

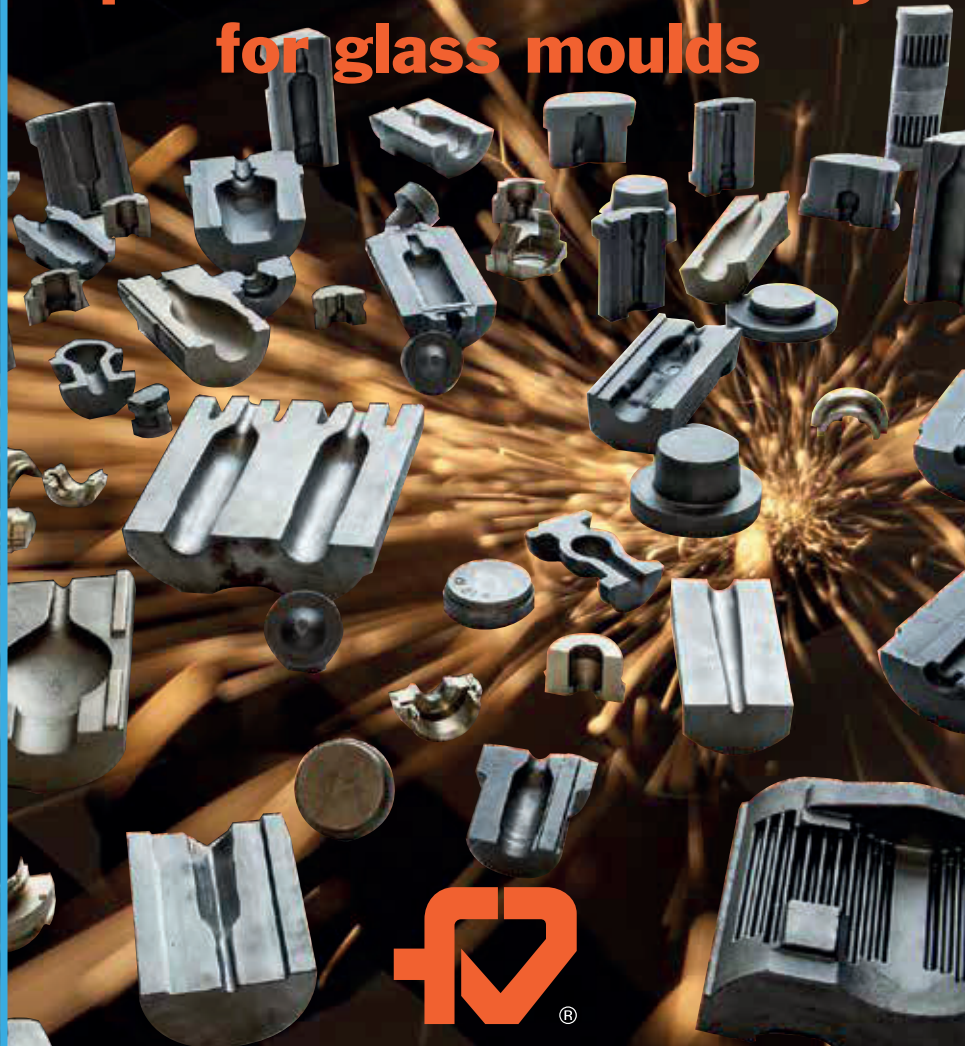
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BI-MONTHLY INTERNATIONAL MAGAZINE FOR GLASS MANUFACTURING



YEAR 38 • ISSUE NO. 1/2025

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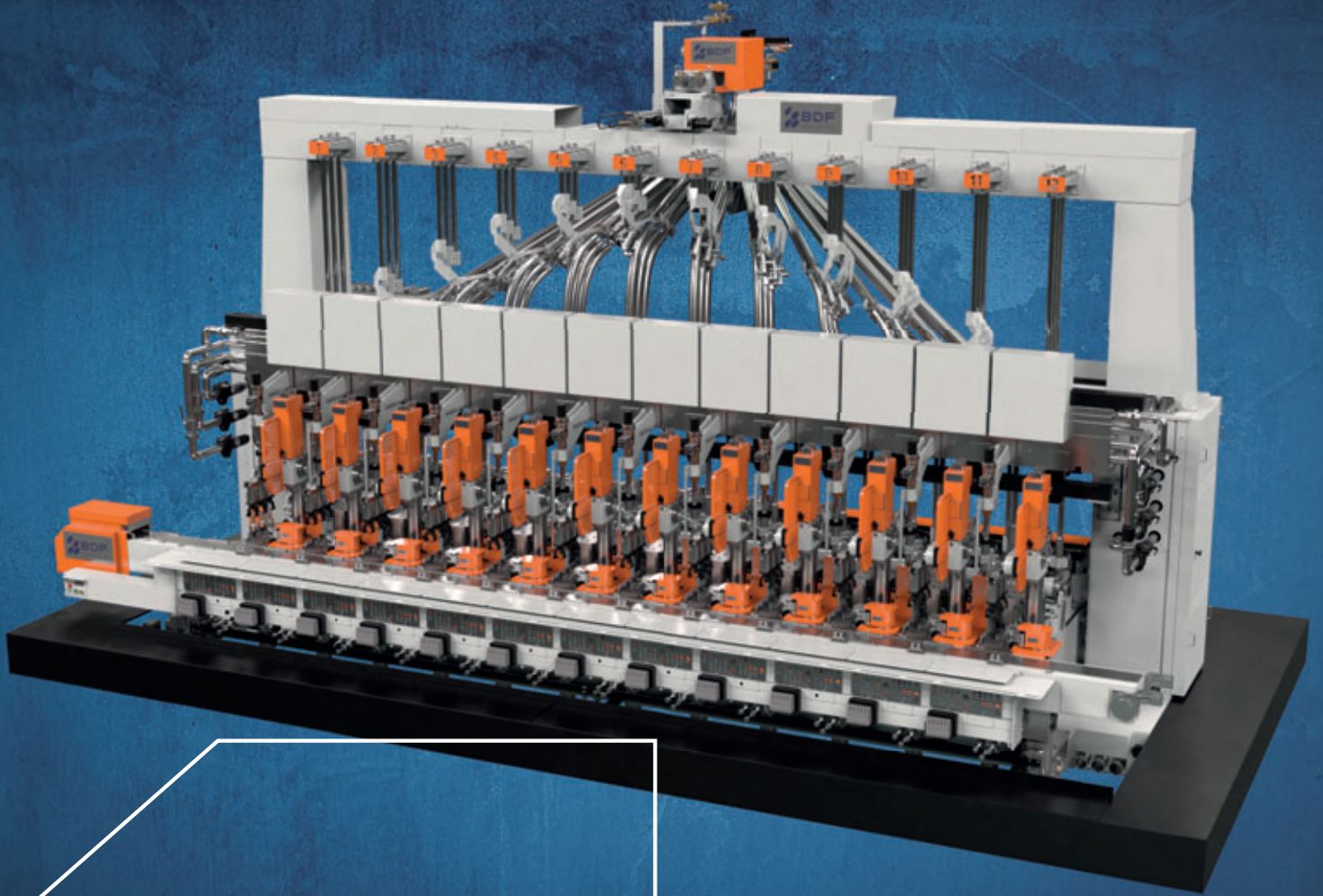
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sustainable melting
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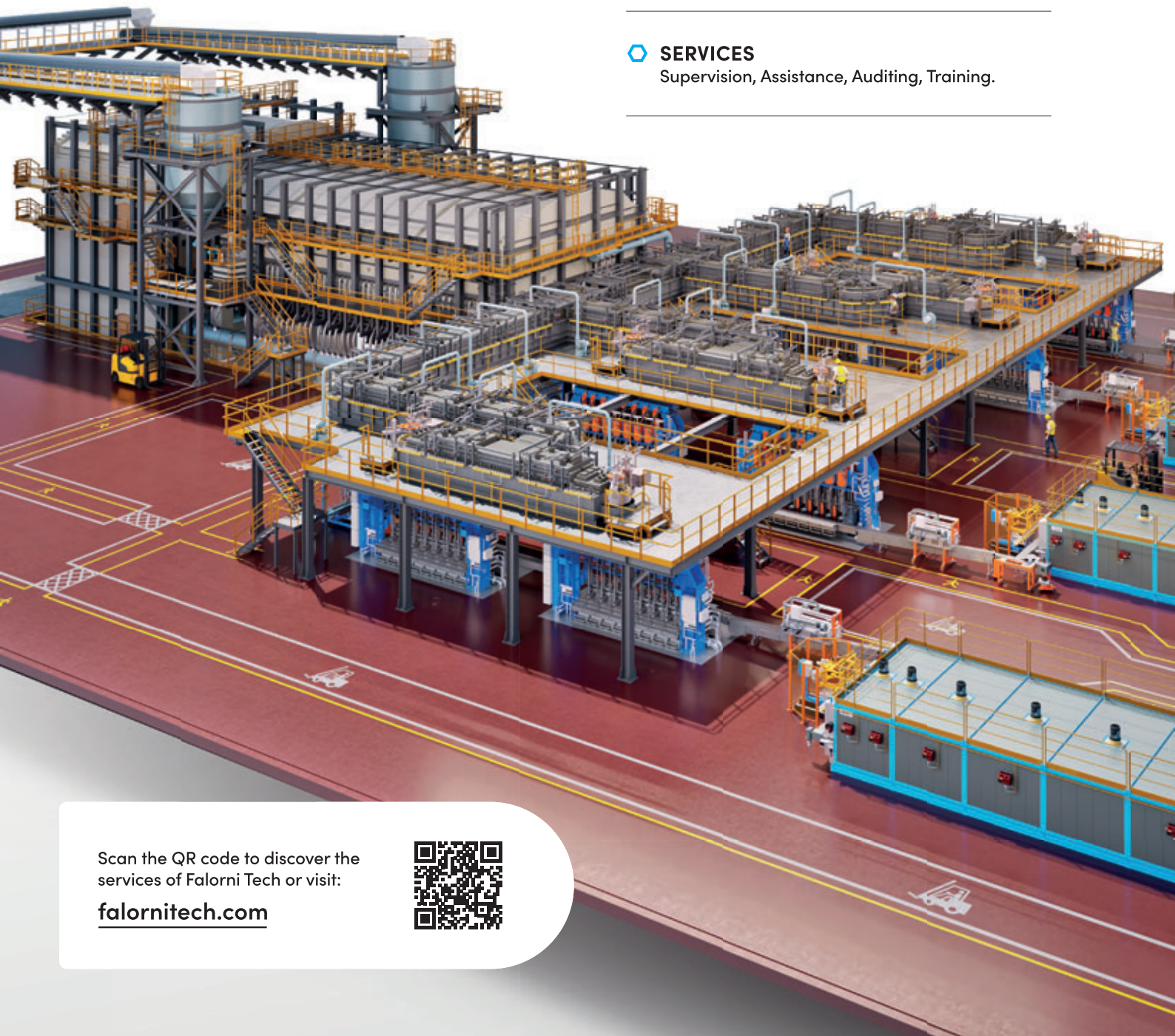
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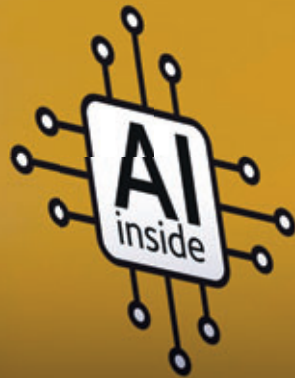


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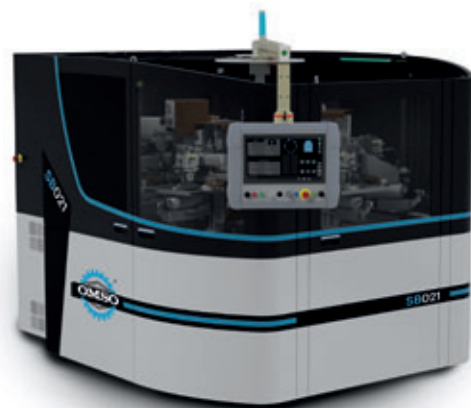
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HEYE INTERNATIONAL

Successful commissioning at JG Containers

JG Containers, a renowned container glass manufacturer based in Malaysia, has successfully commissioned the latest technology from Heye International, marking a significant milestone in their production capabilities.

The company recently integrated the SpeedLine IS machine alongside three SmartLine 2 inspection machines into their manufacturing process. This upgrade not only boosts efficiency, but also positions JG Containers for future growth with state-of-the-art solutions in the glass production sector.

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HORN GLASS INDUSTRIES

ZeroCO2Glas – Emission-free glass melting

By targeting the most energy-intensive part of the glass production process, namely the melting of the glass, ZeroCO2Glas opens up the possibility of saving a particularly large amount of energy and greenhouse gases. The project focuses on the container glass industry, which at just over 50 percent represents the largest share of glass production in Germany.

The overall goal of the ZeroCO2Glas project is to use an all-encompassing approach to develop a revolutionary glass melting process in connection with a new type of glass melting tank, with which glass for container production can be melted in a CO2-neutral manner and with significant energy savings. The duration of the project was three years and the project was funded by the BMWK with a maximum of EUR 8.38M with a total project volume of approximately EUR 14.94M.

As technology partner, HORN supplied the entire equipment for the new 2.4 tonnes per day hybrid furnace, the combustion and the process control system as well as the complete construction work for refractory material and steel. The new, innovative furnace, which was set up as part of the project in Aachen, Germany, is designed as a

hybrid furnace with hydrogen-oxy and natural gas-oxy firing, as well as electrical heating. The forehearths can also be operated with either natural gas/O2 or H2/O2. Together with the corresponding peripherals, the furnace represents a fully-fledged container glass site.

The outstanding feature of the ZeroCO2Glas project is that CO2 is completely avoided both on the energy input side and on the raw material side. In comparison, other projects aim exclusively at CO2 avoidance on the energy input side. The new hybrid furnace celebrated its first glass on October 28, 2024. The experience gained from the test facility will make glass production even more sustainable and further reduce the CO2 footprint.

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SORG GROUP

Change in the management of Techglass

The SORG Group is pleased to announce that Radoslaw Guzik took over the management of Techglass Sp. z o. o., Krakow, Poland, from Andrzej Skowiniak as of January 1, 2025.

Skowiniak continues to support Techglass in an advisory capacity in the areas of sales and customer service. The SORG Group would like to thank Skowiniak for his many years of service to Techglass.

Guzik has almost 20 years of experience in the glass industry. In previous positions, he worked as a project manager for greenfield and brownfield projects, focusing on engineering, procurement and construction of glassworks. For 15 years, he has successfully worked in this function for an internationally oriented Polish glass producer at various locations.

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VETROPACK STRAŽA

Furnace reconstruction completed

Marking the symbolic end of the reconstruction phase and an important milestone for the factory on November 21 of last year, the final brick was ceremoniously driven into the crown of the flint furnace at **Vetropack** Straža, in Hum na Sutli, Croatia. The ceremony was officiated by the patrons of the furnace: Minister of Environment and Green Transition Marija Vučković, Managing Director Darko Šlogar, Finance Director Marija Špiljak and Production Director Božo Hršak who used a special mallet to drive

the final brick into place. The official programme continued inside the furnace, where it will soon hold around 500 tonnes of molten glass ready for production. The Minister of Environmental Protection and Green Transition, Marija Vučković, as one of the patrons of the furnace, ‘drove in’ the final brick. The furnace modernisation project, which started on September 2 involving over 300 external workers daily, introduced state-of-the-art technology to enhance production capacity and reduce environmental impact. As Vetropack Straža prepares to produce flint glass in December, the investment sets new standards in efficiency and sustainability for the glass packaging industry.



Increased capacity and greater energy efficiency

One highlight of the modernisation is the use of an NIS glass-blowing machine with servo drive - the first machine of its kind for Vetropack Straža. An optimised layout throughout the plant has improved the overall production flow. These innovations not only safeguard the company’s high quality standards. It also ensures long-term production and energy efficiency. The modernised facility is designed to reduce energy consumption and emissions, which helps minimise the carbon footprint and supports Vetropack’s sustainability goals. In addition, the new furnace also increases the throughput ratio, enabling the production of more glass per square metre - saving space and costs. “I am proud and looking forward to the first glass production with the new machine,” said Mario Berc, Technical Manager at Vetropack Straža. “The commissioning is a significant milestone for us.” Alexander Sorg, CEO of Sorg, the company that designed the furnace, presented the Managing Director of Vetropack Straža with a gift to mark the completion of the reconstruction.

