

Glass-Technology International

November/December • Year 34 • No. 6/2023

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ONGOING 'VIBE'
WITH **BAVELLONI**

FLACHGLAS
STAYS UP TO SPEED
WITH **GLASTON**
UPGRADES

IG LEADER
PREDARI VETRI
BETS ON **LiSEC**
TPA TECHNOLOGY

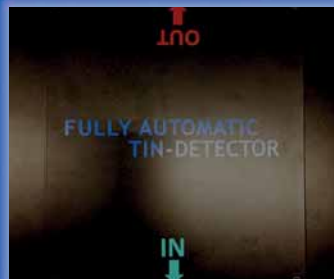
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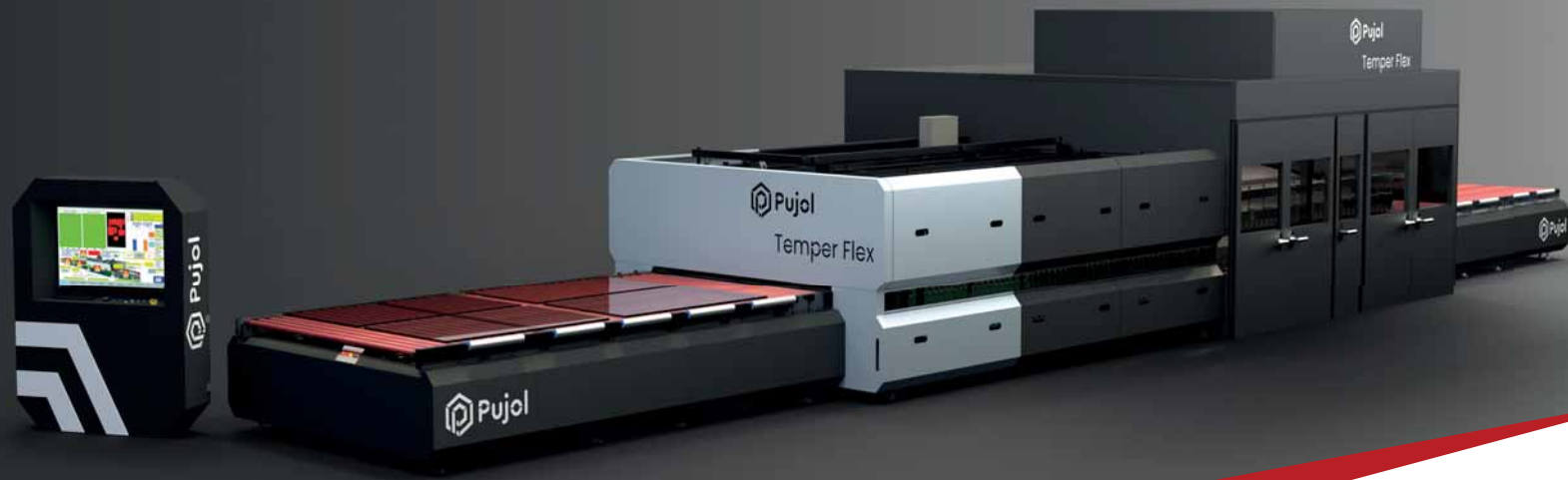
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PARTNERSHIPS

A shared passion for glass: VETRERIA BARTOLETTI's ongoing 'vibe' with BAVELLONI



growing - making glass and processing solutions. They're a family business, says Marco Bartoletti, CEO of Vetreria Bartoletti. The company has been producing glass for over 100 years and is now expanding its production capacity. Bartoletti says the company is looking for partners who can help it grow and improve its processes. He mentions that the company is currently working on a new project with Bavelloni, a company that specializes in glass processing technology. Bartoletti says that the partnership is a key part of the company's strategy to stay competitive in the market. He also mentions that the company is looking for more partners who can help it grow and improve its processes. Bartoletti says that the company is currently working on a new project with Bavelloni, a company that specializes in glass processing technology. Bartoletti says that the partnership is a key part of the company's strategy to stay competitive in the market.

RESEARCH
In a world of AI, the glass industry is looking for ways to improve its processes and reduce costs. Vetreria Bartoletti is currently working on a new project with Bavelloni, a company that specializes in glass processing technology. Bartoletti says that the partnership is a key part of the company's strategy to stay competitive in the market.

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INSULATING GLASS

IG leader PREDARI VETRI bets on LiSEC TPA technology



Partnering with LiSEC to build its celebrated product quality plus strong PREDARI VETRI has always taken pride in its customer service and customer satisfaction. Now, as it stands prepared for much greater in a competitive market, the company is increasing the support of LiSEC to take its signature expertise and reliability to even higher standards.

RESEARCH
The glass industry is looking for ways to improve its processes and reduce costs. PREDARI VETRI is currently working on a new project with LiSEC, a company that specializes in glass processing technology. PREDARI VETRI says that the partnership is a key part of the company's strategy to stay competitive in the market.

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COATINGS

New pilot line has TRIULZI proudly flanking Brightlands Materials Center



The pilot line has been built by TRIULZI, a company that specializes in glass processing technology. TRIULZI says that the partnership is a key part of the company's strategy to stay competitive in the market.

RESEARCH
The glass industry is looking for ways to improve its processes and reduce costs. TRIULZI is currently working on a new project with Brightlands Materials Center, a company that specializes in glass processing technology. TRIULZI says that the partnership is a key part of the company's strategy to stay competitive in the market.

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SUSTAINABILITY

STRATO® has SATINAL conquering new frontiers in social evolution



In the wake of the pandemic, purchasing priorities quickly shifted towards socially, nature and a greener consumption. Ever at the ready, STRATO has shown itself present once again in responding to customer consumption with ease. It's ready, made-to-order solutions in laminated glass and solar panels, with many benefits - all with qualified carbon neutrality and easily traceability.

RESEARCH
The glass industry is looking for ways to improve its processes and reduce costs. STRATO is currently working on a new project with SATINAL, a company that specializes in glass processing technology. STRATO says that the partnership is a key part of the company's strategy to stay competitive in the market.

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2024				Editorial files: 19-01-2024 Deadline Adv files: 26-01-2024
2024	1 MIR STEKLA <hr/> GPAD - GLASS PERFORMANCE AUTOMATION DAYS <hr/> FENSTERBAU FRONTALE	27 February 1 March <hr/> 5-6 March <hr/> 19-23 March	MOSCOW Russia <hr/> NASHVILLE (TN) USA <hr/> NUREMBERG Germany	Editorial files: 02-02-2024 Deadline Adv files: 09-02-2024
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2024	3 GLASS SOUTH AMERICA <hr/> GLASSTECH MEXICO	12-15 June <hr/> 9-11 July	SAO PAULO Brazil <hr/> GUADALAJARA Mexico	Editorial files: 03-05-2024 Deadline Adv files: 10-05-2024
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2024	5 GLASSTEC <hr/> ALL GLASSTEC EXHIBITORS ADVERTISING IN THIS ISSUE ALSO RECEIVE A FREE GLASSTEC PREVIEW  <hr/> VETECO	22-25 October <hr/> 5-8 November	DÜSSELDORF Germany <hr/> MADRID Spain	Editorial files: 20-09-2024 Deadline Adv files: 30-09-2024
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TECGLASS

Launch of new business unit

A new vision for the North American market has led **TECGLASS** to expand its commercial and logistical services. As a leading company in the supply of integral turnkey digital printing solutions, Tecglass is proud to announce the establishment of a new business unit in the United States. This strategic move marks a significant milestone in the global expansion efforts of the company and reaffirms its commitment to serving customers and partners in the North American market.

Following the recent incorporation to the Fenzi Group of AGT Advanced Glass Technologies - a global provider of special glass enamels and precious metal pastes- Tecglass will be implementing a business unit head-quartered in the existing facilities of AGT, in Downingtown, Pennsylvania, USA. This new step in the strategic expansion of Tecglass will allow the company to be directly operating and servicing all customers from the aforementioned location, supplying their complete range of ceramic inks, consumables and spare parts directly from the North American territory, giving a qualitative leap in service commitment to customers. Sales organization is a crucial step in adapting to evolving market conditions, customer preferences and business goals. Consequently, due to the termination of a contractual relationship with IGE Glass Technologies -former exclusive distributor- all commercial relationships will be established directly between Tecglass and the end customer, in order to continue improving sales strategies and to be able to present customers with more competitive projects by having the ability to operate directly in the US. Gustavo Lázara, Area Manager for NA, will continue to be Tecglass' person-in-charge for the market - with the support of the existing commercial network available through Fenzi Group and AGT Advanced Glass Technologies.

WWW.TECGLASSDIGITAL.COM

SYSTRON & ARBONIA

Face-to-face automation and glass storage at ARBONIA

Consequently, the proHD installed in 2019 was placed opposite to the new line before being upgraded then with glass storage. In this way an extremely compact, flexible and highly efficient processing solution was created for glass with a height of 120 to 2,700 millimetres.

WWW.SYSTRON.AT - WWW.ARBONIA.COM

To compensate capacity bottlenecks that have arisen in CNC processing, **ARBONIA** Glassysteme GmbH, based in Deggendorf, Bavaria, Germany, invested in a second **SYSTRON** proHD glass processing centre back in 2022 at year-end - this time with a storage solution.

The second line consists of:

- Inlet Storage with 30 Slots
- proHD Glass Processing Centre
- WM Washing & Drying Machine
- Outlet Storage 30 Slots
- Inspection Zone





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SPARKLIKE

Laser Portable training at Polypane Glasindustrie

In September 2023 Sparklike held a training session at Polypane Glasindustrie in Belgium to introduce its non-destructive insulating gas measuring device Laser Portable 2.1. Polypane Glasindustrie purchased the newest version of SPARKLIKE Laser Portable to improve its IGU quality assurance. The company has been using Sparklike Handheld for almost 20 years and now was the right time to upgrade to the newest technology to enable non-destructive insulating gas measuring. With Sparklike Laser Portable 2.1, it can now also measure triple glazing with lamination and coatings.

Franky Symoens, Managing Director at Polypane Glasindustrie, said: "We have been following the development of this device for some time now and believe it to be the right moment to make this investment in order to strengthen our Quality control procedures."

Sparklike appreciates Polypane Glasindustrie for its long-term cooperation. The company is delighted to see how much IGU quality is still so prized - with investments ensuring that this core value remains secure going forward.

WWW.SPARKLIKE.COM



VIPROTRON

AI tool revolutionizes glass quality control

The use of three different inspection channels in Quality Scanner 3D already provides highly reliable classification results. VIPROTRON has many years of experience and proven algorithms for correct defect classification. Nevertheless, there is always potential for improvement, especially in the case of similar defects. In this context, the use of classical methods will not bring any major steps towards a near hundred percent level. The use of AI tools for self-learning is therefore the next step. First, the data requirements are determined. Thanks to 20 years of experience in image processing, Viprotron has high-quality and reliable data sets. In addition, the company continuously generates new data to close the last of the incorrectly classified defects with compliant data. In doing so, Viprotron uses a reliable filter to add comparable data.

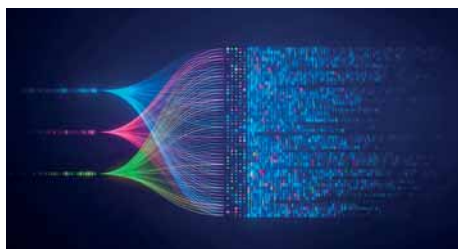
The new Viprotron application software Rel. 9.x also allows customers to report unclear or incorrect classifications directly by sending the error image and the correct classification

result. Viprotron qualifies this data and feeds it into the AI tool to develop an even more sophisticated training and evaluation model.

The AI tool uses all existing data, algorithms, new information and the results of the learning process to increase the efficiency and reliability of the control processes. This avoids incorrect scanner results and improves root cause analysis so that no line needs to be stopped.

It leads to higher productivity, better delivery quality and more reliable statistics. The more staff can rely on the scanner's classification, the shorter the inspection time per glass. This increases productivity. Low-quality glass is removed from the process, resulting in better delivery quality. Better classification also enables more meaningful statistical reports for the quality manager for root cause analysis. Overall, these improvements help customers simplify processes, save costs and strengthen their image thanks to fewer complaints.

WWW.VIPROTRON.DE




LISEC

Martin G. Anderson invests in a LiSEC TPA line

The partnership between Swedish company Glasgruppen and Lisec has roots reaching back to the 1970s, making the firm one of Lisec's first customers in the Nordic region. This long-term collaboration began through initial contacts at the very first Glasstec trade shows and has since blossomed into a synergistic relationship.

In Sweden, the LiSEC brand is very well known, especially for its insulating glass machinery and cutting tables. Thus, Glasgruppen's Martin G. Anderson has incorporated Lisec cutting tables for float glass (GFB) and laminated glass (VB), a grinding machine (KSR) and a bender (BSV-45ANK) into their operations. The latest investment was a TPA line.

Stina Wollenius, third generation owner and sole shareholder of Glasgruppen, said: "The reason why we buy Lisec for generations is the high quality and long lifetime of the machinery as well as the reliability of the output and the great service." Glasgruppen speaks highly of their cooperation with Lisec - emphasizing the exceptional service, quick response times, and close collaboration with the sales team. This level of support fosters a sense of trust and reliability, allowing Glasgruppen to focus on their operations without undue concern for machinery and technical support.

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NSG GROUP

New glass processing division marks Pilkington milestone



A new glass processing division of Pilkington IGP, part of NSG Group (which has opened in Sandomierz, Poland) marks a company milestone. This is because, despite enabling **NSG GROUP** to respond to the growing demand for glass and insulating glass units at home and abroad, the expansion has also created new jobs in the area - all while celebrating the company's seventh branch in Sandomierz. This has also boosted employment and helped the local economy. The opening, which took place on 19 September, officially marked the start of production with equipment that includes two production lines for double glazing, glass cutting tables, scissor lifts, manipulators, benders and overhead cranes.

