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BI-MONTHLY INTERNATIONAL MAGAZINE FOR GLASS MANUFACTURING

YEAR 35 • ISSUE NO. 6/2022

SPECIAL

INTERNATIONAL YEAR OF GLASS 2022

KOENIG & BAUER KAMMANN makes strides with hollow body printing

OCMI-OTG and **SAPIO** flag hydrogen as lead sustainability player

BDF INDUSTRIES puts its product excellence on full display

Environment-friendly packaging now upgraded by **VETROPACK**'s Echovai bottles

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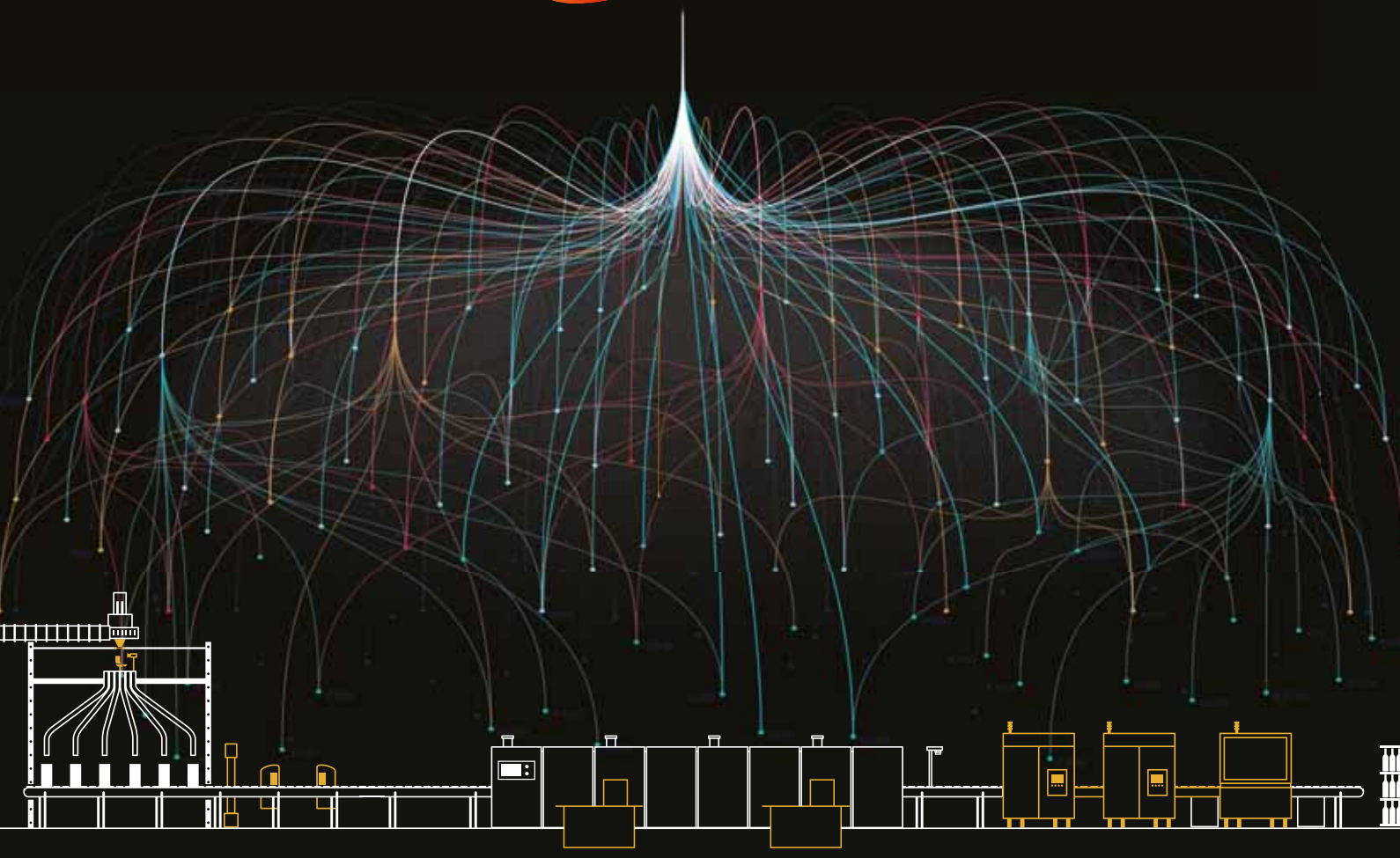

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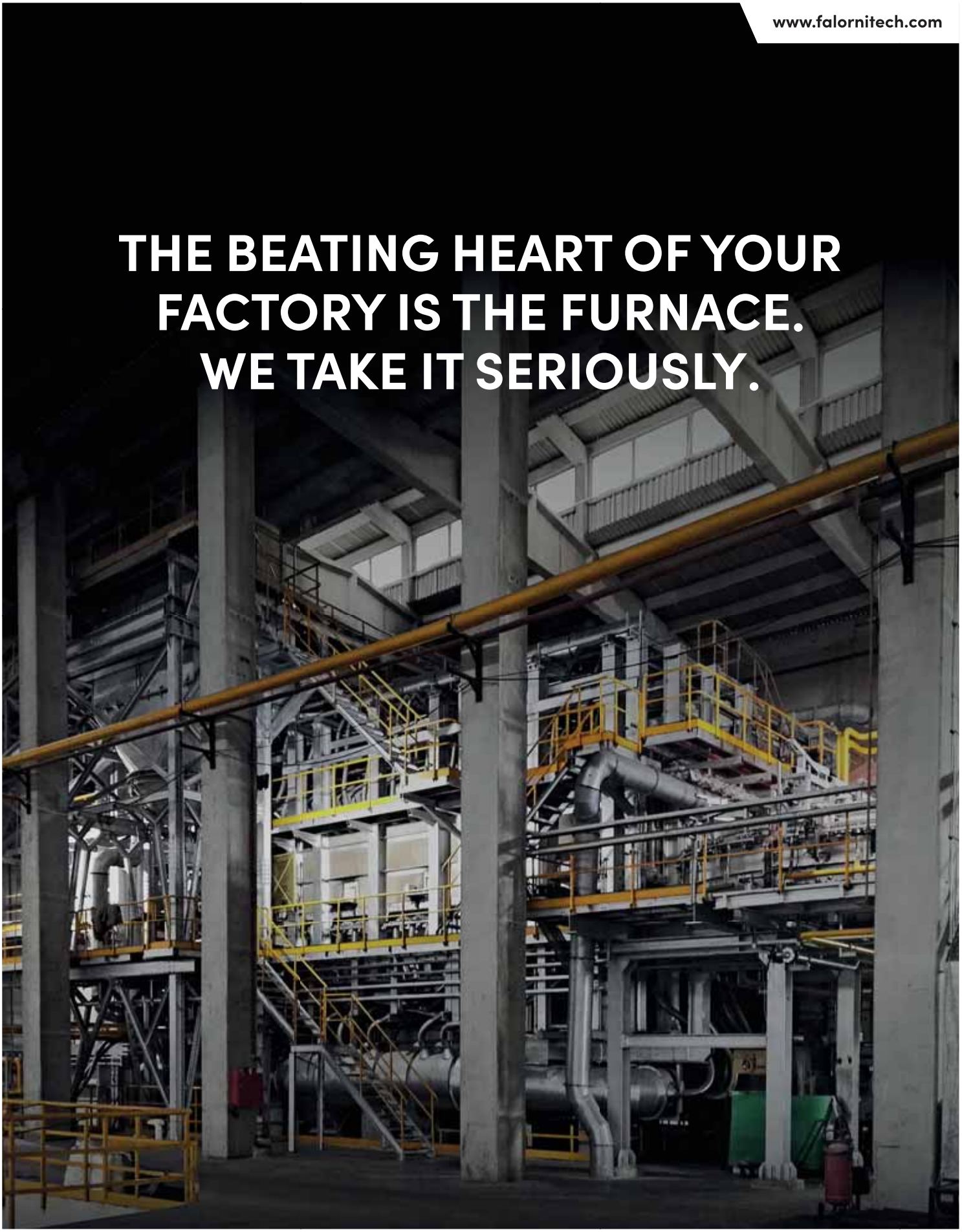

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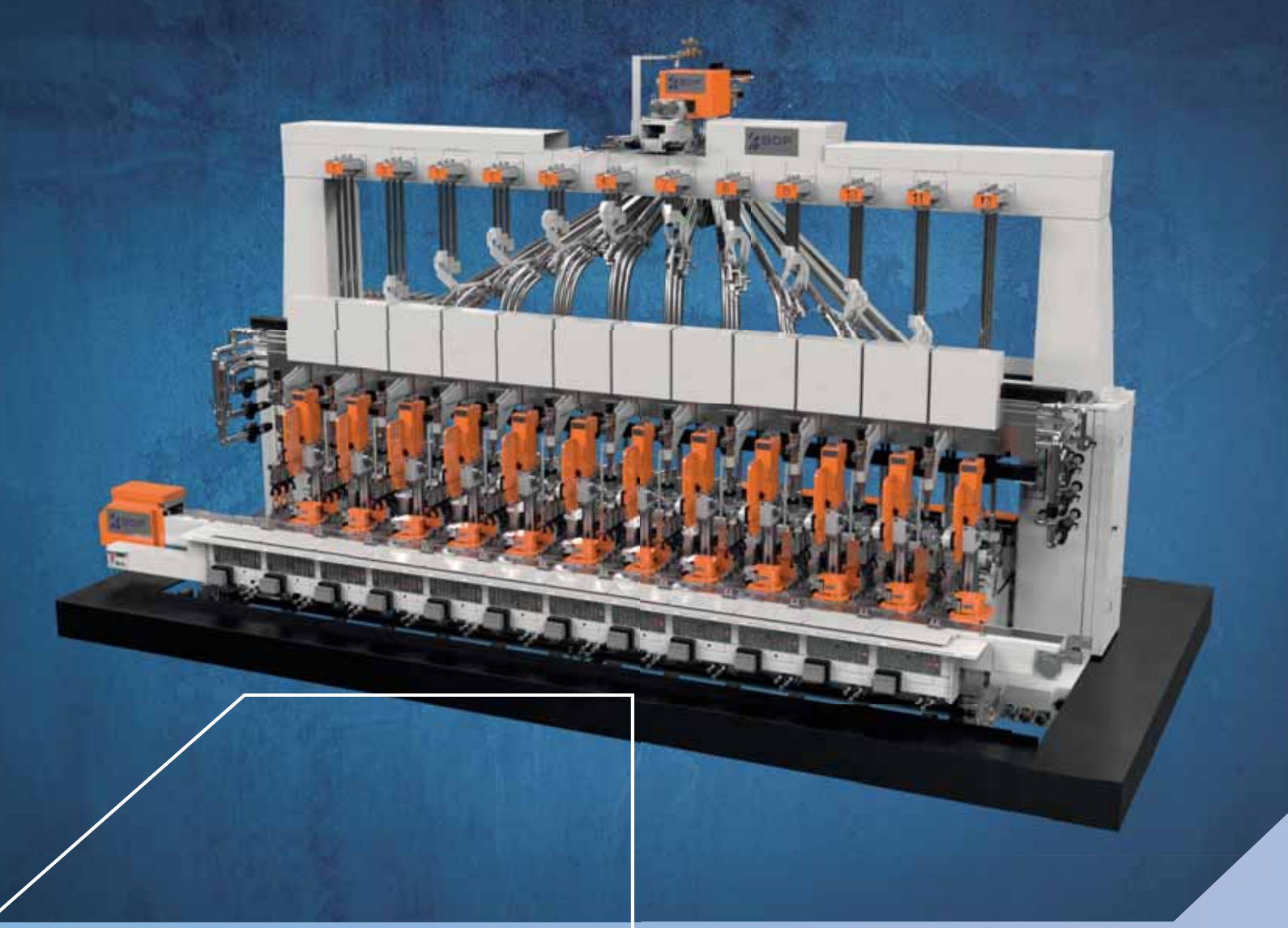

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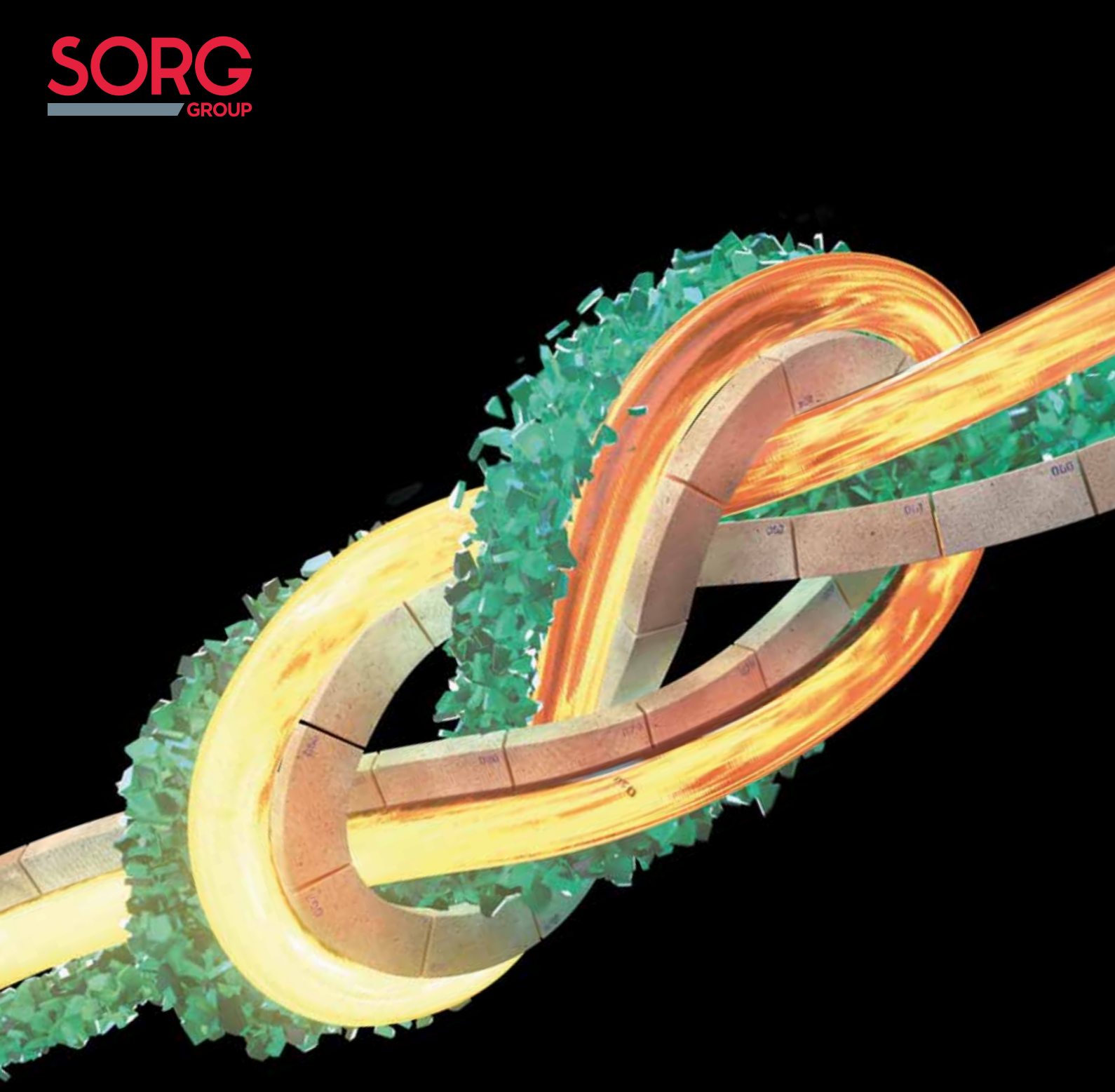

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PUBLISHING DIRECTOR: Arcangelo Altamura

EDITOR-IN-CHIEF: Marco Pinetti

ASSOCIATE EDITOR:
Nicolaas François Fouché | nick.fouche@glassonline.com

CONTRIBUTING EDITORS:
Rajeev Jetley, Zoë Elaine Whitten, Mauro Pagano
Jennifer Pressman

ADVERTISING:
ITALY: Maurizio Lozza | maurizio.lozza@glassonline.com
WORLDWIDE: Luciano Molina | luciano.molina@glassonline.com

GRAPHIC DESIGN:
Sonia Previato | sonia.previato@glassonline.com
Cristiano Guenzi

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Via Antonio Gramsci, 57 - 20032 Cormano (Milan) - Italy
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Glass furnaces

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2023 TRADE FAIRS CALENDAR

The magazine will be distributed at the following Events

issue	exhibition/conference	date	venue	deadlines
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	
	INTERPACK	4-10 May	DÜSSELDORF Germany	Editorial files: 20-03-2022
	CHINA GLASS	Date to be announced	SHANGHAI China	Deadline Adv files: 30-03-2023
2023 3	FURNACE SOLUTIONS CONFERENCE	7-8 June	ST HELENS UK	
	16TH SEMINAR ON FURNACE DESIGN	21-22 June	VELKE KARLOVICE Czech Republic	Editorial files: 05-05-2023
	FEATURED CONTENT: FURNACE DEVELOPMENTS			Deadline Adv files: 12-05-2023
2023	Glass Industry Directory			Editorial files: 05-06-2023
				Deadline Adv files: 19-06-2023
2023 4	VITRUM	5-8 September	MILAN Italy	
	GLASSPEX	14-16 September	MUMBAI India	Editorial files: 21-07-2023
	GLASSMAN ASIA	20-21 September	SEOUL South Korea	Deadline Adv files: 28-07-2023
2023 5	AFGM	Date to be announced	South East Asia	
	LUXPACK	3-5 October	MONACO	
	CONFERENCE ON GLASS PROBLEMS	30 October 2 November	COLUMBUS (OH) USA	Editorial files: 04-09-2023
	FEATURED CONTENT: VISION & COLD-END			Deadline Adv files: 11-09-2023
2023 6	ICG ANNUAL MEETING	12-15 November	HANGZHOU China	Editorial files: 09-10-2023
	GULF GLASS	4-7 Dicember	DUBAI UAE	Deadline Adv files: 16-10-2023

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In line with the trend for personalized medicine and small batches, the group provides everything necessary for the production of ready-to-use containers in an aseptic environment - right up to the pallet. It also provides full CE-compliance, rigorous standards, continuous improvement and a rapid response to market needs.