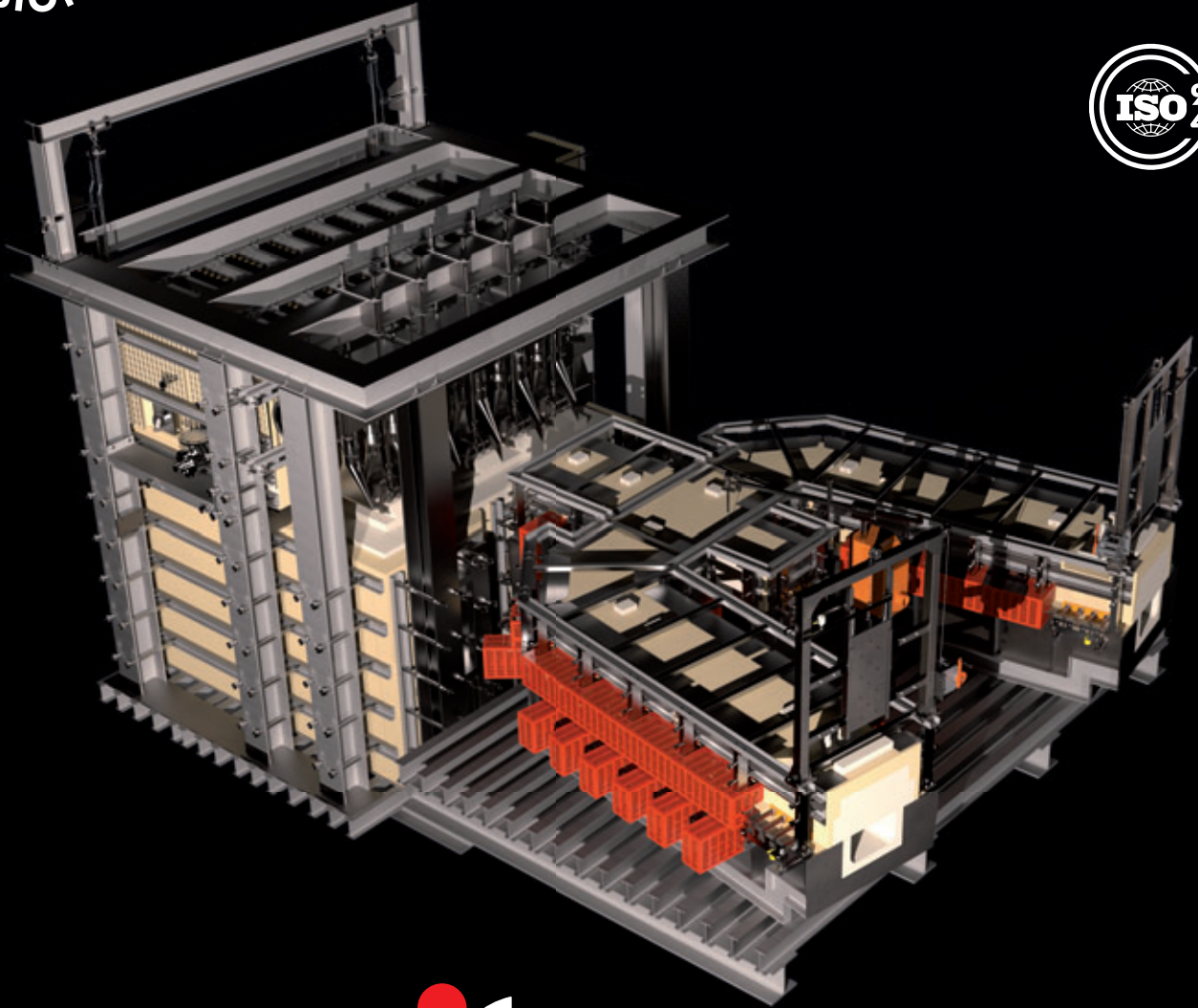
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TECSIGLASS

Digital innovation through strategic partnerships

In a significant move that signals the evolution of glass manufacturing technology, Italian glass engineering company **Tecsiglass** Srl has embarked on groundbreaking research and development initiatives. The Genoa-based company has partnered with the University of Genoa and research company Sirelab to advance digital innovation in furnace design and operations.

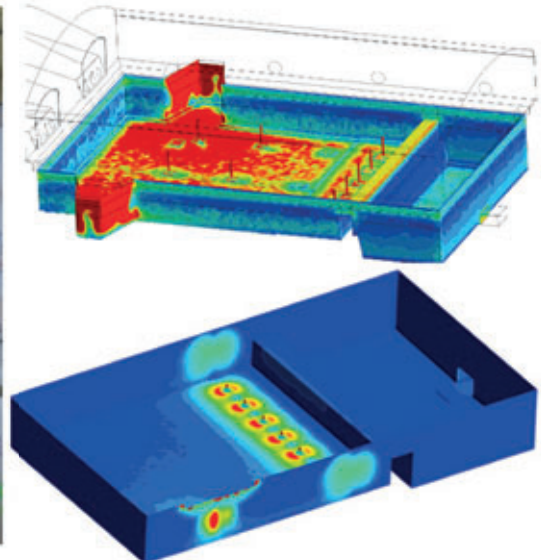
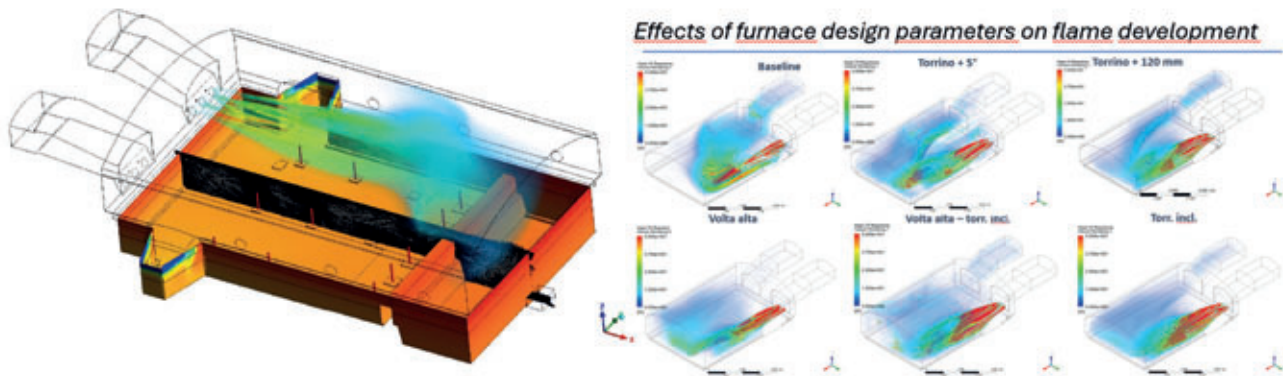
At the heart of their collaboration is the sophisticated application of Computational Fluid Dynamics (CFD) simulations, which are revolutionizing how glass furnaces are designed and operated. The technology enables engineers to precisely model combustion processes, optimize booster and boiler positioning - all to analyze the complex interactions between electrode layouts and molten glass flow patterns.

Perhaps most notably, the partnership has yielded innovative solutions for predicting and managing furnace aging through FurnEx®, a patented tool that analyzes furnace erosion. This development addresses one of the industry's most persistent challenges: maintaining optimal furnace performance throughout its operational lifetime.

The initiative also embraces virtual reality technology for personnel training, representing a shift toward more immersive and effective learning methods in industrial settings. This approach allows workers to gain hands-on experience with complex equipment and procedures in a risk-free virtual environment.

These developments mark a significant step forward in the digitalization of glass manufacturing, promising improved efficiency, reduced environmental impact, and enhanced training capabilities. As the industry continues to evolve, such partnerships between private companies, academic institutions and research organizations may well become the standard model for driving innovation in glass manufacturing technology.

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OMS Group also provides technologies compatible with ever-evolving consumable materials, anticipating, and promoting new solutions that meet the highest green standards.

Thanks to a worldwide team of technicians and a wide availability of spare parts OMS Group can follow and support its customers, considering them as actual partners of the Group.

Following you can find a selection of the OMS Group leading machines dedicated to the glass industry.

The **AT55 Thermoshrinking Hooding Machine** is an automatic machine which, on a single workstation, applies and shrinks the hood on the pallet of bottles. Depending on the chosen model, it can use up to three different coils of shrinkable tubular film with side gussets. The film is shrunk onto the product by a flameless ring gas machine.

The **PM-GLS Vertical Strapping Machine + Press**, for palletized products, has a top press capacity up to 2,400 Kg. Thanks to the perfect combination between strapping heads, swords and the turntable placed under the machine, it can apply multiple strapping patterns in both directions (from 2x0 up to 4x6).

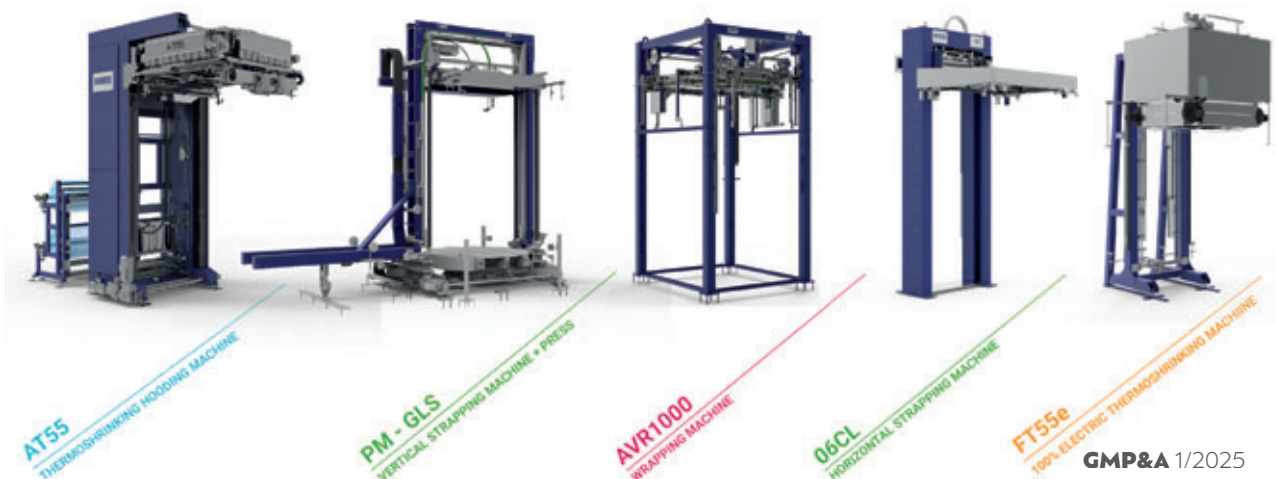
The **06CL Horizontal Strapping Machine** features an arch driven on a linear rack that guarantees a perfect positioning of the straps on the pallets, a simplified head maintenance with quick-action connectors and different strapping programs that can be easily managed from the operator panel.

The **AVR1000 Wrapping Machine** has been developed with a carbon fiber ring, slip ring contacts and a patented pre-stretch carriage up to 300% ratio. Possibility to start and stop the wrapping cycle at any height of the pallet load (Top or Bottom). High speed, simplicity and flexibility. The results are a largely increased reliability and reduced maintenance as well as stable loads with minimal film consumption.

Recently introduced in the market, the **FT55e Electric Thermoshrinking Machine** is a typical example of our commitment for a better environment. This machine achieves the same performance of a gas shrinking ring purely by means of electricity. The heaters are activated on demand, only when the pallet to be shrunk is present.

Thanks to the technology developed by the OMS Group R&D, the power consumption has been drastically reduced.

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GSE ITALY

Construction support to the glass sector

Among the leading players in industrial construction, **GSE Italia** attended Glasstec to tell, as the company's Director Operation Business Line Data Center Stefano Piccoli said, of the experience gained during the construction of **Vetropack** production plant in Boffalora Sopra Ticino, Italy, which was built back in 2023.

Said Piccoli: "Owing to its high energy consumption and great complexity from a bureaucratic point of view, the glass sector renders it necessary to have continuous collaboration between client and general contractor. GSE has been a key player from the initial stage of defining the design requirements and authorization strategy."

Indeed here's what attracted much attention at Glasstec: the heightened ability of GSE Italia to liaise at every stage of the authorization process with Vetropack and with the authorities in charge of the seven planned authorizations - adapting the project as a result of emerging needs.

As Piccoli made clear: "It is only thanks to intensive and careful preliminary design work and the adoption of innovative design choices, shared with the client and appropriately planned with the agencies, that we were able to manage all the bureaucratic and operational phases in a very globally complex period. In fact, the job order was obtained in June 2019, the building permit was issued in July 2021, the construction site was started in August 2021, the first furnace in the plant was started in June 2023, more than two years after the start of construction, and the second began production in July 2023. Therefore, in the midst of a global pandemic and the outbreak of the Russo-Ukrainian conflict with the known consequences on raw materials and energy costs."

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TRICORBRAUN

Acquisition of Euroglas and Glaspac

Global packaging leader **TricorBraun** recently announced that it has entered into an agreement to acquire German-based **Euroglas** and Austrian-based **Glaspac**

pack, both distributors of rigid packaging solutions for the European market. These acquisitions expand the company's packaging footprint in the DACH region (Germany, Austria, Switzerland).

"Euroglas and Glaspac are known for their quality, innovation, and customer service, and they've built long-standing businesses with impressive reputations," said Mark O'Bryan, COO of TricorBraun. "Combining Euroglas' and Glaspac's

expertise in key end markets with TricorBraun's own supply chain and regional penetration will provide new opportunities to support our customers' growth in Europe."

Both founded in 1992, Euroglas and Glaspack are family-run companies. Euroglas is one of Europe's leading suppliers of high-quality glass packaging. The company provides stock and custom packaging for the food, beverage, and spirits sectors. Glaspack provides stock and custom packaging for the wine, beer, and food sectors and is a leading supplier of wine packaging for the Austrian market.

"Joining TricorBraun is an exciting new chapter for us," said Cristoph Jäckle, Managing Director of Euroglas. "By working together we can provide access to global resources and expertise while maintaining our dedication to quality and local customer service. Said Johannes Jäckle, Head of Sales: "We are excited to bring our passion for packaging to TricorBraun as we begin the next phase of our growth. TricorBraun's world-class reputation, paired with its focus on both team members and customer support, makes it the perfect home."

All Euroglas and Glaspack team members will remain with TricorBraun and continue to work out of the companies' existing locations. Effective upon the close of the transaction, Euroglas will be known as Euroglas, a TricorBraun company, and Glaspack will be known as Glaspack, a TricorBraun company.

Since its founding, TricorBraun has partnered with management teams to successfully acquire and accelerate growth for many packaging companies worldwide.

The transaction is expected to close in the first quarter of 2025 - subject to having received required regulatory approvals.

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O-I

Decarbonization of glass packaging production takes a step forward

As part of the single largest industrial decarbonization effort in U.S. history, the US Department of Energy (DOE) Office of Clean Energy Demonstrations (OCED) has made an official award to phase 1 of O-I Glass's project to install cutting-edge emissions-slashing technology.

Glass Furnace Decarbonization Technology Stack Project

OCED awarded the Glass Furnace Decarbonization Technology Stack Project, led by O-I Glass, with more than USD 700,000 (of

the total project federal cost share of up to USD 56.6M) to begin Phase 1 activities. The project plans to rebuild one furnace at the O-I Glass facility in Zanesville, OH. It aims to reduce carbon intensity by 20-40 percent compared to glass produced on a baseline furnace. This rebuild would combine five cutting-edge technologies on the furnace, marking the first time that all five technologies have been implemented simultaneously. These technologies, which include improved heat recovery and fuel systems, material pre-heating and electric conversions, would reduce waste heat, energy demands and both direct and indirect carbon dioxide emissions.

The project could demonstrate the commercial feasibility and functionality of combining multiple decarbonizing technologies that could be replicated

across different glass colours and container types. During Phase 1 of the project, O-I Glass will conduct preliminary engineering design along with documentation and reports necessary for OCED to complete the National Environmental Policy Act review.

WWW.O-I.COM

SORG GROUP

Second CLEAN Melter® commissioned

SORG Group has commissioned the world's second CLEAN Melter® furnace at Fabrica Paraguaya de Vidrios (FPV) in Paraguay. FPV is a highly respected manufacturer of glass packaging in the Mercosur region.

Planned and supplied by Nikolaus SORG, the furnace is designed for a capacity of 140 tonnes per day and the capability of melting flint, amber and green glass.

All furnace-specific equipment, a SORG STW distribution channel and 2S-shaped forehearth of type SORG 340S+ were delivered.

