex® products when temperatures exceed 350°C.



COD. 1204CM TENACK KNITTED SLEEVES

Tenack sleeves are made by braiding AISI 316 L stainless steel wires. These sleeves, which withstand high temperatures and have excellent mechanical properties, are suitable for the glass industry as protection for parts that may come into contact with hot glass that is still soft, to prevent thermal shock and microcracks. They are an excellent substitute for Aramtex® products when temperatures exceed 350°C.

COD. 12010N ARAMTEX® DISCONTINUOUS FILAMENT TAPES



Aramtex® tapes are produced using 100% pure paraaramidic yarns with continuous filaments, and are usually woven in several layers, using particularly fine yarns that render the positioning surface extremely homogeneous and smooth, thus preventing the still hot sheets of glass from being scratched. Aramtex® tapes have excellent mechanical characteristics (excellent resistance to cutting, abrasion, tearing and compression) while their heat resistance characteristics remain unaltered.

COD. 1203N PBI TAPES

PBI tapes are fire-retardant textile products made of PBI yarns, which are particularly suitable for high temperatures. To improve the use of this tape, a double-sided adhesive has been added, which helps to ensure correct positioning.



TUROMAS
OUR PASSION, YOUR PROGRESS

TUROMAS

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TUROMAS is a global reference in the manufacture of machinery for storing, loading and cutting glass, thanks to its continuous investment in R&D and its support to the customer during the whole purchase process. It is something that it has committed to since the first contact: trust to obtain a close relationship. No two factories are the same. For this reason, the Spanish company promises a tailor-made solution for every need, from semi-automatic equipment to fully automated cutting lines for all glass sizes.

FLOAT GLASS CUTTING



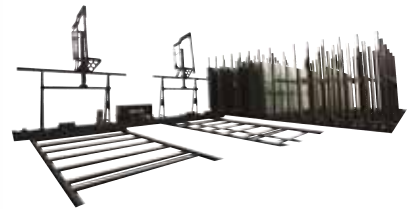
RUBI monolithic glass cutting tables are high-performance machines that offer exceptional cutting quality, meeting the requirements of low-emission glass manufacturers. There is a specific solution for each company, from independent and flexible cutting units to fully automated cutting lines.

LAMINATED GLASS CUTTING



LAM laminated glass cutting tables are autonomous machines that satisfy medium production needs or machines designed to be integrated into a mixed cutting line that responds to demand for maximum automation. Both types of machines are compatible with Low-E glass and guarantee a very high quality cut.

SMART STORAGE



TUROMAS smart storage systems can be ground-based, aerial or 'shuttle', for glass sheets of any size and thickness, supplying one or more cutting lines, depending on available space, current production needs and future projections.

SOFTWARE APPLICATIONS

TUROMAS
Software

Designed for exponential productivity growth, reduced energy and human costs and improved cycle times.

- Complete automation of the line, including non-automated warehouses in the plant.
- Information available and updated in real time.
- Compatibility with the main software on the market.
- Generation of reports in spreadsheet format (MS-Excel)
- Preventive management of stocks, breakdowns and maintenance.



Glass Magazines

1989

Glass-Technology International

GLASS-TECHNOLOGY INTERNATIONAL is the leading international magazine for professionals involved in the flat and bent glass industry, from building to automotive, and from furniture to household appliances. G-TI is useful for those working in float glass plants as well as glass processors/fabricators, glazing contractors, automotive glass installers, window and door manufacturers, glass merchants, wholesalers, etc. With about 100 pages per issue, it is the bi-monthly tool for keeping abreast of new technology, new products, company life and all innovations in the world of flat and bent glass.



VINCENT Srl

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Vincent - a global partner for all application in the glass industry



HALO



HALO product line: a new concept for edge grinding of automotive glass.
 Main product features
 + Minimum startup time;
 + Increased productivity;
 + Machine set up minimized;
 + Easy installation

HYLAS



HYLAS, VINCENT: a new line of wheels for grinding furniture and technical glass.
 The most significant benefits are: fast startup, high speed, excellent quality finishing as well as extreme flexibility of use. Main product features:
 + Fast startup;
 + Maximum performance;
 + Machine set up minimized;
 + Increased productivity;

STARFLEX



STARFLEX: Universal set of metal and resin grinding cups for flat edge processing of float and laminated Glass, Focused on process efficiency and flexibility.

Main product features

- + High speed;
- + Flexibility;
- + Long lifetime;
- + Optimized edge finishing

LOW-E DELETING WHEELS



REVERSE: wheels designed to improve the productivity of machinery for processing of laminated glass for architectural and structural facades.

Main product features

- + Improvement of diamond tool life;
- + Enhanced edge finishing quality;
- + Increased working speed;
- + Fragmentation of plastic waste;
- + Complete range of wheels geometries and thicknesses

VINCENT PRODUCT ASSORTMENT FOR GLASS PROCESSING

INDUSTRY	APPLICATIONS	VINCENT PRODUCT
TECHNICAL GLASS	<ul style="list-style-type: none"> • Edge grinding and drilling of automotive, home appliance, solar and LCD glass 	<ul style="list-style-type: none"> • Peripheral grinding wheels 60 to 250mm diameter • Straight and countersink diamond drills for automatic machines
ARCHITECTURAL GLASS	<ul style="list-style-type: none"> • Edge grinding and chamfering of architectural glass • Removal of metal coating 	<ul style="list-style-type: none"> • Cup wheels in metal and resin bond for grinding and finishing • Peripheral wheels • Saw blades • Elastic wheels • Cerium polishing wheels
FURNITURE GLASS	<ul style="list-style-type: none"> • Edge grinding and profiling, chamfering, drilling and cutting of furniture glass • Engraving of crystal glass 	<ul style="list-style-type: none"> • Cup wheels in metal and resin bond for grinding and finishing • Peripheral wheels with various profiles to be used on automatic or manual machines • Straight and countersink drills • Milling cutters • Cutting blades • Engraving wheels • Cerium polishing wheels
OPTICS	<ul style="list-style-type: none"> • Grinding and polishing of optical lens • Lens edge grinding 	<ul style="list-style-type: none"> • Frontal cup wheels • Diamond pellets • Edge grinding and polishing wheels (also combined)

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SINCE 1989



SINCE 2013



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2022

January
2023

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October 2022

PILKINGTON SUNCOOL™ Q: ARCHITECTURAL MARKET'S NEW GLASS SOLUTION

NSG Group has launched Pilkington Suncool™ Q – its latest offering in a range of Pilkington glass products that provides the most advanced solutions in new high performance solar control.

Uniquely, this innovative new product allows the individual glass types within the range to seamlessly match each other from the external viewers' perspective – an advantage that was previously not possible with other Pilkington Suncool™ products.



With effective sun protection becoming more and more important, the right glazing not only protects against solar radiation in summer but can also help to reduce heating costs in winter. In the long term, this protects both the climate and your wallet.

The solutions offered by Pilkington Suncool™ Q provide architects with a host of aesthetic and practical possibilities. A superior solar control glass range with high colour stability, low reflection, low angle dependence, excellent neutrality and superb selectivity, the range includes Pilkington Suncool™ Q 50, Pilkington Suncool™ Q 60 and Pilkington Suncool™ Q 70 – all offering various levels of light transmission and solar heat gain.

Crucially, the three different products can be used seamlessly in the same project. In this way, a façade with a uniform colour can meet a variety of different technical challenges. A building that is oriented in different directions can be equipped with various types of solar control glass products displaying a uniform appearance. For architects and planners, these properties result in very special design options. The Pilkington Suncool™ Q range can also be combined with other Pilkington glass products and thus offer extended functionalities.

Builders and architects can choose from a wide range of products to find individual solutions for modern buildings. This allows structural requirements to be addressed flexibly and for maximum comfort for occupants.

GLAS DREISBUSCH GETS FIRST-EVER U-SHAPED GLASTON VARIO TPS® LINE

Glas Dreibusch provides the entire range of insulating glass, including double and triple insulating glass units, safety glass and ready-to-use products, such as printed glass, all-glass door systems and showers. Some of the company's special products are blinds in insulating glass and alarm insulating glass for burglary protection.

With a history spanning nearly 100 years, Glas Dreibusch of Goldbach, Germany, started as a furniture joinery and flat glass trading company. Over the years, it evolved from a pure handicraft glass grinding business to a medium-sized industrial company producing insulating glass. Managing Director Thomas Dreibusch took the helm from his father in 1995 and represents the family's third generation. The fourth generation is also working in the family business, with his son Maximilian already very familiar with the technology in particular.

In 1970, the company started producing insulating glass and purchased its first Lenhardt insulating glass line. In the early 2000s, it purchased a Bystronic glass line with an automatic butyl coating robot for glass production with conventional spacers. Both Lenhardt and Bystronic glass brands are now part of Glaston.

In spring 2021, the company purchased its Glaston VARIO TPS® 2735 line, which started up in December that year. "The special feature of this particular TPS® line is its U-shaped design," said Thomas Dreibusch. "It's unique in the world!"

"The idea of a special U-shaped design to fit our confined space was created over lunch by my son Maximilian Dreibusch and two Glaston service



engineers. I think this says everything about our close and collaborative partnership with Glaston."

The line features two special turning stations between the inspection station and the automatic assembly, gas filling and press robot. The turning stations move the glass from one side of the line to the other, thereby creating the line's U-shape.

"TPS® is the most flexible insulating glass production system for us. It produces both standard and special formats on one line, eliminating the need to split orders. This gives our customers unlimited design possibilities for shapes and sizes. Also, the line differs from conventional systems in that the Thermo Plastic Spacer TPS® is applied directly to the glass plate."

AGC GLASS FLOAT UNITS IN FRANCE: COLD HOLD PROJECT - BOUSSOIS 2 LINE

The management of AGC Glass France informed the staff of the Boussois Industrial Unit of its intention to close the B2 float line, which has been in operation for over 21 years, while assuring the will to maintain the site within the Group. This line closure is a direct consequence of the current energy crisis.

The plant specialises in the production of flat glass for the building industry and employs 135 people. It operates in a market affected by overcapacity in Europe and, for some months now, by the very strong



pressure on prices resulting from the inevitable impact of the energy surcharge. The intention to close the B2 line is with the aim to preserve AGC's flat glass activities in Europe. Located in the North of France, this site includes two Float Line Units. Shut down in 2020 as a result of the Covid-19 crisis, the B1 line – known as oxy-combustion – offers a certain potential that would allow it to contribute to AGC's production process decarbonisation objectives by 2030, should the market require it.

It is for this reason that it will be proposed to the Trade Unions and consequently to part of the Staff to implement, along with the Employment Safeguard Plan, various social measures allowing, beyond the maintenance of the industrial installations, to preserve a set of adequate skills.

As far as the social aspect is concerned, AGC will propose and discuss a support plan with the company's staff representatives, while complying with the legal and contractual provisions that apply to such a line closure.

IRONBRIDGE EQUITY PARTNERS COMPLETES PARTNERSHIP WITH WALKER GLASS

Walker Glass announced that Ironbridge Equity Partners ("Ironbridge") based in Toronto, Ontario, Canada, have acquired a controlling interest in Walker Glass Company Ltd. ("Walker" or the "Company").