WWW.STEVANATOGROUP.COM/IT/

FORGLASS

Expertise in large-scale furnace repairs

A well-known supplier of glass-melting technology, **FORGLASS** has earned the added reputation of being also an expert in large-scale furnace repairs. The company has recently partnered with one of the world's largest producers of automotive and architectural glass to perform hot overcoating of its float furnace in Europe. Hot overcoating of a large float furnace is one of the most demanding types of furnace repair - requiring extraordinary organization and an exceptional team. It involves a large number of highly-skilled workers and supervisors who have to work in extremely harsh conditions. During hot overcoating, the furnace is kept around its operating temperature, so people working around the furnace must wear special protective clothing, gloves, face and head shields and other garments that protect the human body from exposure to extreme heat.

Scheduling this type of work must account for a further factor, which is human endurance when working in extreme conditions. Teams must work at short intervals - giving them timwwe to rest and cool off. Hot overcoating of a large float furnace is planned with a view to minimizing glass-to-glass time, and there is no room for delay. Here detailed planning is key - allowing exactly the right amount of time to complete each task. The efficiency and quality of work has to be 100 percent, as there is no time to redo a mistake. It has to be done correctly the first time. Clearly, the high skill level of everyone involved is essential to this type of work. And here, Forglass has exactly the right kind of experts among its staff.

WWW.FORGLASS.EU

GRENZEBACH & SORG:

From hot to cold: all from a single source

Family-owned companies **GRENZEBACH** Maschinenbau GmbH and **Nikolaus SORG** GmbH & Co. KG are to cooperate more closely in the future. This is reflected in the foundation of the joint company GS Engineering GmbH (GSE).

Here Grenzebach and Sorg ideally complement their own scope of supply and services as leading suppliers in their respective market segments - both being technology pioneers besides.

GSE will support the activities of their partners Grenzebach and Sorg as leading suppliers for the glass industry - in particular in the development of overall projects with complementary services for works planning, architectural and construction planning, planning of the complete media and power supply, as well as services for project management, construction supervision, commissioning up to technical assistance and production support. In doing so, they will ensure that customers have full access to the latest technological developments for sustainable and state-of-the-art glass production.

WWW.GRENZEBACH.COM - WWW.SORG.DE

GERRESHEIMER

USD 94M investment in US production facility

A leading provider of healthcare & beauty solutions and drug delivery systems for pharma, biotech and cosmetics, **GERRESHEIMER** AG recently announced investments to rapidly expand its manufacturing, supply and logistics capability for glass vials in the US. The project will be supported by the Biomedical Advanced Research and Development Authority (BARDA), part of the Office of the Assistant Secretary for Preparedness and Response (ASPR) at the US Department of Health and Human Services (HHS), with contracting support from the Department of Defense (DOD). It will expand Gerresheimer's capacity by new vial-forming lines, including dimensional inspection, annealing, cosmetic inspection and packaging. BARDA has agreed to provide up to approximately USD 66M to Gerresheimer AG for this project. The investment is part of Gerresheimer's global expansion plan and follows its formula G strategy process.

Under the agreement, Gerresheimer will increase its annual production capacity in Morganton, NC, with interchangeable Type 1 vials (glass borosilicate and/or aluminosilicate) and Gx Elite Glass Vials capability. BARDA's financing, with contracting support from the DOD's Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (JPEO-CBRND) and the Army Contracting Command (ACC), will strengthen the capabilities in the US to respond to current and future public health emergencies. The vials can be used in vaccination campaigns against infectious diseases, such as COVID-19 and others. This expansion of the facility will further strengthen Gerresheimer's leading market position in best-in-class elite vials.

"Gerresheimer is honoured to support the US government in strengthening its pharmaceutical supply chain for current and future healthcare emergencies," said Dietmar Siemssen, CEO of Gerresheimer AG. "The agreement confirms our role as a supplier of system critical products, such as pharmaceutical primary packaging solutions and drug delivery systems for the healthcare sector. This investment follows our strategy process formula G and accelerates our growth in this important market."

As part of the project, the existing facility in North Carolina will be enlarged by the installation of new vial forming lines and a new warehouse. As the investment will lead to an increase in the number of people employed, new offices will also be part of the expansion plan.

The company is committed to sourcing the vast majority of its raw materials from US domestic suppliers in order to enhance the levels of responsiveness, dependability, quality and domestic supply chain integration. Gerresheimer is furthermore incorporating sustainable design principles to implement energy efficiency measures, comply with stormwater management requirements and reduce waste for the upgrades and expansion.

WWW.GERRESHEIMER.COM

ZIPPE

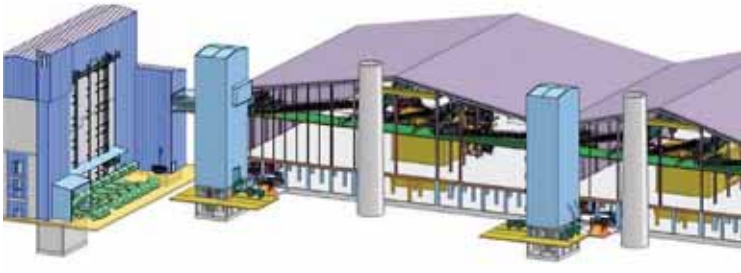
Triple batch plant project

A global player in the glass industry, especially in such key areas as flat glass, glass packaging, automotive glass and glass fibres, Şişecam has a production capacity of 2.6 million tonnes of glass per year in its glass packaging production facilities.

ZIPPE Industrieanlagen GmbH is currently executing three new projects for Şişecam, including one container glass plant and two flat glass production facilities, which produce glass for the automotive industry, among others. These plants will be located in Turkey and Hungary. Project completion is scheduled for mid-March 2023.

Regarding batch and cullet, Zippe is supplying all the technology for these plants.

WWW.ZIPPE.DE



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VETROPACK & HORN GLASS

Furnace repair contract

One of the leading European manufacturers of glass packaging, **VETROPACK** Group, employs around 4.000 people in eight glass factories in Central and Eastern Europe.

Furnace specialist **HORN GLASS** Industries AG recently received the order for the repair of Furnace 52 at the Vetropack Moravia Glass plant in Kyjov, Czech Republic.

As the general contractor, Horn is responsible for planning furnace refractories and steel, supplying the equipment as well as demolishing, constructing and commissioning the plant.

Equipped with the latest technology from Horn in the areas of gas heating, electrical control and e-fusion power boosting, the furnace is expected to go into operation in November 2023.

WWW.HORNGLASS.COM - WWW.VETROPACK.COM

ARDAGH GROUP

New solar energy across the Netherlands

ARDAGH GROUP S.A. and its renewable energy partners Eneco and Zoncoalitie are delighted to announce the start of construction for three on-site solar projects in the Netherlands. The solar installations will supply renewable on-site generated electricity to Ardagh's Dongen, Moerdijk and Oss facilities and are part of Ardagh's strategy to use 100 percent renewable electricity by 2030.

The Netherlands is the first country where Ardagh will supply all of its production facilities with on-site generated sustainable energy via large-scale solar energy installations, with plans to further roll out the technology with local energy partners across all regions.

Adam Koehler, Global Renewable Energy Programme Manager at Ardagh Group, said, "It's an exciting time for Ardagh's renewable energy programme. These state-of-the-art solar installations will supply renewable electricity to all of our metal and glass facilities across the Netherlands, which will make a significant impact in terms of reducing our carbon footprint."

Ardagh used independent solar energy specialist Zoncoalitie to conduct an extensive technical commercial and feasibility assessment, plus a tender and award process, selecting Eneco to deliver the Netherlands installations.

Ardagh is delighted to partner with Eneco, a leading energy company with its own plan to become climate neutral by 2035 in its own activities and the energy it supplies to customers. Approximately 24.700 panels will be installed across the three locations and will soon be able to generate approximately 12,677 MWh of renewable electricity each year.

In 2020, Ardagh launched its Renewable Energy Programme to implement its strategy and oversee its renewable electricity activities. The company's strategy is built on a combination of on-site, near-site and off-site renewable electricity projects. In Europe, five on-site solar projects (in the Netherlands, Irvine, Scotland and Dublin, Ireland) will replace 14.500 MWh of electricity consumption from the grid, while avoiding the release of 3.800 tons of carbon emissions per year. This represents one percent of Ardagh's total electricity consumption in this region.

WWW.ARDAGHGROUP.COM

PARK CAM & PANERATECH

Zero refractory wear achieved in 12 months

PARK CAM recently operated a furnace at full capacity for twelve months, with virtually zero wear in critical areas. Working closely with **PANERATECH**, the company was able to make data-driven decisions both to target cooling and to maximize operation time before overcoating.

The furnace that achieved this milestone, Furnace 20, began its campaign in September 2013 at Park Cam's Bozuyuk, Turkey, glass packaging production facility. The company began a multi-year agreement with PaneraTech to monitor its furnace in 2018. SmartMelter® radar technology was used to inspect the furnace at least twice per year. After each inspection, the plant team discussed results and recommended actions with PaneraTech's team. Because PaneraTech had created a digital model of their furnace, the teams could visually review the measurements of each refractory block.

PaneraTech was able to contribute insights from over half a million refractory measurements and make predictions based on that data. Using this data as a guide, Park Cam increased cooling wind at critical blocks and monitored those areas closely to ensure safe operation. They also collected temperature data on a regular basis on these critical blocks. After each six-month scan, adjustments were made.

"We were able to have confidence in our decisions because of the data PaneraTech provided," explained Cetin EĞRİ Deputy General Manager of Park Cam. "Because of this, we could carefully manage risk and make good financial decisions at the same time."

The industry typically overcoats when refractory thickness is 25 mm (1 inch). However, Park Cam was able to operate without overcoating an additional two years after reaching 25 mm. Once the thickness reached 18 mm, the targeted cooling allowed the plant to operate 12 months - with virtually no additional wear on these blocks. After this 12-month period, they decided to overcoat the refractory.

"Our experience with Park Cam is a testament to what we have known for a long time: that a manufacturer can run their sidewalls much longer than what they currently do once thicknesses reach critical level," said Yakup Bayram, president of PaneraTech.

"We have seen the difference that data-driven decisions can make. This is why we have expanded our services to include a full Digital Furnace Monitoring programme. Park Cam's innovative approach has helped lay the groundwork for this service."

PaneraTech's Digital Furnace Monitoring Programme includes SmartAudit, regular furnace audits that incorporate an 18-point radar spot check into the standard visual, thermal, and endoscopic evaluations. New technology is also available as part of this programme, such as Polaris continuous monitoring sensors. Digital Endoscopy that uses laser technology will be available in 2023. PaneraTech works with manufacturers to create a schedule of services for each year of the campaign's life, and condition-based monitoring can be added on a narrow scope as necessary.

WWW.PANERATECH.COM - WWW.PARKCAM.COM

VETRERIE RIUNITE & TECSIGLASS

‘Centauro’ furnace rebuilt

During the summer months, **VETRERIE RIUNITE** began reconstruction work on its second furnace, known as the Centauro - all to increase its production capacity.

Specifically, with regard to the old structure, the vault, superstructure and regeneration chamber have all been maintained. By contrast, all glass conditioning and distribution channels and other parts of the furnace in direct contact with the glass are under construction.

Companies that contributed to the renovation of the furnace are **TECSIGLASS**, which handled the design, demolition and reconstruction of the structure, as well as the updating of the software part, along with Fila termoidraulica, which handled the construction of the compressed air, methane and technological water systems, and C.D.M., which handled the heavy carpentry part. Finally, Alca handled the upgrading of the electrical system.

Reconstruction of the furnace will allow the production of 190 tonnes of glass per day, instead of 175, so as to be increasingly competitive in the market.

WWW.VETRERIERIUNITE.IT - WWW.TECSIGLASS.COM

STOELZLE

ISO 45001 certification

Glassworks **STOELZLE** Union, Czech Republic, is the second plant in the Stoelzle Glass Group that’s successfully certified according to ISO 45001 standards. Stoelzle Częstochowa, Poland, was the first Stoelzle plant so certified in March 2021.

For Stoelzle, the 3.200 employees are not only one of the three pillars in its sustainability strategy. They are considered the key to its success. Occupational safety and health protection are of essential importance for Stoelzle and have therefore been firmly embedded in the corporate culture.

In recent years, Stoelzle Glass Group has implemented significant measures and guidelines throughout all branches of the Group to ensure the safety of all employees - all the while improving their health and well-being.

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HORN

Construction of third glass manufacturing facility for Ambev

Ambev recently contracted **HORN** to supply a third furnace for the company, which will have the latter building Ambev's new container glass plant in Carambeí, Paraná in Brazil. The new container glass furnace seeks to be the most technological and environmentally-friendly glass melting furnace in the region. The furnace order is of great importance to Horn, securing its conspicuous position in South America as a furnace supplier.

The 400 tonne-per-day regenerative furnace, with 3 forehearths, will produce container bottles - coloured flint, amber and green. This furnace is particularly designed to produce maximum 'pull' in all three colours for both: 6 percent electrical share and up to 20 percent electrical share by Horn e-fusion power boosting.

Horn was appointed turn-key supplier for all refractory material, steel construction, e-fusion power boosting, auxiliary equipment, supervision, manpower and tools for installation and, finally, commissioning. The contract even includes theoretical and practical training, as well as production support for 60 days after commissioning.

Furthermore, the latest forehearth design of the Horn GCS® 301-advanced system will be applied to produce the bottles.

WWW.HORNGLASS.COM

LA MAISON FRANÇAISE DU VERRE

Completion of furnace rebuilding

LA MAISON FRANÇAISE DU VERRE recently concluded its project to rebuild its furnace in Châteauroux, France.

The colossal project, which involved more than 30 companies and 120 people in total over 60 days, allows the company to restart with a renovated, more efficient and less energy-consuming furnace.

La Maison Française du Verre is the manufacturer of Pyrex® and Duralex®, both world-famous brands of cooking utensils and tableware, in glass. Created in 1915, Pyrex® is known for its borosilicate glass, which is ultra resistant to heat.