The internal event was attended by employees and management representatives, including Krzysztof Granicki, Managing Director, AGE East, Nordic & Central Downstream and Christian Quenett, Head of Architectural Glass Europe.

In an opening speech, Operating Director Dariusz Kowalczyk said: "Our priority is to provide safe working conditions in an atmosphere of mutual respect, inclusion and diversity - with a special focus on ethical issues, while at the same time remaining committed to such values as quality and innovation. The opening of the new branch demonstrates the company's long-term commitment to the development of the industry." Krzysztof Granicki, Managing Director, AGE East, Nordic & Central Downstream said: "This new plant is the company's response to the ever-growing demand for glass and glass products. It will increase our production capacity and satisfy the needs of our key customers in southern Poland.

"Currently we have seven branches. The opening of this new one is not only evidence of the company's strong position, drive for innovation and quality, but also its forward-looking approach to development - which promises further achievements and successes."

WWW.PILKINGTON.COM

EASTMAN

Support for advanced interlayer growth

Eastman is committed to supporting the growing global demand for specialty interlayers products - strengthening its regional service capabilities and investing in asset capabilities to serve glass laminator needs for high performance products.

In order to respond to regional and global demand for Saflex™ polyvinyl butyral (PVB) products, **EASTMAN** has announced a feasibility study to upgrade and expand extrusion capability for production of interlayers in Europe.

"We are excited about exploring how to strengthen our Eastman asset footprint to drive continued high quality, reliability and services to our Automotive and Architectural customers," said Sabine Ketsman, division president of Films with Eastman.

"Furthermore, we want to leverage Eastman's innovation strengths to support our partners in enabling their growth plans and driving sustainable solutions - responding to rapidly evolving trends in Automotive and Building & Construction."

WWW.EASTMAN.COM



GLASSLINE



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Rollmac is a division of Gemata S.p.A.
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TVITEC & SIMEON

An exceptional and efficient partnership



Tvitec System Glass, Cricursa and Gruppo Simeon all collaborated recently in one of the most spectacular and sustainable projects in Europe, which features extensive use of high-performance glass and wood. Called Arboretum, the project has been developed in France and is set to open soon. Additionally, the Simeon team has become acquainted with the production capabilities of one of the world's leading brands in curved glass for iconic projects, namely Cricursa.

Cricursa, following its alliance with Tvittec, is increasingly involved in major projects involving curved glass, such as the Domino Sugar Refinery in New York, the Torres Colón in Madrid and the new Palacio de la Música in Valencia.

Tvittec System Glass, Cricursa and Gruppo Simeon all continue to work seamlessly together - coordinating exciting new endeavors Europe-wide. Indeed the recent snapshot from a meeting at Cricursa's curved glass factory in Granollers, Barcelona, truly captures the essence of this collaboration.

WWW.TVITECGLASS.COM - WWW.GRUPPOSIMEON.COM

NSG GROUP

Launch of glass with 50 percent less embodied carbon

NSG Group has pioneered a new glass range with 50 percent less embodied carbon when compared to standard float glass - representing the lowest carbon product of its kind on the market.

NSG Pilkington now offers Pilkington Mirai™, a low carbon alternative to regular float glass, with no difference in performance, quality or aesthetic appearance. Pilkington Mirai™ has been pioneered using a combination of alternative fuel, high recycled glass content and green electricity sources.

Kristian Chalmers, Global Strategic Commercial Manager at the NSG GROUP, said: "The launch of Pilkington Mirai™ represents the beginning of an exciting journey. The new range will be instrumental in providing architects with the solutions they need

for reducing the carbon intensity of their projects. This market-leading glass can be combined with other high-performance low emissivity, solar control and acoustic coatings in the Pilkington product family - all to enable building owners and design professionals to proactively reduce embodied carbon whilst meeting other building performance and compliance requirements." Said Leopoldo Castiella, Head of Architectural Glass Global at the NSG Group: "Pilkington Mirai™ is a sign of the glass industry's contin- ➔



← ued progress towards decarbonisation for the benefit of the broader built environment. Cutting half of the embodied carbon of glass, without compromising on performance or aesthetical attributes, is a major technical feat born out of great collaboration. The new range presents a simple, more sustainable alternative that enables building designers to make immediate improvements on the carbon impact of their projects. Bringing forward solutions like this is central to the mission of NSG Group of changing our surroundings while improving our world.”

Sustainability in glassmaking

The company's ambition is to work together to combat climate

change, strive for social equality, and to protect the environment. Last year, the Science-based Targets initiative (SBTi) re-certified the NSG Group's increased ambition to reduce its emissions by 30 percent by 2030 compared to 2018 levels. The company further aims to achieve carbon neutrality by 2050 and continues to work proactively to make a positive impact on the environment through activities such as its world-first proof-of-concept trials of alternative fuels in glass making. This specific programme led to the development of Pilkington Mirai™.

WWW.NSG.COM

RCN SOLUTIONS

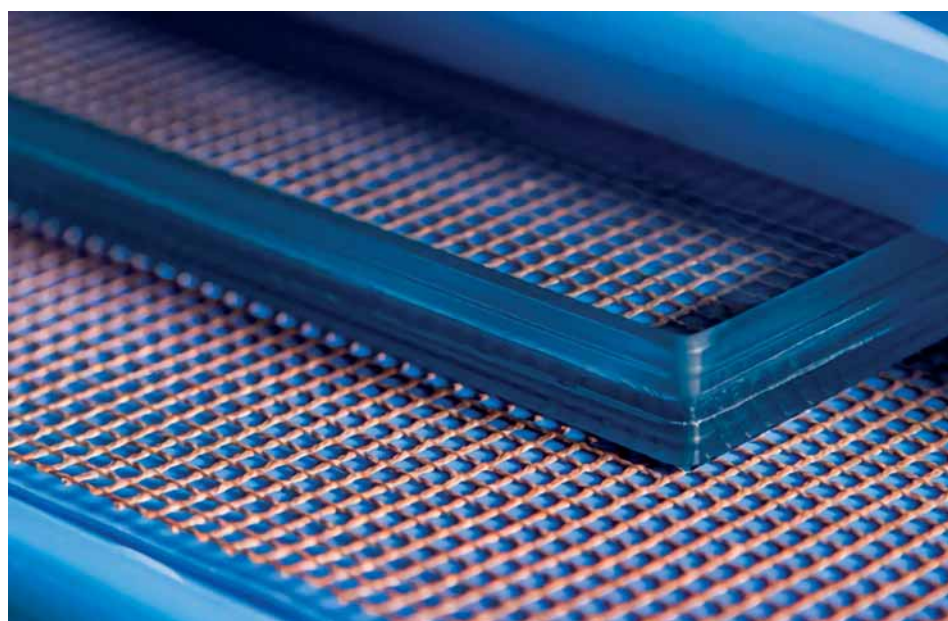
RD Clean Concept: more than one benefit

Glass lamination involves several related jobs, among which the cleaning of the edges at the end of the process. It consists in using blades, thermocutters or any other sharp tool, to remove the excess interlayer. And with Reva BF being very strong, it is a difficult job. This is the compromise for using a high-adhesion product. Over the past twenty years, **RCN SOLUTIONS** has assisted customers in finding solutions to this problem even if a definitive one remained pending. Finally, in 2021, RCN's R&D department focused on the cleaning of edges not after but during the process, thereby preventing EVA from squeezing too much from the laminated glass. The result has been RD Clean Concept, a system based on last generation bags, having different features from the common ones and able to offer some benefits:

- Clean edges after lamination
- No need for blades, cutters or sharp tools to clean, thus giving operator safety.
- Save time and labour costs
- Total flatness of the laminated glass

The last point may seem less evident but RCN has noticed that regular bags tend to press too much on glass edges with the consequence the laminated glass is not as flat as expected, thereby creating visual distortion. RD Clean Concept prevents this problem, leaving the glass surface totally flat because it distributes the pressure on the full glass surface - not just at the edges. The product has been patented since the end of 2022 and has another important quality: it has no competition. And if customers are wondering whether RD Clean Concept can be installed in existing kilns or in kilns different from RCN's ones then the company is ready to satisfy all demands.

WWW.RCNSOLUTIONS.IT



BAVELLONI

New branch opened in France, supporting further sector growth

Bavelloni SPA, manufacturer of technologies for the flat glass, stone and ceramic industries, has recently expanded its international presence by opening a new branch in France. The management of the office located in Saint-Priest has been entrusted to Ms Lakbira Zanzoune, already Bavelloni Sales Area Manager for the same market.

This operation represents a significant step in Bavelloni's expansion strategy, which is focused on serving the needs of customers in France and French-speaking Switzerland more closely and offering targeted support to French-speaking territories in Africa and the DOM-TOM - thereby contributing to development in these geographical areas in a tangible way.



Bavelloni France has a highly qualified team of sales and technical experts, ready to support the customer base both during the purchasing phase and after the sale.

The local presence allows for more direct communication and a more timely response to customer needs - greatly improving the quality of services offered. The new branch has also demonstrated its commitment to supporting local initiatives as well as its ability to integrate itself into the region. In fact, Bavelloni France

enthusiastically seized the opportunity to support the 47th National Skills Competition, WorldSkills France, a major event held in Lyon from 14 to 16 September 2023 by collaborating in the training of students from a number of local schools who competed in the 'Miroiterie' (Glassworks) category. The task of assisting in the training of 'future glassmakers' was entrusted to Evan Pitout, one of Bavelloni France's technicians who, suitably trained in Italy at Bavelloni's headquarters, skillfully transferred his know-how to the students.

During the contest, the young challengers had the opportunity to work on the Bavelloni VE 350 8 straight-line edger on display at the 'Village de la Construction', demonstrating the skills they had acquired in the use of the Bavelloni equipment.

Lakbira Zanzoune, who attended the event, expressed her enthusiasm for the outcome of the competition and also her satisfaction with the professionalism shown by her team. "The students showed great potential by working with precision and skill. We are thrilled to have been able to contribute to their professional development and hope they can become the 'glassmakers of the future'. It was also a good challenge for our team, making its *début* at a major event with thousands of visitors," said Ms Zanzoune.

WWW.BAVELLONI.COM

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HEGLA

New logistics centre signals fresh growth



A groundbreaking ceremony marks the start of a major investment at **HEGLA**. At its location in Beverungen, Germany, the company is building a new logistics centre that will combine its individual warehouses over an area of 3,000 m². At the same time, the floor space freed up in the existing warehouses will be used as additional capacity for production. The functional building will be equipped with state-of-the-art technology. Various warehouse lift systems, mobile pallet and high-bay storage racks and modern warehouse management software will make processes more efficient while simplifying workflows. The new Hegle logistics centre in Beverungen will combine the existing individual warehouses over an area of 3,000 m² for efficient, faster workflows.

Delivery and goods handling from one central place

In future, delivery of all raw materials, goods and supplied parts for the three factories in Beverungen will be concentrated in the new building. To optimize space use, the investment project software will automatically assign the ideal storage position. With this system, up to 2,300 pallets will find their warehouse location and be directly accessible. The processes will be controlled and monitored via automated labeling and scanning. This enables delivery inventories to be queried in real time, re-orders to be immediately triggered and spare parts to be shipped at short notice. Shorter paths, simplified workflows and higher efficiency are only some of the strategic goals of the warehouse, which will be located at the heart of the 95,000 m² company premises and centralize logistics and the provision of all materials.

Improving efficiency and performance

Alongside storage and assembly areas, the logistics centre will contain office and social spaces for employees from the warehouse, logistics, purchasing and work preparation departments. This change will bring modern working conditions to departments, together with a fresh ecology of communication and work paths.

“With the new logistics centre, we are positioning ourselves for the future while improving the performance of our warehouse, provision and production processes,” said Managing Director Peter Herrmann. “The measures will also free up factory floor space that we can repurpose for production - all with a view to further driving growth.”

It took almost two years to complete the planning and approvals phase, and now the first construction measures can begin. “With the investment of EUR 4.5M we are strengthening the Beverungen location, further developing our competitive edge and committing to ‘made in Germany quality’ going forward,” explained Bernhard Hötger, Managing Director of the Hegla Group in order to justify the investment decision. According to the plan, the logistics centre will be completed in September 2024.

WWW.HEGLA.COM



ŞİŞECAM

India Şişecam glass furnace completed by Furnotherm



Furnotherm has successfully undertaken the demanding and prestigious project of rebuilding the 600 tonnes per day float glass furnace for ŞİŞECAM Flat Glass India in Halol, Gujarat, India. Here the challenge was to demolish the entire furnace of 8800 MT Refractories and re-installation of the refractories in a span of 105 days, out of which 20 days for demolition and 85 days for re-installation. Part of the job required steel modifications and installations - dismantling old equipment and re-installing the same along with installation of some new equipment.

The furnace was officially handed over to **FURNOTHERM** in June 2023 for demolition. After demolition of the old furnace the refractory installation was completed over the last week of August 2023 - unprecedented in the history of float glass furnace reconstruction. Furnotherm has extensive experience in constructing all types of glass melting furnaces and providing installations of glass plants on turn-key basis. The company serves domestic and international clients with projects including container glass, float glass and borosilicate furnaces.

WWW.SISECAM.COM - WWW.FURNOTHERM.COM

AGC

Electro-boosting installation at Osterweddingen plant in Germany

As part of its roadmap to carbon neutrality, **AGC** is focusing on switching to new key technologies, sustainable raw materials, alternative energies and increased glass recycling to avoid process-related as well as indirect emissions. To that end an interdisciplinary AGC team is currently in the process of installing electro-boosting on various float glass production lines in an effort to partially electrify the company production lines.

