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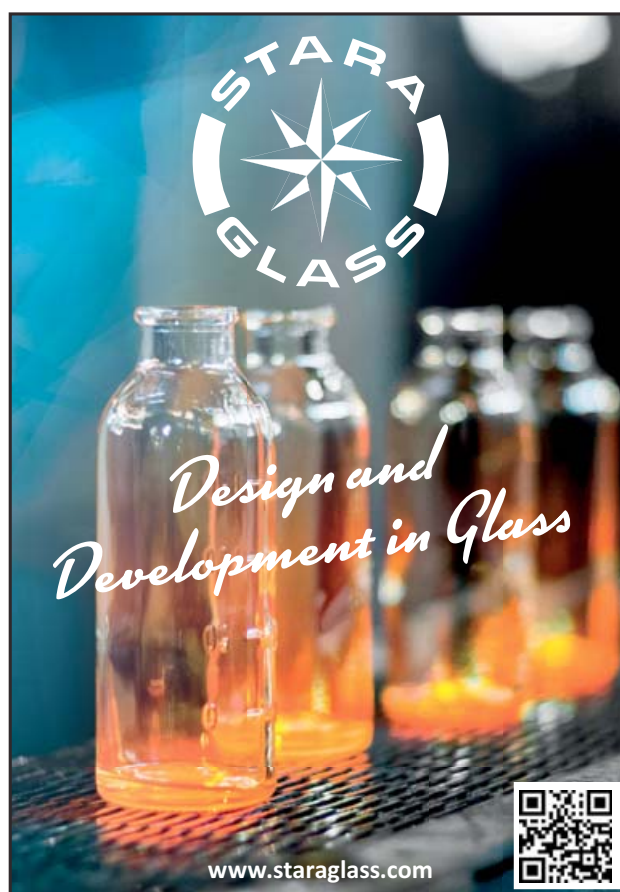
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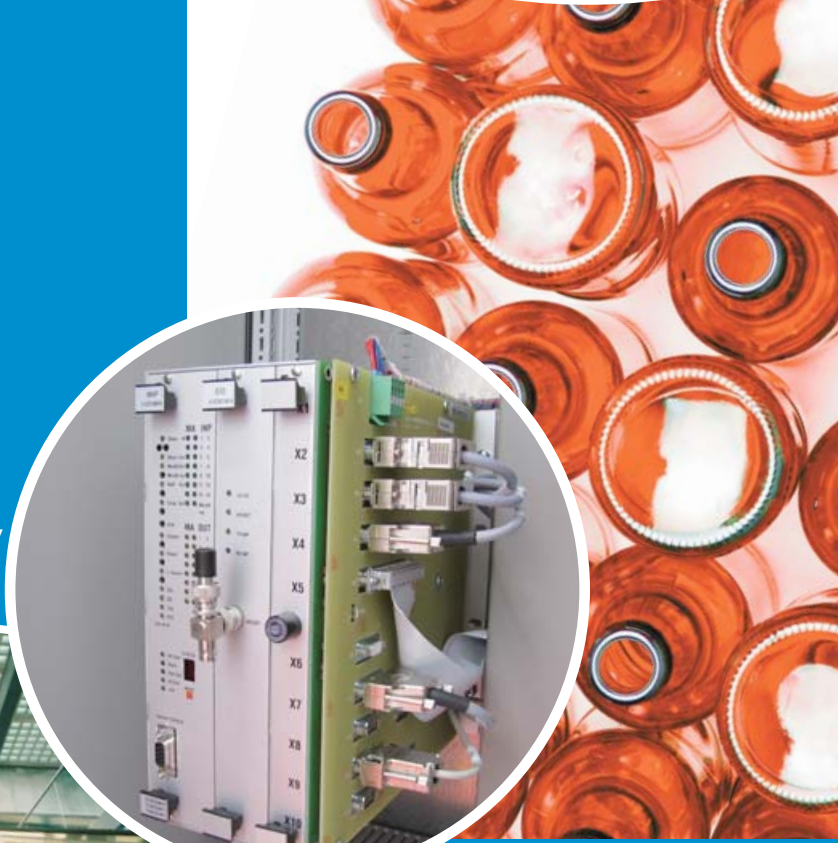
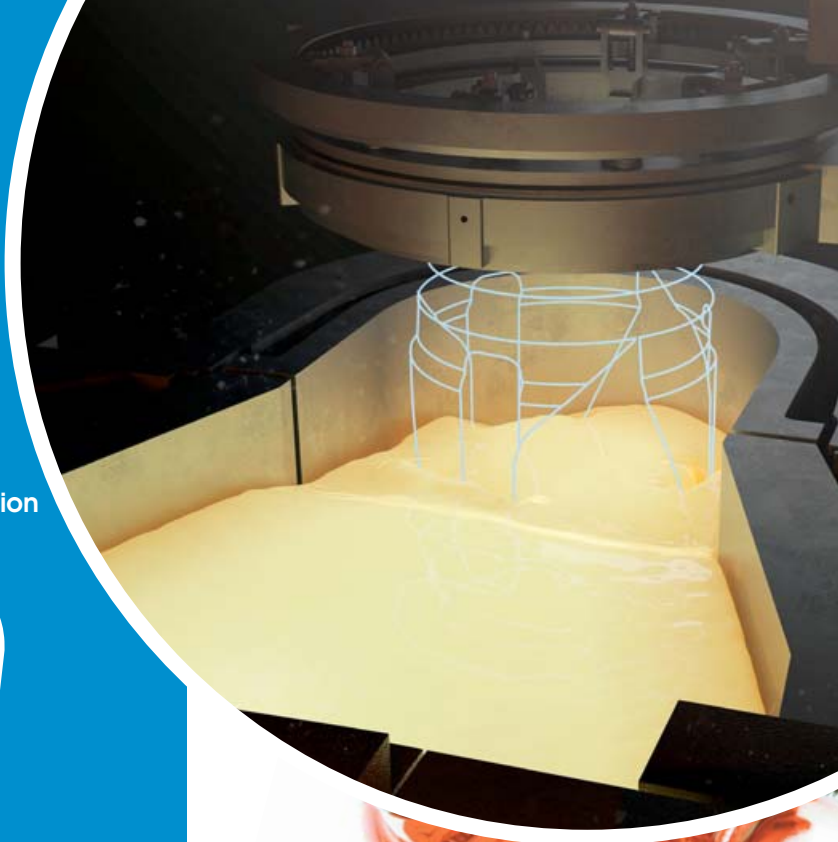
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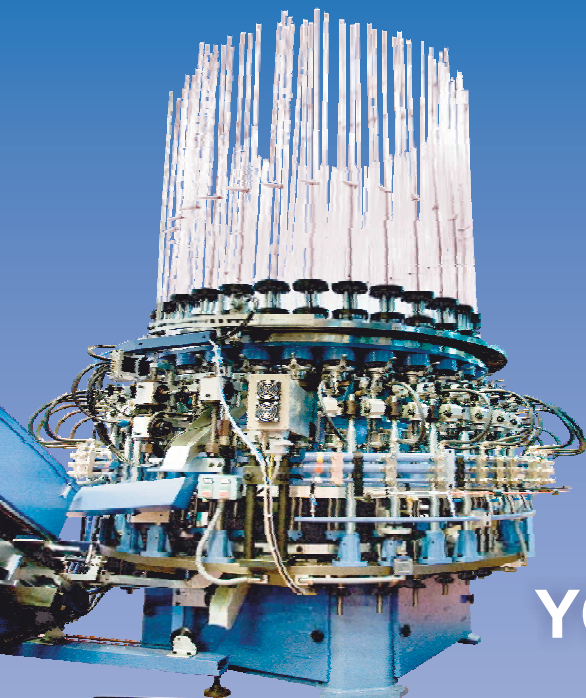


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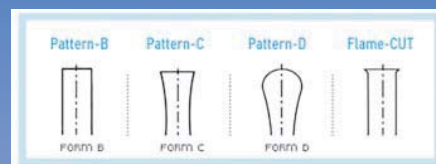


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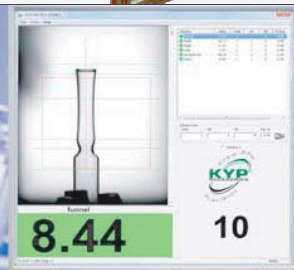


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2017 1	GLASSPEX	23-25 February	NEW DELHI (GREATER NOIDA) India	Editorial files: 09-01-2017
	GLASSMAN SOUTH AMERICA	29-30 March	BUENOS AIRES Argentina	Advertising files: 23-01-2017
2017 2	INTERPACK	4-10 May	DUSSELDORF Germany	Editorial files: 17-03-2017
	IRAN GLASS	9-10 May	TEHRAN Iran	Advertising files: 24-03-2017
2017 3	CHINA GLASS	24-27 May	BEIJING China	Editorial files: 07-04-2017 Advertising files: 21-04-2017
	MIR STEKLA	5-8 June	MOSCOW Russia	
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	GLASS PACK	8 June	PORDENONE Italy	
2017	 WORLD GLASS D I R E C T O R Y  suppliers & glassworks  NEW CONTENTS  GLASSWORKS			Editorial files: 26-05-2017 Advertising files: 09-06-2017
2017 4	COLOMBIA GLASS	25-26 July	BOGOTÁ Colombia	Editorial files: 23-06-2017 Advertising files: 30-06-2017
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2017 6	CONFERENCE ON GLASS PROBLEMS	6-9 November	COLUMBUS (OH) USA	Editorial files: 25-09-2017 Advertising files: 09-10-2017
	HOLLOWGLASS ASIA	to be announced	TO BE ANNOUNCED	
	EAST AFRICA GLASS	28-29 November	ADDIS ABABA Ethiopia	



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EUROPEN

PACKAGING INDUSTRY LAUNCHES JOINT RECOMMENDATIONS FOR RESOURCE-EFFICIENT CIRCULAR ECONOMY

EUROPEN (European Organization for Packaging and the Environment) and 35 other associations representing a wide range of sectors including major consumer goods brands, packaging producers, material producers and extended producer responsibility (EPR) organisations, have announced a set of joint recommendations for the Circular Economy legislative proposals.

The 36 associations call for a long-term ambitious EU policy framework that enables and facilitates sustainable resource use from a full life-cycle perspective, incentivises economies of scale and takes into account value chains at all levels, each with their different functional needs, supply and demand realities.

“Our proposals aim at reinforcing the current

EU policy framework, preserving the environment and re-launching European competitiveness, quality jobs and sustainable growth,” said Martin Reynolds, Crown Europe and EUROPEN Chairman, “Packaging plays a central role in a Circular Economy by optimising resource use and minimising product waste.”

“We call on the EU to recognise its cross-sectoral function by preserving a full life-cycle approach in legislation, since packaging is intrinsically connected to the product it contains and its value chain,” underlined Reynolds.

The joint industry recommendations call on the European Parliament and the Council to ensure that the Circular Economy Package:

- safeguards the free

movement of packaging and packaged goods in the EU Internal Market;

- enshrines a full life-cycle approach;
- strengthens the EU legal framework for Extended Producer Responsibility (EPR) for used packaging;
- avoids legal requirements that mandate additional packaging reuse systems alongside existing EPR systems and avoid related national measures that will distort the Internal Market;
- sets realistic and achievable packaging ‘preparing for reuse’/recycling targets based on known starting points, as well as a harmonised and clarified measurement point and calculation methodology.

“Safeguarding the Internal Market is essential to give companies in the

packaging value chain the confidence to invest and innovate to meet the environmental, growth, and competitiveness objectives of the Circular Economy Package.

We must avoid measures that could lead to divergent national packaging design requirements, as these would create de facto trade barriers for all packaged goods,” said Virginia Janssens, EUROPEN Managing Director. “Instead, we need a robust, evidence-based European framework that sets ambitious yet realistic targets, is based on a harmonised calculation method and enables operators to build on over two decades of success in growing packaging recycling rates through efficient, transparent and fair Extended Producer Responsibility schemes,” concluded Janssens.

ACTIS

BOTTLES FOR FIRST RUSSIAN WHISKEY

Rostov-based glass plant **Actis** has produced the first batch of 0.5 l bottles for whiskey for domestic volume. According to spokesman Anton Kobets, the plant is ready to fully meet the growing demand for this product. Due to the devaluation of the ruble, the price of imported whiskey has increased from 20 to 30%, while consumption has fallen by almost half. 2015 saw new state standards for the production of distillates, and analysts predict rapid growth in this segment. Actis in turn, is ready to fully meet the growing demand for new glass containers for the Russian market, said Kobets. The plant, which is one of the largest enterprises of the industry in Russia and Europe, is capable of producing a wide range of glass and quickly start production of even the most unusual bottles. The capacity of this market, according to Actis is estimated at 18-20 million bottles per year. The plant will be able to produce the appropriate amount of glass in less than a month.

JSC

MANUFACTURING VOLUME INCREASES

From January to June 2016, the industrial site of **JSC Plant Screen** (RATM Holding asset) produced 71,818 tons of glass - 34% more than the same period last year. Figures in units of glass containers increased by 27% - up to 203.3 million shares. This includes 26 million bottles fired NNBP technology (Narrow Neck Press and Blow - narrow-pressovyduvanie), which reduces the weight of the product by 20-25% while maintaining strength properties. Moreover, the production of lightweight bottles showed almost a threefold increase compared to the first half of 2015, said chairman of the Board of Directors of JSC Plant Screen, Paul Boboshik. According to Mr Boboshik, production breakthrough was made possible thanks to the implementation of a large-scale investment program to modernize the capacities of glass, at a total value of about 650 million rubles. Repairs were made to glass melting Furnace 5 and a complete renovation of Furnace 2 was undertaken. As a consequence, in the first half of the year, daily performance compared with January-June 2015 rose by 26% and amounted to 440 tons of glass, or 1.2 million units of glass. The volume of glass sales compared with the first half of 2015 increased by 26% - up to 205.3 million units, and revenues by 45% - up to 1.106 billion rubles. "This year, our customers have become the enterprise of the international concern Heineken in Mongolia, LLC PA Kooppromservis (Kyrgyzstan), LLC Abdish Ata (Kyrgyzstan), JSC SUN InBev (Omsk), LLC Omskvinprom, LLC BIRLAYN (Khabarovsk), LLC Alpina (Abakan), Everest (Barnaul), LLC Tamerlane (Barnaul), LLC Terehinsky drinks plant (Novokuznetsk), LLC PC Aqualife (Novosibirsk), OOO Express PET (Novosibirsk), LLC Corvette (Kemerovo), commercial networks Coin and Ware Center, lists the commercial Director of JSC" Plant screen Anton Mor. According to Mr Boboshik, the company is currently nearing completion work on equipping glass Furnace 2 for the production of coloured glassware, including a special colouring feeder, glass-blowing equipment and inspection machines. The volume of investments - 200 million rubles. With the conveyor production will increase to 40 million coloured bottles a year. Orders for these products have already been received from Omskvinprom LLC and JSC Irkutsk mineral water factory.

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HEINEKEN VIETNAM

ACQUISITION OF CARLSBERG BREWERY

Heineken Vietnam Brewery Limited Company has recently acquired **Carlsberg Vietnam** brewery in Vung Tau City. A communications executive of Heineken Vietnam said that the acquisition deal had been concluded earlier this year when Vietnam Brewery Limited (VBL) was renamed as Heineken Vietnam Brewery Limited Company. The value of the deal is unknown. Developed by a joint venture involving Denmark's Carlsberg Group and state-run Hanoi Beer and Beverage Corporation (Habeco), the Carlsberg brewery in Vung Tau came on stream in 2008. The joint venture was renamed as Carlsberg Vietnam Brewery Company in 2014. According to Carlsberg, the sale of the brewery facility in Vung Tau will allow the Danish group to focus on the central and northern parts of Vietnam, where Carlsberg has two breweries in Hue and Hanoi. The foreign firm bought these facilities from local companies. Carlsberg chief executive officer Cees't Hart said Vietnam is one of the group's key markets in Asia.

STEBEN GLASS

COLLABORATION WITH CONTEMPORARY DESIGNER

Steuben Glass, the American luxury crystal brand renowned for its distinguished decorative collectibles, signature tableware designs, and prestigious corporate gifts, is breathing new life into its celebrated tradition of collaborating with leading designers to develop the next generation of creations for the brand. Following a reintroduction of the brand under the stewardship of *The Corning Museum of Glass* (CMoG), select Steuben classics are being reintroduced, and new products are being developed, some with contemporary designers, among the first of which is New York-based designer, Harry Allen. Since the 1930s, celebrated artists and designers, from Georgia O'Keefe, and Salvador Dali to Kiki Smith and Michele Oka Doner have collaborated on new Steuben designs. Allen, whose work is represented in the permanent collections of the Museum of Modern Art, the Brooklyn, Denver, and Philadelphia museums of art, and CMoG, designed his first Steuben piece in 2011 - a realistic-looking glass piggy bank. "Harry Allen's relationship with Steuben highlights the brand's extraordinary ability to attract the most notable design talent of the day," said Steve Bender, head of Steuben Sales & Marketing and Business Development. "This next generation of products builds on the brand's timeless excellence through both classic and new designs, and looks ahead to its vibrant future." Steuben was founded in 1903 by renowned English glass master Frederick Carder, who named it for the county in New York State where the city of Corning is located. In 1918, Steuben became part of *Corning Glass Works*, now *Corning Incorporated*. Steuben continued production under Corning Incorporated in a building next to CMoG until 2008. After a brief change in ownership, Corning reacquired the brand and licensed

CMoG to produce and sell a limited selection of items that maintain the quality signified by the Steuben brand. Proceeds from Steuben sales benefit the educational mission of the not-for-profit Museum.

