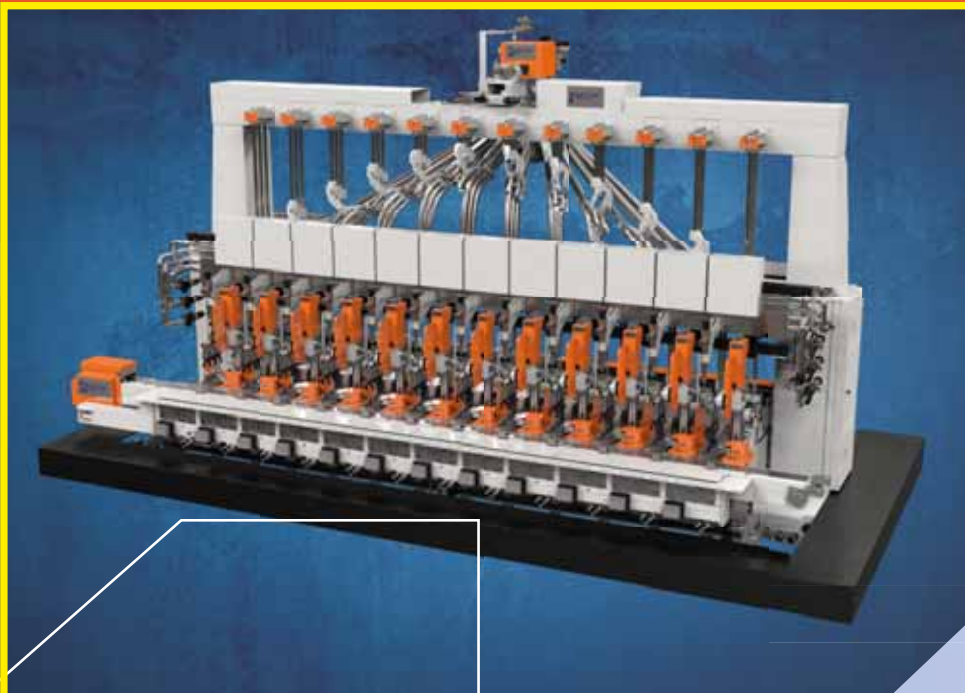


glass machinery world plants & accessories

BI-MONTHLY INTERNATIONAL MAGAZINE FOR GLASS MANUFACTURING



YEAR 36 • ISSUE NO. 2/2023



IS PARALLEL
ADV 8050

8-10-12 SECTIONS AND TANDEM
IS-P: DG 6 1/4" - TG 4 1/4"

IS ANGULAR
ADV 1050-8050

6-8-10-12 SECTIONS AND TANDEM
IS 4 1/4": SG-DG -TG 3"-TG 3 1/8"
IS 5"S: SG-DG-TG 85MM
IS 5 1/2": SG-DG
IS 6 1/4": SG-DG-TG 4 1/4"

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Collaboration with **BUCHER EMHART GLASS** bolsters new **VETROPACK** plant

The story of **FAMOR ENGINEERING** - an enduring legacy in glass

HEYE and **ORORA** mark two decades of collaboration

EME shines among global leaders for plant design technologies

Latest machine developments by **OCMI-OTG** for stemware sealing

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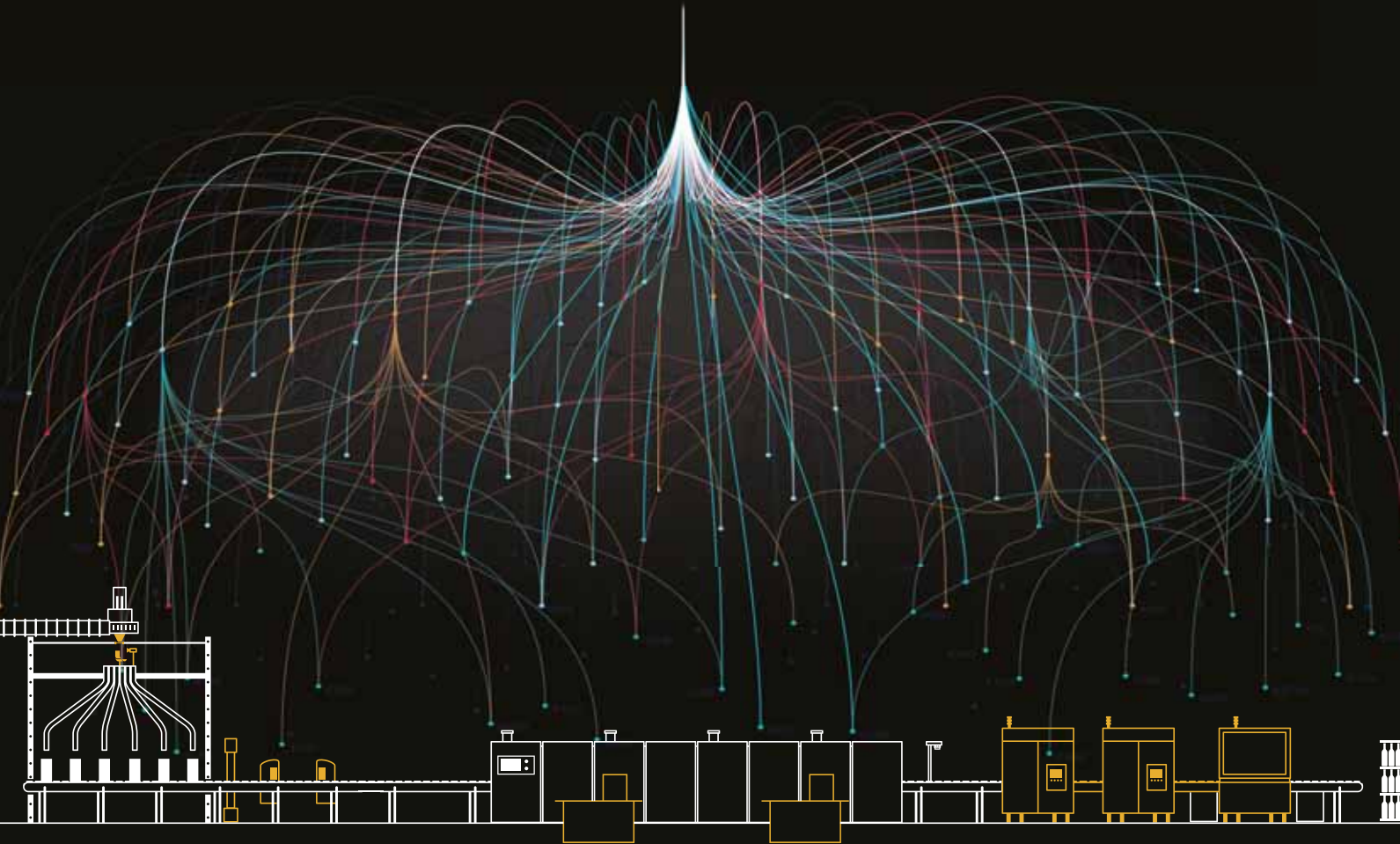
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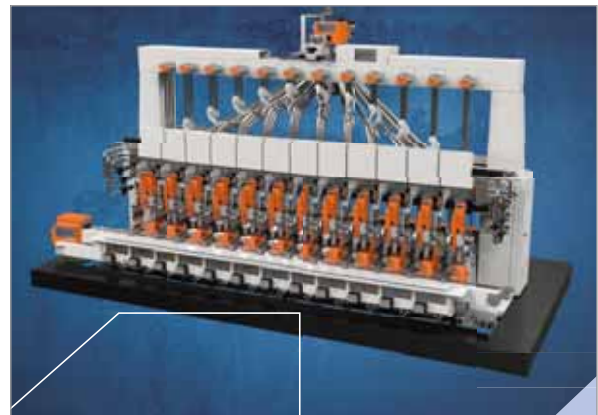


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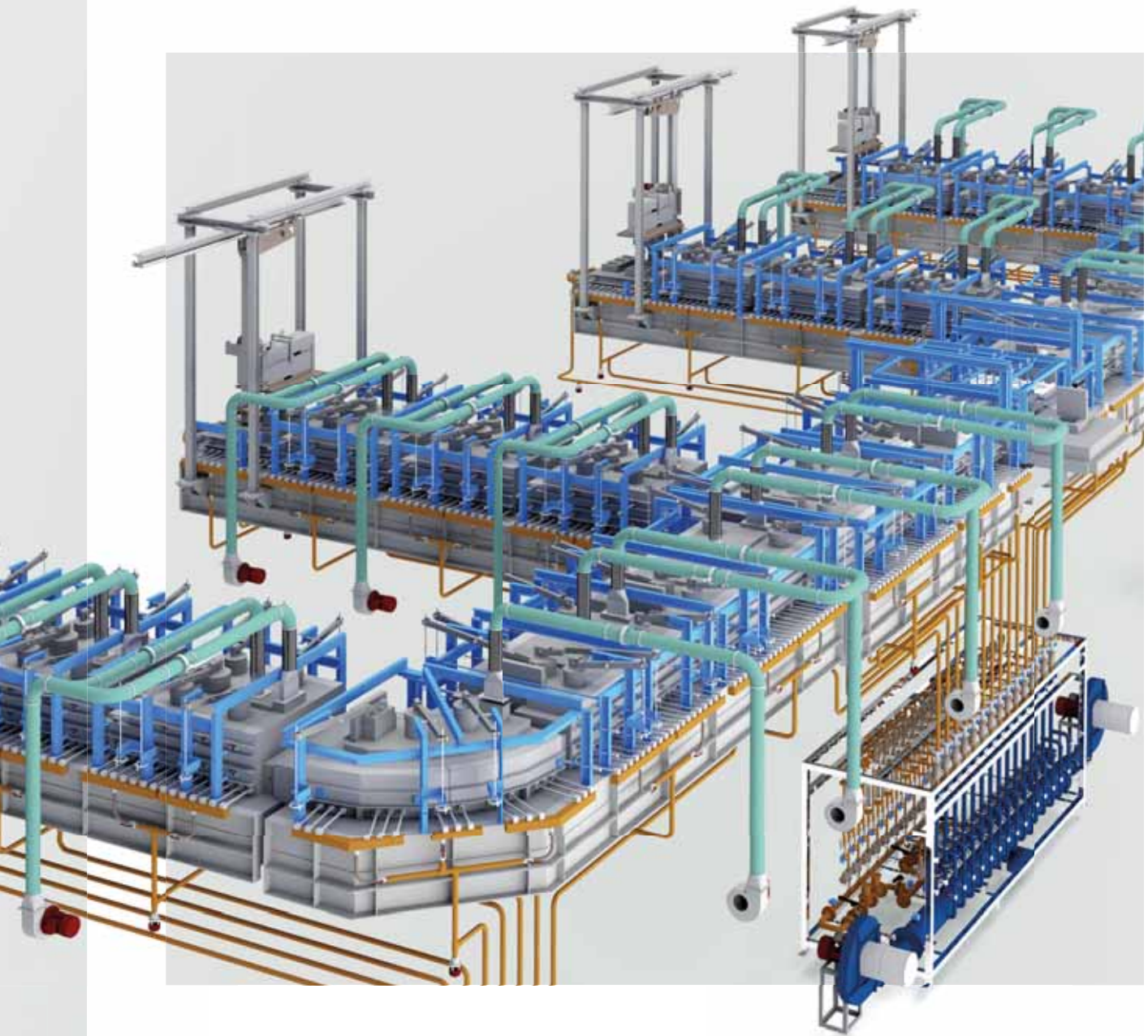
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2023 1	GLASSMAN EUROPE	8-9 February	ISTANBUL Turkey	Editorial files: 13-01-2023
	COSMOPACK	16-18 March	BOLOGNA Italy	Deadline Adv files: 17-01-2023
2023 2	GLASSPRINT	25-26 April	DÜSSELDORF Germany	Editorial files: 20-03-2022 Deadline Adv files: 30-03-2023
	INTERPACK	4-10 May	DÜSSELDORF Germany	
	CHINA GLASS	6-9 May	SHANGHAI China	
2023 3	GLASSMAN USA	6-7 June	CLEVELAND (OH) USA	Editorial files: 26-04-2023 Deadline Adv files: 05-05-2023
	FURNACE SOLUTIONS CONFERENCE	7-8 June	ST HELENS UK	
	16TH SEMINAR ON FURNACE DESIGN	21-22 June	VELKE KARLOVICE Czech Republic	
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2023 4	VITRUM	5-8 September	MILAN Italy	Editorial files: 21-07-2023 Deadline Adv files: 28-07-2023
	GLASSPEX INDIA	14-16 September	MUMBAI India	
	GLASSMAN ASIA	20-21 September	SEOUL South Korea	
2023 5	AFGM	Date to be announced	South East Asia	Editorial files: 04-09-2023 Deadline Adv files: 11-09-2023
	LUXPACK	3-5 October	MONACO	
	CONFERENCE ON GLASS PROBLEMS	30 October 2 November	COLUMBUS (OH) USA	
	FEATURED CONTENT: VISION & COLD-END			
2023 6	ICG ANNUAL MEETING	12-15 November	HANGZHOU China	Editorial files: 09-10-2023
	GULF GLASS	4-7 December	DUBAI UAE	Deadline Adv files: 16-10-2023



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LUBEN GLASS

Dynamic gob-cutting blade lubrication control system



For years now, LUBEN GLASS has been manufacturing and supplying its customers with gob cut lubrication systems designed to guarantee maximum reliability and all made with high quality components. The company is well aware that, as an action, lubricating the gob cutting blades is of vital importance for the production of containers - to be carried out in a continuous cycle, and always guaranteeing precision of the dosage.

Dosage first

Luben Glass plants accord great attention to the dosing system, which is designed to offer maximum precision through high quality electronic pumps capable of guaranteeing a dosage which is always constant - and with reliability levels that constitute the flagship of Luben Glass today.

The regulation of the emulsion production process, as well as all system control functions, are entrusted to guaranteed components. Display of the system, collection of operating data, documentation and archiving of process data all take place by means of a user-friendly, intuitive HMI interface by which operating parameters can also be easily monitored. The system allows for automatic, in-line micrometric dosage of the product. A set of fluid flow and pressure monitoring and control sensors gives our lubrication system a level of efficiency that has no equal on the market.

Luben Glass' dynamic lubrication control system DLCS allows for highly precise dosing of the quantity of oil - according to the quantity of water present.

Made for one or more lines, it can work with both an oil-water system and an oil-air system to lubricate the blades or the scoop. The DLCS control unit, equipped with a pressurization group to guarantee constant dynamic water pressure, can be combined

both with mixing systems with switchboard on the machine, and with mixing systems equipped with accumulation tanks for the recovery of the emulsion water as well as with in-line mixing systems.

DLCS can also be associated with cold-end bottle coating equipment.



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SAVERGLASS

New rainwater collection system at Feuquières plant

World Water Day, March 22, SAVERGLASS has installed an effective rainwater collection system at its Feuquières, France, site.

Rainwater from the roof is directly collected in a collection basin. This has significantly reduced drinking water usage and, what's more, has provided 60 percent of the factory's water needs.

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AGR

Combined coating measurement system

AGR's fully-automated Combined Coating Measurement System (CCMS) provides a single operation testing station for measuring coating applied to glass containers during production. The CCMS incorporates two measurement heads that are configured to meet the unique, individual requirements for measuring tin oxide coating. Positioning of measurement heads, container rotation and capture of measurement data are all performed in a single progression - without the need for operator intervention.

Automatic measurements eliminate the potential for error that may be introduced by different users. Up to six vertical positions for finish and body measurement can be defined for each job. Precise positioning of the measurement heads makes it possible to measure every container within that job at the exact same heights - ensuring accurate, replicable measurements.

DUAL HEAD DESIGN

- Finish measurements – a low profile head configuration with horizontal and vertical positioning is specifically designed for performing measurements within the confines of a container's finish region;
- Body measurements – a wide range head, with angular



positioning for optimal measurement of coatings up to 100 CTU, performs all body measurements.

TWO TESTING MODES

- Spot test mode – Facilitates a quick test to verify coating presence and thickness on an individual sample at a single height;
- Job test mode – simplifies the effort of performing routine, repetitive testing through predefined and stored jobs with up to six vertical positions for finish and body measurement as well as ten angles for each vertical height.

KEY FEATURES

- Finish and/or body measurements in one operation
- Dual head design
- No job change for different container types
- Automated test or spot check operation
- Job storage and recall
- Industry 4.0 ready
- Built-in power loss protection

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VERALLIA BRAZIL

Inauguration of second furnace in Jacutinga



VERALLIA BRAZIL just celebrated internally the inauguration of a second furnace in its plant in Jacutinga, bringing the production capacity to 2.5 million bottles.

This new furnace is an important investment to meet the growing demands of the domestic market. This ambitious project has generated new jobs at the plant, thereby contributing to the local economy.

Indeed the model of technology and sustainability wouldn't have been possible without the dedication, competence, and expertise of those mobilized on the project.

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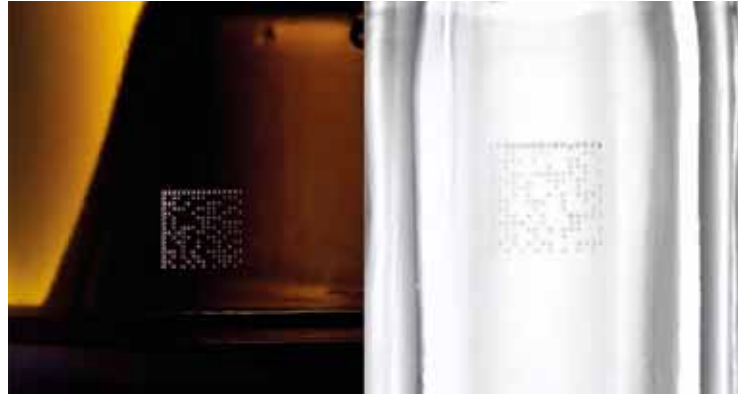
Datamatrix: added security and traceability

SAVERGLASS' Datamatrix is an identification solution that's specific in that it's tamper-proof and unalterable. It is a unique code of 24 digits (on a square of 8 by 8 millimetre dots), hot-engraved (which won't cause microcracks) during the manufacture of the bottle. Its very clear marking allows for very reliable reading. Both aesthetic and very inconspicuous on the glass (generally placed on the neck or the lower barrel of the bottles) it gives absolute certainty about the date and time of manufacture.

This innovation complies with the recommendations of the various standards (Datamatrix ECC200 and ISO/IEC 16022:2006) and responds to the growing quality and traceability challenges faced by the global wine and spirits market. The Datamatrix also complies with European food safety standards.

The discreet Datamatrix is part of an anti-counterfeit protection strategy - an issue no luxury brand can ignore. As such it also contributes to the enhancement and differentiation of the bottle - a guarantee of Saverglass' optimum quality. Finally, it is possible to use it to load other information concerning the content or even information intended for consumers.