Helping FPV meet the company's emissions and sustain-

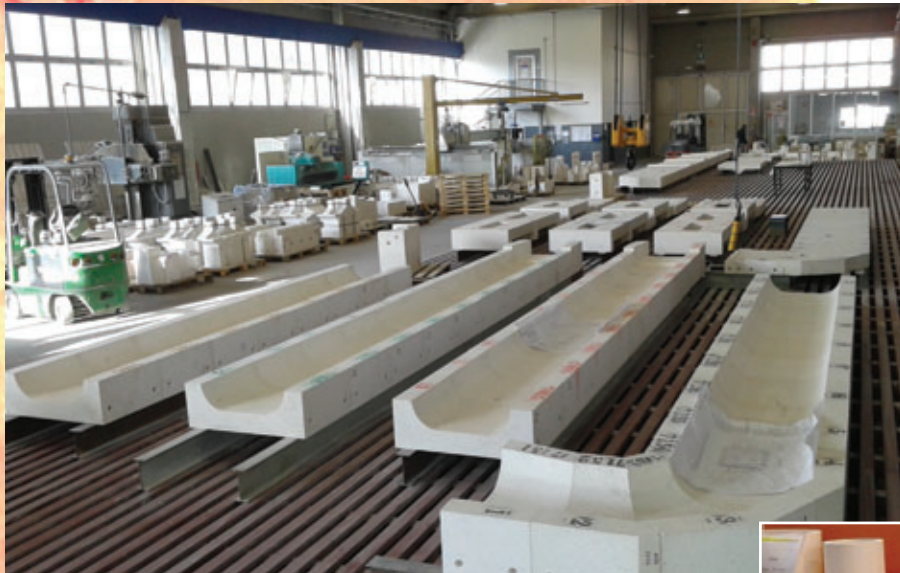
ability goals, the CLEAN Melter® is set up to achieve an electric share of up to 80 percent of the melting energy. The furnace steel was supplied and installed by Siam Furnace Construction (Thailand), a company of SORG Keramik Services (SKS). SORG Feuerungsbau und Service GmbH was responsible for the heating up and filling of the furnace. SORG Group's EME supplied the CPO 650D® batch charging machines. The smooth and successful build-up and commissioning of the furnace was also a result of the good collaboration and integration of the Ambev and AB InBev project teams with the SORG team.

WWW.SORGGROUP.COM





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TEC REF RANGE OF PRODUCTS



GPI

Exciting news for glass packaging and the spirits industry

The Glass Packaging Institute (GPI), the trade association representing America's glass packaging manufacturers, has celebrated the Alcohol and Tobacco Tax and Trade Bureau (TTB)'s decision to approve the use of glass containers for spirits-based products across all approved sizes - including the popular 355ml size. Effective since January 10, this regulatory milestone reflects a significant step forward for consumer choice, industry innovation and fair competition in the beverage alcohol marketplace.

"This decision marks a pivotal moment for consumers, the glass packaging industry and the broader spirits market," said Scott DeFife, President of GPI. "The TTB's decision to modernize older regulations that had previously limited packaging options for certain spirits-based products, acknowledges the importance of innovation, consumer choice and environmental sustainability. It ensures a level playing field for all packaging materials. This ruling will allow domestic glass manufacturers to serve this growing market."

Historically, the 355ml size for spirits-based products was restricted to metal or aluminium containers. GPI and its member companies had long advocated for elimination of this restriction, which hindered glass manufacturers' ability to compete and limited brands' packaging options. Glass containers, renowned for their durability, recyclability and premium aesthetic, may now offer spirits producers a core packaging size option that aligns with consumer preferences and environmental goals - as well as allowing them to distinguish their products on the shelf.

The TTB's updated standards of fill (SOF) will enable producers to better meet this growing demand by offering their products in glass containers a material that not only distinguishes brands but also contributes to reducing consumer confusion between alcoholic and non-alcoholic beverages.

GPI also commends the TTB for recognizing the need for packaging flexibility across other fill sizes, including 187 ml and 250 ml - thereby ensuring that glass containers can serve the needs of spirits producers at all future approved capacities.

"We applaud the TTB and the Treasury Department for fostering a competitive marketplace that supports innovation and sustainability," added DeFife. "There was widespread bipartisan support for this decision, and we appreciate that the agency took the time to investigate these issues and remove the restrictions for spirits-based products to benefit from the unique qualities of glass packaging."

WWW.GPI.ORG

PKU PIONEER

VPSA oxygen plant supplies pharma glass production

In October last year PKU Pioneer (Beijing Peking University Pioneer Technology Corporation Ltd.) entered into a cooperation with a well-known glass manufacturer in China to design and set up a VPSA oxygen generation system for its 50,000 tonnes per year pharmaceutical glass production line. The VPSA oxygen plant, with a capacity of 1,615 normal cubic metres per hour and a purity of 93 per cent, will provide stable, flexible and cost-effective oxygen

for the oxy-fuel combustion process in glass furnaces. This will help the user optimize glassmaking processes, reduce production costs and improve glass product quality and manufacturing efficiency, to further enhance its market competitiveness.

The glassmaker has been dedicated to producing pharmaceutical glass packaging materials. Compared to ordinary glass, pharmaceutical glass products demand higher quality and safety. As a nationally supported initiative specially approved by the State Council, the client's pharmaceutical glass bottles production project aims to meet the industry's stringent requirements for high-end pharmaceutical glass products and to advance the technological level and production capacity of pharmaceutical glass in China.

According to the project plan, by 2026 the client will build 4

glass production lines. Once fully operational, the total production capacity will reach 200,000 tonnes per year, making it the second-largest pharmaceutical glass manufacturer in China, to inject new vitality into the upstream and downstream segments of the industrial chain.

As a world-leading supplier of VPSA/PSA oxygen equipment, PKU Pioneer has built nearly 30 oxygen generation units for glass and fiberglass manufacturers, both domestically and internationally, by providing high-quality and efficient oxygen generation solutions for the application of oxy-fuel or oxygen-enriched combustion technology in glass melting furnaces, which not only reduces NOx and CO2 emissions during combustion, enabling green and low-carbon production, but also significantly improves combustion efficiency and reduces energy consumption, saving substantial production costs for glassmaking enterprises. VPSA/PSA oxygen generation technology is becoming the preferred choice for many glass manufacturers, contribut-

ing to the high-quality and sustainable development of the glass industry.

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STARA GLASS

Completion of H2GLASS project burner prototype test

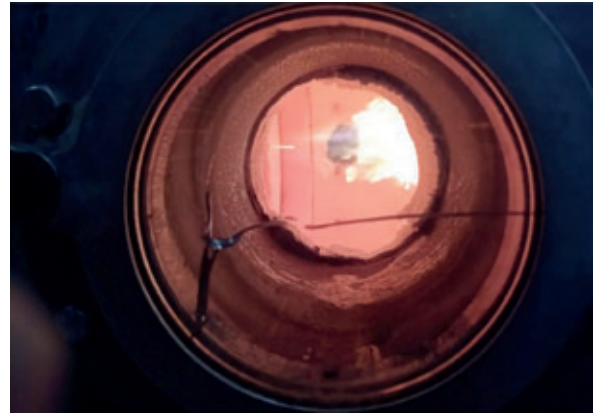
Stara Glass has announced the successful completion of testing for the Air-Gas and Oxy-Gas H2 Burner Prototype as part of the H2GLASS project.

Using Fives the tests were carried out at the Fives European Combustion Centre in Piacenza, Italy - Energy, Combustion advanced experimental furnaces.

Stara Glass assessed the burner's performance across various configurations, testing fuel blends from 100 percent methane to 100 percent hydrogen. Key evaluations included flame stability, NOx emissions and energy efficiency, delivering results that demonstrate significant potential for reducing emissions and optimizing energy use in glass production.

This milestone brings closer the implementation of these innovative solutions in industrial furnaces, paving the way for a more sustainable glass industry.

WWW.STARAGLASS.COM



HORN GLASS INDUSTRIES & AMBEV

A strengthened partnership

In March, HORN shared news about its collaboration with Ambev to supply a state-of-the-art, energy-efficient glass melting furnace with three forehearth for its new container glass plant in Brazil. The innovative facility is to produce bottles for renowned brands like Stella Artois, Beck's and Spaten - serving Ambev breweries across Brazil.

HORN Glass Industries is particularly proud that this is the third furnace the company has delivered for Ambev - a

proof to the long-standing trust and successful partnership with one of the world's leading beverage manufacturers.

The construction site in Carambeí is currently in full swing. Starting at the end of January, HORN employees will also be on-site to support the installation process and ensure a smooth assembly of the melting furnace.

HORN looks forward to successfully implementing this project together with Ambev and contributing further to sustainable container glass production.

WWW.HORNGLASS.COM



GMIC

Office relocation to Toledo



The Glass Manufacturing Industry Council (GMIC) is in the process of relocating to a new office in Toledo, Ohio, USA. The new business address is: 3950 Sunforest Ct - Suite 200, Office 209 - Toledo OH, 43623

After many years of being co-located with the American Ceramic Society in Columbus, OH, the office was sublet, and the GMIC used the opportunity to rethink its footprint. After a thorough search in both Columbus and Toledo, the decision was for a shared office location in the Glass City.

In this new year and new location, the GMIC looks forward to advancing the glass industry and supporting the work of its members. GMIC is a non-profit trade association focused on representing the interests of the glass manufacturing industry. Bridging all segments of glass manufacturing, GMIC does for our members what would be challenging for them to do alone.

The **Glass Problems Conference** is organized by the Glass Manufacturing Industry Council and Alfred University and endorsed by the American Ceramic Society.

WWW.GMIC.ORG



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GERRESHEIMER

New production capacities for glass syringes at Skopje

Gerresheimer is currently expanding its production capacity in Skopje, North Macedonia, with a new production hall for syringes. Since 2019 the company has been producing drug delivery systems, as well as diagnostic and medical products made of plastic on around 14,600 square metres at this site.

The new factory hall adds around 7,600 square metres of production space for glass syringes. The company is investing over EUR 100M in the construction and equipment of the new building. The expansion of the site will double the number of employees in Skopje from around 250 to 500 over the next three to five years.

The new production hall is currently one of the key projects in the global capacity expansion for drug delivery systems and syringes for long-term customer contracts and it is specifically designed for the manufacture of syringes and other primary packaging made of tubular glass. The total area, including Good Manufacturing Practice (GMP) Class C and D clean rooms, covers around 7,600 square metres – roughly the size of a soccer field. The new hall provides space for the precision glass forming lines developed and manufactured by Gerresheimer itself, as well as specific assembly and ready-to-fill lines.

“Combining production capacities for plastic and glass at one location for the efficient production of integrated solutions for the pharma industry is a further step in the implementation of our corporate strategy formula,” said Dietmar Siemssen, CEO of Gerresheimer AG. “As a systems and solutions provider, our customers receive individually tailored, fully integrated solutions. In the future, for example, we will also supply ready-to-fill syringe systems from Skopje.”

One advantage of the plant in Skopje, with its 7,600 square metres extension, is the combination of production capacities for pharmaceutical plastic and glass products at one location. This enables efficient production of integrated solutions with optimized logistics. For example, customers can obtain fully assembled ready-to-fill syringe systems in a wide variety of configurations from Skopje. The site in Skopje also offers growth potential. 100,000 square metres of additional space is available on the site for future expansion.

Gerresheimer is currently concentrating syringe production at its sites in Bünde, Germany, Querétaro, Mexico and Skopje, Republic of North Macedonia.

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CHECKMATE IN JUST FIVE MOVES

- 1 ENGINEERING
- 2 MANUFACTURING
- 3 ASSEMBLY
- 4 INSTALLATION & START-UP
- 5 SERVICE



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STEVANATO

The robust mechanical resistance of Nexa® vials

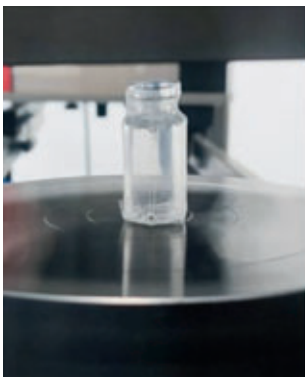
A current study that aims to experimentally demonstrate the improved mechanical resistance performance of Stevanato's Nexa® vials is comparing the 2R ISO format vial in Nexa® and Fina® platforms - highlighting how Nexa® vials provide robust mechanical resistance, translating into several operational benefits.

Test methodology

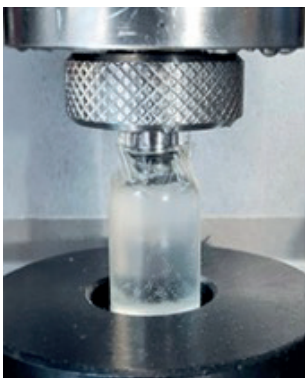
Mechanical resistance was assessed using two quantitative techniques

Vertical Compression Test (VC): Measuring the maximum force a vial can withstand before failure when subjected to axial stress.

Both tests compared Nexa® and Fina® vials. From the results achieved (VC and BT), Nexa® vials showed consistent superior mechanical resistance.



Sample before (left) and after (right) VC test



Sample before (left) and after (right) the burst test

Key results

Thanks to their improved cosmetic quality and mechanical resistance, 2R ISO Nexa® vials provide several advantages:

1. Reduced Total Cost of Ownership (TCO): Fewer cosmetic rejections and in-line breakages reduce waste of both container and final product.
2. Improved Efficiency: Nexa® vials result in fewer lines-stops, downtimes and labour required to fix the filling line after breakages.
3. Higher Safety: The superior mechanical strength of Nexa® vials reduces the risk of harmful products being dispersed due to container breakage.

Conclusions

This study analysed the improved mechanical resistance of Nexa® vials by comparing them to Fina® vials through vertical compression (VC) and burst test (BT). According to the results achieved, Nexa® vials have superior mechanical resistance - as much as three times that of Fina® as regards Vertical compression (VC).

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HEINZ-GLAS

PCF Tool validated and verified again by TÜV Süd



With a focus upon sustainability, both the Product Carbon Footprint Tool (PCF Tool) and Corporate Carbon Footprint (CCF) from Heinz-Glas have been validated and verified once again by TÜV Süd. Last year, Heinz-Glas took a significant step forward with the development of its PCF tool. The company is now the first glass manufacturer to be able to calculate the greenhouse gas emissions of its products down to the gram. The PCF Tool was verified according to international ISO standards for the first time in 2023 and therefore fulfils the highest standards in carbon foot-printing.

What makes the PCF tool so special?

The PCF tool enables the determination of specific emissions along the entire life cycle of a product - from production to delivery. Heinz-Glas can also compare different products with each other and make informed decisions for more sustainable production. This can be clearly seen in the collaboration with Babor Beauty Group. The German cosmetics company uses Heinz-Glas' calculations to make its own CO₂ accounting even more precise and to find effective measures for reducing emissions. 50 percent of the CO₂ emissions caused by a BABOR brand product are due to the packaging. Glass has the greatest influence here, with surface treatment playing a major role. In the future, this will be an important lever for reducing the cosmetics company's emissions. In addition to the PCF, Heinz-Glas' corporate carbon footprint, which reflects the carbon footprint of the company sites in Kleintettau, Piesau, Spechtsbrunn, Dzialdowo and Hranice, was also successfully verified. This annual review covers all relevant greenhouse gas emissions along the value chain.

WWW.HEINZ-GLAS.COM

ARDAGH

Hydrogen energy mix from onsite electrolyser

Ardagh Glass Packaging-Europe (AGP-Europe), an operating business of Ardagh Group, recently announced that it has produced green hydrogen for glass melting via a hydrogen electrolyser at its facility in Limmared, Sweden. The 5MW Proton Exchange Membrane (PEM) hydrogen electrolyser uses renewable electricity to split water into hydrogen and oxygen, supplying hydrogen to the energy mix in the furnace. Since testing of the electrolyser began in October, the furnace has successfully combusted 109,000 cubic metres of hydrogen produced onsite, saving

70 tonnes of CO₂.

Daniel Johansson, Project Manager, AGP-Europe explained, "The testing phase

using the hydrogen energy mix is progressing well, with no impact on the quality of the glass or the furnace. Our target is to replace 20 percent of the natural gas in the furnace with green hydrogen, which will reduce carbon emissions from our glass packaging produced in Limmared."

This partly hydrogen-fired glass furnace follows the launch of AGP's flagship NextGen Furnace in Obernkirchen, Germany, where 60 percent electrical heating has already been achieved, delivering a 64 percent (based on LCA calculation: January to June 2024) reduction in carbon emissions. AGP-Europe CEO, Martin Petersson, added, "Replacing a proportion of the natural gas with green hydrogen in the furnace represents a step change in the way we sustainably produce glass packaging.

"The future combination of hydrogen and other sustainable technologies such as hybrid melting, will help Ardagh Group and our customers to achieve their emissions reduction targets, as well as advancing the decarbonisation of the glass industry."

WWW.ARDAGHGROUP.COM



GERRESHEIMER

Acquisition of Bormioli Pharma Group holding company



Gerresheimer has successfully completed its acquisition of Blitz LuxCo Sarl, the holding company of the **Bormioli Pharma Group**. The acquisition was announced in May 2024. This closing was preceded by the fulfilment of customary closing conditions. With this acquisition, Gerresheimer strengthens its European footprint with additional production sites and underpins its market position as a leading full-service provider and global partner for the pharma and biotech industries. Gerresheimer expects the acquisition to be accretive to the Group's Adjusted EBITDA margin and Adjusted EPS from the first year onwards through synergies.