CMoG displays the world's largest collection of early Steuben glass and important examples of the brand's major works, and houses Steuben's archival materials in the Museum's Rakow Research Library. In addition, the historic ventilator building Steuben once used, which is located on CMoG's campus, was recently renovated and repurposed as a 500-seat Amphitheater Hot Shop in the Museum's Contemporary Art + Design Wing. Today, it is the world's largest space in which to watch live glassblowing demonstrations.

The reintroduction of the Steuben brand marks a commitment to continue the brand's legacy, hallmarked by uncompromised excellence in design, material, and craft, and is a testament to the long-shared history with CMoG. Now available are reintroductions of some of the most iconic designs, including examples of art glass, signature collectibles, desk accessories, tableware, and stem and barware, as well as classic forms such as hand coolers and animals, and customizable pieces. In keeping with the tradition of Steuben's historic role as a gift to mark significant occasions, or as diplomatic gifts, Steuben will continue to create special commissions for commemorative items and awards. Most recently, the Louis Vuitton America's Cup World Series sailing event commissioned a custom engraved Steuben vase and presented it as the winning trophy for its regatta in New York in May 2016. Steuben products are available in the Museum Shops at The Corning Museum of Glass, on Steuben.com, and through select authorized retailers.

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BELUGA AND LALIQUE

TEAMING UP TO CREATE THE ULTIMATE LUXURY PRODUCT

The limited-edition vodka, Beluga Epicure by **Lalique**, is the result of the close collaboration between Beluga Noble Russian Vodka and legendary French crystal and jewellery maker Lalique. This exquisite product is a manifestation of the values the two iconic brands share. Beluga Vodka has won worldwide fame because of the spirit's high quality, created by professionals committed to producing a flawless product. Combining new technology, age-old traditions of craftsmanship and a careful attention to every detail, Beluga is a recognized symbol of luxury and success.

Beluga's collaboration with Lalique was born from its desire to create the perfect decanter, which would only be worthy of an exquisite spirit. The limited-edition vodka's name, Epicure, was chosen to highlight the preciousness of fleeting moments. The Epicure decanter is designed to be a symbol of the present, and a reminder that we should enjoy each moment by drawing inspiration from everything that surrounds us. The project took shape the minute Beluga brand director Katerina Mechetina met Lalique creative director Marc Larminaux. The pair developed Epicure's concept and exquisite design over lengthy discussions. In designing the decanter, Marc drew inspiration from Lalique's heritage and unique production process, as well as Beluga vodka ingredients. Beluga Epicure revisits Lalique's iconic 'Three F' themes, Female, Flora and Fauna, and its sublime vessel, designed in an Art nouveau style features an enigmatic female nude figure surrounded by ears of wheat, a symbol of harvest and fertility. Artisans at Lalique workshops in Alsace, France produced each decanter by hand, blowing the crystal pieces individually in an iron mold to create its distinctive shape. Master polishers then refined the contrast between the clear and satin-finished crystal, emphasizing its monumentality and vulnerability. The final touch is a unique serial number engraved on the bottom of each decanter. After leaving the workshops, the decanters are sent to the legendary Mariinsk Distillery in the heart of Siberia, Russia. Located in one of the most environmentally clean and tranquil places on earth, Beluga production facilities there have been producing vodka for over 100 years using secrets and traditions passed down from generation to generation. Beluga went back into the archives of the distillery to create Epicure's unique recipe. To make this truly exceptional product, Beluga master distillers used a special malt spirit produced from a select wheat harvest. Using only the purest water drawn from artesian springs in Siberia, a laborious production process and a 100-day resting period, the vodka is a celebration of the mastery of Beluga, and a true testament of the skill of Beluga craftsmen. Only a small portion of the final distillation was collected, ensuring only the finest quality spirit went into each bottle. With only 1,000 crystal decanters produced, the limited-edition Beluga Epicure by Lalique vodka is a stunning 'objet d'art' dedicated to the brand's followers, true connoisseurs and passionate collectors. It was first presented in Russia at the closed dinner at the Residence of France followed by presentation on Cosmospow International Contemporary Artfair. The first decanter was sold off on 9 September on the Off White charity auction in frames of Cosmospow raising money for Naked Heart Foundation for EUR 11,000. Beluga Epicure by Lalique will be available for purchase in Russia in the end of 2016 and in other markets in 2017, the retail price per piece being approx. EUR 6,000.

VIDRALA

LAUNCH OF LOGISTICS DIVISION

Vidrala Logistics was recently launched by **Vidrala**, reaffirming its commitment to excellence in quality and customer service.

Based on the experience of recent years, and through this acquisition of its own transport pool managing company, Vidrala is moving forward its plans for an optimization and process control of the supply chain to customers. Vidrala Logistics generated traffic of more than 4,000 deliveries through a modern fleet of 29 trailers, run by 52 operators in 2015.

The satisfaction level reported by its customers shows that Vidrala is renowned for offering a quality logistical service. This is the result of concrete strategies, focused on this particular objective, which will still be considered a priority in the coming years. The launch of Vidrala Logistics will contribute to maximize the availability and consolidation of service, its competitiveness and efficiency, based on an overall knowledge of the supply chain to customers.

"Vidrala is progressing towards long term strategic goals that are based in priority upon the construction of relationships with customers whose future is the essence of our activity," said a company spokesperson.



FEVE

The European Container
Glass Federation

CIRCULAR BUT SAFE – BOOSTING RECYCLING WITH CONSUMER SAFETY IN MIND

The European Container Glass Federation – **FEVE** – welcomes the European Parliament's report on Food Contact Materials (FCM) which calls for 'better synergies between the Framework Regulation on FCMs and the Circular Economy'. The report points out the need to safeguard consumer safety by making sure that materials in contact with food such as packaging are safe for health, whether or not they are produced with recycled materials. The circular economy package, calling for higher recycling rates for all packaging materials, can pose a safety challenge for food contact materials. The future recycling targets for all materials under the Packaging & Packaging Waste Directive (94/62/EC) must be accompanied by adequate control measures to ensure this safety aspect, but also to avoid that the use or reuse of FCMs made from recycled products leads to a higher number of contaminants and/or residues in the final product. In order to guarantee safety while increasing recycling rates, a stronger traceability of chemicals intentionally used in the production of materials in contact with food is needed. A robust and harmonized assessment of the inherent migration properties of all recycled materials in contact with food is essential for consumers to fully back the principles of the circular economy. "We have no problem in recycling more and more glass because permanent and inert materials allow for this" – states Adeline Farrelly, FEVE Secretary General. "That is one of the reasons why the industry is investing in closed loop recycling". Inert materials that can be endlessly recycled without any risk for food contact do present certain benefits for the end-consumer. "Permanent materials that can be endlessly recycled without losing any of their intrinsic properties of inertness and impermeability should be acknowledged by legislation and supported by policymakers," continues Adeline Farrelly. "The recommendations being made by the European Parliament's Report are encouraging and we hope to see these principles endorsed in the waste legislation." The report on the implementation of the Food Contact Materials Regulation was drafted by Rapporteur MEP Schaldemose and approved by the European Parliament this week.



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TEMPERING LINES on belt

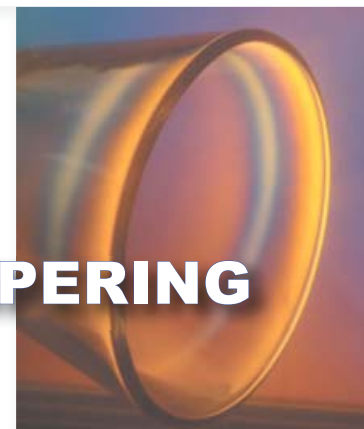
Opal - Borosilicate - Soda-lime glass



TABLEWARE Toughening Lines on spindles



RIM TEMPERING



CHEMICAL TEMPERING

- Annealing lehrs • Decorating Lehrs • Hot&Cold-end coating
- Mold pre-heating kilns • Stackers • Scraper conveyors
- Cullet crushers • Thermal shock test systems



LINDE

CFO LEAVES COMPANY

The CFO of **Linde AG**, Georg Denoke, has left the management board of Linde AG after the firm's failed merger talks with US giant Praxis. The duties in the finance department will be assumed on an interim basis by Dr Sven Schneider, Head of Group Treasury, until a successor has been appointed.

Linde shares closed up more than 4.6% on news of Denoke's dismissal, which came a day after the company announced that a deal to create the world's largest industrial gas supplier had been abandoned.

Linde said the tie-up talks with Praxair had been halted after "discussions about details, specifically about governance aspects, did not result in a mutual understanding".

According to reports, Denoke was opposed to the deal and had worked "behind the scenes" to get worker representatives on the board to back his position.

In another unexpected statement, Linde also announced that its chief executive officer Wolfgang Buechele had decided not to stay on for another term after his contract ends in April 2017, citing his disappointment over the botched merger talks. A merger between Linde and Praxair could have allowed the German firm to overtake historic French rival Air Liquide as the largest industrial gas supplier, with combined annual revenues of more than USD 30 billion. But a Linde-Praxair tie-up would also have been subject to close regulatory scrutiny, as the number of large players in the market would have shrunk to three.

GERRESHEIMER

SALE OF LIFE SCIENCE RESEARCH BUSINESS

In line with its strategy of focusing on packaging and device solutions for pharmaceutical customers, **Gerresheimer** announced that it is to sell its Life Science Research business to Duran group, a portfolio company of One Equity Partners.

"We are a leading global provider of pharmaceutical packaging and medical devices. Producing laboratory glassware is not a core business for us and synergies are very limited. Together with our joint venture partner Chase Scientific Glass, Inc., we have decided to sell the business," said Uwe Röhrhoff, CEO of Gerresheimer AG.

Kimble Chase Life Science and Research Products LLC is based in Rockwood, Tennessee, USA. It is a leading

producer of laboratory and scientific glassware.

The product portfolio includes reusable laboratory glassware for research, development and analytics, such as beakers, Erlenmeyer flasks and measuring cylinders as well as disposable laboratory products such as culture tubes, pipettes, chromatography vials and other speciality laboratory glassware.

Kimble Chase has approximately 760 employees worldwide. It has manufacturing facilities in Rockwood, Tennessee, USA, Rochester, New York, USA, Queretaro, Mexico, Meiningen, Germany, and Beijing, China. Kimble Chase's annual revenues in financial year 2015 amounted to EUR 100.7m

with the majority of sales in North America. Kimble Chase was established in 2007 as a joint venture of Gerresheimer (51%) and *Chase Scientific Glass, Inc.* (49%) contributing their respective laboratory glassware businesses.

Revenues of the Life Science Research division, Kimble Chase, declined by 2.6% in the first six months of 2016 to EUR 47.8 million. At EUR 6.5 million, adjusted EBITDA for the first half of 2016 was slightly down compared to the prior-year period. The total enterprise value for the transaction is USD 131 million. The transaction will be an all-cash acquisition. Its closing is subject to regulatory approvals.

Assuming the transaction is

not closed before end of the financial year (the end of November 2016), Gerresheimer's expectations for financial year 2016 remain unchanged.

The reported figures in the financial indication are to be adjusted as of the closing date to reflect the disposal of the Life Science Research division as of that date.

Gerresheimer reiterates the indication for the financial years 2016 to 2018:

- average annual organic revenue growth of between 4% and 5% for the period from 2016 to 2018;
- adjusted EBITDA margin of around 22% for financial year 2018;
- capital expenditure of around 8% of revenues.

GLOBAL AMPOULES PACKAGING
MARKET

ESTIMATED TO REACH USD 5.36 BILLION BY 2020

The **Global Ampoules Packaging Market** is estimated to reach USD 5.36 billion by 2020 at a CAGR of 8.59% from USD 3.27 billion in 2014. The Asia Pacific and Latin America regions are witnessing the fastest growth. This trend is expected to continue over the forecast period on account of rising disposable income in these countries.

The majority of the ampoules are made of glass, but plastic ampoules are also available in the market. Growing instances of diseases and regulations to keep the solutions safe has caused the ampoules packaging market to grow consistently. The manufacturers are also trying to enhance their offering by manufacturing products which are more suitable to the healthcare industry.

Glass ampoules are considered as the ideal packaging material and are widely used for pharmaceutical products. The growing technological propagation and amalgamation of ampoule packaging applications, with a vast kind of products such as glass and plastic and others, are the major factors driving the growth of the ampoules packaging market.

The key determining factors for packaging are varying consumer trends, additional weight on products, different sizes, shelf life and ease of recycling. Longer product shelf life, changing lifestyle of people, increasing disposable income across different regions and new innovative products are the major drivers for the high growth of the flexible packaging market. Stringent regulations by the FDA on other packaging materials particularly related to Pharmaceutical products are also to be considered. Increased prevalence, early diagnosis, and regular monitoring of chronic diseases is likely to increase the demand for ampoules packaging during the forecast period. Refillable syringes contain drugs or medicine to be injected, which eliminates the use of ampoules. This might hinder the growth of the market in the long term.



- Belt and spindles tempering lines • Decorating lehrs • Chemical tempering ovens • Roller annealing lehrs • Mold pre-heating kilns • Stackers + cross conveyors
- Scraper conveyors • Cullet crushers • Thermal shock test systems

BEATSON CLARK

NEW ZECCHETTI PALLETISERS SET TO IMPROVE OPERATIONS

The installation of a new twin palletiser on **Beatson Clark**'s amber glass lines is set to make production faster and more flexible. The leading South Yorkshire glass manufacturer has invested GBP 720,000 in a new **Zecchetti** conveyor line and palletiser which is able to both bulk and small pack. "One of the amber lines previously packed only shrink-wrapped modular packs, which limited its use to pharmaceutical products in this format," said Graham Lax, Head of Project Management at Beatson Clark. "But the upgraded line gives Beatson Clark the flexibility to supply pharmaceutical containers in either bulk or small packs and will be able to handle other containers such as beer bottles too." Other benefits include a better environmental performance and an improved health and safety design, as there is easy access to components at a high level. "Having manufactured medicine bottles and jars for 260 years the pharmaceutical sector remains an important market for us and increasing the packaging options we offer in this area will be beneficial for our customers," said Charlotte Taylor, Marketing Manager at Beatson Clark. "In addition, this investment will give us more flexibility for the growing craft brewing sector."

ALLIED GLASS

NEW BOTTLE RANGE UNVEILED AT LUXE PACK MONACO

Allied Glass Containers, the UK based premium glass packaging specialist, unveiled a new collection of exceptional premium glass spirit bottles at the 2016 Luxe Pack Monaco exhibition. Created by Allied's expert in-house Design team, in collaboration with bar tenders, the elegant Newton range provides sophisticated lightweight bottles which maintain a very premium look. This is achieved through a strong yet elegant profile and raised push which create great on shelf presence, each bottle also having been designed with a long neck and slightly waisted body contour for better handling when pouring. Available in sizes 50cl, 70cl, 75cl, 1L and 1.5L the bottles are to be manufactured in standard, Extra White and coloured glass in Corkmouth and 33mm GPI -400 ring finishes.

VERALLIA

INNOVATION ON THE PASTEURIZABLE AND RETORTABLE GLASS JAR MARKET

Verallia presents an innovation that extends the applications of heat-sealable glass containers to new markets: ready meals, baby food, sauces and more. Building on its expertise in the field of heat-sealable glass packaging, Verallia has developed a solution to offer for the first time, heat-sealable, pasteurizable and retortable glass jars and cassolettes. While already used for yoghurts or puddings, such heat-sealable containers cannot endure high-temperature heat treatments such as sterilization or pasteurization which are essential, for example, for vegetables, cooked dishes as well as sauces available in the fresh foods section.

Consequently, Verallia has developed the depositing of a new bonding primer on the lip of its jars. This primer is compatible with the polymer of the market lids used to seal jars that can then be sterilized and pasteurized. These heat treatments guarantee food preservation. Partner of reference, Verallia supports its customers towards new consumption patterns. Endlessly recyclable, glass is the consumers' preferred choice of material. It does not interact with its contents, nor alter their taste, smell or composition. Verallia's customers will accordingly be able to propose end-consumers differentiating containers. This easy-to-open solution is also compatible with both standard and customizable jars. An innovator developing 1,500 new products each year, Verallia demonstrates its ambition to invest in new markets and offer its customers the best in glass packaging.

PPG

DIVEST OF OWNERSHIP INTEREST IN PFG FIBER GLASS JOINT VENTURES

PPG has announced that it has reached an agreement to divest its 50% ownership interests in its two *PFG Fiber Glass* joint ventures (**PFG**) to Nan Ya Plastics Corp., which currently controls the other 50% ownership interest in the joint ventures. Nan Ya is affiliated with Taiwan-based Formosa Plastics Group. The transaction is expected to close by the end of 2016. Financial terms were not disclosed.

PFG was formed as an equally-held joint venture between PPG and Nan Ya in 1987, with a single production facility in Chia Yi, Taiwan. To meet growing demand, a second joint venture was formed to add a production facility in Kunshan, China in 2001. PFG supplies electronic yarn fibers used in integrated electronic circuit boards and fiber glass reinforcement products for automotive applications.

HINDUSTHAN NATIONAL GLASS

CONTINUED LOSSES: 'POTENTIAL SICK COMPANY'

Hindusthan National Glass & Industries, one of the largest container glass producers in India, will report to the Board of Industrial and Financial Reconstruction (BIFR) as a "potential sick company". In a notification to the bourses, the company said its accumulated losses over the last four years amounted to INR 647 crore (approx.) resulting in erosion of more than 50% of its peak net worth of INR 840 crore (approx.).