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TIAMA

Next generation gob monitoring sensor

The Tiama HOT mass 2 is a next generation **TIAMA** hot-end sensor dedicated to gob monitoring. Today gob monitoring systems have become a 'must have' for glass plants and monitoring the gob is a key step in improving process control, given that glass-makers will typically say that 80 percent of defects come from the gob.

Thanks to its unique configuration, the Tiama HOT mass 2 provides real 3D views of gobs and accurate measurements for gob shape such as length and diameters. The control of the gob shape is essential to limit the creation of defects. The system also provides temperatures, falling angles and speeds measurement in real time.

The Tiama HOT mass 2 keeps the gob weight stable through two closed loops: the system automatically regulates both tube height and needles' position. Performance achieved by the system is very promising. As an example, for a production with a weight set point at 955 grams, the Tiama HOT mass 2 regulates the gob weight within +/- 1g. Thus, weight limits can be set to a minimum and the weight setpoint reduced. A reduction of only 1g means significant savings for a glass factory. This automatic gob weight control frees up time for operators who can concentrate on more added-value tasks around the IS machine.

The limitation of carbon impact becoming a priority for factories, a better weight stabilization also helps to support plants in the production of increasingly lighter containers.

The Tiama HOT mass 2 is universal and can be connected to any kind of IS machine and process. The technology used by the system makes it possible to have a compact solution that can be easily installed and requires only very little maintenance.

TIAMA was the first supplier to offer gob monitoring sensors with the GIA and then the Tiama HOT mass. Many years of experience and installations around the world have made Tiama HOT mass 2 an efficient and ergonomic system that meets customer needs.

Fully integrated in the YOUiverse concept, Tiama HOT mass 2 is compatible with the different information systems used by glass plants. Thanks to the worldwide presence of its after-sales engineers, Tiama is ready to support customers with both installation and 'getting started' with the Tiama HOT mass 2.

WWW.TIAMA.COM

BGC

Prime Packaging acquired for THB 580M

Subsidiary of Bangkok Glass Public Company Limited, BG Container Glass (**BGC**) operates in glass packaging. In Thailand the company has five plants that, collectively, amount to a production capacity nationwide.

Today BGC has bought complete ownership of Prime Packaging - a company specialized in production of printed, laminated flexible packaging, such as plastic rolls and plastic pouches used with automatic packing machines.

The cost of the operation is THB 580M (EUR 15.7M),

with all funding derived from bank loans - all part of BGC strategy to become a leader in total packaging solutions.

WWW.BGC.CO.TH



FEVE

Half Year 2022 production at highest levels

According to data gathered by FEVE – the European Container Glass Federation – in the first half of 2022, production and total sales reached new record levels - thus confirming the pace already registered for the Year 2021. Production increased by three percent in both tonnes and units between the first half of 2021 and that of 2022. In fact, in the same period, total sales reached a growth of 8.0 percent in tonnes and 8.5 percent in units compared to the first half of 2021. This was the highest growth rate recorded since the first semester of 2016. From the first half of 2016 to the first half of 2022, total sales in container glass increased by 14.2 percent in tonnes (1.5 million tonnes) and 13.0 percent in units (5.3 billion units). The industry is facing unprecedented market demand growth in all segments in Europe and is working at full speed and capacity to meet what is being seen as exceptionally high levels of customer demand. This shows continued trust in glass packaging material and Feve members are strongly committed to meet market demand. They are also investing in increasing production and capacity despite very high pressure on energy and costs, which however requires time.

This latest data come on top of the record Year of 2021 when production increased by 5.0 percent to 23.5 million tonnes for the food and beverage markets, the highest production levels ever reached historically. Likewise, production of glass flacons for the perfumery, cosmetics and pharmaceutical segments delivered a strong growth of 2.2 percent to reach 13.6 billion units by the end of 2021.

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The new **NX-SR-300 swabbing robot**
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GERRESHEIMER AND CORNING

Joint venture announced

GERRESHEIMER AG, leading global provider of healthcare, beauty and drug delivery systems for pharma, biotech, and cosmetics, has announced a joint venture with **CORNING** Incorporated, a leading innovator in materials science and manufacturing, to increase global access to the Velocity® Vial technology platform, addressing the need for a high-quality and cost-effective injectable drug filling process.

The partnership will combine Gerresheimer’s extensive glass converting expertise with Corning’s innovative Velocity® Vial technology. This model will improve fill-finish productivity and enhance product quality, lowering manufacturing costs and speeding the delivery of injectable therapies. Velocity® Vials will be produced by the joint venture in existing Gerresheimer facilities for the international market, making the vials immediately available in North America, Europe and Asia.



As the leading solution provider for the pharma and biotech industry, Gerresheimer is dedicated to offering our customers best-in-class solutions to the industry’s toughest challenges,” said Dr Lukas Burkhardt, Member of the Management Board of Gerresheimer AG. “By expanding our long-standing relationship with Corning, we add another integrated solution to deliver value for our customers. Our market-leading position in vials is further strengthened by this innovative vial technology. In combination

with our GX Pharma Plus, Gx Elite glass vials or Gx RTF solution, we can meet the highest quality standards.” Velocity® Vials can improve filling-line efficiency by up to 50 percent as a drop-in solution, thereby lowering costs while improving quality and providing a streamlined regulatory process. Compared with conventional vials, Velocity® Vials can also protect against damage that could lead to particles, breaks, and cracks. The adoption of Velocity® Vials has already helped accelerate the delivery of lifesaving treatments and critical drugs to the market.

“Over the past two years, we’ve seen first-hand how vital Corning Velocity® Vials have been to improving pharmaceutical-manufacturing performance and quality. Now, Corning is expanding access to Velocity® Vials by partnering with Gerresheimer to co-manufacture and sell the product,” said Brendan Mosher, vice president and general manager of Corning Pharmaceutical Technologies. “The new model expands Velocity’s manufacturing footprint, localizes its supply chains, and gives customers the option to purchase directly from Corning or Gerresheimer. We are excited to welcome Gerresheimer as the first partner to join the Velocity® Vial technology platform.”

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PLATINUM EQUITY

Acquisition of Harbison Walker International completed

PLATINUM EQUITY confirmed that the previously announced acquisition of Harbison Walker International

(HWI) by way of a merger agreement has been completed. HWI is a supplier of refractory products and services in North America. Financial terms were not disclosed.

In January, Platinum Equity announced the closing of the acquisition of Imerys SA’s High Temperature Solutions business, which is now operating under the Calderys brand going forward. HWI and Calderys will join forces into a global business with increased reach and scale.

“Despite a challenging M&A market, we are continuing to →

← find attractive opportunities to put capital to work and provide divestiture solutions that deliver speed and certainty,” said Platinum Equity Partner Louis Samson. “HWI and Calderys are an excellent fit, with complementary footprints and product portfolios. Bringing them together will create exciting benefits for both businesses.”

“The Harbison Walker brand is highly respected and vital to the long-term success of the combined company,” added Samson. “We will continue investing in its growth and expansion in the Americas.”

Harbison Walker’s headquarters will remain in Pittsburgh as the headquarters of the combined company’s Americas region operations.

Michel Cornelissen, currently President and CEO of Calderys, will serve as the global CEO of the combined company effective immediately.

“We have a tremendous opportunity to bring together the best of both companies to create a high-growth, customer-centric refractories solutions provider with global scale,” said Mr. Cornelissen. “Our goal is to be the best partner for our customers anywhere in the world, to support them in their energy transition needs, and to set a new benchmark for the industry.”

Platinum Equity said it will seek additional opportunities to

help the combined company grow.

“Joining forces will create additional scale and provide both businesses access to new technologies, increasing the value proposition for customers,” said Platinum Equity Managing Director Malik Vorderwuelbecke. “It will also create a global platform with new opportunities for growth, both organically and through additional acquisitions in key product areas and geographies.”

Kirkland & Ellis provided legal counsel to Platinum Equity on the acquisition of HWI and Willkie Farr provided financing counsel to Platinum Equity on the transaction.

WWW.THINKHWI.COM - WWW.PLATINUMEQUITY.COM



GLASS SERVICE ITALY

Construction of fourth batch plant and furnace for ACHT Group

An important milestone was recently reached by **GLASS SERVICE ITALY** after it built its fourth batch plant and furnace for the production of Alpha 5.0 borosilicate glass pharmaceutical tubing for ACHT Group in Ayang, China. The completion of the

furnace marks a significant achievement and great cause for celebration for all involved in the project - both staff and management. A moment to be shared and enjoyed by all involved, it serves as testament to their hard work and dedication that the project came to fruition. Here follows the technical data:

- borosilicate neutral glass alfa 5.0 furnace 24 TPD
- N.2 production line, platinum feeder technology
- melting, oxy-gas heating + electrical booster
- Distributor + N.2 Foreheart, air/gas heating + electrical booster co2 reduction footprint



WWW.GLASSSERVICE.IT/

STOELZLE AND POLAR NIGHT ENERGY

Partnering for innovation

In autumn 2022, Stoelzle participated in an innovation pitch organized by the Austrian Chamber of Commerce. As an energy-intensive industrial company, Stoelzle is constantly seeking innovative ideas in which to help reduce energy consumption in all production processes, as well as increase the use of green energy. As the glass manufacturer already gains green energy (waste heat from furnaces and green electricity from photovoltaic panels) the next step was finding a way to store excess green energy.

The innovation pitch came up with a couple of great ideas, and **STOELZLE** decided to take a closer look at **POLAR NIGHT ENERGY** - a small start-up company from Finland founded by Markku Ylönen and Tommi Eronen. This innovative company has developed a patented, sand-based thermal energy storage. It is the world's first commercial solution to store electricity in the sand as heat to be used in a district heating network. "As a material, sand is durable and inexpensive and can store a lot of heat in a small volume at a temperature of about 500 to 600 degrees Celsius," explained Markku Ylönen.

The first storage of this kind has been successfully installed in the town of Kankaanpää, Finland. Heat storages can significantly help to increase intermittent renewables in the electrical grid. At the same time, waste heat can be used to heat homes. This is a step towards combustion-free heat production.

Niklas Zwettler, Head of R&D at Stoelzle Glass Group, continues to lead this project and further steps are being explored to extend the process. "Glass production is a very energy intensive process. We have set ourselves the target to halve our CO2 emissions by 2030 and become carbon-neutral by 2050. So far, Polar Night Energy has discovered a way of extracting heat to warm water and feed local heating systems.

"Now, we need to discover how to retrieve electricity from the energy that is stored in the sand, in order to have a reliable source of green electricity to fire our furnaces. We're excited to see how this system will work for us."

WWW.STOELZLE.COM - WWW.POLARNIGHTENERGY.FI



EME

Quality from start to finish

As part of the SORG Group, **EME** delivered the entire batch house and cullet return for this green-field project in 2021. The plant was designed from the outset by EME in such a way as to extend future furnace capacity.

Today the company is delighted to continue cooperating with the glass container manufacturer with a view to extending the batch system. The team kick-started the project as the sales engineer, project manager, design engineer and sales representative all met in Mexico to discuss the next steps.

Here EME has shown itself to be a reliable partner for its customers - delivering quality batch plant extensions as well as upgrades and cullet return systems.

WWW.EME.DE



FEVE

Container glass industry welcomes green claim proposal

FEVERE, the Federation of European manufacturers of glass containers, supports the intention of the European Commission's Green Claims proposal to ensure that consumers and businesses have access to reliable, comparable and verifiable information to make sustainable decisions and avoid the proliferation of misleading green claims.

FEVE is pleased the European Commission proposes a legal framework to enable companies substantiate their green claims based on reliable assessment. The methods used for calculating sustainable impacts though still have large gaps and it is welcome that the proposal takes an open approach to prescribing methods that can be used to ensure credibility, reliability, transparency, robustness and clarity of the claims being made.

Even the EU Product Environmental Footprint (PEF) methodology, based on Life-Cycle-Assessment (LCA), has large gaps, which need to be addressed to improve its robustness and reliability. In particular, some environmental impacts of products – such as the circularity of packaging, its infinite recyclability, the avoidance of food waste, littering, biodiversity, toxicity, etc. – are not yet or sufficiently taken into account.



[HTTPS://FEVE.ORG/](https://FEVE.ORG/)



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ARDAGH GLASS PACKAGING

Focus on sustainable technology in Poland

A new glass furnace has been designed in Poland by **ARDAGH GLASS PACKAGING** Europe with the latest available suite of sustainable technology for reducing emissions and improving energy and resource efficiency. Ceramic Candle Filter technology and a Continuous Emission Monitoring System have both been installed to achieve and maintain low emission levels while gas, electricity and water consumption will be reduced through a combination of heat recovery, turbo compressors, water recovery and a closed loop cooling system.

Reducing emissions and improving the impact on the environment is one of the key targets for the glass industry. Ceramic Candle Filter technology is the most effective method of controlling particulates and acid gasses and is also highly efficient in reducing Sulphur Oxides during the glass manufacturing process. Installing a Continuous Emission Monitoring System provides ongoing information and allows immediate corrective and preventive action to be taken if necessary.

The new furnace will be highly energy efficient thanks to the conversion to a regenerative furnace, reducing gas usage and CO₂ emissions annually. Turbo compressors will replace screw compressors, which is expected to reduce the electricity requirement by up to 25 percent.

Reducing water consumption will be achieved through a new closed-loop cooling system for the compressors and for boosting electrodes in the furnace. Together this is expected to reduce water usage by up to 10 percent compared with traditional cooling solutions. In addition, recovered water from a new demineralisation system will be used in the sanitary facilities, saving a further expected 2-3 percent of water on-site.

Jerzy Żołyński, Plant Director at the AGP – Europe facility in Wyszaków, Poland, said, “We are incredibly proud of the work that has been put into implementing this new sustainable technology which will improve the environmental impact of our operation and will help AGP – Europe to achieve its sustainability targets.”

WWW.ARDAGHGROUP.COM

SGD PHARMA AND CORNING

Expansion of pharmaceutical packaging in India

Telangana state, India, recently announced its future collaboration with **SGD PHARMA**, a global producer of pharmaceutical primary packaging, and **CORNING** Incorporated - a global leader in materials science, all to bring state-of-the-art technology and manufacturing expertise to the region.

The collaboration will combine Corning’s high-quality pharmaceutical tubing technology with SGD Pharma’s glass vial manufacturing and converting expertise. This will secure SGD Pharma’s tubing capacities to supply primary packaging to its Indian and international customers from the Telangana state.

“We are proud to partner with Corning and the Telangana State

to reinforce the strength of the pharmaceutical industry in Telangana by securing the full supply chain of primary packaging,” said Akshay Singh, Managing Director, SGD Pharma. The intended project of approximately INR 500 crores (EUR 57M) has the potential to create nearly 150 jobs in the Mahabubnagar District of Telangana. Not only. Commercial production may begin as early as 2025. We are excited to bring this collaboration with SGD Pharma to Telangana,” said Sudhir Pillai, Managing Director, Corning India. “Together, we’ll be working to accelerate the delivery of critical drugs while also improving the quality of pharmaceutical packaging.”

WWW.SGD-PHARMA.COM - WWW.CORNING.COM





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VERALLIA

Two new furnaces in Europe by 2026

European leader of food and beverages glass containers and the third-largest producer globally, **VERALLIA** recently announced the construction of two additional furnaces by 2025 and 2026 respectively, the former to be located in Spain and the latter in Italy - and all to increase the company's production capacity as it responds even better to market needs.

Company investment plan

Within the framework of the 2022-2024 strategic plan, the Group announced plans to build three new furnaces, one per year, to increase production capacity by around 400 kilotonnes/year by 2024.

In line with this strategy, the first furnace was commissioned at the Jacutinga plant, Brazil, at the end of 2022.

Two others - which are already under construction - will be fully operational during 2024, in Campo Bom, Brazil, and Pescia, Italy. They will be both powered by oxy- combustion, reducing CO2 emissions by 18 percent compared to traditional technology.

With the announcement of two additional furnaces, Verallia is completing its capacity footprint to meet customer needs over the coming years. These two new furnaces will incorporate new technologies to support the Group's sustainable growth.

Patrice Lucas, CEO of Verallia, said: "We are walking the talk. As committed with our strategic plan, we are building additional capacity: Jacutinga has been launched, Campo Bom and Pescia projects are progressing as planned. With this announcement of two additional furnaces in Europe by 2026, we are pursuing our ambition to follow customer and market needs to take forward sustainable, profitable growth."

WWW.VERALLIA.COM

PASABAHCE

EUR 14M investment in plant at Targovishte, Bulgaria

Bulgarian Minister of Innovation and Growth, Alexander Pulev, recently announced that **PASABAHCE**, part of Turkish glass manufacturing group SiseCam, is investing BGN 28.5M (EUR 14.5M) to upgrade and expand its factory in the city of Targovishte, Bulgaria.

The investment, comprising tangible and intangible assets, is set to automate and optimize the production process - also via new technical equipment, said the innovation ministry.

The planned upgrade will increase production output, broaden the company's product offering and speed up the quality assurance process. Pasabahce Bulgaria is also plans to install rooftop solar panels at the plant. As a support measure, it will receive government financing to build parts of the technical infrastructure.

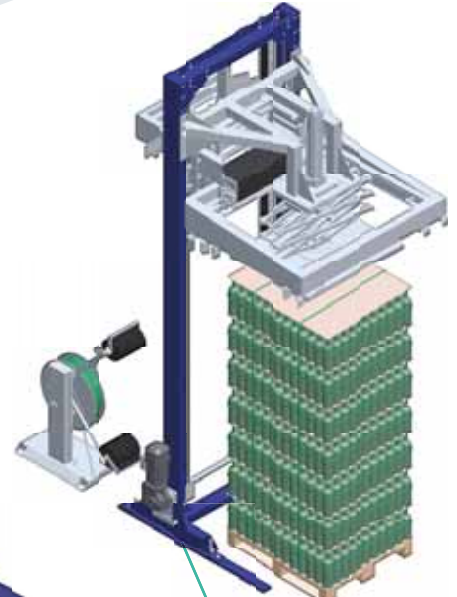
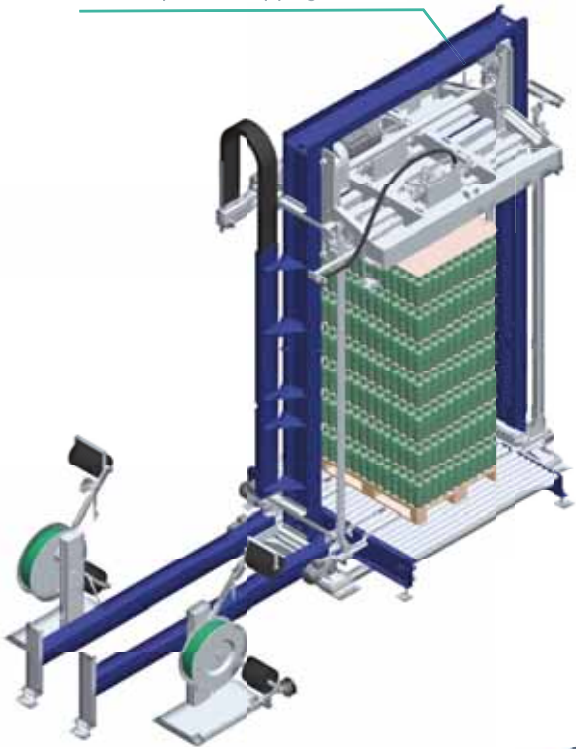
Pasabahce Bulgaria produces float glass, glass packaging, glassware and fibreglass. It has an output capacity of up to 150,000 tonnes per year, with products made at the plant exported to Europe, the Americas and North Africa. SiseCam in Bulgaria manufactures flat glass through its unit Trakya Glass Bulgaria, also in Targovishte, car glass through SiseCam Automotive Bulgaria and also has soda ash production through Solvay Sodi in Devnya - a joint venture with Belgium's Solvay Group.