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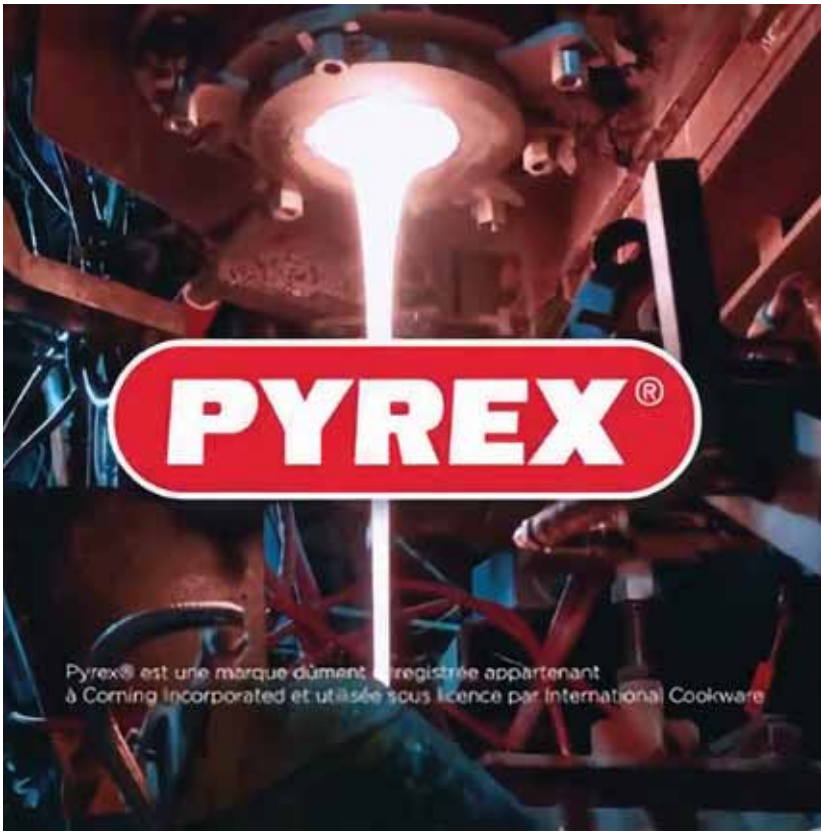


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POCHET & FIVES

An electric furnace for luxury bottles in France

POCHET Group, a key partner of the luxury industry specializing in glass packaging for perfume, skincare and make-up, and **FIVES**, an industrial engineering group, are combining expertise to reduce carbon emissions and offer eco-friendly glass production.

Pochet du Courval, the division of the Pochet Group that has been an expert in shaping and decorating glass for 400 years, has stated an objective to reduce CO2 emissions of its production by 50 percent, by 2033 offering decarbonized glass to its clients. The Guimerville plant, located in Normandy, France, is an industrial flagship that manufactures and decorates more than one million glass bottles and jars every day for the most prestigious perfume and beauty brands.

Fives, a market leader in all-electric melting technologies, will design and supply an electric furnace for the Guimerville plant. The furnace – Prium® E-Melt cold-top vertical melter – is one of the most advanced technologies available to significantly reduce CO2 emissions. The melter is designed based on Fives' significant electric melting operational experience.

A strategic partnership

The investment, supported by Pochet Group's private shareholders, is in line with the group strategy to reduce the environmental impact of the industry and will require a major transformation - both technological and human.

"This electric furnace will be the very first French furnace dedicated to luxury bottles enabling us to offer carbon-free glass to perfume, skincare and make-up brands that will deliver tomorrow's beauty," said Benoit Marszalek, Pochet du Courval's Chief Operating Officer.

"Fives is committed to providing innovative solutions based on our proven technology to electrify glass processes. We help the industry partners to meet their objectives in terms of decarbonisation, as well as to train technicians and operators at the plant level," said Alexandre Brusset, Vice-President of Glass at Fives.

WWW.GROUPE-POCHET.FR - WWW.FIVESGROUP.COM

O-I

Reconstruction of container glass furnace

O-I recently asked the engineering company Chovet 2DBi to rebuild a furnace in its plant in Puy Guillaume, France. The new furnace has the same dimensions as the previous one.

For the coordination and planning management of this project, Chovet 2DBi dispatched a project manager on site for almost three months. At the peak of activity, at the end of April, more than sixty companies and 265 people were working on the site, with a high HSE risk.

Scrupulous progress monitoring, anticipation, arbitration and good communication with Chovet 2DBi interlocutors have all made it possible to respect the company's commitments. Five machines (including a new one) were received and commissioned on time.

WWW.O-I.COM

VERALLIA

Verallia to acquire Allied Glass

VERALLIA, the leading European and the world's third largest producer of glass containers for food and beverages, has signed a binding agreement with an affiliate of Sun European Partners LLP for the acquisition of **ALLIED GLASS**, a market leader in the UK premium glass packaging segment with a focus on the premium spirits' end market.

Expanding Verallia's capabilities and geographic footprint in Northern Europe

With more than 150 years of glass-making expertise each, both groups share the same strong values – especially care for customers and teamwork – that guide and inspire their behaviour. This acquisition will enable Verallia to benefit from Allied's expertise in premium glass bottles, specifically in the Scotch Whisky and Gin sectors, and from its established position on the UK market.

With this transaction, Allied Glass will integrate an international group, European leader in the glass containers for the food and beverage sector, which will allow it to take advantage of its expertise and its long-term vision.

Allied Glass, an industry-leading premium glass platform

Headquartered in Leeds, Allied Glass is a leading player in the premium glass packaging market in the United Kingdom, where it generates over 95 percent of its revenues, with 4 furnaces located in West Yorkshire and around 600 employees.

Allied Glass designs, develops and manufactures glass packaging, benefiting from state-of-the-art extra-white, bespoke colour and decoration capability, with a strong focus on sustainability, based on an ESG policy with clear targets across all areas and a market leading use of cullet across all products.

Allied Glass has strong relationships with a diversified customer base covering blue chip, traditional and emerging brands, based on a partnership approach to new product development.

Allied Glass is led by a strong management team with significant industry experience who have successfully grown the Group's profitability over the last years.

Allied Glass generated revenue of GBP 138 million in the fiscal year ended December 2021 and over GBP 150 million revenue are estimated for 2022.

Verallia expects the transaction to have an accretive impact on its Adjusted EBITDA margin reflecting Allied's strong performance as well as significant synergy potential between both businesses.

Commenting on the acquisition, Patrice Lucas, CEO of Verallia, said, "This acquisition of Allied Glass is fully in line with our strategy which is to accelerate our investments in key markets while leveraging our industrial, technological and management expertise to generate synergies. I am convinced that Verallia and Allied Glass have an outstanding fit as we share common vision and values. This is a great milestone too, as the Group will be present on the UK market, I am confident that this combination will create sustainable value for customers, employees and shareholders. Finally, I am delighted to welcome Alan Henderson in the Executive Committee team of Verallia."

Alan Henderson, CEO of Allied Glass, added, "Integrating Allied into an international Group, one of the main world leaders in glass manufacturing for food and beverage, is a thrilling challenge for Allied. Based on our respective strengths, the two companies will benefit from strong synergies. Whilst our customers in the UK market will continue to benefit from the same level of quality of service locally, we believe we can further improve our market offering through the support and knowledge of the wider Verallia group."

Transaction details

Verallia will acquire 100 percent of the capital of Allied Glass. The transaction is valued at approximately GBP 315 million (enterprise value) and will be financed by Verallia's existing cash, whilst maintaining the Verallia Group's leverage below 2x net debt/adjusted EBITDA.

WWW.VERALLIA.COM/EN/ - WWW.ALLIED-GLASS.COM/

FORGLASS

Expansion into Central America

As a top European engineering company producing furnaces and batch plants for the glass industry, **FORGLASS** recently partnered with Graphiteglass, a top seller of forming machines and other glass production equipment in Mexico. With more than 25 years of experience in the glass industry, Graphiteglass represents some of the most recognized worldwide brands and supports clients in Mexico and Central America.

Reputation is of paramount importance in this business and Forglass is happy to be represented by two of the most reputable experts in Central America: Gerardo Gil de Partearroyo and Luis Pablo Duron Loaiza. They will represent the full range of glass melting technologies, furnaces, batch plants and machinery engineered and produced by Forglass.

The next ten years are sure to be very interesting and important for Forglass, as the new technologies for reducing energy consumption that the company has developed will be implemented in furnace designs. In the face of rapidly rising costs of energy, the timing of this partnership is particularly important because energy-saving technologies are urgently needed by the glass industry worldwide. It seems quite fortunate that this new, interesting period for Forglass coincides with their entrance to the Mexican and Central American market.

WWW.FORGLASS.EU

ZIGNAGO VETRO

Glass cullet at the heart of sustainability project

Glass every day teaches us to be sustainable. It is in fact a perfect example of a circular economy: it can be recycled 100 percent and an infinite number of times, without losing any quality as a result. The new container is always identical to the previous one, provided the process of waste sorting and recycling is of high quality.

In view of the above, glass cullet is a perfect starting point in the quest that leads towards sustainability. That's why **ZIGNAGO VETRO** has decided to make it the principal raw material in its operations. Thanks to its reuse, the company obtains a reduction in energy consumption needed for melting, less CO2 emissions, lower consumption of virgin raw materials and a smaller quantity of waste to be dumped.

To make this into a real asset, the company had to reorganize its processing. The Group has therefore decided to collaborate with three companies working in the collection and treatment of glass (Vetreco, Vetro Revet and Julia Vitrum), which are able to deal with about 800 thousand metric tonnes of unrefined glass a year, viz.

approximately a third of the raw glass collected in Italy in 2021. These are significant numbers -but by no means definitive- that bear witness to the company's culture of sustainability and make Zignago Vetro the leading Italian company in glass recycling.

Unity makes for sustainability

But Zignago Vetro believes that there is still plenty to be done, and that there is strength in unity. Rather than operating as individual players, it's better to involve the whole supply chain. For this reason, the company has created a project -unique in Italy- that also encompasses clients and stakeholders, with the aim of increasing and improving the glass recycling chain.

To help foster this circular model, the Group has forged relationships with a network of distributors to source glass cullet (empty, broken or deteriorated containers that would otherwise be thrown away) directly from Zignago Vetro clients. To reduce transport costs and CO2 emissions to a minimum, these partners are also responsible for delivery of the materials to the Group's nearest cullet treatment centre.

Zignago Vetro is delighted that this initiative has enjoyed remarkable success, especially with the medium-to-large wineries in Italy. The company hopes to continue in this vein and that the network of stakeholders will also spread to smaller wineries, to the restaurant sector, and to that of HORECA in general. It is a project in which the company believes very strongly, because it is effective and environment-friendly.

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BUCHER EMHART GLASS & VERTECH

Together at Glasstec

After **BUCHER EMHART GLASS** and **VERTECH** agreed to cooperate to take data collection and usage in glass plants to the next level, both companies recently displayed their partnership at Glasstec in Düsseldorf.

Their cooperation benefits customers with single point data access to the complete line data, from batch to palletizer, including all relevant forming parameters collected from and around the IS machine. Based on the correlated data, BEG and Vertech can now jointly offer applications and solutions that increase efficiency of the glass plant and quality of the containers.

WWW.EMHARTGLASS.COM - WWW.VERTECH.EU

HORN GLASS & HEINZ-GLAS

Hot repair at Heinz-Glas in Piesau

With a family glassmaking tradition dating back to 1523, the **HEINZ-GLAS** company is today one of the world's leading manufacturers and finishers of glass flacons and caps for the perfume and cosmetics industry.

Horn Bau & Service GmbH, a subsidiary of **HORN GLASS** Industries AG, was contracted for the hot repair of the glass melting furnace at Heinz-Glas in Piesau, Germany. Here, the entire 250 tonnes per day glass melting furnace was drained to carry out repairs at the doghouse and the throat.

To avoid consequential damage, the furnace temperature was kept at 1200 degrees Celsius. At these temperatures, the service experts started to remove the remaining doghouse palisades and plating in this area as well as in the throat.

As a next step, new doghouse palisades and corners were replaced and various critical areas were re-plated. Continuous endoscopies were carried out during the repair process to assess the extent of the repair and to ensure Horn's own quality standards.

After being filled up by Horn, the furnace was successfully put back into operation after a few days. Parallel to this work, the complete colouring forehearth was reinstalled and heated up by Horn.

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ORORA

Operation of glass recycling plant commences

Leading sustainable packaging solutions provider **ORORA** has announced it has commenced operation of a new AUD 25M glass recycling plant in South Australia to significantly increase the recycled content in its manufactured glass products.

At an official opening ceremony attended by South Australia Deputy Premier, the Honourable Susan Close, Orora Chief Executive Officer Brian Lowe described the recycling plant as a major milestone in the company's sustainability journey.

"Our new world-class beneficiation plant is a significant achievement as it will increase the amount of recycled glass used in our manufactured products, allowing us to process up to 150.000 tonnes each year," Mr Lowe said. "That's equivalent to approximately 330 million wine bottles or 750 million beer bottles. Not only does this advance Orora's sustainability agenda, it enhances our ability to support our customers' sustainability goals - in turn contributing to both the circular economy and the sustainability of the Australian glass industry."

Construction of the plant, located next to Orora's glass packaging manufacturing facility at Kingsford near Gawler, was supported by AUD 8M in grant funding from the Commonwealth and South Australia government as part of the Recycling Modernisation Fund.

"Consumers are increasingly demanding recycled packaging and this project makes a significant contribution to the circular economy and the sustainability of the glass industry in this state," Ms Close said.

"We value the investment of the Commonwealth and South Australia government," Lowe said. "It aligns to the government's focus on increasing Australia's capacity to generate high value recycled commodities, investing in recycling and waste infrastructure, as well as creating new opportunities to recover and reuse resources."

The process of beneficiation involves removing impurities from used, broken glass through crushing, cleaning and sorting to deliver crushed contaminant-free glass (also known as cullet) ready for manufacture in new products. The new plant uses optical technology for this process, sorting post-consumer recycled glass by colour and separating the glass from contaminants to provide a clean stream into the company's furnaces. The use of this type of technology for glass recycling is a first for South Australia.

Increasing recycled content through the beneficiation plant will deliver a number of environmental benefits, including a reduction in the amount of energy consumed to manufacture glass products, a reduction in virgin materials and diversion of waste away from landfill.

These benefits will advance the company toward achieving a number of its sustainability goals, which include 60 percent recycled content for glass beverage containers by 2025 and net zero greenhouse gas emissions by 2050.

The plant has the capacity to produce a maximum of 150.000 tonnes of furnace-ready, recycled glass each year, with 100 percent of the recycled glass used by Orora to produce glass packaging for customers across the beverage industry, including wine, beer, carbonated soft drinks, kombucha, water and olive oil.

Recycled glass is primarily sourced by Orora from container deposit schemes in South Australia and Western Australia. Orora currently uses 80 percent of the recycled glass from the South Australia container deposit scheme. The recycling plant will enable the company to source even greater volumes of used beverage glass through container deposit schemes and other established sources in other states across Australia.

The opening of the plant has generated 12 local jobs in the region across technical roles related to operating the plant as well as around 100 jobs via contractors and local suppliers during construction.

As another major step in its sustainability agenda, Orora is planning to construct Australia's first oxy-fuel furnace for its G3 furnace upgrade at Gawler. The oxygen plant is scheduled for completion in 2024, at a gross cost of approximately AUD 40M, supported by government funding of AUD 12.5M.

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GERRESHEIMER & STEVANATO GROUP

Collaboration announced

GERRESHEIMER AG, a leading global provider of healthcare & beauty and drug delivery systems for pharma, biotech and cosmetics and **STEVANATO GROUP** S.p.A., a global provider of drug containment, drug delivery and diagnostic solutions to the pharmaceutical, biotechnology and life sciences industries recently announced that they have jointly developed a high-end Ready-To-Use (RTU) solution platform with an initial focus on vials, based on Stevanato Group's market-leading EZ-fill® technology. This collaboration is projected to help customers gain efficiencies, improve the quality standard, increase speed to market, reduce total cost of ownership (TCO) and help mitigate supply chain risk.

Gerresheimer AG and Stevanato Group are addressing rising demand for RTU vials in the market and the partnership serves as a market enabler to fully support customers' evolving needs and establish a gold standard in the industrial filling process. The collaboration aims to make RTU vials a standard, available to a wide number of pharma companies globally – offering premium quality solutions to patients and reducing complexity for pharma operations.

The new solution will be available to other players in the market to standardize fill-finish operations from early phase drug development to commercialization. The new RTU solution platform from Gerresheimer AG and Stevanato Group will share the same secondary packaging, production process and sterilization method, ensuring consistent available capacity and a reliable double sourcing to the pharmaceutical industry. A hallmark of the new RTU platform is a significant reduction in particles, improving the overall quality and performance of the RTU solutions. In addition, customers can count on a high-end solution made by two major players in the drug containment industry with a long history of innovation. The new jointly developed vial platform and trademark will be presented in detail to the market at the CPhI Worldwide Frankfurt in November 2022.

"The new developed RTU platform stands out in terms of quality, TCO and sustainability and takes the use of RTU solutions like vials and, in the future, cartridges to a new level," said Dr Lukas Burkhardt, Member of the Management Board of Gerresheimer AG. "Due to the strong reduction of the particle load, the quality is significantly increased. Our new innovative solution will convince the market to significantly accelerate the conversion from bulk to RTU Vials."