"The company would be defined as a potential sick company under the Act," it said in a notification. Over supply in the INR 50,000-crore container glass market and consequent decrease in capacity utilisation, along with sluggish growth in demand have been cited as reasons for performance being adversely affected.

Anticipating a major increase in demand, glassmakers including HNG, expanded rapidly in 2010. During 2012-13, HNG increased container glass making capacity by 1,300 tonne a day — through both greenfield and brownfield expansion programmes to take its total installed capacity to 4,395 tonnes a day. The company also has a joint venture, *HNG Float Glass Ltd.*, for float glassmaking. Companies such as Canpack, *Piramal Glass*, HSIL have also increased their capacities during the period. According to the HNG's annual report, the combined effect of higher capacity and the slowdown in demand led to a lower capacity utilisation affecting margins. To add to the woes, higher depreciation and interest provisioning had hit the bottomline. From INR 172 crore in FY13, losses shot up to INR 218 crore in FY14 and INR 237 crore in FY15. The silver lining is: losses came down to INR 193 crore in FY16.

During the first quarter of the current fiscal, losses were down to nearly half over the corresponding quarter last year, and there is "slight improvement" in market condition according to Mukul Somany, Vice-Chairman and MD, HNG.

In June 2016, the company sold its wholly-owned European subsidiary *HNG Global GmbH* to an undisclosed buyer. The subsidiary contributes to 12% of HNG's net sales.

BA VIDRO

ACQUISITION OF STIROM

Glass manufacturer **Stirom** has been sold to the Portuguese group **BA Vidro** for an undisclosed sum.

The transaction will be closed by the end of this year, after approval by the Competition Council.

Stirom's revenues grew in the first six months of the year grew by 18% to RON 143.6 million, according to profit.ro.

BA Vidro was founded in 1912 and owns seven factories with over 2,100 employees in Spain and Poland.

Stirom was founded in 1968 in Bucharest under the name of *Glass Articles Factory Bucharest*. In 1990, it became a joint stock company under the name of Stirom, and in 1995 became majority private company. In early 2003, Stirom was taken over by *Yioula Glassworks* group, based in Greece, group which has six other glass factories in Greece, Bulgaria and Ukraine.

RHI AND MAGNESITA

CREATING A LEADING REFRACTORY COMPANY

RHI and the controlling shareholders of **Magnesita**, GP and Rhône, have reached an agreement to combine the operations of RHI and Magnesita to create a leading refractory company. The new company, **RHI Magnesita**, will be established in the Netherlands and listed in London. Accordingly, RHI's Management Board has agreed to sign a share purchase agreement with Magnesita's Controlling Shareholders regarding the acquisition of a controlling stake of at least 46%, but no more than 50% plus one share of the entire share capital in Magnesita, pending RHI's Supervisory Board approval.

The consideration for the 46% stake will consist of cash amounting to EUR 118 million and 4.6 million new shares to be issued by RHI Magnesita. A subsequent mandatory tender offer will be launched as a result of which a maximum number of 5.4 million RHI Magnesita shares will be issued, bringing the total number of newly issued RHI Magnesita shares to up to 10.0 million. The Offer will also include a cash-only alternative amounting to 8.19 per Magnesita share. As a result of the Transaction, GP, Magnesita's largest shareholder, will become a relevant shareholder of RHI Magnesita and will be represented on its board of directors. Following registration of the corporate restructures, RHI's shares will cease to be listed on the Vienna Stock Exchange. RHI's migration from Austria and listing in London are subject to approval by RHI's shareholders' meeting. The Transaction is also subject to approvals by relevant competition authorities. The place of effective management will be Austria. The Transaction is expected to complete in 2017. Both companies will remain completely separate and independent until then. RHI Magnesita will be a leading refractory company with an enhanced growth profile due to improved regional presence and complementary asset portfolios.

RHI, based in Austria, is a global supplier of high-grade refractory products, with 2015 revenues of 1,753 million. Brazil-based Magnesita is a global provider of integrated refractory solutions, services and industrial minerals, with revenues of USD 1,013 million (EUR 914 million) in 2015.

AMERICAN GLASS RESEARCH

COLOR ATLAS OF STONES RELEASED

American Glass Research has announced the publication of a new book entitled *Color Atlas of Stones in Glass*. The hardbound book provides a comprehensive description of 39 stones, accompanied by more than 300 original colour photographs, images and spectra. Detailed identification tips, compositions, causes and sources are given for each stone, as well as its physical and crystalline characteristics. The colour atlas is printed on high quality photo paper and is over 120 pages. The atlas is intended to facilitate identification of the most common glass stones across the four major glass industries: container, tableware, flat glass and fiberglass. This volume focuses on practical assistance with the identification of stones through color photographs. This publication is expected to be a valuable guide for furnace operators, quality control engineers, filling line incoming inspectors and personnel responsible for the day to day monitoring of glass quality. The *Color Atlas of Stones in Glass* is available through Amazon or directly from AGR via the website: www.americanglassresearch.com

NIHON YAMAMURA GLASS

AQUISITION OF STAKE IN QINHUANGDAO FANGYUAN GLASS PACKAGING

Nihon Yamamura Glass Co., Ltd., a Japanese manufacturer and seller of glass bottles and plastic containers, has agreed to acquire a 15.25 stake in **Qinhuangdao Fangyuan Glass Packaging Co., Ltd.**, a Chinese manufacturer and seller of glass bottles.

Following the transaction, Nihon Yamamura Glass will hold 100% stake in Qinhuangdao Fangyuan Glass Packaging.



+



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SORG

VALUE
BY
DESIGN

NEW MANAGING DIRECTOR

Dr. Steiner is the new managing director of **SORG Keramik Services GmbH (SKS)**.

SKS represents a group of companies in the SORG organization responsible for steel and refractory construction, endoscope inspections, hot and cold services as well as ceramic welding.

Arjen comes to SKS from *Schaumglas Global Consulting*. He has an engineering degree from RWTH Aachen and a doctorate from TU Eindhoven. Following that were stints at *Saint-Gobain* and DTEC Engineering und Consulting.

WEBSITE RELAUNCHED WITH NEW CORPORATE DESIGN

SORG is implementing a new corporate design. Aspects of this were already visible in 2016 glass magazine ads, and now the new website, company slogan and initial brochures are live.

"We started by looking hard at what we stand for and offered all employees the opportunity to incorporate this into an appropriate slogan for a cash award," said a company spokesperson. "While we did not directly use any of the entries, we did pay bonuses for what our committee considered to be the best two entries.

The numerous suggestions helped inspire us to come up with the new Value by Design slogan." "Next was our newly relaunched website www.sorg.de in time for *glasstec 2016*. We decided on a modern but minimalistic approach concentrating on our core messages. There is a larger emphasis on our team with more photographs and direct email links to key personnel.

"The background objects in the new web site are all made of or incorporate glass. These pieces were all items that are present in our Lohr offices.

Now we get the opportunity to share these treasures with a larger audience. Speaking of a larger audience, the site has been optimized for viewing on mobile platforms (tablets and phones) as well.

"We asked a number of customers for permission to display their logos on our home page.

The positive responses have been overwhelming. We maintain this part of our web site ourselves using Wordpress content management system.

The first 20 or so logos have been resized and are online. We will be working on including the remaining logos after the *glasstec* rush dies down. SORG wants to thank all of our partners who kindly supplied logos.

"Now we are going to work to update our brochures; both updating content and corporate design. The first two were available at *glasstec* in Dusseldorf. Our new Image brochure is the condensed story of the Sorg family and company.

The other one is Glass Conditioning. These and others will be available for download on our homepage as they are completed.

Helping us modernize our image is the local ad agency B2 Communications in Aschaffenburg, Germany." www.sorg.de is online and can be viewed in German and English.

THAI MALAYA GLASS' NEW BATCH PLANT

The new batch plant for **Thai Malaya Glass** is being built for furnace SB4 with a capacity of 300 t/d and ready for future expansion. The plant is being built as a modern tower concept for flint, green and amber glass.

Included in the scope are automatic hot cullet scraper return systems. The cullet storage will be equipped with crushers and all metal detection with automatic rejection.

The entire system will be fully automated through a proven **EME** controls solution.

Nikolaus SORG has been chosen to supply two state of the art endport regenerative furnaces complete with **IRD**® doghouses and **EME-NEND**® batch chargers. These will be feeding a total of nine SORG® 340S forehearths.

BERLIN PACKAGING

TAKEOVER OF BRUNI GLASS

Berlin Packaging

announced it has entered into a definitive agreement to acquire Italy-based **Bruni Glass** in a transaction that will significantly expand Berlin's premium glass portfolio, extend its footprint into key European markets, and push the combined company's 2016 global sales past the USD 1.2 billion mark.

Once the transaction closes, Bruni's team will operate as Bruni Glass, A Berlin Packaging Company, and will have access to Berlin's full line of packaging solutions, service divisions, and its 100+ North American sales and warehouse locations. With offices in Italy, France, Spain, China, Canada, and the US, Bruni has a 42-year track record, USD 150+ million in annual sales, and an innovative collection of glass packages designed in-house for spirits, wine, food, and gourmet applications.

The custom lineup spans more than 3,000 SKUs, including patented shapes with various capacities and colors, plus seasonal and promotional items ranging from maple leaf to Christmas tree-shaped packages. New offerings are added on a monthly basis. The acquisition will be Berlin Packaging's first in Europe, third in the past year and seventh since 2010. These strategic transactions augment Berlin's double-digit organic growth and strengthen the company by adding to pro-

duct depth and breadth, geographic coverage, and capabilities that help customers increase sales and profitability. The Bruni Glass acquisition will deliver substantial benefits to customers and suppliers of both companies, including:

- Thousands of new packaging options – Berlin customers gain access to exclusive Bruni-designed glass containers and closing systems, adding to the large selection of custom and stock glass solutions already in Berlin's catalogue. At the same time, Bruni customers will be able to fulfil their glass, plastic, and metal packaging and closure needs from a single source by tapping into Berlin's 35,000+ SKUs, including lab supplies and packaging for shipping hazardous materials.
- Enhanced expertise in key vertical markets – Bruni's focus on packaging for the spirits, wine, food, and gourmet sectors joins Berlin's presence in food, beverage, pharma, personal care, household care, and industrial packaging, bolstering Berlin's ability to help customers optimize package solutions in a wide range of industry segments.
- Access to Berlin's profit-building services – Bruni customers will be able to take advantage of Berlin's warehousing, structural and brand design, capital lending,

and quality consulting services at no charge in exchange for new packaging business.

- Global expansion opportunities for customers – The combination of Berlin's sales and warehouse presence in more than 100 North American locations and Bruni's footprint in major European countries offers customers on both continents vital logistics support for penetrating global markets.
- New sales opportunities for suppliers – Both Berlin and Bruni suppliers will have access to a combined 200-person sales force in North America and Europe as well as a database of qualified packaging customers and prospects that has grown to 75,000+. Berlin also helps suppliers land new business with a powerful marketing engine that builds demand and strong warehousing and logistics programs that handle customer inventories reliably and efficiently.

All parties also will benefit from Berlin's strong operational backbone, including ISO 9001 certification and a world-class Oracle system that together have produced an industry-leading 148 consecutive months of 99+% on-time delivery for customers. This performance helps everyone in the supply chain reduce inventory levels and lower expenses.

"Combining Berlin and Bruni is an important building block in our quest to be the strongest, broadest, and most customer-centric packaging supplier in the market," said Andrew Berlin, Chairman and CEO of Berlin Packaging. "It not only strengthens our glass offerings and extends our reach to a global playing field, but it also aligns us with another company that shares our commitment to quality, our insistence on compelling package design, and our strong annual growth rate."

All of Bruni's employees and locations will be retained in this process. "There will be no disruption as part of our integration," added Andrew Berlin. "Customer and suppliers can expect to work with the same people with the same entrepreneurial, can-do spirit."

"Speciality glass has been our stock in trade for more than four decades, and joining forces with a glass/plastic/metal packaging powerhouse like Berlin offers new opportunities for business growth that will benefit our customers and suppliers as well as our employees," said Gino Del Bon, Executive Chairman of Bruni Glass. "With our entire team soon to be working under the Berlin umbrella, including myself, my brother and Bruni CEO, Roberto Del Bon, and the rest of the management team, we will be supplying the same creative package solutions and level of customer service but as part of a larger organization that can meet a wider range of needs." Financial details were not disclosed.



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(Persatuan Kaca Malaysia)



National Glass Association



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The application fields of its products include perfume and cosmetic packaging, wine and spirit bottles, tableware, flat glass for furniture and interiors, and lighting glass.

All products are lead and heavy metal free, and can be applied directly on glass, as they do not require any primer. All products are curable at **low temperature** or with UV lamps, enabling important energy savings compared with other products. The physical and mechanical resistance to the most severe tests required in the different market fields make Fluorital's products the top reference on the market. Fluorital **invests a lot in Research** and in its laboratories; beside the continuous update of more consolidated products, the research is oriented on developing new finishing and new products with even more efficient resistances and environmentally friendly characteristics.

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TECHNOLOGY DEVELOPMENTS

Heye International PROVIDING THE BEST THERMAL HOMOGENEITY FOR GLASS

Technology developments



With a 50-year history of working with the glass industry, Heye International and its industry expertise, combined with the positive attitude and enthusiasm of its employees, is one of the foremost suppliers of production technology, high performance equipment and know-how for the container glass industry worldwide.

H EYE ROTOR MECHANISM

Delivering superior thermal homogeneity and top weight consistency, the Heye Rotor Mechanism has been widely adopted by the international hollow glass community, even by customers not operating the German company's advanced IS machines.

The rotating movement of the rotor segments provides good thermal homogeneity of the glass melt, the equipment's proven design guaranteeing reliable functionality and a long lifetime. Retrofit installations are possible.

Function

The Heye Rotor Mechanism Type 237F11 is mounted at the forehearth/feeder channel. By a rotating movement of the toothed ring, three paddles provide a stirring movement in the glass melt and thereby, keep it homogenous. Unlike traditional designs that employ rotating tubes, this innovative mechanism guarantees very high thermal homogeneity. The movement generated is deflected at the bevel wheel by 90° (from horizontal to radial), so that the sprocket executes a rotating movement.

The servo motor motion is controlled by Heye Simotion®

Servodrive, based on the future-proof multi axis Simotion® drive system from Siemens. Excellent reliability of electronic components in combination with the application of a compact servo motor with robust resolver guarantees reliable, non-stop operation.

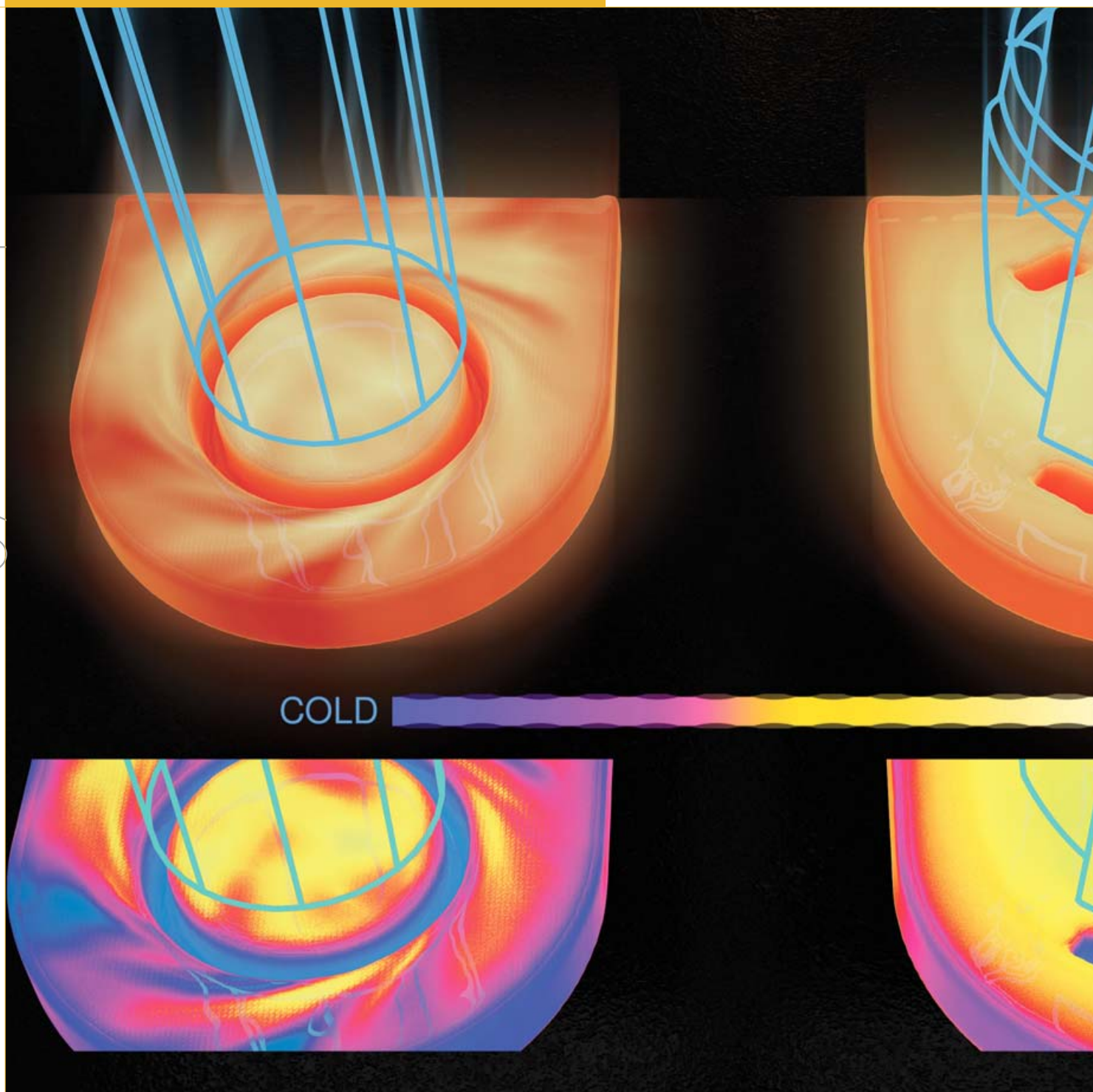
Heye Simotion® Servodrive

This highly-flexible control is based on the future-proof multi axis drive System Simotion® from Siemens. Excellent reliability of the electronic components in combination with the application of a compact servo motor with robust resolver guarantee a reliable non-stop operation.