WWW.PASABAHCE.COM



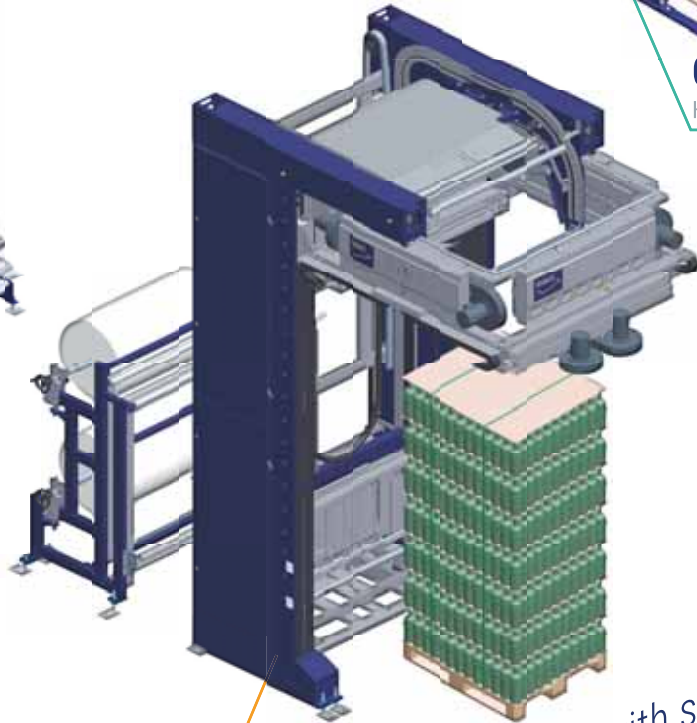
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GERRESHEIMER ESSEN

Tradition and progress combined after 300 years

Gerresheimer Essen GmbH has been around since 1723. Its origins go back to the 'Royal Privileged Glass Manufactory', founded 300 years ago. Today GERRESHEIMER AG produces high-quality glass packaging for a large number of well-known customers in the pharmaceutical, cosmetics and food industries.

"We're proud of our 300-year glassworks. From traditional glassblowing to modern industrial glass production, we've helped shape an important piece of industrial history in the Ruhr region. For over three centuries we've constantly changed and faced the challenges of the moment," explained Dr Dirk Müller, Managing Director of the Essen site. "Indeed we'd like to use this special occasion to thank, in particular, our employees for their commitment. We watch the future with confidence and look forward to continuing to produce high-quality glass packaging for customers at our Essen site."

The company was established in 1723 and was privileged as a royal glass manufactory by Friedrich Wilhelm I in 1727. Later, the factory was dubbed Hünninghauser Glashütte after its founder Hermann Albert Hünninghaus, then Knohl'sche Glashütte. In 1820, manufacturer Friedrich Ignatz Wisthoff took over the glassworks and 'helped on' the company to international success. In 1991, the glassworks was integrated into the Gerresheimer Group.

Today the product portfolio of Gerresheimer Essen consists of II and III-type flint and amber glass. Primary packaging for the pharma industry in particular is produced at the plant itself. For example, for

cough & cold remedies, penicillin, antibiotics or also infusion and injection medications. Gerresheimer Essen is a specialist for miniatures in the spirits sector too - producing bottles and jars for the cosmetics industry.

Through the use of innovative technologies and continuous investment in development and progress, Gerresheimer has been able to maintain a lead position in the market. As early as 1976, the plant was among the first glassworks to have ISO Class eight clean-room technology.

Today Gerresheimer Essen has integrated robot-based automation solutions into production to achieve greater flexibility, productivity - and staff relief. With a strong corporate culture that's focused upon quality, innovation and customer satisfaction, Gerresheimer Essen is committed to remaining a leading supplier of glass products.

WWW.GERRESHEIMER.COM

ZIPPE

New batch and cullet plant successfully commissioned

ZIPPE recently installed a new plant, complete with batch and cullet conveying system, to the new furnace at PT Culletprima Setia, Indonesia.

Established in 1992, PT Culletprima Setia offers quality and unique glassware products under its brand BBC Glass.

The project was realized at the peak of the Corona pandemic. Nevertheless, together with the customer, all challenges were solved in a very flexible and collaborative partnership.

The new plant flanks the existing production - feeding the new furnace for tableware with a capacity of 130 tonnes per day and a cullet ratio of 30 percent.

In addition to the batch plant, Zippe has also supplied a new scraping conveyor as well as a crusher for the cullet plant.

Commissioning was completed recently and the plant has been operating flawlessly ever since.

WWW.ZIPPE.DE



STOELZLE

Global expansion of decoration services

Stoelzle Glass Group recently announced the opening of a decoration facility at **STOELZLE Glass USA**, in Monaca, PA - a site that offers screen-printing to customers in the USA.

"We are thrilled to add more services and contribute to the expansion of our US facilities with this new decoration site in Monaca," said August Grupp, Head of Business Unit Spirits. "The Monaca plant continues to see success for the Stoezle Glass Group. North America represents one of the most important markets for the liquor and spirits industry globally, and now we will have more to offer new and existing customers."

The installation of the CNC machine enables printing in larger quantities, in addition to screen-printing. Decoration options will include ceramic colours, precious metals, organic and UV colours, printing around corners and in 360-degree motions, as well as more services. The machinery is equipped with a fully automatic control camera system and will allow for annual capacity of up to 20 million bottles.

Decoration expansion In Poland

Stoelzle Częstochowa also updated printing machines at its site in Poland. A new machine was added to the seven lines of the Kamman printing machines. In keeping up with growing customer demand, the brand-new printing line offers four sections, a 20 percent more efficient new lehr, and increased capacity from 12,500 pieces per shift to more than 25,000 pieces.

"Thanks to new innovations, automation and the commitment of our employees, we are able to generate twice the amount of products in comparison to the previous line" said Artur Woloszyn, CEO of Stoelzle Częstochowa.

With the addition to the Monaca, Pennsylvania plant, Stoelzle Glass Group serves international customers in four business unit categories of pharmaceuticals, perfumery & cosmetics, spirits, and consumer goods. The opening of the seventh glass plant in the US served as the first venture outside of Europe. This is the fourth decoration facility for Stoelzle Glass Group.

WWW.STOELZLE.COM

ARDAGH

Refinancing South African debt facilities until 2028

Ardagh Group SA recently announced that its subsidiary, **ARDAGH Glass Packaging - Africa** (formerly Consol Glass) has successfully completed the refinancing of the South African debt facilities - assumed at the time of the Consol Glass acquisition in April 2022.

Under the terms of the refinancing, maturities are currently extended to 2028, from 2023, with total facilities increased by ap-

proximately ZAR 3 billion. These will support Ardagh Glass Packaging - Africa's investment programme for additional capacity, principally the construction of a third furnace at the Nigel production facility, near Johannesburg, which is expected to commence production in late 2023. They also provide increased liquidity to support both the business and operations.

This refinancing was undertaken with the existing syndicate of South African banks (FirstRand Bank, Standard Bank of South Africa, Nedbank and ABSA Bank) which continued to show their support to Ardagh Glass Packaging - Africa. This reflects the long-standing track record of the Ardagh Glass Packaging - Africa team and business, and its commitment to serve growing demand for sustainable glass packaging in the region.

WWW.ARDAGHGROUP.COM





SORG

Single-source hot-end supply for Vetropack Boffalora

Vetropack, located in Switzerland, is building a brand-new glass plant in Boffalora sopra Ticino, Italy - the first greenfield project in the company's history. Here the SORG Group is supplying two regenerative end-fired furnaces with forehearths, the entire batch plant and a complete service package, forming the heart of the greenfield project.

The two melting furnaces will produce white and cuvée coloured container glass. Sorg Group will supply the complete melting furnace from a single source as a turnkey project, including cabling, piping, project management, installation, and commissioning.

Nikolaus Sorg planned and supplied the melting furnace - which were intensively modelled in detail with Vetropack, as well as the glass conditioning systems and all necessary equipment. The plants are designed at the highest technological level in order to achieve maximum efficiency with the lowest energy consumption and minimal emissions.

For example, the furnaces are planned to have a high amount of electric boosting, which can be further increased at a later point in time. The combustion process is controlled and regulated by means of a gas analyser, burner with individual nozzle regulation, WSH-type burner holder and double continuous flue gas measurement (chamber head and flue gas duct). For further control of the processes, the two doghouses per furnace are sealed against gas and dust by using EME-NEND® R2 batch charging machines.

Each furnace is equipped with four type 340S+® forehearths. The Sorg® OMT measuring and control system is installed in all zones of the forehearths and the working end to ensure optimal combustion. All systems are also regulated and controlled via a PCS7 system. In addition to the four EME-NEND® R2 charging machines, EME is supplying the batch bunker, the charging platforms, and the steel construction for this area.

SKS in the form of SKSI, responsible for service in the SORG Group of companies, will supply all the furnace and forehearth steel, a total of 1,500 tons. Furthermore, they are responsible for the refractory storage, erection of the steel and refractory structure as well as heating-up, filling and commissioning of the furnace.

The Sorg Group -The Power of Three- will supply the complete design and plant technology for the hot end of this greenfield project, consisting of the glass melting furnace, glass conditioning section and batch supply, all from a single source. The Group will also handle all project management, from refractory storage to the handover to the customer.

WWW.SORG.DE

SAVERGLASS

Second furnace for Mexico's Acatlan de Juarez plant

For SAVERGLASS, 2018 marked the opening of the group's first North American plant - which included both a glass production unit and another dedicated to bottle decoration.

Located in Acatlan de Juarez, Jalisco, the plant serves the

entire North American continent and is the sixth production site of the group.

A second furnace has since been added to ensure production capacity.

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BUCHER EMHART GLASS

New manufacturing facility to be built in Malaysia



BUCHER EMHART GLASS has contracted AME Elite Consortium Berhad to construct its MYR 108M (EUR 22.8M) new manufacturing facility in Airport City, Johor, Malaysia.

A subsidiary of Swiss-listed engineering and manufacturing group Bucher Industries AG, Bucher Emhart Glass is established as one of the world's leading international suppliers of glass container manufacturing solutions including equipment, controls, parts and support. The international group has presence across the globe, including Switzerland, Sweden, Italy, Germany, Singapore, Malaysia, Japan, China and the United States.

The new build facility at Airport City will have a built-up area of approximately 300,000 square feet - replacing the existing factory at another site in Johor Bahru in order to increase production capacity. The construction of the project will commence in the second quarter of 2023 and is scheduled to be completed in 2024.

A signing ceremony was held at the Airport City sales gallery, attended by Bucher Emhart Glass Logistics & Manufacturing Vice President Juan P Montes, Finance Vice President Reto P. Semadeni, Finance Controller Chan Siew Kheng and Johor Bahru Site Manager Bryant Wong, as well as AME Executive Director Simon Lee, Property Development Director Cheryl Lim and Sales Director Alice Tee.

WWW.EMHARTGLASS.COM

SCHOTT

Production launch of amber pharma glass in India

With a view to meeting increasing demand in Asia, SCHOTT has invested EUR 75M (approximately INR 660) over the last three years - all to expand its pharmaceutical glass production in India.

The Gujarat-based facility is the company's manufacturing hub for borosilicate glass tubing, a high-quality material that is converted to pharmaceutical containers, such as vials, ampoules or syringes, to store life-saving drugs. This expansion contributes to the Indian government's vision of further strengthening India as a global pharmaceutical hub, while also supporting Germany's commitment to increasingly invest in India - as recently agreed by Chancellor Olaf Scholz and Indian Prime Minister Narendra Modi.

At the official opening event today, local government officials, business unit executives and pharma industry representatives all celebrated the start of a new production of FIO-LAX® amber pharmaceutical glass tubing. With this move, manufacturers of drug containment solutions in the region can now receive SCHOTT's complete portfolio of pharmaceutical glass tubing produced in India. Amber glass is used to store light-sensitive medications such as antibiotics or chemotherapeutic agents. The local production will also improve availability, planning reliability, and cost efficiency for pharmaceutical converters.



WWW.SCHOTT.COM

BORMIOLI PHARMA

North America 2022 sales grow by more than 40 percent

Bormioli Pharma recently announced robust growth in its North American business over 2022, with sales increasing more than 40 percent. The same growth

was matched by strong sales gains in the company's markets worldwide - reflecting **BORMIOLI PHARMA's** multimillion dollar investments in expanding its capabilities as provider of comprehensive packaging solutions for injectable drugs. The US glass bottle market is dealing with continuing supply issues for injectable glass packaging as a result of lingering effects of the COVID-19 pandemic as well as resultant supply chain disruptions. Bormioli Pharma is committed to providing a comprehensive solution with its ever-expanding capabilities in the area of high-value glass vials, rubber stoppers and aluminum seals.

Specifically, the company has invested in strengthening its tubular glass vials capabilities through advanced machinery, while upgrading its platform for moulded glass and expanding clean-room capabilities for the production of rubber stoppers. Such developments were supported by recent acquisitions that have had Bormioli Pharma reliably efficiently producing rubber and aluminum closures, as well as tubular glass vials. "For almost 200 years we've been leading the moulded glass manufacturing field. Now we've expanded those capabilities to include tubular glass vials designed for injectable drugs and vaccines," noted Bormioli Pharma Chief Executive Officer Andrea Lodetti. "Our proud history is matched by our current passion for innovation in the provision of innovative comprehensive packaging solutions for drug makers.

"As a single supplier of all the components of the injection drug kit, we can offer a wide variety of cost-effective, flexible solutions tailored to the customer's needs, while also pursuing an ambitious agenda to greatly increase the sustainability of all our operations. Our multifaceted commitments are driven by two major factors - the supply chain issues from the continuing shortage of glass packaging for injectable drugs and the stark reminders of the inescapable dangers of ongoing climate change."

In anticipation of its upcoming 200th anniversary, Bormioli Pharma launched "50-in-5," an ambitious program to achieve 50 percent of sustainable raw materials in its pharmaceutical packaging production by 2025. "50-in-5" is a project impacting the entire manufacturing footprint. To achieve this ambitious goal, the company has been strengthening and expanding its industrial platform, with investments of more than EUR 50M to date that will be matched by similar investments over the next three years. Strategies include increasing the percentage of recycled materials throughout the production process and adopting carbon capture and other green materials for container closure components and seals.

WWW.BORMIOLIPHARMA.COM



VIDRALA AND VIDROPORTO

Acquisition of 29 percent stake in Vidroporto

Spanish glass packaging manufacturer **VIDRALA** has acquired a 29,36 percent minority stake in Brazilian company **VIDROPORTO** for around EUR 53M.

Of these, the latter is a glass container manufacturer with factories in Porto Ferreira, São Paulo State and Estancia, as well as Sergipe State which supplies some of Brazil's main brands in such segments as beer, spirits and soft drinks - all reported by the Spanish company to the National Securities Market Commission (CNMV).

WWW.VIDRALA.COM - WWW.VIDROPORTO.COM.BR





AIR LIQUIDE AND VERALLIA

Innovative solution implemented

AIR LIQUIDE is to implement a customized solution allowing for a reduction in CO₂ emissions as well as energy consumption for VERALLIA - European leader and the world's third largest producer of glass packaging for both beverages and food products. The Group is thus mobilizing its innovation capabilities and its know-how to accompany the conversion of Verallia's plant in Pescia, Italy, from a traditional combustion process to an optimized oxycombustion on the occasion of the construction of a new furnace on the site.

The solution provided by Air Liquide combines the supply of oxygen and the reuse of the heat available from the glass production process. In the framework of a long-term contract, the Group will build and operate for Verallia a new generation on-site oxygen production unit in Pescia, Italy. The oxygen produced by this unit will replace the air usually injected into the furnace, thereby allowing it to melt the glass by oxycombustion and to improve the efficiency of the process. In addition, Air Liquide will supply its HeatOx™ proprietary technology to recover the heat emitted by the glass furnace in order to further reduce the amount of energy needed to produce glass.

The global solution provided by Air Liquide will significantly contribute to the reduction by 18 percent of the CO₂ emissions (scope 1 and 2) that Verallia targets for its glass furnace in Pescia.

In addition, the new generation on-site oxygen production unit to be built and operated by Air Liquide will be equipped with a unique cryogenic process and will be 10 percent more energy efficient than the previous generation. Producing oxygen on-site also avoids its transport in liquid form by trucks.

Matthieu Giard, Vice President and Executive Committee Member of the Air Liquide Group, supervising the Industrial Merchant business line, said, "This partnership will allow Verallia to reduce both the energy consumption and environmental footprint of its glass production in Pescia. Leveraging our deep knowledge of our clients' production processes, it illustrates our ability to combine several innovations so as to develop tailor-made solutions with them. This collaboration is in line with our ADVANCE strategic plan, which aims to achieve carbon neutrality by 2050 while supporting our customers in their decarbonization process.

WWW.AIRLIQUIDE.COM - WWW.VERALLIA.COM

FALORNI TECH

AQRatio Combustion System

FALORNI TECH has developed its own combustion systems - taking into account the necessity to have simple solutions that are flexible and reliable.

Depending on availability, the company's combustion systems can be powered by NG or LPG. They are entirely designed in accordance with the latest technical standards, ensuring the best temperature stability at any production load.

Thanks to AQRatio technology the air/fuel ratio of the mixture is accurately adjusted during any output regula-

tion.

AQRatio is a modular integration of air and gas flow control technologies aimed to modulate temperature in the Working End. Flexible operation, constant air/gas ratio, temperature stability and high homogeneity index at the spout.

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Maref



BDF INDUSTRIES

High quality glass production at Latin American plant

BDF INDUSTRIES was recently proud to share one of its latest installations for the Latin America area.

The company has supplied five production lines composed of five IS Machines as well as ten 6 ¼ sections - equipment and accessories included. Regarding the Melting Division, it has supplied the entire control system and equipment for the furnace and forehearths.

Here the customer counts significantly for BDF, which is among the biggest players in the Glass Industry - particularly in the production of special bottles. Indeed BDF Industries has been a trusted partner for more than 30 years. Not only. Due to its extensive experience, the com-

pany has been active in every ambitious plant project of the past years - confident of the productive collaboration between BDF and the customer's commercial and technical team.

The plant is now operative and the entire project, starting with the building of the site, having taken almost a year.