Complementary, attractive product portfolio

In 2023, Bormioli Pharma generated sales of around EUR 371M and an Adjusted EBITDA margin of around 22 percent. The company manufactures pharmaceutical primary packaging made of glass and plastic as well as closure solutions, accessories and dosing systems. In the plastics segment, Bormioli Pharma is one of the leading suppliers of pharmaceutical plastic systems and solutions. In the glass segment, Bormioli Pharma has an attractive portfolio for parenteral and other pharmaceutical primary packaging.

Strategic reset of Moulded Glass business

The acquisition creates a new, strong Moulded Glass unit with a diversified product portfolio for the pharmaceutical, cosmetics, food and beverage industries. This globally active unit offers new options for a strategic reset for the best growth prospects and competitiveness, which will be evaluated in the coming months.

New guidance for combined company in February 2025

Bormioli Pharma became part of the Gerresheimer Group and was fully consolidated retroactively as of December 1, 2024, the start of Gerresheimer's new financial year 2025. Therefore, on February 26, 2025, together with the results for the financial year 2024, Gerresheimer will publish a new guidance for 2025 and a new mid-term guidance for the combined company.

WWW.GERRESHEIMER.COM

SORG

Introducing the Viking Forehearth

Nikolaus SORG has been at the forefront of glass production innovation for almost 150 years now - always looking to prepare for the future.

The Viking Forehearth is a 100 percent electric heated conditioning system for all tonnages. New to the market, the

Viking Forehearth benefits from electrodes located in the forehearth's specially designed superstructure, resulting in no local overheating.

The special installation also protects the glass melt against possible impurities from electrode material, helping to make the conditioning process safe.

WWW.SORG.DE



Efficiency meets viability with STARA GLASS's HeatCost Optimizer

Developed by STARA GLASS, HeatCost Optimizer revolutionizes glass furnace design by combining thermal-economic analysis with real-time optimization. The system, integrated with FurnaceMaster[®] software - in this case study - reduces heat loss costs by 4 percent and structural costs by 9 percent - all while advancing environmental stewardship in glass manufacturing.

By Annick Lachance Nyiringango & Ernesto Cattaneo

As it continues to face rising costs, growing energy demands and increasing pressure to meet sustainability goals, glass manufacturing is one

of the most energy-intensive sectors. This explains why the industry must embrace technological innovation to enhance efficiency and remain competitive. With over 70 years of expertise, Stara Glass is tackling these challenges with such groundbreaking solutions as the HeatCost Optimizer, which blends thermal analysis and

cost optimization to revolutionize furnace design, improve energy performance and support decarbonization. In the paragraphs to follow we will examine how the system is transforming furnace design and advancing the glass industry's sustainability agenda.

CHALLENGES FACING THE GLASS PRODUCTION

While being vital to modern industries, Glass production is heavily energy-intensive and faces the following mounting challenges:

- **Rising energy costs:** Increasing electricity and natural gas prices make traditional reliance on fossil fuels unsustainable.
- **Thermal inefficiencies:** Heat loss in traditional furnaces drives up costs and wastes resources.
- **Sustainability pressures:** Initiatives like the European Green Deal demand reduced emissions and innovative, greener designs.
- **Complex furnace design:** Traditional designs often fail to balance performance, efficiency, and costs effectively.

The HeatCost Optimizer addresses these challenges through advanced technology that optimizes performance,

reduces costs, and minimizes environmental impacts.

WHAT IS THE HEATCOST OPTIMIZER?

The HeatCost Optimizer is a thermal-economic analysis system for glass manufacturers. It provides real-time, data-driven insights to optimize furnace performance and costs while achieving sustainability goals. The system supports every stage of furnace design, from concept to testing, helping companies identify inefficiencies, cut costs, and reduce waste through optimized design choices.

KEY FEATURES

The HeatCost Optimizer delivers several powerful features that transform furnace design processes. At its core, the system provides real-time cost feedback, dynamically calculating expenses for every furnace structure from bottom to crown to superstructure - thereby also ensuring that budgets remain aligned with efficiency goals. Its sophisti-

cated thermo-economic analysis balances thermal and economic performance, while a comprehensive material database enables engineers to select the most durable and sustainable materials. Through clear, intuitive visualization tools, the system also identifies heat loss, cost savings and performance metrics - making complex data easily interpretable. This combination of functionality and simplicity empowers engineers to make well-informed decisions that optimize furnace performance.

INTEGRATION WITH FURNACEMASTER®

The HeatCost Optimizer operates within Stara Glass's proprietary FurnaceMaster® software. Developed and fine-tuned with real furnace data sampled by Stara Glass technicians over two decades, FurnaceMaster offers reliable data collection, testing, and optimization tools, ensuring accurate predictions and real-world applications.

With FurnaceMaster as the backbone of the HeatCost Optimizer, engineers can rely on accurate predictions and insights that have real-world applications and proven success rates.

CASE STUDY: RESULTS WITH HEATCOST OPTIMIZER IMPLEMENTATION

A practical example highlights how HeatCost Optimizer has been applied successfully. One case study focuses on optimizing an end-port glass furnace.

RESULTS FROM OPTIMIZATION

- Heat loss costs reduced by 4 percent. The total heat loss costs were reduced from EUR 436,151 to EUR 418,702 annually.
- Structural costs reduced by 9 percent. This translates into savings of EUR 500,000 over the expected eight-year lifecycle of the furnace.

What is HEATCOST OPTIMIZER?

Heat cost optimizer is a **thermal-economic optimization tool for glass furnace design**


- It was designed by Stara Glass to address the industry's need for a comprehensive furnace design tool.
- It is tailored to **optimise structure costs and minimise heat loss in glass furnaces.**



Key Features:

- **Real-Time Cost Feedback:** Optimize furnace structure cost during the design phase.
- **Thermo-Economic Analysis:** Evaluate design choices based on economic and thermal performance.
- **Material Database:** Choose the best materials based on temperature limits, conductivity, and cost.
- **Visualization Tools:** Generate clear visual representations of cost and heat loss patterns.

SUCCESS STORY



HEATCOST OPTIMIZER: Case Study

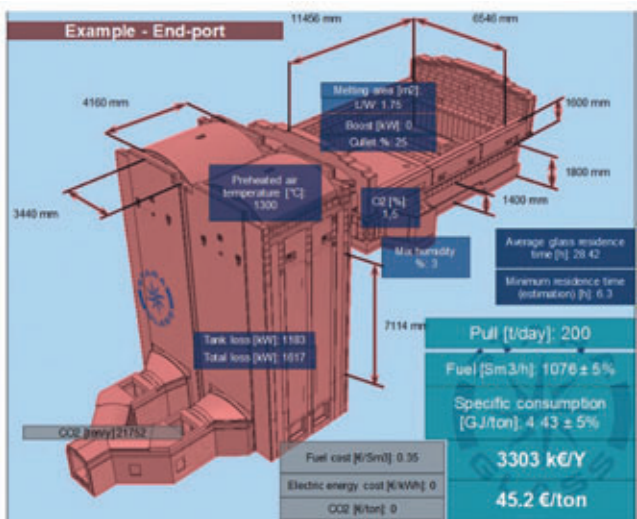
Example End-port		Heat balance	
Men data		Input heat	1980 4.436 8.020 98.2
Fuel (Sm3/h)	200	Electrical power	0 0.000 0.000 0.0
Melting area (m2)	176	Oil	0 0.000 0.000 0.0
Roofing (m2)	0	Total input heat	1980 4.436 8.020 98.2
Output %	85	Output heat	
Specific pull (Sm3/day)	2.50	Glass	463 1.060 3.698 49.3
Preheat of air (Sm3/day)	1300	Chemical reactions	102 0.422 0.860 9.0
Glass temperature at the front (°C)	1300	H2O evaporation	21 0.000 0.171 1.9
Furnace waste gas inlet temperature (°C)	1340	Flue gas and leakage	211 1.385 2.717 36.0
CO2 excess at the port (%)	1.5	Moist and air leakage	15 0.041 0.022 0.9
Room air temperature (°C)	20	Thermal loss	107 0.880 1.381 16.5
CO2 humidity %	3	Total output heat	1676 4.360 8.957 100.0
Fuel (CHA + 1, CH2 + 2, CH4) Day + 3	1		
NOV (hours)	8000		

Fuel [Sm3/h]	1076.7 ± 5%
[Nm3/h]	1020.7 ± 5%
Specific consumption [kcal/kg]	1060 ± 5%
Specific consumption [GJ/ton]	4.436 ± 5%
Specific useful heat [Mcal/m2]	71.5 ± 5%

Average glass residence time [s]	23.4
Minimum residence time (estimation) [s]	0.3

Cost	3304 k€/Y	45.3 €/ton
Fuel [Sm3/h]	1076.7	
Electrical energy [kWh]	0	
CO2 [kg/ton]	0	

A summary report generated by FurnaceMaster for a glass production process using an end-port furnace



Before Optimization

Structure	Sup. [m2]	q [kcal/h] TOT	Structure Cost(€)	Heat loss Cost(€/X year)
Bottom	101	290,706	1,019,239	86,064
Palissade	62	512,791	806,649	157,222
Superstructure	91	118,786	599,737	36,420
Crown	90	136,301	167,018	41,790
Port neck	69	142,007	449,301	43,539
Chambers	609	231,951	1,197,307	71,116
Total	1,022	1,422,541	4,241,251	436,151

After Optimization

Structure	Sup. [m2]	q [kcal/h]	Structure Cost(€)	Heat loss Cost(€)
Bottom	101	264,617	971,166	81,132
Palissade	62	480,957	802,662	147,465
Superstructure	91	118,786	599,737	36,420
Crown	90	133,370	167,018	40,891
Port neck	69	137,089	448,981	42,032
Chambers	609	230,801	872,021	70,764
Total	1,022	1,365,631	3,861,585	418,702

A case study

Key Insights and Predicted Improvements:

- Predicted Heat Loss Cost Reduction:**
 - Total heat loss cost is predicted to decrease from **436,151 €/year to 418,702 €/year**, which represents an estimated **4 % reduction**.
- Optimized Structure Costs:**
 - Total structure cost reduced from **4,241,251 € to 3,861,585 €**, resulting in a **9% reduction**.
- Over the furnace's 8-year life, the Heat Cost Optimizer delivers a combined savings of approximately €500,000, including reductions in both heat loss and construction costs.**

These numbers demonstrate how the HeatCost Optimizer allows manufacturers to identify inefficiencies and implement cost-saving measures while aligning their operations with environmental sustainability goals.

HEATCOST OPTIMIZER AND SUSTAINABILITY

The HeatCost Optimizer isn't just a financial analysis tool; it directly supports sustainability efforts by:

- Reducing energy consumption
- Optimizing the use of resources to minimize waste

- Lowering greenhouse gas emissions by promoting efficient fuel use

A STEP TOWARDS SUSTAINABLE GLASS MANUFACTURING

The HeatCost Optimizer has proven itself as a technological solution that offers economic, environmental and operational benefits. With its advanced data-driven insights, the HeatCost Optimizer allows glass manufacturers to rethink traditional designs, reduce costs and integrate sustainability goals into their core business operations. Here Stara Glass's commitment to innovation is shaping the future of the

glass industry - all to ensure that progress comes with sustainability and responsibility. ■



STAR GLASS

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Next generation of Dual Motor Shears: a HEYE bestseller

Standing out in HEYE International's portfolio among the company's top-selling products, the Dual Motor Shears have established an exceptional reputation in the container glass market over decades. Renowned for their precision and reliability, the shears have set a benchmark in the container glass industry. Indeed their advanced design and engineering excellence not only enhance cutting efficiency, they also ensure consistent gob loading - making Heye's shears a preferred choice among glassmakers worldwide.

TIME-TESTED RELIABILITY

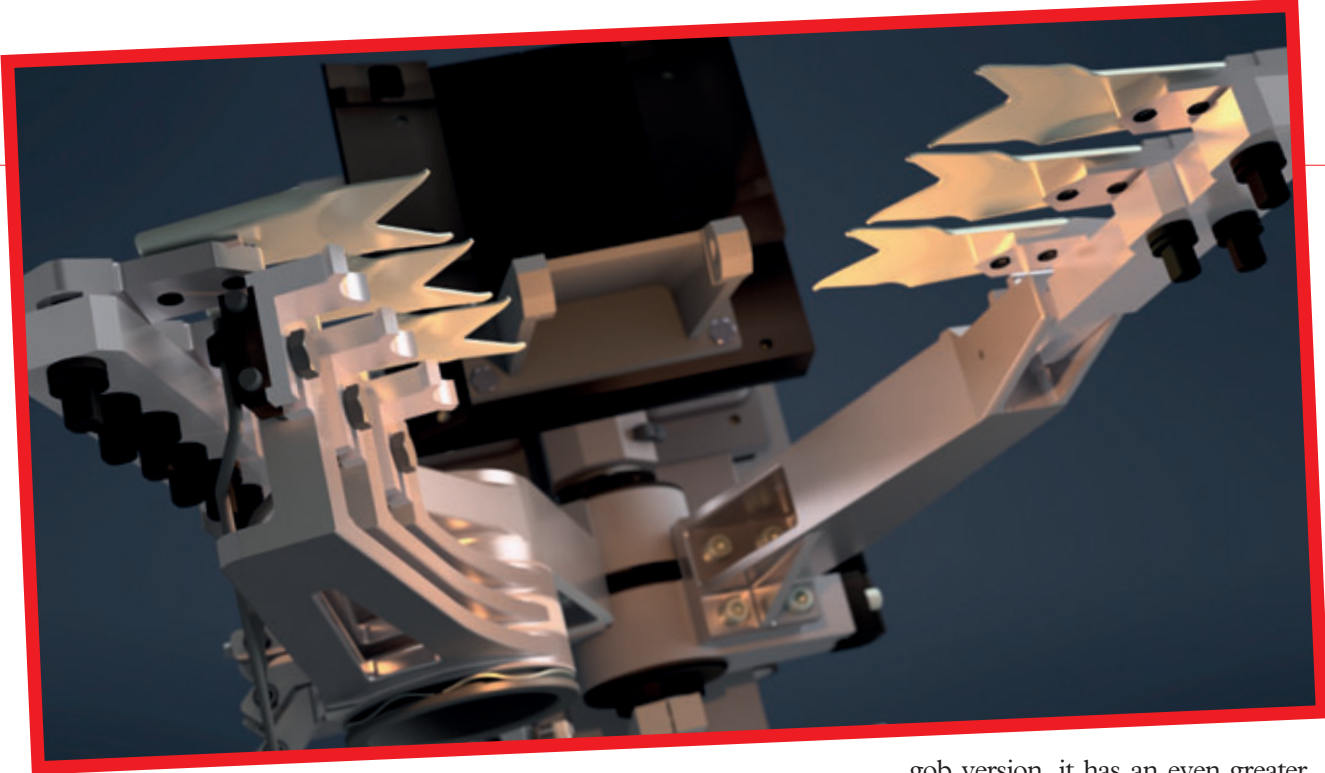
The secret to the success of Heye's Dual Motor Shears lies in their design, which ensures high-speed and consistent cutting performance. The shear blades, which move on a circular arc, allow for practically wear - and backlash-free suspension of the shear arms, which is achieved through the use of tapered roller bearings. An out-

A real showstopper in Dusseldorf last year, HEYE's top-selling product, the Dual Motor Shears, displayed its latest enhancements at glasstec. With a solid reputation built over decades, the shears are designed to boost performance and efficiency - having become a coveted tool for glass manufacturers.

standing characteristic of the shears is their nearly parallel cut: the centres of rotation of both shear arms are aligned on a common axis, ensuring that the motion of the

shear blades is perpendicular to the centre line at the moment of the cut. The Dual Motor Shears also excel at achieving a minimum orifice distance, capable of cutting very close - within just 1/2" - to the orifice ring. Each shear arm is independently driven by a separate three-phase servo motor, with both motors completing one full revolution per cut. This eliminates the need for reverse rotation of the motor at the cutting point. A common control system ensures phase-locked synchronization of both shear arm movements. Additionally, the actuating joints of the moving parts are equipped with tapered roller bearings, which significantly reduce





wear and backlash, contributing to the accuracy, overall durability, and reliability of the shears. The solution is designed for a wide range of feeder types, spout casings of different sizes and various orifice centre distances and suitable for single to triple gob production.