Even with respect to servicing this control is perfect as it is easy to handle. If control components should have to be exchanged complicated manual addressing or programming is not necessary because all the configuration data is stored on a memory board.

When the control is started the data are automatically transferred. This allows short commissioning and service times and reduces training time for service staff. Fault and operating messages are registered by the control unit with date and time and can be read in detail on the touch-screen anytime.

TECHNOLOGY DEVELOPMENTS



SAFETY ABOVE ALL

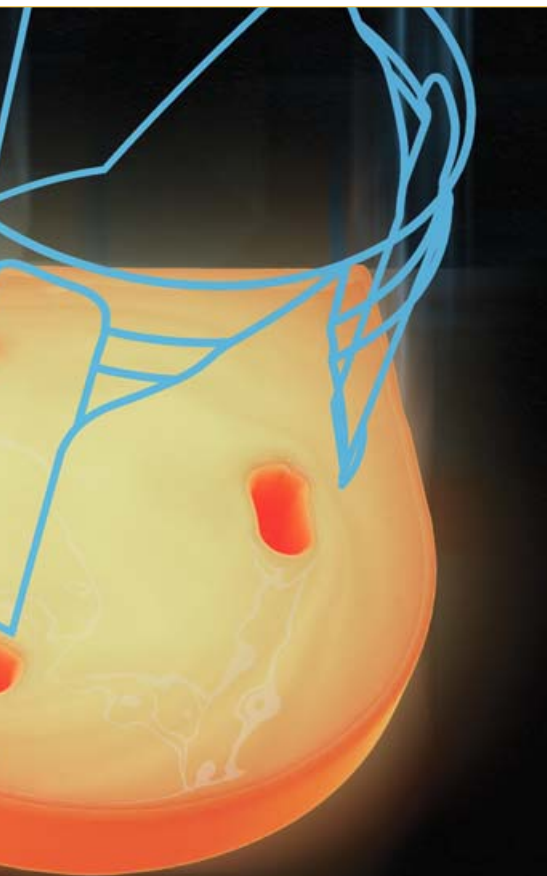
All movable parts are located behind an easily demountable safety housing. The rotor mechanism's drive is torque-controlled and if blockages occur, the system stops.

Proven benefits of the Rotor Mechanism include good thermal homogeneity, high weight

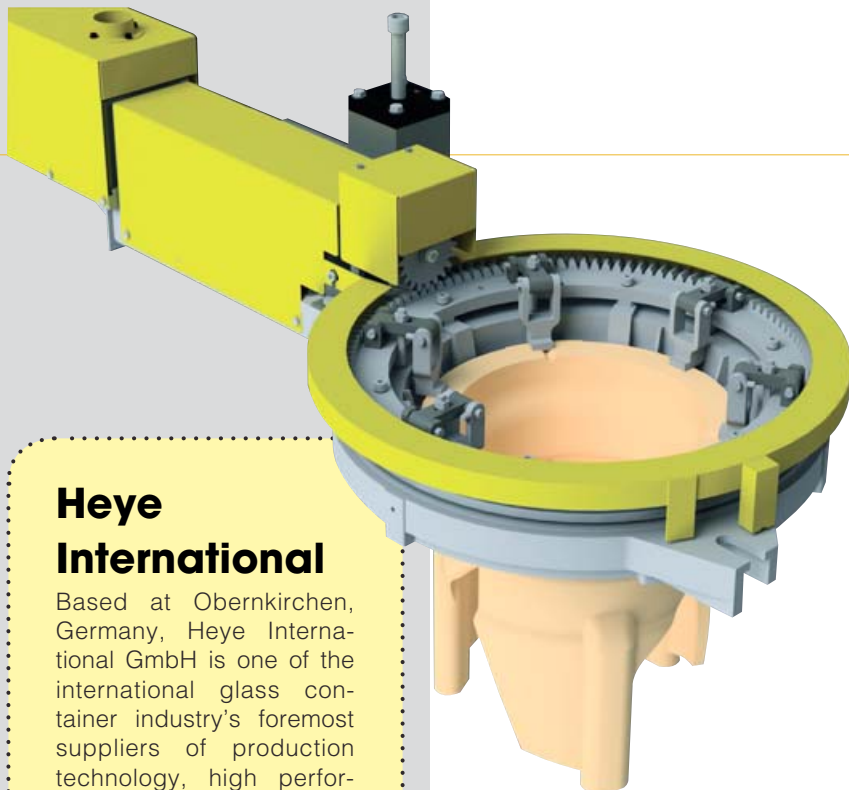
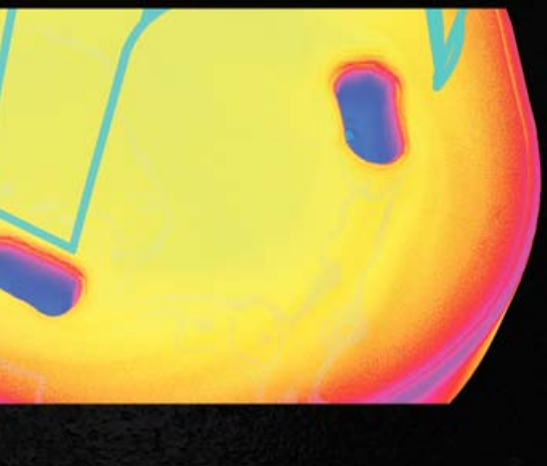
consistency, variable speeds, the ability to change the direction of rotation, the provision of a high mechanical equipment lifetime, the uniform rotation of rotor segments, height adjustment and complete housing of mechanical components.

Advantages to be obtained are:

- thermal homogeneity;
- high weight constancy;
- variable speeds;
- change in direction of rotation possible;
- high lifetime of the mechanics;
- uniform rotation of the rotor segments;
- complete housing of the mechanics;
- manual height adjustment.



HOT



Heye International

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



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FOR SUPERIOR THERMAL HOMOGENITY
AND TOP WEIGHT CONSTANCY



INAUGURATION

Stölzle Flaconnage: INVESTING IN TECHNOLOGY; FOCUSSING ON SPECIFIC PRODUCTION



When Stölzle Flaconnage in the UK held its official furnace inauguration at the end of September, Glass Machinery Plants & Accessories was among the guests invited to see how this company is continuing to develop and 'fine-tune' its production – more and more aimed at the prestigious liquor sector.



From left to right: J. Schick (CEO Stölzle), Mayor Harry Ellis, Tony Robinson (Bishop of Wakefield), Angus Duncan (Diageo), Mayoress Janet Ellis, Jackie Black (Chivas Brothers), Thomas Riss (Stölzle), David Moore (Avon)

STÖLZLE FLACONNAGE

Situated in the heart of West Yorkshire, the British glass factory, Stölzle-Flaconnage was set up as J.W. Bagley and Co in 1871 by three local glass-makers, and became part of the Stölzle Glass Group in 1994.

Over the past few years, major investments have been made both in production and decoration, turning the British factory into a state-of-the-art manufacturer. In addition to the furnace rebuild, the cold end area was enlarged and a new mould shop and a mould design department were built in 2010.

However, the most impressive feature remains the new Customer Centre with its conference and show rooms where customers can admire the latest masterpieces produced for the

Prestige Spirits and Perfumery and Personal Care markets. Stölzle Flaconnage's total output is produced 70 per cent for the Prestige Spirits & Design market, with 30 per cent supplied to leading Perfumery & Personal Care companies.

THE NEW FURNACE

Increased output

The furnace provides 155 tons of extra-white flint glass per day, to be boosted to 175 tons per day, which results in a produc-

STÖLZLE GLASS GROUP

With headquarters located in Austria, Stölzle Glass Group has six European production sites and three in-house decoration facilities.

The Glass Group is a specialist in producing high-end glass containers for its Prestige Spirits and Perfumery & Cosmetics divisions, as well as pharmaceutical glasses and miniatures for food and beverage. Stölzle has expertise in both custom design and standard glass containers.

The company's Innovation Team, which also consists of designers, work closely with clients, taking their concepts and producing outstanding products. An exclusive touch of luxury can be added to all products in decoration. Latest innovations include printing with special effect inks, metallisation, laser cutting, embossed lettering, and accessory application.

INAUGURATION

tion of 110 million glass containers per annum. Some of the production lines are additionally equipped to manufacture feeder coloured glass. According to the company, this investment will safeguard 350 jobs for ten years.

The site's original furnace was built in 1995. It closed in July as refurbishment work began. New machinery, including printing devices, was installed as part of the two-month revamp and existing technology was upgraded.

Decoration

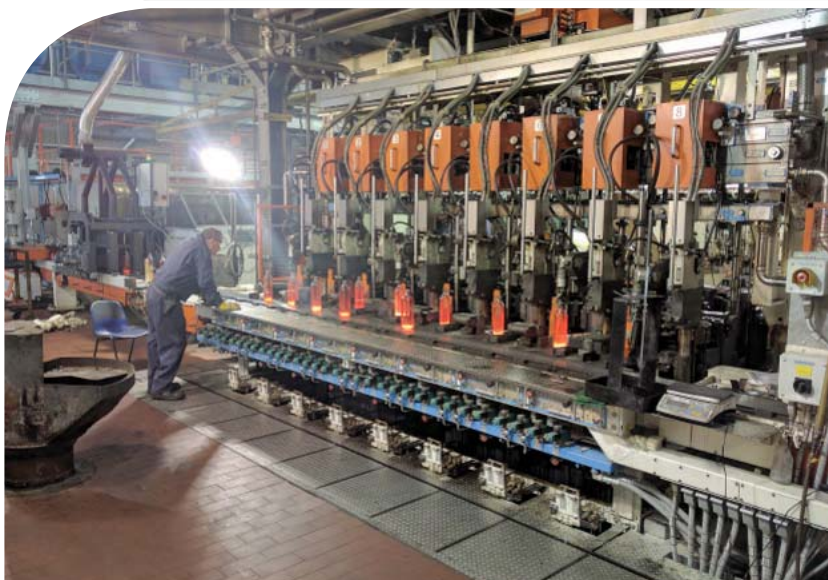
In order to meet the requirements of the most challenging of customers, STF offers a full range of in-house decoration techniques: automatic and semi-automatic silk screen printing in ceramic colours together with precious metals and the full spectrum of organic colours. Semi automatic and fully automatic heat release and water-slide transfer application are also offered. The range was completed by the introduction of hot foil stamping and a twin spraying line for organic colours, where different spray guns can be used in one process, achieving subtle, multi-coloured finishes.

CELEBRATING THE REBUILD

The British production site of the Stölzle Glass Group invited its customers and partners to celebrate on site the recent rebuild of its white flint furnace and extensive revamp of the whole plant on 29 September 2016, followed by a prestigious evening at The Oulton Hall Hotel, and a whisky tasting event.

"Stölzle Flaconnage will be our new centre of excellence regarding the development, production and decoration of Premium Prestige Bottles.

The recent EUR 17 million investment proves that we trust in our British plant, even in these difficult economic times of Brexit.



The UK, and primarily Scotland are definitely the cradle of Whisky. Stölzle relies on its long-term expertise, acquired throughout years of fruitful cooperation with renowned Luxury spirits brand and continues to offer design, development and state-of-the-art production directly in the UK," explains Johannes Schick, CEO of the Stölzle Glass Group.

Taking advantage of a brand new state-of-the-art furnace, IS machines, decoration facilities, and an expert team of innovative designers, Stölzle Flaconnage has become the first choice partner for luxury and premium spirits.

Focus will be on tallware, gift products and feeder colouration, all made of cosmetics flint glass with a fire polishing option on all production lines.

Most important to Stölzle is still flexibility - being able to manufacture small batches, which are

very often requested for limited editions of luxury brands.

In 2016 Stölzle made further investments in modern cold-end inspection facilities and decoration technology, implementing a high speed spraying line and a new automated printing machine and accessory application. Substantial improvements in the plants media supply (water, energy, compressed air) have been realised in order to ensure highly energy efficiency and an environmental friendly operation.

"This year's double-digit investment in a state-of-the-art extended furnace rebuild, together with significant investments in production, quality inspection and decoration techniques will definitely strengthen our Knottingley site as a global market leader in prestige spirits containers, concluded Schick." ■



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CONTAINER INSPECTION

Iris STRENGTHENING GLOBAL PRESENCE

Being an inspection machine specialist means not only being efficient, but also providing complete support for clients. And this is exactly what IRIS Inspection machines does with its continuing developments, new solutions and intense organization of its global sales team.



IRIS Inspection machines

**IRIS Inspection machines
unveiled a series of equipment
developments at glasstec 2016**

TURNKEY GLASS CONTAINER INSPECTION SOLUTIONS

September was an especially active month for inspection solutions specialist IRIS Inspection machines, including the organisation of an international sales meeting and the company's successful participation at glasstec 2016 exhibition in Düsseldorf, with the launch of several product developments.

The company's success in recent years is due not only to the efficiency of its Evolution series of camera-based inspection machines but to the comprehensive support provided throughout the world. Thanks to a network of international agents and technical support centres, IRIS is able to assist all customers in Asia, Europe, the Americas, Africa and Australia.

THE INTERNATIONAL SALES MEETING

Held in the heart of the picturesque vineyards of Beaujolais, just 35 minutes from Lyon, this September's two day sales meeting provided a valuable opportunity to show the company's latest innovations to members of the international IRIS sales team. This included details of the new Evolution 12 HD sidewall inspection machine using a multi-item module, for example, the latest Evolution 5 HD base and finish inspection, as well as the new Evolution Ultimate and Evolution Dim equipment designs. There were also important opportunities for members of the group to socialise, including an introduction to the sport of 'Pétanque' or 'Boules', a game first played in France but now enjoyed throughout the world.

GLASSTEC – PRODUCTS ON SHOW

Intelligent engraving inspection

The following week, IRIS Inspection machines unveiled

its latest inspection equipment advances to the international glass container industry at glasstec 2016, including an intelligent engraving inspection development. The engraving identification and inspection module is a software innovation that allows the machine to identify engravings in a container's body or base. Because it is very difficult to predict how an engraving will look, this module dramatically improves inspection in these areas. By calculating the position of the engraving, the machine identifies the pixels related to the engraving, as well as those that relate to a defect. This algorithm has been improved and tested over recent months on several production lines, including those devoted to beers, carbonated beverages, wine and high value spirits.

Complete inspection solution

Separately, encouraged by the success of its Evolution 12 sidewall inspection machine, IRIS Inspection machines showed a complete inspection solution for high end glass containers. Evolution Ultimate is a sidewall inspection machine combining the inspection capabilities of Evolution 12 with six dedicated cameras for cosmetic and perfume defects.

Touchscreen and touchscreen wall

Other features included a touchscreen application on a touchscreen wall, where the 3D application presents a complete inspection solution for each sector (pharmaceutical, beer, soft drinks, wine, perfume, cosmetics etc). There was also an opportunity for visitors to experience virtual reality with an Oculus



The IRIS Inspection machines international sales team discussed the company's latest innovations at a meeting in Burgundy



**Experiencing virtual reality as a bottle
in an Evolution inspection machine**

Using this high-tech equipment, the user became a bottle in an Evolution inspection machine, where the inside of the machine, its mechanics and cameras etc., could be discovered.

IRIS Inspection machines

A subsidiary of the Wisetec Group, IRIS Inspection machines was established to provide turnkey inspection solutions for mass-produced glass containers of any shape or colour, including wine, beer, liquor and Champagne bottles, pharmaceuticals and food containers. A team of dedicated Research and Development engineers has evolved a range of equipment to match the industry's demanding requirements and satisfy the inspection needs of key international customers.

The company has based its development on a long-term partnership with glassmakers in the field of glass defects detection, as well as on an exceptional knowhow in the most innovative vision technologies. The success of IRIS is due not only to the exceptional efficiency of its Evolution machines range but also to the excellent support provided by engineers worldwide. Thanks to a network of international agents and technical support service centres, IRIS is able to support customers throughout Asia, Europe, the Americas, Africa and Australia. ■

IRIS Inspection machines

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futronic:

BRIDGING THE GAP TO MODERNITY

More than 300 IS machines with a futronic-built EPRO control have been performing impeccably for many years in glassworks around the globe. Yet the technology is gradually coming up against its limits: the EPRO's ArcNet communication structure is obsolete and several of its components are no longer manufactured and therefore difficult to get hold of. A comprehensive retrofit is the only way out of this dilemma. A bridging technology developed by futronic for this purpose brings yesterday's control up to date with a slimmed-down version of the FMT24S in return for an altogether manageable investment.