WWW.BDFINDUSTRIESGROUP.COM



O-I GLASS

90 employees to be laid off in Texas plant

The O-I GLASS plant in Waco, Texas, USA, is to lay off 90 people in a workforce-restructuring that company officials have blamed upon furnace damage from the February 2021 freeze.

"One of our furnaces has experienced ongoing damage and continued to decline in performance due to thermal shock - resulting from both power and gas outages during the event," said O-I.

A recent assessment convinced the company to indefinitely suspend operating the furnace - one of three plants it operates in Waco. The company will now restructure the workforce and facility "to focus on the two remaining furnaces."

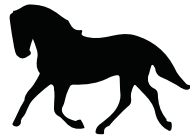
O-I said its 'indefinite' lay-off would impact 25 percent of its Waco employees.

Management met personally with employees and labour union officials to discuss lay-offs "and provide them with transition support," said Jim Woods, company spokesperson.

The news release said O-I glass "has been a proud manufacturer of glass packaging in Waco since 1944 - operating three furnaces and seven production lines to serve the beer, spirits and non-alcoholic beverage markets."

WWW.O-I.COM





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Collaboration with **BUCHER EMHART GLASS** bolsters new **VETROPACK** plant

With VETROPACK building its state-of-the-art plant at Boffalora sopra Ticino, the company was careful to choose the forming machines of BUCHER EMHART GLASS as an important part of its 'Project Future' – which has sustainability at its heart.

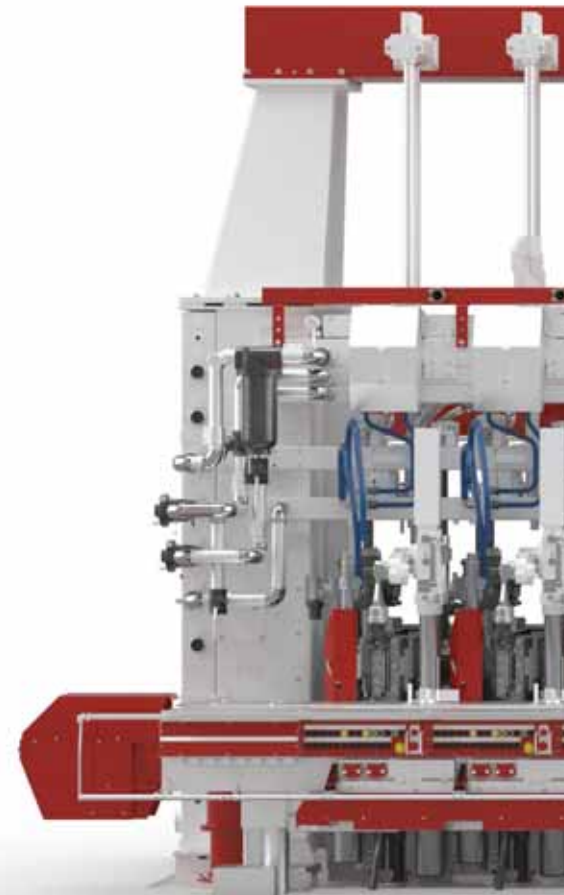
Vetropack Group, one of Europe's leading glass manufacturers, is investing over CHF 400M in a new plant at Boffalora sopra Ticino near Milan - drawing on equipment and expertise provided by Bucher Emhart Glass.

Vetropack Italia S.r.l. has been part of Vetropack since 2015, although its history in glass manufacturing goes back more than five decades. With its previous site being around 25 km from Boffalora sopra Ticino, at Trezzano sul Naviglio, the location had started to prove unsatisfactory towards meeting Vetropack's objectives over the longer term, which is why the company decided to start afresh at a new site.

SERVING GROWTH

The new plant will serve Vetropack's clients in Italy, which is home to several global brands and has long been a vital market for the Group. The site will make use of high-performance smart technologies to advance a host of benefits - including more flexible production, increased capacity and a strong focus upon sustainability in respect of construction, resource efficiency and working processes. For

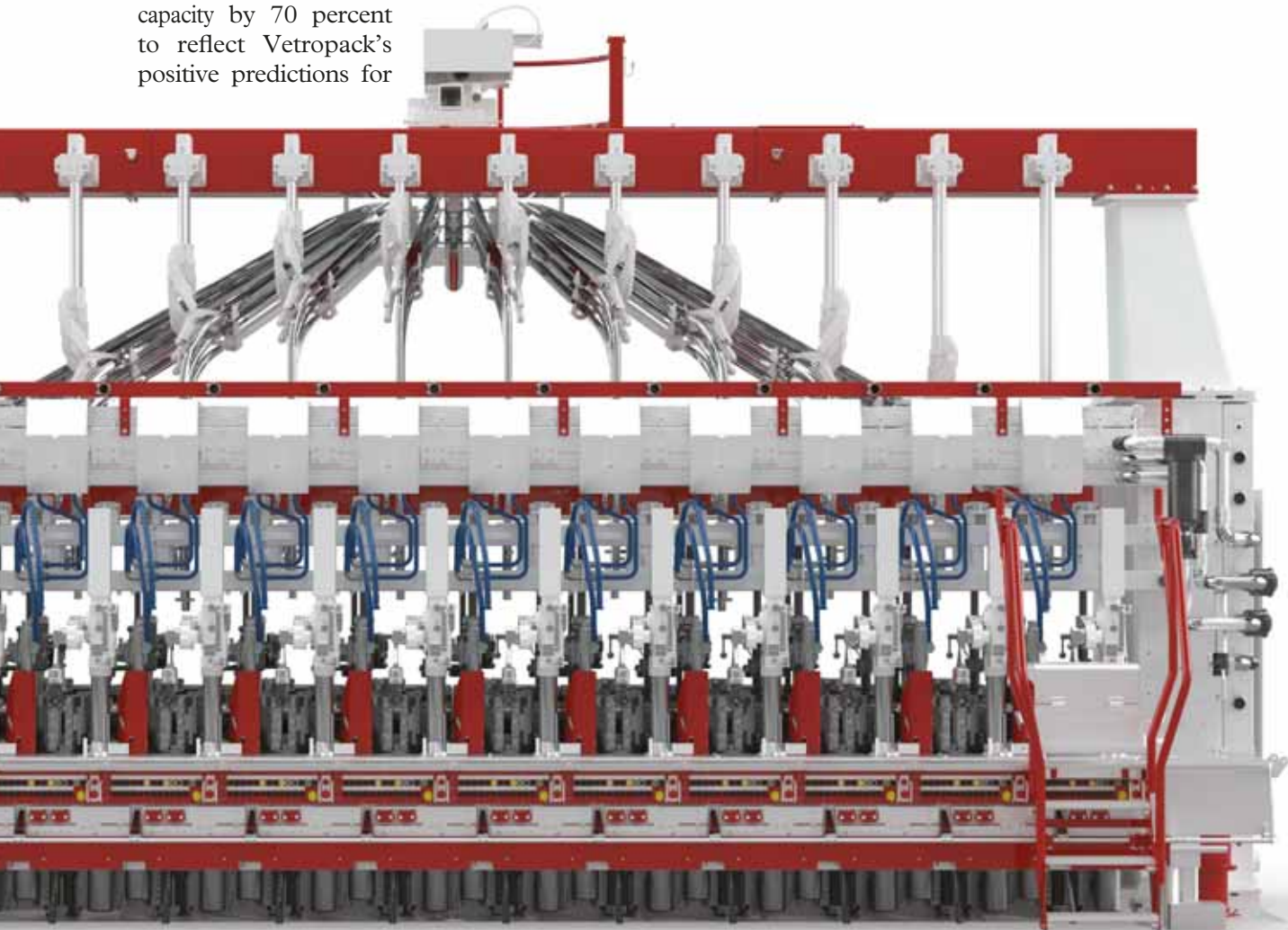
example, green electricity generated from solar panels will also be used to run the plant - thereby moving Vetropack towards its target through a 30 percent reduction in CO2 emissions per ton of glass produced by 2030 as compared to 2019.



SENSITIVITY TO THE ENVIRONMENT

Covering a total area of 347,000 m², the plant is being built on the site of the former Reno De Medici paper mill. On 13 November 2018, Vetropack Management announced the construction of the new glassworks in Boffalora sopra Ticino, with buildings carefully designed to harmonize visually with the surrounding landscape - all whilst protecting the local environment. Indeed material from the demolition of an existing building has been reused in the construction of the new one, and the finished site is to include 31,000 m² of green space.

Production is expected to start in the second quarter of 2023, with two furnaces operating. This will increase current capacity by 70 percent to reflect Vetropack's positive predictions for





the Italian market. All current employees at the previous site have been offered a transfer and training for the new production equipment has been in progress since 2020.

INITIAL CONTACT

Bucher Emhart Glass (BEG) first heard of Vetropack’s ‘Project Future’ in February 2019, when details of the plans began to appear in the trade and general press. ‘We knew right away that we wanted to be involved,’ says Jan Herold, who would later become project manager in the collaboration. ‘But we couldn’t imagine how much work we would have to do to develop our quote and win the deal.’

Rather than stipulating the exact equipment to be supplied, Vetropack invited potential partners to develop a technical concept for its new production setup.

To work out the details, technical discussions were held between Jan and Michael Funkler, Key Account Manager for BEG, as well as with Dennis Gsell and Martin Wakolbinger of the Vetropack Technical Group.

BEG’s team was supported by product managers Dominique Vassaux and Fabrizio Ferrero, engineer Urs Gabriel and project manager Giulio Terlizzi, while for Vetropack Ms Von Hänisch helped develop the tender documentation alongside Dennis and Martin. BEG’s VP Sales Werner Gessler and President Matthias Kümmerle also helped to coordinate the work.

FROM PROPOSAL TO DEAL

In November 2020, the official tender document was dispatched from Vetropack to BEG. ‘Over the following five months, we created the biggest quote I

have ever seen at BEG, which ran to a whopping 323 pages,’ says Michael Funkler. ‘The document included our proposal for the forming machines themselves, plus a very detailed quote for staff training. When we got it printed, a single copy of our quotation weighed 2.5kg!’

The BEG quote arrived at Vetropack in March 2021. After two steps of the official tender, Vetropack made evaluations of the tender documents of four suppliers. Then after four negotiation sessions over June of that same year, Emhart Glass was announced to be the tender winner. Having nailed down the scope of the job, Werner Gessler and Vetropack’s Head of Corporate Procurement, Ulrich Ruberg, met to hammer out costs and terms before the companies’ two leaders, Matthias Kümmerle and Johann Reiter, agreed upon



the final price and shook hands on the deal. Now it was official: BEG would be playing a central part in Project Future. Production of the eight machines was duly scheduled from March to July 2022 at BEG's manufacturing facility in Johor Bahru, Malaysia, with installation set to start in September.

A TRADITION OF ARTISTRY

"I think what really made the difference for BEG winning the contract was the package of technical solutions we created - specifically tailored to the customer," says Michael Funkler. "On top of that, we were able to offer some flexible commercial conditions - and Werner helped us find the right price."

As Jan explains: "Vetropack's final choice of BEG equipment reflects the dual focus that Vetropack Italia has always had - serving the food and beverage industry with products ranging from high-end bottles down to the traditional jar. At the same time Vetropack Italia has always had a reputation as a plant of specialists. The IS machines provided will allow the new plant to continue the Vetropack Italia tradition of handling intricate container designs that allow smaller

brands to differentiate themselves in the market." The custom details for the IS machines were overseen by both Urs Gabriel and Fabrizio Ferrero.

Another key part of the BEG proposal was a special mould design, developed by Dominique Vassaux that would allow the reuse of existing moulds from the Trezzano sul Naviglio plant. As well as saving significant cost for the customer, this also eased the process of transferring production from the old facility to Boffalora sopra Ticino.

"We were delighted to be chosen to supply the forming machines for Boffalora sopra Ticino," says BEG President Matthias Kümmerle. "We always knew that we had the right mix

of technical skill and added-value service to meet the need, but we also knew that we had to prove we could deliver. I was truly proud of how everyone on our side played their part in the tender, and I'm also grateful to Vetropack's team for the positive and collaborative approach they took during negotiations."

With all the details of the project confirmed, the stage was set for the production of the machines - which we will cover in our next article in this series. ■



From left: Roman Yatsuk, Jan Herold, Martin Wakolbinger, Giulio Terlizzi, Nicola Ventrella, Giovanni Depoli, Michael Funkler

BUCHER
emhart glass

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Decarbonizing the glass industry: the role of refractory solutions

In addition to the typical challenges of sustainably producing high-quality glass at optimised costs, the glass industry is facing new paradigm-shifting challenges, namely carbon-neutrality and circularity.

Dr Michel Gaubil,
Director Refractory Solutions,
SEFPRO

Mélanie Allen Larut,
Strategic Marketing Manager,
SEFPRO

Achieving low carbon glass production marks the first key challenge of the glass industry over the years ahead. Many governments and

companies have announced clear targets to reach carbon-neutrality in the coming decades. The glass industry must play its part.

Circular economy is the second key challenge for the glass industry. Beyond an increased use of cullet, the full furnace lifecycle must be considered, including its end of life and refractory recycling. Refractory solutions are essential to glass



furnaces and their performance. As such they play a key role to support glassmakers in these new challenges.

SERVICES TO SUPPORT THE SHIFT TO CARBON-NEUTRALITY

The path to the industrial production of carbon-neutral glass still faces many obstacles, the most significant being the switch to renewable energy sources. Two main contenders -electricity and hydrogen- are currently being tested and developed by many industry players. Other options, such as biogas and biofuels, are also under investigation.

Despite this uncertainty, as to switching fuels we know that there will be an impact upon glass furnace refractories and that more flexibility will be needed in the energy mix - especially during the transition period.

To anticipate and make the best refractory choices, numerical simulation services based on an expert knowledge of refractories will be key to mitigating

risks respecting furnace safety and lifetime. Corrosion models allow for analysis of the impact of such parameters as glass temperature profile, glass velocity profile, refractory composition and cooling efficiency on refractory lifetime. These numerical simulation services help choose the best refractory solutions specific to glass furnace conditions.

Such changes to operating conditions –never seen at this scale before- will also reinforce the need for real-time furnace monitoring. Instrumenting refractories with sensors to follow in real time the evolution of furnace wear will secure furnace operations, trigger necessary adjustments to operating conditions or if necessary, prompt maintenance or repair operations before a critical incident.

HIGHER PERFORMANCE REFRACTORY SOLUTIONS

Technologies and measures enabling the shift to carbon neutrality – such as electrical boosting, greater insulation at both glass contact and superstructure and hydrogen combustion technology - are demanding higher refractory performance.

tion and corrosion.

There are several high quality products in the refractory portfolio that meet these requirements. The use of low exudation fused cast AZS in combination with high alumina and/or high zirconia fused cast materials has proven to be highly suitable to cope with more soliciting furnace conditions.

USE OF HIGH ZIRCONIA FOR TUCKSTONE APPLICATION

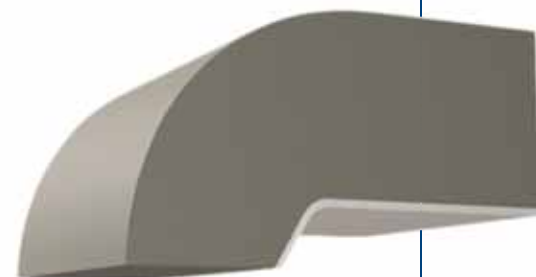
Superstructures and tuckstones in particular will undergo more corrosive atmospheres. High zirconia tuckstones will ensure the required higher resistance to corrosion but will typically be more susceptible to thermo-mechanical stress. Associating a composite ceramic shield - with high compression resistance and low thermal conductivity - to a high zirconia tuckstone will protect it from the risk of cracks due to these stresses. As such, the insulated tuckstone will be able to play its role in avoiding thermal losses. The stability of the superstructure as well as the thermal protection of the below located soldier blocks significantly increase and contribute to a longer furnace lifetime.



Superstructure using ER 1851 Lowex

In superstructure application, the use of oxy-combustion technology and higher thermal insulation results in increased exuda-

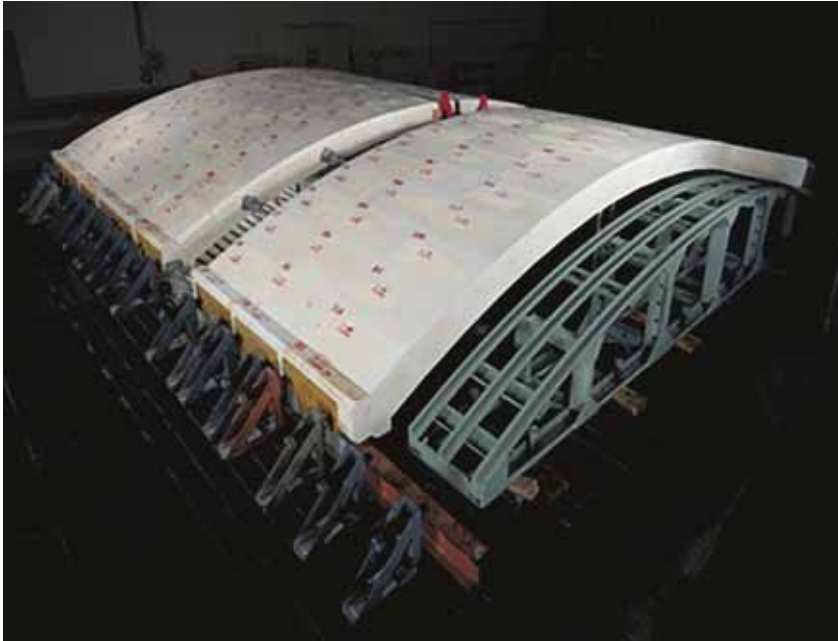
ER 1195 RT TuckPro



Albeit not a new technology, oxyfuel combustion is reclaiming its relevance for both hybrid and hydrogen furnaces. This technology induces comparably high

SUSTAINABILITY

running temperatures combined with high water vapours and alkaline concentration within the fumes. Refractories must withstand these new conditions - particularly in the crown.



The first choice for crowns in oxyfuel combustion are fused-cast refractory solutions such as low exudation-AZS materials or fused-cast high alumina. An assembly with very tight specifications ensures the required corrosion and creep resistance properties of the furnace crown.

Electrical boosting directly results in higher temperature at the bottom of a glass furnace, in parallel with an increased convection flow rate of the melt. Using fused-cast tiles is a well-known answer to those challenges. However, this may no longer suffice: a complete refractory solution for the furnace bottom should be considered.

Void free fused cast tiles constitute the first element of this solution. Beyond higher corrosion resistance, they must ensure joint closure after heat-up in order to guarantee safety of the furnace bottom.