A GLASSTEC SHOWSTOPPER

At glasstec 2024, Heye showcased their Dual Motor Shears and unveiled exciting new design enhancements on their booth. The exhibit proved to be a real showstopper with visitors and loyal customers, already impressed by the product's established reputation. Since the event, Heye has experienced a surge of enquiries for the enhanced version of this product. The key enhancement lies in the redesigned shear arms featuring an innovative gob guide. The shear arm, which accommodates the gob guide arms, has been revised with optimised rigidity. Additionally, the geometry of the gob guide arms has been improved. These enhancements minimise harmful vibrations and significantly improve gob fall. Along with the optimised gob fall, this also leads to considerably improved durability of both the bearings and the gob guide arms. This new design with improved rigidity ensures enhanced preci-

sion, durability and lower material wear. Retrofits, too, are possible: the approximately 800 Heye Dual Motor Shears currently in operation worldwide can also benefit from these new enhancements. By replacing the entire right shear arm along with the gob guides, the shears can easily be updated to the new version - thereby enhancing their precision and durability even further.

USER-CENTRIC DESIGN

The Dual Motor Shears are also designed with ease of maintenance in mind. Their modular design allows for quick and easy replacement of the shear blades, facilitating routine maintenance and reducing downtime. The shears offer various mechanical adjustment possibilities to achieve clean and accurate gob cutting: Whether it is necessary to adjust the blade overlap, blade tension, or the height of the shears (and consequently their distance from the orifice ring), all these adjustments can be made using easily accessible handles and spindles. The next adjustment possibility relates to the gob guides. The handles for adjusting the gob guides are conveniently located on the right shear arm. The new design provides significantly improved accessibility to these handles. While this enhancement benefits the double

gob version, it has an even greater impact on the triple gob version, where the middle handle was previously the most difficult to reach. It is crucial to be able to carry out manual adjustments or perform necessary maintenance on the shears quickly and easily – especially in the tough operating environment where the Dual Motor Shears are installed. The new enhanced design took account of all areas - which help Heye customers to improve efficiency, focusing on ease of use for the personnel while also prioritizing the reduction of downtime. Heye's Dual Motor Shears are not just a testament to engineering excellence; they are a forward-thinking solution, which addresses the evolving needs of the container glass industry. With their innovative features and a design focused on efficiency, these shears continue to set the standard for glass gob cutting, reinforcing Heye's position as market leader. ■

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Revolutionizing glass production: **HORN** advances sustainable melting technologies

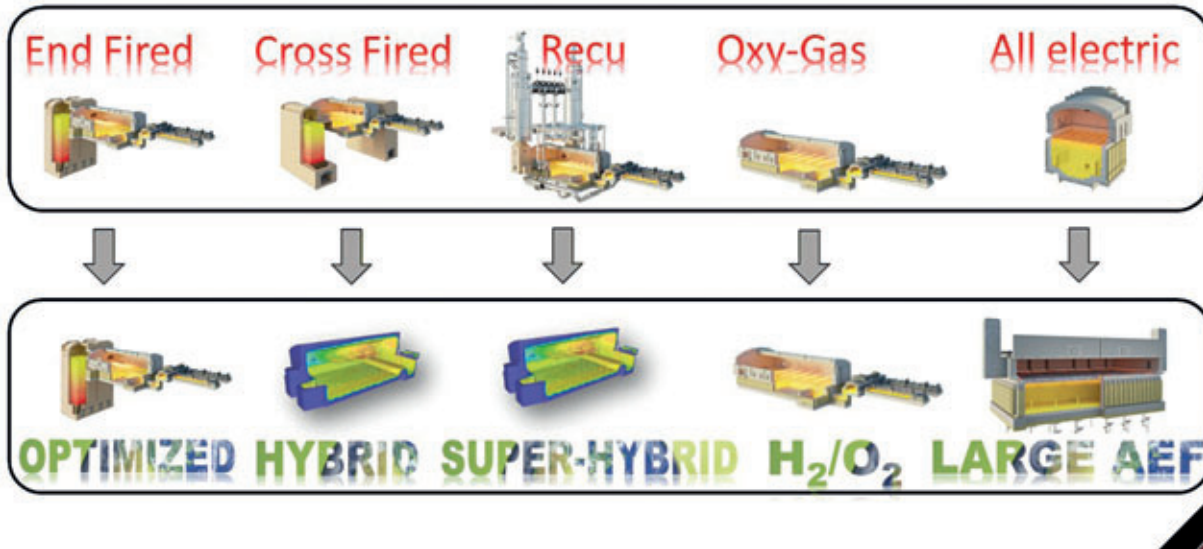
Against the backdrop of rising energy costs and necessarily stricter regulations, HORN is showing its winning hand in ecologically avant-garde glass manufacturing. Here its solutions range from optimized ECO End Fired Furnaces to hybrid and all-electric systems, alongside promising hydrogen technology developments - all enabling manufacturers to reduce their environmental footprint.

As energy costs surge and environmental regulations tighten, glass manufacturers worldwide face mounting pressure to revolutionize their production methods. The industry stands at a crossroads where innovation in melting technology isn't just about efficiency - it's also a call to action. HORN Glass Industries, a pioneer in glass manufacturing solutions, is



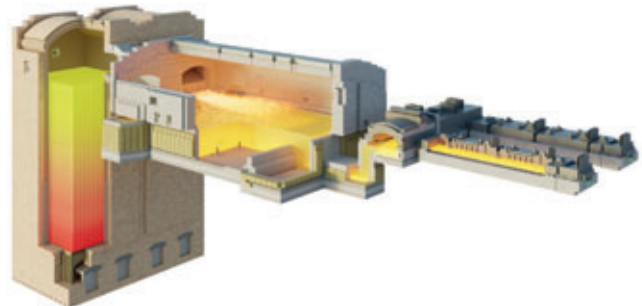
TRENDS & CONTENT

REDUCING THE CARBON FOOTPRINT



ECO END FIRED FURNACES < 3GJ/TO (<717 KCAL/KG)

- ✔ Lowest energy consumption
- ✔ Cullet share >85%
- ✔ Bottom boosting >10% with double electrodes
- ✔ HORN pusher batch charger with semi-closed doghouse
- ✔ Advanced insulation concept for furnace/regenerator
- ✔ Optimized design of regenerator / port neck / superstructure / glass bath



spearheading this transformation with groundbreaking advancements in furnace technology.

“The glass industry’s future hinges on our ability to balance production demands with environmental responsibility,” explains HORN’s lead engineering team. Their response to this challenge has been a comprehensive suite of solutions, ranging from enhanced traditional methods to cutting-edge electric systems.

PIONEERING EFFICIENT FURNACE SOLUTIONS

At the forefront of these innovations is the optimized ECO End

Fired Furnace. As reimagined classic, it achieves remarkable efficiency through both sophisticated geometric designs and operational refinements. With enhanced insulation and semi-closed doghouses, these furnaces can achieve energy consumption below 3 GJ per ton when operating with high cullet ratios and boosting capabilities. The company’s hybrid furnace technology represents a pragmatic approach to sustainability. These systems, capable of up to 50 percent electrification, allow manufacturers to modernize their operations without completely abandoning existing infrastructure. The technology

incorporates specially-designed boosting systems and innovative waste gas recirculation - particularly effective in end-fired configurations.

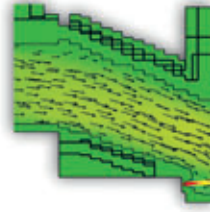
NEXT-GENERATION TECHNOLOGIES: FROM SUPER HYBRID TO HYDROGEN

For manufacturers primed to push further into sustainable territory, HORN’s Super Hybrid Furnaces achieve up to 80 percent electrification, marking a significant step toward carbon neutrality. Meanwhile, their all-electric furnaces, handling up to 300 tons

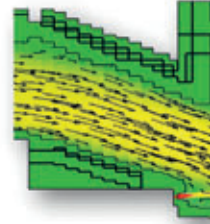
ENERGY

END FIRED HYBRID FURNACES

- Partial recirculation of waste gases into combustion air (about 20% recirculation) @ EFF
- Recirculation increases the velocity of combustion air > normal flame length



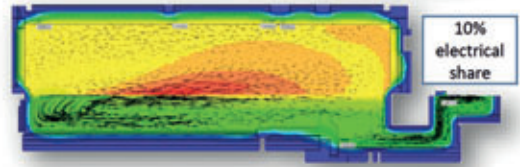
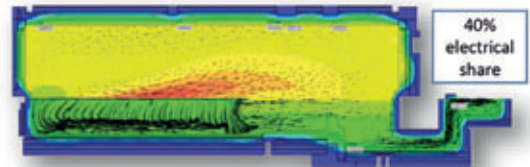
Without recirculation
> low air velocity @ 40% E.



With recirculation
> normal air velocity @ 40% E.

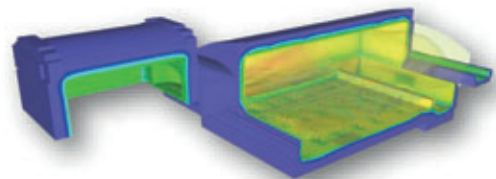
HYBRID FURNACES - ELECTRICAL SHARE UP TO 50%

- Electric power share 20% up to 40% @ EFF
up to 50% @ OXY / RECU
- Low specific energy consumption (< 3 GJ)
Low carbon footprint

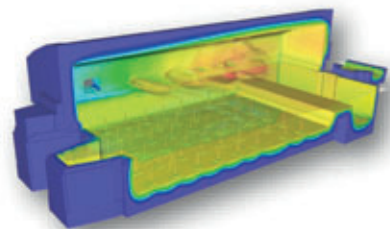


HYBRID FURNACES - ELECTRICAL SHARE UP TO 50%

- Based on proven technology
Hybrid - End Fired Furnace EFF
Hybrid - Oxy Gas Furnace OXY
- Security of invest



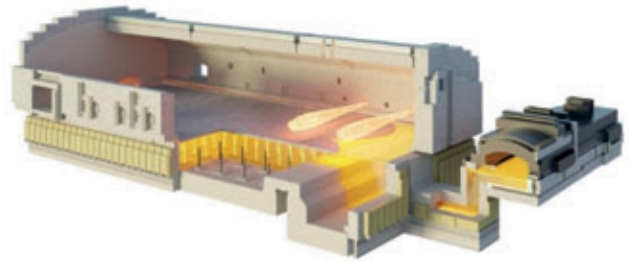
Hybrid - EFF



Hybrid - OXY

SUPER HYBRID FURNACES - 50 - 80% ELECTRICAL SHARE

- ❶ Cross fired Gas-Oxy-Furnace
- ❷ Electrical share: 50% <-> 80%



HYDROGEN-FIRING

BASICS :

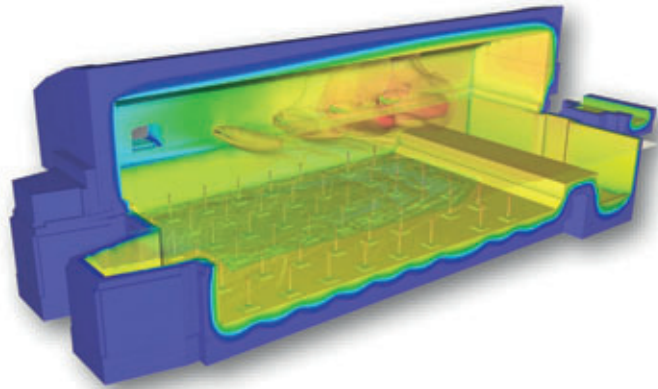
- ❶ Lower heat value of the Hydrogen
 - > higher volume flow of the mixture required
 - > 1 m³ Methane = 3,33 m³ Hydrogen

- ❷ Lower oxidant requirement of Hydrogen

	Methane	Hydrogen	
Air	10	2.4	m ³ /m ³
Oxygen	2	0.5	m ³ /m ³

- > less volume flow per m³ mixture required

- ❸ Impact of higher water content in furnace atmosphere
 - refractory corrosion, foam formation, water content in the melt



daily, showcase the potential for completely fossil-free glass production. These systems feature innovative rectangular designs and swivel top electrodes, ensuring both optimal melting conditions and practical maintenance solutions. Perhaps most intriguing is HORN's venture into hydrogen technology. While hydrogen promises a cleaner future with reduced oxidant requirements, it presents unique challenges including higher volume flows and increased water content. HORN's response includes the development of specialized DUALFLAME AC burners with separate gas inlets for natural gas and hydrogen, allowing for flexible fuel transitions. Through pilot projects and extensive research, HORN is methodi-

cally addressing the practical challenges of hydrogen implementation, from combustion dynamics to material integrity. Their comprehensive approach includes sophisticated modeling and real-world testing, ensuring that theoretical benefits translate into practical advantages. The path to sustainable glass production is complex, but HORN's innovations demonstrate that it's achievable. As the industry evolves, these technologies offer manufacturers viable options for reducing their environmental impact while maintaining competitive operations. The future of glass production isn't just about making glass—it's about making it responsibly. This transformation represents more than just technological

advancement; it's a fundamental shift in how the industry approaches production. With continued innovation and collaboration, the glass industry is poised to meet the challenges of a sustainable future head-on. ■

HORN
GLASS INDUSTRIES

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KOENIG & BAUER KAMMANN continues to impress with innovations in its 70th anniversary year

Now celebrating seventy stellar years in business, decorating glass container specialist KOENIG & BAUER KAMMANN is proud today to lead high-speed decoration with its HS300 machine at 300 bottles per minute. The company's new K4DP digital printer offers innovative features too, including simulated glass embossing for small-series production.

Based in Löhne, Germany, Koenig & Bauer Kammann GmbH is the specialist within the Koenig & Bauer Group for direct printing on glass and hollow containers. Since 1955, the company has been synonymous with high-quality 'Made in Germany' decoration machines that are tailored for containers made of glass, plastic and metal. Thanks to outstanding research and development, Koenig & Bauer Kammann has been successfully



fulfilling and exceeding customer requirements for 70 years now. Driven by the increasing quality and performance demands of both customers and the market, the company is constantly working on new innovations to optimize the efficiency of its machines as it develops new solutions.

A prime example is the KAMMANN HS300, first introduced to the market four years ago. With over 20 machines sold across nearly every continent, the HS300 dominates high-speed decoration at an impressive rate of 300 bottles per minute (bpm). Equipped with cutting-edge servo motor technology, innovative screen-printing units, and highly precise registration and print image control, the HS300 stands as not only the fastest screen-printing machine for the soft drink and beer bottle industries but also the most versatile.

The HS300 can handle up to 8 colours on round or conical items effortlessly, maintaining a consistent print speed of 300 bpm regardless of the number of colours applied. Complemented by 24/7 service, the world's fastest screen-printing machine for glass bottles eases any concerns new customers might have regarding the adoption of advanced technology.

Koenig & Bauer Kammann has also responded to the growing demand for digital printing - a field that is rapidly gaining attention. Here the newly developed KAMMANN K4DP is the first system designed exclusively for digital printing. Within a short period following its launch, half a dozen units have already been sold. The K4DP was created to offer a fully-automatic, high-speed digital printing machine with a minimal footprint, capable of decorating even the most complex geometries that traditional screen printing cannot accommodate. With a capacity of up to 8 bpm, the KAMMANN K4DP serves as the perfect entry-level digital printing solution. It supports the classic CMYK process



while also offering the ability to produce digitally printed relief. This involves layering a specialized ink to simulate glass embossing.

When comparing the high costs of creating a new glass mold to the 'printable embossing' feature, it becomes clear that this option is particularly attractive and cost-effective for small series or special editions. For those requiring higher speeds than 8 bpm, Koenig & Bauer Kammann offers the well-

established KAMMANN K15. With multifunctional machine platforms from six to 30 stations, which can be individually equipped according to customer requirements, this rotary machine provides maximum flexibility, enabling both standard screen printing on hollow bodies at up to 200 bpm and high-speed digital printing at up to 65 bpm. To ensure the highest possible efficiency, decoration methods such as hot stamping or labeling can also be combined with each other and/or with conventional screen printing or digital printing in a hybrid version of the KAMMANN K15 machine model.

From contract decorators to glass manufacturers, Koenig & Bauer Kammann offers tailored decoration machines to meet every customer's unique needs. ■


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Under Pressure: PNEUMOFORE'S Role in IS Machine Excellence

Daniel Hilfiker

THE ENERGY CHALLENGE

In glass factories, compressors and vacuum pumps are among the most significant consumers of electrical power, rivaled only by electric furnaces. The substantial energy demands of these machines underscore the importance of choosing energy-efficient solutions. In an era defined by environmental awareness, reducing CO₂ emissions and optimizing energy consumption have become critical priorities. Modern glass manufacturers must strike a balance between operational efficiency and sustainability and this begins with selecting equipment that meets these two objectives.