The new module comprises the so-called FMT24S machine processor (left) and the bridging EPRO Interface Board (EIB) developed specially for the purpose. The connections for the EPRO valve drivers and the control panel are located on the front plate and all others on the rear. The rack can be tilted forward for installation



From the outset, futronic has pursued an open source strategy with its machine controls and drives: the systems must be flexibly tailored to machines from different manufacturers as well as to different specifications. The automation specialists have made a name for themselves as an OEM and supplier to plant and equipment manufacturers for the glass industry. Many end users have likewise trusted for years in Tett nang-made technology and insist on it whenever they invest in new equipment. The concept is no less successful whenever it comes to modernising old plant or used machines. futronic's experts can meanwhile draw on



Neat and tidy: this (new) control cabinet still houses an original EPRO control (left). Each retrofit should also include new cables, depending on the system's age and condition. They could become brittle over the years and lead to faults in view of the harsh production conditions prevailing in glassworks

several decades of experience with retrofits – in fact, this has become one of the company's core competencies.

KEEPING PACE WITH NEW TECHNOLOGIES

Provided the system and its mechanical components are carefully maintained and regularly overhauled, the robust IS machines have a service life of 20 or 25 years. This is not quite so easy as far as the electronics are concerned. "To keep pace with modern manufacturing trends, the systems should be retrofitted with the latest generation

of control and drive technology in the course of their lifecycle", explains Wolfgang Lachmann, Managing Director Development & Technology at futronic. "At least the operating software should always be up to date."

Not that the technology is liable to give up the ghost at some point – it simply can't stay abreast of the information technology's rapid innovation cycles. Put another way, "There comes a time when something or other is hopelessly out of date and spare parts are not available any more", Lachmann continues.

A glance back over the com-

pany's history illustrates exactly what he means.

FROM GENERATION TO GENERATION

It was in the spring of 1978 that futronic secured its first contract to design a control system for glass machines. After just four months, the company's development engineers were able to unveil the MP-ST. This system marked the entry of computer technology into glass production. Transistor logic and relays were no longer up to the challenge – the MP-ST was a groundbreaking invention and indeed a paradigm shift. Not quite ten years later, futronic presented its successor: at the time, the CIMOG (Computer Integrated Manufacturing of Glass) was the first control system anywhere in the world to facilitate freely programmable special cycles for the production process – the next generation had arrived. The FMT24S machine control has been on the market since 2004: Lachmann refers to this third generation as "our flagship", not without a certain pride. The FMT (Flexible Modular Timing) is a distributed control system for IS machines with anything up to 24 sections that can be tailored to each customer's individual specification – and it has remained the state of the art to this day.

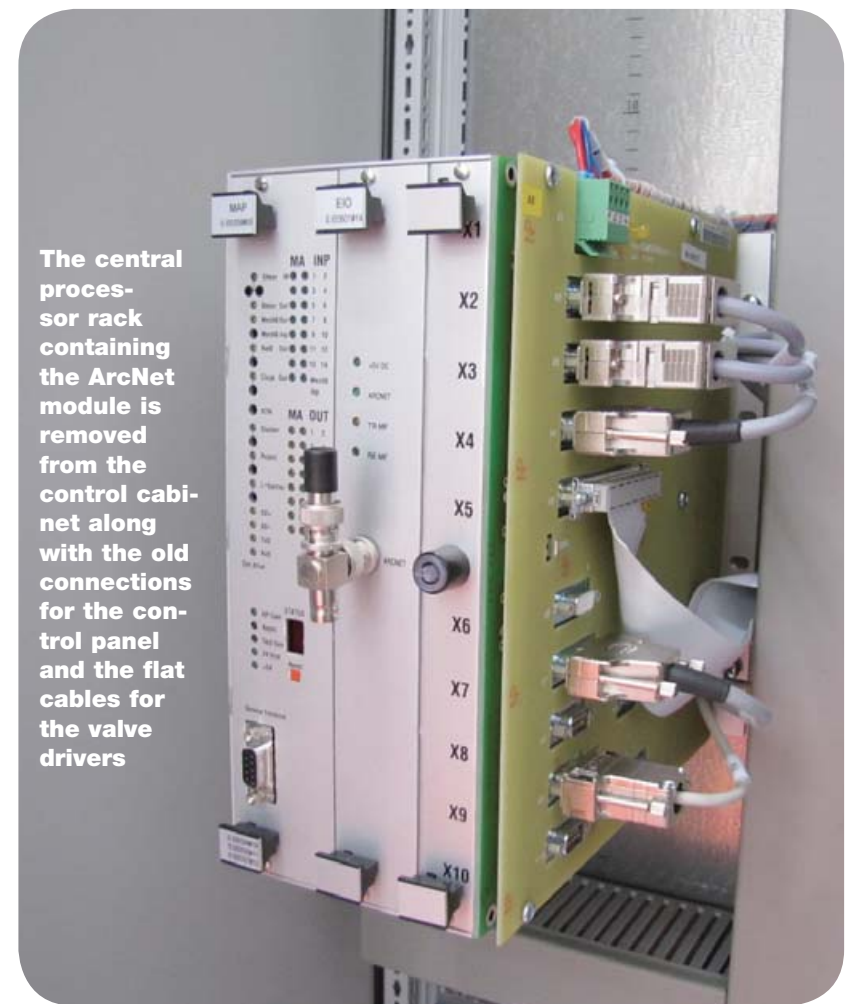
LEAN VERSION FOR MODEST NEEDS

The CIMOG, too, was designed to control IS machines with up to 24 sections, making it definitely oversized for the smaller-scale plant and machinery that was particularly popular in the Far East. In the early nineties, therefore, futronic's specialists came up with a lean – and hence low-cost – alternative initially for customers in the Asian market, which is traditionally an important pillar of the company's business, and which soon

attracted attention of customers worldwide: the EPRO (Economic Production) manages without the CIMOG's high-end functionality and controls a maximum of 12 sections. Approximately 300 EPRO controlled systems are currently productive worldwide even now and doing a reliable job. The last new system futronic has shipped in 2013. The EPRO is based on what is essentially obsolete, from today's point of view slightly exotic technology. The control and the visualizing components OT und MCT communicate via an ArcNet network. It's a technology that dates back to the late seventies, and since the advent of Fast Ethernet in local area networks it has been relegated into virtual insignificance. There's only one big German automation company that has to offer ArcNet architecture components. And it is probably thanks solely to its enormous power in the market that parts can still be purchased for it at all.

A FUTURE FOR WELL-MAINTAINED MACHINES

"We expect to see ArcNet disappearing off the scene altogether very soon. In the foreseeable future, modules like the ArcNet plug-in cards will cease to be available, and the same also goes for spare parts," Lachmann predicts. Several components like hubs, controls or so called phys for ArcNet are already difficult to get hold of today. "We buy all our modules from the last manufacturer; there aren't any second sources around any more", he adds. And the situation as regards the software in OT und MCT is no better. "The control software runs under DOS, but computers that still support such an ancient operating system are gradually dying out. In the meantime, there are hardly any left." Though to bridge the gap futronic's technicians have worked out a solu-



tion as a temporary measure: modern, Windows based PCs can now be used in conjunction with the specifically developed ArcWrapper software and a so-called DOSBox. But the supplier already has made clear that it will no longer support the DOS-Box. futronic can continue to manufacture the system's other EPRO modules itself without any problems for a while ahead. Wolfgang Lachmann's conclusion is a double-edged sword: "The ArcNet system and the obsolete software are the bottleneck. Revising them and bringing them into line with the Windows standard would be equivalent to a write-off." On the other hand, "many of our EPRO systems have got a good few years to go yet." And there's no

reason to take a well-maintained system off the production line. After all, customers have made a long-term investment in futronic technology: "We're not going to leave them standing, even if certain parts or components are no longer made". So, what to do?

RETROFITS ARE THE ANSWER

The answer is surprisingly straightforward. "futronic already has a modern control in its portfolio, namely the FMT24S, the CIMOG's successor", Lachmann points out. And if it's been done with the CIMOG before, why shouldn't it be possible to do it again? Lachmann outlines the underlying idea: "We discovered that components from the FMT24S system can be adapted

at a reasonable cost and used as replacements for the critical EPRO modules". It's the customer's choice: either completely refurbish their existing equipment and invest in a new FMT control. Or opt for a retrofit, in other words the slimmed-down version of the FMT including the EPRO parts that can still be maintained, which means to invest in only one third of the costs. "Whichever option the customer selects, he is bound to profit", says Lachmann.

ELECTRICS AND PRODUCTION TECHNOLOGY RIGHT UP TO DATE AGAIN

The first step in the EPRO retrofit is always to remove the central processor rack (Figure 1) from the control cabinet and replace it with a similar module comprised of the so-called FMT24S machine processor (FMT24S-MPR) and a new board specially developed for this purpose by futronic's hardware specialists. This EPRO Interface Board (EIB) bridges the gap between the internal control algorithm of the EPRO components and the FMT system – that is to say, the old system and the new one. The new electronics board has connections for the EPRO valve drivers on the front plate as well as the control panel of the glass machine (Figure 2). All other connections for the machine components controlled by the central processor rack, such as the shear or the reject valve, are located on the rear of the module. Finally, the old DOS computer makes way for a standard PC with a current Windows operating system. A special version of the control software with the modern, EPRO-tailored FMT24S user interface is then installed on this PC. All network components and IT hardware, like switches or cable and connection systems, can now also

be purchased "off the peg" and the network connection is established via the PC's own Ethernet port.

The thus retrofitted EPRO now offers some new features that meet the FMT standard, provided that the customer is enhancing his production programmes. Furthermore the customer can easily add some more FMT components for specific functions if required, e.g. an upgrade of the controller for servo proportional valves. And what happens to all the precious data? What about the jobs and their parameters? Lachmann: "We copy the entire data from the old EPRO control and import it into the new system. That's part of the parcel, of course. Nothing whatsoever is lost."



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The retrofit is designed to bring an EPRO controlled system right up to date again. Lachmann admits, however, that the owner must not forget "that a retrofit is only ever an interim solution in return for a manageable investment. The day inevitably comes when only the big cogs make a difference and there's no alternative to extensive modernisation." ■



**At futronic
responsible for
Development
& Technology:
Managing
Director
Wolfgang
Lachmann**



CHINA GLASS 2017

28th China International Glass Industrial Technical Exhibition

China International Exhibition Center (New Venue)

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77th CONFERENCE ON GLASS PROBLEMS

**Robert Weisenburger
Lipetz, MBA**

**DIRECTOR CONFERENCE
ON GLASS PROBLEMS,
EXECUTIVE DIRECTOR GLASS
MANUFACTURING INDUSTRY COUNCIL**

The 77th Conference on Glass Problems (GPC) takes place 7-10 November in Columbus, Ohio, USA. The conference has been the leading forum for the exchange of ideas to address shared challenges for glass manufacturing professionals for over 75 years. Here, the world's leading technical experts address current problems in manufacturing, with solutions citing real-world examples. Additionally, it provides an exhibiting platform for solutions providers to share their innovations that deliver high participation by manufacturers.

The Conference on Glass Problems is organized by the Glass Manufacturing Industry Council, the trade association bridging all segments of glass manufacture and Alfred University, the USA's leading glass research institution. The American Ceramic Society endorses it, with Glass Worldwide as the official journal.

THE CONFERENCE PROGRAMME

An industry advisory board directs the programme content, which is composed of invited papers and submitted abstracts, with the proceedings published by John Wiley & Sons. Priority is given to speakers providing practical, take-home information. The conference also provides hard to obtain technical education. Three excellent technical short courses are offered on 'Energy Savings at Glass Furnaces',

This year's Conference on Glass Problems - the 7th edition - will, as usual, bring together, the glass world to discuss glass manufacturing and all its aspects, ranging from energy savings, furnace operations, glass defects, and much more.



'Fundamental Batch and Furnace Operations' and 'Glass Defects. Attendees should note the special full day symposium entitled 'Modelling Technology in Glass Manufacturing'. This content rich opportunity for time invested in a few days, is what sets the Conference on Glass Problems apart from other trade shows and conferences.

Monday, 7 November 2016

12:00 p.m. - 4:30 p.m. Student Plant Tour - Holophane Corporation

SHORT COURSES

12:00 p.m. - 5:00 p.m.

Fundamentals of Batch and Furnace Operations to Batch and Furnace Operations

7 November 2016, 12:00 p.m. to 5:00 p.m.

Instructor: **C. Philip Ross**, President, Glass Industry Consulting International (GICI).

The course is an introduction to the principles of commercial glass production employed in Batch & Furnace operations by US Glass producers. Raw Materials, Glass Technology & Properties, Melting Furnaces, and Environmental Issues will all be touched upon. Suggested attendees could be vendors or newer individuals to glass manufacturing seeking an introduction to the issues faced in glass production.

Energy Savings at Glass Furnaces

7 November 2016, 12:00 p.m. to 5:00 p.m.

Instructor: **Oscar Verheijen**, PhD, Senior Consultant, CelSian Glass & Solar B.V.

The short course provides an overview of tools to identify and quantify the energy savings potential of glass furnaces. These tools include various simulation tools, dedicated industrial measurements and special sensors. The course will be based on a series of industrial examples.

Glass Defects

7 November 2016, 1:00 p.m. to 4:30 p.m.

Part 1: Bubble Analysis Instructor: **Filip Janos**, Glass Service USA, Inc.

Part 2: Solid Defects Analysis: Instructor: **Martina Jezikova**, Glass Service USA, Inc.

This short course addresses many aspects regarding the detection and analyses of glass defects and the sources and mechanisms of glass fault formation. Additionally, the short course will review the possible source of these defects in general glass production facilities with special attention regarding float, container, fiber, tableware and other glasses.

Audience: The short course is meant for entrants in the glass industry, including glass technologists and scientists, suppliers, or as extra education for even experienced engineers in the glass industry. The objective is to receive a better understanding of glass production defect identification and their possible causes.

5:00 p.m. - 5:30 p.m. Student meeting

5:00 p.m. - 11:00 p.m. Hospitality suites

77th GPC PLENARY SESSION

Tuesday, 8 November 2016

8:00 a.m. - 8:45 a.m. Exhibiting

8:45 a.m. - 9:00 a.m. Opening remarks

Robert Weisenburger Lipetz, Conference Director, Glass Manufacturing Industry Council

S. K. Sundaram, Program Director, Alfred University

9:00 a.m. - 9:30 a.m. **KEY NOTE ADDRESS**

C. Phillip Ross, Glass Industry Consulting - *A Perspective on the GPC and its Relevance to the Glass Manufacturing Industry*

9:30 a.m. - 10:30 a.m. **TECHNICAL SESSION: OPERATIONS**

Session Chairs: **Elmer Sperry**, Libbey and **Uyi Iyoha**, Praxair, Inc.

9:30 a.m. - 10:00 a.m. **James Uhlik**, Director of Technical Services, Toledo Engineering Co., Inc. - *Glass Plant Audits - Three Case Studies in Glass Production Problems and their Solutions*

10:00 a.m. - 10:30 a.m. **David Boothe**, President, Allstates Refractory Contractors, LLC - *Furnace Operations and Design Considerations for Longer Campaigns*

10:30 a.m. - 11:00 a.m. EXHIBITING

11:00 a.m. - 12:30 p.m. **TECHNICAL SESSION: CONTROLS**

Session Chairs: **Glenn Neff**, Glass Service USA, Inc. and **Bruno Purnode**, Owens Corning

11:00 a.m. - 11:30 a.m. **Mark Powys**, Project Manager, Gallo Glass; & **Erik Muijsenberg**, Vice President, Glass Service, Inc. - *Gallo Glass - Energy Reduction with Model Based Predictive Control*

11:30 a.m. - 12:00 p.m. **David Kuhn**, Manager Systems Innovation & Integration, Corning Incorporated - *Smart Manufacturing for Continuous, High-Technology Glass Production*

12:00 p.m. - 12:30 p.m. **Peter Hemmann**, PhD, President, STG Combustion Control GmbH & Co KG - *Design of Optimal Control Strategy for Predictive Compensation of Gas Quality Fluctuations in Glass*

12:30 p.m. - 2:00 p.m. LUNCH

12:30 p.m. - 2:00 p.m. EXHIBITING

2:00 p.m. - 4:30 p.m.

TECHNICAL SESSION: ENERGY

Session Chairs: **Phillip Tucker**, Johns Manville and **Martin Goller**, Corning Incorporated

2:00 p.m. - 2:30 p.m.

Matthias Lindig, PhD, Material Scientist, Nikolas SORG GmbH Lohr - *Model Based Enhanced Regeneration Flow Conditions for Glass Furnaces*

2:30 p.m. - 3:00 p.m.

Tunc Goruney, PhD, Lead Engineer - Energy & Combustion Systems, Sisecam - *Oxy-Fuel Tableware Furnace with Novel Oxygen - and Natural Gas Preheating System*

3:00 p.m. - 3:30 p.m.

Stefan Laux, PhD, Director R&D, Praxair, Inc. - *Advanced Heat Recovery for Oxy-Fuel Fired Glass Furnaces with OPTIMELT™ PLUS Technology*

3:30 p.m. - 4:00 p.m.

Oscar Verheijen, PhD, Consultant, Celsius Glass & Solar B. V. - *Improving Energy Efficiency of Glass Furnaces*

4:00 p.m. - 4:30 p.m.

Simone Tiozzo, Junior Project Manager, Stazione Sperimentale de Vetro - *Optimization of Combustion Settings: An Energy Efficient Approach to the Reduction of Emissions by Glass Melting Furnaces*

4:30 p.m. - 05:30 p.m.

EXHIBITING

5:30 p.m. - 7:30 p.m.

FREE TIME

7:30 p.m. - 11:00 p.m.

HOSPITALITY SUITES

Wednesday, 9 November 2016

8:00 a.m. - 9:00 a.m.

EXHIBITING

9:00 a.m. - 9:30 a.m.