"Our EZ-fill® vial platform is the market's most established choice for pre-sterilized containers, and this enhanced version for RTU vials will bring to the market its full potential in terms of quality, flexibility and value for Pharmaceutical Companies and CMOs," said Mauro Stocchi, Chief Business Officer at Stevanato Group. "Through our collaboration with Gerresheimer AG we are responding to market demand, and we expect to achieve another important milestone in creating a reliable ecosystem to support, accelerate and de-risk the conversion from bulk to EZ-fill® vials already underway in the market."

WWW.GERRESHEIMER.COM - WWW.STEVANATOGROUP.COM

ZIGNAGO VETRO

Glass mould production reinforced

Zignago Vetro S.p.a. has finalized the acquisition of the entire share capital of **Italian Glass Moulds** S.r.l. (IGM), an Italian company with its headquarters and factory at Portogruaro, Venice, Italy. It specializes in the production and sale of moulds for the glass industry. The operation was carried out by the Group with its own funds, confirming the financial soundness of **ZIGNAGO VETRO** and the conviction that led to this investment.

Roberto Cardini, Chief Executive Officer of Zignago Vetro S.p.A explains the nature of the operation: "This acquisition is very important because it is at the same time a diversification from the Group's core business but also in synergy with it." IGM operates in a sector of fundamental importance for the production of glass containers. It is a company that needs relaunching but, as Roberto Cardini said, Zignago Vetro "is confident of the success of this operation" because "it is the Group's primary goal to expand its production capacity and broaden the range it can offer the market both in Italy and abroad, ensuring the highest levels of quality, innovation and service."

IGM has been in business since 2020, after taking over Busellato Glass Moulds S.r.l., a long-standing mould-producing company. It currently employs about 40 people and in 2021 reported revenues of approximately EUR 3M, with around 20 percent from abroad. It has distinguished itself over the years with the high quality of its products, the professionalism of its service and its capacity for innovation, and it can count on modern plants, its own technology, and consolidated know-how: the ideal characteristics for becoming a fundamental cog in the wheel of Zignago Vetro.

WWW.ZIGNAGOVETRO.COM

KOENIG & BAUER KAMMANN makes strides with hollow body printing

When it comes to classic screen printing three basic ink systems are contrasted - namely those of the organic, solvent-based and ceramic: all of which have different ranges of process application and permissions.

As for classic ceramic screen printing on glass, solid ink upon the screen is heated until it becomes liquid. The printed image will then be cured in an oven set at circa 600°C. The ink itself is characterized by excellent scratch and adhesion resistance. Thanks also to further developments it can be fed to the screen by ink pumps. All this makes it possible to design machines that can operate at extremely high printing speeds.

The classic use of ceramic ink is tableware glass printing as well as bottle printing. Due to their high scratch adhesion resistance, bottles printed with ceramic ink can be filled in a fast-running filling line. As is proven by Koenig & Bauer Kammann's HS300, printing speeds with an output up to 300 articles per minute pose no problem.

SOLVENT-BASED INKS

These are popular for such baby products as toys or drinking bottles, given that they're food safe once the solvent has evaporated. The same inks are used for

With customized decoration solutions still all the rage today on shaped articles in glass, plastic and metal, as well as many other substrates, KOENIG & BAUER KAMMANN continues -as always- along its path of innovation in both direct and digital printing.

paper finishing in thermoplastics, glass and metal - being cured either by hot air, by removing the solvent or by tempering. A disadvantage of solvent-based screen printing is the relatively long drying time as well as its restrictions concerning printed images. Ink processing time, too, comes as limiting to image printing - and caution is necessitated if the screen remains open during the printing process.

ORGANIC INKS

Modern UV-screen printing is finding ever more applications. Once developed for plastic articles, it's now becoming increasingly popular in glass finishing too. Several points speak in its favour, including the short drying times, elevated production speed, good resistance and high gloss. Halftone printing and fine lines are no problem in UV-screen printing owing to its long open-screen time. Thanks to the latest UV LED dryers, the required energy consumption and associated CO2 emissions are reduced even further, making UV-screen printing ever more important as compared to ceramic ink. Thanks to further developed inks and pretreatment systems, adhesion and scratch resistance on glass have also increased significantly in UV screen printing.

DIRECT PRINTING

When comparing direct printing processes, hot stamping can't be excluded from the equation. Here embossing foils, embossing stamps, pressure and heat all

converge in the process. In the case of plastic articles, the print image will be transferred from the embossing foil by a heated embossing stamp or embossing wheel. The embossing tool, which has the image engraved on it, is pressed onto the article. Then with heat and pressure the image will be transferred or embossed onto it. The foil, usually metallized in various colours -gold and silver being typically the most elegant and preferred- is coated with a primer that ensures good adhesion to the article. As for glass articles, a flux in the decorated form is printed on the article in advance. When embossing glass, as opposed to plastic, the tool isn't image engraved. Here release of the image from the foil is done in advance by the printed primer, with the foil adhering only in the parts that have primer. Hot Stamping is among the most elegant ways of decorating glass or plastic articles and is mainly used for finishing glass flacons and plastic articles in the cosmetics industry or when finishing beverage bottles in the wine sector.

DIGITAL PRINTING

Digital printing offers a unique print quality with resolutions of between 360 and 1200 dpi, depending upon article geometry and tolerances. With special technical features, printing can be done in areas where conventional printing processes reach their limits. In combination with dynamically-tiltable holding devices for optimum article positioning under the print heads, even complex geometric

shapes can be decorated. Wheat beer glasses or bicycle drinking bottles, for example, can be printed over the full height of the article. Personalizations, special series or single prints are all possible thanks to digital printing. Online-based job control, direct from website to press, is also possible. Colour management software ensures consistent quality, even with different file types. With special features in the machines, such as an article scanner with corresponding software, the printing of conical and waisted articles can be optimized too. A perfect 360° banderol print is also possible with non-circular articles. And this is individually different for each printing station. For the K15 and K20 machine series from Koenig & Bauer Kammann, these solution types are standard.

ADDED VALUE WITH INNOVATION

With the latest technology, unique and personalized "digital relief printing" decors can be offered to the customer in relief form. This can be realized either transparently or with colour. Digital relief printing offers a notable cost advantage over conventional processes, short turnaround times and a good carbon footprint - not least due to the latest, energy-saving UV LED drying.

Digital relief printing can be performed with up to 3 mm layer thickness and is especially suitable for printing small, fine details or even thicker reliefs. Such printing is precise and sharp-edged down to 0.01 mm despite machine tolerances. Depending on print length and height, up to 60 cycles/min can be achieved in digital relief printing on the K15, for example. Excellent adhesion resistance and more than 1000 dishwasher cycles are a matter of course. To ensure this, optimal pretreatment is necessary, for which Koenig & Bauer Kammann has just the right machines within its product range. In combination screen printing, digital printing, hot stamping and digital relief printing, the most complex artworks can be printed - which includes special colours in both screen and digital printing.

HYBRID MACHINES

These combinations become reality by hybrid printing machines, which are characterized by absolute flexibility. Much is possible, whether we're talking a combo of screen printing and digital printing, screen printing and hot foil stamping, screen printing and labeling or a mix of several processes. Here the customer is afforded the option of carrying out different finishing steps in a single work step. When combining different types of finishing in just one machine system, super high-precision register tolerance is hardly possible in conventional decentralized systems. The article remains in its holder during the process, which means both screen and digital printing can ideally be matched. With large machine systems, such as the K15Xl from Koenig & Bauer Kammann, the entire finishing trio can be combined, signaling how hybrid application saves an enormous amount of time and effort - not to mention cost.

CARBON DECOR

In many cases, such new technologies and developments are

already being used by Koenig & Bauer Kammann customers - whether it's pure screen or digital printing presses, or modern hybrid presses combining all the aforementioned decorating processes. The company's customers focus upon innovation, reliability and performance. One example of innovation here is Carbon Decor, of the Carbon Group. A French specialist in glass printing for the perfumery, cosmetics and bottle industries, it's proud to offer high-quality services every day thanks to Koenig & Bauer Kammann's digital and automated machines. The company's machines, both flexible and versatile, integrate a combination of all the aforementioned decoration processes, as well as recently-added personalized relief printing. Now able to look back on a long history in screen printing, Koenig & Bauer Kammann is constantly developing new machines today - which numbers it among the most innovative machine builders in the field of screen and digital printing. Such developments, made in close coordination with its customers, always aim to enable further advantages for their daily work - which is why, with Koenig & Bauer Kammann's machine portfolio, customers can configure the right machines for all applications.

K15 SERIES

The flagship in screen printing, the K15 series offers all the possibilities demanded by the market. Whether it's pure screen printing, digital printing, digitally printed relief printing or hybrid machines with hot stamping -even combinations of different systems- the possibilities are legion. Indeed for either "normal", high-speed with cycle rates of up to 110 cycles/minute, or its two-up version, the company's basic machine is always the same for all capabilities. Popular hybrid machines are combinations of screen and digital printing as well as screen printing and hot stamping - all of which increase the digital printed relief. Functions here include variable tiltable article holders in all stations, bottom register camera, article scanner, image inspection - to name just a few. However, the machine programme includes other machines besides the K15.

THE HS300

The HS300 is a screen printing machine for glass bottles that can reach up to 300 cycles/minute. To be able to run uninterrupted at these speeds the ceramic ink is fed to the screen by heated ink pumps. Indeed with the HS300, Koenig & Bauer Kammann is effectively demonstrating how developments continue also in classic glass printing.

THE K20 SERIES

This is a great solution for smaller production runs with one or two article fixtures. Tooling costs are low and set-up times short. Here, also as hybrid machines, the possibilities are as extensive with the K20 series as they are with the K15.

THE K31 SERIES

For the pretreatment of glass articles, this represents an optimal solution for UV screen printing.

FUTURE SUCCESS STORIES

All this signals that thing's are definitely afoot within the printing industry. Traditional screen printing continues to develop, complemented by in-line hot stamping and, in parallel, digital printing - which is also becoming more popular. Various decoration processes, with their very individual advantages (but also their limitations), will continue to coexist on the market. Thanks to the aforementioned modern hybrid technology, current advantages combine to offer customers optimal finishing options. Here's why the printing industry can look forward, upbeat, to the new surprises that Koenig & Bauer Kammann will bring to the market in the future. ■

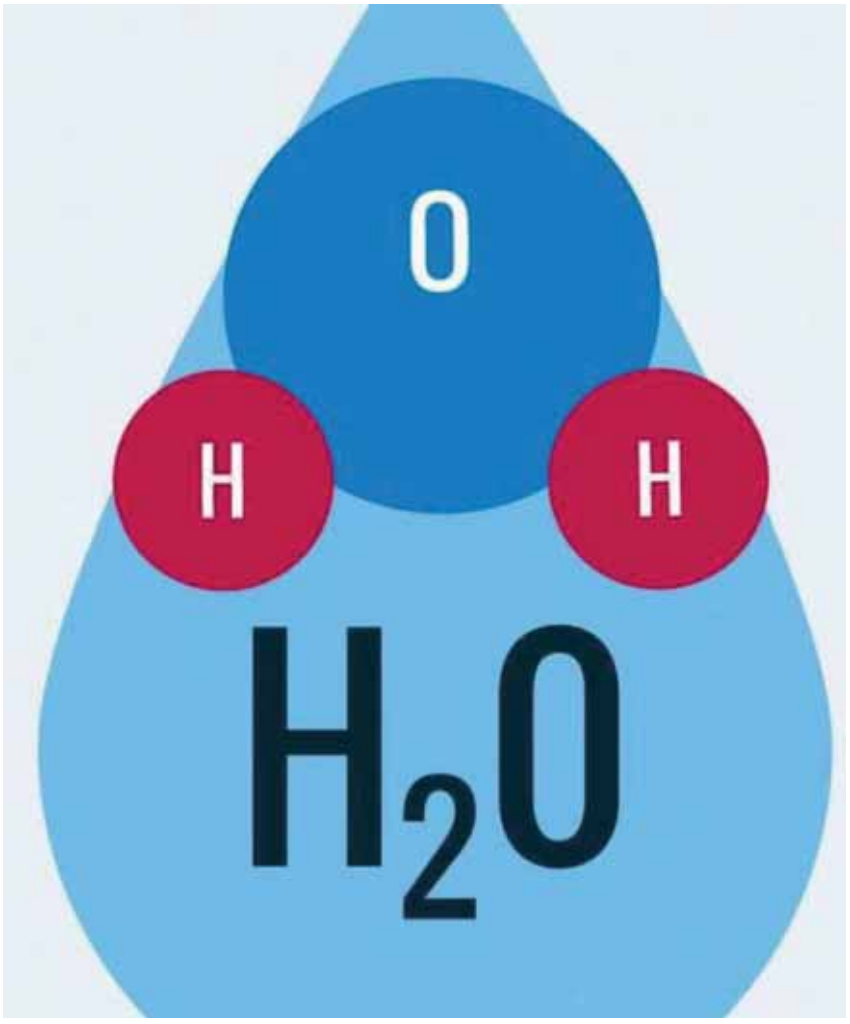
OCMI-OTG and SAPIO flag hydrogen as lead sustainability player

The GMP&A editorial team recently spoke to Anna Marigo, Business Development Manager at SAPIO and Michele Gusti, OCMI-OTG Group Chairman - all to learn more about their ongoing project to promote a more sustainable use of energy in machines for glass making.

GLASS MACHINERY PLANTS & ACCESSORIES (GMP&A):

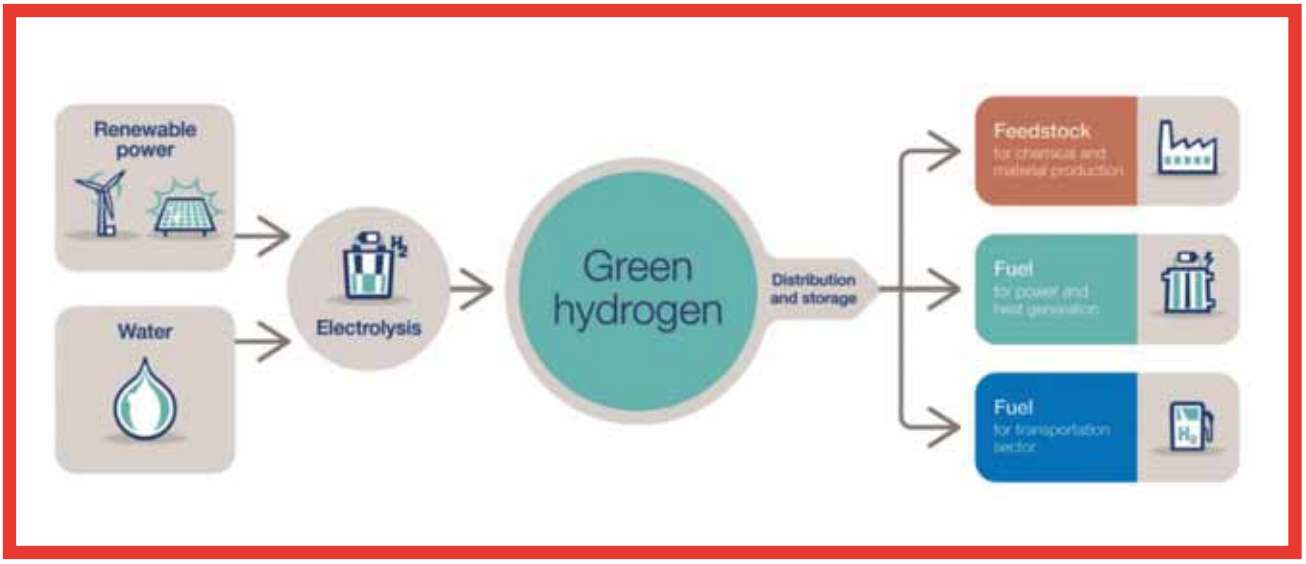
Anna, tell us something about Sapio and about why hydrogen is so central to your business.

AM: As an independent company that produces technical gases, Sapio has always been in the hydrogen business. Yesterday we celebrated our centenary. These past hundred years have consistently seen hydrogen being very much a part of our history. Right from the outset we started producing it in significant quantities. Now looking ahead, the coming years will bring new developments for hydrogen, If it's a ten to fifteen percent blend most likely they can all remain the same. That's a very challenging new market. To enter this market it's important that the assets which enable hydrogen use are designed to work with it, i.e.: it has to be ensured that future boilers can burn hydrogen instead of methane. In our case, therefore, glass furnaces will use hydrogen instead of methane, and so on. To achieve this, those assets need to be modified - given that they were made to consume methane and not hydrogen. If it's a ten to fifteen percent blend most likely they can all remain the sameBut when you have to boost that level to reach 100 percent hydrogen then you must redesign the glassmaking assets to ensure they can offer the same performance.