Walker is North America's market leader in the development and manufacture of acid-etched glass substrates, premium quality mirrors and bird-friendly glazing solutions. Growing and evolving since 1942, Walker Glass proudly serves US and Canadian architectural glass fabricators from coast to coast, supported by the largest inventory of etched glass, acid-etched mirror and mirror on the continent. "Walker's proven track record over the past 80 years has demonstrated the ability to consistently deliver growth through best-in-class product quality, top-notch

customer service, state-of-the-art production, and an innovation-based culture," said Pete Samson, Managing Partner at Ironbridge. "We look forward to working with management to support the Company during its next chapter of growth."

"I am very excited about this partnership as it will enable Walker to realize its formidable growth objectives over the coming years," said Walker's President, Lee Harrison.



NSG GROUP: 2ND FLOAT GLASS PLANT STARTS OPERATION IN ARGENTINA

NSG Group has announced that construction on its second float glass plant has been completed and it has started operations. The new plant is located at Los Cardales in the state of Buenos Aires in Argentina and is operated by Vidriería Argentina S.A. (VASA), a joint venture subsidiary in Argentina, with a history of over 80 years.

The investment was decided in 2018 to meet the growing demand for architectural and automotive glass in Argentina and to supply South American markets, where the market continues to grow as well. Despite a challenging macroeconomic environment, demand continues to outpace supply for glass due to still growing construction activity.



The new plant at Los Cardales, Argentina

NSG Group believes that the region is a promising market where it can continue to demonstrate the Group's business strength.

NSG Group is promoting "Expansion of Value-added Business" and "Transformation into a more profitable business portfolio" as part of the measures listed in the medium-term management plan "Revival Plan 24 (RP24)."

The announcement to operate a new float line as one of its strategic investments in Argentina and South America, where the Group has established a strong position, is part of this strategy that will also allow them to continue supporting customers and to improve the world by creating people-friendly surroundings with living spaces that are pleasant, safe and healthy. It will also lower the use of air-conditioning and heating by offering adequate glass solutions. The Group will continue its efforts to realize its Medium-Term Vision to be "A global glass supplier contributing to the world with high value-added glass products and services."



November 2022

SWISSPACER AND UBLO JOIN FORCES FOR NATURAL ROOM VENTILATION SYSTEM

The new Ublo system offers a truly exceptional concept for the natural ventilation of office and commercial space, but also living space. Integrated directly into the insulating glass of windows or façades, the round ventilation module ensures efficient air circulation at all times and also offers numerous advantages in terms of air quality control and comfort. SWISSPACER's integrated warm edge spacer bars contribute to the high energy efficiency of this innovation, which was developed in the Far East and is now also available in Europe.



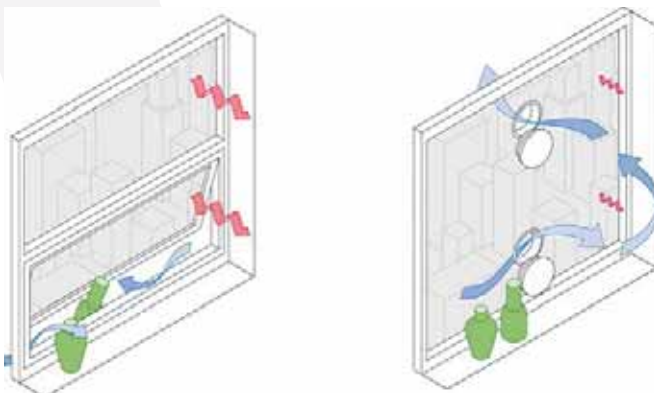
The innovative Ublo system also offers new perspectives in terms of aesthetics - © Ublo

Always having fresh air inside – without having to open windows or doors. That is the idea behind the Ublo ventilation window developed by designers Robert-Jan van Santen and Naree Kim.

The solution, originally developed in Hong Kong and South Korea, consists in simple terms of a round polycarbonate module with an opening of 150 millimetres. This element is installed in the required number directly in the insulating glass with single, double or triple glazing that has been fitted with corresponding “holes.”

Depending on the requirements, the ventilation modules can be installed either in the top or bottom part of the insulating glass unit to ensure optimised air buoyancy and circulation in the room. The circular system thus ensures optimum air quality at all times in a very simple way.

Especially in rooms where windows cannot be opened – for example in high-rise buildings – the innovative concept has already been proven successful. Another ad-



Due to the small size of each Ublo opening, potential hazards of falling can be avoided and users can comfortably ventilate rooms also on upper floors – © Ublo

vantage is that due to the small size of each Ublo opening, potential falling hazards can be avoided, therefore also allowing ventilation of rooms on upper floors. At the same time, the system minimises the risk of burglary, especially on the lower floors.

New options in terms of aesthetics and design freedom

The innovative Ublo system also offers new perspectives in terms of aesthetics. Viewed from the outside, the unique circular geometry expresses creativity and finesse and thus offers planners and architects new design potential. Another advantage is the round “cap,” which can be made transparent or in a variety of materials – for example wood, metal or cork. It is also possible to integrate decorative elements, digital print designs or additional features such as a bluetooth speaker or a lighting element.

Energy-efficient construction with SWISSPACER spacer bars

The Ublo ventilation window makes a decisive contribution to optimising energy efficiency in buildings with its simple construction without classic window sash and complex fitting technology. SWISSPACER's highly energy-efficient warm edge spacer bars also play an important role here.

In the search for a high-performance solution for the warm edge, SWISSPACER Ultimate was confirmed being a suitable product. Installed in the edge seal of the round insulating glass, the spacer, which can be easily bent, ensures improved energy performance of the overall construction.

Great potential for the window industry in Europe

Today, the Ublo concept is more relevant than ever, especially with the ongoing worldwide COVID-19 pandemic and the associated demand for efficient concepts for the natural ventilation of living space and workplaces.

“Currently and in future, we see great potential for our ventilation system also in Europe and are already in negotiations with different partners from the glass industry,” explained Naree KIM, Managing Director of Ublo. Complying with the EN 1279 is mandatory, and the tensile stress in the sealant must be checked for each application where glass is exposed to intense solar radiation.

BLUE STAR GLASS OPENS FULLY AUTOMATED FACILITY IN TEXAS

Blue Star Architectural Glass, a commercial architectural glass fabricator specialising in high-performance insulated glass units, has announced the opening of a new, fully automated facility in Texas.

Located in the heart of Dallas, this 145,000 square foot

facility is home to the first and only fully automated insulating glass facility in the United States. In fact, there are only 4 facilities like it in the world. Starting with automated jumbo glass cutting, tempering and insulating, transport and fabrication are performed completely without human interaction.

BSG is proud to boast that the quality, speed and precision of its insulated glass units is unmatched by any other domestic fabricator. With that said, the new Texas facility is ready to begin production. Given the new capacity and improved yields, the company is eager to review any upcoming projects that your team may be working on, and are very thankful to be considered.



ŞİŞECAM USES SYNDICATED LOAN OF EUR 240 MILLION

Şişecam used a new syndicated loan of EUR 240 million to refinance the EUR 175 million loan that the Company used in 2019 to meet its investment and capitalization needs in Turkey and Europe.

Under the leadership of Bank of America and BNP Paribas, the debt roll-over ratio for the syndicated loan used from 9 banks was 137 percent.

Şişecam will use the additional loan amount for investment and capitalization needs in Turkey and Europe. The maturity of the new syndicated loan will be 3 years.

Şişecam, which has always been a highly credible institution from the perspective of international banks and financial institutions, once again proved its financial reputation arising from its solid financial structure with this transaction it carried out in a period of fluctuations on a global scale.

Combining its power from production with its sustainable growth approach, R&D competencies and digital systems, Şişecam has again proved its sustainable growth performance and its ability to fulfil its obligations in the eyes of global financial institutions.



POLFLAM SETS NEW STANDARD OF BUTT-JOINTED GLAZING EI120

POLFLAM successfully achieved 2-hours fire resistance (EI120) with POLFLAM BR EI120 (butt-jointed) fire-resistant glass installed in a commercially available aluminium system (Aliplast FR90).

The combination of butt-joint glazing, 2 hours fire protection in an aluminium fire-resistant system with a basic depth of 90 mm is unique for the market, giving designers and architects the possibility to combine endless transparency with 2-hours fire protection in a widely available aluminium fire-resistant system.

With this test result maximum individual glass pane dimensions of 1800 mm x 3000 mm and 1500 mm x 3600 mm (width x height) are possible (EI120) with glass-to-glass (butt-joint) connections creating endless transparent fire-resistant glass partitions.



PILKINGTON GLASS SHOWCASED IN CREDIT UNION IN OTTAWA, ILLINOIS

The Financial Plus Credit Union building in Ottawa, Illinois features approximately 10,000 square feet of Pilkington Solar E™ and 10,000 square feet of Pilkington Energy Advantage™. Pilkington Solar-E™ offers natural daylight transmittance and energy conservation. Pilkington Energy Advantage™ is one of the clearest and the most durable low-e technologies available today. With a scratch resistant surface, superior thermal performance and high solar heat gain, it is an energy saving solution.

The credit union was founded in May of 1951 by Charles Munks, President of Local Union 19, Federation of Glass, Ceramic and Steel Workers of North America. The Credit Union originally served union employees of Libbey Owens Ford Glass Company and was named Glass Workers Credit Union. It operated in a small area in the Local 19 office building. Over the years, the charter was changed to a community charter, and Glass Workers Credit Union was renamed Financial Plus Credit Union in 1988.





WALKER GLASS CONTINUES ITS ENGAGEMENT IN SUSTAINABLE DEVELOPMENT

Walker Glass is proud to announce the release of new third-party verified Environmental Product Declarations (EPD) on acid-etched glass, as well as on acid-etched mirrors and unetched mirrors.

The verification and publication of Type III Environmental Product Declarations (EPDs) were carried out in accordance with ISO 14025:2006 and the international PCR system c-PCR-009 Flat glass products (EN17074:2019). One EPD covers acid-etched and unetched mirrors, while the other addresses full-



surface Walker Textures® acid-etched glass, including etched products with a low-e coating on surface two. According to research, these two EPDs are the only ones of their kind on the market.

“These new versions of our EPDs are examples of Walker’s continued commitment to the environment and sustainable development,” said Charles Alexander, Vice President of Sales & Marketing at Walker Glass. “These tools will be most helpful for architects and developers in selecting sustainable materials that provide full transparency regarding their make-up – materials that will contribute to a better tomorrow.”

“The new EPDs on acid-etched glass, including the option with energy-efficient coating, are further proof that Walker remains attentive to the needs of architects and their desire for materials that meet the highest environmental standards,” said Marc Deschamps, Director of Products and Business Development.

For more information about the new EPDs or to obtain a copy, please visit the website.

OMNIDECOR GLAZING IN PARIS FOR EQUIPHOTEL

From 6-10 November, the expressive and architectural possibilities of OmniDecor glazing were shown at the leading international trade show for professionals in the hotel and restaurant sector, EquipHotel Paris.

EquipHotel Paris is an opportunity to explore the endless solutions, guaranteed by the excellence of Made in Italy and the professional approach of a leading international brand in the industrial production of decorated and satin finish glass, to accommodate the needs of contemporary hotel design.

DecorFlou groups together the satin finish glazing which is produced using a special process devised by OmniDe-

cor, resulting in a soft and velvety surface, which is perfectly even and offers outstanding hard-wearing durability.