SUSTAINABILITY BEYOND EFFICIENCY

Energy efficiency is only one facet of sustainability. Glass production furnaces are built to operate for up to 20 years and auxiliary equipment must match this durability to ensure unin-



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In container glass production, the success of PNEUMOFORÉ is in the design and manufacture of Air Compressors and Vacuum Pumps that feed IS machines with pneumatic energy to produce jars and bottles with exceptional precision. A demanding environment, here the smallest imperfections are flagged by rigorous quality control systems. Compressed air and vacuum are equally indispensable - both ensuring that the molten glass gob perfectly fills the mould cavity by efficiently displacing air.

errupted performance. High-quality machinery, paired with extended warranties and comprehensive maintenance plans, can dramatically reduce downtime and repair costs. This not only enhances operational efficiency but also supports long-term environmental goals.

The industry's focus has shifted from minimizing upfront costs to understanding Total Cost of Ownership (TCO). Investing in robust, energy-efficient equipment pays dividends by reducing environmental impact while providing economic advantages. This shift highlights the sector's growing commitment to a sustainable future.

101 YEARS OF EXPERIENCE

Since its founding in 1923, Pneumofore has been at the forefront of designing and manufacturing air compressors and vacuum pumps tailored to the glass industry. These machines are built to endure the demands of IS glass production, which operate around the clock with minimal tolerance for error. Pneumofore's solutions ensure precise pressure for mould filling and complete air evacuation, critical to achieving flawless containers. Additionally,

these systems play a crucial role in cooling the molten glass to a stable state, enabling it to be transported safely on conveyor belts. Auxiliary equipment, such as blowers, complements this process by providing large volumes of airflow at minimal pressure to maintain consistent cooling across the IS machines. In a field where uninterrupted performance is essential, the installed compressors and pumps are better engineered for decades of reliable operation. While initial capital expenditure (CAPEX) represents a significant investment, it is only a small part of the Total Cost of Ownership. Energy and maintenance expenses dominate the cost equation, especially in regions with high electricity rates.

THE ECONOMIC OF ENERGY AND DOWNTIME

A 300-ton furnace operating with compressors and vacuum pumps consuming approximately 1.000 kW demonstrates the scale of energy demands. Over 10 years of continuous operation - 87.600 hours - this equates to 87,6 million kWh. In Europe, where energy costs average EUR 0,20 per kWh, this usage translates to EUR 17,52M, more than 20 times the initial equip-

ment cost. In regions with lower energy costs, such as EUR 0,10 per kWh, the expenditure still amounts to EUR 8,76M. Yet, the most significant cost in glass production is not energy but downtime. When compressors fail, and production lines grind to a halt, the financial losses can be devastating. This risk underscores the necessity of reliable, well-maintained equipment, supported by efficient system layouts and leak-free pipelines to maximize pneumatic energy supply without capacity loss.

LONG-TERM EFFICIENCY: A CORE REQUIREMENT

Despite the critical role they play, compressors and vacuum pumps are inherently inefficient. Approximately 80 percent of their energy input is lost as heat. Given this limitation, maintaining consistent efficiency over time becomes essential. The Air End - the heart of these machines - must be designed for longevity, ensuring that performance does not degrade over years of operation. Key considerations when selecting equipment include whether the supplier offers extended efficiency warranties, the frequency of Air End replacement and the

VACUUM



Mulia Glass, Indonesia: 3 x A180 Air Compressors, Air-cooled, Hot climate version, 160 kW each. 2 x UV50 Vacuum Pumps, Air-cooled, Hot Climate version. This customer has six more Pneumofore units installed since 2015.

machine’s overall design lifespan. While some manufacturers prioritize low upfront costs, these often come at the expense of long-term reliability, with equipment designed for short lifespans and frequent repairs. This approach, known as programmed obsolescence, results in higher lifecycle costs.

A VISION FOR SUSTAINABLE MACHINERY

Fortunately, a handful of experienced companies, including Pneumofore, remain committed

to manufacturing machinery with the lowest possible Life Cycle Cost (LCC). These machines are engineered for continuous efficiency, avoiding the disadvantages of programmed obsolescence. With extended warranties guaranteeing performance for up to a decade, they provide a solution for glassworks seeking to balance economic and environmental priorities. By embracing durable, energy-efficient equipment, the glass manufacturing industry can reduce its environmental footprint while achiev-

ing unparalleled reliability and cost efficiency. This alignment of sustainability and operational excellence ensures a bright future for glass production, where tradition and innovation converge. ■

AUTHOR BIO

Daniel Hilfiker is an engineer who represents Pneumofore, a company established in 1923 that specializes in heavy-duty compressors and vacuum pumps. Hilfiker has 30 years of experience in pneumatic machinery in glassworks. His passion for industrial equipment with the lowest environmental impact, makes Pneumofore a preferred compressors and vacuum pumps provider for IS machines.

Pneumofore

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2025 furnace launch has GLASS FUTURES prioritising safety

Putting safety first with comprehensive HAZOP studies ahead of its spring 2025 furnace launch, GLASS FUTURES' innovative R&D facility at St Helens has been conducting groundbreaking biofuels, hydrogen and carbon capture research - all whilst maintaining exceptional safety standards, and with 600+ days accident-free operation.

A COMPREHENSIVE SAFETY ASSESSMENT PROGRAMME

Following the ground-up construction of a unique R&D asset for the global glass industry, Glass Futures is entering a key stage of serving its international membership on the journey towards a fully decarbonised supply chain. To support this phase, a rigorous safety assessment programme is currently underway at the Global Centre of Excellence in St Helens, with safety in this industrial environment being reassessed from the foundations up. Every system



From left to right: Glass Futures' Justin Kelly (CEO), Aston Fuller (General Manager) and Richard Katz (President)



and part of the process is being studied in an initiative that's also expected to benefit glassmaking members when deploying new technologies across their own facilities. "Functional safety is being built as one single system across our one-of-a-kind facility, including 15 separate Hazard and Operability (HAZOP) studies. We are very eager to share the details with our members and support a safe working environment," says Glass Futures General Manager Aston Fuller.

STRATEGIC PLANT COMMISSIONING TIMELINE

Fuller went on to explain that providing a safe plant and focusing on member priorities was critical and that a successful start-up schedule is being planned to deliver maximum value to the membership. He indicated that they currently believed spring 2025 would be the best window to fire-up the 30 tpd experimental furnace, providing an extended

opportunity for members to work with them on the pipeline of activities for the next year and beyond, and to learn and share collaboratively as per their vision. He noted that the majority of kit and equipment was already installed, such that cold commissioning of the plant would commence during Q1 along with training and writing Standard Operating Procedures. Aston also emphasized that the safety of people and the plant had highest priority, which meant that the right timing was more important than simply pushing the button as soon as possible. Important to note as well is that 24/7 activity in the plant runs alongside extensive research projects. Also, external trials with industrial partners are already leading the way to groundbreaking developments in fields such as biofuels, hydrogen, carbon capture, alternative raw materials and technologies around supporting and enabling circularity. Dr Ludovic Valette, Glass Futures board member and

Vice President of Technology and Engineering at O-I Glass commented: "Ahead of the pilot furnace starting-up in the coming months, tremendous work is going on behind the scenes at the Global Centre of Excellence in our continuous efforts to achieve the very highest level of safety at this unique facility. The board, members and partners support this strategy because a focus on safety will provide a sustainable platform for Glass Futures' trials and collaborative work in decarbonising the glass industry."

PROVEN TRACK RECORD IN HEALTH AND SAFETY

Having started with a blank page five years ago and taken ownership of the site under two years ago, Glass Futures' H&S commitment has been driven by exceptionally high standards set by the operations team from day one. As a result, Glass Futures was shortlisted in the 'Health and Safety Action' category at



Image courtesy of Siemens

the Glass Focus Awards on 21 November 2024 in Leeds, highlighting an H&S culture that boasts over 600 days of ‘no lost time’ accidents with approximately 800 safety observations carried out and over 1000 indi-

vidual contractors inducted onto site during this period. Says Glass Futures’ CEO Justin Kelly: “Glass Futures will continue to follow a sustainable operating model; our board has rightly set our appetite for

risk as low as possible. This will keep our people and plant safe and the investment into a best-in-class safety study is deemed imperative to achieving our longer term goals. The furnace will be operated according to the needs of our members, who are strongly encouraged to engage with us to discuss all opportunities. A safe business model alongside safety in our plant will ensure we deliver them value.” ■



Image courtesy of Siemens



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Analysis of advanced glass manufacturing by OCMI-OTG

For pharmaceutical applications, technological advancements in borosilicate glass tube processing from three years ago demonstrate significant progress through OCMI-OTG's FLA18-9-LF518 production line. This system exhibits exceptional production metrics, achieving 55 units per minute while maintaining optimal quality control parameters through its integrated servo-driven architecture and OPTIVIAL imaging system.

SYSTEM ARCHITECTURE

A global market leader in pharmaceutical glass tube processing equipment, OCMI-OTG recently disclosed technical specifications of their FLA18-9-LF518 system. Initial data suggests that the technology represents a paradigm shift in automated vial and cartridge production methodologies. The primary production component consists of an index rotation forming apparatus (FLA18/9) integrated with the LF518 post-forming system, facilitating precise dimensional control while maintaining production efficiency.

OPERATIONAL PARAMETERS AND PERFORMANCE METRICS

Empirical evidence indicates that the servo and torque control mechanisms in the FLA18/9 significantly enhance index rotation performance beyond previous continuous motion parameters. Quantitative analysis reveals processing capabilities for vials ranging from 9-30 mm in diameter and 30-100 mm in length. The modular design architecture enables unprecedented customization potential through accessory integration at various implementation stages. The forming configuration

demonstrates optimal efficiency through an 18-station upper crown formation system integrated with a 9-station lower finishing mechanism. Thermoregulation is achieved through torque-motor-driven rotation with integrated cooling systems. Three distinct processing stations facilitate sequential material transformation: primary roughing and shoulder preparation, profile pre-finishing, and final finishing. The bearing-mounted forming heads eliminate manual alignment requirements, while quick-lock mechanisms facilitate maintenance access.

Examination of the precision

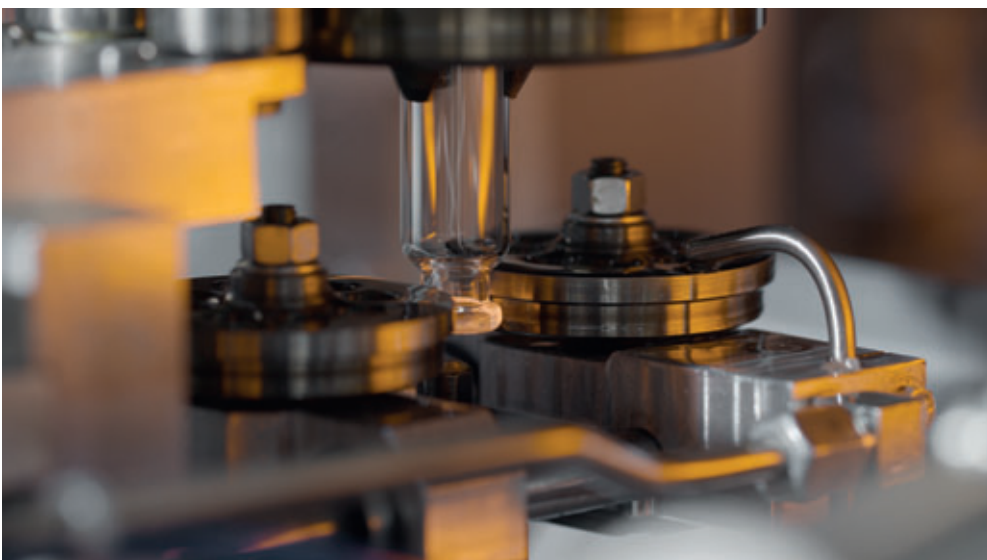


operations reveals independently servo-driven tooling components that enhance operational accuracy. Internal lubrication systems minimize contamination while maintaining optimal functionality. The servomotor implementation extends to plate settings and cutting operations. A containment buffer system ensures proper base formation, particularly crucial for larger diameter applications. The integrated solenoid-valve-controlled blower system maintains ISO-standard alkalinity parameters.

The system's architecture enables comprehensive control through an advanced human-machine interface. Mass flow metering technology replaces traditional manual mixing processes, with automated parameter

management and gas consumption optimization. The OPTIVIAL imaging system provides complete dimensional monitoring through high-frequency image capture, processing 15 frames per revolution for precise measurement verification. Through anthropomorphic robotics integration (R-ATL4 loader), the system demonstrates enhanced material handling capabilities. The LF518 post-forming process maintains technological consistency through servo-driven mechanisms, including an advanced annealing system with three independently controlled thermal zones. The automated packaging system (PM-V) incorporates modular design principles with four or five filling stations, effectively eliminat-

ing manual handling requirements. This technological implementation has garnered significant industry validation, demonstrating optimal performance metrics in automated vial production while maintaining stringent quality control parameters. The evidence suggests this system represents a significant advancement in pharmaceutical glass container manufacturing methodology. ■







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Precision, efficiency and sustainability all redefined in **OMSO's** SB021

CLOUR REGISTRATION PRECISION

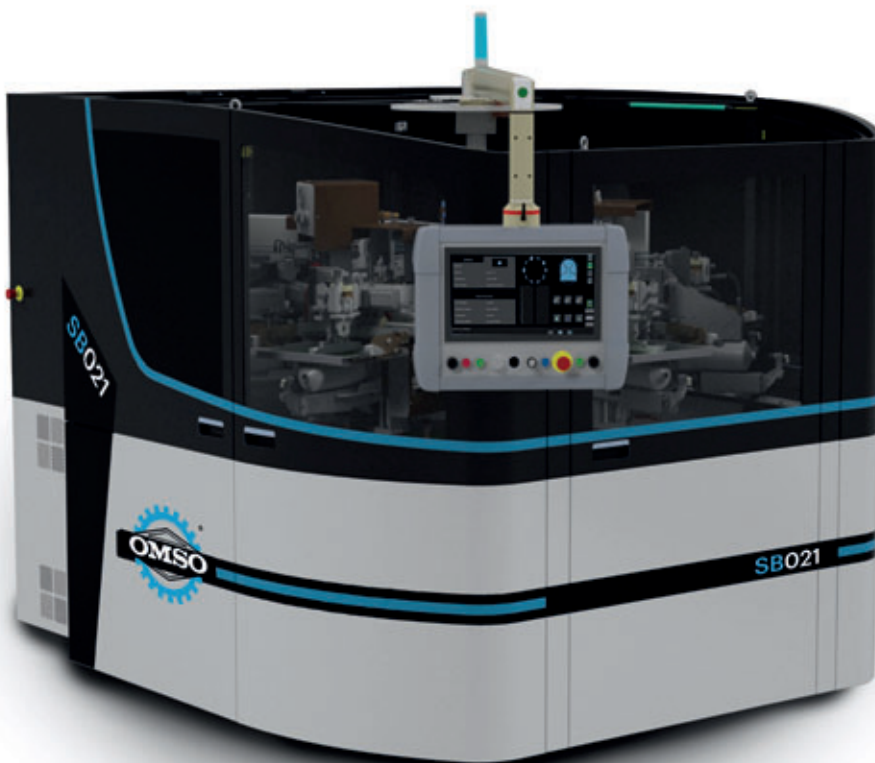
One of the distinctive features of SB021 is its extreme precision in colour registration, which is guaranteed by servo-assisted movements and a camera search system that maintains absolute

control over the object's position during all printing phases. The machine can print up to three colours on cylindrical, elliptical and flat formats - also allowing the same colour to be printed on both sides at the same station for elliptical bottles. The maximum decoration stroke is 251 mm, and

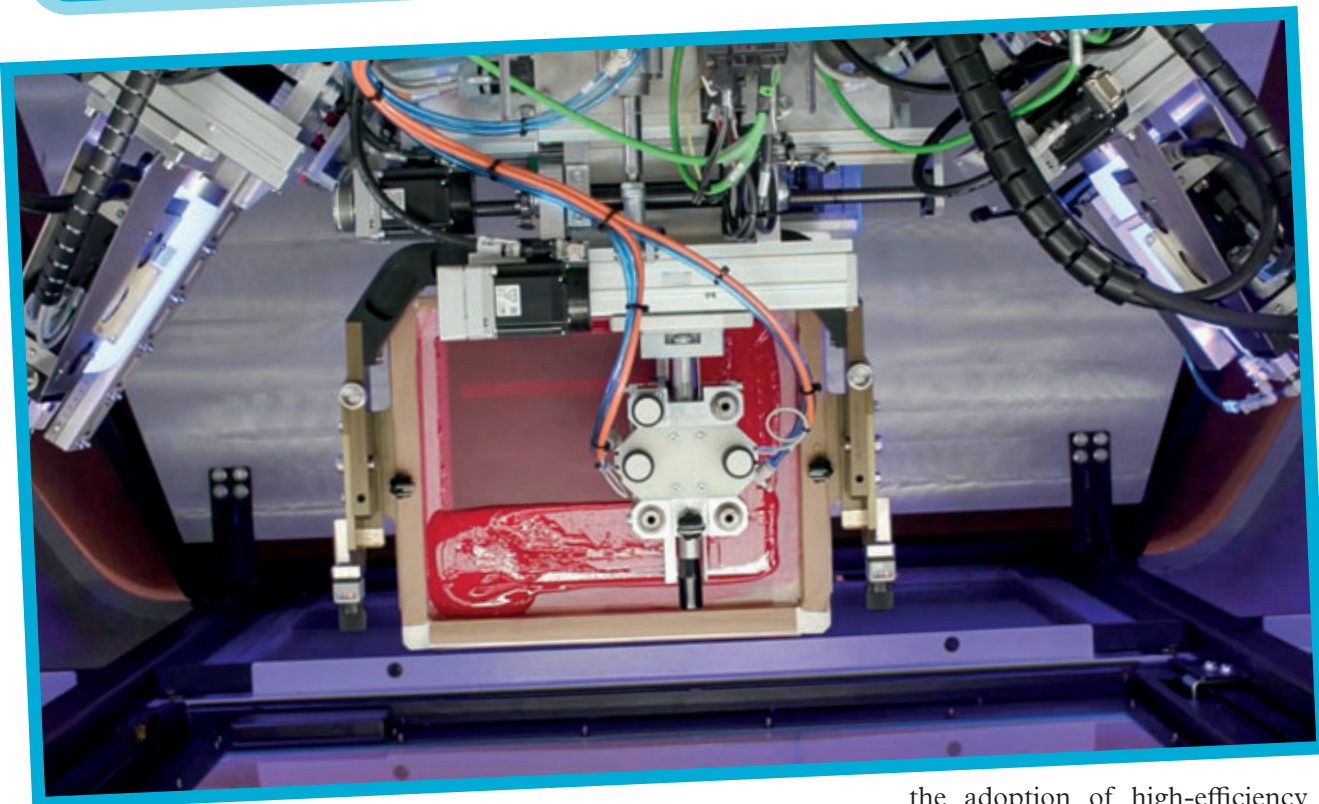
the average registration tolerance between colours is between 0.1 mm-0.2 mm. This accuracy is particularly appreciated in the cosmetics sector, where the aesthetic quality of decoration is essential.