GMP&A: Where's the conversation around green hydrogen going today and how has hydrogen become so important to today's challenge to take CO2 emissions out of the energy equation?

AM: To answer your question I must begin by saying that to create this new market, hydrogen must become the fuel that replaces methane. Here the starting molecule is water - a molecule comprising an oxygen atom with two hydrogen atoms attached. Note that when I recombine the two hydrogen atoms to make our H2 hydrogen molecule then I leave an oxygen molecule behind - not a carbon molecule, as would have been the case with methane. So, starting from water in this way, you have no CO2 emissions in the hydrogen production process. The problem lies here: much energy must be consumed to detach the hydrogen from the oxygen molecule before combining them together to make the hydrogen molecule. Today 40 percent of the electricity comes from a gas turbine plant. It's important that the electric current I use for my electrolysis should be electricity from a primary renewable source that comes either from the wind, the sun, hydroelectric power, etc. Such primary forms of energy need to be converted into electrical energy by using wind turbines, photovoltaic panels, and so on. It's electricity that makes the electrolysis reaction which breaks the water molecule and produces the hydrogen molecule in its entire supply chain without releasing CO2 into the atmosphere - and it can be used to substitute methane. Now to substitute the methane I first need to make changes to my assets to ensure they perform well - still doing the work optimally as if they were operating on methane. Here we have to work on the nozzles, on the geometry of the burners, etc. That's because hydrogen and methane are indeed two fuels but they're very different. What's evident is that they exhibit differences in combustion with oxygen. Another detail here is that the flame is transparent in hydrogen but not in methane. That can have repercussions when I make a radiative heat transfer. As the flame is shorter, I now have to heat more by convection. I must consider that I have a shorter flame. The



calorific value is also different ent. In terms of volume, hydrogen has a calorific value three times lower than methane. As such, it's a molecule that can take the place of methane, yes, but it displays different chemical forms - which means it also has a different behaviour. Consequently, the asset that will have to burn this hydrogen will have to be modified. The OCMI-OTG case comes into play here, since the group produces machines that are used to form glass. A methane-fueled flame is produced that then melts glass rods. These get processed, following which a vial comes out. That machine has been modified to ensure it can work completely free of methane and be one hundred percent powered by hydrogen combustion. In this way we have a vial formation that displays the same characteristics and quality - and the degree of defectiveness is reduced when compared to methane combustion. The machine can thus shift from methane to hydrogen. When deciding to transfer to hydrogen the customer will have conversion kits to be able to use one fuel rather than the other. We've offered our support with the hydrogen and gas distribution system - the whole phase that concerns the burner, combustion, etc. Now OCMI-OTG has done the fine-tuning and indeed the machine works very well running on hydrogen.

GMP&A: Michele, what is OCMI-OTG's part in this project?

MG: We commenced this joint research a year and a half ago in order to identify the best way to power the machines we make. Mind

that we have about 1500 lines on the market - a significant amount all over the world. We're aware that there's a strong need out there for our customers to try to reduce energy costs in production. Here's why we started with a study that could offer us some way of getting hydrogen. We first rented some generators to conduct tests and also perform cost studies. These hydrogen generators are a fairly refined product by now. However, frankly that conflicts with our goal, which is to give our machines a way of working with something cheaper. Many years ago I went to Denmark to see the very first wind generators - all distant relatives of the ones we have now, which had a very modest production capacity back then. Not only. They had no way of transmitting the electricity. They generated the wind from a distance, though we're talking here of transmission of an electric current through an electric cable that died after just 200 metres. By contrast, wind farms today can generate megawatts of electrical power and supply it over significant distances. So the wind generator is an important means of having clean hydrogen. Sapio is a large company that has signed very noteworthy contracts that include important contacts, for example with Enel in Sicily, in order to be able to take hydrogen from their wind farm.

GMP&A: Anna, tell us about Sapio's current projects with hydrogen.

AM: Well, we have the construction of three hydrogen valleys in the pipeline - one of which is in Mantua. The other two centralised production centres aren't yet at an advanced stage though we're finalising them. In Mantua we already have a steam reforming plant that we are going to expand with an electrolysis plant where the hydrogen produced will be green. In our steam reforming plant we capture the CO2 and we sell it on the food market.

GMP&A: Michele, what are your considerations about the project's progress so far?

MG: To date, the project has given an exceptional result at experimental level. On the other hand, we do clash with different interlocutors. Large multinationals already have a hydrogen plant installed in their factories. So let's say it's already easy to make a mix of hydrogen and oxygen or gas -or anything else- to take forward production with slightly minor modifications of the machines. The real problem arises when the user of our machinery is a medium-small company that's perhaps poorly-equipped, given that the hydrogen destined for its factory requires significant investment in safety. That explains something about the situation. We arrived at a time when the machines were already on the market. If we're talking about the supply of cylinders with plant engineering that's well done then we're already producing plants that can bring hydrogen to our machines. The truth is that today is the worst moment to make certain considerations because the cost of gas has risen tenfold. Also, there's the war and so on.

GMP&A: Anna, can you speak to your own take on the project's progress?

AM: What we can say from our technical point of view is that the combustion has improved with hydrogen, with excellent metrics and an elevated quality of the final product, i.e. the vial is identical, if not improved, with hydrogen combustion as opposed to methane combustion. No defects or worsening has been introduced.

GMP&A: And which is Sapio's contribution to the mix?

AM: In order to power these machines with hydrogen, what a company like Sapio can do is produce and transport the gas needed by the customer in cylinders or bundles where the hydrogen requirement is compatible with such transport. So, if the customer's needs are compatible with transport by trucks then we'll transport the gas by truck. If, instead, the demand is greater because we're maybe talking about a glass factory oven or a steel mill oven (with quantities no longer compatible with a back and forth of trucks) then our business model can also add onsite plants for hydrogen production - obviously always with electrolysis and renewable electric power and so connected to renewable energy and 'on-demand' hydrogen production for customers. Such is our business model for all gases - nitrogen included.

GMP&A: Michele, any comments on project financing?

MG: At the moment studies on hydrogen are generally sponsored by individual states. In our case Europe takes care of them, which allows us to break-even with costs for where

hydrogen finds itself today. Indeed we also participated in a European study to create a glassworks powered by hydrogen. As soon as our client shared the project idea on the net, hundreds of others tried it too with the result that Europe suddenly said: "Guys, we can't finance hundreds of the same initiatives. Try to pool resources among yourselves to come up with some sustainable economic plan and we will finance it." That marks a very important step. But in the meantime, here is Sapio and we continue to do our job to try to convert everything that's mixed to take hydrogen forward. I am personally very optimistic.

GMP&A: Anna, can you speak to Europe's part in the hydrogen question?

AM: Hydrogen is one of the ways identified by Europe to decarbonise. We have the entire roadmap for hydrogen articulated by the European Union and the European stock exchange provides the financing to develop the hydrogen sector. If we need to arrive at zero emissions by 2050 then fossil methane can no longer be burned. That necessitates finding an alternative that doesn't contain carbon.

GMP&A: Michele, can you report any numbers yet?

MG: We've just installed a line that's in its start-up phase at one of our customers - a large multinational that had the hydrogen plant already installed onsite. So we're already taking production forward with hydrogen. We don't have any pertinent statistical data yet to hand. However, given that we already have burner consumption data as well as maintenance needs and production quality information, we hope to be able to publish something within two to three months - which will certainly show a very positive result.

GMP&A: Finally, Anna, how does the whole project tie into your company's core values?

AM: The Green Deal anticipates a complete abatement of carbon emissions by 2050. With its 'fit for 55' project it also has a milestone set for 2030, which seeks to push for the halving of emissions. Here the European roadmap is quite precise. Europe has dictated the timeline but it has also given us the tools to propose one of the decarbonisation levers, which is hydrogen (and there are others as well) - even to start projects that use hydrogen in these sectors. Obviously, when we can, we move internally to apply for funding because it's the best means to start projects today in ways that are also economically sustainable. This is how we're interpreting the European mandate to meet our commitments to the environment. We as Sapio believe in hydrogen and sustainability, which is why we're moving forward with all we believe to be our strength in setting out upon this path. ■

BDF INDUSTRIES puts its product excellence on full display

During Glasstec last month the editorial team at Glass Machinery Plants & Accessories spoke to BDF INDUSTRIES Head of Operations Ferdinando Dalla Fontana on machines on display at the trade show and how recent organisational changes were able to boost company innovation.

GLASS MACHINERY PLANTS & ACCESSORIES (GMP&A):

Ferdinando, tell us how your own personal story is linked to BDF.

FDF: As the fourth generation taking the reins of the family business, BDF often leaves me with mixed feelings. The company has always been a part of my home. As a child I was often on the factory floor. I even learnt to drive there by practising on the forklift. It all became more hands-on about six years ago, and that rich sense of family history has been my driving passion ever since. For me, BDF always came naturally. It's in my DNA, which also explains why I feel the strong responsibility today to

continue along that family path and ensure the business grows. Looking back at how I always watched my father, grandfather and uncle to learn the ropes of the business I'm reminded of how they often cautioned me to see the past while remaining also focused upon the future.

GMP&A: Can you share something of your professional history with us?

FDF: Sure. My preparation is in Economics, after which I completed an MBA based upon supply chain and production. My first professional experience came with working in an oil and gas company as a kaizen promotional officer following production. I started about six years ago at BDF as a continuous improvement officer. Here I began managing the entire process, going on to become production manager in my second year - initially in operations. Over time I've taken charge of BDF operations and introduced a completely new process with a fresh team. While it may not be always visible from the outside, we now have a totally different way of working which is much more standardised and efficient.

GMP&A: So, innovation with your products and transformation of your organisation, basically.

FDF: Indeed. What drives me and my team is continuous improvement. That goes for our operations but also for technical development at BDF. Two years ago I became technical director and there my particular focus has been on evolving the IS machine. Here we've been introducing all the modern concepts, like the black box system which has sensors within all utilities of the machine to allow reception of all machine information, thereby maximising machine control. We've also implemented the thermo-camera that regulates mould temperature and moderates air flow while managing the cooling of the machine. To this we can add our implementation of new mechanisms, like those of the new servo baffle and servo blow head - both of which can be installed in either a new machine or an existing one. All this follows that logic of continuous improvement to which I referred earlier - not only for future BDF machines but for all earlier versions as well, which means extending our advancement of the technology to what's already out there. We've also focused a lot on the angular section, having identified many features that can be improved - not just at BDF but throughout the entire IS sector. We've worked a lot, for instance, on machine stability and anti deflection - all to guarantee not only stability but also a certain 'performance standard'. This can best be delivered by a structurally-robust machine that's also resistant to wear over time given that it takes into consideration all the many variables of production which come with years of operation and millions of cycles. Having examined the internal mechanisms of

our various machines we've also worked on the passage of air in all of them. Now with the state-of-the-art software programmes and tools currently available we've been able to isolate any legacy engineering inside the machine -also following intensive study- which has afforded us the know-how to identify areas which exhibited pressure loss. In this way we've been able to 'ration-alise' the air passage mechanism within our machines to render it more standardised. That's marked a great improvement.

GMP&A: Also a big win for energy saving.

FDF: Precisely. Basically the goal here was to have no pressure loss within the air circuit. You improve performance with the same air quantity because you're not los-ing any compressed air. That way we have a more efficient machine

which is also far more reliable and much more standardised.

GMP&A: Talk to us about your product range.

FDF: As a leading supplier in the glass container business, BDF can supply the entire hot-end from batch to stacker. We've got both melting and forming divisions. The former takes care of all the furnaces, or hearths - so automation, back charger and the entire process associated with it, while the latter refers to everything from feeder to stacker (here the IS machine represents our core business). Not only. We also provide everything in-between.

GMP&A: Ferdinando, how has 2022 been so far?

FDF: Despite recent headaches in the industry connected to the present war, I can report that we've had a good year so far. That's because as a company we prefer to have advanced preparation for any unanticipated shocks. This also extends to the competition since we're also the producers of our own electronic system. It automatically excludes BDF from problems with the electronic component that many face within the industry. In terms of materials, as well, our forecasts had already factored in any unforeseen difficulties, so our timing hasn't been affected either. For us, the problems connected to Ukraine display two sides of the same coin. True. We're strong in Russia and have many clients there. However, after halting company activities there we've been able to concentrate instead on areas that were receiving less attention. Indeed in some cases we've been able to improve our presence in other countries that were serviced less or where our footprint wasn't as visible.

GMP&A: Finally, any reflections on 2023?

FDF: Looking ahead to next year I'm very positive. Today the consumption of glass has remained unchanged and current demand is still very high. Plants have to stay operative and keep the production going. So despite existing fears around gas and energy, people are still consuming beer and making pasta with tomato jars.

GMP&A: Can you speak to any BDF innovation in terms of energy saving?

FDF: For a long time now we've been providing hybrid solutions for our furnaces - so much so that we already have furnaces that are almost-gas free. While it's true there's still some need for oil and gas, we've implemented double-booster systems that ensure total reliance on oil and gas is reduced to a minimum. On our IS machine, too, energy consumption is significantly cut with the servo baffle and servo blow head, which jointly reduce compressed air consumption in the machine - here, in fact, we've totally eliminated compressed air consumption in the baffle to reach an estimated saving of 80 percent. ■

Environment-friendly packaging now upgraded by VETROPACK's Echovai bottles

At Drinktec in Munich last month VETROPACK showcased Echovai, the group's pioneering returnable bottle in tempered, lightweight glass - another innovative solution from this leading European manufacturer of glass packaging.

As confirmed by a pilot project with the Austrian brewery Mohrenbrauerei, an Echovai-treated bottle doesn't only impress with its lighter weight but also with its resistance to abrasion - which results in higher circulation rates. With Echovai the containers aren't only more durable. Logistics effort and CO2 emissions per bottle are reduced too.

LIGHTWEIGHTING

For years now, studies have shown that reusable glass containers rank among the most sustainable and environment-friendly packaging types. For glass bottles, only their weight and resistance were considered to be weak points. As a new solution, Echovai's conspicuous improvement of these elements has Vetropack making a significant splash among glass packaging manufacturers. It's a particularly robust and material-saving form of lightweight glass bottle that's up to 30 percent less, weight-wise, than standard returnable bottles - and it's more abrasion-resistant. As Daniel Egger, Head of Innovation at Vetropack explains: "This makes Echovai bottles a truly superior solution, both economically and ecologically - potentially transforming the market for returnable glass containers." Egger was also among those responsible for the development of Echovai.

THERMAL PROCESSES

Tempered glass isn't a new idea in itself. For many years it's also been successfully applied in other areas - such as car windscreens. Lately, however, the process has had its limitations in glass packaging. Thermal treatment, which ultimately makes glass more stable, requires early adopters to accept certain design limitations simply owing to shape. Says Egger: "At our Echovai plant, the

biggest challenge with processing is variation in wall-thickness distribution. Only high-quality, uniform bottles can be successfully tempered. That's because their thermal treatment builds up a stress sandwich."

A special thermal process ensures a high level of robustness. In fact, the Echovai process makes exceedingly high demands upon production owing to the elevated heat-up and rapid cool-down of the bottles. That applies to the quality of the material no less than to the production process and systems. "Fortunately, at Vetropack we work with bottles of high quality," says Egger. "We also adjust the entire tempering process, very precisely, to the individual container and its shape. It's a very sophisticated, technologically-demanding process that can't be easily implemented - hence our phased approach to roll out."

It took around ten years of development work at the Vetropack Innovation Centre for Echovai to become reality. The robust lightweight glass containers are still produced exclusively at the plant in Pöchlarn, Austria. In phase one over the last three years, millions of bottles have been successfully sold and refilled by pilot customer Mohrenbrauerei, with extensive tests confirming the extended life span and durability of the bottles. In phase two, select new projects will show how and which other Vetropack plants will need to be readied for Echovai production - as requirement for meeting the demand for Echovai bottles across Europe. "We expect this demand to grow very quickly," says Daniel Egger, "especially since Echovai's performance in our pilot project has really been outstanding." Phase three will see the possibility of licensing technology, as well as know-how, to third parties - all to allow for a wider market introduction.

PILOT CUSTOMER DRAWS OUTSTANDING ECOBALANCE

As the first Vetropack customer, Mohrenbrauerei (in Vorarlberg, Austria) has used Echovai containers for its 'Pfiff Märzen' beer as well as its 'Radler' varieties over the past three years. They're already planning to move more of their beer specialties into these innovative lightweight glass bottles. A look at the data shows why. For the 0.33-litre returnable bottles alone, use of the Echovai solution (210 grams) shows a weight-saving of around a third compared to the standard bottles used formerly (300 grams). At the same time, the lightweight glass bottles can be stored six-high (instead of five-high) on a pallet owing to their reduced height. This has considerable effects upon logistics volume: in the case of the 'Pfiff Märzen' beer and the 'Radler' varieties, a reduction by around 1.000 tonnes per year was achieved. As a result, CO2 emissions per bottle fell to only a quarter of the normal 0.33-litre returnable bottle.