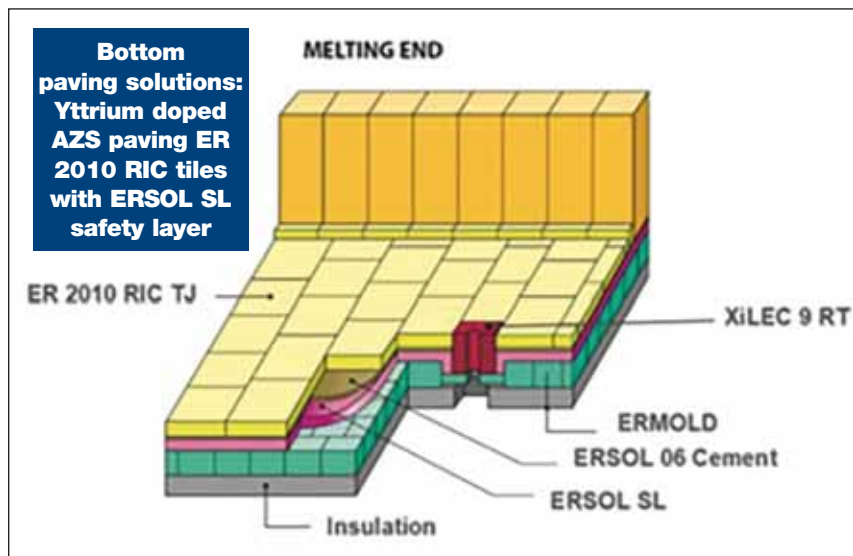
Performance of mortars can hardly be overlooked either. Harmonised dilatation of the various layers of tiles and mortars is essential to avoid unexpected glass infiltration.

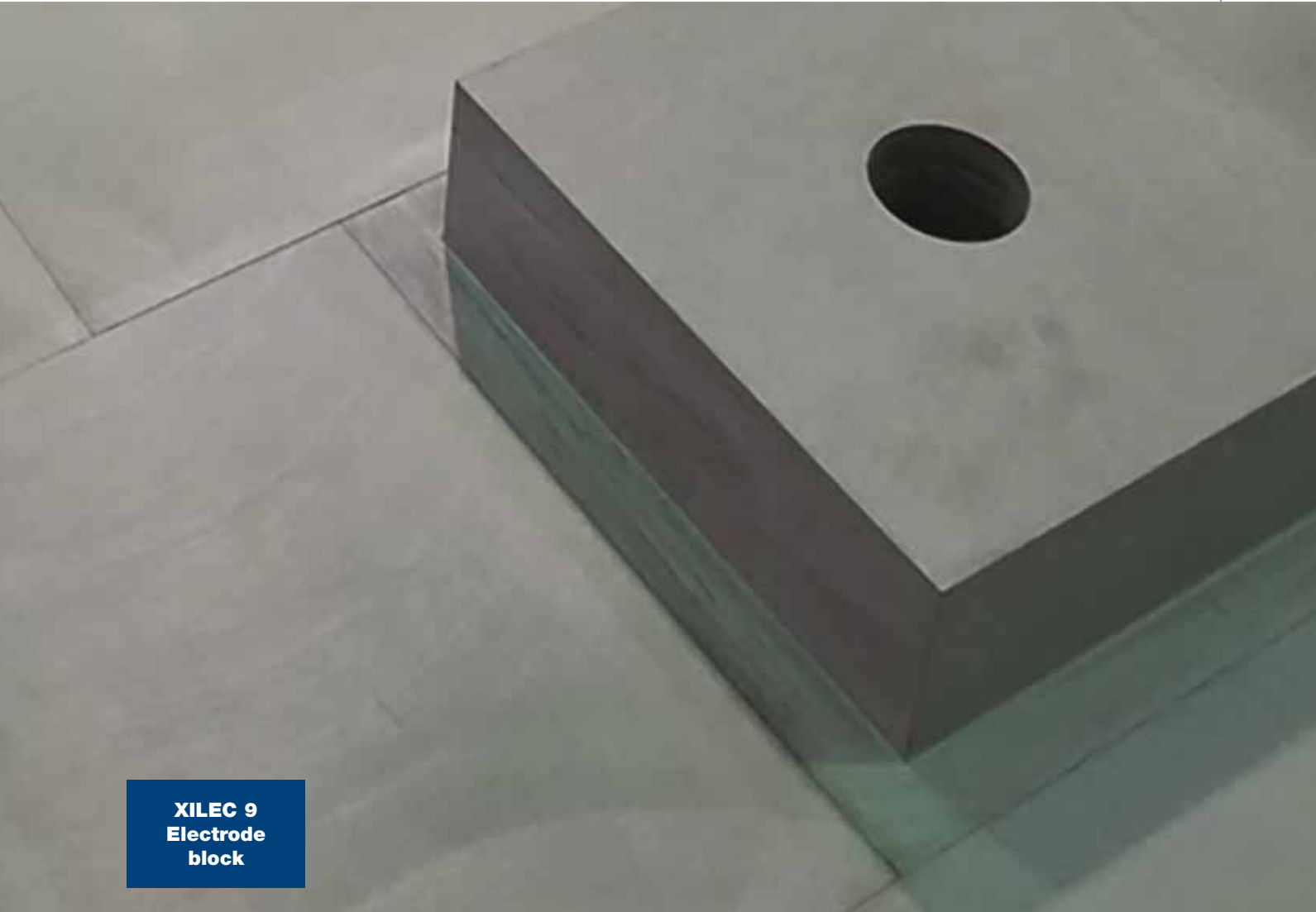
For furnaces with high electrical power the use of extra high electrical resistivity fused cast refractory solutions particularly designed for such extreme conditions as Xilec 9, must be considered. Such materials are the premium choice and safest option for harsher operating conditions, due to high current density.

Beyond the impact on the furnace paving, higher temperatures at the bottom of the glass furnace also impact the lower section of soldier blocks. Reinforced filling is required in this area where end cast once needed only a move to reinforce blocks with a further reduced and tightly controlled casting cavity.

CIRCULARITY

A first step towards circular economy is reducing the quantity of materials needed to achieve a similar performance. Extending furnace lifetime and maximising the use of the refractory asset through the use of high quality refractories and targeted repair service operations can support this objective. At the end of the production lifecycle, all glass furnaces face the same issue: a high quality product becomes waste, and in some cases even hazardous waste. Several established providers in the market are offering demolishing and waste-evacuation services. Some offer the revalorization of waste materials transformed and recycled into new raw materials. The responsibility of the glass industry for the 'after-life' of their process materials becomes even more evident





**XILEC 9
Electrode
block**

when refractories can get classified as hazardous waste at the time the furnace is shut down - such as for materials containing chrome oxides.

Conscientious exposure with the question of what happens to those materials does not stop after they are evacuated and removed from the site. Many sustainability charters include the treatment of waste material and drive the glassmakers' responsibility yet further.

Those questions become particularly sensitive in countries where legislation holds the furnace owner responsible even beyond the evacuation of the waste materials. It becomes crucial in such places to find

a service provider that grants approved utilisation.

Refractory suppliers are part of the third objective of the glassmaker, namely that of selecting refractory providers which can ensure a high use of secondary raw materials and a low carbon energy mix - a key competitiveness factor for glassmakers in the years to come.

CONCLUSION

The glass industry faces the paradigm-shifting challenges of carbon-neutrality and circularity. This journey will mobilise all industry partners working together to achieve ambitious targets. As a part of the glass industry, dedicated refractory

suppliers and their service providers have a key role to play and can support glassmakers in the transition by relying on their refractory expertise, innovation capabilities and customer centric approach. ■

SEFPRO 

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The story of **FAMOR ENGINEERING** - an enduring legacy in glass

At Famor Engineering all machinery is produced in-house and this is an important advantage for our old and new customers.

Every year we set ourselves new goals, we challenge the market to try to reach them, it's an important commitment and we know that the "future depends on the success of all of us", a combination of quality and talent.

Today Famor Engineering supplies a wide range of forming machines and accessories for hollow glass. We are located on the outskirts of Turin, in an industrial area north of the city on an area of 2.000 square metres.

Experience is hardly lacking for a company with a tradition of hollow glass machinery manufacture that hails back to 1977. It's why a consistent goal at FAMOR ENGINEERING remains that of continuing along its road of sustained progress. In this article we trace some of the key milestones along the company's journey.





EQUIPMENT RANGE

The fact that all its equipment is manufactured internally in its factories, where the new high-tech generations of production and quality control are used, is an important advantage for the competitiveness of Famor Engineering.

The company is, and always has been, focused on new realisation and improvement of the following equipment:

- Platinum system
- Gob feeder
- Press and Blow machine
- Press machine
- Spinning machine
- Individual Section – IS
- Big container forming machine
- Billet casting machine
- Fire polishing machine and accessories
- Handling and transfer equipment
- Glass tools



'OUR FUTURE DEPENDS UPON US ALONE'

For years now Famor Engineering has been a successful operator in the internal market, within Europe and in the Mediterranean basin.

Here the company's rise is marked by its ability to solve specific glassworks problems by offering high quality technology and machinery 'like a tailored suit'. Indeed the combination of technical and commercial experience in the hollow glass sector, as well as the deep knowledge of construction mechanics, have jointly contributed to the development of its working methods, based respectively upon knowledge, quality and innovation - all at the right cost.

Results obtained over the years have consistently shown that this approach exceeds itself in correctness.

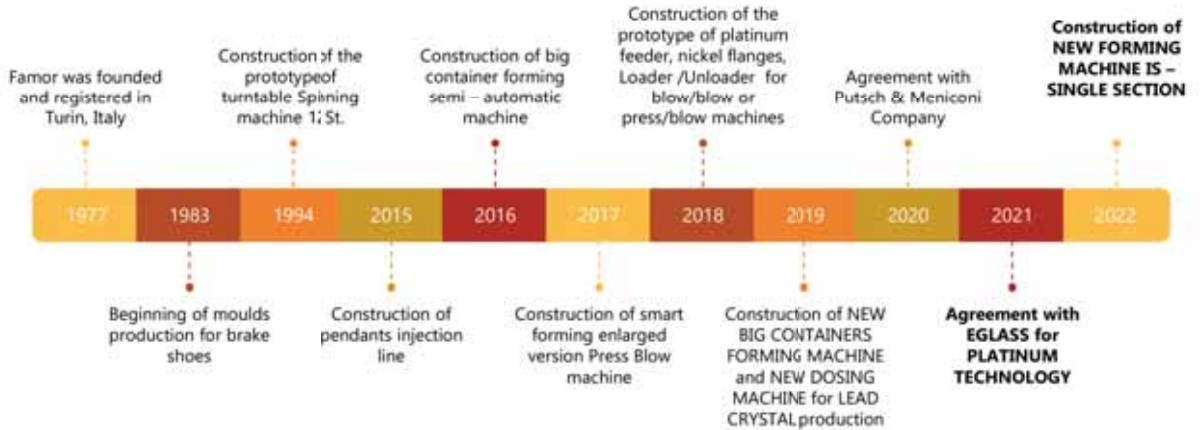
To be underscored too is the speed and efficiency of its customer service, adding to a winning set of working methods that are clearly appreciated within the company's market sector. This is demonstrated by the number of machines and equipment sold annually, as well as by the loyalty with which customers return for their new investments. Here Famor typically has motivational signs appended to its

walls with key messages for all staff. Coveted among these is one which reads: "The customer who leaves for the price will return sooner or later for the service whereas the customer who leaves owing to poor service won't return at any price."



COMPANY INTRO

Famor Engineering milestones



SOME MILESTONES

Technical department

The engineering department comprises three separate divisions - the first being mechanical, staffed by employees who use 2D and 3D software.

Today the company has added a further division staffed by a mould design expert in which customers' ideas are realised to the point of delivering a genuine sample of the finished product. This then allows customers to equip machines with moulds that are ready for production. Connected to this same division is a team of expert glassmakers who are available for both training and new productions - a service for all customers, including those who wish to become so. The third division, namely the systems office, deals with pneumatics, hydraulics, electronics and supervision - with entire projects ranging from the first technical specification to the hot commissioning of the machine or forming line.

Services

Complete customer satisfaction is the principal strategy of Famor Engineering and customer service support is among the company's main activities in striving to achieve that goal. Here's why it has a network of representatives and service cen-

tres in many countries - providing support and easy communication in local languages via its hotline service.

Famor offers the following full service range:

A guarantee service, with all service details individually



agreed with each customer and with conditions usually stated in the contract. The standard warranty period is 12 months, which can be extended to up to 24 months.

A post guarantee service of small, medium and large overhaul with each overhaul having its own frequency schedule and duration:

1. Small overhaul occurs every two years and is for the exchange of used parts.
2. Medium overhaul occurs every four years and is for the exchange of critical mechanisms.
3. Large overhaul occurs after 10 years and is for general repair - usually including an upgrade.

Here the customer selects the preferred service package as required - for which an annual fee is paid. These customers will clearly privilege certain priorities over others.

Customer satisfaction

Continuous learning creates opportunities and spreads the seeds of change to ensure that Famor Engineering has totally

satisfied customers. The sharing of information develops abilities and strengthens ideas, which is why Famor Engineering provides the resources and the know-how to overcome challenges and achieve optimum results. Indeed the company puts its faith in the performance of both the individual and the team - all as a means towards meeting the future in full preparedness.

Quality management

Famor Engineering has implemented and improved the Quality Management System, to control the entire order fulfilment process:

1. Technical specification
 2. Design
 3. Construction
 4. Testing
 5. Shipment
 6. Installation and commissioning at the end customer
- The above steps allows man-



agement to have a complete, calibrated view of each line on offer and/or in production at any given moment - thereby acting as a meeting point for all technical offices to ensure they work in groups by sharing documents and technical information, also to avoid incompatibilities in the final product. ■

FAMOR

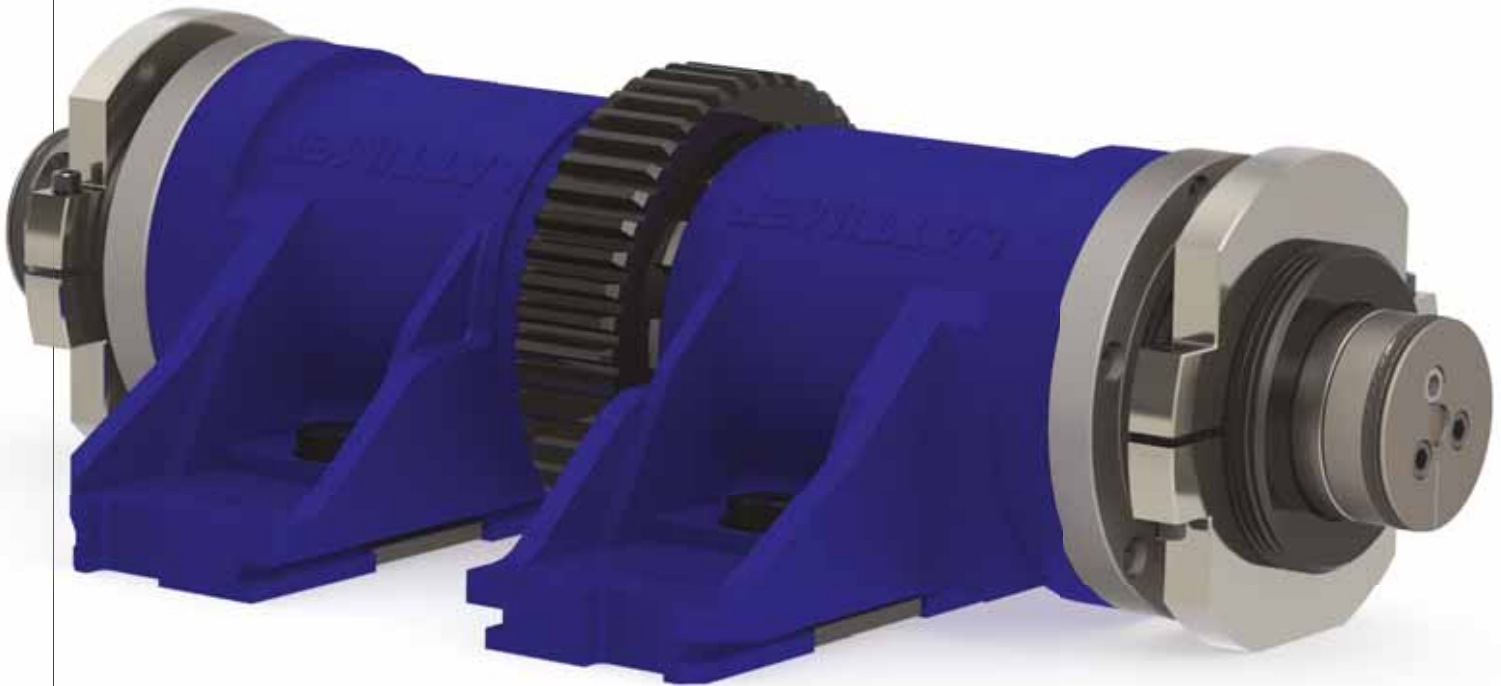
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The innovative features of the **LATTIMER®** Neck Ring Mechanism

The renowned LATTIMER® Neck Ring Mechanism is deemed by many to be the industry leader. Indeed several almost invisible -yet key- differences contribute to making it one of the company's key products.





Available in a number of variants to suit a variety of machine types, the robust design of the Lattimer® Neck Ring Mechanism ensures that it can deliver trouble-free operation over many years. A hardened and ground Piston and Rod delivers a closely-toleranced, low backlash opening and closing of the flights that is both synchronised and controlled, delivering minimal backlash to Neckring Arms. Two Heavy duty springs ensure that the flights quickly return to home position once the compressed air is released, ensuring that opening and closing of flights is synchronised.

Roller bearings on the shaft guarantee a smooth, resistance-free rotation during inversion of the Neck Ring Arms - all coupled with a simplified design for ease of maintenance.

CONSPICUOUS EXCELLENCE

Using three cap-head screws in the end cap in place of the traditional taper pin allows for maintenance to be carried out with precision and efficiency. To reduce wear on the



end caps and bushings during operation, a radial ball bearing is used instead of a standard one - a contributing factor to what's commonly acknowledged as an impressively long running life of the Lattimer Neck Ring Mechanism.

Not only the mechanism's lower backlash and high build quality delivers production consistency. The hardness, surface finish and accuracy of the fit between shaft and flights reduces wear - thereby facilitating a significant reduction in container defects.

BENEFITS

- Interchangeable with existing mechanisms without any requirement for conversion kits increase in size to fill space.
- Extended service life
- Faster opening and closing speeds
- Enhanced repeatability
- Lower backlash
- Reduced maintenance downtime

PRECISION PRODUCTS

Precision products



During the assembly process every mechanism is tested on the company's dedicated test facility, which ensures that each one falls within Lattimer's demanding specification.

Lattimer piston and Rods are heat treated several times during the manufacturing process and once all machining and treatments are completed they are ground on all surfaces. This guarantees correct sizing, accuracy of fit with the flights as well as surface finish - all critical for a controlled, smooth operation of the mechanism.

A quad seal is used on the end cap to reduce the loss of compressed air and lubrication during operation. ■

ABOUT LATTIMER

Since its founding, Lattimer's singular target has remained that of seeking to lead the way in the design and manufacture of IS variable equipment. Customers will now typically associate the company with high quality products as it exhibits every attention to detail as necessitated by today's demand for excellence in the exacting world of Glass Container manufacture. Lattimer strives to exceed expectations while being fully committed to its customers - manufacturing and supplying products that aim to set standards in the glass container forming industry as it concentrates on precision and the highest quality. Lattimer brings a wealth of knowledge and experience to its design and manufacture of both standard and bespoke IS variable equipment - supplying mechanisms and components to plants in all parts of the world.