Electro-boosting installations on various float glass production lines

After Moustier in Belgium and Seingbouse in France, the installation of electro-boosting is now ongoing in AGC's site in Osterweddingen, Germany. A major challenge for the team, as it requires drilling operations in the floor (bottom refractories) of a hot furnace in operation - and this in very hot conditions. Thanks to efficient cooperation involving the team

in Osterweddingen, Engineering, Purchasing, Sustainability, Technical Coordination, R&D and many supplier companies, the job is currently being done. AGC celebrates the successful installation of electro-boosting by its people on running float lines as a major achievement.

About electro-boosting

Electro-boosting is the direct use of electricity as a source of melting energy. It is one of the innovative breakthrough technologies, developed at AGC's Technovation Centre, that are essential to reducing our direct emissions by 30 percent by 2030 and reach carbon neutrality by 2050. Direct emissions are the emissions caused when melting raw materials in the furnace with fossil fuels.

WWW.AGC-GLASS.EU



FOREL

Brian McDonald nominated new CEO for UK and Ireland



Forel is a wholly-owned subsidiary of the Italian parent company that specializes in glass processing and double-glazed solutions. The brand has had a growing and successful presence in the UK & Irish markets for more than 30 years. Due to the growing the company's success, its UK & Irish branch was set up two years ago with the aim of offering unraveled support to its customers, whilst assisting with their business development by offering custom made solutions focused on productivity and performance.

All of this is backed up by the UK-based field engineering team as well as a major warehousing development for original Forel spare parts based in Stansted, England. "I am thrilled to have joined the Forel team" said Brian McDonald. "Forel is an extremely well-known brand in our market - offering state-of-the-art technology with an attentive approach to after sales."

"I am 100 percent committed to continuing our growth and presence in our local market - all while sharing the vision of our parent company which is based upon resourcefulness, listening and acting on our customer needs."

With industry knowledge in all sectors of the fenestration industry Brian will further develop this philosophy of support and proactiveness in the market.

WWW.FORELSPA.COM

SKC & HALIO

USD 70M to be invested in smart glass solutions provider

South Korean company **SKC** has decided to invest USD 70M in **HALIO**, the California-based provider of electrochromic smart glass solutions - all to strengthen its environmentally-friendly materials business. After a board meeting, the company finalized the agenda. Details have not yet been disclosed. Halio's smart glass is one of the world's most advanced natural light management systems. Designed to create comfortable and healthy indoor environments by eliminating glare and blocking solar heat, Hal-

io windows deliver numerous ongoing benefits to building developers, owners and occupants.

WWW.SKC.KR - WWW.HALIOINC.COM



TUOMAS & ARQUETIPO

More than thirty years together

Two years after its founding, the Chilean company **ARQUETIPO** was faced with a new challenge: as demand increased, its leadership team realized that in order to maintain the quality of the company's products and meet delivery deadlines, it had to master the glass-cutting process. This was a turning point that led it to invest in cutting-edge technology. That's when the Spanish manufacturer **TUOMAS** came along.

Said company CEO Joaquín Baeza: "I still remember when we bought the first laminate table. The truth is that I am not a technician. I am a salesman. As such, I would tell Miguel what I needed and he would say: 'Joaquín, this is the table you need.' And so it was. One of the first tables Tuomas made for cutting laminated glass was bought by us."



With more than 25 Tuomas machines, Arquetipo reaffirmed its confidence in the Spanish firm over the course of 2022 by choosing to collaborate once again on a significant step: to start working with jumbo glass, thus acquiring the latest state-of-the-art automatic storage and glass cutting machinery line offered by Tuomas.

Innovation and machinery

The new machines installed at the Chilean company consist of an intelligent SR-06 rack shuttle glass storage system for 6100 x 3300 mm (240" x 130") glass. An intelligent jumbo glass storage solution that combines efficiency and versatility by offering minimum cycle times and the ability to work with different thicknesses, layers and sizes as well as adjustable

load capacity options.

Together with the SR-06 warehouse, a RUBI 406VA monolithic cutting table has been installed. Its innovative automatic loading design is integrated into the structure of the cutting table itself. To complete the installation, a second loading and cutting line for standard laminat-

ed glass has been added: LAM 304 + MV300. These automated tables with state-of-the-art technology allow Arquetipo to guarantee maximum efficiency in the cutting of monolithic and laminated glass sheets in each of its branches. Another aspect that strengthens this alliance is the technical service: Tuomas has direct technical and commercial service in Chile, which allows it to create and maintain close and solid links with its customers.



WWW.TUOMAS.COM
WWW.ARQUETIPOSOLUCIONES.CL

A shared passion for glass: **VETRERIA BARTOLETTI**'s ongoing 'vibe' with **BAVELLONI**



Preserving traditions and fostering economic growth, small and medium-sized enterprises like **VETRERIA BARTOLETTI** are vital to Italy's economy. Over the years the company's use of **BAVELLONI** machines has facilitated its growth and efficiency.

Italy has always been fertile ground for small and medium-sized enterprises, which form the backbone of the national economy. Such companies, often family-run, play a key role in supporting economic

growth - creating jobs and preserving valuable craftsmanship traditions. They're a genuine treasure trove of creativity and expertise. Here Vetreria Bartoletti S.a.s. embodies precisely that Italian entrepreneurial tradition. Spanning over six decades, its very history serves as testimony to dedication, constant growth and a passion for glass that's been handed down from father to son.

BEGINNINGS

It all started in 1962 when company founder Alvaro Bartoletti opened a small artisanal workshop at Monsummano Terme (PT). About ten years later, he set up a building that could house both a glass shop and a glassworks. Then, with one of his sons and just a single worker, he began serving retail customers. Franco Bartoletti, Alvaro's other son, joined the family business in 1985 - thereby contributing to consolidate the company's success.

TRANSFORMING CHALLENGES INTO OPPORTUNITIES

By the 1990s, the glass industry was undergoing major transformations, with glass panes becoming larger and heavier such that they began to require more sophisticated equipment and larger workspaces. When the time was ripe to make a crucial decision between focusing

on construction and large exterior glass or on interior furniture Vetreria Bartoletti chose to specialize in the latter, offering contract machining services to other glassworks and industry-related companies - an astute choice that later proved insightful. Franco Bartoletti recalls those times thus: 'Fortunately, we chose the furniture sector. We found a larger workspace and bought equipment, also second-hand - as we couldn't afford more. The first Bavelloni machines were a beveller and a straight-line edger. Later, we purchased more.' Since then, the company has continued to grow - expanding its customer base from neighbouring provinces to the entire region, and then beyond the borders of Tuscany to Liguria and Emilia. Franco explains: 'We entered the market gradually. Then, thanks to the precision of our work, our reliability and our on-time deliveries, we earned the trust of our customers.' Today Vetreria Bartoletti is a

combined glass and mirror shop business, complete with sandblasting and art projects department and two production units that specialize in contract work. In running the company Franco Bartoletti is joined by his two sons and a nephew who, alongside several employees, all pursue their passion for glass with pride and dedication.

BAVELLONI'S ALL-ROUND RELIABILITY

Collaboration with Bavelloni has significantly contributed to the growth of Vetreria Bartoletti since the early 1980s. Franco reflects on the past and the strategic choices: 'Bavelloni machines have allowed us to grow. Indeed, besides edging and beveling, we also rely on Bavelloni for cutting.' In an intensive production context where speed and precision are crucial, it's essential to have reliable machinery and dependable partners. For this reason, between late 2022 and the first half of 2023, Vetreria Bartoletti chose to renew its machin-

ery by introducing new Bavelloni technology. This entailed the purchase of a new VE 350 8 straight-line edger, a VB 350 CN beveller, a REV 372 SR cutting table and a semi-automatic SB10 machine for edge-grinding, polishing and bevelling - all affording the company its special edge to perform highly-diversified production. Indeed, thanks to the cutting table, it performs both straight and shaped cutting of both glass and mirrors - maximizing sheet utilization thanks to the optimizer, supplied as standard. The VE 350 8 straight-line edger is mainly used to process bathroom mirrors, glass for frames, doors and shower cubicles while the bevelling machines are used for machining variously-shaped mirrors and tables. Says Franco: 'Most of our machines run practically eight hours a day. We work with a variety of thicknesses from 15 to 3 mm every day. We can't afford machine downtime due to our daily deliveries. Here's why, when the time came to change our equipment,





PERSPECTIVES FOR THE FUTURE

Ever committed to continuous improvement and with a view to optimizing production, Vetreria Bartoletti is now considering reorganizing its manufacturing sites. Here, looking ahead, Franco Bartoletti speaks of his future plans: 'Our next goal is to scout for a single, more extensive environment to combine our activities in order to reduce costs, be even more competitive and so better meet customer needs.' Under Franco's leadership and the robust family bonds underpinning the company's success, Vetreria Bartoletti looks ahead with determination - ever ready to transform its projects into reality as it continues to exceed customer expectations with passion and dedication.

we chose Bavelloni's all-round reliability given our positive past experience.'

THE OBVIOUS CHOICE

Changing over to new Bavelloni solutions was a natural process due to their ease of use. It also

signaled an opportunity for operators to improve their efficiency by taking advantage of new features and the more advanced user interface. For its part, Vetreria Bartoletti has effectively formed young trainees - allowing them to learn

the job from experienced operators while providing opportunities to join the organization. Here Bavelloni's quick response time and expertise have both proven key factors. Says Franco Bartoletti: 'It's not the machinery alone that makes the difference. Add to that the after-sales services upon which we can rely in times of need: prompt support and timely dispatch of spare parts.' Indeed the combination of high-quality machinery, such as that of Bavelloni, together with a focused approach to punctuality, precision and work quality have all enabled the company to maintain high efficiency whilst ensuring swift delivery and consistently high quality to customers.



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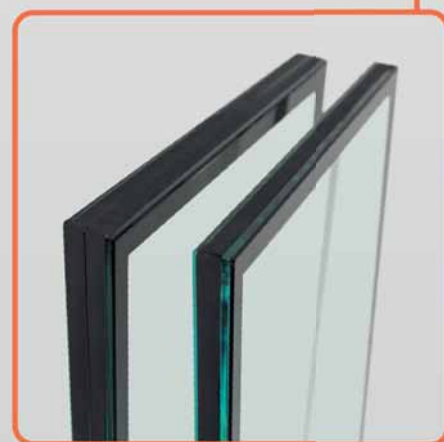
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FOR **FLAT** AND **BENT** GLASS



Hints from GLASS COMPANY on how not to play with fire

With fireproof glass being produced solely by large industries until just recently, it can now be independently produced with Glass Company technology. Designed and created by the company based in Pesaro, the system comprises multiple machines and has the capacity to produce the entire range

of fire-resistant flat and curved glass within the various 30, 60, 90 and 120-minute resistance classes. Not by accident, indeed, the trio of characteristics that best typifies Glass Company machines for the production of fire-resistant glass is: simple, intuitive, high-performing and economically accessible for all.

WHY A FIRE-RESISTANT SYSTEM?

Here fire-resistant glass refers to glass that, for a finite period of time, can absorb both the gases produced during a hypothetical fire as well as the heat generated such that a barrier is created that effectively blocks the flame from spreading. The glass is made up of at least two

parallel sheets, each separated one from the other by a specially-dedicated spacer and sealant layer - a more internal one and a more external one. A very transparent intumescent dispersion responsible for the fireproof properties of the glass is fed inside the sheets. As the temperature increases, the gel becomes increasingly opaque and



Facilitating independent production of fire-resistant glass of varying resistance classes, GLASS COMPANY machines are simple, intuitive, high-performing and economically accessible. Made of two parallel sheets with intumescent dispersion, such glass will absorb gases and heat during a fire - all while preventing the spread of flames.



intumescent, forming a radiation-proof barrier that protects people from every kind of flame, smoke and toxic gas as typically comes from fire.

FIREMEK FUNCTIONALITY

Firemek is a turnkey system that works under vacuum and which, thanks to its peculiar construction and the components comprising it, manages to guarantee a homogeneous mixture

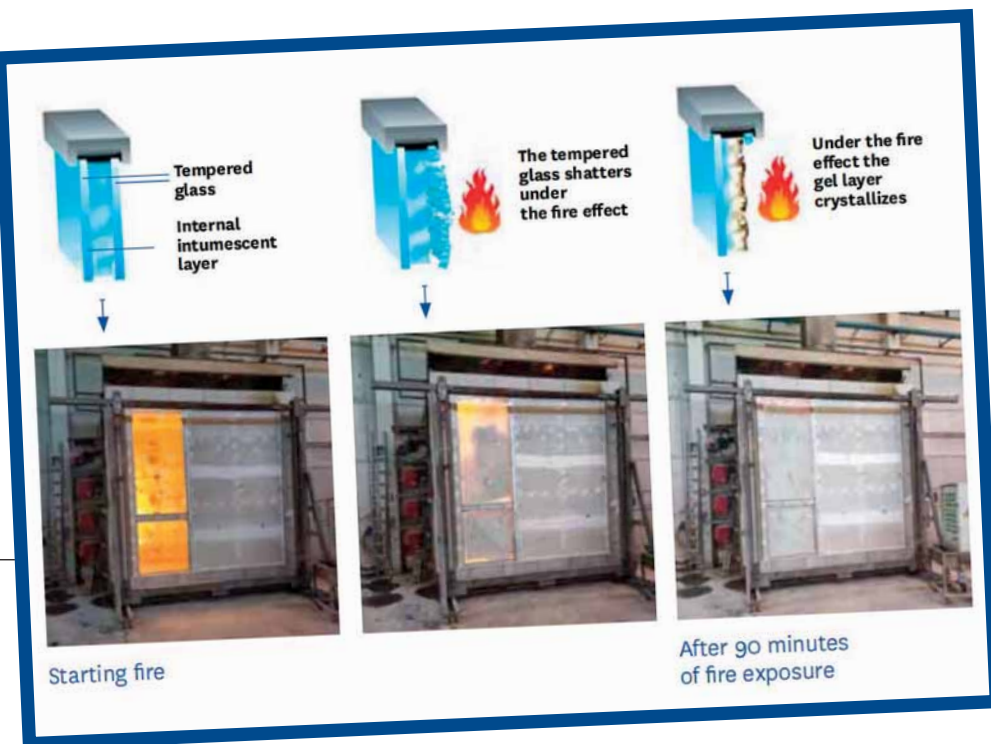
that's free of internal gasses.