This line also includes DecorFlou Design decorated glazing which, thanks to a selective satin finish process designed with painstaking care for detail, boasts the possibility of being adorned with the most diverse patterns. The skilful combination of transparent surface and satin finish surface creates mesmerising three-dimensional effects that change as the light varies.

DecorOpal, on the other hand, is the coloured glass line by OmniDecor distinguished by satin finish or glossy surfaces achieved using water-based paints, to confirm the brand’s commitment to implementing processes and making products that are sustainable.

WIDEYE® BY AGC TO SHOWCASE 360° FOV AND UNIQUE ADAS SENSOR INTEGRATIONS



Wideye, the AGC Group scale-up specialising in solutions for self-driving vehicle ecosystems, will be at CES 2023 (Las Vegas, from January 5 to 8 2023), where it will unveil new glass innovations for the efficient, reliable and aesthetic integration of optical sensors for ADAS and AV applications. Wideye will exhibit five prototypes proving its ability to address the challenges of mounting sensors anywhere around the vehicle, irrespective of architecture.

The industry’s interest in mounting sensors at multiple locations on the vehicle continues to grow as the market increasingly focuses on ensuring safety for drivers while accelerating the race towards autonomy and self-driving cars. In this context, a 360 degree field of view is critically important and different mounting architectures are being developed. Wideye will leverage its concept car and collaboration with partners to demonstrate its ability to provide the market with solutions that are suitable for each configuration.

1. Windshield

The wind-shield was the first location Wideye worked

with starting in 2016, believing it to be the best site for on-board integration. The high, central position of the sensors behind the car's wind-shield provides a commanding vantage point, ideal for highway pilot and traffic jam pilot functions. Mounting sensors behind the existing glass automatically ensures they are protected and does not affect aesthetics. This trend may be widely adopted by the market, with the first mass production vehicles featuring wind-shield-mounted LiDAR due to hit the market as early as 2023. Wideye will present the functional co-integration of LiDAR with three cameras, thereby widening FOV and enhancing range detection.

2. Roof

The roof is in a position from which it is possible to monitor the vehicle's surroundings with a view to enhancing safety by providing reliable and optimised environment perception information from the smallest possible rooftop footprint. With the rooftop mount set to go increasingly mainstream in the years ahead thanks to its elevated position, Wideye will be delighted to show how it successfully integrates a LiDAR unit in this location by encapsulating it in an all-glass roof, proving that this kind of integration delivers the perfect compromise between performance and design.

3. B-pillar

The B-pillar is an area where OEMs are looking to combine functions: merging ADAS and HMI applications by mounting cameras and LiDAR sensors at the same location. This high position on the side of the vehicle is perfect for detecting obstacles since it enables parking space detection and 3D mapping all around the vehicle. In view of the optical, reliability, durability and robustness requirements demanded by the industry, glass is the perfect material for B-pillars – and Wideye will show how mounting sensors in this location works in real life.

4. Fender

An alternative side-mounted location – the fender – will also be demonstrated. Visitors to the show will see that a sensor can be mounted discreetly on the fender of any vehicle without compromising on aesthetics. Glass can be deployed to ensure that sensors are incorporated seamlessly into the styling of the vehicle. Indeed, glass is the ideal material, enabling car makers to fully customise the look of their vehicles while ensuring that sensors can perform their primary function of detecting objects.

5. Bumper

The bumper is the traditional home for sensors of all kinds (radar, LiDAR, etc.). Carmakers can still use this location to leverage their current system architecture and aesthetics. At CES 2023, Wideye will demonstrate the superior quality of its glass when used in LiDAR housings located in the grill or bumper.

Growing industry interest in optical sensor integrations

has seen Wideye nominated for several business awards for mass production programmes in different product segments, such as wind-shield-mounted LiDAR and LiDAR glass covers and trim for roof-line-mounted LiDAR units. "This confirms Wideye's strategic and international path as a pioneering premium brand for optical glass sensor integration. Looking beyond the ambitious vision that drives our business, we are proud that industrialisation is now under way, with the manufacturing division growing and the first production lines coming on stream and receiving customer validation. All this clearly demonstrates Wideye's ability to provide and deliver global leadership," said Wideye CEO Quentin Fraselle.

Wideye Rhino, a branch dedicated to the industrial vehicle and smart infrastructure markets, will also present their solutions for mounting and protecting LiDAR units in harsh environments for mining, freight transport, farming and construction vehicles, as well as in urban environments for traffic monitoring, safety, security and crowd analytics, both indoors and outdoors.

GLAS TRÖSCH: LIVELY FAÇADE PLAYS WITH OKALUX K

The Ismaning indoor swimming pool, designed by prpm Architekten+Stadtplaner GmbH, is housed in a pavilion featuring a captivating curved glass façade.

Designed as a self-supporting steel structure, the surrounding façade lends liveliness to the building and



also to the interior spaces through an interplay of transparent, translucent and opaque elements.

Part of this is also due to the light-diffusing 3-pane insulating glass Glas Trösch's OKALUX K. The capillary plate installed in the space between the panes ensures uniform and shadow-free illumination with daylight. Even in sensitive areas such as the sauna, a lot of light can enter the interior, while the functional glass provides maximum privacy. Excellent sun and glare protection, as well as optimised thermal insulation, improve the energy balance of the building and help to save heating costs in winter or cooling energy in summer.



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PRESS GLASS: UNIQUE "GLASS" BENCHES FOR RAKÓW CZĘSTOCHOWA

Press Glass produced glass roofs for the benches for the coaching staff and substitute players as part of its cooperation with the Polish RKS Raków Częstochowa football club.



The project was extremely demanding due to time pressure and also to having to find an unusual technical solution.

The glass benches were made with the help of a unique design solution without the use of any steel fasteners or fittings. Glass side beams and bent glass were made in the technology of laminated tempered glass with the use of SentryGlas structural film. This solution made it possible to achieve increased stiffness and the required self-supporting structure. The glass was fixed using Dow structural silicone.

The effect exceeded the expectations of Raków supporters and players. The structure is located on a sports facility at ul. Limanowskiego. The benches are extremely aesthetic and comfortable, and being absolutely transparent means that supporters finally have an uninterrupted view of the entire field.

SAINT-GOBAIN SIGNS RENEWABLE ELECTRICITY SUPPLY AGREEMENT IN SPAIN

Saint-Gobain has signed a Power Purchase Agreement (PPA) with the top energy supplier in Spain, Endesa. The 11-year agreement will start in 2024 and will cover around 55 percent of Saint-Gobain's electricity needs in Spain. The electricity supplied by Endesa will be generated by its renewable portfolio: wind, solar and hydro-electric power.



The agreement will enable a reduction in CO² emissions of roughly 39,000 tonnes per year.

This is the second renewable energy supply agreement signed by Saint-Gobain in Spain. Together, the two agreements will cover 65 percent of the Group's electricity needs in the country. It is a major step in the Group's fight against climate change and towards its commitment to reach carbon neutrality in 2050.

Under the agreement, Endesa will supply Saint-Gobain

150 GWh of renewable energy annually, which corresponds to the supply of about 43,000 Spanish homes with renewable energy every year.



This announcement follows the recent signings by Saint-Gobain of two important renewable electricity supply agreements in Poland and North America, increasing the share of renewable electricity to more than 60 percent for the entire Group. It comes after the recent endorsement by the Science Based Targets initiative (SBTi) of the Group's greenhouse gas emission reduction targets as consistent with the organisation's new Net-Zero Standard and the Paris Climate Agreement.

FUYAO GLASS: NEW AUTO GLASS IS MORE THAN A WIND-SHIELD

A single pane of auto glass can now do more than keep out wind and rain. Fuyao Glass Industry Group in Fuzhou, Fujian province, China, has produced glass that can be used as a display screen, similar to a computer.

Over the past three decades, Fuyao has been devoted to enhancing its ability to produce innovative, high-end auto glass. The company spends 4 percent of its revenue

on research and development and has built nine national research and development platforms, including a centre for academic research.



Smart auto glass produced at a manufacturing plant of Fuyao Glass Industry Group

Overseas, it has built six research and development centres to coordinate global resources in the glass industry.

With its advantages in innovation, the company developed window glass for the high-speed maglev train that rolled off the production line last year in Qingdao, Shandong province.

The train, with a designed top speed of 600 kilometres per hour, is currently the world's fastest commercial ground vehicle, and has stringent requirements for its windows. Fuyao developed glass for the train by adjusting the internal structure of the material, which has not only reduced the weight, but also enables passengers to touch the window to adjust the light.

Along with the rapid development of digital technologies in China, the company started a smart manufacturing project in 2021. According to the company, one of every three cars produced worldwide uses Fuyao glass.

ŞİŞECAM PROUDLY CELEBRATES ITS 87th ANNIVERSARY

Şişecam goes global in production and innovation, with its products exported to more than 150 countries from 45 facilities with its more than 24,000 employees.



Emphasising that Şişecam has become one of the most important global players in its field of activities, **Dr. Ahmet Kirman, Şişecam Chairman and Executive Member of the Board** said, “We have been contributing to the development of the glass and chemicals industries for 87 years. As a global company guided by collective wisdom, we are confidently advancing toward our goal of ranking as one of the world’s top three players in our main fields of activity.”



Pointing out that Şişecam is following the footsteps of Atatürk, who famously said, “My legacy is science and reason” Dr. Kirman continued, “We are proud to carry the strong legacy of our founder to Şişecam’s eighty-seventh year. Our global success stems from the ability to blend 87 years of experience with transformation. Throughout our long history now approaching the century mark, we have always successfully managed the great changes that the world faced in different periods.

“We have embarked on a comprehensive transformation journey for the needs of tomorrow to design ‘Şişecam of the Future.’ Focusing on global excellence and strong production capabilities, we provide input to different industries in many different geographies. Empowered by our roots, our unique culture and our power of transformation, we are working hard to make our achievements sustainable.

“Thanks to the use of smart technology, highly competent workforce, and data-based decision-making mechanisms, we are steadily moving toward our strong goals and creating value for our stakeholders, we are walking in the footsteps of our founder, Mustafa Kemal Atatürk, in the light of science, and we are mobilising all our talents for a better world and future.”

December 2022

MORLEY GLASS HITS 1,000-TONNE GLASS RECYCLING MILESTONE

Uni-Blinds® integral blind manufacturer Morley Glass has saved over 1,000 tonnes of post-consumer glass from going to landfill in just two years, and instead diverted it into the production of new glass in a scheme that has provided funding of more than GBP 60,000 for environmental and community schemes in West Yorkshire.

Morley Glass is the UK’s largest manufacturer of double glazed units with ScreenLine® integral blind systems inside, offering installers a market-leading range of Venetian and pleated blind options.

In 2020, the company invested in reducing its process waste and providing a post-consumer glass recycling service to installers by



commissioning machinery that could crush waste glass into what is known as cullet. This can be fed directly into the manufacture of new glass which not only reduces needless landfill waste, but it also cuts the volumes of virgin raw materials needed to make glass and saves energy as turning cullet into new glass requires less energy.



Ian Short, Managing Director of Morley Glass

The scheme, which is run in conjunction with international glass manufacturer Saint-Gobain Glass, is continuously audited so Morley Glass can see exactly how much waste glass is being collected and the benefits it is delivering.