EASE OF USE AND REMOTE ASSISTANCE

SB021 features an advanced operator interface, designed to be intuitive and simple even for those with little experience with servo-assisted machines. The interface guides the operator during work phases, ensuring a simple and reassuring process. This feature makes the machine ideal for both small and large operations seeking technologically advanced but easy-to-manage solutions. Additionally, the machine is equipped with remote connection assistance, allowing OMISO's support service to assist the operator when needed. Remote control will thereupon enable the online technician, after explicit customer request, to guide the operator in resolving the problem - providing immediate support and thus limiting machine downtime.



An Italian leader in manufacturing machines for decoration on glass, plastic and aluminum objects, OMSO has introduced SB021, its next-generation automatic screen printing machine. Designed to meet the growing needs of the cosmetic sector and other demanding industries, the decorator stands out for its advanced performance, ease of use and reduced environmental impact.



QUICK AND ECONOMICAL FORMAT CHANGE

Format change on the SB021 has been optimized to minimize operating costs. This is possible thanks to the replacement of only shaped components, such as bottom plate and tailstock, and automatic setting of adjustments like screen stroke and rotary table transport movements. This system simplifies machine intervention operations by the operator and reduces configuration times. Furthermore,

the machine has been designed ergonomically and accessibly, equipped with large casings with 180° opening panels that allow easy and safe access to work areas. The equipment is minimal and low-cost to produce, allowing companies to quickly respond to production needs and access new market sectors while ensuring high efficiency.

LOW ENERGY CONSUMPTION

Sustainability is a crucial strength of the SB021, thanks to

the adoption of high-efficiency motors and a LED lamp drying system, all of which represent significantly more efficient technology compared to traditional mercury UV lamps. LED lamps allow energy savings of up to 80 percent compared to traditional technologies whilst maintaining optimal drying effectiveness. CO2 emissions are drastically reduced, and the absence of ozone production during operation significantly improves working conditions. Such advantages not only reduce environmen-

SCREEN PRINTING

Screen printing



tal impact. They also ensure a safer operating environment compliant with the strictest industrial safety regulations. An additional distinctive element is the ability to track and demonstrate energy consumption and emission data through

SB021's management software. The system constantly monitors energy savings and CO2 emissions, providing detailed data accessible through the operator interface. Companies can thus verify operational and ecological benefits in real-time, inte-



grating them into their sustainability management systems.

ACCESSIBLE INVESTMENT

Thanks to its versatility, compact size and reduced operating costs, SB021 presents itself as a strategic investment for both large industries and small production facilities. The machine is designed to adapt to different applications - ensuring a quick and tangible return on investment. Omso's SB021 machine represents a significant innovation in the field of screen printing, combining precision, operational efficiency and sustainability. It positions itself as an ideal solution for companies wanting to modernize and optimize their production processes - without compromising quality and environmental respect.

A UNMISSABLE APPOINTMENT

It will be possible to see the SB021 in action during the upcoming Cosmopack 2025, to be held in Bologna from March 20-22. The machine will be exhibited at the OMSO stand, identified as L12-M11, where it will be shown in operation - allowing visitors to appreciate its capabilities directly and the simplicity of changeover. The presentation will afford viewers a chance to personally evaluate the above mentioned speed, efficiency and advantages - so confirming SB021 as a truly innovative solution within the screen printing sector. ■



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Summoning industrywide collaboration: FEVE's call to action

The European glass container industry invests over EUR 600M annually in innovation and decarbonization, including efficiency improvements and plant modernization. However, to fully achieve net zero by 2050, it is estimated that an additional EUR 20 billion in capital expenditure will be needed. While the goal is within reach, the industry cannot achieve it alone: urgent access to affordable low-carbon energy is needed, along with EU support

through new accessible financial instruments and the continuation of existing ones.

TECHNOLOGICAL TRANSFORMATION AS A KEY PRIORITY

The European Container Glass Federation, FEVE, recently published 'One Destination, Multiple Pathways: How the European Container Glass Industry is Decarbonising Glassmaking' - a report that provides the recipe

for the container glass industry to produce packaging that is not only circular but also climate neutral. However, to ensure the sector reaches its net zero target by 2050, the Report emphasizes that the window for action is now. Glass furnaces have a lifespan of 10-15 years and an annual replacement rate of 7-10 percent. That makes it essential that old furnaces be gradually replaced with ones that are capable of operating using low-carbon technologies. Currently, 80 percent of direct carbon emissions from the glass container sector comes from natural gas combustion. Switching to low-carbon energy sources is therefore a top priority. Over 90 percent of glass containers produced in the EU are made by companies that have joined the Science-Based Targets initiative (SBTi) - created to support them in their decarbonization journey toward net-zero emissions.

MOBILISING ALL STAKEHOLDERS

As Assovetro President Marco Ravasi says: "Through continuous innovation of its plants the Italian glass industry too has already begun the energy transition journey, and about 7 out of 10 companies have formal-

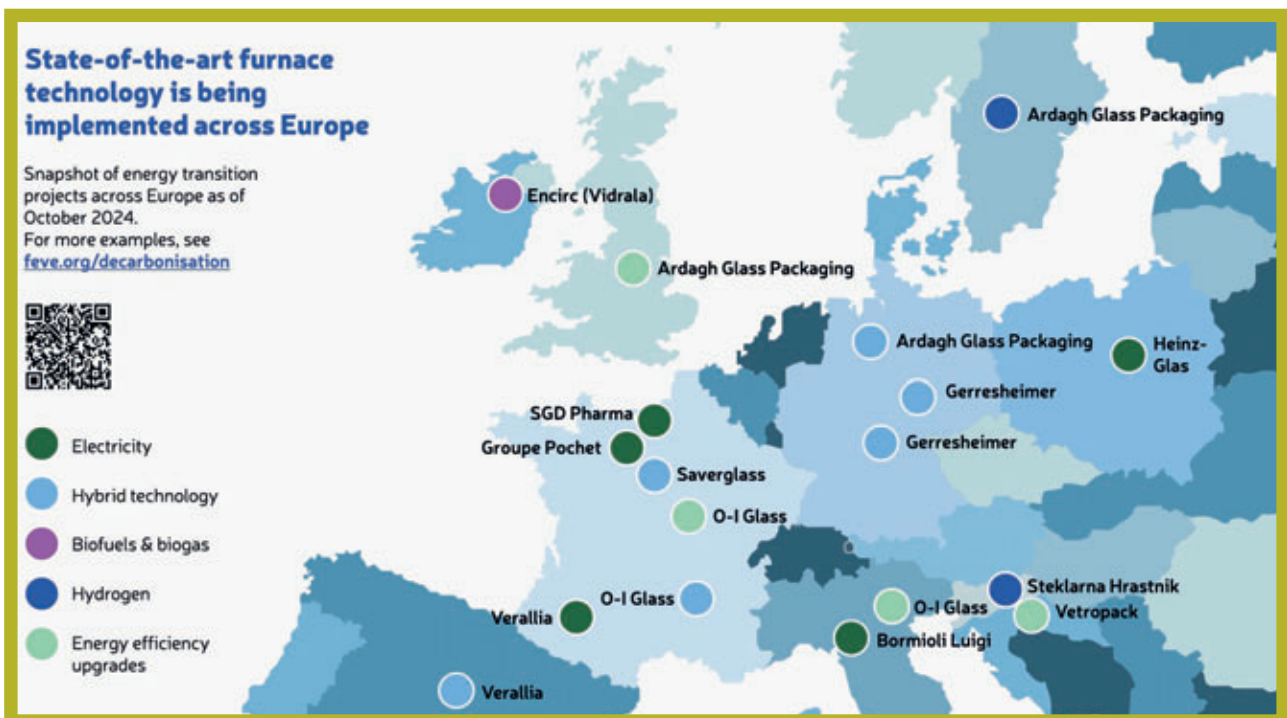
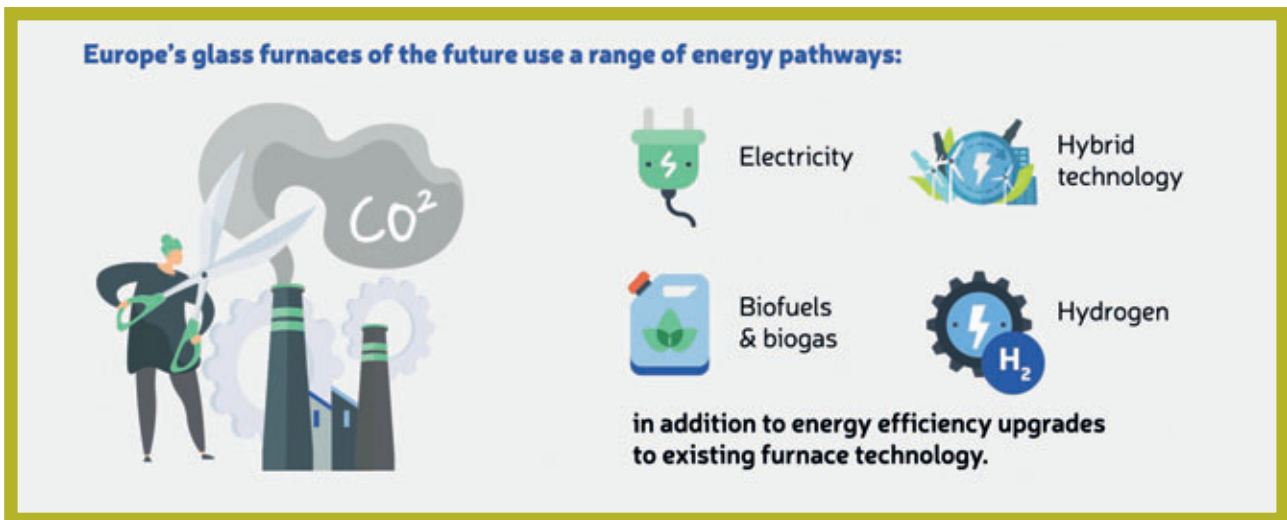


Coursing a path towards net-zero packaging for the European glass container industry necessitates an urgent, annual strategic replacement of old furnaces with low-carbon alternatives. As detailed in a recent report by FEVE, this includes substantial capital investment of 20 billion, as well as affordable access to green energy.

ized a decarbonization roadmap. However, as the FEVE Report

points out, to achieve the challenging net zero target by 2050 we need the contribution of all stake-

holders, including government entities, energy producers and distributors. That includes bottlers



NET ZERO



and end consumers, who can contribute by choosing darker containers, which are certainly more sustainable than clear ones from a CO2 emissions perspective.” As a permanent material that can be recycled infinitely without losing quality, glass had a whopping collection rate in Europe of 80.2 percent in 2022 (Italy reached

an impressive 90.8 percent), with most cullet used in a circular path. Furthermore, glass is a safe packaging material that doesn’t release harmful chemicals into products - regardless of how often it’s recycled. With 162 production facilities distributed across Europe, the glass container industry accounts for 125,000 direct and indirect jobs.

Moreover, over EUR 140 billion of EU exports are packaged in glass. Approximately 45,000 manufacturing companies Europewide, 98 percent SMEs, rely on glass packaging to sell their products. Glass plays a fundamental role in the pharmaceutical, food and beverage, as well as perfumery and cosmetics sectors. The Report has a dedicated section on the FEVE website, including an online map with over 90 case studies showing decarbonization efforts across Europe. ■





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100% SICILY BOTTLE embraces Italian tradition and sustainability

As winemakers look toward the future, O-I's 100 percent Sicily bottle reinforces Sicilian heritage. The "100 percent Sicily" bottle is a wine bottle produced with recycled glass collected from Sicily along with ingredients coming from the island.

In the heart of the Mediterranean, Sicily, Italy, stands as a beacon of tradition, culture and innovation. The island's unique climate, rich history, and vibrant community have long made it a hub for winemaking.

The wine bottle is deeply rooted in the local culture. The 100 percent Sicily bottle is a testament to the power of community and the importance of preserving the planet for future generations.

COMMITMENT TO WINE SUSTAINABILITY

Sustainability is more than just a buzzword; it is a way of life that requires a commitment to continuous improvement and innovation. For the winemak-



SUSTAINABLE PACKAGING

Josè Rallo,
Owner of Donnafugata Winery



©beatricepilotta

Sustainable Packaging

ers of Sicily, this means adopting practices that reduce their environmental impact.

“When my children were born, I immediately thought about what is the future that I will bring to them. And then I thought about sustainability, not only the good practice, but the results of the good practice, and then the quality of the soil and the quality of the grapes and the quality of the wine,” said Josè Rallo, Owner of Donnafugata Winery located in Sicily. “And it’s also [my] responsibility to be the 5th generation because I know that my parents, my grandparents, my ancestors, they have built something also for me, for me and for my brother and

I have to do the same for my children.”

Rallo said the winery began working with O-I to acquire a sustainable, lighter-weight wine bottle – and landed on the “Cento per Cento Sicilia” – the 100 percent Sicily bottle.

“O-I produced the bottle with recycled glass and 90 percent of the glass of the new bottle was coming from Sicily and it was delivered to our winery – the distance of a very, very few kilometres,” Rallo said. “This could be one of the most sustainable choices that we make for the winery.”

O-I has a plant in nearby Marsala, making it uniquely positioned to support this local effort. The bottles have up to

90 percent recycled glass, or cullet, that is collected exclusively from the region, minimizing the carbon footprint associated with transportation and production. This not only reduces greenhouse gas emissions but also supports the local economy by creating jobs and promoting sustainable practices.

PRESERVING TRADITION AND WINE SUSTAINABILITY

For Donnafugata Winery, winemaking is part of family, tradition, and Italy’s culture.

“Wine is something that brings together people. Wine is something that symbolizes that there are characters of the land, of

the climate. So for us, wine is culture,” Rallo said.

Wine is not just a business; it's a legacy of love, passion, and responsibility passed down through generations, a tradition Rallo is determined to continue for her children.

“It's beautiful to take part of ... a business who is involved in wine because wine is really a special product full of poetry, full of love and passion,” Rallo said.

By embracing sustainability and innovation, Donnafugata Winery Sicily is not only pre-

serving its rich heritage and traditions but also paving the way for a more sustainable future.

A SUSTAINABLE SOLUTION FOR A CIRCULAR ECONOMY

Glass packaging is inherently sustainable and the ideal material to support a low-waste circular economy. The more recycled glass that glass manufacturers use to create new bottles, the glass-making process requires less energy and creates fewer emissions.

The “Cento per Cento Sicilia” project, together with the marketing of its bottles, aims to be a concrete example of a sustainable economy, thus encouraging those involved in the supply chain – starting with the consumer – to choose products that are sustainable and able to safeguard the Sicilian territory. Glass container produced in Sicily and made mainly with recycled cullet from local separate collection, except for some elements of the vitrifiable mixture that are not available in the region.