The main components of Firemek are:

- a stainless steel mixer, the main pivot around which the production of the mixture revolves;
- a PC-controlled dosing pump;
- an automatic weighing system for the components that form the mixture;
- an orbital table and an oscillating table;
- a crosslinking oven;
- a spacer application system, both flexible and liquid
- management of the entire mixture production cycle under PLC supervision;

- extremely simple and intuitive human-machine interface with a menu of recipes already stored for the production of fire-resistant glass with different silica mixtures;

- Supply of silica-based chemistry, for the production of fire-resistant glass in all EI classes.



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FLACHGLAS stays up to speed with GLASTON upgrades

COMMITTED TO UPGRADES

Headquartered in Wernberg-Koebnitz in Bavaria, Germany, the Flachglas Group has been serving quality-conscious architectural and transportation companies throughout Europe since 1938. Today the company's three plants, spread across Germany, all have Glaston tempering furnaces that produce a comprehensive range of glass split evenly between the two sectors. References include windows and safe-

ty glass for high-speed ICE trains and yachts, alongside glass for London's world-renowned 'The Shard', the Microsoft office in Munich, the prominent Axel Springer building in Berlin and many more. Key to the company's success has been its commitment to ongoing improvements in the performance and energy efficiency of its equipment. "We feel upgrades are the best way to keep running strong," says Martin Werner, who joined the company in 2017 and now heads the technical department.

"Our machines are older, but they're all still efficient and running strong because of continual upgrades and care."

UPGRADE LIST KEEPS GROWING

Some of the key upgrades include the 2015 modernization of a 2004 Glaston ProE machine with the latest Glaston iControlL automation system and bottom Roller Heat Control (RHC). "By changing the bottom heaters and replacing the bottom convection, ProE could better

handle the new coatings. Also, switching to Glaston iControlL gave our operators a much better user experience," Martin says. "For our HTF Combi Convection furnace, we had issues with the availability of spare parts. So, we completely upgraded the electronic parts with the iControlL, and now we're very happy indeed."

LATEST BLOWER INVERTER MODERNIZATIONS

At the time, the only parts that hadn't been upgraded on those two furnaces were the blower inverters. "In Germany, energy prices have been very high," Martin explains. "I was in touch with Glaston to make calculations about the payback of upgrading the blower inverters. We also found out we could get financial support from the German government for improving the energy efficiency of the inverters." Martin



Foto: Leidorf

Headquartered in Bavaria, Germany, FLACHGLAS has served both architectural and transportation companies Europe-wide since 1938. Upgrades to its coveted GLASTON equipment have accompanied both environmental and financial benefits, seeing the group earn ISO 50001 certification - all with improved energy efficiency and sustained success.

and his team decided in the spring of 2022 to upgrade both the ProE and the HTF by modifying the blower drive with Glaston's Variable-Speed Blower Control System (S™) and the Integrated Blower Vibration Monitoring System (BMON). "We chose the Variable-Speed Blower Control to reduce energy consumption. We no longer need to wait for the blowers before stopping to reset the blower mode when changing from 4-mm to 8-mm glass. This enables our production to be more flexible, cost effective and fast," Martin says. The reason for the Vibration Monitoring system is to improve blower reliability and to

avoid any crash of the blower wheels. For the work the furnaces were shut down in February 2023 for a total of five days. "We experienced a few small issues, like the chiller profiles being more precise, so we needed to change the programmes. This was unexpected both for us and Glaston. Still, it was a very good project overall," Martin says. "In the end, we lowered the total annual amount of kilowatts we use in production with these projects - and now we're saving." Flachglas already has its next upgrade project planned for January 2024 when they'll modernize an existing lamination line with a Glas-



ton ProL-zone.

IMPROVING OVERALL ENERGY MANAGEMENT

Says Martin: "These upgrades have helped us maintain -and even expand- our strong market position in Europe - despite the pandemic and intensifying competition." With upgrades being such a good opportunity to improve energy consumption, he's proud to point out that Flachglas has also earned the ISO 50001 certificate for its commitment to efficient energy management. "By just changing the furnace or adding new components, we have gained better process quality," he concludes. "We can also do something good for the

environment by running our machines longer. And, most importantly, upgrades help us to drive savings."



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IG leader PREDARI VETRI bets on LiSEC TPA technology

Founded in 1960, Predari Vetri SPA is a three-generation family business that has grown into a leading producer of insulating glass in Italy. While the production of all types of insulating glass, including warm edge, is its core business, the company's portfolio is rounded out by an architecture division that manufactures made-to-measure products with laminated and tempered glass. 130 employees at three Mantua production sites process over 3,000 square metres of monolithic glass and 3,000 square metres of laminated glass per day. Supplying large Italian producers of PVC, wood and aluminium windows, they generated a turnover of EUR 40M in 2022.

MAXIMISING CUSTOMER-CENTRICITY: A STRATEGIC APPROACH

Says company Managing Director Daniele Predari: "As for the secret to our success, what makes us stand

out is customer service. We are focused on a limited number of major Italian window manufacturers and our factory is optimised to meet their needs. Our large production and logistics capacity allows us to offer the 'just in time' delivery that the most demanding customers require. This strategy adds

value to our products and has allowed us to build very strong, loyal relationships with our customers."

Running several production lines over three shifts, Predari stresses that premium products are made by well-trained, knowledgeable personnel: "For me, it's the person, not the machine,

that has the most value for the company. It's they who are responsible for the best performance." The same conviction is reflected by the company's investment in regular training for its operators, but also in high quality technology. "For us it is essential to have techno-



Partnering with LiseC to keep its celebrated product quality ship shape, PREDARI VETRI has always taken pride in its customer service and super-skilled staff. Now, as it stands primed for more growth in a competitive market, the company is leveraging the support of LiseC to take its signature expertise and reliability to even higher standards.

logical continuity. Operating many production lines, we need uniformity to manage staff turnover while always producing products in the same way.”

EXPLORING INNOVATION: THERMOPLASTIC SPACER TECHNOLOGY INTEGRATION

As a quality-conscious company producing high volumes, Predari Vetri looks for suppliers just as focused on its requirements as it's focused on customer needs. The company's collaboration with LiseC started in the early 1980s with an insulating glass line, a profile bending machine and an automatic float cutting line with loaders that continues to this day. At the 2022 Glasstec trade show, Predari Vetri decided to invest in the exhibited LiseC insulating glass line with warm-edge TPA technology. Says Predari on the reasons for this decision: “We see a change in the Italian market regarding intelligent customers and products. The share of PVC windows especially in residential construction has grown strongly. In our opinion, TPA products are ideal for residential construction, which

requires neither very large sizes nor special glazing with great weight. The high flexibility regarding thickness is another advantage.”

Realised in the proven long-life and low-wear LiseC machine design, the LiseC TPA ensures superb spacer extrusion quality with intelligent features like the flow measurement system on the applicator head. The system checks whether the correct amount of material is used throughout the entire process. High precision dur-





that combines decades of experience in IG production of insulating glass with high production figures and excellent quality standards. The group jointly operates 28 factories with 900 employees and processes 2,8 million m² of insulating glass per year, with a turnover of EUR 160M. Says Predari on current and future trends: “At the moment, the fastest developing sector is that of residential construction. Customers demand insulating glass with the best visual quality and large industrial manufacturers need total reliability regarding delivery times. Our market grows increasingly competitive, our customers are growing considerably in size, and they need products and services that are suitable for highly-organised and productive industrial realities. Our goal is to continuously improve quality and production efficiency and to grow as a company by both internal and external lines. Here Lisec can support us by giving us the best technical know-how as well as reliability both in plants and in scheduled and unscheduled maintenance.”

ing the application process guarantees consistent end-products that match production specifications with precision. After the TPA material is applied, a closing device refines the connection points to achieve not only unrivalled unit gas tightness, but also a smooth, aesthetic result. The material storage integrated into the machine allows a fast application speed and an uninterrupted production ideal for large volume output. Says Predari on what makes Lisec a unique partner: “We know Lisec as a reliable and innovative company with a strong research and development team. Its great advantage has always been the ability to test the systems in its own production, the Glasstech, before offering them on the market. Lisec systems allow us to create products that meet the technical and qualitative

requirements of our customers.”

CULTIVATING STRENGTH: THE VALUE OF STRATEGIC PARTNERSHIPS

Current governmental tax incentives for residential and

public energy renovation make Italy a strong market for IG solutions. To meet customer demand with united buying and selling power, Predari Vetri founded the Glass Group, established in 2009 - a union of 23 leading Italian glass manufacturers

ABOUT LISEC

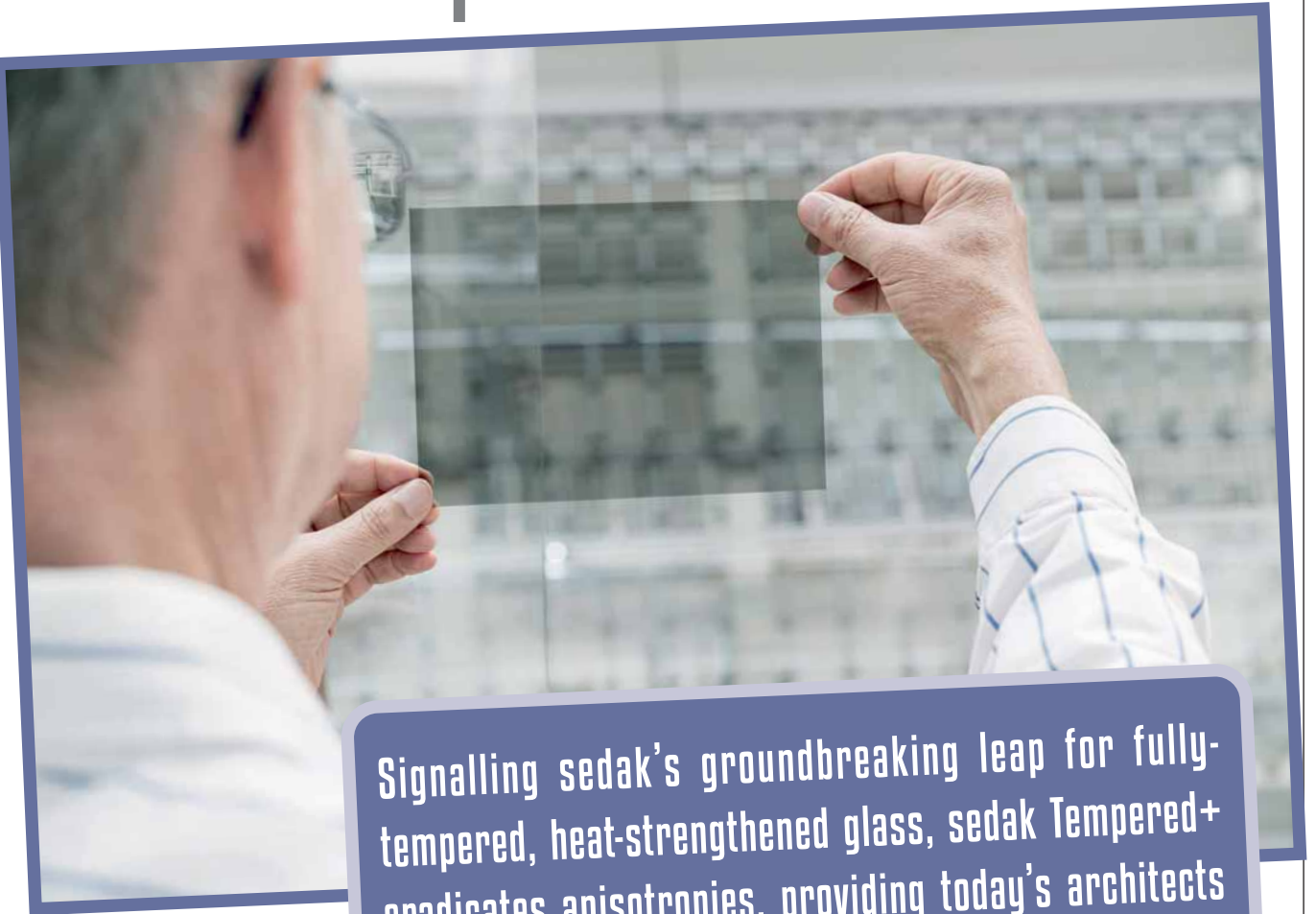
Headquartered in Seitenstetten/Amstetten, LiSEC is a globally-active group that has provided individual and comprehensive solutions in both flat glass processing and finishing for 60 years. Its service portfolio comprises machines, automation solutions and services. In 2021, the group, with circa 1.100 employees and over 20 sites, achieved an export ratio of more than 90 percent and generated sales of more than EUR 200M. LiSEC develops and fabricates glass-cutting and sorting systems, single components and complete production lines for insulating glass and laminated glass fabrication, as well as glass edge processing machines and tempering machinery. With reliable technology and intelligent automation solutions, it sets both quality and engineering standards and significantly contributes to the success of its customers.