The data shows that in two years, the amount of glass cullet produced by Morley Glass is saving around 325,000 kilograms of CO², as every tonne of glass cullet prevents 300 kilograms going into the atmosphere. Over 920,000 kilograms of sand, the main raw material for glass, has also been saved and the overall energy saving to Saint-Gobain Glass is calculated at 541 ‘energy years’ – that is the energy used by an average UK household in 12 months.

In addition to saving resources and energy, the recycling scheme has another important benefit for communities in West Yorkshire. All the money raised by the sale of the recycled glass cullet to Saint-Gobain Glass goes into a fund set up by Morley Glass called GreenVision.



This offers GBP 500 one-off grants to charities, individuals and community groups who are located in West Yorkshire and dedicated to providing environmental or social improvements in their local area.

Ian Short, Managing Director of Morley Glass, said, "What started out as a simple business improvement idea has snowballed into an initiative that is delivering far-reaching benefits at a time when environmental and social sustainability have become priorities. We are thrilled to reach our 1,000 tonne milestone in just two years, which clearly demonstrates how popular the recycling service is with our customers who can save money on waste disposal costs too.

"And of course, the more waste glass we are able to collect and process, the more support we can provide through GreenVision to local people and groups who are giving up their time to improve their local environment or deliver social benefits."

CORNING REDEFINES TOUGH WITH CORNING® GORILLA® GLASS VICTUS® 2

Corning Incorporated has unveiled its newest glass innovation, Corning® Gorilla® Glass Victus® 2, thus expanding its Corning® Gorilla® Glass portfolio.

With a new glass composition, Gorilla Glass Victus 2 delivers improved drop performance on rough surfaces like concrete, the world's most abundantly engineered material, while preserving the scratch resistance of Gorilla Glass Victus.



"Smartphones are the centre of our digital lives, and the requirement for exceptional scratch and drop resistance has only increased

with our growing reliance on clear, damage-free displays," said David Velasquez, vice president and general manager of Gorilla Glass. "Surfaces matter, and rough surfaces like concrete are everywhere."

Corning's extensive research has shown that 84 percent of consumers across three of the largest smartphone markets – China, India and the United States – cite durability as the number one purchasing consideration behind the brand itself.

"We challenged our scientists not only to create a glass composition that was durable enough to better survive drops from waist height onto rougher surfaces than asphalt, but to improve cover-glass performance for larger and heavier devices," said Velasquez. "With more sophisticated and varied designs, today's smart-phones are

nearly 15 percent heavier, and screen sizes are up to 10 percent larger, than they were four years ago – increasing both the stress on the cover glass and the probability of damage. Gorilla Glass Victus 2 redefines tough for consumers and OEMs."

In lab tests, Gorilla Glass Victus 2 survived drops of up to one metre on a surface replicating concrete. Competitive aluminosilicate glasses from other manufacturers typically failed when dropped from half a metre or less. In addition, Gorilla Glass Victus 2 continued to survive drops up to two metres on a surface replicating asphalt and maintained scratch resistance up to four times better than competitive aluminosilicate.

For more than a decade, Gorilla Glass has helped revolutionise the way we communicate and transform the mobile consumer electronics industry. With nearly half a billion global consumers yet to transition to smart-phones, Gorilla Glass will continue to solve tough consumer challenges and meet the needs of current and future smart-phone users.

Gorilla Glass Victus 2 is currently being evaluated by multiple customers and is expected to reach the market within the next few months.

Gorilla Glass has been designed into more than 8 billion devices by more than 45 major brands. Throughout the company's Mobile Consumer Electronics (MCE) market access platform, Corning continues its legacy of innovation with its market-leading cover glasses as well as glass and optics for semiconductor products that enhance performance, deliver new connectivity features, enable new designs, and support immersive user experiences with augmented reality and 3D sensing.

VIBRANTZ TECHNOLOGIES SELLS DIPTECH DIGITAL PRINTER BUSINESS

Vibrantz Technologies has announced that its DipTech Ltd. subsidiary based in Israel has entered into an agreement to sell its digital printer business to Kerajet S.A. The digital ink business is not part of the sale.

"This sale allows Vibrantz to redouble our focus on the production and development of digital inks for Kerajet and other digital printer manufacturers," said D. Michael Wilson, Vibrantz president and chief executive officer. "It also helps ensure our unmatched glass expertise and capabilities continue to grow in support of the digital printing market."

"Kerajet's expertise in the ceramics market and two decades of experience in digital printers well positions the company to take over DipTech's digital printer business," added Matthias Bell, president of Performance Coatings at Vibrantz.

Vibrantz will provide further information to DipTech cus-

tomers upon the closing of the transaction. Until that time, customers should continue transacting with Dip-Tech as usual.

Founded in 1999 and headquartered in Castellón, Spain, Kerajet is a leading technology company in the manufac-



ture of advanced digital printers for the ceramic industry. Kerajet currently has more than 4,000 digital printers installed in more than 44

countries in sectors as diverse as ceramics, textiles, tableware, PVC, LVT, fibre cement, etc.

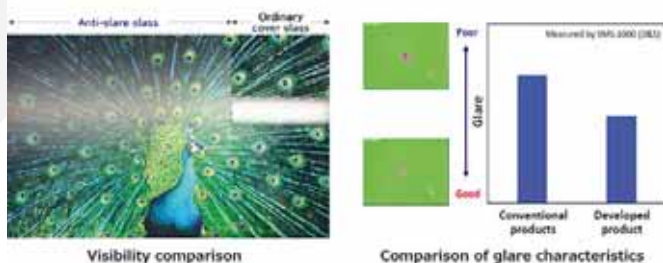
With the acquisition of Dip-Tech, Kerajet continues with its business expansion policy and gains a presence in the industrial glass sector, completing its industrial digital printing solutions.

AGC DEVELOPS ANTI-GLARE GLASS FOR 4K HD DISPLAYS

AGC has developed a new anti-glare (AG) glass for 4K high-definition displays. It reduces glare (random unevenness on a screen caused by optical factors) by approximately 30 percent while suppressing light reflection. The product will be launched in the first half of 2023, with the aim of adoption in notebook PCs and other devices equipped with 4K HD displays.

AG glass reduces eye fatigue by adding unevenness to the glass surface to reduce reflections, and is mainly used as cover glass for displays installed in PCs, tablets, and other products. In product development, it is extremely difficult to satisfy all three optical characteristics of anti-reflectiveness (suppression of light reflection), clarity (clear images), and anti-glare property (suppression of random unevenness on the screen). Especially with HD displays, optical interference with the LCD panel becomes stronger and causes glare to worsen. Overcoming this problem is a challenge.

AGC has now developed a new type of AG glass with more uniform unevenness on the glass surface through a special mechanical process. While maintaining the same level of anti-reflective performance as its conventional



products, reducing glare has been an issue, but this new glass cuts glare by approximately 30 percent and reduces eye discomfort when viewing HD displays.

MNORTHGLASS: RUBINSTEIN COMMONS BLENDS ART, SCIENCE AND NATURE



Tianjin NorthGlass supplied the prism glass for the new Rubinstein Commons at The Institute for Advanced Study (IAS), in Princeton, New Jersey, United States. The Institute was founded in 1930 and is home to many historic buildings, among which the most iconic is Fuld Hall, where scientific giants such as Einstein and Zhenning Yang worked in the past.

Rubinstein Commons has curved walls and roofs, with a spacious skylight and glass walls. The large-face ultra-wide prism glass façade provided by Tianjin NorthGlass

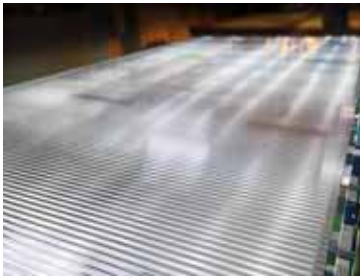


interweaves science, physics, humanities and art and echoes the mission of the institute. The mottled sunlight, green pools and surrounding scenery reflect into the building through the prism glass, which also refracts the white light into an interesting chromatograph, adding vitality to the interior.



Because the prism glass is a super-wide groove with large plate surface glass, and is heterogeneous, the groove carving process was very difficult, and the processing

is not easy to control. NorthGlass innovated and studied the groove carving process, and solved the bow bending problem caused by the polishing of the ultra-wide groove and the stress released after the groove engraving. The final glass is transparent and bright, and the prism effect



is perfectly presented. The building form is interwoven with the landscape so that courtyard landscape and architecture cast beautiful reflections, making nature and culture align in harmony. Rubinstein Commons has a variety of flexible meeting spaces to support IAS campus community and academic life, and it will also serve as a display

place used to show the institute of history, contribution and academic community pictures and materials.

AGC WELCOMES NEW ELECTRIC VOLVO TRUCKS FOR GLASS TRANSPORT

The Italian Lannutti Group – Logistics & Transports, transport partner of AGC Glass Europe, has ordered 20 electric Volvo trucks to be used for transporting glass, thus helping AGC to further green its transportation and embark on the electric journey. Lannutti, AGC and Volvo Trucks pursue a common goal of making the supply chain increasingly green.

One of the fully electric vehicles, helping AGC to lead the way towards fossil free transport, was welcomed to the AGC Cueno plant at the inauguration event, “Together towards a sustainable society” hosted by AGC Cuneo Plant, in the presence of the President of the Piemonte Region, the President of the Cuneo Province and the Municipal Mayor of Cuneo.

The CEO’s of Volvo Trucks Italia, Lannutti Group and Davide Cappellino (President AGC Architectural Glass Europe & Americas Company), Enrico Ceriani (VP Upstream) and Marc Fogueune (VP Sustainability) were present at the inauguration, along with the Cuneo team, to celebrate the entry into the fleet of the first 100 percent



electric vehicle departing from Cuneo plant loaded with flat glass.

The vehicle has a power of 540KW (660hp) and is able to drive a distance of 300 kilometres with a single charge. The vehicle will replace the diesel truck currently in use for glass handling between the AGC plant in Cuneo and the Lannutti storage areas near the site. Daily fossil free transport will have a significant positive effect on the environment and also eliminates the traditional noise impact of heavy goods vehicles.

AGC sees this as another important step on its Carbon Roadmap. Davide Cappellino, AGC’s President Architectural Glass Europe & Americas, said, “Today represents an important step for AGC in the virtuous path towards sustainable development which began years ago with the progressive reduction of carbon dioxide emissions and with ever more renewable energy, such as the photovoltaic and cogeneration plants installed for some time at our site in Cuneo. Our commitment is to achieve carbon neutrality by 2050, through careful and systematic work on all components of the value chain.”

Domenico Molina, AGC Cuneo’s Plant Manager, said, “We are not only witnessing the renewal of a very precious partnership for us, the one with Lannutti, our historical Logistic Partner, but also a fundamental step towards smart and eco-friendly transportation free from fossil fuels.”

NEW DIGITAL GUARDIAN GLASS RESOURCE HUB

Guardian Glass Resource Hub is a new digital platform that offers customers and the wider glass community of fabricators, processors, wholesalers, architects and specifiers 24/7 online access to a wealth of technical information on glass, as well as engineering, analytical and specification tools, marketing resources and interactive training – all in one place.