As for robustness, the solution is also showing strong performance. Not only do fewer bottles break during industrial use but after three years and up to 12 cycles, the containers have so far shown hardly any wear on the contact surfaces (scuffing). "A large part of them can still be classified 'good as new' - which is hardly the case with standard bottles after so many cycles," explains Egger. "Here's why we expect Echovai bottles to achieve a markedly higher number of cycles – which makes them an even more compelling solution compared to standard bottles."

ANTICIPATED IMPACT ON THE MARKET

As the environment-friendly option also for products in one-way bottles, Echovai bottles are an alternative not only for beverage producers who already sell their products in returnable bottles. Here Egger and his colleagues also see great potential for the new Vetropack solution in the segment of one-way glass containers. That's because, until now, it's often been the weight increase that plays a decisive role. As such, Echovai could promote the switch to returnable bottles, since brand owners usually want to keep their unique bottle characteristics. "Our long-term goal is to have a more user-friendly return and refill system with 100 percent bottle reuse," explains Egger. "For instance, we're already working on a solution for optimised traceability of our Echovai bottles. By applying a specific data matrix code to each bottle, we'll soon be able to link any data to the individual product unit. This can allow us to link differentw parts of the value chain, which are currently viewed separately, and to trace them through the entire supply chain - from production and bottling to the end-customer and back again - thus also marking the dawn of a new era of digital interlinking." ■

ABOUT VETROPACK

Vetropack aims to enable people to enjoy food and beverages as safely as possible by providing solutions that combine optimum elegance with maximum responsibility. The group approaches glass as the most sustainable packaging solution – and the perfect material to ensure that food is packaged safely. Its holistic Service plus+ approach helps customers to optimise their value chains and better guarantee consumer safety. Close, long-lasting relationships are the hallmarks of Vetropack's collaboration with partners. Guided by its understanding of environmental responsibility and cost efficiency, the group aims to minimise its carbon footprint throughout the supply chain, and is committed to recycling as the key to optimising product life-cycles.

Vetropack is among Europe's leading manufacturers of glass packaging for the food and beverage industry, with around 4.000 employees and net revenues of CHF 816.5M in 2021. It has state-of-the-art production facilities as well as sales and distribution offices in Switzerland, Austria, the Czech Republic, Croatia, Slovakia, Ukraine, Italy, the Republic of Moldova and Romania.

vetropack

VETROPACK GROUP

Schützenmattstrasse 48
Ch-8180 Bülach - Switzerland
Tel.: 0041-44-8633434
E-mail: info@vetropack.com
www.vetropack.com

Remembering Glasstec: LUBEN GLASS sets sights on future wins

With the LUBEN GLASS team just back from Glasstec, the company used the trade show to take stock of a year spent innovating and investing in its research and development of new products - of which the company views its success at Glasstec as clear proof.

A GREAT YEAR

Back from the Glasstec fair it is time to take stock for Luben Glass: a year spent innovating and investing in research and development of new products has paid off! The success achieved at the Glasstec fair is proof of this. Many visitors and customers visited the Luben Glass booth to learn about the latest news in terms of machinery and variable parts for IS machines.

The success was extensive and particularly amplified by the revamped VR1 evo, ILS evo and the brand new CVT 1 machines.

A GREAT TEAM

Present with all its partners, Luben Glass has been able to welcome customers from all over the world, managing to make each of them feel at ease. The professionalism and in-depth knowledge of the sector allowed the Luben Glass team to present all the news in the best possible way, also performing specific tests when requested by customers.


LUBEN
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Bottle Volume

A NEW MACHINE FOR CONTAINER VOLUME CONTROL

An absolute novelty, the CVT 1 has fascinated customers for its ease of use and its compact and innovative design. The machine, equipped with state-of-the-art technology, allows you to measure the volume of the container with extreme precision both at the mouth and at the filling level without the use of liquids.

The container is positioned, in sequence, in the two compartments where, thanks to the innovative system, its volume is measured in a few seconds.

VR1 EVO

VR1 Evo is the evolution of VR1, a machine that has been widely used in the mold workshops of glass factories around the world and also by the main mold makers, thanks to its ease of use and many other pluses that make it unique in its kind.

VR1 Evo has been enriched with a new system (patent-pending): the presence of a rotary table allows to perform the loading of the molds from a single workstation, facilitating the operator's work.

ILS EVO

This lubrication unit is widely used in glass factories throughout Europe and, thanks to the technical solutions adopted, it is possible to have up to 20 lubrication lines operating with one or more oils, in a very compact cabinet, measuring only 120 cm. Presented at Glasstec with renewed aesthetics, the ILS control unit has been equipped with a new luminous status indicator consisting of a LED strip of excellent aesthetic effect. ■

ABOUT LUBEN GLASS

LUBEN GLASS has been in the hollow glass market since the 80s. It has since established itself as a leading company specialized in the supply of spare parts, special equipment, plants, machines and chemicals - later adding engineering and energy consulting services to its sales department. Over the years, Luben Glass has grown and evolved - proving always flexible and solid as a company while becoming a coveted partner to hollow glass manufacturers. Nowadays Luben Glass is looking to the future with a view to ensuring a more proactive service offer to its customers by way of potential co-operations by which the company seeks to become a reference point for hollow glass manufacturers worldwide.

LUBEN GLASS

LUBEN GLASS SRL

Via Meucci, 23
26010 Offanengo (CR) - Italy
Tel.: +39-0373-244396
Fax: +39-0373-244401
E-mail: info@lubenglass.it
www.lubenglass.eu

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GET INVOLVED

EXHIBIT
Ken Clark
Sales Director
+44 (0)1737 855117
kenclark@quartzltd.com

EXHIBIT
Manuel Martin Quereda
International Sales Executive
+44 (0)1737 855023
manuelm@quartzltd.com

SPEAK
Greg Morris
Editor
+44 (0)1737 855132
gregmorris@quartzltd.com

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COUNTRY OVERVIEW

Spotlight on container glass for cosmetics and perfumery in INDIA

Rajeev Jetley

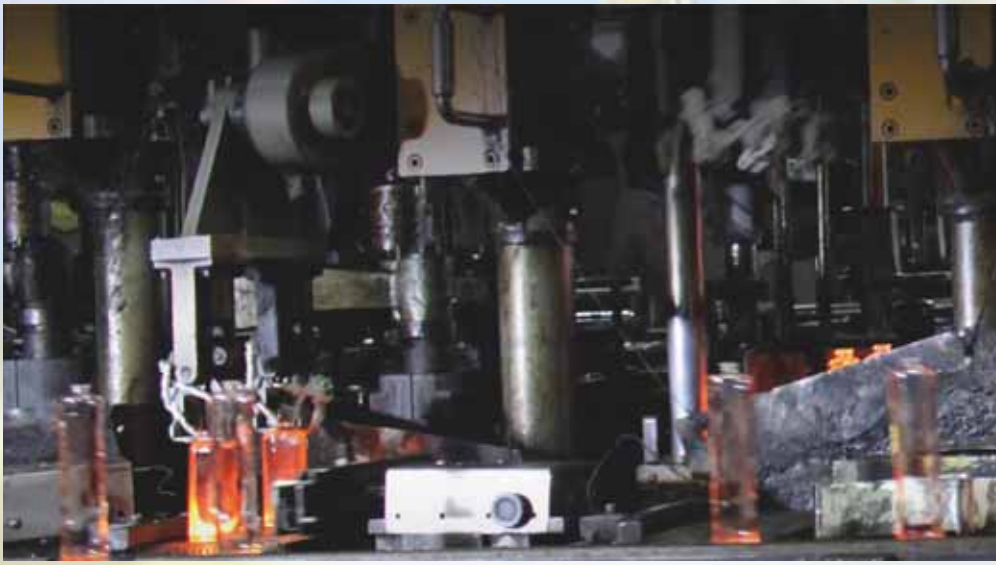
In this issue of Glass Machinery Plants & Accessories we take a look at the container glass market in INDIA. Once considered a very small segment of the country's container glass industry, cosmetics & perfumery has grown into a sizable segment for container glass producers nationwide.

Along with current domestic demand, exports of container glass has made India a leading producer of container glass for the cosmetics & perfumery segment.

MEETING THE NEEDS OF COSMETICS AND PERFUMERY

India has some of the leading producers of container glass for cosmetics and perfumery segments. PGP Glass, Haldyn Heinz Glass and AGI Greenpac are some of the leading producers - all known for their expertise within both domestic and international markets for the production of container glass for this industry segment.

The sizeable population, favourable demographics, ever-improving economic growth have all made India a major force in the production of cosmetics and perfumery. The country now accounts for a very small proportion of the global cosmetics & perfumery industry. However, owing the growing popularity of these products their production and consumption are expected to register healthy growth in the foresee-



able future - which bodes well for container glass producers within this segment.

Packaging for cosmetics & perfumery products can be made from a variety of materials, with container glass and plastic being among the most common. Plastic trays and jars are typically used in cheaper options due to their availability and low cost. Some cosmetics, on the other hand, will not work with any plastic. Albeit indestructible, plastic is composed of chemical molecules. As a result of their reactivity, certain plastics are unsuitable for general use. Firstly, the product must be free of any potentially harmful ingredients before being stored appropriately for skin use. A safe material that will not leach chemical components into the goods by which it's contained must be accustomed to whatever packages it - a demand make glass an ideal packaging medium for these products.

To remain inert, it requires neither additional treatment nor liners, which is why high-quality balms and lotions are often sold in glass bottles. In glass, rest assured, your beautiful products will remain fresh and healthy for as long as they're packaged.

As Vijay Shah of India's leading container glass producer for cosmetics & perfumery industry says: "The global cosmetic glass packaging industry is estimated to be worth around USD 2.25 billion, with PGP Glass capturing around 6-7 percent of the market. The perfumery segment contributes around 80 percent of the total cosmetic glass packaging industry. PGP Glass captures around 4 percent of the market. In the cosmetics segment (mainly nail polish), PGP Glass is among the largest players in the world and captures around 40 percent of the market. From our two manufacturing plants in India, in Kosamba and in Jambusar respectively, around a quarter (25 percent) of the produce goes to the Indian domestic market. And from our manufacturing plant in Sri Lanka, Horana, around 60 percent of the produce goes to the Sri Lankan domestic market. Our key export markets from India are Western Europe (France, Spain, Italy, and UK), the Middle East (UAE, KSA), Brazil and USA."

KEY SEGMENTS

India's thriving fashion and film industries are fuelling growth in the cosmetics & perfumery segment by making Indians aware of the benefits of having a good appearance. Today the majority of cosmetics producers in India serve the local market, although a few have started to export their products. Cosmetic manufacturers in India have been able to secure contracts from foreign producers and retailers with, say, Indian herbal cosmetics items being in high demand in overseas markets.

Mass beauty remains the largest segment of the Indian cosmetics industry, with a mar-

ket value of more than USD 11 billion, followed by hair care and personal hygiene products, which have a collective market value of over USD 3 billion.

Perfumery has also been among the key segments. India's importance in perfumery sector is evident from the fact that the International Fragrance Association's (IFRA) opened a new India liaison office in September 2022.

On the occasion Martina Bianchini, President of IFRA, said : "I'm delighted to officially launch the IFRA India liaison office. The country has a long and storied history in scents, perfumes and fragrances and sources many vital raw materials that are essential along the entire fragrance value chain."

Rachit Mathur, General Manager - Luxury Products Division, L'Oreal India says: "A visible growth in demand for luxury beauty across a stratum of Indian consumers has been observed in markets beyond the major metros, driven by a rise of aspirational consumers who have more disposable income and don't shy away from spending on premium products. Lancome will cater to this growing segment of Indian consumers through the brand's intuitive understanding of women's needs through its portfolio of unique and complementary skincare, makeup, and perfume products."

MAJOR CONTAINER GLASS PRODUCERS

PGP Glass, Haldyn-Heinz Glass, AGI Greenpac and a number of small container glass producers in Firozabad cater to most domestic demand of container glass for cosmetics & perfumery businesses in India.

PGP GLASS

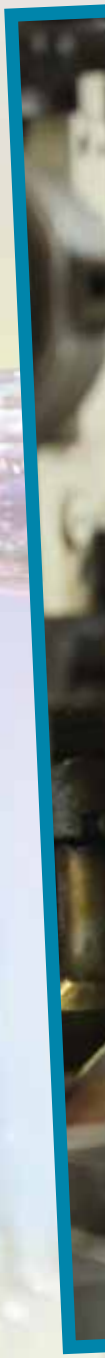
PGP Glass is one of the largest cosmetics & perfumery glass producers in Asia. With four manufacturing facilities - two in Kosamba and Jambusar in Gujarat India, one in Missouri USA and one in Horana Sri Lanka - 80 percent of the company's revenues come through exports. Piramal Glass currently produces 1.530 tonnes per day through 11 furnaces and 65 production lines. Its clients include global companies such as Coty and L'Oreal.

PGP Glass provides end-to-end solutions for its customers in the cosmetics & perfumery segments. The company provides integrated service and technical expertise from concept, artwork design, to final commercial development of container glass bottles. It owns one of the most sophisticated in-house capabilities for printing in ceramic, organic, and pad in one or multiple colours hot-foil stamping, coating (lacquering), rinsing (frosting), decal, fitment, and external metallization.

Formerly known as Piramal Glass, the company was acquired by US-based private equity fund Blackstone Group in 2020. Following acquisition by Blackstone, PGP Glass is expected to further increase its customer base, especially in the premium cosmetics and perfumery segment in the European and US markets.

"The change of ownership at Blackstone is a positive development as we will be able now to finally fulfil its vision of global leadership within the chosen segments of premium perfumery and cosmetics as well as specialty spirits," said Vijay Shah, director on the board of PGP Glass. Vijay Shah, who led Piramal Glass for decades, is in charge today of day-to-day operations at the new company.

Blackstone Group is one of the leading investment firms in the world, with an Assets under Management (AUM) of around USD 731 billion - these across sectors like private equity, real estate, hedge fund solutions and credit businesses. The Group has an exposure in the packaging



industry, through acquisition of varied companies such as the USA based Graham Packaging, Owens-Illinois Inc., Ohio and China-based packaging firm ShyaHsin, Gerresheimer Glas Packaging in Europe and EPL Limited (formerly Essel Propack in India).

HALDYN-HEINZ FINE GLASS

A joint venture between famed German company, Heinz Glass International GmbH and India's Haldyn Glass -Haldyn Heinz Fine Glass- is now among the leading producers of container glass for the cosmetic and perfumery industry. Formed in 2017 and thereupon commencing its commercial production in October of that same year, the joint venture is engaged in manufacturing premium glass containers used in the cosmetic and perfumery industry.

Heinz Glass has over 400 years experience in the production of perfume and cosmetic glass bottles and is regarded to be one of the world's leading manufacturers and finishers of glass flacons. The company has a presence in 16 countries. Heinz's core competencies lie in its in-house development division and mould construction unit as well as its state-of-the-art production and refining technology. The company's continuous focus to cater to the ever-changing needs of its customers has enabled the Heinz

COUNTRY OVERVIEW

Group to uphold both its glass-making tradition and its position as leading 'Global Player' supplying to most leading global beauty and cosmetic companies.

Heinz-Glas and lacquer manufacturer Weilburger recently developed an invisible antibacterial coating that renders the glass surface self-cleaning. The new technology, dubbed senoglass® Carecoating, enables glass bottles to be safely picked up both on store shelves and at home as the surface fights such microorganisms as bacteria and viruses. The invisible protective shield destroys 99 percent of the pathogens Staphylococcus aureus and Escherichia coli as well as over 99 percent of coronaviruses within an hour. The water-based coating is free of nanoparticles and harmful biocides.

AGI GREENPAC

AGI Greenpac, a company renamed from its earlier identifier AGI Glasspac, has set up a new manufacturing facility to meet demand from the cosmetics & perfumery segments. The unit was commissioned in early 2022 with a total investment of INR 2.200 M. The new facility which houses a furnace of 154 TPD has been named AGI Speciality Glass division. The speciality glass facility has five manufacturing lines, spread over 15 acres. The company will focus on exports to the US, Australia and a few markets in Europe. The plant will cater to high-end pharmaceuticals, including vials, perfumery, cosmetics and other segments. ■

INTERNATIONAL YEAR OF GLASS 2022

In this issue of Glass Machinery Plants & Accessories we commemorate this special Year of Glass by presenting a series of stories and anecdotes from the international glass community - all companies and people who have contributed to the industry with great dedication while investing their life's passion in the magical process of raising extraordinary creations from shapeless matter.