O-I plant in Marsala

The 100% Sicily bottle is characterized by a customized bottom logo depicting the concept of circular economy and they are made entirely within O-I's plant in Marsala, Italy



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Cutting-edge mould technologies drive **LUBEN GLASS** forward

Exhibiting its enhanced VR1 Evo, ILS Evo, and AI-equipped MCS V1 machines at Glasstec, LUBEN GLASS showcased its most significant innovations in Düsseldorf last October. Both the new ULTIMATE 2024 polishing cycle and the company's advanced mould volume inspection technology also demonstrated its commitment to industry advancement.

P RIZED ACKNOWLEDGEMENTS

The last edition of Glasstec 2024 signalled a great opportunity for Luben Glass to display to its customers and future customers what growth through excellence means. Indeed many visitors visited the company booth to get up to speed with the latest innovations while appreciating the result of the great effort and passion that has been invested in the study and realization of new products. This success was wide-ranging and the renewed machines VR1 evo, ILS evo, MCS V1 equipped with artificial intelligence, as well as the brand new DLCS, had a great echo. Present in massive numbers, spare parts and variable equipment also played a key role during the days of the fair, allowing our customers to be able to touch them and appreciate their quality.

A SUPER TEAM

Present with all its partners, Luben Glass has been able to welcome customers from all over the world, thus managing to make each of them feel at ease. The professionalism and in-depth knowledge of the industry, enabled the Luben Glass team to best present all the innovations while also performing on-site operation demonstrations when requested.

THE VRI EVO POLISHING CYCLE

Thanks to well-established technology leveraged by the VR1 Evo,





software. The machine, which is widely used in glassworks all over 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 of only 120cm.) is easy to install and start up and is now a reference point for glassworks all over the world.

THE MCS VI FOR RENEWED MOLD VOLUME INSPECTION

Glasstec also served as an opportunity to present Luben Glass' revamped MCS V1, which consists of a measuring core featuring a very high-precision laser head which allows for mould measurement and volume detection in less than 3 minutes - regardless of shape. It is equipped with dual monitors for the display of 3D processing, resulting from scanning, as well as the use of the new AI-equipped software. To date, that makes it the fastest and most reliable machine when it comes to determining mould volume without the use of skilled operators. ■



Luben Glass customers were afforded the chance to appreciate its new "ULTIMATE 2024" polishing cycle through which any type of tableware mould characterized by particularly complex and dirty surfaces can be quickly polished - with amazing results. Committed to the constant search for new materials, the company has developed a highly effective mix of materials - allowing for absolute shine in appearance on mould surfaces, regardless of whether they are made of steel or cast iron.

ILSEVO

This lubrication control unit, which is now a best seller for Luben Glass, has been enriched with new stylistic details such as LED lighting that enhances its technological aspect and with new management



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Nigeria's glass recycling landscape transformed, courtesy **BETA GLASS**

In a landmark sustainability initiative marking its half a century anniversary, West African glass leader BETA GLASS Plc convened 150 industry stakeholders at its Fresh Perspectives forum in Lagos. The Frigoglass Group subsidiary showcased its environmental leadership through strategic partnerships that demonstrate how legacy manufacturers can drive Africa's circular economy transformation.

LANDMARK EVENT UNITES INDUSTRY LEADERS

A member of the Frigoglass Group and the leading glass container manufacturer in Central and West Africa, Beta Glass Plc celebrated its 50th

anniversary by co-hosting the Fresh Perspectives event on 24 October 2024, alongside Lagos Waste Management Authority (LAWMA), ProvidusBank and Wecyclers, at the ProvidusBank Headquarters in Victoria Island, Lagos. The event gathered over

150 industry leaders, environmental advocates and key stakeholders - all to discuss Nigeria's environmental challenges while exploring innovative sustainability solutions in waste management and recycling.

As event, Fresh Perspectives



From left to right: Omolola Ola-Awakan, Supervisor Corporate Engagement, LAWMA; Aramide Olaniyan, Head of Corporate Care and Customer Engagement, LAWMA; Rajesh Gaggar, Group Supply Chain Director, Tolaram; Dr Muyiwa Gbadegesin, Managing Director, LAWMA, Jagdish Agarwal, Chief Operations Officer, Beta Glass Plc; Esther Fagbo, Head of Partnerships, Wecyclers; Olawale Adebisi, Managing Director, Wecyclers; Alexander Gendis, Chief Executive Officer, Beta Glass Plc.

presented an excellent platform for collaboration between private and public sector leaders - showcasing the company's long-standing commitment to sustainability, coupled with its leadership role in advancing environmental stewardship. Dedicated to addressing Nigeria's waste management challenges and driving sustainable

practices across industries, participants included major stakeholders from government, the corporate sector and civil society.

STRATEGIC PARTNERSHIPS DRIVE ENVIRONMENTAL CHANGE

The sustainability efforts of Beta Glass are anchored by stra-

tegic partnerships with such key organisations as Wecyclers, the Food and Beverage Recycling Alliance (FBRA) and the Recycling Scheme for Women and Youth Empowerment (RESWAYE). These partnerships were highlighted throughout the event as instrumental in advancing recycling initiatives and building scalable waste management solutions. Through its collaboration with Wecyclers, Beta Glass supports grassroots recycling programmes that empower local communities. As a founding member of the FBRA, the company continues to lead industry-wide efforts to create a circular economy for packaging waste.

CEO of Beta Glass Alexander Gendis opened the event by reflecting on the company's 50-year journey of innovation and sustainability. He underscored the importance of collective action



Alexander Gendis, CEO of Beta Glass Plc, giving the welcome address



Jagdish Agarwal, COO of Beta Glass; Sade Morgan, Corporate Affairs Director at Nigerian Breweries Plc, a member of the Heineken Group; and Godfrey Adejumoh, Head, Corporate Affairs and Sustainable Business, Unilever exploring the topic, Environmental Sustainability: Practices and Innovation.

in tackling environmental challenges, particularly by legacy companies. Said Gendis: “As we celebrate half a century of excellence, Beta Glass is more determined than ever to leverage our legacy as a driving force for environmental change,” then adding: “The path to a sustainable future requires strong partnerships and bold actions, and we are proud to lead this charge in Nigeria.”

Following Gendis’ address, CEO of Frigoglass Group Serge Joris delivered a keynote presentation that reaffirmed the parent company’s unwavering commitment to sustainability. He emphasised the Group’s role in fostering innovation and supporting environmental initiatives across its global operations, with Beta Glass at the forefront of these efforts in Africa.

PANEL SESSIONS CHART FUTURE SUSTAINABILITY COURSE

The event featured three panel sessions, each focusing on critical topics in sustainability and corporate responsibility.

- The first panel session, ‘Environmental Sustainability: Practices and Innovation,’ explored sustainable business practices and the integration of circular economy models. Industry experts such as COO of Beta Glass Jagdish Agarwal, Corporate Affairs Director at Nigerian Breweries Plc Sade Morgan and Head of Corporate Affairs and Sustainability at Unilever Godfrey Adejumoh all discussed how businesses

can innovate to reduce their environmental footprint and meet global sustainability goals.

- Speakers at the second session entitled ‘Corporate Social Responsibility: Empowering the Next Generation’ featured Group Head of Brand Transformation and Digital Marketing at Bank of Industry Limited Jide Sipe; Providus Bank Head Card Business and Solutions Lanre Ogundare and Demand Creation Specialist Bukola Oloyede. Sony Nigeria highlighted the role of corporate social responsibility in empowering future leaders and making meaningful contributions to social and environmental progress.

● The third and final panel ‘Public-Private Partnerships for Environmental Solutions’ underscored the critical role of public-private partnerships in driving scalable environmental solutions. Panellists here included Managing Director of LAWMA Muyiwa Gbadegesin, Managing Director of Wecyclers Wale Adebisi and Vanguard Sustainability Advocate and Chief Growth Officer Tuoyo Amuka. The discussion emphasised the need for deeper collaboration and aligning policy frameworks to foster sustainable waste management solutions.

As Beta Glass celebrates its 50th anniversary, it continues leading in environmental sustainability initiatives. The Fresh Perspectives event showcased the company’s ability to bring together key stakeholders and inspire change through innovative partnerships. A significant takeaway was the vital role of public-private collaborations in addressing waste management challenges and fostering sustainable practices across industries in Nigeria. Additionally, the event reinforced Beta Glass’ commitment to grassroots engagement as it supports community-based recycling initiatives and educational programmes aimed at cultivating long-term social and environmental benefits. ■

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BEAR turns heads with groundbreaking STEKLARNA HRASTNIK technology

Slovenia's STEKLARNA HRASTNIK unveils its BEAR project, featuring a hybrid regenerative furnace that achieves 40 percent electrical melting share whilst maintaining 170-ton daily capacity in a seismic development for container glass production worldwide.

A BREAKTHROUGH IN GLASS MANUFACTURING

In a significant leap forward for the glass manufacturing industry, Steklarna Hrastnik is set to demonstrate a revolutionary hybrid end-fired regenerative furnace that promises to transform how container glass is produced. The BEAR (Batch-fed Engineered Air-fuel Resource) project represents the first major innovation in regenerative furnace technology in over 150 years of its long history. The new hybrid furnace, to be installed at the Steklarna Hrastnik facility, will achieve an unprecedented 40 percent electrical melting share while maintaining a substantial daily glass production capacity of 170 tons. This breakthrough development directly addresses one of the industry's most pressing challenges: reducing carbon emissions while maintaining high production efficiency. Traditional end-fired regenerative furnaces, which currently account for 75 percent of global container glass production, have long been the industry standard despite their high carbon footprint and reliance upon fossil fuels. While all-electric alternatives exist, their limitations have prevented widespread adoption across the container glass sector. The BEAR project bridges this gap by combining the energy efficiency of electric furnaces with the operational flexibility of conventional regenerative systems.



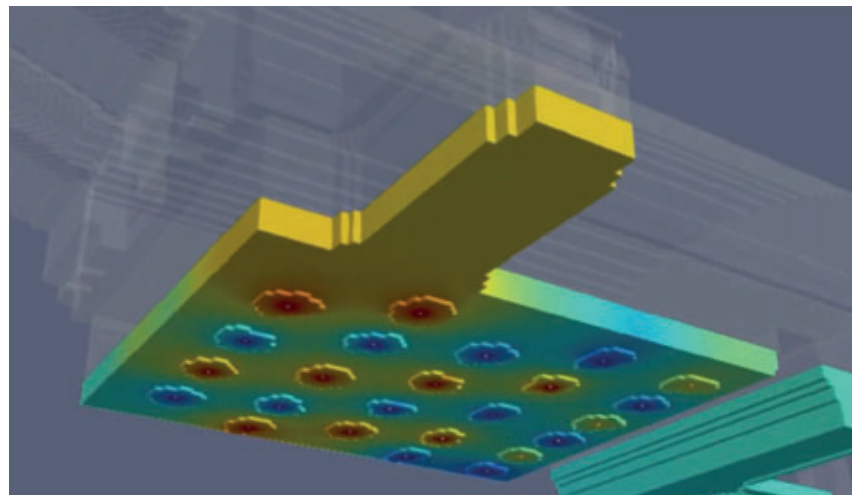
ENVIRONMENTAL AND ECONOMIC IMPACT

The environmental impact of this innovation is remarkable. By increasing the electrical boosting share from the conventional 5-10 percent to over 40 percent, the new furnace will cut natural gas consumption by more than half. Over its first decade of operation, the facility will avoid 0.1 Mt CO₂ equivalent emissions - enough to offset the entire household greenhouse gas emissions of Slovenia's Zasavje region, home to more than 20,000 residents, for over a year.

Beyond environmental benefits, the BEAR project carries significant economic implications for Zasavje, a region in transition from coal-dependent industry. As a major employer accounting for approximately 5 percent of local jobs and over 10 percent of the region's GDP, Steklarna Hrastnik's investment in sustainable technology demonstrates how traditional industries can evolve while maintaining and potentially expanding its workforce.

IMPLICATIONS FOR THE FUTURE

The project's innovative approach to energy integration holds promise for the entire container glass sector. By aligning glass melting processes with renewable energy sources, including direct coupling with local renewable supply, the hybrid regenerative furnace technology could significantly enhance the industry's energy security and resilience. The BEAR project's comprehensive design incorporates advanced features including regenerative heating through alternating heat exchangers, sophisticated control systems for optimal combustion conditions and enhanced insulation materials. These elements all work in concert to maximize efficiency while minimizing environmental impact - setting a new standard for glass manufacturing technology. As the glass industry faces increasing pressure to reduce its environmental



footprint, the BEAR project offers a viable pathway toward sustainable production without compromising on quality or capacity. Here's why its success could potentially catalyze similar transformations across the sector, demonstrating how traditional manufacturing can adapt to meet contemporary environmental challenges - all while maintaining industrial competitiveness. ■

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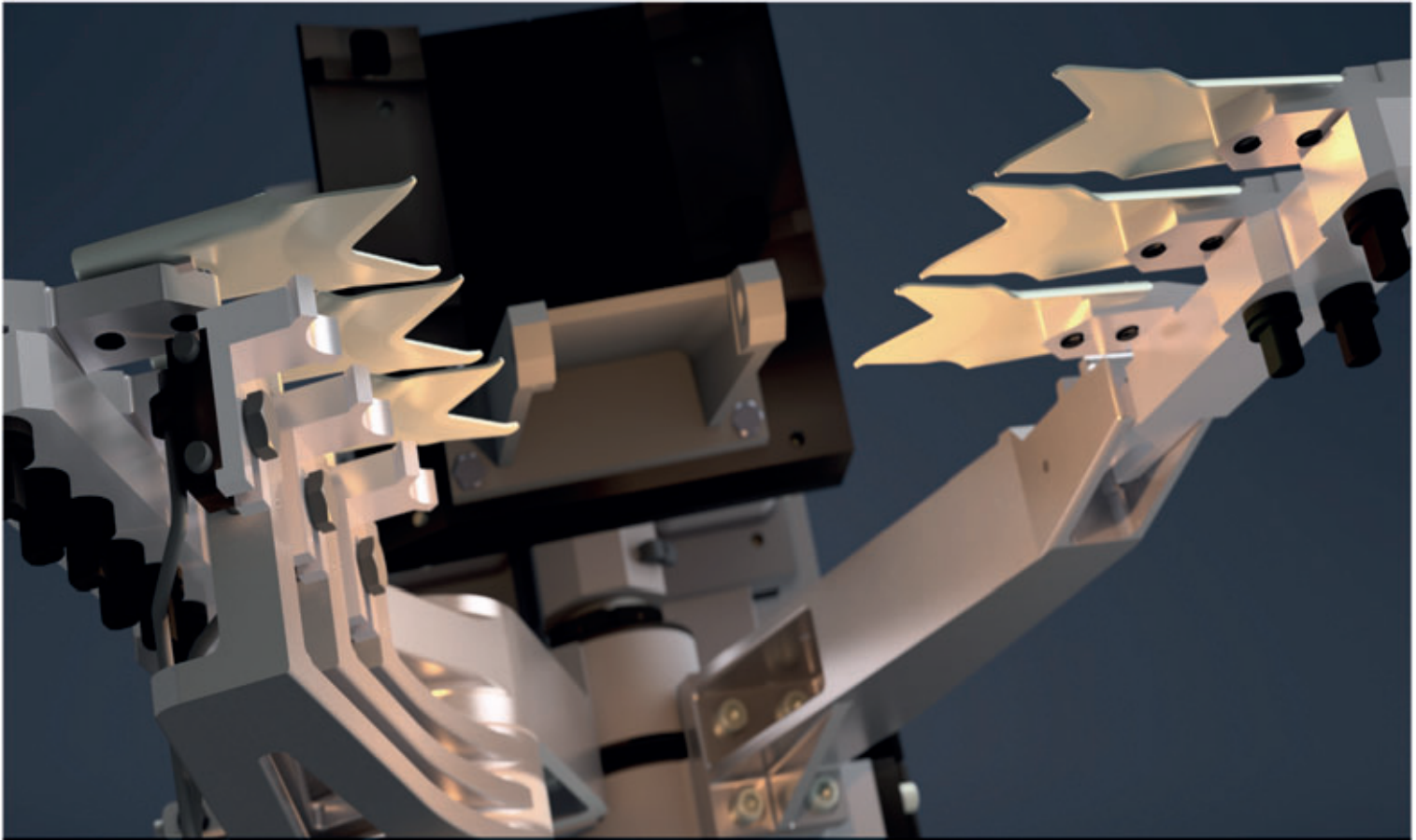
FLUORITAL has made its eco-sustainability policy a *true pact with the planet*, sealing this pact thanks to its environmental certifications.

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