The Resource Hub includes a comprehensive technical library that offers self-service for technical enquiries. Technical information and notes are available on a wide range of searchable topics such as glass fundamentals, thermal stress management, bent glass, understanding condensation on glass, as well as specialty applications, interior glass and architectural glazing.

Users also have access to Guardian Glass Analytics, a comprehensive suite of engineering and analytical tools that help demonstrate the benefits of high performance glass in building façades. These tools include the Performance Calculator for modelling thermal and optical properties of glass substrates, coatings and interlayers; the Glass Visualizer for evaluating the aesthetic properties of glass make-ups; and the Acoustic Assistant for es-



timating the acoustic performance of many types of glass make-ups.

In the Specification Tools section, the Product Selector allows users to quickly find the most suitable Guardian Glass product for their project. In just a few clicks, users can explore the aesthetic and functional possibilities of Guardian Glass products, while helping them to choose a solution that also meets other important project criteria such as a building's energy and daylighting requirements. In addition, Guardian Glass for BIM (Building Information Modelling) is an Autodesk Revit® plug-in that works within the Revit workflow to guide selection and specification of Guardian Glass products. This powerful application analyses key performance metrics (thermal, passive solar heat gain, natural daylight) for all glass types. The software supports early-stage design considerations, enabling users to establish the optimal glass-to-wall ratio, define an early-stage glazing performance selection, as well as understand the location, orientation and the effects of shading from surrounding buildings.

Guardian Glass for BIM also supports designers at the schematic and detailed design stages of their project, including selection and specification of glazing to meet performance requirements, geometry optimization, and downloadable detailed specification and performance reports. Thermal analysis tools are also provided to enable users to calculate total window or curtain wall system U-values.

The Resource Hub also includes the Training Centre, a platform with a variety of online interactive training tools and resources, including video-based learning sessions, webinars and an in-person training booking system. The Marketing Resources tool provides a range of downloadable marketing resources such as Guardian Glass logos, which can be used in marketing materials.

Steven Scrivens, Global Head of Digital Platforms at Guardian Industries, said, "We want to provide our customers and the wider glass community, including those who specify glass in buildings, with 24/7 access to the tools and technical information they need to make faster, better and more informed decisions about glass and its use in building projects. By providing a combination of

technical information, analytical tools, marketing and training resources, the Resource Hub is a very powerful, valuable, self-service platform."

Access to the Resource Hub is via the Guardian Glass website. After creating a user profile, customers simply log in to start enjoying the benefits of the new digital platform.

GLAS KÜHNEL INVESTS IN LISEC INSULATING GLASS LINE

Glas Kühnel, based in Gangkofen, Germany, is one of the leading insulating glass manufacturers in southern Bavaria and employs around 40 people. It offers a wide range of products, high flexibility, short delivery times and outstanding quality. In 2021, Glas Kühnel invested in a LiSEC insulating glass line including a frame mounting station with assembly aid. This has increased productivity and enhanced operator ergonomics.

Glas Kühnel produces double and triple insulating glass as well as stepped glass, glass lites sheets for sound insulation, thermal insulation



and solar protection. LSG glass lites sheets in sizes from 6 to 16 millimetres are stored in the large glass storage facility. Since 2021, the company has been able to seal the sheets with silicone.

Glas Kühnel offers impressive flexibility, and is able to tailor products to individual customer needs. It is also able to offer very short delivery times, and can usually produce the order on the day it is placed.

Glas Kühnel was so satisfied with the existing insulating glass lines



that it once again opted for LiSEC when ordering a new insulating glass line.

"The units and products are becoming bigger and heavier. This meant a LiSEC line that was incapable of processing such units had to be replaced. It is getting on in years, but remains in very well-maintained and good condition," said Florian Kühnel, Managing Director.

The old LiSEC line was taken back and dismantled by Glastronic. The new LiSEC insulating glass line enables



Glas Kühnel to build particularly large and thick sheets – with the company now able to produce sizes of up to 5 by 3 metres.

“We appreciate the high quality of the LiSEC machines. They are clearly well-designed and contain many innovations. A lot has changed in comparison to the old machine,” said Mr. Kühnel.



Mounting the frame is a challenge, especially with large sheets. The LiSEC mounting station for spacer frames with assembly aid simplifies this process and enhances operator ergonomics.

It is no longer necessary for operators to climb a ladder and place the frame on the upper edge. The assembly aid bar descends and the frame is placed on the stops, after which the frame is aligned to the centre from both sides using the clamps. Finally, the bar moves to the required height and presses the frame against the glass at the upper edge.

The height-adjustable roller beams automatically adjust themselves to the height of the glass edge. Four side steps are possible with the RSV-MHS-B. Adjustment of the stops is automatic. Shapes are no problem either. Opening roller shutters for large glass sheets and installed LED lighting enable inspection of the glass sheets. Mr. Kühnel sees a positive future ahead, commenting, “Material availability is currently very good. The end of 2021 was pretty tough. In the future, we want to further expand our customer base and remain a reliable supplier for our customers. Furthermore, focussing on the latest technology is important to us – we want to stay continuously up-to-date.”

AGC GLASS EUROPE LAUNCHES LOW-CARBON GLASS

AGC Glass Europe launched its Low-Carbon Glass range, featuring a significantly reduced carbon footprint, in order to meet growing market demand and reduce the environmental impact of its production processes in line with its carbon neutrality roadmap.

“In 2022 – the United Nations International Year of Glass – AGC turned the spotlight on glass and our passion for this noble material. We also took a big step towards carbon neutrality during the year and are now de-



lighted to close out 2022 with the launch of our Low-Carbon Glass range offering customers glass, which – from the extraction of raw materials to final installation – generates more than 40 percent less CO² than our standard glass,” said Davide Cappellino, President of AGC Architectural Glass Europe & Americas Company.



Davide Cappellino

To achieve this drastic CO² reduction, every link in the value chain was closely examined and addressed. This included limiting direct carbon emissions from the glass production processes as well as lowering all CO² emissions from electricity production, the supply chain upstream of our processes and other indirect emissions. AGC’s holistic approach to sustainably producing its Low-Carbon Glass covers six key areas:

- sustainably sourcing of raw materials
- using highly efficient melting furnaces
- increasing the use of cullet (recycled glass)
- using green energy sources
- optimising transport between Group sites for finishing processes (lamination, coating)
- optimising transport for finished products

As a result of this in-depth process, AGC is now producing Low-Carbon Planibel Clearlite, a low-carbon float glass whose carbon footprint has been slashed by 40% to just 7 kg of CO² per square metre (4 millimetres thick). The first Low-Carbon Planibel Clearlite was successfully produced at the AGC plant in Moustier, Belgium, and is available and in stock now. In 2023, the AGC plant in Seingbouse, France, will also start producing Low-Carbon Glass.

Low-Carbon Planibel Clearlite is available for AGC’s key ranges of functional glazing products, including:

- safety glass: Low-Carbon Stratobel and Low-Carbon Stratophone
- thermal insulation glass: Low-Carbon iplus 1.0 and Low-Carbon iplus 1.1
- solar control glass: Low-Carbon Stopray and Low-Carbon Energy

These new Low-Carbon Glass products deliver the same aesthetics, quality and technical performance as traditional AGC float glass products.

SAINT-GOBAIN DIVESTS UK DISTRIBUTION BUSINESS

Saint-Gobain has signed a binding agreement for the sale of all its merchandising brands in the United Kingdom – including the builders and timber merchant Jewson – to the Stark group, following a competitive sale process.

The divested assets were expected to generate revenues of around EUR 2.7 billion in 2022 with an operating margin of



around 2 percent. They comprise 600 outlets and employ 8,900 people. The divestment is based on an enterprise value of GBP 740 million, i.e. around EUR 850 million. This transaction is expected to be completed in the first quarter of 2023 and is not subject to any external conditions. Saint-Gobain will then no longer have any distribution businesses in the United Kingdom.

It follows the divestment of specialist distribution brands in the United Kingdom over the last 18 months representing around EUR 650 million of revenues at around break-even in terms of operating margin, based on an enterprise value of around EUR 200 million.

VACUMAX™ VIG BY VITRO ARCHITECTURAL GLASS EARNS ACCLAIM

Vitro Architectural Glass announced that VacuMax™ Vacuum Insulating Glass (VIG) was named as one of the “Top 75 Products of 2022”, by leading architectural publication Building Design + Construction (BD+C).

VacuMax™ VIG units consist of two fully tempered lites of glass separated by a non-lead metal seal and a vacuum air space. The units’ slim construction and light weight allow them to be incorporated into virtually any traditional glazing system and significantly improve thermal efficiency, delivering insulation performance that is two to four times better than conventional insulating glass and up to 14 times better than standard monolithic glass.



Delivering ‘centre of glass’ (COG) R-values of R14+, VacuMax™ VIG units rival the thermal performance of traditional walls. Improved R-values in cladding materials are increasingly in demand as building owners and developers face imperative incentives to minimise their environmental impact, from new stringent energy code updates to Net Zero energy goals.

Every year the editorial team of BD+C evaluates the range of new and updated products, materials and systems for the U.S. building design and construction market. Products identified as the “best of the best” make

up the magazine’s “75 Top Products” report, which has been published in the November/December print issue of the magazine and online at BDCnetwork.com/75-Top-Products.

CORNING AND LG ELECTRONICS: SUSTAINABLE GLASS DISPLAY SYSTEM

Corning Incorporated has announced its continued collaboration with global technology and vehicle component solutions innovator LG Electronics (LG) to provide sustainable glass solutions for innovative, curved automotive interior displays. The two companies combine vehicle electronics and cover glass expertise to help advance in-car connectivity, which debuted in a premium European automaker’s curved display, while achieving a lower carbon footprint.



Automakers are envisioning new and immersive driving experiences that also deliver on industry climate goals and initiatives. With its combined instrument cluster and centre stack display, the premium European automaker’s curved display harmoniously integrates digital and analogue controls in a design that appears to float on the dashboard in front of the driver. LG’s focus on extended experiences with in-vehicle infotainment system technology has ushered in this new era of connectivity and sophistication, while Corning’s patented ColdForm™ Technology helps bring it to life in a sustainable and economical way.

“As consumers and automakers continue to prioritise more-sustainable technologies to help meet climate goals, Corning’s ColdForm Technology is vital to this industry progress,” said Mike Kunigonis, vice president and general manager, Corning Automotive Glass Solutions. “We’re proud to collaborate with OEMs and partners to deliver innovative user experiences and technology with a lower carbon footprint that enables a more sustainable supply chain.”

An independent third-party study measured the environmental impacts of Corning’s patented ColdForm Technology and found glass curved using ColdForm Technology’s carbon footprint is at least 25 percent lower than traditional glass curved using heat, producing 14.5M less kg of CO₂ for every 1M sq. ft. of glass produced. With ColdForm Technology, glass is bent at room temperature and fits to its final shape at the end of the module-assembly process performed by LG and its industry partners. In addition, by completing the manufacturing process in its



flat state, Corning's AutoGrade™ Gorilla Glass parts have uniform optical coatings, precise decoration, and can be produced at high yields.

"The desire for user-friendly in-vehicle connectivity through advanced interior design necessitates innovative products and processes," said Seokhyun Eun, president of Vehicle component Solutions Company of LG Electronics. "We're proud to partner with Corning to introduce unprecedented innovations into the industry that deliver curved display modules to enhance the user experience, such as special adhesive and forming systems, that set the trend while achieving sustainability goals."