KEY NOTE ADDRESS

Peter Garforth, Garforth International LLC, Energy Productivity Solutions - *Corporate Energy Efficiency at a Tipping Point?*

9:30 a.m. - 10:00 a.m.

TECHNICAL SESSION: MELTING

Session Chairs: **Jan Schep**, Owens-Illinois, Inc. and **Andrew Zamurs**, Rio Tinto Minerals

9:30 a.m. - 10:00 a.m.

Mathieu Hubert, PhD, Celsius Glass & Solar B. V. - *Impact of Redox in Industrial Glass Melting and Importance of Redox Control*

10:00 a.m. - 10:30 a.m.

EXHIBITING

10:30 a.m. - 12:00 p.m.

TECHNICAL SESSION: MODELING AND FORMING

Session Chairs: **Ken Bratton**, Emhart Glass Research, Inc. and **James Uhlik**, Toledo Engineering Co., Inc.

10:30 a.m. - 1:00 p.m.

Alexander Fuchs, Manager Applied Technology, Glass Industry Solutions, Umicore AG& Co. KG - *Fluid Dynamics Analysis Leading to Innovative Glass Homogenization Device "ARCTwister"*

11:00 a.m. - 11:30 a.m.

Chris Windle, Technical Manager, DSF Refractories & Minerals Ltd - *Tin Bath Block Evolution and Future Development: A Case of Toil, Endeavor and Fears*

11:30 a.m. - 12:00 p.m.

Holger Kreilkamp, Group Manager "Optics", Fraunhofer IPT - *Non-isothermal Glass Molding of Complex LED Optics*

12:00 p.m. - 1:30 p.m.

LUNCH

12:00 p.m. - 1:30 p.m.

EXHIBITING

1:30 p.m. - 5:30 p.m.

EXHIBITING BREAKDOWN

1:30 p.m. - 4:00 p.m.

TECHNICAL SESSION: REFRACTORIES

Session Chairs: **Laura Lowe**, HarbisonWalker International Company and **Larry McCloskey**, Anchor Hocking, LLC

1:30 p.m. - 2:00 p.m.

Andy Reynolds, Managing Director, Fives Stein - *New Oxycombustion Crown Design for Efficient Flue Gas Heat Recovery*

2:00 p.m. - 2:30 p.m.

James Crowe, Principle Product Specialist, Johnson Matthey, PLC - *Extending the Life of Fused Cast Ceramics*

2:30 p.m. - 3:00 p.m.

Michel Gaubil, PhD, Senior Scientist, Glass Refractory Expert Manager, Saint-Gobain CREE - *Nondestructive Analysis of Low Thickness AZS FC Tiles for High Performance Bottom Paving Solution and Over Coating*

3:00 p.m. - 3:30 p.m.

Dean Thomas, North American Sales, HarbisonWalker International - *High Performance Superstructure Concept for Container Glass Furnaces*

3:30 p.m. - 4:00 p.m.

Gerald Hunt, Flue Gas Treatment Specialist, Lhoist North America - Sorbocal® - *A Simple Solution for Acid Gas Compliance*

4:00 p.m. - 5:00 p.m.

GMIC MEMBER MEETING

GMIC SYMPOSIUM

Thursday, 10 November 2016

8:00 a.m. - 4:00 p.m.

Modeling Innovations & Applications in Glass Production

Description: The Modeling Innovations and Applications in Glass Production symposium is focused on the latest technologies in the market to support critical processes and address current challenges in glass manufacturing processes. It provides a

CONFERENCES

forum for the audience to gain technical knowledge and exchange experiences with each other in support of the advancement and application of glass modeling technologies.

Audience: Glass manufacturers, Glass equipment suppliers, Material suppliers, Process Designers, Design Engineers, CFD Modelers and Engineering Service providers.

Objectives: The participants should come away from the symposium with knowledge of the capabilities and new developments in modeling technology for glass manufacturing and production.

8:00 a.m. - 8:30 a.m.

8:00 a.m. - 8:05 a.m.

8:05 a.m. - 8:30 a.m.

8:30 a.m. - 10:00 a.m.

8:30 a.m. - 8:55 a.m.

8:55 a.m. - 9:00 a.m.

9:00 a.m. - 9:25 a.m.

9:25 a.m. - 9:30 a.m.

9:30 a.m. - 10:00 a.m.

10:00 a.m. - 12:00 a.m.

10:00 a.m. - 10:25 a.m.

10:25 a.m. - 10:30 a.m.

10:30 a.m. - 10:55 a.m.

10:55 a.m. - 11:00 a.m.

11:00 a.m. - 11:25 a.m.

10:25 a.m. - 11:30 a.m.

11:30 a.m. - 11:55 a.m.

11:55 a.m. - 12:00 a.m.

12:00 a.m. - 1:00 p.m.

1:00 p.m. - 1:30 p.m.

1:00 p.m. - 1:25 p.m.

1:25 p.m. - 1:30 p.m.

1:30 p.m. - 1:55 p.m.

1:55 p.m. - 2:00 p.m.

2:00 p.m. - 2:25 p.m.

2:25 p.m. - 2:30 p.m.

2:30 p.m. - 3:00 p.m.

3:00 p.m. - 4:00 p.m.

3:00 p.m. - 3:25 p.m.

3:25 p.m. - 3:30 p.m.

3:30 p.m. - 3:55 p.m.

4:00 p.m.

PROGRAM I - INTRODUCTION

Welcome - **Robert Weisenburger Lipetz**, Glass Manufacturing Industry Council

Overview and History of Modeling - **Brian J. Naveken**, Toledo Engineering, Inc.

PROGRAM II - COMBUSTION & EMISSIONS

CFD Simulation of Oxygen-fuel Combustion in Glass Furnaces: A Perspective from Real World Applications - **Dr. Xiaoyi He**, Air Products

Q&A

CFD Modeling in Oxy-Fuel Glass Furnaces for Increased Energy Efficiency and Emissions Reduction - **Dr. Julien Pedel**, Praxair.

Q&A

BREAK

PROGRAM III - GLASS MODELING

CFD Modelling of All Electric Glass Furnaces - **Aaron Huber**, Johns Manville

Q&A

Glass Quality Troubleshooting Through Modeling on a Regenerative Gas Fired Side-Port Furnace - **Daniel Landrum**, Owens-Illinois

Q&A

Modelling of Flow and Heat Transfer for an Advanced Forehearth Heating System - **Andy Reynolds**, Fives Stein

Q&A

Select Overview of Modelling in the Glass Industry; Forming, Reduced Order Modelling (ROM), and Fluid-Structure Interaction (FSI) - **Hossam Metwally**, ANSYS

Q&A

LUNCH

PROGRAM IV - MODELING PARAMETERS

Glass Quality Defined and How It Is Modelled - **Erik Muijsenberg**, Glass Service

Q&A

The Importance of Model Verification Using Production Data and Multiple CFD Applications - **Kevin Fulkerson**, Toledo Engineering, Inc.

Q&A

The Added Value of Time Dependent Glass Furnace Process Simulation - **Oscar Verheijen**, Celsius Glass & Solar

Q&A

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PROGRAM V - BENEFITS, LIMITATIONS & OTHER CAPABILITIES

Benefits and Limitations with Numerical Modelling of Glass Melting and Delivery in a Fibre Glass Manufacturing Process - **Jong Han** and **Patrick Prescott**, Owens Corning

Q&A

Model Based Enhanced Regenerator Flow Conditions for Glass Furnaces - **Matthias Lindig**, PhD,

Material Scientist, Nikolas SORG GmbH Lohr

CONCLUDING REMARKS

- **Brian J. Naveken**, Toledo Engineering, Inc.



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Seves glassblock is a business unit of The Seves Group, the world's leading manufacturer of glass and composite insulators for power transmission and distribution systems, and of glass blocks for architectural and interior design applications. Seves glassblock owns 36 per cent of the world's glass block production and distribution market. With nine different colours, a neutral line, and 200 different glass designs, Seves glassblock has a 40 per cent share (in terms of value) of the world glass block market. The collective traditions and in-depth expertise of the most prestigious brands in the international glass block segment: Vetroarredo, Vitrablok, Vidromatone, and Sindoco, have been united together under Seves glassblock. Today, Seves glassblock provides high-quality products, with superior technological contents and strict structural standards, while respecting both the environment and consumer.

Seves Group the world's leading manufacturer of high voltage electrical insulators and glass blocks for architectural and interior design applications was recently acquired by Funds advised by Triton Partners.

Founded in 1997, Triton seeks to contribute to the building of better businesses for the long-term. Triton and its executives wish to be agents of positive change towards sustainable



operational improvements and growth. The 30 companies currently in Triton's portfolio have combined sales of approximately EUR 13 billion and over 55,000 employees.

THE REASONS BEHIND THE SUCCESS

Seves glassblock's success is defined by one clear objective: to maximize the potential of glass blocks by transforming them from a marginal, traditional construction element into an artistic expression of light and space. From the start, Seves glassblock aimed to change traditional production rules and ideas regarding glass blocks, which were previously considered 'poor' building materials used only in cases of lack of light. Seves introduced to the humble glass block highly advanced experience and technology thus enhancing its pureness, brilliance, transparency, and resistance, the single most

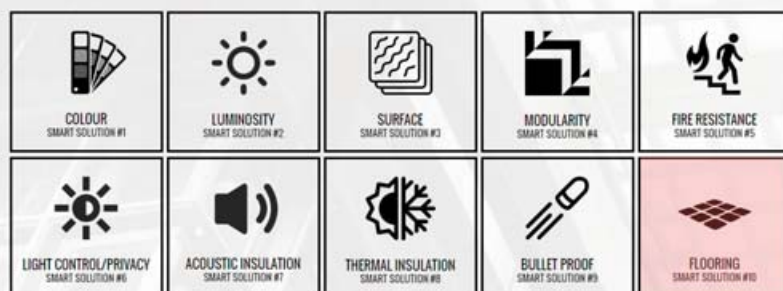
beneficial components of the product. Then, it went one step further by adding an exclusive characteristic, once reserved only for the most sophisticated glasses: colour. An improved process of production rationalization modified and enlarged the entire product line with models and complementary modules to make customized solutions. Finally, the incorporation of new research and development activities made way for new wall installation methods, new special mortars for laying and finishing, and the progressive reduction of the 'gap' between glass blocks to just two millimetres.

GLASS BLOCKS WITH A SUPERIOR AESTHETIC PROFILE

Thanks to the use of highly-selected raw materials, the introduction of cutting-edge machinery, ancient and experienced techniques of colouring, and the



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strict monitoring of systematic controls, Seves glassblock transformed the old 'glass block' into a modern block of glass. Giving birth to a new and refined architectural furnishing element for interior and exterior environments at home or in the city, which can be 'customized' by request according to any project design. Today, the glass block is considered a high-end product and an autonomous subject, rather than just providing a service, the glass block is capable of unique forms and aesthetic realizations that inspire creativity in all architects and interior designers.

SEDIVER AND ITS LONG HISTORY

There is a long history behind one of the most ancient arts of the use of fire. The origins of Sediver date back to 1898. The first glass insulators were manufactured in 1929 by a specially incorporated company, Electro Verre.

In 1947, the application of the thermal toughening process to glass insulators resulted in a product offering exceptional performance, enabling the company to achieve international success.

Automated production lines were introduced ten years later, in 1957. This was followed in 1959 by the merger of Electro

Verre and Charbonneux, which led to the creation of Sediver.

Having established itself in the French insulator market, the 1960s saw the company embark on its first international joint ventures. New products were launched during the 1970s, including a full range of composite insulators for power transmission lines and railway systems. Its Brazilian subsidiary, Electrovidro, was set up during this period.

The establishment of two joint ventures in China took place in 1993: Sediver Zigong, specialising in the assembly of glass insulators, and the Safam Zigong foundry, manufacturing malleable cast iron components. In October 2002, Sediver was taken over by Vetrorredo, a company with a young-sounding name, but with an equally long and prestigious history. Vetrorredo's origins date back to 1928 when, on the initiative of Prince Pietro Ginori Conti, the Istituto Sperimentale per lo Studio e l'Applicazione dei Prodotti del Boro e del Silicio was established in Florence. This institute played a leading role in developing one of the most demanding production processes in terms of quality: optical glass.

In 1940, the Institute became part of Italy's most important state-owned industrial group,

IRI, which was involved in the manufacturing of optical products for the military on behalf of the Navy, and took on the name S.a.i.v.o., specializing in glass tiles (mosaics), ceramic enamel and tableware.

In 1990, Fidenza Vetraria, a long-established Italian producer of glass insulators, lighting glass and tableware, took the company private. From the 1920s on, Fidenza Vetraria had also begun producing a form of glass brick, better known as 'glass blocks' or 'reinforced cemented glass'. And the glass blocks have been in 1991 at the basis of the Vetrorredo "entrepreneurial adventure".

With unreserved determination, the new company achieved constant growth through a series of acquisitions and ongoing innovation.

During the 1990s, Vetrorredo acquired the lighting glass business of Vetrerie Lodi, a company with a hundred-year long history, and the Czech company, Vitrablok, a specialist glass block manufacturer, steeped in the bohemian glassmaking tradition. In order to broaden its coverage to others technical glass applications, in 2001 the company acquired the Italian firm, Dielve, a world-leading manufacturer of glass insulators for power transmission lines. This was the first step towards gaining leadership in this field too. The acquisition of Sediver, the world's number one producer of glass and composite insulators, led to the birth of the Vetrorredo Sediver Group, the industry leader that subsequently took on the name of Seves. ■

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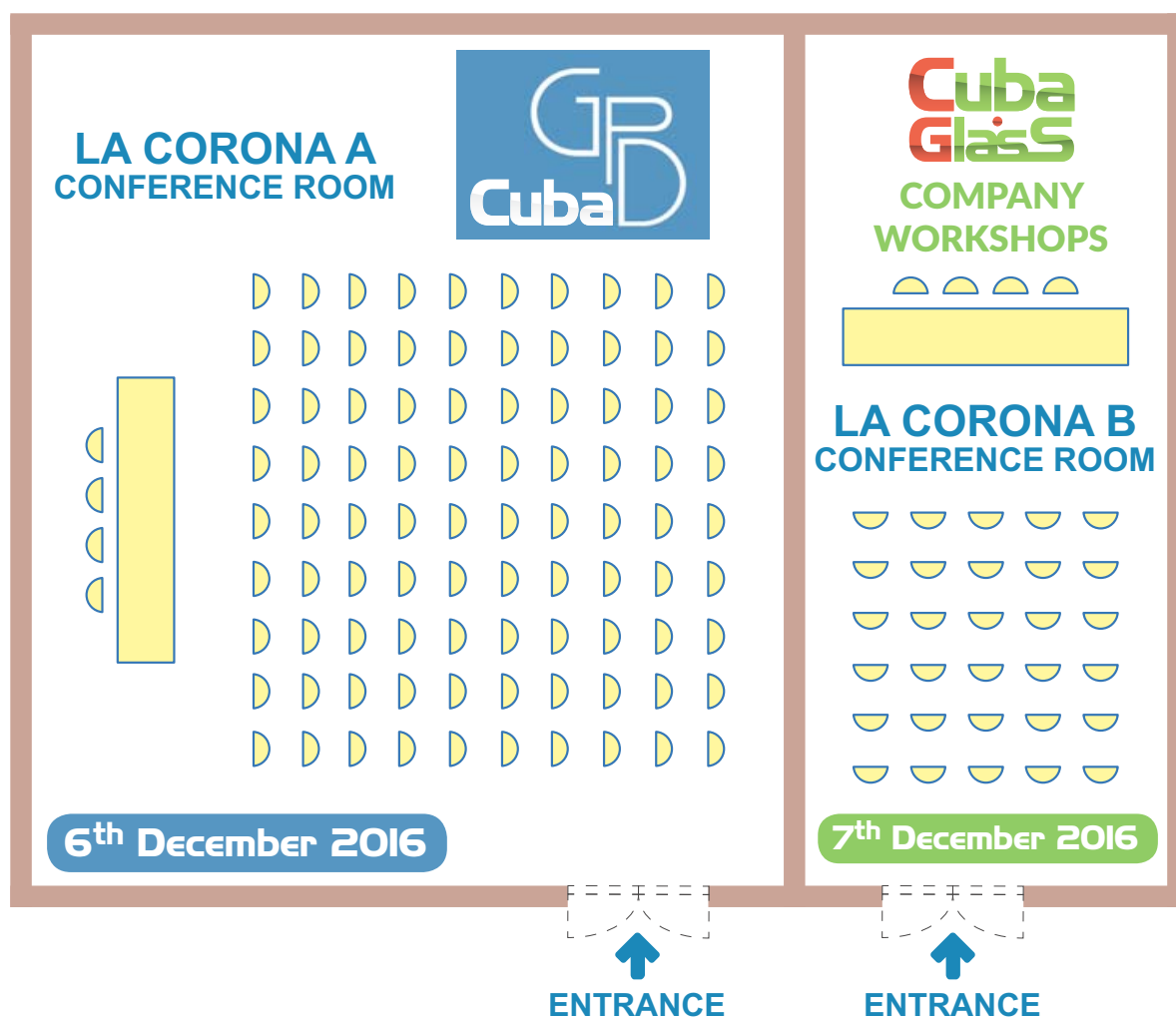
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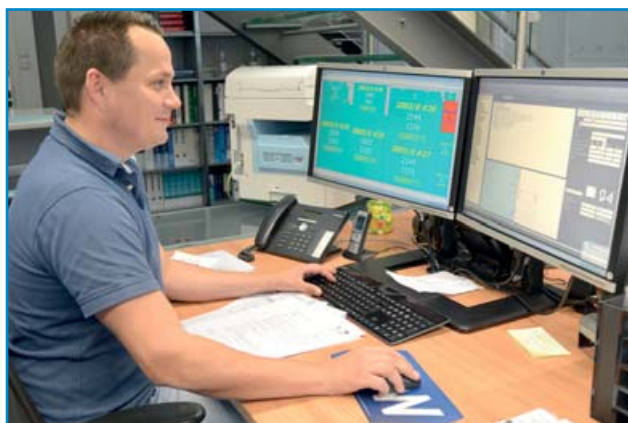


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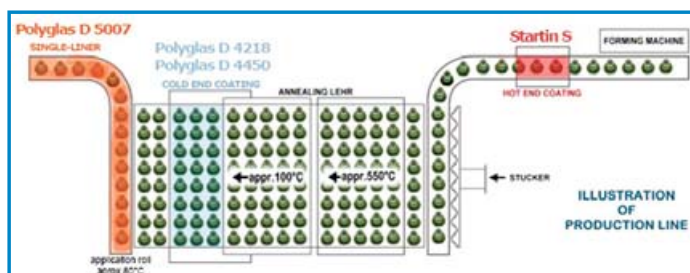
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- Washing and polishing machines for flat and curved glass until Jumbo size;

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- Rolls & belt conveyors, aerial & ground transfers.