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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

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Shanghai Ceramic Society

Contractor: Beijing Zhonggui Exhibition Co., Ltd.

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E-mail: ceramsoc@chinaglass-expo.com

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WeChat ID: CHINAGLASSEXPO

HEYE and ORORA mark two decades of collaboration

Heye and Orora celebrated their friendship and commitment and remembered the beginnings of their partnership in 2002 whilst looking forward to future collaborations. Anniversary celebrations, attended by employees of both companies, took place in February at Orora's glass manufacturing plant in Gawler, South Australia.

Over the course of their collaboration, Heye has provided continuity of supply and techni-

cal support for Orora - initially confirmed by a large new order placed with the German equipment manufacturer just before Christmas 2022.

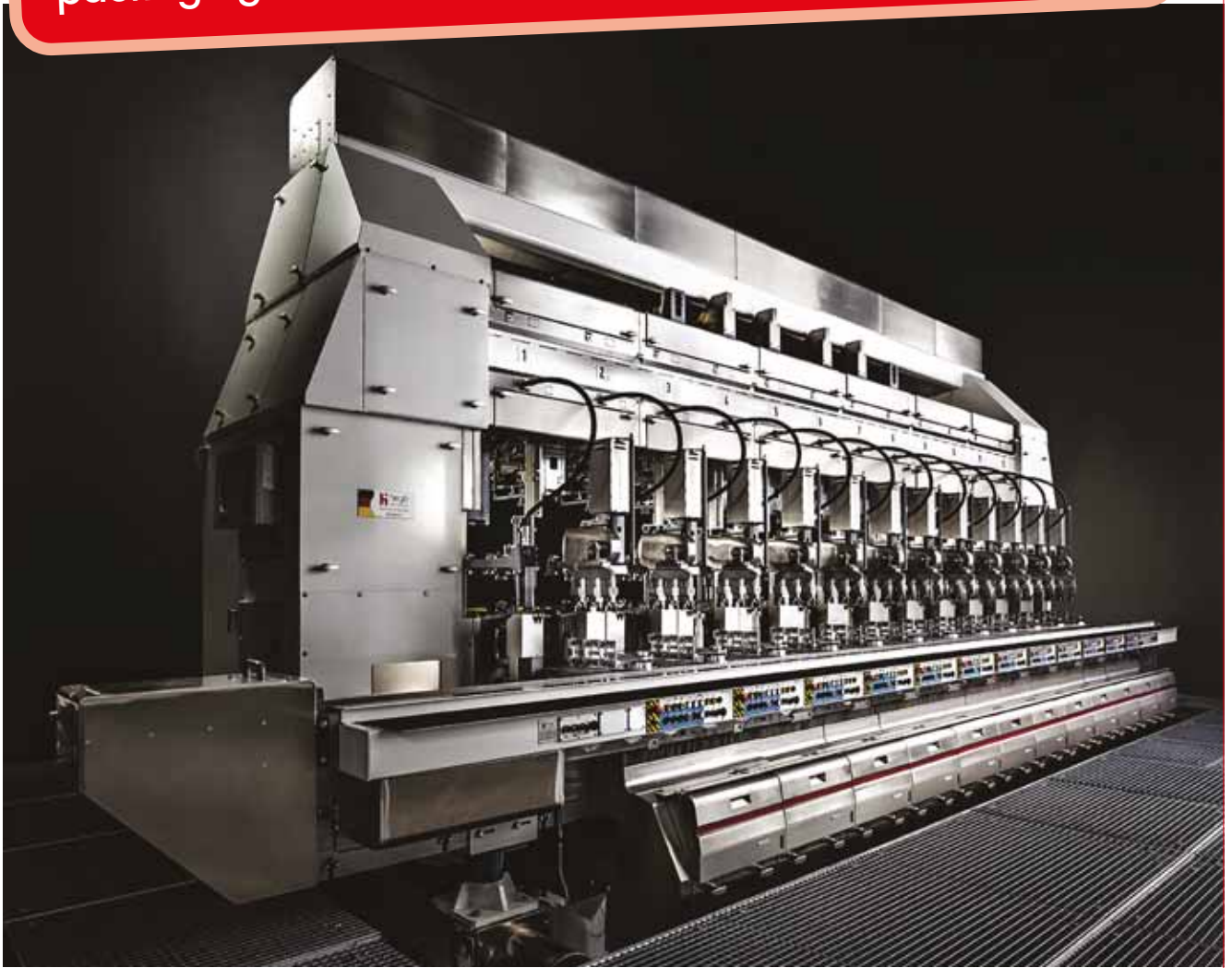
START AS YOU MEAN TO PROCEED

Upon establishing its Gawler glass manufacturing plant back in 2002, Orora entrusted Heye with design and supply of the first furnace and two production lines. The plant was built to supply the rapidly

developing wine industry in the nearby Barossa Valley, together with other prestigious wine regions across Australia. This being a new plant, Heye also helped train glass operators and delivered technical support once the plant was up and running. According to Orora Technology and Business Development Manager, Andrew Barreau, that support has continued to this day. Said Barreau: "Having a responsive world-class



In a joint celebration of consistency and continuity, HEYE is celebrating the twentieth anniversary of its supplier partnership with leading sustainable, innovative packaging solutions provider ORORA Limited.



technical partner like Heye makes a big difference to our operations. Our plant operates 24/7, so it is critical to have consistent and reliable support, which our partnership with Heye delivers. Together we have developed some clever remote solutions and this collaborative approach to innovative solutions is key to our long, successful partnership.”

When the glass plant was commis-

sioned in May 2002, Heye’s 450-tonne furnace fed two 16-section, double-gob IS machines, which produced a yield of over 90 per cent. Sales soon exceeded the initial target of 200 million wine and champagne bottles a year. As a result, Orora added a second furnace two years later. Again, Heye supplied the furnace, feeder, two 16 section 6 ¼” DG IS machines (blow-blow process) and cold-

end equipment.

The wine industry has sustainability at its core and has been pioneering light weight wine bottles. Orora used this opportunity to diversify its glass offering and, in 2010, asked Heye to supply another furnace - equipped, for the first time, with NNPB technology on its IS machines to supply the beer market as well as ultra-light

PARTNERSHIP

Partnership

weight wine bottles. The two 20 section NNPB machines were supplied with a triple gob conversion kit, giving the plant the flexibility to run double- or triple-gob production. As Heye is the inventor of the NNPB production process, it was clearly the best supplier for the job. NNPB is now applied throughout the plant, with commercial wine brands benefiting from 75cl bottles weighing as little as 330g. By 2020, all lines had been converted from 16-section to 20-section. Heye supplied compact 20 section IS machines which were built to fit within the footprint of the original 16 section machines. This dramatically reduced the civil engineering required to fulfil the project. The latest order, received in December 2022, will see Heye install the first SpeedLine IS

ABOUT ORORA LIMITED

Orora is a leading manufacturer and distributor of sustainable, innovative packaging and visual solutions. Listed on the ASX and headquartered in Melbourne, Australia, the company is focused on designing and delivering products and services that enable its customers' brands to thrive. Every day, millions of consumers buy and use goods in packaging that's all proudly designed, developed, manufactured or distributed by Orora.

machines to Orora's Australian operation.

TECHNICAL ASSISTANCE

From the very beginning, Heye supported Orora with a comprehensive Technical Assistance Agreement that has been renewed and extended over the years. This includes training of Orora team members in Australia and Germany, production- and

yield-support, furnace inspection, job- and colour-change support, mould design/light-weighting and a host of other areas to boost the efficiency of customer operations. During the pandemic, the company supported Gawler as it rebuilt the G2 furnace, first completed in 2004. Currently Gawler has a capacity of around a billion bottles a year from its three fur-





naces and six production lines - depending upon product mix and colour schedules.

BUILT ON DEMAND, EFFICIENCY AND TRUST

A combination of market demand and opportunities for operational efficiencies have kept the relationship expanding throughout its 20-year history. In the lead-up to 2022, the flexibility built into the lines supplied by Heye helped the glass business to successfully expand into new product ranges to mitigate the impacts of lower wine volumes. Both the plant's expansion and Heye's innovative technology have made it increasingly efficient. For example, the early furnaces had to change colour quite often to react to market demands. With three furnaces,

Orora became more flexible and generated more stability. Heye International CEO Hans-Peter Müller says: "To realise such complex projects and keep a strong relationship in place requires trust between the partners, exemplified by the continuity and the level of professional excellence both parties show." The development of personal contacts between the experts in all departments enhances communications and reduces bureaucracy. There are no bottlenecks caused by enquiries having to channel through a single account manager.

A WIN-WIN SITUATION

Hans-Peter Müller explains: "This is the kind of relationship we want to build with all our customers. Glass is a capital-intensive business, so glassmakers seek

partners like Heye who will be with them for the long haul and provide fresh solutions for the challenges they face." The ongoing collaboration has been a win-win-situation for both parties and has helped Orora prove to be a reliable partner for the wine, beer, spirits and olive oil industries in Australia. Looking to the future, Orora continues to work with Heye to pursue the glass industry's evolution. Andrew Barreau says: "We are actively seeking to improve flexibility around run lengths, further lightweighting and sustainability around low CO2 glass manufacturing. We are confident that Heye will play a key role in helping us address these challenges." The relationship with Heye will assist Orora in achieving its interim Climate change target of reducing Scope 1 and 2 greenhouse gas emissions by 40 percent by FY35 from an FY19 baseline. ■

ABOUT HEYE INTERNATIONAL

Based at Obernkirchen, Germany, Heye International GmbH is one of the international glass container industry's foremost suppliers of production technology, high performance equipment and production know-how. Its mechanical engineering has set industry standards for more than five decades. Extensive industry expertise, combined with the positive attitude and enthusiasm of Heye International employees is mirrored by the company motto 'We are Glass People'. Its three sub-brands HiPERFORM, HiSHIELD and HiTRUST form the Heye Smart Plant portfolio, addressing the glass industry's hot-end, cold-end and service requirements respectively.



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PACKAGING

Packaging

OMS – determined as ever to remain ahead of the times



A global leader in end-of-line packaging of palletized products for all market sectors, OMS was established in 1949. Since then the Group has developed a venerable tradition of designing and manufacturing strapping, wrapping and hooding systems.

In addition to its Italian headquarters, OMS consists of twelve subsidiaries based in Italy, Europe, North and South America, as well as Asia and Oceania. Reliability, experience and flexibility collectively comprise the characterising trio that now enables the Group to respond to today's market demands - from the simplest strapping machine up to the most sophisticated packaging plant to offer complete packaging lines for the hollow glass market. This has been made possible thanks to OMS' extensive experience in this market, spanning many years, together with numerous customised solutions - all specifically tailored to respond to every unmet need of the Group's customers.

DESTINATION FUTURE

Thanks to OMS' constant attention to new technologies and market demands, its models are designed to interface with the customer network, in sync with Industry 4.0 protocols. Operation and production data acquisition devices, according to horizontal as well as vertical integration and cloud criteria, all provide the necessary data to verify and monitor the entire system as production data gets collected.

Ever ahead of the times, OMS is now experiencing a new phase of transformation - elevating its current position within the

market to an even more global industrial reality.

Such important results can be credited to the Group's third generation of robust business minds, which has continued to be closely involved with the market through a shared vision of a future that's characterised by both innovation and continuous improvement.

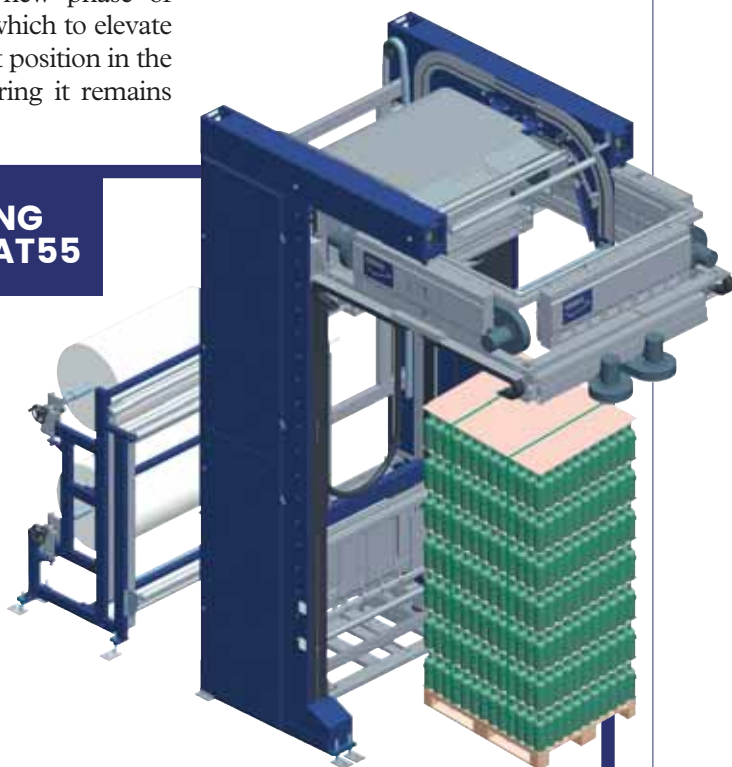
With constant attention to new technologies and market demands, all OMS models are designed to interface with the customer's network in accordance with Industry 4.0 protocols - a new phase of transformation by which to elevate the Group's current position in the market whilst ensuring it remains ahead of the times.

MAIN PRODUCT RANGE:

SHRINKING HOODING AT55

AT55 is an automatic machine that's specifically designed for the hollow glass industry. On a single workstation it applies and shrinks the hood on the pallet of bottles. Depending on the chosen model, it can use up to three different coils of shrinkable tubular film with side gussets. The film is shrunk onto the product by a flameless ring gas oven.

SHRINKING HOODING AT55



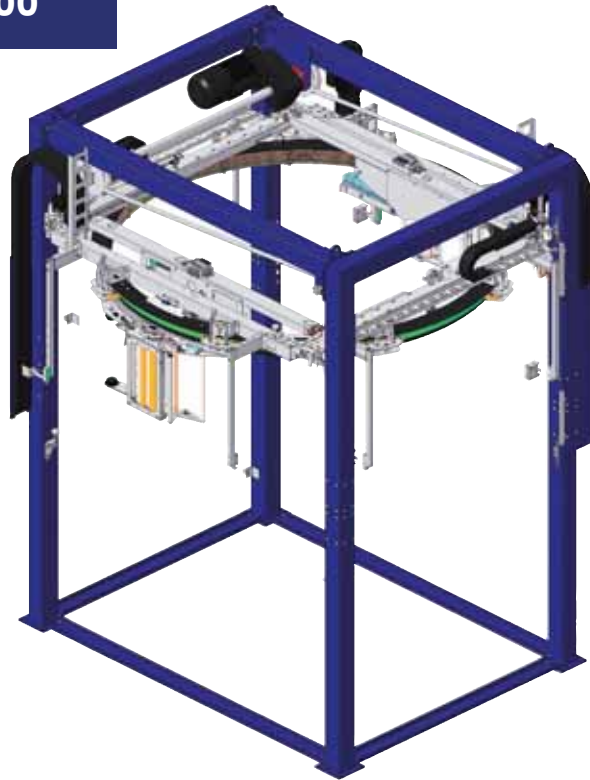
PACKAGING

RING WRAPPING AVR1000

The AVR1000 was developed with a carbon fibre ring, slip ring contacts and a patented pre-stretch carriage up to 300 percent ratio. It can potentially start and stop the wrapping cycle at any height of the pallet load (whether at top or bottom). Offering high speed, simplicity and flexibility, results include largely increased

reliability and reduced maintenance as well as stable loads with minimal film consumption. At the end of the cycle, the final film tail is either safely inserted under the previous wrap or welded with a halogen lamp device (based upon the option chosen). Consequently there are no loose film ends and a perfect finish is guaranteed.

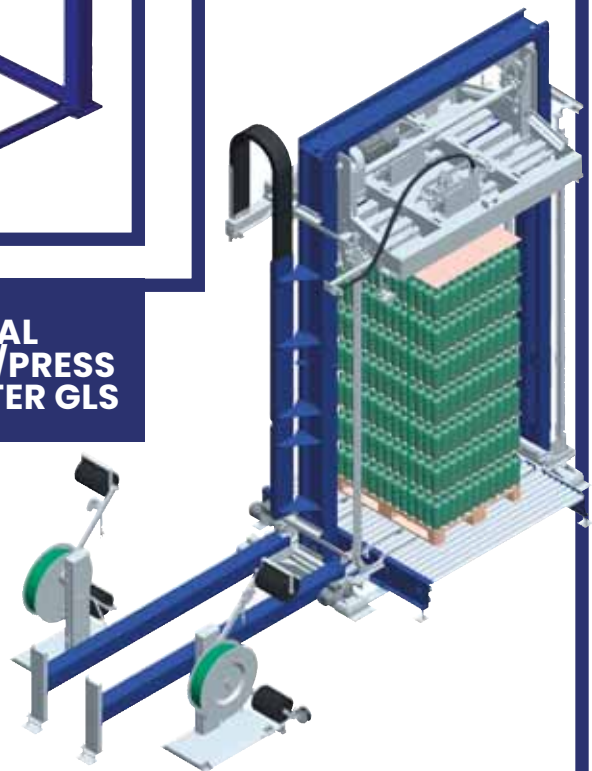
RING WRAPPING AVR1000



VERTICAL STRAPPING/PRESS PRESS MASTER GLS

The vertical press/strapping machine for palletized products has a top press capacity of up to 2,4t that's specially designed for the hollow glass industry. Thanks to the excellent combination between strapping heads, swords and the turntable placed under the machine it can apply multiple strapping patterns in both directions (from 2x0 up to 4x6). The basic design can be either integrated (built-in) in the customer conveyor system or equipped with OMS conveyors.

VERTICAL STRAPPING/PRESS PRESS MASTER GLS



OMS in the World



● Subsidiaries ● Distributors



FT53 TOP PAL PROTECTION

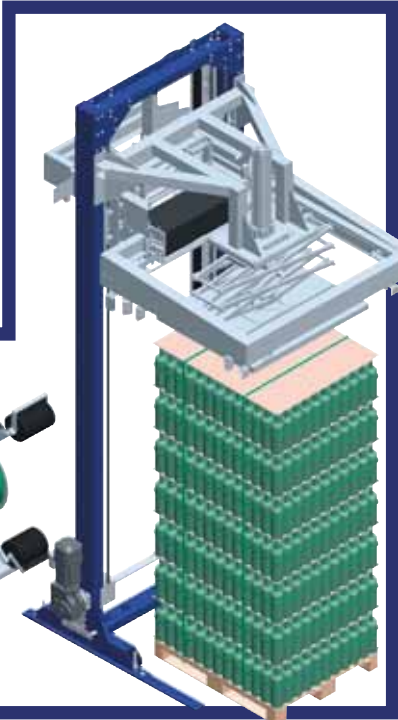
This is OMS' automatic system to apply and thermo-shrink a sheet of plastic film on top of the load - hermetically and

mechanically protecting the top part of the load, which is generally subject to tears owing to stacking. The operation ensures a better hermetic seal of the welding of the hood. ■



HORIZONTAL STRAPPING 06CL

OMS' horizontal strapping machine for palletized products features an arch that's driven on a linear rack - guaranteeing superb positioning of the straps on the pallets, a simplified head maintenance with quick action connectors and different strapping programmes that can be easily handled from the operator panel.