EUR 228 MILLION SUSTAINABLE INVESTMENT FROM ŞİŞECAM

Şişecam announced its decision to increase the capacity of its second frosted glass furnace in Mersin, Turkey, from 180 thousand tonnes to 244 thousand tonnes per year. The company will also increase its yearly capacity of energy glass processing line from 20 million square metres to 26.6 million square metres. This move will support Şişecam's leading position in the Turkish energy glass industry, as well as reinforcing its strong position in the global glass industry.



The move will increase the total investment amount of two projects to EUR 228 million inclusive of working capital requirements. Şişecam's Chairman and Executive Member

of the Board Dr. Ahmet Kirman said, "While the cost of energy increases, the decrease in the costs of generating electricity from solar energy and the sustainability focus in the global arena offer new opportunities in the frosted glass and energy glass industries. With this strategic move Şişecam's installed frosted glass production capacity will reach 324 thousand tonnes per year by the end of 2024 and this is compatible with our sustainable value-added production strategy."

Dr. Kirman said that the global solar energy sector, which was 40 GW in 2010, reached 710 GW in 2020 and added, "With the contribution of the trends supporting the sector, the global solar energy installed power is expected to increase fourfold by 2030 and exceed 3,000 GW. The USA, which currently provides 3 percent of its energy needs from solar energy, aims to increase this rate to 40 percent by 2030 and to 45 percent by 2050. This transformation also accelerates the initiatives of industrial players to transform their energy consumption into green energy sources and to limit their carbon footprints.

More and more companies are putting renewable energy investments on their agenda. We believe that this investment will support the development of the rapidly growing solar energy sector in Turkey."

PILKINGTON GLASS PROTECTS VENICE'S BASILICA OF SAN MARCO

Piazza San Marco, home to the Basilica of San Marco, is one of the most famous monumental squares in Italy known worldwide for its unique beauty. Located in the lowest area of Venice, with the average high water in the city regularly exceeding 60 centimetres, the Cathedral runs the daily risk of being damaged by high tides. The Basilica's pavement and antechamber (Narthex) in front of the main entrance have been flooded no less than 250 times in recent years.

To keep the cathedral safe from damage, an architectural solution, using Pilkington glass, has been installed to provide enhanced protection to the existing MOSE, a system of mobile barriers designed to reduce the entry of tidal water from the



Credits Pierpaolo Campostrini

harbour inlets. Currently, it is of just partial use since it is activated only when the tide exceeds 110 centimetres. An overall, long-term solution is under construction – that of providing a more efficient seal from rising groundwater and sewage as well as raising the entire St. Mark's Pier Insula (built area) to facilitate better rainwater runoff. In the meantime, the steel and Pilkington Glass watertight barrier, will not only help protect the structure from erosion, but due to the choice of material, also provides unobstructed views over the square and Cathedral. Widely used in architecture for interior and exterior design, Pilkington Optiwhite™ extra-clear glass was the perfect choice for this prestigious project that not only demanded the highest quality of protection, but also superior elegance. Its low-iron content allows the true colour of the marble to be appreciated through the thickness of the glass barrier, which is laminated with a rigid interlayer. The resulting three-ply glazed panel is suitable for use in humid environments and capable of improv-

ing not only the mechanical characteristics, but also the post-breakage behaviour of the glazed panels.

The structure includes modules comprising steel uprights holding the panels that are securely fixed to the concrete base slabs. The finished project has been load-tested to extremes so that even in the unlikely event of a breakage of one of the plies, the whole structure will remain intact and continue to protect the Cathedral.

Zanatta Vetro, spokesman for Montebelluna (TV), the company that assembled the glazed section, explained the composition: "Comprising three laminated glass plies, the 12 mm-thick central ply is inserted between two 10 millimetre-thick plies – all are connected using rigid inter-layers. The panes are toughened, and heat-soak tested. These processes were able to triple the bending strength of glass and help avoid spontaneous breakage caused by potential nickel sulphide inclusions."

Matteo Grappiglia, Director of GR Strutture of Vigodarzere (PD), the company that carried out this project, clarified some details on its complexity: "On receipt of the order in March, the project was subjected to detailed engineering and design work, that included preparatory processes for the production of metal components in the workshop, culminating in sealing the glass and steel modules – the heaviest one weighing close to 1,800 kilos.

"Despite the complexities, we were able to ensure that the two-month installation period was completed in time to preserve the narthex from the first high tide of the season on November 7. Inauguration took place 12 days later in the presence of the highest state and regional officers. Ongoing access via six watertight gates, including horizontal modules, ensures the site remains open for visitors.

"By using this glass as the main material for this architectural project, its extraordinary mechanical and filter characteristics allow it to leave the water outside while preserving the integrity of what is enclosed."

NORTHGLASS TECHNOLOGY FEATURES IN QINGYUAN SCIENCE AND TECHNOLOGY LANDMARK

A new cultural landmark project, the Qingyuan Science and Technology Museum and the Youth Activity Centre, has a total construction area of 50,000 square metres, and includes a large number of internal complex multi-



curved glass structures made by NorthGlass.

The entrance of the Science and Technology Museum is located

in the centre of the venue, and it epitomises science and technology. 597 pieces of double silver Low-E tempered laminated composite insulating glass make up a huge sphere with a diameter of 24.6 metres. NorthGlass used its curved tempered forming technology to create a perfect edge curve, which is extremely accurate for arc accuracy and differential control.

The all-glass sightseeing elevator is made of special saddle-shaped hyperbolic glass with high technology.

The size of each piece of glass is different with great curvature, which showcases the manufacturing technology level of NorthGlass. The composite multi-curved glass of this project is ordered by 3D modelling, which is different from the traditional ordering mode and accurately extracts the specifications of glass with different shapes of each piece.



GFE AT CLOSING CEREMONY OF INTERNATIONAL YEAR OF GLASS

On 14 December, Glass for Europe was at the Glass Palace of the United Nations, New York, for the Closing Ceremony of the International Year of Glass 2022.

The event offered the opportunity to present to UN representatives the outcome of an intense year which celebrated glass, its industry, and its contribution to the UN sustainable development



goals. A year that Glass for Europe devoted to raising awareness about sustainability in the flat glass industry. Glass is essential to build a net zero energy future. Glass allows better performing buildings and can have a major impact on reducing emissions and addressing climate change.

During the panel dedicated to "Sustainability and Climate change", Bertrand Cazes, Secretary General of Glass for Europe, underlined the main challenges for decarbonising the building sector: reducing energy consumption and reducing embodied emissions.

"In Europe, we are currently discussing strict legislations



to reduce the consumption of energy in buildings and to move toward Zero Emissions Buildings”, he said. “But the issue of sustainability is also being taken up in other parts of the world.

“We need to reduce embodied emissions,” he continued. “But we need to primarily focus on operational emissions as they will remain by far the most important for the time being.”

Flat glass has a major role to play in decarbonising buildings. Today, flat glass manufacturers ensure high energy conservation properties in their products while limiting embedded emissions. In addition, flat glass technologies do not limit their contributions to energy savings. Extra clear glass for example maximises solar energy production in PV panels or in facades as BIPV.

The flat glass industry and its products are clearly part of the solution to tackle climate change and contribute to a more sustainable built environment.

January 2023

AGC TO TRANSFER OWNERSHIP STAKE IN AGC FLAT GLASS (DALIAN)



AGC Inc. reached an agreement with Shanghai Yaohua Pilkington Glass Group Co. Ltd. (SYP Group) to transfer its ownership stake in AGC Flat Glass (Dalian) Inc. to

SYP Group. Under the medium-term management plan AGC plus-2023 announced in February 2021, AGC designated the improvement of the profitability and asset efficiency of its architectural glass business as one of the AGC Group’s priority issues and has undertaken a variety of initiatives in this regard. As part of this process, AGC has decided to transfer its ownership stake in AGC Flat Glass (Dalian) Inc., which manufactures and sells glass for architectural, automotive and industrial use.

AGC determined that transferring the business to SYP Group, which has strong sales capabilities and a solid business base in China, would lead to further business development. The transfer price was RMB 305 million.

GUARDIAN GLASS SIGNS AGREEMENT TO ACQUIRE VORTEX GLASS

Guardian Glass (“Guardian”) and Vortex Glass (“Vortex”) announced an agreement for Guardian to acquire the assets of Vortex, a Miami, Florida, USA, fabrication busi-

ness. The transaction is expected to close in January 2023.

Vortex offers laminated and insulated glass that



meets the stringent Florida Building Code for hurricane impacts, and supplies Florida and the Caribbean Islands customers with complete tempered glass packages for residential and commercial construction, including office partitions, shower doors and glass railings. By bringing Guardian Glass advanced products and operations together with the fabrication capabilities of Vortex, Guardian is better positioned to assist customers in meeting advancing safety and energy conservation codes for buildings.

Vortex and Guardian agree the transaction will have a positive impact on the business, including its employees, customers, and suppliers.

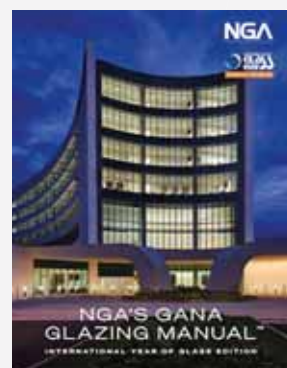
“We are very pleased to see in Guardian Glass a buyer that has strategic synergies with our existing business, the right values and the ability to help Vortex continue to provide great service to our existing customers while identifying and adding the capability for us to add new business,” said Humberto Juliao, Vortex President. “It’s a chance for the business as well as our team members to grow.”

“This transaction represents an important opportunity for Guardian Glass to add value to our residential customers in the Southeast,” explained Rick Zoulek, Executive Vice President at Guardian Glass Americas. “We remain committed to our existing customers and partners, and we’ve identified Vortex as a company with the right team, capabilities, and motivation to fit Guardian’s fabrication business model. We look forward to the successes to come.”

NGA’S GANA GLAZING MANUAL UPDATED

The National Glass Association (NGA) announced the publication of the updated GANA Glazing Manual, International Year of Glass (IYOG) Edition. NGA’s GANA Glazing Manual is recognized as the definitive source of information in the glass and glazing industry.

This comprehensive manual describes primary and fabricated glass products, quality standards, design considerations, general and specific glazing guidelines and glazing in hazardous locations. NGA’s GANA Glazing Manual is often cited as the “must



read” publication for anyone new to the industry and the reference resource for glass and glazing veterans.

Glass in buildings serves many purposes, often simultaneously, to enhance the comfort and protection of occupants. Improvements and new products and applications continue to impact the built environment, and these are reflected in this newest edition.

New sections in the IYOG Edition include sustainability, recyclability, physiological benefits, vacuum insulating glazing (VIG), daylighting and biophilia, glass protective barriers, glass in photovoltaic applications, and bird-friendly glazing.

“NGA’s GANA Glazing Manual is the essential reference manual for everyone working in the glass and glazing industry,” said Urmilla Sowell, NGA Technical Services & Advocacy Director. “The IYOG Edition highlights the many functions of glass in buildings as a key material to address energy performance initiatives, human comfort and security, as well as health benefits to building occupants and the animals that share our environment.”

NGA’s GANA Glazing Manual is available to purchase in hard copy or downloadable formats in the online NGA Store.