Passion for glass

Jürgen Grössler retires as SORG Glass Conditioning Manager

After having helped develop various solutions that shaped the glass industry for more than 40 years, SORG's Jürgen Grössler is now retiring from the business as Head of Forehearth and Glass Conditioning.

Over his time at SORG, Jürgen Grössler has seen the company rise to claim its own as world leader in both glass melting and conditioning technology - able to remotely analyse, advise and optimise a glass plant operation from thousands of kilometres away.

He commenced his journey with the company in June 1982 when the glass industry was very different. Says Grössler: "In the past we hadn't the speed nor the necessity to be available 24/7. Neither was anyone expecting a solution to their problem on the same day, given that plants have their specialists."

INDUSTRY INNOVATIONS

He adds that electronic systems and controls - or automation - have greatly increased the available data per system.

On top of this, a lot of value is also invested today in using less energy and far fewer staff in the glassworks. Grössler notes that problems can now be solved immediately: "It used to take a little longer when travelling wasn't as easy and communication tools were less advanced."

Joining the glass industry after having worked in mechanical engineering, Grössler's entry into SORG afforded him the opportunity to apply his knowledge and experience to an interesting new field as part of the Glass Conditioning team. Indeed he worked on more than 2000 projects globally over his time with the company - spanning a career which saw him travelling to around 50 countries.

A TRAJECTORY OF SUCCESS

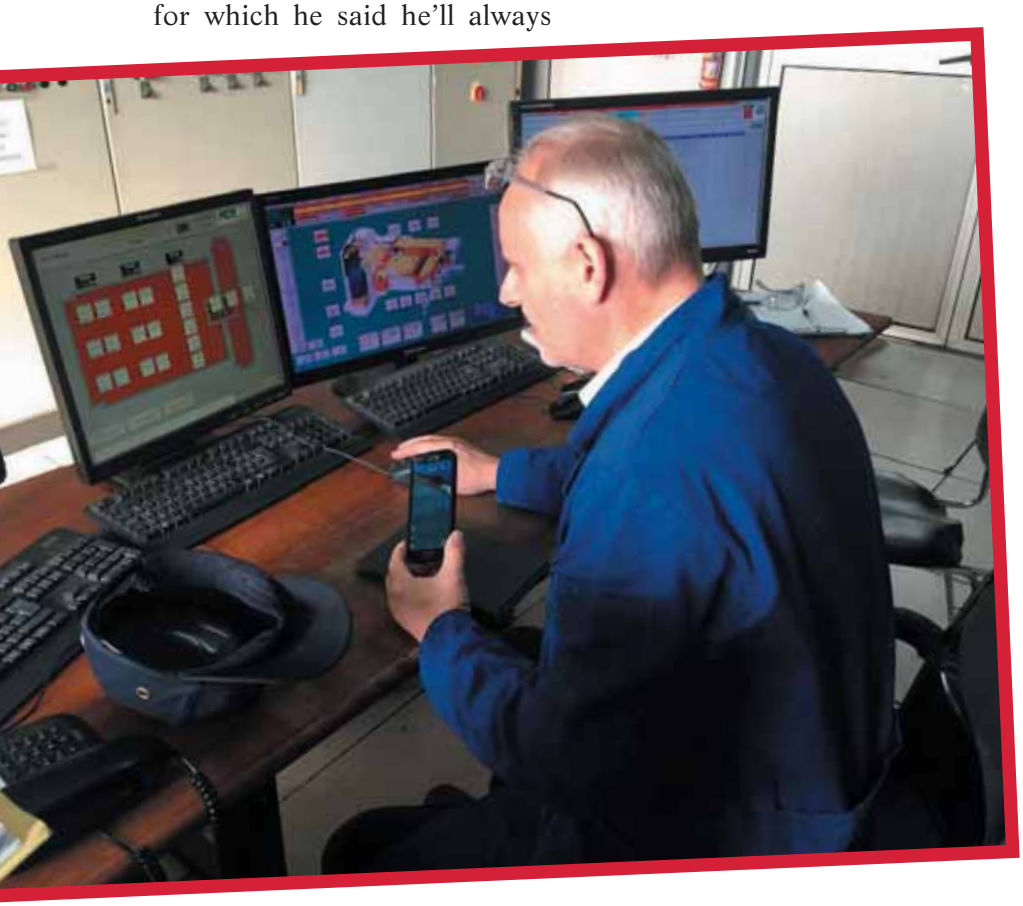
Managing Partner Alexander Sorg spoke of Grössler's professionalism and commitment, for which he said he'll always be remembered: "He's worked on some challenging projects and excelled in all of them. One example here was his dedication during the Emhart takeover in 2006. Grössler and his team had to organise the transfer of technical and commercial knowledge from the USA to Germany in record time. He did it in just a couple of weeks."

A GLANCE BACK, A GLANCE AHEAD

When asked what he'd miss the most, Grössler immediately answered "my colleagues, customers and suppliers." He expressed confidence, however, that the team he leaves behind will continue now to strengthen those relationships still further - especially since the training and education of young and new employees was always among his priorities over the years.

Aware that he leaves the company with a sense of 'mission accomplished', Grössler was satisfied to express his pride over "everything we did together" - also speaking of his particular pride "to now hand over a motivated, well-trained and well-structured specialist department."

In closing, he spoke of his plans "to visit some cities of which I alone know the airports so far - and to teach my grandson proper football!" ■



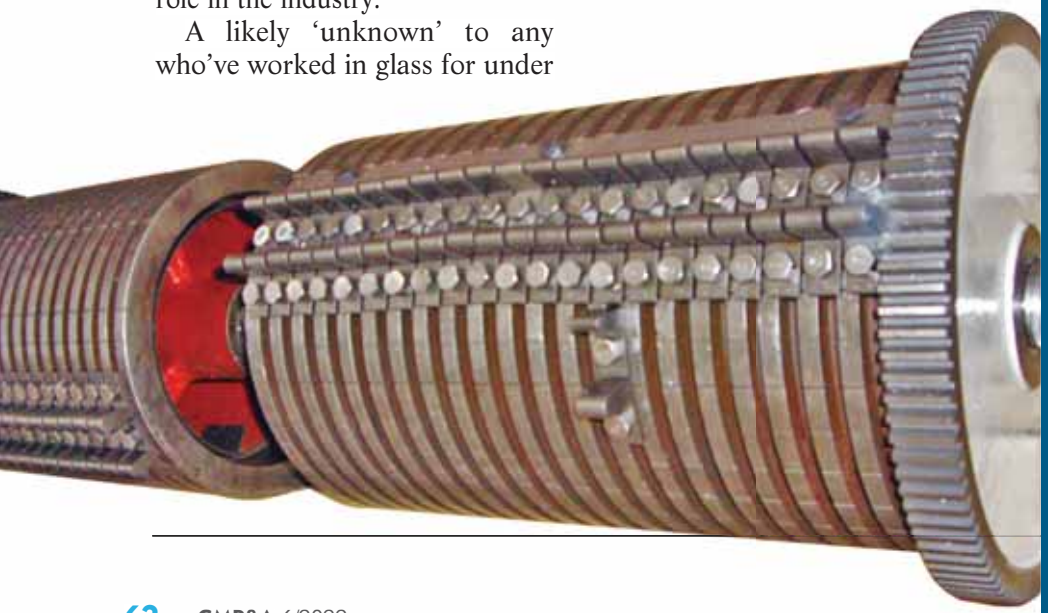
REVIMAC recollections: foray into the legacy paraphernalia of glass

Gilberto Volpato
Senior Advisor
REVIMAC

For the record: the 'Unidentified Mechanical Object', of worthy memory, is hardly a matter of fantasy or unlikely speculation. Instead, it refers to something that actually existed for decades - even playing an obscure, albeit crucial, role in the industry.

A likely 'unknown' to any who've worked in glass for under 30 years, the UMO is nothing less than the much-dreaded Mechanical Timing Drum of the IS glass-forming machine, a.k.a. tambour, trommel, barabàn, tambor - here our list of identifiers is endless and will doubtless depend upon your geographic latitude or country jargon.

Granted. A cursory glance at the static picture above will prob-



With "UFO-logy" back in fashion, I must shamelessly confess my lifelong passion for relic hunting - a pastime so close to my heart that it has me borrowing the same trope to retrieve from various memories of REVIMAC what I might best call 'the UMO' or 'Unidentified Mechanical Object'.

ably leave you impervious to its appearance. Admittedly it resembles some innocuous, oversized version of a musical carillon. But here's the thing: See our UMO revolving at high speed on its drive shaft, and with dozens of protruding sharp steel lugs (also known as buttons), and you'll find it a lot less friendly-looking. Not surprisingly, it used to be among the most dangerous moving devices installed onto the IS glass container forming machine.

Be not fooled here - for the eyes of the beholder can indeed deceive. The truth is, this UMO was quite indispensable, being our sole means of setting those on-off angles to activate and mechanically synchronise every pneumatically-operated function of the entire machine.

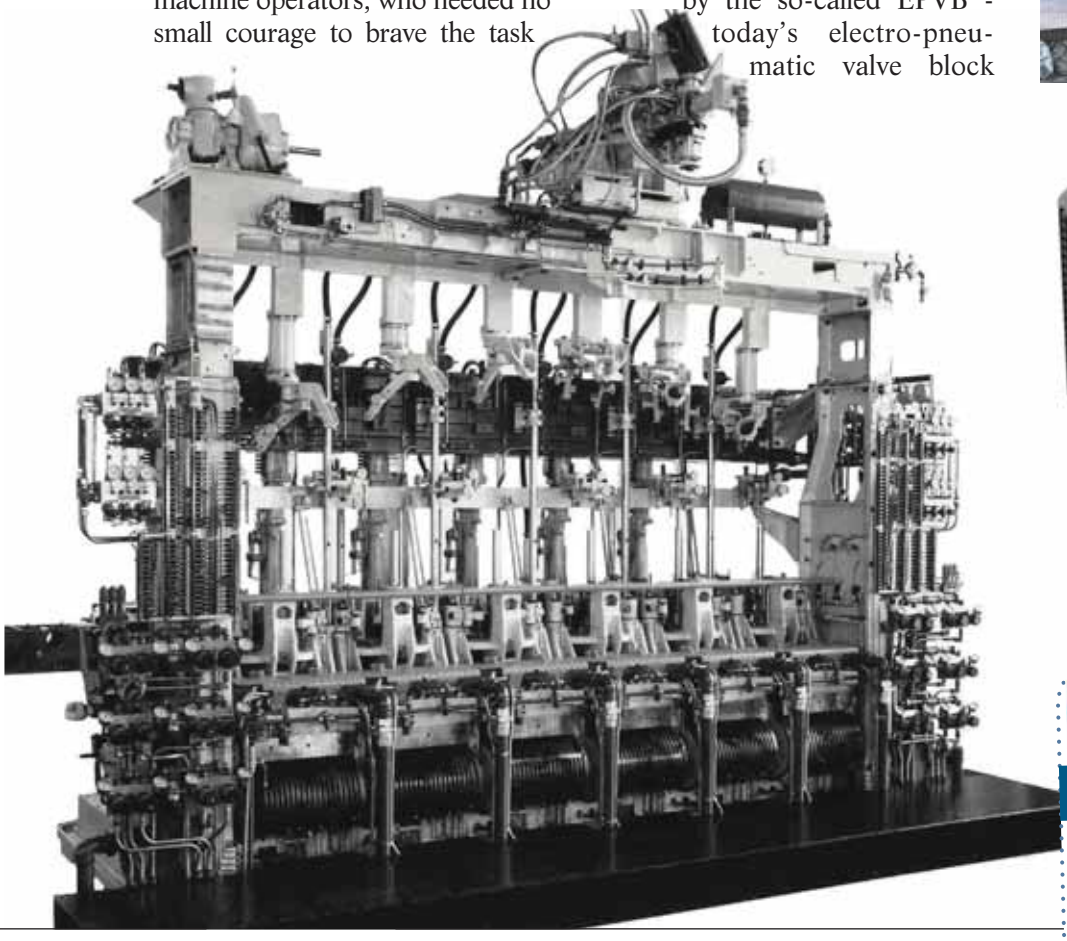
Setting 'only the brave' aside now as a popular quiz show, the title also perfectly captures the working spirit of so many IS machine operators, who needed no small courage to brave the task of manually-handling the special socket wrench for "on the fly" relocation of lugs into the drum slots.

Originally those slots numbered nineteen. They sufficed for several years until the last version arrived in the late 60s, which featured twenty-one lines - corresponding to the increased number of required activations.

Check out the picture below, which shows a six section, drum-timed IS machine - all neatly refurbished, of course, and functioning with the precision of a Swiss watch. Being something of a globetrotter, I managed to sell it overseas in the 80s, just as I did with the last piece, which is why I can now display it here proudly as a nostalgic image of industrial archaeology.

Decades on, the UMO is now decidedly obsolete, along with the purely mechanical IS machine upon completing its venerable career and having been replaced by the so-called EPVB - today's electro-pneumatic valve block that's controlled by the electronic timing system. Very few UMOs are still up and running nowadays, given that they got banned in many countries for being no longer compliant with safety rules.

That said, various stationary specimens can still be spotted in REVIMAC's IS building workshop where, cut into slices and squeezed to the ground, the last UMOs can be seen playing the humble role of spacers beneath the machine bed - there to lift it from the floor and so eventually ease the job of pipe fitters. Sic transit gloria mundi! ■



MINERALI INDUSTRIALI homecoming of a nation's production

Almost fifty years ago a winning idea by geologist Angelo Bozzola, together with craftsman Alfonso Ramon and Lodovico Ramon, a young student at Politecnico in Milan, saw the origins of Sasil, a company of the Minerali Industriali group, from a strategic market intuition.

Of Founded in 1975, Sasil began with the aim of producing feldspar sands for green and half-white glass - a 'dream' which extended further to producing sands for white hollow glass in Italy as well. Until 1980, all nationally-produced white glass was sourced from low-iron siliceous sands from France and Belgium - all because Italy lacked the sandy rough of purity that was on offer beyond the Alps back then.

ANSWERING UNMET NEEDS

Here the company's leadership team conceived of the idea of applying new treatment technologies to Italy's coarse sands.

Certainly it made economic sense - given the high price of the sands at their origin, coupled with the elevated costs of transporting them to Italy's glassworks from abroad.

The Sasil project was the first to develop before hitting the market - a feldspar sand with a low iron content that could replace at least 50 percent of the imported sands by bringing all the necessary alumina into the vitrifiable mixture. That goal was achieved in 1980 when industrial tests for the production of white hollow glass conducted at Bormioli Rocco in Parma under the direction of the Surveyor Breviari gave a decidedly positive result - both from a technological and an economic vantagepoint.

SASIL AND SARDA SILICATI

Great success was achieved in 1993 by Minerali Industriali with the Sarda Silicati company. Here a product was in fact put on the Italian market with sands treated at the Ossi/Florinas plant in the Sassari area - which would fully replace all imported sands for white hollow glass in Italy.

Initially to 50 percent from 1980, then up to 100 percent from 1993, Sasil and sarda Silicati could supply white glass sands to the country glassworks. Both controlled by Minerali Industriali, the two offered intrinsic guarantees of consistency of supplies and quality - all better ensured by production at national level.

Indeed it might come as strange today that, until 1980, glassworks in Italy depended 100 percent upon foreign sands for the production of white glass. That meant significant logistic headaches and only modest competition on the market. In reality, the time was just ripe to make a lasting change. ■

Waxing nostalgic as I retrace my many FERMAC yesterdays

Alessandro Ghirardini
Global Sales Manager
FERMAC

Looking back over my twenty years at FERMAC, I take stock today of the great privilege I've had of visiting so many places and of meeting as many interesting people as I have - often in different situations.

Of the many faces I've seen over my years at Fermac, many have left me with memories, anecdotes and emotions. All have contributed to my training - not only at the professional level but also, and above all, in human terms.

It's difficult, after encountering so many different situations, to identify an experience that's more significant than others. However, what comes immediately to mind is my recollection of the Midsommar Festival.

SAMPLING SWEDISH STEAK UNDER THE STARS

This occurred during June 2019 when we were guests of an important client in Sweden. By sheer happenstance we arrived there 'slap bang' in the week preceding the country's Midsummer festivities - an event much-coveted in Nordic climes that involves people of all ages and walks of life.