HORIZONTAL STRAPPING 06CL



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CONDAT: identifying the right lubricant for the right job

During glass forming, swabbing greases provide a combination of functionalities, such as helping the molten glass to perfectly cover mould surfaces to avoid any potential defects owing to poor distribution.

For decades now, graphite has been a central element in swabbing grease formulations - a well-known raw material that's coveted for its lubrication properties in several industrial fields. Forging operations and tube manufacturing are examples of other areas that use it. Its origins can be

natural (mining ore) or synthetic (full chemical process). And such characteristics as carbon content, particle size and crystallography all help CONDAT to select graphite to optimize performance.

That said, graphite also lies at the origin of some notorious defects in glass making. Here the first common issue is graphite transfer, which leads to dirtiness in glass items. This phenomenon is explained by graphite migration from the mould-applied swabbing grease to the glass container. The second problem is

graphite build-up, which usually occurs in finish moulds where engravings are used. In some areas graphite will concentrate and then stay. Consequently the molten glass won't reach those areas, thus blocking the mould covering. With that marks are not fully printed and production must be stopped.

Such defects can be either limited or overcome by the choice of the right swabbing grease for the right job - or by trying a new technology, such as a white swabbing grease.



After its 160-year history of industrial lubrication, CONDAT's swabbing greases serve today's container glass manufacturing process by ensuring high, constant productivity. Indeed the same products will typically enhance mould lifespan just as their releasing properties will enable easy removal of glass items from each mould.

Selecting the right swabbing grease for the right job

Each segment of the container glass industry requires specific lubricants adapted to its production specifications: production rate, item cleanliness, glass types, gob weights, item shape, etc. Here's why CONDAT decided to develop dedicated

swabbing solutions to correspond with their customers' different application fields:

- Wine & beer bottles
- Spirit bottles
- Cosmetics & perfumes
- Pharmaceuticals

Here a dedicated swabbing grease must be chosen depending on which particular glassware is being produced. The use of a non-suitable swabbing grease will

lead to more rejects due to graphite transfer and graphite build-up.

Each lubricant is also specified for a particular mould type given that lubrication needs between blank, neck ring and finish moulds are all different. Where high releasing properties are sought at the first stage of glass forming, swabbing the neck ring and blank mould must be soft and light. Over-swabbing these areas will lead to more glass checks.

SWABBING GREASES PER INDUSTRY SEGMENT

Using a lower graphited grease - CONDAGLASS 397

An Asian glass bottle manufacturer specialized in light amber bottle production for energy drinks had over many years been using a highly-graphited swabbing grease for every mould of its 10-section, triple-gob IS Machines. Production yield was correct - only they were after more.

Upon analyzing the glass items manufactured and the mould material used, CONDAT glass experts suggested CONDAGLASS 397 for a test - a lower graphited swabbing grease dedicated to small glass container release.

Results demonstrated a product with excellent wetting properties that could support good gob loading. Thanks to its elevated quality and low graphite content, CONDAGLASS 397 helped the company to reduce its number of automatic rejects by 50 percent after swabbing.



SWABBING GREASES

This indicates how less graphite means less build-up - which proved an essential feature here in that it helped the company decrease its swabbing frequency by 33 percent whilst cutting mould maintenance downtime.

Within a year this same company could potentially save more than 8 million bottles - in addition to its significant decrease in swabbing grease consumption.

But that's not all. Besides productivity, safety too was improved. Less swabbing operations led to a decrease in the risk of operator injuries.

Turn on white!

Of course, being graphite free CONDAT white swabbing greases avoid any graphite transfer. Automatic post-swabbing rejects are thereby limited with the result that millions of bottles get saved each year. In this way glass manufacturers generate less waste while enjoying immediate productivity gains.

No graphite also means a cleaner working environment for operators within the gob forming area. When swabbing the blank, blow and neck ring moulds they handle no graphited and blackened products - an improvement that extends to the mould workshop as well.

Here CONDAT aims not only to replace graphite from swabbing

greases but also to bring technical benefits in application. The lubricating raw materials used in the company's new technology have a higher thermal resistance, which leads to increased swabbing frequency. Companies that chose this solution were able to extend by 2 to 4 times their swabbing frequency. Thanks to this high performance, operators come into less contact with the glass forming area - leaving them more focused upon IS machine working parameter optimization. In this way white swabbing greases help to consume less and better - all while creating a safer working environment.

And that's not all. With environmental impact reduction taking pride of place among CONDAT's core values, its white swabbing solutions comprise a mix of renewable vegetable-based oils and recycled refined oils. Indeed when developing the product, particular attention was also paid to end-users, which is why the Safety Data Sheet displays no hazardous pictogram. Finally, thanks to their high flash point, CONDAT swabbing greases limit fire risk and ensure protection to both equipment and operators. Thanks to its responsi-



ble formulation the same technology is rated at the Lubriscor[®], CONDAT self-scoring system on eco-designed products, which well illustrates the concept of Responsible Performance that the company targets.

CONDAT in glass making

CONDAT has supplied and supported the container glass industry by providing lubricating solutions for over 30 years now. Around 200 customers across the globe rely on the company today - both for their plant productivity and for their safety. Whether it's shears, scoops, deliveries, moulds or IS machine mechanisms, the glass production process is still consistently addressed with the company's much-valued solutions.

CONDAT can produce very capably throughout the world - also thanks to its mantra to 'think global, act local.' Among its commitments to the glass industry CONDAT especially prizes limiting transportation delays, reducing the carbon footprint and investing in local companies. ■

ABOUT CONDAT

CONDAT is an independent company with an international presence, specializing in industrial lubrication. For over 160 years it has adapted its products to the specific needs of each market (drawing, cold heading, metal working and the glass industry, among others) - all whilst developing a wide range of soaps, greases, oils, etc. CONDAT's vast range of lubricant is already well acknowledged within the glass industry. The company caters to all glass processing needs - from glass containers to flat glass to optical glass. Its offer includes shear spray oils, scoop oils, delivery coatings, graphited varnish for mould lubrication, graphite and graphite-free swabbing mould compounds, IS machine maintenance oils.

CONDAT

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DAILY NEWS

Tuesday, February 14, 2023

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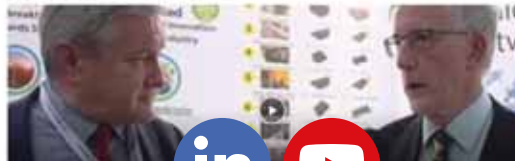


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EME shines among global leaders for plant design technologies

As a leading world supplier of batch and cullet handling technology, EME now serves 80 countries, having designed and commissioned plants at more than 250 glassworks worldwide. Such achievements have seen the company creating pioneering technologies in the design and engineering of batch preparation plants, cullet handling equipment and batch charging technology.

With a history stretching back over a century, EMI stands out today for the depth of experience marked by that heritage - all reflected in glass of the highest quality. As part of the SORG Group, the company is committed to delivering a reliable batch. This includes providing glass manufacturers with raw material intake and storage, equipment for dosing, batch weighing and mixing, as well as technologies for delivering the mixed batch to the furnace. As both product and





service offering, this is built upon a combination of experience, expertise and the use of the latest equipment to meet the particular needs of a wide range of customers.

VETRO DE CANTABRIA

The ability to custom-design and install efficient solutions for every glass type, from float glass and fibres to containers and tableware, is why Vetro de Cantabria chose EME to supply its new batch plant. To achieve a high-quality end product, the raw materials, delivery, storage, dosing and mixing all require exacting design and precision engineering. Here it's EME's knowledge of raw material behaviour, combined with its capabilities in automation and regulation of precise dosing, that truly sets the company apart.

EME Project Manager Jörg Pontzen says: "We are delighted to have been chosen to collabo-

rate with Vetro de Cantabria in the design, development, installation and commissioning of their brand-new batch plant. We've put together a team that will bring expertise, experience and enthusiasm to every aspect of this exciting project. Our specialists consider everything connected to the process - including local circumstances that can impact the costs and quality of the glass produced."

VIDRIO FORMAS

Whether it's plant expansion, the necessitated substitution of legacy equipment or a need to reduce cycle times, EME offers an optimum solution for a batch plant upgrade. Every consideration goes towards achieving value for money as well as meeting plant lifetime expectations and future expansions or modifications. When Vidrio Formas of Mexico decided it was time

to upgrade their existing batch plant, the choice of supplier came easy. EME delivered the entire hot-end for the greenfield project in 2021. It's even been chosen to upgrade the family-owned glass container manufacturer's batch system as batch and cullet handling technologies supplier - all thanks to the reliability and quality EME had provided at the initial project stage.

MIDDLE EAST GLASS

EME was also selected by Middle East Glass, Egypt, after the company decided it was time for an upgrade. Here the company was awarded the project for its proven track record of capably delivering on so many previous projects - from raw materials through to mixed batch deliveries, along with engineering design support. All this is matched by EME's level of coordination across all involved disciplines, which reassured Middle East Glass that flexibility and longevity would not be an issue. EME exchanged the customer's SCADA computers and software for a solution more fitting for purpose - installing not only new computer hardware but also Siemens WinCC software to help maximise productivity now and into the future. All of which was, indeed, achieved while the plant remained in operation and with no loss of production. ■




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Latest machine developments by **OCMI-OTG** for stemware sealing



Brought by Covid-19 pandemic, the great worldwide crisis of the HORECA sector had OCMI seeing some sector recovery with the reopening of its activities. As such, and with quality of design and finishing among its primary goals, the company could supply its high-speed sealing/stretching machines to three of the main glass factories in Europe.

OCMI machine type SA, available with 42, 48, 60 or, upon customer request, 108 stations, can produce drinking stemware articles by joining stem and bowl (previously produced in pressing and blowing machines) and, if necessary, by stretching the stem before unloading.

Stemware processing in OCMI machines must be previously clarified between supplier and end-user according to the type of articles to be produced. Here's why machine configuration must be as flexible as possible to properly satisfy the technical requirement of customers.

OCMI SA

A rotating machine divided into different working areas. The loading area consists of

Over the past two years OCMI-OTG has strongly consolidated its position as an appreciated supplier of glass stemware finishing technology. Already that has leading glass drinkware factories in Europe using OCMI sealing and stretching machines in their stemware processing lines.

two loading devices for stems and bowls with twelve arms each. These loaders must be perfectly synchronised with conveyors coming from previous machines in order to avoid losses and breakages - together with rotation of the sealing machine itself. The bowl loader is equipped with 12 mechanical grippers, designed according to bowl shape, while stem loader grippers can work by vacuum if the stem consists of a simple, foot-free disk.

Design of the stem and bowl to be processed by the OCMI sealing machine is decided in accordance with the shape of the finished article - all thanks to the experience of glass specialists.

The bowls are loaded in the lower chucks of the machine while the stems go to the upper chucks. The lower chucks can be developed with some adaptation in order to correct any stemware axiality defect. Floating chucks with a movable supporting plate serve this purpose.

Furthermore, the lower chucks can be developed for internal or external gripping of the bowl in accordance with the regularity of the moil shape.

For bowls without moil and if moil cut is made before sealing,

lower chucks can be equipped with vacuum gripping to avoid contact of the mechanical grippers with the bowl edge as well as any resultant marks, breakages or cracks.

Lower chucks could be developed with special features aimed to avoid breakages or the loss of pieces during loading. This allows for a machine efficiency increase while, on the other hand, good machine conditions get preserved by minimising the falling of glass residues within the machine body.

The upper chucks could be automatically adjusted in height through a camera control system that checks the level of the items in the machine. This is very important in ensuring the same sealing point at each station while getting a uniform quality for all the batch.

SEALING POINT CONTROL

The vertical adjustment of upper chuck position is made through the linear movement of a servo-driven axis, which corresponds to a stroke between +2mm and -2mm.

Installed immediately after the loading area, the camera control system allows for organisation of the production statistics by batch or working shift - also saving the specifications

of each article to be processed in order to easily recall a project without delay.

The initial working area of the machine is equipped with heating burners, given that items must be kept at the right temperature prior to operations.

The main machine cam allows for vertical movement of lower chucks up to the sealing point for stem joining. At this point the glass is then processed through specific burners especially dedicated to sealing.

The stem can be stretched, as needed, following sealing - thanks to the lowering of lower chucks. Here configuration of the cam can be designed to get either a quicker or slower stretching or a longer or shorter sealing area.

Even for stretching, dedicated burners will treat the glass to accord with this particular operation.

All burners follow the movement of articles inside their action range with perfect synchronisation. Developed by OCMI in accordance with different operations to be made on glass, the nozzles are also designed internally.

FUNCTIONALITY OPTIONS

OCMI machines can be developed for only the stretching



function as well in case the customer needs to process stemware pieces made of just one piece and made in a dedicated press-blow machine. In this case the SA model is converted into ST - also available in 42, 48 and 60 stations according to the productivity needed by glass factories.

At the end of the process an unloading device, also equipped with twelve arms with mechanical gripping hands, picks the finished articles and places them on the exit conveyor that goes either to the moil cutting machine or to the Lehr.

Configuration of the cam affects the forming and attitude of the glass, coupled with the type of burners used, their position and the temperature of their flames.

The OCMI sealing machine will produce stemware articles with a

maximum height of 350 mm and a maximum output of about 100 pieces per hour (in SAL108, the most performing model).

MACHINE SPEED

Speed will depend upon the type of article processed. Glass from blow-blow machines for higher quality items will require a slower rotation of the spindles in the OCMI sealing machine. As usual, the highest quality products can't be produced at the highest possible speed.

The most performing OCMI machine, with 108 stations, will achieve the most complete all-in-one solution since, after the stretching area, more space is available to perform other line stem flattening or moil crack-off operations.

All SA sealing and stretching machines can work in off-line mode, with items coming

from heating tunnels or in line with pressing and press-blow or blow-blow machines.

This has OCMI ever at the ready to develop sealing/stretching machine SA according to different needs in terms of speed, glass types and production area process and layout. ■

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Container glass from CHINA for the pharmaceutical industry

Rajeev Jetley

Over the years, China has emerged as one of the largest producers and suppliers of pharmaceutical products for both the domestic and export markets - offering container glass producers for the segment a host of opportunities. The sizable population, increasing purchasing power, rapidly increasing urbanisation and gradually ageing population all include factors which now ranks the country as the second largest pharmaceutical market after the US, which is the current global leader.

In CHINA, pharma is expected to bring huge growth potential for container glass producers in the near future. In this issue of Glass Machinery Plants & Accessories we present an overview of the country's container glass industry for the segment.



COMPANY PROFILE

A DOMINANT FORCE IN THE GLOBAL PHARMACEUTICAL GLASS INDUSTRY

To varying degrees the above-mentioned factors have all enabled the Chinese pharmaceutical industry to post high growth rates in each of the years following the country's economic liberalisation in 1979.

The number of individuals in China aged above 65 reached 190.6 million in 2020 and is forecasted to arrive at 247.4 million in 2025 and 318.1 million in 2030. Both 'Health China 2030' promulgated in 2016 and '14th Five-Year Plan' promulgated in 2021 emphasized the strategic importance of the healthcare industry in China's development plan - good news for the country's pharmaceutical container glass producers.

In 2021 the world pharmaceutical market was worth USD 1,256.863 billion, estimated at ex-factory prices, with China accounting for 9.4 percent of the total market.

Some important developments in the Chinese and global pharmaceutical industry have provided Chinese producers with huge opportunities. For example, until the mid-1990s, the United States, Europe and Japan produced 90 percent of the world's active pharmaceutical ingredients (API) - all key for antibiotics and many other common medicines, such as painkillers. That situation began to change as companies, prioritizing efficiency and cost saving over resiliency and security of supply, created extended value chains for medical ingredients and supplies that rendered them extraordinarily dependent on China and India. Today, China provides between 80 percent and 90 percent of the global supply of active ingredients for antibiotics, and China and India are the source of about 75 percent of the APIs and 40 percent of finished medications imported by the United States. China



accounts for 95 percent of US imports of ibuprofen, 91 percent of US imports of hydrocortisone, 70 percent of U.S. imports of acetaminophen, up to 45 percent of US imports of penicillin and 43 percent of US imports of heparin. Currently, China is the world's second-largest pharma market after the US with a projected value of USD 300.9 billion by 2025 and a compound annual rate (CAGR) of over 12 percent. As the domestic market moves from traditional generics to more innovative therapies, it will be crucial for firms to capitalize on the global opportunities for these more targeted offerings. For container glass producers for the pharmaceutical industry it would offer ample opportunities to increase their market share at the expense of plastic packaging. Pharmaceutical packaging has become highly sophisticated over the past few years as quality and safety issues have become extremely important. Various materials are utilized for packaging in combination with more than one material, such as metals, glass, wood, paper or mesh, plastic or composite. Container glass accounted for 20.4 percent of all pharmaceutical packaging in China in 2021. Plastic packaging

had the highest share at 43.3 percent, followed by metal and composite packaging at 24.1 percent. Rubber accounted for 9.5 percent, followed by other miscellaneous materials at 2.7 percent.

LEADING PHARMACEUTICAL GLASS PRODUCERS

China has more than 70 container glass producers meeting the demand of pharmaceutical packaging for the domestic market and exports.

SHANDONG PHARMACEUTICAL GLASS

Shandong Pharmaceutical Glass Company is the largest pharmaceutical container glass producer in China. Established in 1970, it has five large production bases in the country. The company's products include moulded pharmaceutical glass bottles, ampoules, phials, brown bottles, infusion bottles, glass tubes, daily-use cosmetic bottles and food bottles. Shandong Glass produces more than 500 different types of pharmaceutical glass containers and exports a large share of its total production to Asian and African countries. The installed capacity of the company can produce about 9 billion container glass pieces.

GERRESHEIMER SHUANGFENG

Gerresheimer Shuangfeng is a high-level pharmaceutical packaging company with investments by both Shuangfeng Glass and Gerresheimer Group GmbH. The former is a preeminent pharmaceutical packaging company in China, the latter a leading pharmaceutical packaging supplier. The JV has two companies located in Zhenjiang and Danyang, namely Shuangfeng Pharmaceutical Packaging Co., Ltd. (Zhenjiang) and Shuangfeng Glass Co., Ltd. (Danyang). It has three production sites - two in Danyang and one in Zhenjiang.