VITRO ARCHITECTURAL GLASS RENAMES THREE SOLARBAN® GLASS PRODUCTS



University of California, Irvine’s (UCI) living-learning community Middle Earth Expansion features Solarban® R67 (formerly Solarban® 67) Solexia® glass by Vitro Architectural Glass

Vitro Architectural Glass announced that it will be renaming three of its signature Solarban® solar control, low-emissivity (low-e) glass products at the beginning of 2023. While the products will have

new names, the performance and visual characteristics of all three glasses will remain the same.

Solarban® 67 glass will be renamed Solarban® R67. The addition of the R designation brings Solarban® R67 into a group of subtly reflective glasses, including Vitro’s Solarban® R77 and Solarban® R100 glasses, and helps make its aesthetic attributes clearer to customers. Solarban® R67 glass provides excellent solar control performance and transmits and reflects colours with remarkably crisp fidelity and can be specified with low-iron, blue, green and earth-toned tinted glasses for additional visual impact.

Additionally, Solarban® z50 glass will be renamed Solarban® 60 on Optiblue® glass and Solarban® z75 glass will become Solarban® 70 on Optiblue® glass. The new

names reflect the products’ composition.

“Solarban® z50 glass consists of the Solarban® 60 solar control, low-e coating on Optiblue® tinted glass and Solarban® z75 glass is made up of our Solarban® 70 solar control, low-e coating on Optiblue® tinted glass,” said Emily Losego, Commercial Innovation Director, Vitro Architectural Glass. “By changing the product names to better reflect their aesthetic attributes and physical composition, we believe it will be easier for architects, fabricators and others who work with architectural glass to evaluate and select the best product for their projects.”

Solarban® 60 on Optiblue® glass features a neutral, cool blue-gray appearance, and in a one-inch insulating glass unit with clear glass provides visible light transmittance (VLT) of 51 percent and a solar heat gain coefficient (SHGC) of 0.32. Solarban® 70 on Optiblue® glass features a similar cool blue-gray appearance and, in a one-inch insulating glass unit, provides visible light transmittance (VLT) of 46 percent and a solar heat gain coefficient (SHGC) of 0.23. Because of their neutral color profiles, both glasses harmonize well with clear and other color-neutral Solarban® solar control low-e glasses.

VITRO ARCHITECTURAL GLASS ANNOUNCES ORGANIZATIONAL UPDATES

Vitro Architectural Glass has announced organizational updates to its Marketing and Innovation division. Those moving to new or expanded roles include Wendy Carroll, Fernando Diez, Emily Losego and Robert Struble.

“It’s my honour to announce these well-deserved promotions,” said Martin Bracamonte, VP, Marketing and Innovation. “Led by this dream team of industry pioneers, our Marketing and Innovation group continues to produce superb results. We’re very excited to see what’s in store for 2023.”

Wendy Carroll will continue in her role as Product Manager for Tints/Low-Iron products and has been promoted to an expanded role as Best Practice and Product Manager.

“Wendy’s 30+ years of experience in the glass industry is invaluable, and her progressive approaches are exactly what we need to rethink the future of glass,” said Bracamonte. “In this expanded role, she will be responsible for establishing processes to effectively launch products, while also defining the Product Launch checklist, and specifying the required interactions, steps, and stakeholders required to bring new products to market.”





Fernando Diez has been promoted to the newly created position of Director, Marketing, where he'll lead initiatives across the United States, Canada and Latin America regions. The Mexico marketing organization will continue to report to Fernando, as well as the Sample Program coordinator and CDA Architectural Design Services functions. "As the Head of Marketing for Vitro's Mexico business unit, Fernando was monumental in executing marketing expansion strategies that led to successful business growth in the United States," Bracamonte said. "He'll be driving business growth, expanding existing product lines and leading new products and platforms within the architectural glass business."

Emily Losego has been promoted to the newly created role of Director, Commercial Segment Innovation. The current product management team will continue to report to her.

"Emily has shown tremendous leadership in product development and has been an excellent facilitator of our most important product line," said Bracamonte. "She'll be responsible for defining the vision for the commercial market segment and will support the strategy for the interiors, specialty, and residential markets."

Robert Struble has been promoted to Director of Brand and Innovation. He will continue to handle all brand and communications responsibilities and in his expanded role, he'll lead Vitro's employee-sourced initiative.

"Rob has an impressive track record in creating strong and profitable brands for Vitro, and his superior interpersonal skills make him a great fit to lead this endeavour," Bracamonte said. "In this expanded role, he will implement strategies for employees to create new and improved products as well as increase business efficiency." The new, creative, employee-sourced innovation process will enhance the advancement of the future of glass.

"While we have strong and proven formal processes for research and development in place, we're thrilled to deliver this new forward-thinking tactic, which stimulates and rewards employees across the company to rethink what glass can be in the future, and how we can deliver solutions more efficiently and sustainably," said Bracamonte.

HEAVYDRIVE: LARGE GLASS PANES INSTALLED IN NEW TESLA FACTORY

New York glass company W&W Glass LLC ordered four suction systems at Heavydrive LLC (Atlanta, USA) for the installation of 110 oversized façade elements for American car manufacturer Tesla's new factory in Austin, Texas. The façade elements, weighing 5,400 kilos with a width of 2.8 metres and a height of 9.7 metres, were set using the VSG 6000 K MH suction system with a load capacity of 6,000 kilograms. For the smaller panes, with a width

of 2.8 metres, a height of up to 5.1 metres and weighing 2,800 kilograms, the Heavydrive VSG 3000 K MH system was used.

In order to keep to the construction project schedule, the façade company ordered a VSG 6000 K MH and a VSG 3000 K MH on a purchase deal, as well as a system for hire. This meant that the glass panes could be set by several installation teams at the same time.



Installation of the oversized façade elements at the Tesla factory in Austin, Texas, USA - © W&W Glass

The Heavydrive experts ensured the safe transport of the systems, and took care of the necessary customs and freight documents as well. In July 2021, the Heavydrive equipment started its journey to Austin in a sea freight container. Heavydrive staff monitored the shipment via real-time tracking. Installation began in August 2021 and was scheduled for completion by the end of 2022.

FGIA RELEASES NEW TECHNICAL REPORT FOR SLIDING WINDOWS AND DOORS

The Fenestration and Glazing Industry Alliance (FGIA) has released a new technical information report establishing criteria for deflection and permanent deformation gauge device locations to meet uniform deflection and structural load test specifications and requirements specific to horizontal and vertical sliding windows and doors. AAMA TIR-A19-22, Structural Test Deflection and Permanent Deformation Gauge Placement for Horizontal and Vertical Sliding Windows and Sliding Doors, is now available for purchase.

"Certain industry standards for structural performance require the collection and recording of deflection and deformation during testing," said Dave Stammen (ASSA ABLOY Americas), Chair of the Structural Test Deflection and Permanent Deformation Gauge Placement Review Task Group. "This document was developed to provide FGIA accredited test labs with a consistent method for measuring and calculating these. Examples are provided in this document to assist test labs with de-



termining the unsupported sash and frame members that are most typically used based on the product type being tested.”

This TIR describes the correct placement of deflection measurement devices, and calculations for determining deflection and permanent deformation when performing structural testing of horizontally and vertically sliding window and sliding door products under uniform static air pressure difference per ASTM E330 and/or AAMA/WDMA/CSA 101/I.S.2/A440. The proper use of this TIR requires knowledge and training in the principles of fenestration testing.

AAMA TIR-A19 is the third in a series of three technical information reports on the structural testing of windows and doors, its counterparts being AAMA TIR-A17, Structural Test Deflection and Permanent Deformation Gauge Placement for Single-Point Lock Side-Hinged Door Systems, and AAMA TIR-A18, Structural Test Deflection and Permanent Deformation Gauge Placement for Fixed and Compression Seal Windows.

AAMA TIR-A19-22, as well as other AAMA documents available from FGIA, may be purchased from the online store at the discounted member rate of USD 20 or the non-member price of USD 60.

VITRO ARCHITECTURAL GLASS OFFERS COURSE ON VIG TECHNOLOGIES

Vitro Architectural Glass has introduced a new Continuing Education (CE) course on the science and development of vacuum insulating glass (VIG) to its collection of CE resources.

As an American Institute of Architects (AIA) Cornerstone Partner, Vitro Architectural Glass is committed to providing quality continuing education courses across all its product categories, which now includes vacuum insulating glass. “Vacuum Insulating Glazing (VIG) Benefits and Advantages in a Sustainable World” is an AIA/CES-registered CE course that reviews the development of vacuum insulation technology, the properties and advantages of vacuum insulating glass and what types of projects can benefit from this innovative architectural glass product. Architects who take the course can earn 1 LU, HSW credit.

“Part of what makes our CE offerings so robust is our commitment to providing impartial, accurate information about the types of architectural glass products that we manufacture,” said Daniel Sutton, product manager for value added products, Vitro Architectural Glass. “We know that product integration is key for our architectural audience when it comes to meeting design goals, and our CE courses offer the foundational knowledge needed to make decisions about product selection.”

Specific learning objectives of the course include under-

standing how VIG differs from a typical architectural glass unit, how VIG technologies can meet a range of needs from energy savings and acoustic improvements to sustainable building practices, the energy performance of VIG versus traditional product options and code requirements that this type of product can meet and exceed.

“Vacuum Insulating Glazing (VIG) Benefits and Advantages in a Sustainable World” will be available to architects on demand in the Architectural Record Continuing Education Center and on the Hanley Wood University website.

Vitro will also offer live presentations of “Vacuum Insulating Glazing (VIG) Benefits and Advantages in a Sustainable World” to its audience of Glass Insider e-newsletter subscribers, who are invited to participate in educational webinars hosted by Vitro national architectural managers several times per month. Live presentations of the course will begin in early 2023.

After the conclusion of the educational portion of the presentation, interested attendees will also have the opportunity to learn about VacuMax™ Vacuum Insulating Glass (VIG) by Vitro. VacuMax™ VIG units can enhance the performance of any insulating glass unit by significantly improving thermal efficiency, delivering insulation performance that is two to four times better than conventional insulating glass and up to 14 times better than monolithic glass.

VacuMax™ VIG units can be used alone as a replacement for monolithic glass or as a substitute for the interior lite in a traditional one-inch insulating glass unit (IGU) where it forms a second airspace and creates a hybrid IGU that can achieve a centre of glass R-value of R16. The full range of Solarban® glass coatings and Vitro Glass substrates are available on the non-VIG lites in a hybrid IGU.



SAFLEX FLYSAFE 3D IN SAINT-GOBAIN 4BIRD GLAZING

Worldwide, billions of birds are killed annually when they collide with glass windows and building facades during migration. Whether reflecting the sky or landscapes, offering indiscernible transparency, or projecting interior lights, architectural glass can cause a threat to bird safety. It is a major concern for architects, building owners and ornithologists everywhere.

Saflex FlySafe 3D PVB interlayer was developed as a highly effective solution to address bird threats from architectural glass without compromising on aesthetics. That is why FlySafe 3D is an excellent choice to use with 4BIRD® Lami from Saint-Gobain Glass, one of a new se-



ries of bird-friendly glazing solutions combining COOL-LITE® solar control coated glass.