Ecol es un grupo de empresas dedicadas al diseño, fabricación y puesta en marcha, de componentes y maquinaria, diseño de líneas completas de producción e instalaciones llave en mano especialmente para la industria del vidrio.

Algunos productos:

- Horno de sacos vacío para vidrio laminado (estándar y térmico);
- Maquinas empaquetadoras;



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Spain
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✉ ecolmecanica@ecolmecanica.com

www.ecolmecanica.com

- Líneas completas de producción (corte en cabeza, descarga automática);
- Maquinas especiales;
- Tambor hilos PVB;
- Estocadores para vidrio plano y curvo;
- Robots para carga, descarga, MB&embalaje, repelado;
- Máquinas de lavar y pulidoras para vidrio plano y curvo;
- Líneas completas para carga y descarga de coater, laminado, plateado;
- Transportadores de correas y cadenas y transfers aéreos o terrestres.



Fairis C.A. has been dedicated to the processing of flat and curved high performance glass since 1928.

Our products:

- Faitem: flat and curved tempered glass.
- Failam: flat and curved laminated glass with PVB or SentryGlas.
- Faiclina: flat and curved insulated glass panels.

Capabilities: digital glass printing, silk screen, Water jet cutting, cutouts, holes, fully CAD/CAM processing. SGCC (Safety glazing certification council) certified.



Our lines:

- Architectural
- Sports
- Accessories

Download our APP: "Fairis GLASS" on APP Store or Google Play.
www.fairis.com

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Fairis C.A. desde 1928 dedicados al proceso de transformación de vidrio de alto desempeño plano y curvo.

Nuestros productos:

- Faitem: Vidrio Templado plano y curvo
- Failam: Vidrio Laminado con PVB o SentryGlas plano y curvo

- Faiclina: Paneles de aislamiento termo-acústicos plano y curvo

Capacidades: Impresión digital, serigrafía, corte con chorro de agua, entalles, perforados, producción CAD/CAM. Certificados SGCC (Safety glazing certification council)

Nuestras líneas:

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- Deportiva
- Accesorios

Descarga nuestra APP: "FAIRIS VIDRIO" en APP Store o Google Play.

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FeneTech



FeneTech will be presenting the latest release for its FeneVision MAX ERP software solution for glass fabricators. This fully integrated software operates on a graphical user interface running on a single database, allowing employees to see - in real time - exactly what is happening on the production floor. FeneVision provides all the tools necessary to control each phase of production, including web and client-based quotation and order handling, pricing and costing, integrated CAD for glass shapes, a comprehensive shower door designer that enables customers to choose their own hardware, the dynamic creation of bills of materials, capacity planning, production scheduling, dynamic glass cutting optimization, tracking control (including the handling of rejects, production monitoring, logistics, and shipping), mobile delivery using an iPad, in addition to invoicing, return merchandise authorization, and reporting using FeneVision Business Intelligence (BI).

lo que esta sucediendo en su piso de producción y en la empresa en general. FeneVision provee todas las herramientas necesarias para controlar cada fase de la producción, incluyendo una aplicación web para cotizar y ordenar pedidos, un control de precios y costos, un CAD, un excelente Shower Door Designer, la posibilidad de generar dinámicamente la lista de materiales de cada artículo, un control de capacidad de producción, programación de la producción, optimización DINAMICA, control y seguimiento por etiquetas a código de barras, interface con sistema contable administrativo y reportes en TIEMPO REAL con nuestro BI.



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Gerresheimer Querétaro

The Gerresheimer Group

Gerresheimer is a leading global partner to the Pharma and Healthcare industry. With our specialty glass and plastic products, we contribute to health and well-being. We have worldwide operations, and our 11,000 employees manufacture our products in local markets, close to our customers. With over 40 plants in Europe, America and Asia, we generate revenues of approximately EUR 1.4 Billion.



Gerresheimer Querétaro

We are the largest converting facility in the Americas producing over 1 billion units per year (Ampoules / Vials / Prefillable Syringes / Onion Skin). We underwent through a major ampoule and pharmaceutical vials plant refurbishment, 5S and Visual Management elements implementation.

El Grupo Gerresheimer

Gerresheimer es un socio global de la Industria Farmacéutica y del cuidado de la salud. Con nuestras especialidades en productos de vidrio y plástico, contribuimos a la salud y el bienestar. Tenemos operaciones en todo el mundo y nuestros 11.000 empleados fabricamos nuestros productos en los mercados locales, cerca de nuestros clientes. Con más de 40 plantas en Europa, América y Asia, generamos ingresos de aproximadamente 1,4 billones de euros.

Gerresheimer Querétaro

Somos la mayor planta instalada de conversión de América en la producimos más de 1billon de unidades por año (Ampollas / Viales / Jeringas Prellenadas / Tubos Onion Skin). Nos sometimos a una importante reconversion en nuestra planta de producción de ampolletas y viales farmacéuticos, con elementos de control dimensional en proceso e inspección.

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Glass M 2013

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- straight line bevelling machines;
- vertical and horizontal drilling machines;

- double head drilling machines;
- vertical washing machines;
- horizontal washing machines;
- disc edging machines;
- belt machines;
- vertical saw for laminates machines.

Fabricante de maquinaria para la manufactura del vidrio plano.

Productos:

- canteadoras de formas;
- biseladoras y canteadoras de formas;
- canteadoras rectilíneas;
- biseladoras rectilíneas;

- taladros verticales y horizontales;
- taladros de doble cabezal;
- lavadoras verticales;
- lavadoras horizontales;
- canteadoras de círculos;
- lijadora de banda;
- sierras verticales para laminado.

GlassM
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FN FNG



Glaston Finland

Glaston is an industry-leading company committed to delivering technologies and services for the manufacturing of the world's best heat-treated glass. Our machines are used to create high-quality glass for use in architectural, solar, appliance and automotive applications.

Our portfolio includes a comprehensive selection of heat treatment machines and services. In addition to excellent end product quality, our machines are known for providing superior reliability in operations and a high level of energy efficiency. Technological excellence combined with dedicated support and services gives our customers a competitive edge in their business. We have a strong sales, service and manufacturing presence around the globe with production on three different continents and a sales presence in more than 20 locations.



Glaston es una compañía líder del sector comprometida en ofrecer tecnologías y servicios para la fabricación del mejor vidrio termotratado del mundo. Nuestras máquinas se utilizan para crear vidrio de alta calidad para el uso en aplicaciones arquitectónicas, solares, de instalaciones y automotrices. Nuestra cartera de productos incluye una amplia selección de servicios y máquinas de tratamiento térmico. Además de una excelente calidad del producto final, nuestras máquinas son conocidas por proporcionar una fiabilidad superior en las operaciones y un elevado nivel de eficiencia energética. La excelencia tecnológica combinada con un soporte y unos servicios esmerados ofrece a nuestros clientes ventaja competitiva en sus negocios. Contamos con una importante presencia de ventas, servicio y fabricación en todo el mundo, con producción en tres continentes y presencia de ventas en más de 20 ubicaciones distintas.

glaston

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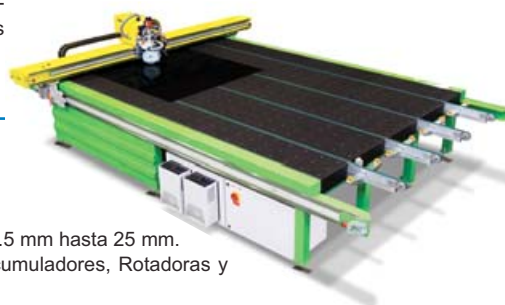
Our Primary Customer Base includes: Float Glass Manufacturers, Fabricators, Laminators, Window companies and Specialty Glass Processors serving multiple markets such as Residential, Commercial, Technical Glass, Solar, among others.

To find out more about Hegla, please visit us at www.heglacorp.com



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40 AÑOS – INNOVACIONES, EXPERIENCIA, FLEXIBILIDAD.

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Cargadoras Automáticas, Sistemas de SORTEO, Apiladoras, Corte y Tronzado, Acumuladores, Rotadoras y sistemas de transportación de vidrio e integración de robótica.

Hegla provee flexibles y soluciones completas.

La Base de Nuestros Clientes Primarios incluyen: Manufactureros de Vidrio Flotado, Fabricadores, Laminadores, Compañías de Ventanas y Procesadores de Vidrio Especial sirviendo a múltiples mercados tales como Residencial, Comercial, Vidrio Tecnico, Solar, entre otros.

Heye International

Heye International, based in Obernkirchen, Germany is one of the foremost suppliers of production technology, high performance equipment and know-how for the container glass industry worldwide. Our mechanical engineering has set the standard in the industry for more than 50 years. The industry expertise, attitude and enthusiasm of the employees of Heye International form the motto "We are Glass people".

Heye Internacional, con sede en Obernkirchen, Alemania es uno de los principales proveedores de tecnología de producción, equipos de alto rendimiento y know-how para la industria de envases de vidrio en todo el mundo. Nuestra ingeniería mecánica ha establecido el estándar en la industria durante más de 50 años. La experiencia en la industria, la actitud y el entusiasmo de los empleados de Heye Internacional forman el lema "We are Glass people".



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Industrias Galtés

Industrias Galtés, S.A. manufactures fittings, accessories and systems for all types of facilities for flat glass. For more than 70 years, the brand TRIVEL is, and has been recognized as the highest guarantee and reliability for the execution of a project with glass.

A singular project requires the best materials to achieve perfect performance and excellent aesthetic finishing. For this reason, our R&D department designs and implements the best experience of mechanical engineering and manufacturing with strict quality controls and advanced software and engineering applications to exceed the growing market requirements.

TRIVEL products are entirely manufactured in our facilities. A consolidated industry experience with the best practices and knowledge that allow an immediate response for standard products. Our technical plant resources allow a mass production projects in short delivery time, being the human team of Industrias Galtés, S.A. the highest professional reference in the sector.

Industrias Galtés, S.A. es fabricante de herrajes, accesorios y sistemas para todo tipo de instalaciones del vidrio plano. Durante más de 70 años, la marca TRIVEL es reconocida como la máxima garantía y fiabilidad en el mundo del vidrio.

Los proyectos requieren los mejores materiales para conseguir el rendimiento perfecto y excelente acabado estético. Por esta razón, el departamento de I + D diseña y aplica la mejor experiencia de la ingeniería mecánica y de fabricación con estrictos controles de calidad y un software avanzado para conseguir los requisitos del mercado.

Los productos TRIVEL son íntegramente fabricados en nuestras instalaciones con una experiencia consolidada en la industria con las



mejores prácticas y conocimientos que permiten una respuesta inmediata para productos estándar. Nuestros recursos técnicos permiten una producción en serie en cortos plazos de entrega, siendo nuestro equipo humano de Industrias Galtés, S.A. y nuestra marca TRIVEL referentes en el sector.

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Keraglass Industries

Keraglass is a global leader in the glass industry, especially in the field of processing equipment for flat and curved glass tempering, screen printing, roller coating and laminating.

The product family made by Keraglass ranges from oscillating tempering furnaces for flat glass with Vision line, to bending and tempering systems with KBFO. From making screen printing machines such as Decoglass to roller coating machines such as Rainbow, also launching the iPlotter machine to gain a foothold in the digital glass printing market.

Keraglass is in the lamination market through Leader Lami Combi for laminating EVA and through KST Deluxe for laminating PVB.

Keraglass es un líder mundial en el procesamiento de vidrio. Y especialmente en los sectores de templado de vidrio plano y curvado, serigrafía, esmaltado y laminado.

La gama de productos hechos por Keraglass van desde hornos oscilantes de templado con la línea Vision, al sistema de curvado y temple con el horno KBFO. Desde la realización de máquinas de serigrafía como Decoglass, a la de máquinas esmaltadoras a rodillos como Rainbow y además lanza la máquina iPlotter para ganar una posición en el mercado de la impresión digital de vidrio. Keraglass es en el mercado de la laminación a través de la máquina Leader Lami Combi para la laminación de Eva y a través la línea KST Deluxe para la laminación de PVB.



KG keraglass

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LiSEC Austria

LiSEC – best in glass processing

LiSEC is a globally operating group which has been offering innovative individual and complete solutions in the field of flat glass processing and finishing for more than 50 years. The performance portfolio includes machines, software solutions and services.

LiSEC develops and produces glass cutting and sorting systems, individual components and complete production lines for the production of insulating and laminated glass as well as machines for the processing of glass edges and tempering systems. With their reliable



technology and intelligent automation solutions, LiSEC sets standards in terms of quality and technology and makes a substantial contribution to the success of their customers.

LiSEC

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LiSEC - best in glass processing

LiSEC es un grupo empresarial con presencia global que desde hace más de 50 años viene ofreciendo soluciones individuales e integrales en el área del procesamiento y el mejoramiento del vidrio. Nuestra cartera de servicios comprende máquinas, soluciones de automatización y servicios.

LiSEC desarrolla y fabrica sistemas de corte de vidrio y de clasificación, componentes individuales y líneas completas de producción para la fabricación de vidrio aislante y compuesto así como máquinas de procesamiento y de templado. Con una tecnología con un alto grado de fiabilidad y soluciones de automatización inteligentes, LiSEC es un referente en calidad y técnica y contribuye en una gran medida al éxito de sus clientes.

Mappi International

Mappi International's business history goes back to 1993. These more than 20 years have enabled the company to become a leader in the production of furnaces for glass tempering. Our machinery is the safest and the most reliable on the market. For this reason they have rapidly become recognized as important Made in Italy products. More than 300 plants installed in over 50 countries represent the stages of Mappi International's

steady growth, made up of investments in research and development, uncompromising quality, attention to the specific needs of each customer, and especially the constant desire to outdo competitors. That is why each new product has been a significant milestone on the path towards perfection - every achievement raises the bar higher. Today, with new ATS 4.0, Mappi does not want to define a new standard, but it aims to overcome it.



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www.mappi.it

Mappi International sentó las bases de su negocio en 1993. Un viaje de más de 20 años ha llevado a la compañía a ser líder en la producción de hornos para el templado de vidrio. Sus máquinas son las más seguras y fiables. Por esta razón, se ha convertido rápidamente en un motivo de orgullo del Made in Italy. Más de 300 plantas instaladas en más de 50 naciones representan las fases de una senda de crecimiento constante, basado en las inversiones en investigación y desarrollo, en el compromiso con la calidad, en la atención por las necesidades específicas de cada cliente y especialmente en el constante deseo de mejora.



Esta es la razón por la que en Mappi desde 1993 cada creación se ha convertido en un hito significativo en el camino hacia la perfección, cada logro sitúa el listón más alto. Hoy con el ATS 4.0, Mappi no quiere definir un nuevo estándar, pretende superarlo.

 Merck

Merck is a leading company for innovative products in the Healthcare, Life Science and Performance Materials sectors. The three business sectors generated total rev. of EUR 12.8 billion in 2015, with 50,000 employees in 66 countries. Since 1668, Merck stood for business success and responsible entrepreneurship. The advanced LCD materials and high-quality LC-mixtures developed specifically for customers are suitable for turning future applications and ideas into reality. One new application is Liquid Crystal Window technology, where Merck is the leading material supplier. Merck is driving technology development and market introduction together with partners in the building industry.

Merck es una compañía líder en productos innovadores en los sectores de Healthcare, Life Science y Performance Materials. Los tres sectores de negocio generaron unos ingresos totales de 12.800 millones de euros en 2015, con 50.000 empleados en 66 países.

Desde 1668, Merck representa el éxito empresarial y el espíritu emprendedor responsable. Los materiales LCD avanzados y las mezclas de cristal líquido de alta calidad desarrollados específicamente para los clientes son adecuados para hacer realidad futuras aplicaciones e ideas. Una aplicación nueva es la tecnología de ventanas de cristal líquido, de la que Merck es el principal proveedor de materiales. Merck dirige el desarrollo tecnológico y la comercialización junto con socios de la construcción.




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merck-performance-materials.com

 Millet Industria de Vidrio

Millet Glass Industry is the largest glass manufacturer in Mexico, located in Merida, Yucatán, with a national presence and exports to the US, the Caribbean, Central and South America. With experience of over 50 years and international certifications in our manufacturing processes, we fabricate: tempered glass, laminated, insulated, screen printing, digital printing, architectural fittings and we offer technical assistance for every project. We also manufacture aluminum inter 120 and 180 certified against hurricanes by Miami Dade County. We manufacture premium kitchen lines made of aluminum and glass panels, Venetian tile and we sell Marble, Granite, Quartz and Corian.