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SEDAK launches first tempered glass without anisotropies



A recent unveiling of sedak's latest innovation saw the leading glass manufacturer showing off its sedak Tempered+. This groundbreaking advancement represents a

Signalling sedak's groundbreaking leap for fully-tempered, heat-strengthened glass, sedak Tempered+ eradicates anisotropies, providing today's architects with superior optical quality - independent of lighting conditions. Poised to set new industry standards, the patented tempering process is especially beneficial for multilayer laminates.

new era in fully-tempered, heat-strengthened glass - which is characterised by a complete absence of anisotropies. Employing a revolutionary tempering process, the company now presents customers, architects, and developers with tempered glass that boasts superb optical qualities - regardless of viewing angle or lighting conditions.

WHEN RESEARCH PAYS OFF

Expressing the company's unwavering commitment to meeting the evolving demands of architectural and building design, Kevin Berni, Head of Sales at sedak said: "Among the demands we must face is the eradication of anisotropies. Here we have invested significantly in our research and development efforts to eliminate such optical anomalies that occur during tempering. Today, we are setting new benchmarks in the world of glass. Indeed with sedak Tempered+ we have taken the tempering process to new levels, which also realises the ambitions of architects, namely heat-treated glass that's free of the disruptive presence of anisotropies. That consigns the era of rainbow patterns to the past. Instead, pattern-free tempered glass is the current reality."

ERADICATING ANISOTROPIES

Tempered glass holds a pivotal role in architectural design, given that thermal toughening transforms glass from a brittle, fragile mate-

rial into one of strength and resilience. However that comes with the drawback of anisotropies. Known as double refraction, this phenomenon arises due to induced thermal stress -

manifesting as a shimmering effect within the glass (commonly referred to as interference colour). In stark contrast to conventional tempered glass, which frequently exhibits noticeable





degrees of visible anisotropy, sedak's Tempered+ stands apart as entirely free from anisotropic effects. Fritz Schlögl, Head of Research and Development at sedak, elaborated on this groundbreaking achievement: "Anisotropies in

glass are typically deemed inevitable. Nevertheless, that risk can be mitigated with a well-crafted furnace programme. Through our patented tempering process, we have succeeded in minimising this effect to

negligible levels. It's nothing short of revolutionary, particularly in the context of multilayer laminates, where the effect tends to compound. With sedak Tempered+ the presence of anisotropies has been reduced to a minimum."

requirements expected of tempered glass, thus adhering to industry standards whilst delivering both exceptional clarity and optical quality. Available for both fully-tempered and heat-strengthened glass, sedak Tempered+ signals a remarkable advancement in the world of architectural glass solutions.



TEMPERING WITH EXCELLENCE

Much like conventional tempered glass, sedak Tempered+ undergoes the standard process of heating the glass to a high temperature, typically around 640°C (1,184°F), followed by rapid cooling using air fans. Through cutting-edge manufacturing techniques, sedak Tempered+ continues to meet all the technical

sedak GmbH & Co. KG

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SVOBODA SKLENÁŘSTVÍ

customer satisfaction
together with
A+W SOFTWARE

As a glass manufacturer in the Czech Republic, SVOBODA SKLENÁŘSTVÍ has always focused on optimum quality to ensure customer satisfaction. The company has both thrived and expanded together with A+W Software, who've been their software partner since 2004. Together they accomplished an improvement of efficiency by 20 percent. Today plans for automation show how innovation continues to pay off in growth terms.





ERP system, a transition aimed not only at updating the software but also at aligning it with Svoboda's vision - all the while preparing the company for the future. Indeed A+W Business Pro now enables office-based production control even as it offers a comprehensive overview of all production processes. This allows both employees and customers to access precise information about the status of orders. Also, some automated stock management is now possible. Importantly, this transition has been smoothly managed remotely, which underscores the excellent coordination between Svoboda and A+W. With the support of EU subsidies, Svoboda then expanded production to include a cutting-edge

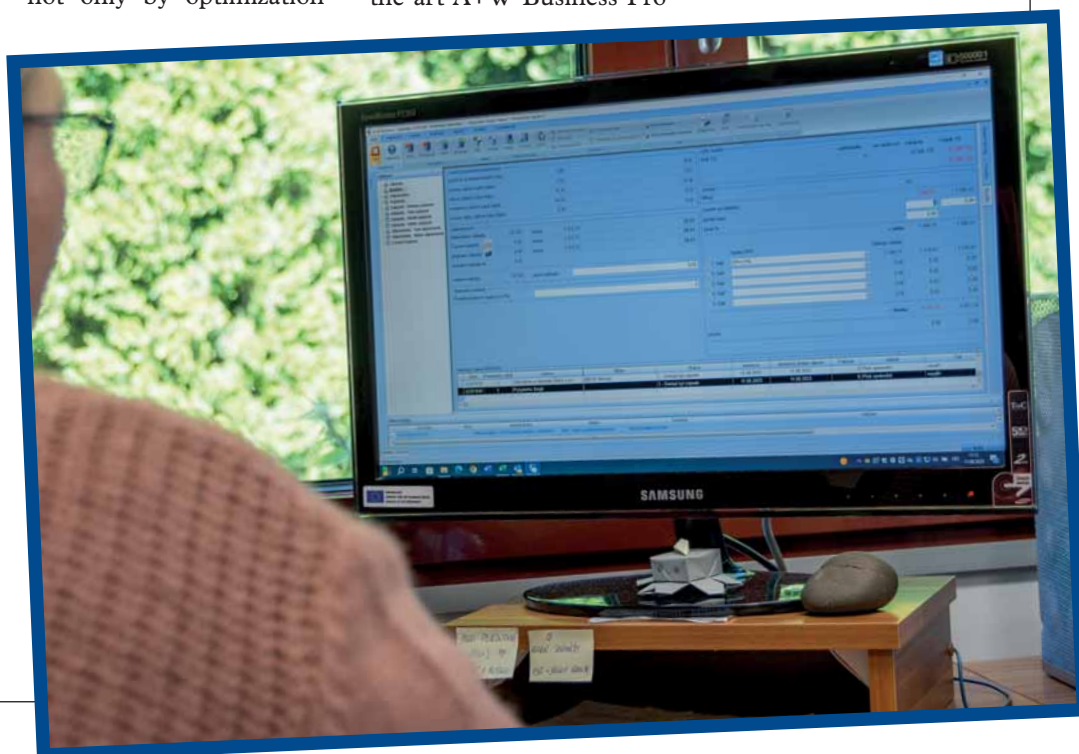
'Satisfied customers will return.' Such has always been the guiding principle of Managing Director Svato-pluk Svoboda of Svoboda sklenářství, a Czech manufacturer of high-quality glass which serves both corporate clients and private customers. Embarking on his entrepreneurial journey in 1992 at the age of 17, Svoboda founded his glass enterprise in the small Czech town of Pohořelice near the Austrian border. Over the years he went on to transform a modest workshop into a thriving company of 25 employees that specializes in a wide range of glass processing services - from cutting to insulated glass production. Here what has set Svoboda apart is an unwavering commitment to delivering customer satisfaction - regardless of project scale. By that acknowledgement, Svoboda insists that 'we serve everyone - even if it's just for small lantern

panes.' But as the company expanded, so did its software needs. Here the partnership between Svoboda sklenářství and A+W Software commenced in 2004 as the two implemented the Alfak-XOPT2000, a lean software solution for data recording and glass optimization. It marked the beginning of a relationship that was characterized not only by optimization

efforts but also by strong mutual trust.

A TRAJECTORY OF SUCCESSES

Since then Svoboda sklenářství has faithfully integrated A+W Software solutions. In 2022 a significant change occurred when Svoboda bid farewell to Alfak-XOPT2000 and embraced the state-of-the-art A+W Business Pro





Bottero cutting table - with A+W software controlling the automatic labeling of glass lites. The seamless integration of the new table was facilitated by A+W's excellent connection capabilities as well as its long-standing relationship with machine partners.

IMPLEMENTATION

Peter Kénesy provided invaluable support to Svoboda throughout the implementation process. His dedication and problem-solving skills ensured a smooth transition - earning high praise from the Managing Director for such exceptional customer support. Here the results turned out nothing short of remarkable. Indeed A+W Business Pro has increased processing efficiency by 20 percent, optimized preparation time and improved

office workflows. The software's intuitive configuration has empowered Svoboda employees to focus upon delivering quality products with punctual delivery. Now Svatopluk Svoboda envisions a promising future that's driven by the potential of A+W Business Pro.

MOVING AHEAD

Plans are already in place to acquire a new Schraml processing line with further steps to optimize production on the horizon - including the implementation of automation through machine control. Svoboda Says: 'We will next implement an A+W Production Terminal and A+W CAD Designer. That would hardly have been possible with the old software!' Such enhancements will enable

employees to generate NC code for controlling processing machines and create drawings of fittings and glass designs with ease. While the transition to A+W Business Pro has required some adjustment for staff, the founder's willingness to embrace this change has certainly paid off. Quality and timely delivery remain the cornerstones of Svoboda's philosophy, and A+W Business Pro allows him to uphold these values while driving growth. In a world where innovation is a key driver of success, Svatopluk Svoboda's journey with A+W Software's solutions exemplifies the power of a strong partnership. Starting from humble beginnings and now operating in a spacious 600 sqm production. Svo-

boda sklenářství's founder continues to deliver high-quality work - all supported by cutting-edge technology and an unwavering commitment to customer satisfaction.



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Glass tempering: **MAZZAROPPI'S** energy-efficient solutions



A glass tempering leader since 1958, MAZZAROPPI specialises in sustainable, energy-efficient furnaces that are engineered to cut costs by reducing consumption. Offering flexibility, its systems will heat rapidly, which is how the company is assisting small and medium-sized glassworks to drive savings by enhancing their tempering processes. Mazaroppi also offers a complimentary energy check and feasibility study to identify potential savings.

According to Mazaroppi, today's most efficient furnaces can save up to 70 percent energy. Such is the energy-saving approach by which the company makes glass tempering sustainable both for the environment and for its customers. This can come as a relief to companies wrestling with the large consumption of their tempering furnaces - especially when the machines themselves are low-tech or obsolete.

Known internationally, the focus of Mazaroppi's attention has always been the achievement of an important goal - namely that of significantly reducing the requisite energy costs of tempering furnaces.

TP COMPACT

Initial results have already been successful. An example of this is Tp Compact, the tempering furnace designed, engineered and

manufactured by Mazaroppi with all those small and medium-sized companies in mind that have hitherto been hesitant to venture directly into glass tempering owing to the considerable costs of adapting and using a tempering furnace. Says General Manager Antonio Mazaroppi: "Those experienced in the tempered glass industry are familiar with the classic problems associated with furnaces - the significant size of the electrical system that's required, the huge energy costs of production and, above all, those unsustainable costs associated with the dated notion that a tempering furnace can never be turned off. We wanted to challenge those assumptions."



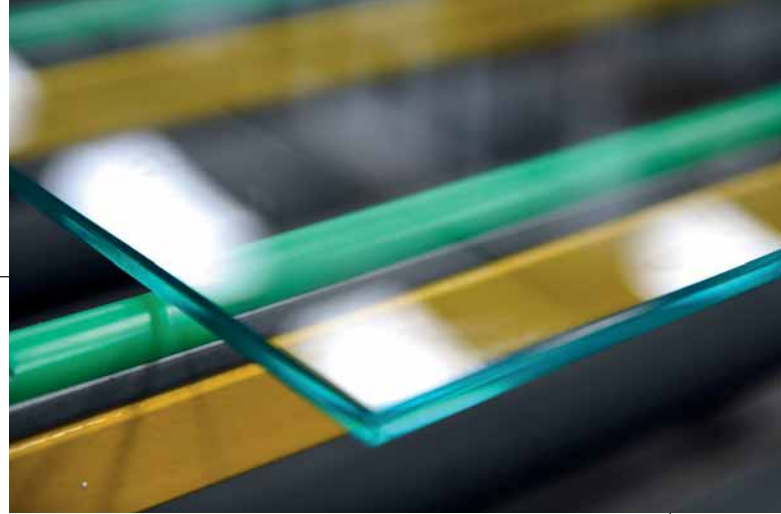
ENERGY SAVING

“The solution to these problems,” explains Antonio Mazzaroppi, “is to design furnaces with new vision by focusing on energy conservation and integrating them into the context of Industry 4.0. It’s that idea which gave rise to our energy-saving approach: designing and manufacturing sustainable machinery both for the environment and for businesses.”

Indeed Mazzaroppi systems -including TP Compact- ensure a low energy consumption within the industry while offering high efficiency and providing such performance capabilities as:

- Lower initial cost: the price to be paid for a Mazzaroppi furnace substitution can be up to 70 percent lower than that of the company’s competitors;
- Consumption in production of up to 100 kWh: up to three times less than many other tempering furnaces on the market.

- Zero unproductive costs: furnaces can be turned on and off as desired because they reach temperature within just 60 minutes. In the case of TP Compact, temperature is reached in 30 minutes in the days after the first use;
- Lower fixed cost for contract kW: companies can obtain more favourable contracts with energy suppliers precisely because of their consumption reduction;
- 40 percent residual value at ten years: according to Mazzaroppi, one of



its furnaces will not only mean utility bill savings - it will also protect the purchasing company’s investment.