The welcome extended to us was truly fantastic, with the customer organizing an outdoor barbecue for us. Faithful to tradition, typical dishes were prepared for the occasion - all with cuisine following a

centuries-old menu.

The photo accompanying this article shows a specific alpine sculpture, created annually for the occasion, which represents the arrival of the long-awaited summer.

In conclusion, since it's glass that's united us over all these years, I could never thank it enough for all it's brought me.

And still the story goes on.

Happy International Year of Glass to all! ■

ABOUT FERMAC

Founded in 1993, Fermac designs, manufactures and installs equipment for decoration of glass objects. The product range includes semi-automatic and automatic machines for screen printing of tumblers, bottles, jugs, cups, pots, ashtrays and perfume bottles, etc. Up to eight colours. Within just a few years the company reached an important position in the market for screen printing machines onto glass objects. The company became a leader in the segment of high-precision machines for medium/high production speed - a market position made possible thanks to the quality and high technological content of its products.

The focus of Fermac's philosophy has always kept the needs and requirements of its customers at centre. The company mainly carries out its activities abroad, with 90 percent of its turnover derived from over 250 customers across 52 different countries worldwide. All are supported by after-sales services that ensure efficiency and productivity -in any production environment- by offering both global-service and remote assistance.

FERMAC

Via la Spezia, 162/A
43126 Parma - PR - ITALY
Tel +39-0521-989056
Fax +39-0521-989118
E-mail: sales@fermac.it

www.fermac.it

SKS: Werner Frankenberger retires after 40 years of dedicated service

With its noble history of driving the glass industry forward for more than 150 years, SORG Group has been able to create a strong bond with its surrounding communities. Lohr am Main, where the company settled in 1949, is among these. Here Werner Frankenberger started working over four decades ago.

As a young man Werner Frankenberger aspired to work at SORG much like many of his age did in Germany's Rechtenbach. Says Frankenberger: "Being fascinated by the stories and experiences of those who worked at SORG, it soon became clear to me back then that I wanted to enter the glass industry."

For him it didn't take long, and he joined the company in 1981. Now, 41 years later, Frankenberger retires from the business with a telling reflection: "Certainly what I'll miss most is the exchange with customers and colleagues."

A BRILLIANT CAREER, AN INVALUABLE MENTOR

Frankenberger's trajectory is inspiring. He started as a bricklayer - his first task being to reconstruct a glass melting furnace at Steinbach am Wald. Eight years later he moved to the service department, where he enhanced his knowledge and skills with the help of Adolf Knauer. A brilliant technical manager, Knauer became a mentor for Frankenberger. Sadly, Knauer died in 1996 and it was up to his pupil to assume the manager's role he left vacant. Says Frankenberger: "SKS has always given me both the possibility and the confidence to develop myself, and I am very grateful for that."

It's said that two days are never alike at SKS, which is why the new manager quickly adapted to a fresh challenge. Today it has him reflecting that "you never know what problems you'll have to solve, which is also why I love the excellent cooperation between SORG Group and its customers."

MEETING CHALLENGES HEAD-ON

As a technical manager, Frankenberger has been responsible for the technical execution of both projects and services: "A large part of my work has consisted in problem-solving and consulting customers. This has involved, for instance, assessing the condition of a furnace and figuring out what kind of repair makes sense to either maintain or extend equipment life."

One of his biggest challenges was a glass leakage in South Africa a few years ago: "The customer rang me out of bed in the middle of the night. The next morning I was on a plane to South Africa to support the customer on-site."

He also highlights his first change of a 2.5" electrode holder while the furnace was in operation: "At that time, an extreme challenge. Today, business as usual." Asked about his greatest accomplishment, Frankenberger brings up his first replacement of a complete throat in hot conditions: "It took a lot of preparation and consideration. I was jubilant when it all worked out."

PAST AND FUTURE

A lot has changed since he joined the company. "Today we have lots of tools and equipment for our work. Back then, everything was done by hand! I've also noticed that - due to digitalisation - many things get discussed via video conferencing and email. Personal contact on-site is becoming less and less frequent." Predicting more changes ahead, the experienced manager opines: "It's becoming increasingly difficult to find skilled experts and personnel for the glass industry. SKS is facing increased competition, especially in the areas of maintenance and hot repairs. Here preservation and knowledge transfer will be challenging, though I'm confident we'll handle it capably."

Werner Frankenberger's plans are simple, yet fun: "I'll miss my colleagues and customers, but I do look forward to investing more time in cycling." ■

PNEUMOFORE: respect and passion for hollow glass

Thanks to PNEUMOFORE's supply, ever since the 80s, of both low and high pressure air compressors to the expanding glass industry in Italy -and vacuum pumps included- today the company marks its accompaniment of the full evolution of IS machines for the moulding of industrial hollow glass.

Having mostly manufactured narrow neck bottles over its proud trajectory, together with pharmaceutical and cosmetic glass, Pneumofore's added heritage of exploring global markets now sees its machines on five continents.

THE PNEUMOFORE SOLUTION

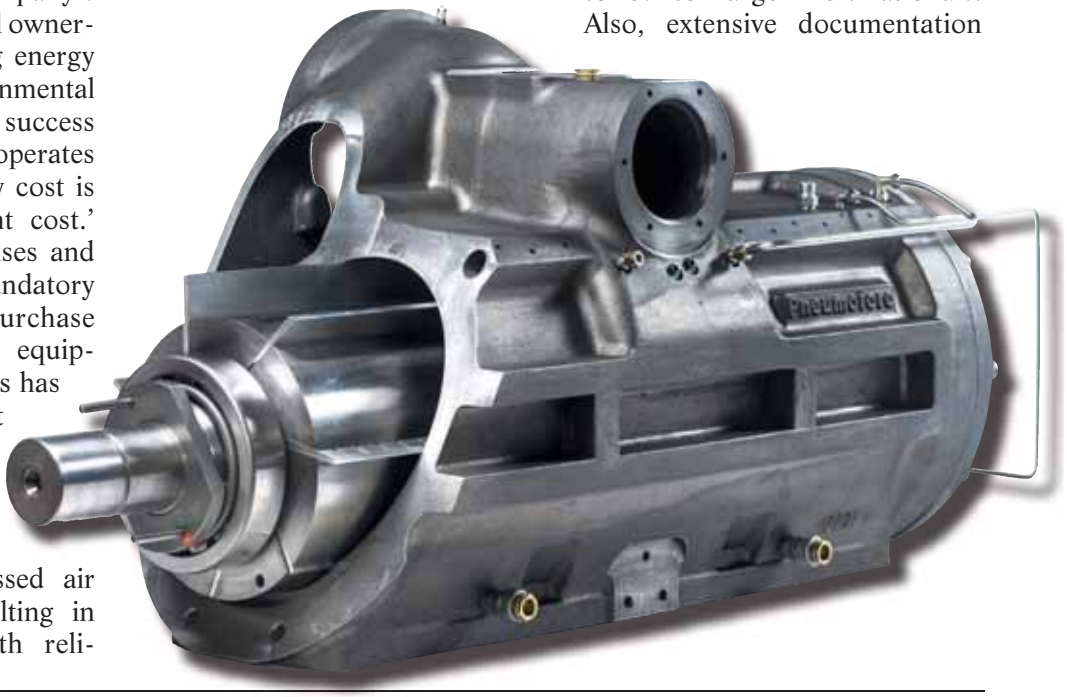
At many glassworks, demanding work circumstances prefer 'the Pneumofore solution' for ease of installation, minimal maintenance and long-term efficiency. Compared to current market offers, the company's machines offer a low total ownership cost. Here, growing energy costs and higher environmental awareness support the success of Pneumofore, which operates by a simple rule: 'energy cost is a multiple of investment cost.' With low running expenses and durability being so mandatory for glassworks, the purchase price of energy-intense equipment like air compressors has only a modest impact over a 20-year run.

THE IMPORTANCE OF MACHINE DESIGN

Any lack of compressed air halts production - resulting in costly down-times. With reliability so prioritised, pneumatic energy must be always available to ensure ongoing production, which is no less essential than electricity, gas, water and cooling air. Here the design criteria and performance of Pneumofore air compressors and vacuum pumps are seen to match the existing needs of the hollow glass moulding industry. It also explains why, after decades and generations of its engineers visiting glass factories around the globe, Pneumofore has achieved extensive experience and competence. Some customers have had plants installed at high altitudes, with thin air. Others have required connection to central control systems owing to, say, different protocols of communication or air-cooling within tropical countries. Indeed, as with all extreme conditions that warrant a tailored, solid, durable and efficient pneumatic machine, Pneumofore technology has sought to meet the challenge.

PUTTING THE CUSTOMER FIRST

Pneumofore seeks to conduct business efficiently, interacting in ten languages with a global customer base that ranges from small, private-owned glass factories to large multinationals. Also, extensive documentation



COMMEMORATING SUCCESS

In 2017 Italy's National Archaeological Museum of Florence hosted the 'Pretiosa Vitrea' exhibition. A dual initiative of both Pneumofore and the Sehen foundation, it had 'never-seen-before' glass artefacts from the Mediterranean area on display - some as old as three millennia. Documenting the event, a beautifully-illustrated book with photographs was subsequently published that's currently available from Pneumofore - now a keen admirer of glass after so many years of collaboration with the industry.

Driven by passion and respect for this noble material, the company's connections with glass are truly legion today - each sprung from a passion originating from the superb results obtained by Pneumofore machines at so many customer sites. To these the company adds its 'feel-good' contribution to a greener world via culture and history, rendered accessible and made visible to the public - and all in testimony to 'the magic of glass'. ■

ABOUT PNEUMOFORE

Founded in 1923, Pneumofore manufactures vacuum pumps and compressors for industrial applications worldwide. The company's compressors and vacuum pumps can be found worldwide - whenever customers require genuine reliability and constant performance over time. Leader in Rotary Vane technology, Pneumofore solutions focus upon efficiency, durability, minimal Life Cycle Cost and an elevated respect for the environment.

and online video testimonials in Germany, China and further afield all underscore the company's solid reputation respecting pneumatic requirements within glass factories - which also has customers returning when production expansions are planned.

For employees of the Swiss-born company based in Italy -which has compressors and pumps installed in the thousands within glassworks worldwide- it all signals a good reason to celebrate Pneumofore's long history of collaborative dedication to an ever more environmentally-friendly glass industry.

Pneumofore

PNEUMOFORE

Via N. Bruno, 34
10098 Rivoli TO
Tel.: +39-011-950-40-30
Fax: +39-011-950-40-40
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Glass Industry

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AGVs/LGV

Tecnoferrari

A.I. NIR FURNACE CAMERAS

GS - Glass Service

AIR COOLING SYSTEMS

Forglass
KYP Accesories
Luben Glass

AIR COOLING SYSTEMS for I.S. MACHINES

Revimac-Bottero

AIR COMPRESSORS

Pneumofore

ALLOYS FOR MOULDS

Fima-Olimpia Fonderie
Fonderie Bartalesi
Fonderie Valdelsane

AMPOULE AFTER-FORMING MACHINES/ LINES

KYP Accesories
Moderne Mecanique
OCMI OTG
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Spami-Optrel-Stevanato Group

AMPOULE FORMING MACHINES/LINES

Euromatic
KYP Accesories
Moderne Mecanique
OCMI OTG
Spami-Optrel-Stevanato Group

AMPOULE PACKAGING MACHINES

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OCMI OTG
R.Cestaro
Spami-Optrel-Stevanato Group

ARTICLE PRODUCTION

Olimerk

ARTIFICIAL INTELLIGENCE

Video Systems

AUTOMATIC TUBE LOADERS

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OCMI OTG
R.Cestaro
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AUTOMATIC WAREHOUSES

EMS Group

AUTOMATION

EME
Forglass
GS - Glass Service
Luben Glass
Mimsan Conveyor Systems
R.Cestaro
Vetromeccanica
Video Systems
ZIPPE

BAG FILTERING PLANTS

BDF Industries

BATCH CHARGERS

BDF Industries
EME
Falorni Tech
Forglass
GCG - Glass Consulting Group
Glass Service
Horn
MT Forni Industriali
Sorg Nikolaus
TECO Group
ZIPPE

BATCH AND CULLET HANDLING SYSTEMS

EME
Falorni Tech
Forglass
ZIPPE

BATCH/CULLET PREHEATERS

EME
GCG - Glass Consulting Group
Sorg Nikolaus
ZIPPE

BATCH PLANTS

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Forglass
GCG - Glass Consulting Group
Glass Service
HFT
TECO Group
Vidromecanica
ZIPPE

BENDING FURNACES

Forglass

BLOWING MACHINES

Bucher Emhart Glass
Famor Engineering
Olivotto Glass Technologies
Waltec Maschinen

BURN-OFF MACHINES

Famor Engineering
Olivotto Glass Technologies
Waltec Maschinen

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Waltec Maschinen

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MT Forni Industriali
Olivotto Glass Technologies
Sorg Nikolaus

CARPOULE AFTER-FORMING MACHINES/LINES

Moderne Mecanique
OCMI OTG

CARPOULE FORMING MACHINES/LINES

Moderne Mecanique
OCMI OTG

CAST IRON FOR MOULDS

Fima-Olimpia Fonderie
Fonderie Valdelsane

COATING OF GLASS - SYSTEMS & MATERIALS (HOT- / COLD-END)

Bohemi Chemicals
Fluorital
Forglass
Graphoidal Developments
Luben Glass
Pennekamp
R.Cestaro
Tecnosens
Vidromecanica

COGENERATION AND TRIGENERATION THROUGH HEAT RECOVERY SYSTEMS

BDF Industries

COLD-END LINES

ACH - Advanced Container Handling
All Glass
Bucher Emhart Glass
EMS Group
Forglass
Heye International
Iris Inspection Machines
KYP Accesories
Mimsan Conveyor Systems
MSK Covertech
Pennekamp
R.Cestaro
Regina Catene Calibrate
Tecnosens
Vetromeccanica

COLOURS & ENAMELS

Bohemi Chemicals
GCG - Glass Consulting Group
Fluorital
Forglass

CONSULTING SERVICES

BDF Industries
Bucher Emhart Glass
Falorni Tech
Forglass
futronic
GCG - Glass Consulting Group
GS - Glass Service
HFT
Horn
Luben Glass
Olivotto Glass Technologies
TECO Group
Video System

CONTROL & AUTOMATION SYSTEMS

BDF Industries
Bottero
Bucher Emhart Glass
Falorni Tech
Forglass
futronic
GCG - Glass Consulting Group
Glass Service
GS - Glass Service
Luben Glass
Horn
Iris Inspection Machines
Marposs
MSK Covertech
Nirox
Olivotto Glass Technologies
TECO Group
Tecnoferrari
Tecnosens
VMA
Video Systems
Waltec Maschinen
ZIPPE

CONVEYING & STOCKING SYSTEMS

All Glass
Forglass
MSK Covertech
Olimerk
OMS
Ramsey Products
Regina Catene Calibrate
Tecnoferrari
Vetromeccanica
EMS Group

CONVEYOR BELTS

Bonaiti Pietro
Car-Met
Famor Engineering
Forglass
Luben Glass
Olivotto Glass Technologies
Pennekamp
Pennine
Ramsey Products
Regina Catene Calibrate
Revimac-Bottero
Vetromeccanica
Vidromecanica
WBT
ZIPPE

CONVEYOR CHAINS & SPROCKETS (HOT-END)

Bonaiti Pietro
Luben Glass
Pennine
Renold
Revimac-Bottero
Ramsey Products
WBT
ZIPPE

CRACK-OFF MACHINES

Olivotto Glass Technologies
Waltec Maschinen

CROSS CONVEYORS

BDF Industries
Bonaiti Pietro
Bucher Emhart Glass
Car-Met
Ergon Meccanica
Famor Engineering
Heye International
Luben Glass
MT Forni Industriali
Olimerk
Pennekamp
Ramsey Products
Revimac-Bottero
Vidromecanica
Waltec Maschinen
WBT

CULLET SEPARATION & TREATMENT SYSTEMS

EME
Falorni Tech
Forglass
GCG - Glass Consulting Group
Vidromecanica
ZIPPE

DATAMATRIX READING DEVICES

TIAMA

DECORATING MACHINES

Fermac
Koenig & Bauer Kammann
Pennekamp

DECORATION CUTTING MACHINES

Waltec Maschinen

DECORATIVE ENAMELS

Fluorital
GCG - Glass Consulting Group

DEDUSTING & FILTERING SYSTEMS

BDF Industries
Forglass

DOSING SYSTEMS: COLD-END EMULSIONS

GCG - Glass Consulting Group
Graphoidal Developments
Luben Glass
Pennekamp
R.Cestaro
Revimac-Bottero
Vidromecanica

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