Millet Industria de Vidrio, es la planta procesadora de vidrio mas grande de México, estamos situados en Mérida, Yucatán con presencia nacional y exportaciones a EUA, el Caribe, Centro y Sur América. Contamos con experiencia de más de 50 años y con certificaciones internacionales en nuestros procesos de fabricación. Fabricamos: vidrio templado, laminado, insulado, serigrafado, con impresión digital, herrajes arquitectónicos y proporcionamos asesoría técnica para cada proyecto. Fabricamos también líneas propias de aluminio Inter 120 y 180 certificadas contra huracanes por Miami Dade County. Fabricamos cocinas premium, hechas de aluminio y vistas de vidrio. Fabricamos loseta veneciana y realizamos la venta de Marmol, Granito, Cuarzo y Corian.




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Pomdi - Herramientas De Diamante

Manufacturing of diamond tools for flat glass industry, based on innovation and patented items. One of our best success is the innovative magnetic system for cup wheels, called 3NEO®, made of a magnetic support and a diamond ring, valid for all kind of machines in the market, bevellers and edgers. The main advantages are lower price, rapid tool changeover and lower stock.



We are also innovators in core drills, laser welded and only 0.8mm thickness, with no maintenance needed. Therefore, we supply other items such as polishing tools, cerium oxide, and scratch removal machines without any optical distortion.

Fabricantes de herramientas de diamante para el vidrio plano, basando nuestro esfuerzo en la innovación y productos patentados.

Uno de nuestros principales éxitos es el innovador sistema magnético para muelas de taza, llamado 3NEO®, que consiste en un soporte magnético y un aro diamantado, válido para todas las máquinas del mercado, tanto biseladoras como canteadoras. Las principales ventajas son la reducción de costes, cambio rápido de herramienta y reducción de stock.

También innovamos en brocas, soldadas por laser y solo 0,8mm de pared, sin mantenimiento (autoafilables).

Además suministramos otros productos como muelas de brillo, óxido de cerio, y una máquina para eliminar arañazos sin distorsión óptica del vidrio.



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Schüco

Together with its worldwide partner network, as well as architects, specifiers and investors, Schüco creates sustainable building envelopes that focus on people and their needs, in harmony with nature and technology. Window, door and façade solutions from Schüco meet the highest requirements in terms of design, comfort and security. At the same time, CO2 emissions are reduced through energy efficiency, thereby conserving natural resources.

The company delivers tailored products for new builds and renovations, designed to meet individual user needs in all climate zones. Everyone involved is supported with a comprehensive range of services at every stage of the construction process. With 4,630 employees and 12,000 partner companies, Schüco is active in more than 80 countries and achieved a turnover of EUR 1.430 billion in 2015.



Junto con su red mundial de socios, así como con los arquitectos, planificadores e inversionistas, Schüco crea envolventes sostenibles para edificios, que se centran en las necesidades del ser humano en armonía con la naturaleza y la tecnología. Las soluciones de Schüco para ventanas, puertas y fachadas cumplen con las más altas exigencias en diseño, confort y seguridad, a la vez que su eficiencia energética reduce las emisiones de CO2, conservando así los recursos naturales.

La empresa suministra productos a medida, enfocados tanto en obras nuevas como en renovaciones, que se ajustan a los requisitos individuales de cada usuario en cualquier zona climática.

Todo aquél que trabaja con nosotros es respaldado con una amplia gama de servicios en cada etapa del proceso de construcción. Con 4.630 empleados y 12.000 empresas asociadas, Schüco está activo en más de 80 países, y ha alcanzado una facturación de 1,430 miles de millones de euros en 2015.

SCHÜCO

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Softeco

Softeco was founded in 1984, and since 1988 it has been active in the safety glass industry. Strong with over 30 years' experience, Softeco offers consultancy in safety glass production and quality control. We arrange complete testing services and official test reports as well as applications to the granting authority and delivery of approvals for European ECE R43, Chinese CCC and American DOT.

In addition to this, Softeco specializes in PVB treatment equipment and more particularly in the PVB shaping and stretching technology. We also have PVB roll handling systems for different needs.



softeco

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Fundada en 1984, Softeco está activa desde 1988 en la industria del vidrio de seguridad. Con más de 30 años de experiencia, Softeco ofrece asesoramiento en la producción de vidrios de seguridad y el control de calidad. Coordinamos los servicios completos e informes oficiales de ensayos, así como las solicitudes a la autoridad competente y la obtención de homologaciones del reglamento europeo ECE-R43, de la CCC de China, y del DOT de Estados Unidos.

Además, Softeco está especializada en los equipos para el tratamiento del PVB y, en particular, en la tecnología para modelar y estirar el PVB. Ofrecemos también sistemas para la manipulación de los rollos de PVB para diferentes usos.

Stara Glass

Turnkey projects:

- Turnkey Installations
- Manufacturing plants

Engineering:

- Design for glass furnaces
- Hybrid systems for heat recovery

Supply:

- Supply of refractories
- Supply of facilities and equipment
- Automation and process control

Research and development:

- NOx Reduction
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- Flue gas recirculation

Services:

- Construction and demolition of furnaces
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- Combustion optimization and endoscopies
- Commissioning and start-up

After sales:

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- Customer Care
- Custom Training



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Proyecto

"Llaves en mano":

- Instalaciones llaves en mano
- Plantas de fabricación

Ingeniería:

- Diseño hornos para vidrio
- Sistemas híbridos para la recuperación del calor

Suministro:

- Suministro de producto refractario
- Suministro de instalaciones y equipos
- Automación y control de proceso

Investigación y desarrollo:

- Reducción NOx

- Optimización de la combustión
- Recirculación de humos

Servicios:

- Construcción y demolición de hornos
- Precalentamiento hornos y mantenimiento en caliente
- Optimización de la combustión y endoscopias
- Asistencia puesta en marcha y conducción

Post venta:

- Recambios
- Asistencia clientes
- Training personalizado

Tuomas-Tecnocat



to adapt our solutions to our customers' specific needs, since there are no two identical installations.

Desde 1985, TUROMAS-TECNOCAT focaliza sus esfuerzos en desarrollar maquinaria para el Almacenamiento, Carga, Corte y Manipulación de vidrio que supere las expectativas del cliente. Todas las operaciones que ello conlleva, como ingeniería y fabricación, son llevadas a cabo en sus dos fábricas españolas con el fin de conseguir los más altos estándares de calidad.

La máxima prioridad de TUROMAS-TECNOCAT es proporcionar máquinas fiables, seguras y eficientes que sean suficientemente flexibles para convertirse en una inversión de futuro. Nuestro equipo de desarrollo trabaja constantemente para adaptar el producto a las necesidades específicas de nuestros clientes.

Since 1985, Spain-based TUROMAS-TECNOCAT has been focusing all its efforts in developing glass Storage, Loading, Cutting & Handling machinery that exceeds customer expectations. All related operations such as engineering or manufacturing are carried out in its two Spanish factories to achieve the highest quality standards.

The highest priority of TUROMAS-TECNOCAT is to provide reliable, safe, efficient machines that are flexible enough to become future-proof investments. Our development team is constantly working



**TUROMAS
TECNOCAT**

Since 1985

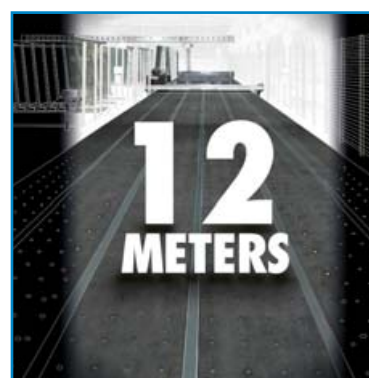
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Vitrosep



For more than 20 years, VITROSEP has been providing solutions for the treatment of glass grinding waters. The VITROSEP Glass Particle Separator guarantees clean water (particles of all sizes are separated) producing dry waste. It enables to work in a real closed loop where wastewater is negligible. In these conditions, the use of coolant, an excellent help for the grinding of glass, becomes affordable.

In the separator outlet the quality of the water is similar to city water. This water can be used in the spindle of a numeric control machine. Cost cutting in water, in diamond tools, in maintenance and in downtime of grinding machines provides a very short payback of the investment in a VITROSEP system.

Desde hace más de 20 años, VITROSEP ofrece soluciones para el tratamiento de las aguas de canteado y biselado. El Separador de Partículas de Vidrio VITROSEP garantiza agua limpia (todos los tamaños de partículas son separados) produciendo un residuo seco. Se consigue trabajar,

por lo tanto, en un auténtico circuito cerrado donde no hay prácticamente pérdidas de agua. Ello permite que el uso de refrigerante, con todas las ventajas que aporta al procesado de vidrio, sea rentable.

La calidad del agua a la salida del separador es comparable al agua de la red. Este agua se puede utilizar directamente en el cabezal de las máquinas de control numérico, por ejemplo. La reducción de costes derivados del ahorro de agua, mayor vida útil de las muelas diamantadas, menor mantenimiento, menos tiempo de máquinas paradas, gestión de residuos más simple y barata, entre otros hace que la recuperación de la inversión en un sistema VITROSEP se alcance en un periodo de tiempo muy corto.



VITROSEP

C/ Garrigàs, 9A
17600 Figueres - Spain

☎ +34 - 9725 - 07743

☎ +34 - 9725 - 10316

✉ info@vitrosep.com

www.vitrosep.com





WALTEC Maschinen

Production programme:

FULLY AUTOMATIC PRODUCTION LINES WITH PLC/CNC ELECTRONIC CONTROL FOR:
tableware, spinning articles, stemware, press-blow articles, blow-blow articles, toughening/tempering, microwave and technical articles, washing machine glasses, cold light reflectors, glass insulators, glass blocks.

- Quadruple Gob lines
- Triple Gob lines
- Double Gob lines
- Single Gob lines
- Spinning lines
- Stemware lines
- Press-Blow lines
- Blow-Blow lines
- Toughening/ Tempering lines

Gama de Producción:

LÍNEAS DE PRODUCCIÓN COMPLETAMENTE AUTOMÁTICAS
CON CONTROL ELECTRÓNICO PLC/CNC PARA

artículos de hogar, artículos centrifugados, copas, artículos prensados-soplados, artículos soplados-soplados, endurecimiento/temple, artículos técnicos y para microondas, ventanas para lavadoras, reflectores de luz fría, aisladores de vidrio, bloques de vidrio.

- Líneas cuádruple gota
- Líneas triple gota
- Líneas doble gota
- Líneas gota sencilla
- Líneas de centrifugado
- Líneas para copas
- Líneas prensado-soplado
- Líneas soplado-soplado
- Líneas de endurecimiento/ temple



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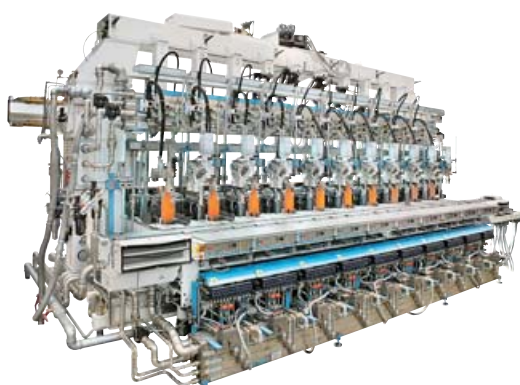
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Bottero Glass Technologies

last entry



Bottero Hollow Glass, with its associated Revimac, has been a successful story thanks to its drive to deliver innovative glass container solutions to customers, from glass conditioning to the transport of wares.

The Hollow Glass Unit designs and realizes electronic and mechanical gob feeders for different production needs, IS machines for every kind of glass containers and a complete set of controls and automation systems. Besides the overhauling and reconditioning of IS machines, Revimac also develops and realizes forehearths, accessories, fittings and complementary equipment of the Hot End of glassworks.

Bottero
Glass Technologies

Via Genova, 81

12100 Cuneo - Italy

☎ +39 - 0171 - 310611

☎ +39 - 0171 - 310757

✉ bottero@bottero.com

www.bottero.com

Bottero vidrio hueco, con su asociada Revimac, tiene una historia de éxito gracias a su unidad ofreciendo soluciones innovadoras a sus clientes desde el control del vidrio en el canal hasta los equipos de manejo.

Bottero realiza alimentadores electrónicos y mecánicos, para diferentes necesidades de producción, máquinas IS para todo tipo de envases de vidrio y un conjunto completo de controles y sistemas de automatización; mientras que Revimac, además del recondicionamiento de máquinas IS, desarrolla y realiza canales, accesorios y equipos complementarios para zona caliente de vidrierías.



Company Workshops

LA CORONA B ROOM / 7th December 2016

10.15 - 10.30

ECOL INGENIERÍA: 40 YEARS OF EXPERIENCE IN PROVIDING TECHNOLOGIES FOR THE FLAT AND AUTOMOTIVE GLASS INDUSTRY

ECOL Ingeniería Industrial

ECOL is a group of companies with more than 40 years' experience in the design, manufacture and start-up of components and machinery, complete production lines and turnkey installations for international flat and automotive glass industry.

10.30 - 10.45

A+W INDUSTRY 4.0 - THE FUTURE OF THE GLASS INDUSTRY

A+W Software

For many years, A+W has been developing industrial software and concepts for innovation-conscious companies in the flat glass industry, including global leaders in glass processing and insulated glass production. Here, A+W cooperates with leading technology partners in the industry in order to provide future-oriented solutions according to Industry 4.0 concepts by participating in a joint innovation network with its customers. This reduces production costs, shortens delivery times, and improves quality. Therefore, productivity, delivery reliability, and customer satisfaction are improved significantly.

10.45 - 11.00

GLASS CUTTING: TECHNOLOGIES THAT SAVE TIME AND MONEY

Tuomas - Tecnocat

Glass cutting is far away from using only CNC capabilities to shape your needs. TUOMAS-TECNOCAT will show how their advanced cutting technologies can deeply improve efficiency and costs, affecting downstream processes and helping the production tracking.

11.00 - 11.15

SCHÜCO: THE ONE STOP SHOP FOR EUROPEAN STYLE WINDOWS, DOORS AND FACADES!

Schüco

As a leading supplier of aluminum systems Schüco stands for quality, energy efficiency and sustainability in building envelopes. The products are widely used in residential as well as commercial applications. Besides aluminum systems, Schüco provides a large variety of services to its fabrication partners including design support, training, software and machinery.

11.15 - 11.30

FENEVISION ERP SOFTWARE IS LOOKING TO THE FUTURE AND MAKING IT HAPPEN TODAY

Fenetech

The software and the machines are in constant communication in order to achieve the correct flow of information across the company, and always balancing the production work cells or production lines in a irregular demand in a market with high expectations. FeneVision ERP Software helps you by increasing the efficiency in the use of all resources; time, machinery, materials and men power.

11.30 - 11.45

BREAK

11.45 - 12.00

3NEO®, INNOVATION FOR ALL MARKETS

Pomdi - Herramientas de Diamante SA

3NEO® patented technology for cup wheels, where we reduce the cost of consumables, reduce by more than 15 times the tool changeover, and reduce stock considerably. We invite you to upgrade to the latest technology, which will reduce your production costs.

Company Workshops

LA CORONA B ROOM / 7th December 2016

12.00 - 12.15

INTRODUCTION ON ARCHITECTURAL GLASS QUALITY CONTROL: WHY AND HOW TO MONITOR QUALITY

Ayrox

Normative and economic reasons for quality control; Quality assurance, daily quality control.

12.15 - 12.30

VITROSEP GLASS PARTICLE SEPARATOR

Vitrosep

The particles generated in the grinding of glass produce loss of efficiency in the diamond tools, clogging of tools and machine downtime. Centrifugation and settling systems do not eliminate them completely. These technologies use flocculants and require big maintenance.

VITROSEP makes glass particle separators based on filtration providing water with such a quality it can be used in the spindles of the CNC machines. Operation is fully automatic and running costs, very small. The system keeps the particles in suspension. This characteristic together with an appropriate design of the collection and distribution of the water, in which VITROSEP can help, makes not necessary cleaning and manual removal of glass fines in the grinding machines.

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A detailed and comprehensive reference source for intelligence on the glass manufacturing industry produced by the Glass Manufacturing Industry Council

Comprehensive Data – Industry Contacts – Emissions Regulations

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Contained in the report are vital metrics broken out by glass manufacturing segments, Flat Glass, Container Glass, Specialty Glass, Fiberglass - Glass Wool, and Fiberglass - Glass Fiber Reinforced Plastics/Polymers (GFRP)

- Production volumes
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 - Market share by region
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 - Production facilities
 - Employment
 - Energy usage and cost
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- and many other relevant metrics...

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A detailed and comprehensive survey of emissions regulations relevant to glass manufacturing in North America and Europe, along with recommended best available techniques

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- US glass manufacturer list
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C. Philip Ross, President, Glass Industry Consulting International (GICI)

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Oscar Verheijen, PhD, Senior Consultant, CelSian Glass & Solar B.V.

Glass Defects

Monday, November 7, 2016 | Noon – 4:30 p.m.

Part 1: *Bubble Analysis*: Filip Janos, Glass Service USA, Inc.

Part 2: *Solid Defects Analysis*: Martina Jezikova, Glass Service USA, Inc.

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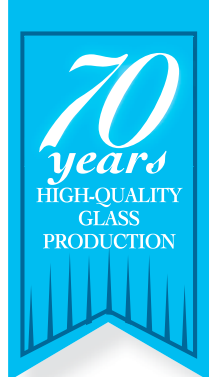
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