FREE COMPANY CHECKS

“In a long-term investment like a tempering furnace,” concludes Antonio Mazzaroppi, “operating costs far exceed those of the initial investment. With our engineering technology these operat-

ing costs are reduced.” In sum, the company pledges that with one of its furnaces even small and medium-sized glassworks can perform the tempering process in-house without the worry of having to temper constantly to meet huge monthly plant costs. For companies interested in optimising the energy efficiency of their quenching processes, Mazzaroppi offers a free energy-saving check, which includes a feasibility study that will indicate to companies how much it is wasting on energy and how much it could potentially save.

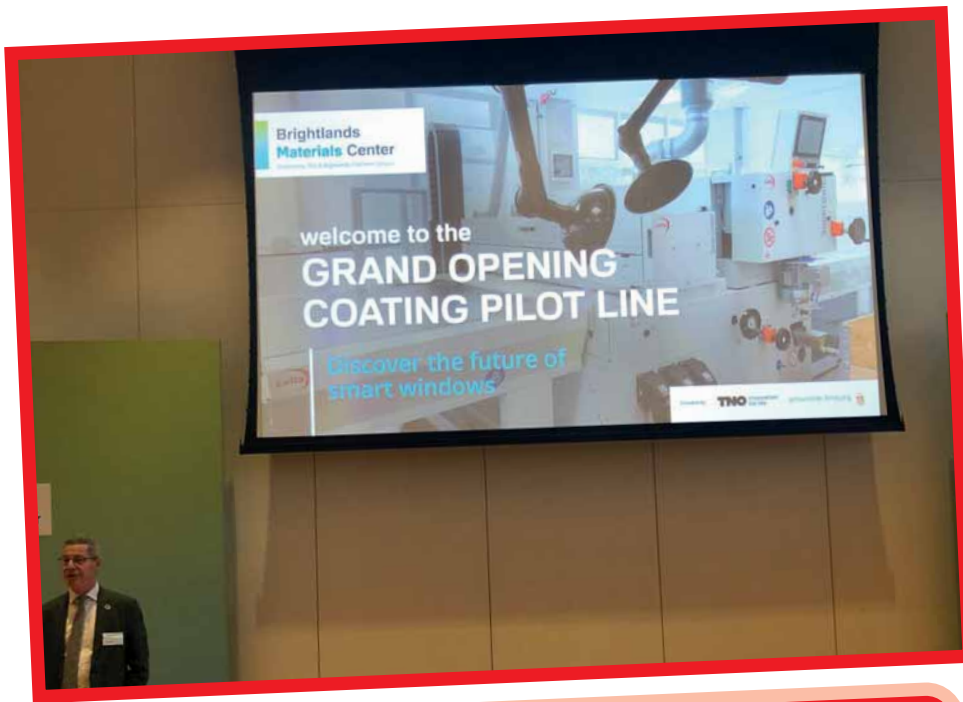
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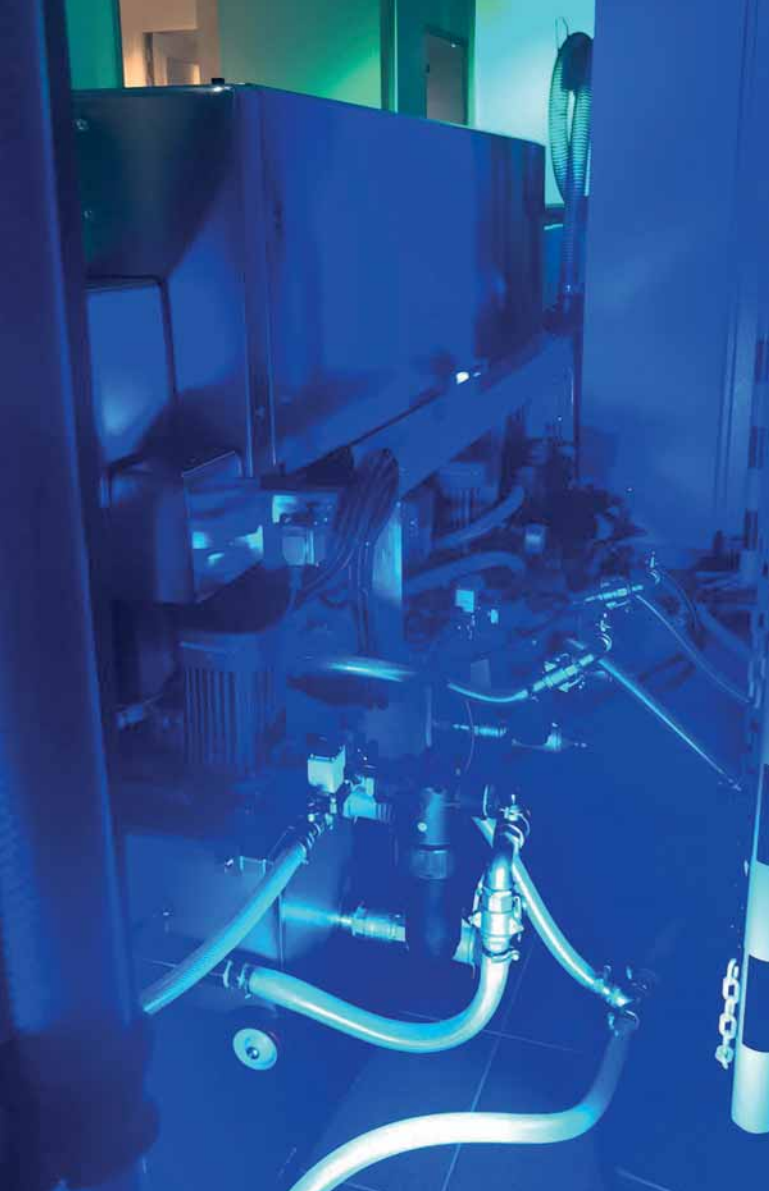


New pilot line has **TRIULZI** proudly flanking Brightlands Materials Center



In a project supported by Triulzi from the outset, the first coating pilot line for smart windows was inaugurated recently at the Brightlands Chemelot Campus in the Netherlands - with one of the company's machines, the TOSCANA.Y.1000 model, being included in the process. Following years of research to find an intelligent solution to control temperature and comfort in both households and commercial buildings, the team at Brightlands Materials Center has developed a smart thermochromic coating which can power on automatically - keeping homes cool in summer and simultaneously transparent for solar heat during winter days. This makes it possible to substantially reduce both cooling systems use (e.g. air conditioners) and heating systems (powered by gas, wood or pellets). Here the thermochromic coating powers on automatically from a certain temperature,

With the support of TRIULZI, the BRIGHTLANDS MATERIALS CENTER in the Netherlands recently launched a coating pilot line for smart windows which features a self-regulating thermochromic coating that cuts energy consumption. Here the joint aim is to expand the technology while testing demonstration windows - all to align production with UN sustainable development goals.



thus allowing windows to be placed in regular frames (without electrical systems/wires), which significantly reduces pollution and waste.

THE EVENT

Officially presented to the world on September 10, the new pilot plant only marked the first step along an ambitious journey that will bring much satisfaction to the Brightlands Material Center. The next goal is that of scaling the process while creating demonstration windows with SunSmart coating that can be tested in the environment of a real occupied building - a unique opportunity that will allow companies, industry professionals and end-users to all

experience the real difference that Smart Windows can make within the field of automatic temperature regulation.

PARTNERSHIP

Triulzi chose to collaborate with Brightlands Materials Center (a joint innovation centre founded by TNO and the Province of Limburg) owing to its tireless efforts to develop innovative materials for a sustainable future. Furthermore, in the field of sustainable buildings, the centre has the aim of 'building a brighter future through the power of sunlight' - a goal that's also achievable by exploiting the characteristics of glass. Besides this synergy related to

the material on which, in recent times, Brightlands Materials Center's research has focused -as in the Smart Windows project- another common point it shares with Triulzi is that of desiring to build a greener future. Indeed Triulzi works with particular commitment to the sustainability of production processes and solutions - all with a view to arriving at the right balance for the environment.

RESEARCH THAT PAYS DIVIDENDS

Such continuous research results in the creation of increasingly efficient and eco-friendly machines. Indeed it's thanks to the latest generation of electronics that Triulzi machines can cut both energy consumption and resources in a 'compromise' that doesn't penalize the final result. However it doesn't end there. Triulzi is concretely doing its part to achieve some of the 17 goals for sustainable development (SDGs) that have been formulated by the United Nations General Assembly (Agenda 2030). This commitment guides both Triulzi's behaviour and its company choices such that it ensures daily that the impact of industrial activity remains limited. Here reduction of energy consumption and waste, coupled with circularity of materials, are all keywords that guide Triulzi operations - allowing the company to develop solutions characterized by a life

cycle that lasts. Here's why, in its support of research together with the development of solutions that can contribute to an increasingly green future, Triulzi is flanking both institutions and private organizations that have projects which can concretely revolutionize day-to-day activities respecting sustainability and recycling. Indeed the Brightlands Material Center pilot coating line for smart windows is testimony to precisely this commitment.

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Innovative **FILTRAGLASS** systems see **GLASHAERDIET** driving production further

With over 20 years of leadership in water filtration, **FILTRAGLASS** systems are transforming the flat glass industry. Renowned internationally, they're much sought after in both automotive and optics as well. Indeed the company's cutting-edge solutions now reach the Americas, Europe and Asia - with its latest system recently installed at **GLASHAERDIET**.



Glashaerderiet recently reported a number of motivations for choosing Filtraglass systems. First of all, having a water treatment solution in place soon enabled the company to significantly reduce its water consumption. Then, given that water changes necessitate no powering off of the machine, Glashaerderiet has been able to improve its production rate while reducing pollution. A further vital factor has been the company's use of clean, good quality water in its handling machines - which has them lasting longer, with parts that don't require frequent changing. Similarly, as the water can remain unchanged, Glashaerderiet can now reduce coolant consumption.

A BRAND THAT SPEAKS VOLUMES

Here Filtraglass was chosen for being a brand with many years of experience that enjoys worldwide acclaim. The company also reports that Filtraglass quickly proved itself reliable and professional right from the outset - leaving Glashaerderiet confident it had made the right decision. At their initial meeting, the needs were quickly understood and the company was given customised advice on which system would meet its requirements - with a professional attitude and attention to detail being always key. Also, the fact that the installed systems now enable Glashaerderiet to do

its bit for the environment have signalled a further plus. Already a noticeable difference has been the reduced Glashaerderiet bill for its water supply and though the company emphasises two further changes, namely an overall improvement to the quality of the final product with glass exhibiting a transparent finish with no signs of dust marks and debris. The same sparkling finish reflects positively on the quality of the product offered and the reputation with customers. Furthermore, productivity has increased given that the production line needn't be stopped for maintenance work anymore. Instead the machines are working non-stop, with the company being able to offer more in the same amount of time.

A SOLID CONNECTION

As to its relationship with Filtraglass over time, Glashaerderiet reports a very positive business duo - right from the start. This began with advice before it purchased the machine. It continued with installation which, say company sources, went very smoothly, while a technical and after-sales service was always ready to hand. Here the Filtraglass team consistently showed itself willing to help with the resolution of any queries or problems whenever they arose - with the possibility of contacting them in a variety of practical ways, including WhatsApp. Indeed from the mo-



ment the company started working with Filtraglass, the team has been monitoring systems to ensure they run smoothly, always offering to help when necessary - all in an excellent relationship and after-sales service which has been another real advantage, along with everything else the company offers.

A GLANCE AHEAD

As for the future of the glass industry, the Glashaerderiet leadership team has spoken of anticipating more centralisation by larger, established companies. These have a broader approach to optimising general operating costs, maintenance of machines - all while focusing on the green transition. Already the company is seeing that thinking about the environment and meeting customer demands for sustainability is gaining more traction in the Nordic countries. Here, opines Glashaerderiet, deciding upon a transition in one's company from a more traditional operation to taking environmental responsibility

into companies is a big decision which involves much work - something everyone will have to do sooner or later. To that end, the company anticipates that those with a headstart will have a better competitive edge and be stronger in the market. Already now EPD - LCA - ESG has become the focus - and will be for many years to come. Here the prediction is that those in the glass industry who dare to take the plunge into a greener future will likely reap the greatest advantages.

Filtraglass SL

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Compact 4C: **CUGHER's** high speed answer for screen printing

Ever precise, screen printing on glass could always distribute ink uniformly along entire surfaces - thereby ensuring high coverage. The reliability of such technology was the company goal behind both the design and production of Cugher's machine range - all characterized by advanced engineering while being easy to use and maintain.