NIPRO

Japanese pharma glass producer Nipro is among the leading pharmaceutical glass producers in China. It produces glass tubings, vials and ampoules for the Chinese pharmaceutical industry. The company operates a total of four manufacturing facilities in China. Puyang City Changda Glass Co. in Henan province, Anyang Nipro Changda Pharmaceutical Packaging Co. in Henan province, Jilin Nipro Jiaheng Pharmaceutical Packaging Co. in Jilin province, and Chengdu Pingyuan Nipro Pharmaceutical Packaging Co. in Sichuan province.

ANHUI HUAXIN PHARMACEUTICAL GLASS COMPANY

Anhui Huaxin pharmaceutical glass Products Co. Ltd (formerly known as Lai'an Medical Glass General Factory), is professionally engaged in pharmaceutical packaging, R&D, production and sales. The company is a member of the Chinese Pharmaceutical Materials Association. It has two production factories with three companies, namely Anhui Huaxin Pharmaceutical Glass Products Co. Ltd, Anhui Huarong Pharmaceutical Packaging Co. Ltd, Anhui Huaxin Import and Export Co. Ltd.

SGD PHARMA CHINA

SGD Pharma operates a pharmaceutical glass plant in Zhanjiang with a capacity to produce 1.2 million Type II & III clear moulded glass vials daily for the parenteral market and for health care beauty products. Spread over an area of 85,000 square metres, the plant includes a glass furnace, 6 production lines, an ISO 8 clean room of 2,000 square metres, a resorting room and a customization workshop.

SCHOTT CHINA

German speciality glass producer SCHOTT operates four pharma glass production facilities



in China. SCHOTT entered the Chinese pharma glass market in 2008 by establishing a manufacturing facility at Suzhou in Jiangsu province. Suzhou plant produces glass vials and ampoules with an annual capacity of more than 100 million vials and ampoules.

In 2012 Scott entered into a JV with an existing pharma glass producer Xinkang Pharmaceutical Packaging Company Limited to expand its pharmaceutical glass production in the country.

In 2021, Schott officially opened a new factory in Jinyun, China. The production, which went into operation at the end of 2020, is manufacturing high-quality borosilicate glass tubing - the base material highly sought after to produce vials and syringes for COVID-19 vaccines among other items. With an initial capacity of 20,000 tons of glass and room for further expansion, the plant is functioning as a production and supply hub in the region. SCHOTT has invested EUR 60M in the new plant as part of a USD 1 billion investment to expand its global pharmaceutical business. ■



COUNTRY STUDY

Company	Installed Capacity	Location
Shandong Pharmaceutical Glass Company	9 billion pieces per year	Zibo city, Shandong
Cangzhou Four Star Glass Company	100,000 TPA of neutral borosilicate glass tubes and 1.2 billion pieces of vials and ampoules.	Zhifangtou Industrial Park, Cangzhou county
Cangzhou Xingchen Glass Company	1.6 billion pieces of bottles and vials	Cangzhou City, Hebei province
Chongqing Zhengchuan Pharmaceutical Company Limited	7 billion pieces of glass vials and ampoules per year	Beibei district, Chongqing
Anhui Huaxin Pharmaceutical Glass Products Company	600 million pieces of bottles and vials per year.	Chuzhou City, Anhui province
Dezhou Jinghua Pharmaceutical Glass Company	2.8 billion molded schering bottles in 5- 100 ml sizes	Dezhou Economic Development Zone, Shandong
Famacy Glass Company Limited	1.2 million glass containers	Jiangsu and Sichuan provinces
Jiangsu Chaohua Glassworks Company Limited	40,000 TPA of vials and ampoules	Danyang, Jiangsu
Jiangsu Jiajia Pharmaceutical Glass Company	32,000 TPA of vials and ampoules	Jiangsu
Schott China	2.4 billion pieces of vials and ampoules.	Suzhou and Jinyun
Jiangsu Tian Ning Glass Technology Company	700 million vials and ampoules	Danyang, Jiangsu
Jinan C-Flying Industrial Group	12,000 TPA of pharmaceutical neutral glass tube and 800 million pieces of tubular vial, moulded glass vial and ampoule.	Jinan, Shandong
Jinan GT Industrial Company (GT Glass)	36,000 TPA of pharmaceutical glass tubes in clear and coloured glass.	Jinan, Shandong
Jotop Glass	500 million pieces of moulded glass bottles and vials.	Jinan, Shandong
Ningbo Zhengli Pharmaceutical Packaging Company Ltd	600 million pieces of vials range from 1 ml to 30ml, and prefilled syringe and cartridges	Ningbo City, Zhejiang Province



Triumph Junheng Hebei Pharmaceutical Glass Company	30,000 tonnes per annum of neutral glass tubes	Henden city, Hebei
Ompi Pharmaceutical Packaging Technology (China) Company	300 million pieces of vials and ampoules	Zhenjiagang
Puyang Lumeng Glass Company Limited	25,000 TPA of glass Tubings, 3 billion pieces of vial & ampoules	Jinan, Shandong
Qingdao Yutai Pharmaceutical Packaging Company	800 million pieces of vials, ampoules and bottles.	Jiazhou City, Qingdao
Zibo Rongdian Glass Company Limited	600 million pieces of pharma bottles and vials per annum	Yiyuan, Shandong
SGD Pharma	1.2 million Type II & III flint molded glass vials per day.	Zhnajiang city, Guangdong
Shandong Linuo Technical Glass		Jinan, Shandong
Dezhou Jingfeng Glass	180,000 TPA of glass bottles and vials	Shandong
Shandong Hon Hai Industrial Glass Company	100,000 tonnes of borosilicate glass tubes, 1 billion pieces of vials and ampoules	Jinan, Shandong
Shanxi Hongjin Medical Glass Company	800 million pieces of vials and ampoules	Yuncheng, Shanxi
Jiangsu Huayue Pharmaceutical Glass Company	500 million vials per annum	Fangxianzhen, Jiangsu
Wuhu Changjiang Glass Produce Company Limited	2 billion pieces of moulded bottles, vials and ampoules	Wuhu, Anhui
Nipro Corporation	-	Henan, Jilin and Sichuan provinces

Pharmaceutical container glass producers in China

PNEUMOFORE: giving breath to glass business since 1923

With excellence in production and quality so reliant today upon the supply of both compressed air and vacuum, PNEUMOFORE is an important point of reference among glass industry suppliers for round-the-clock furnace operation - proven over a century by thousands of compressors and vacuum pumps within glassworks worldwide.

From ancient Greek the literal English translation of 'Pneumofore' is 'breath bringer'. Here one might add that simplicity is a key design concept for Pneumofore compressors and vacuum pumps - which call for reliable, durable equipment with low maintenance needs and constant efficiency over the long-term. Indeed the accurate choice of materials and components, precise mechanical machining and extended testing all guarantee constant performance over the entire lifetime of these machines. In some European glassworks, furnaces



**Pneumofore UV50 and UV16 vacuum pumps -
The most popular Pneumofore machines**

were rebuilt several times during the last century - even as Pneumofore machines were still running non-stop.

SOME FACTS

Founded in 1923, the history and success of Pneumofore is a solid foundation for the future. Over these 100 years the installed units now come as precious references that can speak for themselves. Satisfied customer testimonials from around the world, from Europe to Asia, Africa to USA and Latin America all highlight the integrity of the Pneumofore Rotary Vane technology and design.

Pneumatic equipment works with air. Environmental circumstances notably affect air temperature, from polar to tropical climates, dry to humid weathers, low pressure in high altitude to sea level atmosphere. Every peculiar situation requires tailored pneumatic solutions to run trouble-free and keep constant performance. Here Pneumofore seeks to cover every customer need.

The company's solutions are designed for minimal life cycle cost, in contrast with the spreading programmed obsolescence frequently hidden behind an attractive -yet deceitful- low purchasing price.

Here, with the global environmental crisis, Pneumofore's mission is to produce machines that can minimize the carbon footprint of both industrial vacuum and compressed air systems designed to operate for decades. Indeed some units have been running in glassworks for over 50 years.

CONSTANT INNOVATION

Pneumofore Rotary Vane technology covers all the pressure requirements of IS machines. Some models, like the low-pressure compressors up to 800 kW and the world's largest single stage, air-cooled Rotary Vane vacuum pumps, set the bench-

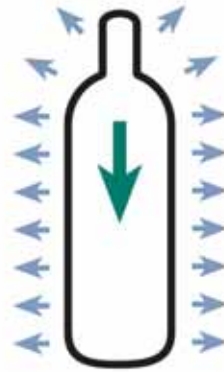
ABOUT PNEUMOFORE

Founded in 1923, Pneumofore manufactures vacuum pumps and compressors for industrial applications worldwide. The company's compressors and vacuum pumps are found worldwide - whenever customers require extraordinary reliability and constant performance over time. As a leader in Rotary Vane technology, Pneumofore solutions focus on efficiency, durability, minimal life cycle cost and a great respect for the environment.

How does the bottle behave in the mould?



Compressed air only



Compressed air and vacuum

mark in the industry. In 100 years of history, starting from a small Swiss family-owned company founded in 1923 and located in the foothills of the Italian Alps, Pneumofore has become a highly-respected global player and preferred supplier in the

glass industry. Since its founding the company is led by the same passion inherited by today's third generation of fully-dedicated Swiss engineers. ■



**Pneumofore UV50 VS90
Vacuum Pumps at Changyu
Glass - China**



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1923-2023

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Sorting technologies from **SESOTEC** bring recycling solutions to Hungary

With its head office in Orosháza and other yards located in Budapest and Mezőörs, RE-Glass Kft processed 7-8 thousand tons of flat glass per year up until 2016, whereas bottle glass - owing to the lack of modern technology - had only 1-3 tons processed per year. With only flint glass being typically produced in Hungary, there was only a market for flint flat and packaging glass domestically. The collected and treated mixed packaging glass was exported as mix-glass. In 2016, Mátyás Máthé became the new owner of RE-Glass, assisted by company Managing director Ferenc Aszódi. As Mátyás Máthé and Ferenc Aszódi explain: "These two pieces of information have induced us to embark on a major development

by which we could process the heavily contaminated glass waste from the current collection system. It also affords us the chance to process larger amounts of cleaner glass waste generated by the deposit fee collection system."

SORTING SYSTEMS FOR RECOVERING HIGH-QUALITY, PURE GLASS

In 2018, Mátyás Máthé and Ferenc Aszódi visited IFAT in Munich where they met several suppliers of sorting technologies before deciding upon KRS GmbH - a subsidiary of Sesotec GmbH. In cooperation with KRS, RE-Glass has now built the most modern plant in Hungary for sorting and processing bottle glass, i.e. capable of processing eight to ten tons per hour. Here foreign materials have

posed the biggest challenge to the new plant. Indeed contaminants such as ceramics, stones, porcelain (CSP), metals, paper, and plastics comprise as much as 15 to 20 percent of the total weight of all collected glass waste. To overcome this challenge, KRS supplied a sorting system that meets the following requirements.

Four SPEKTRUM separation systems are connected within the line. These separate foreign materials such as magnetic and non-magnetic metals, CSP, non-transparent plastics, and special glass materials, then sort the mixed glass waste by colour. The results are contaminant-free and colour-pure streams of glass material.

The plant was commissioned in October 2019. Less than a year later, in 2020, an additional 600-square-metre hall was added to house new equipment. Surrounding the hall is an approximately 3,500-square-metre paved area with an 800-square-metre covered and 600-square-metre open storage area. Hungarian companies, in close cooperation with KRS, built the supporting structure of the halls, manufactured and installed the conveyor belts and the electrical wiring and also built the PLC control system for the entire production plant.



With Hungary lagging behind EU standards for collecting and recycling glass waste, SESOTEC recently teamed up with RE-Glass in response to government plans to introduce a deposit-fee system for packaging glass from 2023 – all in a drive to advance the circular economy as materials get prevented from ending up in landfills.

ABOUT SESOTEC

Sesotec's customers in the food, plastics, and recycling industries are faced with the challenge of reconciling profit with sustainability. The company's intelligent technologies and services for foreign body detection, material sorting, and analysis can make a meaningful contribution to both conserving resources and boosting production efficiency. Since 1976, Sesotec has been collaborating with customers around the world to develop and build high-tech solutions to face diverse challenges from ensuring the highest product quality to maximizing added value to minimizing the waste of resources. Using innovative solutions, high-quality production can reap benefits for humanity, the environment and industry. In addition to its German headquarters, Sesotec is represented by a total of six subsidiaries in Singapore, China, USA, India, Canada, and Thailand, and has over 60 sales partners in all major global markets.

A successful trial run took place in September 2020, during which KRS specialists set up the sorting units and installed the Sesotec VISUDESK software. With VISUDESK, it is possible to monitor the four SPEKTRUM sorters remotely, make fine adjustments, and track error messages. In this way, KRS can check settings and provide remote support if necessary.

INCREASED QUANTITY, QUALITY, AND PROFITABILITY

The technology jointly provided by KRS and Sesotec makes it possible to produce high-quality recycled glass cullet - the perfect product for reuse in the glass industry. "Colour sorting technology has helped us increase the amount of flint glass that we produce for the domestic market," says

RE-Glass Owner Mátyás Máthé. "At the same time, our mixed glass exports now contain a smaller proportion of flint glass. The processing quality and quantity have also increased. With a new deposit system in place, we can continue to successfully operate in three shifts, or even begin to operate continuously using the equipment supplied to us by KRS. That said, our latest technology line selects all foreign materials (magnetizable and non-magnetizable metals, individual paper and plastic waste). Four optical sorters are built one behind the other

to ensure that ceramics and wire glass are also taken out of the glass waste. Therefore, a completely contamination-free glass product is obtained. Additionally, we sort mixed glass waste collected by us or our partners by colour. Above all these, according to the demands of our customers, we are able to set the colour selection rate with an accuracy of 1-2 percent. One of our Hungarian partners produces glass foam from 0 - 6 mm glass cullet. So you can say that the glass waste we process continues its life as a 100 percent glass product. The circular economy is a reality, and RE-Glass is making a big contribution here," adds RE-Glass Managing Director Ferenc Aszódi. ■



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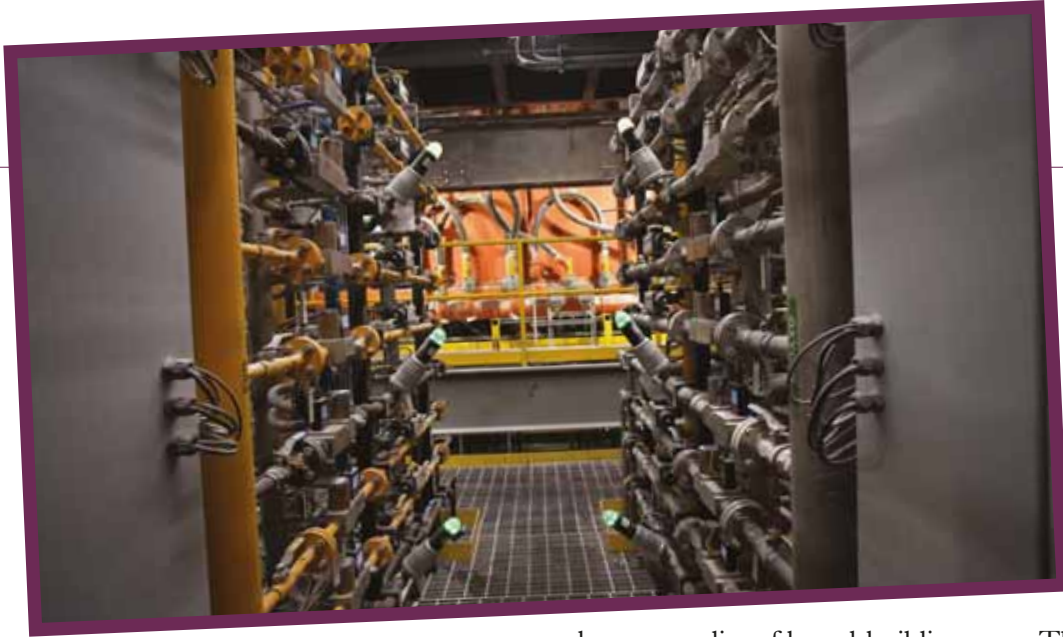
O-I's revolutionary MAGMA technology distinguishes new Bowling Green plant

In the pipeline to be O-I's first facility purposely-built for its revolutionary MAGMA technology, a new greenfield glass plant is set to redefine future glass production - further enhancing the company's capabilities, both to support multiple product categories and expand in today's highly differentiated product segments.

With plans to invest up to USD 240 million in multiple waves over time whilst creating approximately 140 new jobs in Bowling Green KY, O-I will be adding capacity to support customers with brand-building premium glass containers - all to meet strong consumer trends towards healthy, recyclable and sustainable food and beverage packaging.

The production facility is expected to raise the bar of sustainable glass manufacturing standards. Using renewable electricity, gas-oxy fuel and other innova-





tive solutions thanks to O-I's cutting edge MAGMA technology, the new facility will significantly advance the company's sustainability roadmap while making glass an even more compelling choice for consumers, customers and the environment.

A plant powered by MAGMA technology is about the size of its heritage counterpart and can be run in a warehouse. The smaller melter that typifies this technology allows for an addition of lines as markets grow or when entry into new markets is necessitated. A MAGMA line is also modular and prefabricated and can be deployed in half the time that's needed for heritage technology - allowing greater flexibility for smaller production runs which require frequent job and product changes, thanks to on/off capability to support multiple product categories. Unlike a traditional furnace, a MAGMA unit can be moved and redeployed. In the future it can either be proximate to -or co-located with- customer filling lines whilst reducing both shipping distances and the environmental footprint. In sum, MAGMA essentially brings glass packaging to customers when, where and how they need it by employing new capacity in smaller increments even as it provides scalability and rapid deployment - and all while reducing greenhouse emissions and waste.

"O-I is determined to be the most innovative, sustainable and

chosen supplier of brand-building packaging solutions," said Andres Lopez, CEO of O-I Glass. "The new plant is an important milestone as we continue the pursuit of our expansion plan in the US and globally, building a bright future for the company and its stakeholders. Glass is more relevant than ever, and we are proud to support our customers with innovative solutions."

"We continue to target new employers for the commonwealth that are focused on longevity, sustainability and creating quality jobs for Kentuckians," Gov. Andy Beshear said. "O-I Glass is a company that meets all of that criteria and more. This new facility in Warren County will create great job opportunities for our residents and bring innovative new technology to Kentucky's manufacturing sector. Thank you to the leaders at O-I Glass for selecting the commonwealth for this significant investment. I look forward to a

long, successful partnership between the company and our state."

"O-I has a reputation for excellence that has led to jobs for over 24,000 employees in 19 different countries. We are thrilled that they have chosen to grow and invest in Bowling Green," said Bowling Green Mayor, Todd Alcott.

The new facility is earmarked to serve the Premium Spirits category. Its proximity to key customers in Bourbon country will reduce logistics and further enhance O-I's customer service, flexibility, and sustainability. Start of the first production line is expected mid-year 2024, followed by up to two more production lines to serve the growing market and continued development of MAGMA technology. ■

O-I GLASS

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Glass Service

GS - Glass Service

Luben Glass

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WBT
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