“With Saflex FlySafe 3D at its core, Saint-Gobain’s 4BIRD®Lami addresses environmental concerns that architects and builders may have, such as building efficiency and comfort and preserving biodiversity,” said Oliver Osborne, commercial director of AMI architecture with Eastman. “FlySafe 3D PVB interlayer provides the bird-friendly benefit, while COOL-LITE® solar control coating prevents solar heat gain.”

“We are excited to use Eastman’s highly regarded Saflex FlySafe 3D interlayer technology for our 4BIRD®Lami product,” said Pascal Chartier, glass facade marketing director at Saint-Gobain Glass.



Saflex FlySafe 3D has been tested and rated as a highly effective solution to avoid bird collisions and does not compromise on the view or beauty of glass facades — and it will remain just as effective with the COOL-LITE® solar control coating. FlySafe 3D features three-dimensional, reflective sequins between two layers of glass. The discreet sequin pattern covers less than 1 percent of the glass area.

Since its 2022 introduction, Saflex FlySafe 3D has won a Best of Products award for building materials in the glass category from The Architect’s Newspaper and was also named the jury winner of the 2022 Architizer’s A+Awards in the Positive Impact category. In addition, it has already been specified in numerous building projects around the world.

Saflex FlySafe 3D is ‘bird-friendly made beautiful’ and Saint-Gobain’s COOL-LITE® solar control coating reduces heat gain. Together, these products make a great combination to protect birds and conserve energy in Saint-Gobain’s new 4BIRD®Lami.

NSG: VIEW SMART GLASS INSTALLED IN KUDAN KAIKAN TERRACE, TOKYO

NSG Group’s energy-saving View Smart Glass, electrochromic (dynamic light control) windows have been used in the new Kudan Kaikan Terrace (Chiyoda-ku, Tokyo) in Japan.

View Smart Glass, developed by US-based View, Inc., changes the tint of the electrochromic film, which is composed of a transparent conductive metal coated on the glass surface, by applying controlled voltage. It can change the transmittance of visible light, UV rays and solar radiation. The tint can be adjusted in four stages

to suppress light transmittance to a minimum of 1 percent without using blinds or sunshades. Many facilities such as offices, schools,



View Smart Glass changes the tint of the electrochromic film by applying controlled voltage

airports and hotels in the United States and other countries have installed the windows.

At the Kudan Kaikan Terrace, which was one of the first office buildings in Japan to utilize View Smart Glass, the incorporated IGU is installed on the office entrance, the plaza as a node to each area and the first floor. Using data from multiple sources, including sensors installed on the roof of the building, artificial intelligence automatically determines how much to adjust the transmittance of the glass, optimizing the amount of natural light and heat entering the room throughout the day. With this technology it is possible to reduce energy consumption for air conditioning and lighting, while ensuring a beautiful view of the Palace Gardens without any restrictions.

NSG Group has a long-term cooperative relationship with View, Inc. from the initial development stage of the product to the present. Both parties cooperated in the adoption and delivery of this product for the Kudan Kaikan Terrace project. They plan to continue co-working on future expansion in Japan, for the time being limited to large-scale projects.

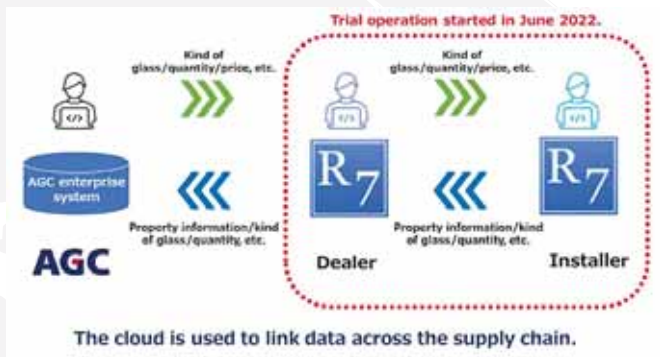


NSG Group is promoting “Expansion of Value-Added Business” as one of the measures listed in the medium-term management plan “Revival Plan 24 (RP24).”

The announcement to expand proprietary products is part of this strategy. The Group will continue its efforts to realize its Medium-Term Vision to be “A global glass supplier contributing to the world with high value-added glass products and services.”

AGC DX BOOSTS EFFICIENCY OF ARCHITECTURAL GLASS QUOTATION

AGC has started a trial of cloud-based linkage of data on kinds of glass and quantities between supply chains using “R7”, a unique glass quotation system developed by an AGC Group company, AGC Amenitech Co., Ltd. (AGC Amenitech). Full-scale operations are scheduled to begin in the first half of 2023. AGC will promote work style reform in the architectural glass industry via DX initiatives throughout the supply chain.



In the Japanese architectural glass industry, the glass quotation process involves the exchange of quotation requests and responses via e-mail and fax, so there is demand to make operations across the entire supply chain more efficient. Until now, AGC has sold AGC Amenitech's system, which specializes in creating quotations for complex glass work, to installers, dealers and other customers. However there has been no data linkage between customers who have installed the system. Therefore, the conventional construction costing process involves an enormous amount of manual input at each process in the supply chain. Also, fax and other analogue data cannot be linked between the processes. The "R7" glass quotation system developed in 2022 enables data linkage through the cloud, providing seamless integration of data such as glass kind and quantity information between installers and dealers. This will enable the entire supply chain to improve operational efficiency by reducing manual input work, shortening lead time for quotations, and preventing omissions and errors in input. Trial operations conducted at dealers and installers from June 2022 showed quotation input work at dealers was cut by approximately 20 hours per month.

AGC's ultimate aim is to achieve supply chain efficiency and work style reform in the Japanese architectural glass industry by accelerating DX to link data among glass manufacturers, dealers, and installers while also implementing accurate and timely information exchange.

The AGC Group has formulated its medium-term management plan, AGC plus-2023 to achieve its long-term management strategy, "Vision 2030", and one of the key strategies in the plan is to "boost competitiveness by accelerating digital transformation (DX)." By utilizing big data from every aspect of operations including R&D, manufacturing and sales, AGC continues to pursue even more efficient operations and while providing new added value for their customers and society by transforming the entire business process from the customer and market perspectives.

SLIMPACT OFFERS NEW PORTAL STRUCTURE

SLIMPACT® by Faour Glass Technologies, a leading provider of custom architectural glazing products for the high-end markets, has announced the newest addition to the SLIMPACT® frameless impact glazing portfolio. SLIMPACT® Portal is a custom-engineered stand-alone 3-sided steel portal structure engineered for single and paired glass door options with Allowable Design Pressures up to +/-90 PSF.

SLIMPACT® Portal compliments the growing SLIMPACT® Door family, joining the Manual, Panic and Automatic Entrance doors. SLIMPACT® Portal allows the integration of SLIMPACT® Doors into Jumbo SLIMPACT® window walls or other traditional curtain walls.



SLIMPACT Portal is a custom-engineered stand-alone 3-sided steel portal structure engineered for single and paired glass door options.

SAINT-GOBAIN ANNOUNCES RELOCATION OF VETROTECH NORTH AMERICA

Saint-Gobain, through its specialist fire-rated glass subsidiary Vetrotech Saint-Gobain North America, announced the upcoming relocation of Vetrotech North America's Headquarters in Auburn, Washington to a new facility in Faribault, Minnesota. The relocation will allow Vetrotech to invest in new manufacturing technology, continuing the company's commitment to its growth in North America.

By locating in Faribault, Vetrotech North America will be able to leverage synergies with other local Saint-Gobain businesses, notably Sage Electrochromics, the makers of





SageGlass. By investing in new technology, the company will be able to introduce its CONTRAFLAM-ONE fire-rated glass technology to market in the United States, a true eco-innovation combining both performance and sustainability. This move comes as Saint-Gobain continues to implement its global Grow and Impact strategy, which includes expanding its presence in key, fast-growing markets and fostering growth through customer-centric innovation.

“Vetrotech North America’s relocation to Faribault, Minnesota will provide us the tools and synergies we need as we continue our commitment to growing our presence in North America and serving our customers,” said Kevin Norcross, General Manager of Vetrotech Saint-Gobain North America in Washington. “We thank the Auburn community for their years of hospitality to our business and look forward to engaging with new neighbours in Faribault and building successful partnerships.”

The completion of relocation activities for both glass processing and framing system manufacturing is targeted for the end of this year.

PROMAT DELIVERS FIRE-RATED SOLUTION AT BLAZING SPEED

Fire glass specialist Promat UK pulled out all the stops to help an interior design and build contractor to successfully complete an office fit-out scheme in Sheffield on time, meeting the tightest of client deadlines at its busiest time of the year.

More than 50 square metres of Promat SYSTEMGLAS® Ligna timber framed fire resistant glazing was manufactured in two-thirds of the usual time for an office refurbishment project by Ovo Spaces in Sheffield city centre. This rapid response meant Promat UK was tasked with reducing its usual lead time from six weeks to just four. Working in conjunction with Promat SYSTEMGLAS® approved installer Rated Solutions, the team was able to provide EI30 fire resistant glazing which took the form of four large screens, two of which featured doors, with each measuring 6,000 millimetres wide by nearly 3,000 millimetres high. This was used over four floors to securely enclose a lightwell which had been installed to provide additional light throughout the building.

The Promat team ensured the glass was delivered on time, with over 50 square metres of glass cut, edge finished and taped before being quality checked and delivered to site. The installation was finished by the Rated Solutions team with just hours to spare.

Rebecca Knight, Managing Director of Ovo Spaces said, “Promat and Rated Solutions have been hugely helpful throughout the process, from initial quotation to installation, everything has been very clear and well done. They



worked to extremely tight deadlines to manufacture the screens and their site installation teams were both speedy and efficient and a thoroughly friendly team, installing an excellent quality system. In the future they will be our ‘go to’ people!”

As with every Promat SYSTEMGLAS® fire resistant glazing installation, Ovo Spaces and its client also benefit from the peace of mind offered by Promat’s 360-degree ‘wheel of assurance.’ In line with the golden thread, this demonstrates complete traceability with regard to the complete fire glass supply chain, from raw material sourcing through manufacture and processing to installation. Ovo Spaces were issued with a project-specific Certificate of Conformity which can be shared with their clients, who were delighted with the end result.

Cath McLean, Segment Manager – Glass at Promat UK added, “We pride ourselves on going the extra mile for our clients and we will always do our best to help find a solution even in the most challenging of circumstances. When we were approached by Ovo Spaces, we were already very busy fulfilling existing orders during our peak period of the year, but we knew we could work with them to find a solution to meet their client’s deadline.

“We made use of additional resources available within Promat, and thanks to the great flexibility and can-do attitude of our approved installer Rated Solutions, we were able to provide the SYSTEMGLAS® Ligna solution required.

“It was an incredibly tight timescale given the need to conduct a site survey prior to manufacture of all the timber frames – and the team at Rated Solutions had to get it right first time as the schedule left no time post-installation to address any snagging issues or problems.”

The timber framed Ligna system used in the Fargate project is just one of the systems available within the Promat SYSTEMGLAS® range. Assured fire protection between EI30 and EI120 is also provided in a glazing system with a steel frame, SYSTEMGLAS® Ferro, and two options are available which use a fire resistant framing material – PROMATECT H® – that can be painted, overlaid or concealed in surrounding walls and floors to achieve a virtually frameless look.

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