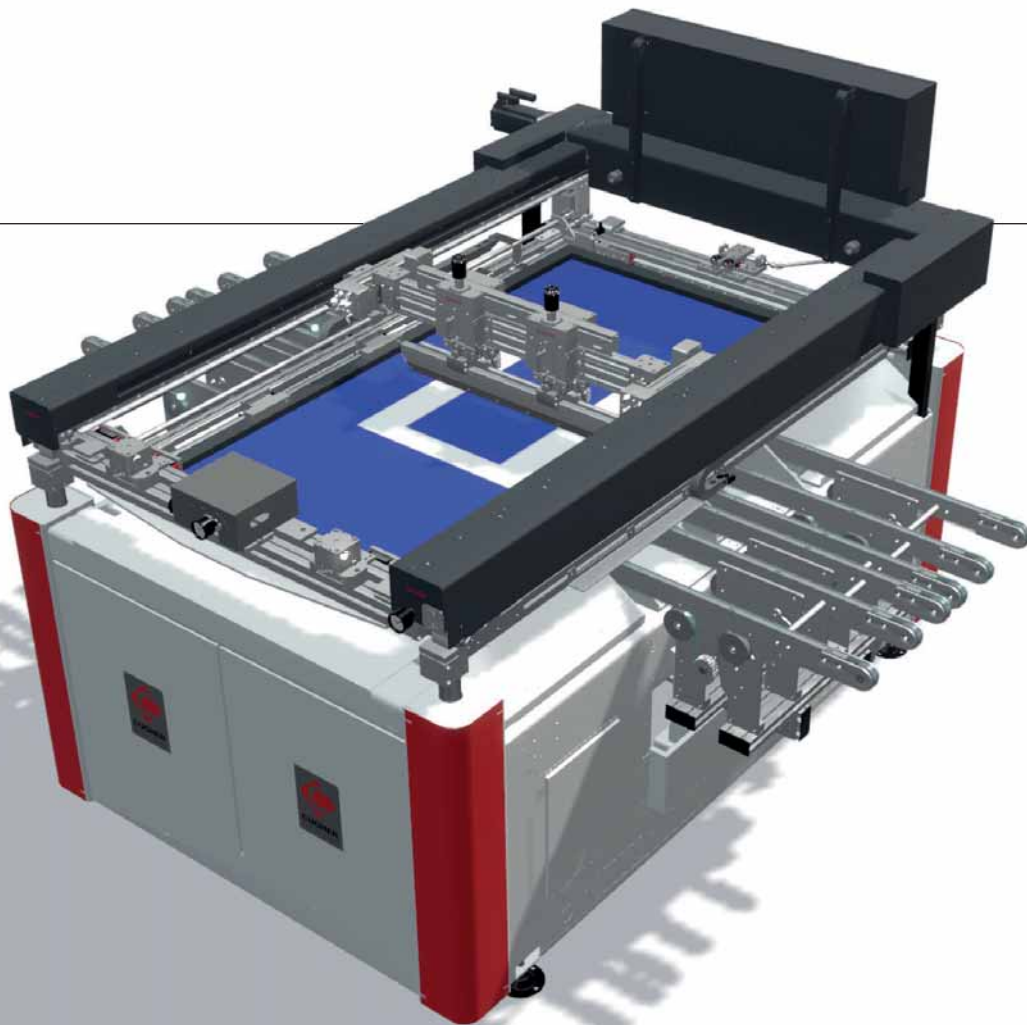
MACHINE PERSONALISATION

Each machine is calibrated to offer high performance based on the glass to be printed - which must have precise requirements that are linked to industry affiliation. These include glass dimension, thickness of deposited ink or print repeatability. Here we add the needs of different producers - which may vary, depending

upon the print number for each glass as well as plant productivity. Against that backdrop it can be a challenge to find a standard machine that will satisfy every request. For this reason Cugher has decided over years to adopt a customer-oriented approach by which to highly-personalize each machine. Creating new models comes as the immediate consequence of explor-

Offering customized solutions in glass screen printing for the Home Appliance sector, CUGHER has done it again with its Compact 4C, which excels at printing larger glass sizes at high productivity. The fully-automatic machine integrates advanced features whilst offering cost-effective, precision printing as well as quality control options - all to satisfy diverse customer demands.





ing market and customer needs, as happened for the newest Compact 4C - evolution of the consolidated Compact Series that, for years, Cugher has distributed to Home Appliance customers that produce cooktops and glass for household appliances - also drilled.

THE COMPACT SERIES

The Compact Series is designed to be a fast machine for squared and rectangular glasses of small and medium dimensions to guarantee high productivity.

Consequently its evolution, the 4C, cannot fail to obtain the same performance. The peculiarity of this new model is the capability to process bigger glass compared to the basic one - from a minimum of 150 x 50 mm up to a maximum of 1300 x 700 mm. This is possible because the new structure with four columns is able to sustain a greater weight of a wider printing head compared to the traditional model - everything, precisely, without sacrificing productivity. The new printing head is designed to accom-

modate Cugher's E2E system for printing right up to the edge - a feature that's increasingly taken into consideration, also in the home appliance sector, and achievable only with screen printing.

THE COMPACT 4C

Always compared with the basic Compact, the 4C has new functionalities that are widely appreciated by buyers and typical of more expensive models, namely frame cleaning with extraction without losing register and print-

ing bridge rotation for squeegee and flood bar changing. The Compact 4C is fully-automatic, meaning that glass arrives at the machine entrance through a belt system where it's pre-aligned to optimize the cycle. The glass is then transferred to the printing table, made of aluminum with a scratch-resistant surface, then perfectly centered before printing takes place. The printing phase is quick and precise. All parameters can be set through the operator panel, from squeegee and flood bar



pressure and speed to frame regulation up to peel off height. The Compact 4C allows for the processing of big, symmetrical batches in reduced times - ensuring, for example, 550 pcs/h for glass with dimensions of 1144x692 mm. Printing precision between every piece is +/- 0,08 mm, which gives standard quality to the final product. As with all Cugher machines, this one can be integrated in line with innovative vision sys-

tems for quality control - both for glass and printing.

PROMISING AS ALWAYS

As for the introduction of this new model among its products, Cugher reports confidence that it can satisfy an increasing number of customers. Indeed, besides the features aforementioned the Compact 4C has a considerable commercial advantage, being a machine that can process bigger glasses com-

pared to the basic model - only with the same performance and without resorting to larger and more complex machine models. This definitely comes as more cost-effective compared to many other solutions. The Compact 4C is an excellent compromise between agility and dimensions. As such, it can enter the production plant of glassworks that seek reliability and high performance with a partner like Cugher - a company that can sup-

port customers at every stage of a machine's life, from installation to periodic maintenance.

Cugher Glass Srl



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STRATO[®] has SATINAL conquering new frontiers in social evolution

In the wake of the pandemic, purchasing priorities quickly shifted towards simplicity, nature and a greener consumption. Ever at the ready, SATINAL has shown itself prompt once again in responding to evolving consumer sensibilities with eco-friendly, made-in-Italy solutions in laminated glass and solar panels, with more besides - all with certified carbon neutrality and supply chain traceability.

commitments have changed too. For many a new level of happiness is now characterized by an enjoyment of simple pleasures. Today the priority is to find the right balance between social success and the private sphere. It is even a new and unique desire to live in contact with -and respect for- nature. Consequently there is a stronger sensitivity towards such issues as sustainability and ecology. Social evolution must be strongly taken into consideration to better understand people's decision-making as it plays an important role in influencing purchasing behaviour. In order to configure specif-

According to recent studies, the 2020 global pandemic led to different considerations around family spaces and natural environments in a back-to-the-origins evolution that edged society towards appreciating more everyday, essential surroundings. Attitudes towards time and daily com-



ic products, companies have been aligning themselves to new needs influencing social evolution - all while translating them into products that can fully reflect the new attitude. At the same time it's necessary to adopt both an analytic and an empathic approach to dealing with human decisional processes and needs while designing innovative products that are in line with the new expectations. In this context, two main topics come across that are closely related, namely sustainability and colour trends. Indeed people's feelings and their vision of the social environment are related to colours - the key to interpreting how they see the world. According to recent studies, the trend nowadays is towards research and the choice of products that have natural and soft colours which reflect calmness and peace of mind. Following this transformation, STRATO® has been translating these new global attitudes by mixing colours and finishings with new sustainable products as well as prime quality raw materials.

LAMINATED GLASS - MITIGATING CLIMATE CHANGE

The looming climate emergency has been urgently demanding a strong turnover. Companies are taking care to bring a gear shift and a responsible approach within their supply chain - taking decisive steps towards a

brighter, greener future that can lead to an ecological renewal of market dynamics. Here, in facing all such social dynamics, STRATO® is in lockstep with market evolution according to specific criteria and influenced by contemporary social self-awareness as it relates to the world we live in. Low-carbon solutions can hardly be neglected. Here's why, by this scenario, STRATO® has adopted a sensitive approach and has been investing in transformative, next-generation technologies to achieve net-zero. In fact STRATO® has recently been the object of in-depth analysis that aims to assess the environmental profile of its product range in terms of CO2 impact - always considering the life cycle of the materials and secondary products involved. Results obtained confirm that the STRATO® EVA Carbon Free range is indeed conspicuous in Europe as a carbon neutral product range. Here STRATO® obtained the ISCC PLUS certification with a score of 1,13 [kg CO2 eq]. Moreover, with 1.13, the environmental profile of STRATO® is a reference score for developing a road map toward zero-carbon aspirations in 2050. Indeed the challenge is to create a sustainable option for customers who would then purchase responsibly - always with an eye to the global warming impact. Here STRATO® meets the sustainable standards





thanks to its outstanding company behaviour. Regarding green energies, Satinal has opted for 100 percent clean electricity only, which is produced by clear waters flowing from the Trentino Mountain peaks. This avoids the emission of 167,8711 tons of CO2 in 2022 - all to preserve the planet and ensure a sustainable future for new generations. Solar panels are being used as well, with 500 pan-

els with a power output of 200 kWp being exacted and installed on the roof of the company. These have been providing alternative energy for all Satinal's business departments - significantly reducing CO2 emissions.

SUPPLY CHAIN TRACEABILITY

Developed by Satinal, STRATO® EVA's unique production technology is a result of years of experience and methodology that leads

to no waste. As for the supply chain, ISCC PLUS certification measures the CFP level with the Mass Balance Approach. A further STRATO® certification is that which attests to Made in Italy. In 2023 STRATO® was acknowledged as a high-quality Italian product by the Institute for the Protection of Italian Producers - primarily thanks to Italian natural and first choice raw materials. No wonder, then, that STRATO Solar® PV is a recognised answer to greener photovoltaic solutions. Ethylene-co-vinyl acetate (EVA), too, is currently the dominant encapsulant chosen for PV applications. Moreover, a STRATO Solar® PV bio-based product range has been designed - a sustainable choice aligned to current market demand.

COLOUR TRENDS REFLECTING SOCIAL DYNAMICS

- STRATO® COLOUR is an excellent solution for customizing buildings or interior design with a touch of colour - all without compromising the natural light of living rooms. It's great for creating interesting atmospheres without losing the visibility of the environments.
- STRATO® Colour Carbon Free product range offers multiple choice in terms of green, natural and trend nuances, transparent or solid tones.

- STRATO® Colour can play with colours and patterns - mixing them to provide multiple solutions that can match sustainability and contemporary trends.
- STRATO® Azzurro Mediterraneo, STRATO® Verde Toscana, STRATO® Bronzo Sicilia and more. All evoke memories of natural, authentic spots that have a place in everyone's mind.
- STRATO Solar® PV ColorQuant™ is testament to how helping the world become carbon-neutral is a declinate balancing act - especially with buildings.
- STRATO Solar® PV ColorQuant™ meets style preferences as highly effective option for reducing the carbon footprint of buildings.
- STRATO Solar® PV ColorQuant™ affords customers the opportunity to choose natural colours with solar panels that can be superbly integrated into both buildings and facades. The result is a strong and green aesthetics appeal - in line with contemporary needs.

ABOUT SATINAL

The first EVA film production site in Italy and a reference point in Europe for the supply of 100 percent made in Italy STRATO® EVA interlayers, Satinal Spa is an innovation-driven Italian company that operates worldwide to deliver advanced solutions for safety glass manufacture. Always close to its customers and partners, the company offers tailored, innovative solutions as well as technical after-sales services. Quality control, too, is commonplace in the company's R&D Lab. Here its mission is to constantly offer prime quality that's also green as product, in line with the Group's core values - all while responding to a demanding clientele that's increasingly attentive to sustainability issues and to a low environmental impact behaviour.

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TK - Strato

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VITRUM

POST SHOW 2023

At Vitrum DELTAMAX showcases defect inspection and glass control solutions



In an interview with the editorial team of Glass Technology International at Vitrum this year, DELTAMAX Sales Manager Gianluca Diener underscored the singular importance of ongoing innovative contributions to the industry. Here he sheds light on the exciting technologies his company has developed in recent years.

GTI: Can you describe how things have gone in 2023 as compared with 2022?

Gianluca Diener: The year currently drawing to a close has been, without a doubt, the most financially successful of the two for Deltamax, with rev-

enues expected to exceed EUR 2 M. That's continuing the growth trend disrupted only in 2020 by the pandemic. Compared to 2022, the leap in terms of revenue and provided systems is substantial - marking a significant increase. Consequently, the



GlassInspector

entire company structure is undergoing adjustments - with expansion seen both in technical personnel and beyond.

GTI: Any comments on innovations or the latest technologies Deltamax is currently involved with - or even related 'work in progress' projects?

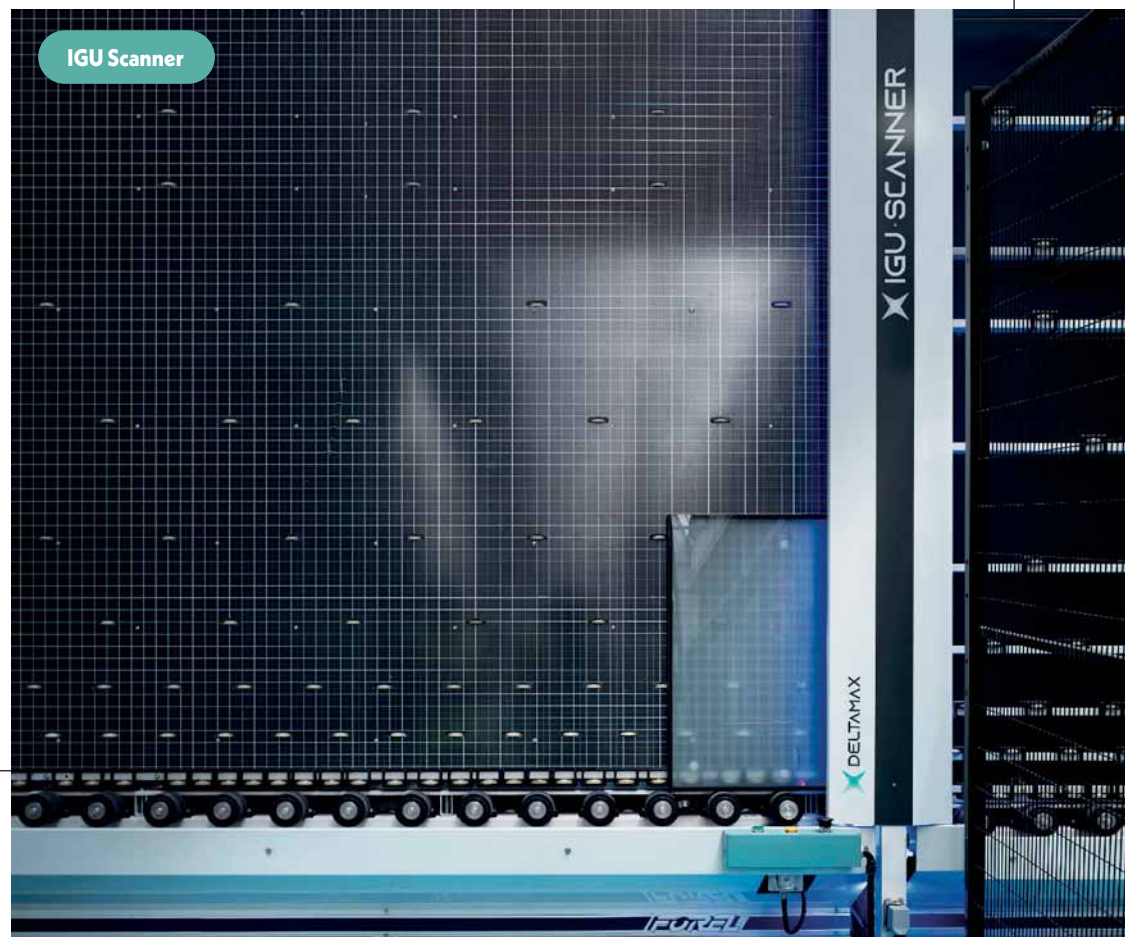
GD: Our latest developments include the OPT system for defect inspection prior to cutting, as well as the development of solutions for glass control in solar/photovoltaic panels. Now patented, the OPT system is set to revolutionize the concept of in-line defect inspection by identifying structural, irreparable defects - such as bubbles - right at the beginning of the production cycle. The innovation has piqued the interest of major players in the flat glass industry - primarily for its ability to provide reliable

inspection even when the glass surface is not washed (owing to the presence of coatings). Equally significant is our entry into the solar/photovoltaic glass control sector, with applications intended for Enel's

Gigafactory currently being constructed in Catania. That's a project we're taking forward in partnership with Bottero, which is the main contractor for this highly important undertaking.

GTI: Going forward, how do you see things panning out for the sector over the years ahead?

GD: Given the extreme challenge in making predictions, even in the short term, the signals we receive



IGU Scanner

DELTA MAX



Q Plus

ABOUT DELTAMAX

Established in 1989 as a spin-off of the current FBK Research Centre in Trento, Deltamax boasts substantial expertise in the development of artificial vision-based solutions for quality control within the industrial sector. Since 2010, the company has primarily focused on the inspection of flat glass - employing cutting-edge technological solutions thanks to continuous investments in Research and Development. Collaborating with Deltamax means becoming part of a global network. The company's solutions have a footprint on five continents. Regardless of location, it offers the experience of a proven partner, coupled with the reliability that distinguishes its customizable systems - ready to become essential tools for businesses that aspire to meet the stringent quality requirements of today's markets. Inherent complexities in the float glass production process result in structural defects in individual sheets - irreparable defects that incur substantial costs due to waste management and customer disputes. As it aims to streamline the entire flat glass transformation process, Deltamax has developed innovative solutions designed to revolutionize the execution of activities in any glassworks. Detecting defects prior to any processing, without the necessity of washing the sheets, offers numerous advantages and a rapid return on investment. Also, integration with cutting system software makes the company's solutions eco-friendly. By optimizing the cutting programme the quantity of discarded glass is significantly reduced, as are energy consumption and machine wear, since they no longer need to process sheets destined for the scrap heap.

from our agents worldwide appear to confirm an intriguing vibrancy within the flat glass processing sector. The use of glass in all manufacturing sectors is steadily and significantly on the rise, as is the application of technology to the product. So it's crucial to continually innovate the production process - ensuring both productivity and quality.

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Automazione Srl



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FLATGLASS

2023

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



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Still making a splash: EDGETECH spacers wow Vitrum attendees

Commenting in early September from Milan on the great strides the spacer market is making in Asia today, Vice President for International Sales at EDGETECH Joachim Stoss spoke to Glass Technology International Senior Editor Nick Fouché from a company booth that saw visitor interest rise to new heights this year.

GTI: Joachim, what can you report on your 2022 performance and how it compares to this year?

Joachim Stoss: I think that, from us, 2022 was a record year for the whole market in every sense. However this year, especially in Q3, we've seen a slackening in the market. Particularly countries like Germany and Poland are

indeed descending into what I'd term -not quite a recession- but certainly a dip. I expect that will last for the next twelve months, and then they'll bounce back. So we're not worried.

GTI: Where do you see the spacer market going at the moment?

JSt: We see a future where the migration from the





old aluminium systems to the new warm-edge systems will continue. Super Spacer® is one of the only systems out there that can apply automation - which makes it good for the environment too. This also helps us in driving digitalisation so that companies can make better IGs with less people. So we're seeing a lot of change with always more countries coming aboard. In mid-Europe we're already at a very high percentage of warm-edge, even if it hasn't yet gained so much traction in the south in

Europe. That said, in the Asian market there's always more interest and demand - so we see the future of our growth there.

GTI: Can you tell us a bit more about the Asian market?

JS: Sure. At the moment the Asian market is booming. Presently Edgetech is in India, China and Indonesia. Here we're seeing markets that are really exploding and the good thing for us is that warm-edge isn't so well-known there. For this reason we've been at different

trade shows to bring our product to the market and we've had a very high response there. In these countries people are interested in new technologies to save energy because it represents a big problem at the moment - especially in India.

GTI: Joachim, in a nutshell: why warm-edge?

JS: Warm-edge will reduce energy consumption in any window. It doesn't matter which window you have - you will need less energy for either heating or cooling your house. So that, in

brief, is why it makes sense that everyone changes to warm-edge. You really do save energy.

Edgetech Europe GmbH

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At Vitrum FRATELLI PEZZA shines anew with fresh solutions

In early September this year the editorial team of Glass Technology International spoke to Michela Pezza, President of FRATELLA PEZZA during Vitrum 2023 - all to get the latest about the company's glass processing machinery.

GTI: Can you describe how things have gone in 2023 as compared with 2022?

Michela Pezza: 2022 was an excellent year for our company. We consolidated existing relationships with important glass processing groups - which confirmed their trust in our company. Then 2023 marked a further growth year, both in terms of turnover and product range - which has been expanded. We worked hard to improve the features of our equipment: Industry 4.0, reduction of consumptions, simplifica-



tion of the programming procedures to reduce errors and consequently minimise processing waste - all matters about which people are becoming increasingly alert.

GTI: Can you comment on any innovations or latest technologies Fratelli Pezza is currently involved with or any related 'work in progress' projects?

MP: Certainly the most important innovation is our MistralApp, which is the only web application available on the market that allows for remote programming of the sandblaster - even while the machine is working. It allows the operator to create working programmes, store them in the memory, as well as recall and manage them at any time via PC or tablet. Here the main advantages are: reduction of programming times and processing errors, ease of use and graphic preview of the glass to be sandblasted. As for our glass marking systems, we've implemented the software to make them

compliant with industry 4.0 standards. Here we added some new features which can be useful for process monitoring and cost estimation. We've also completed our range of glass protective coatings. In addition to the anti-fingerprint and water-repellent protectors for sandblasted (MIX30PRO) and transparent glass (Ghostglaze) for manual application, we've developed a new product dedicated to float and extra-clear glass that's applicable with an automatic spraying machine. Sprayglaze is highly-appreciated by companies that have to process glass in large quantities - such as manufacturers of shower enclosures, windows, balustrades and refrigerators.

GTI: Going forward, how do you see things panning out for the sector over the years ahead?

MP: Of course, the latest geopolitical events may have had their impact on the business but, that said, it's very difficult to make any predictions. The situation is too complex and twisted. For sure the volatility of energy tariffs, the economic crisis that's currently hitting some of the main industrial countries as well as the termination of some main government incentives may all result in a slight drop in orders. Notwithstanding, we're experiencing a new trend in the industry, thanks to



the combining of different glass processing techniques for technical and decorative purposes. This affords us the opportunity not to just sell equipment but to also offer a solution - which sometimes leads to establishing synergies between supplier and customer or between different glass machinery manufacturers.

FRATELLI PEZZA

FPE
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Showcasing **HEGLA** excellence from automation to laser diode heating

GTI: Jan, what can you tell us about Hegla-Hanic performance over 2023 as compared to the previous year?

Jan Schäpers: 2022 was a very good year industrywide - throughout the glass sector and also for Hegla-Hanic. Machine and software suppliers were living on a high volume based upon growth within the construction industry. There's been some decrease in 2023. Construction is facing some challenges owing to increased interest rates and private equities are lowering - also for the flat glass industry in Germany. This year that industry has slowed down by approximately 20 to 30 percent. So as a company we're focusing now on international markets - also outside Europe. So what we're facing isn't exactly a recession. But, that said, performance is lower than it was back in 2022.

GTI: Can you comment on any technologies your company is currently developing?

JŠ: Sure. I can tell you that a lot of very interest-

ing new ideas are coming in from the digital space - also from the other sectors like automotive and the chemical industries which are very ahead in terms of machine learn-

ing and artificial intelligence. Of course, Hegla-Hanic is also fully a part of that revolution. We have developed a brand new ERP system that's already being rolled out at customer sites. Four years ago we decided to take this major step as we



Hegla-Hanic is currently rolling out a completely redeveloped ERP system on customer sites, whose intuitive design is based on the Microsoft Dynamics 365 development platform. The new ERP can integrate numerous processes from digital order collection, storage and individual machines to delivery at the construction site.

As September saw HEGLA returning to Vitrum after the pandemic break, the editorial team of Glass-Technology International took the occasion to interview Hegla-Hanic Managing Director Jan Schäpers, Hegla Managing Director Bernhard Hötger and HEGLA boraident Head of Operation & Development Thomas Rainer on their companies' latest contributions to the industry.

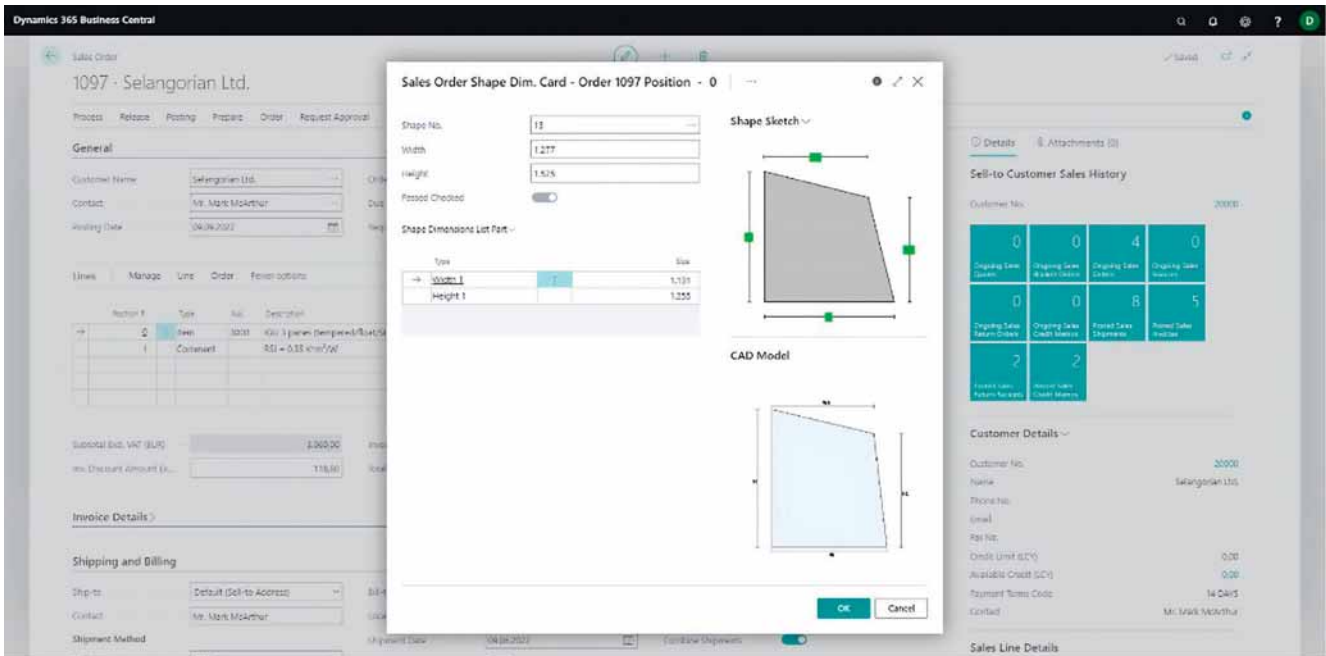
sought to further develop our software strengths by using cutting-edge programming as a springboard. Based upon Microsoft Dynamics, it offers a usability that us-

ers are already familiar with from daily use. Operators have access to numerous add-ons and defined interfaces too, and the system can be used on almost any end-device

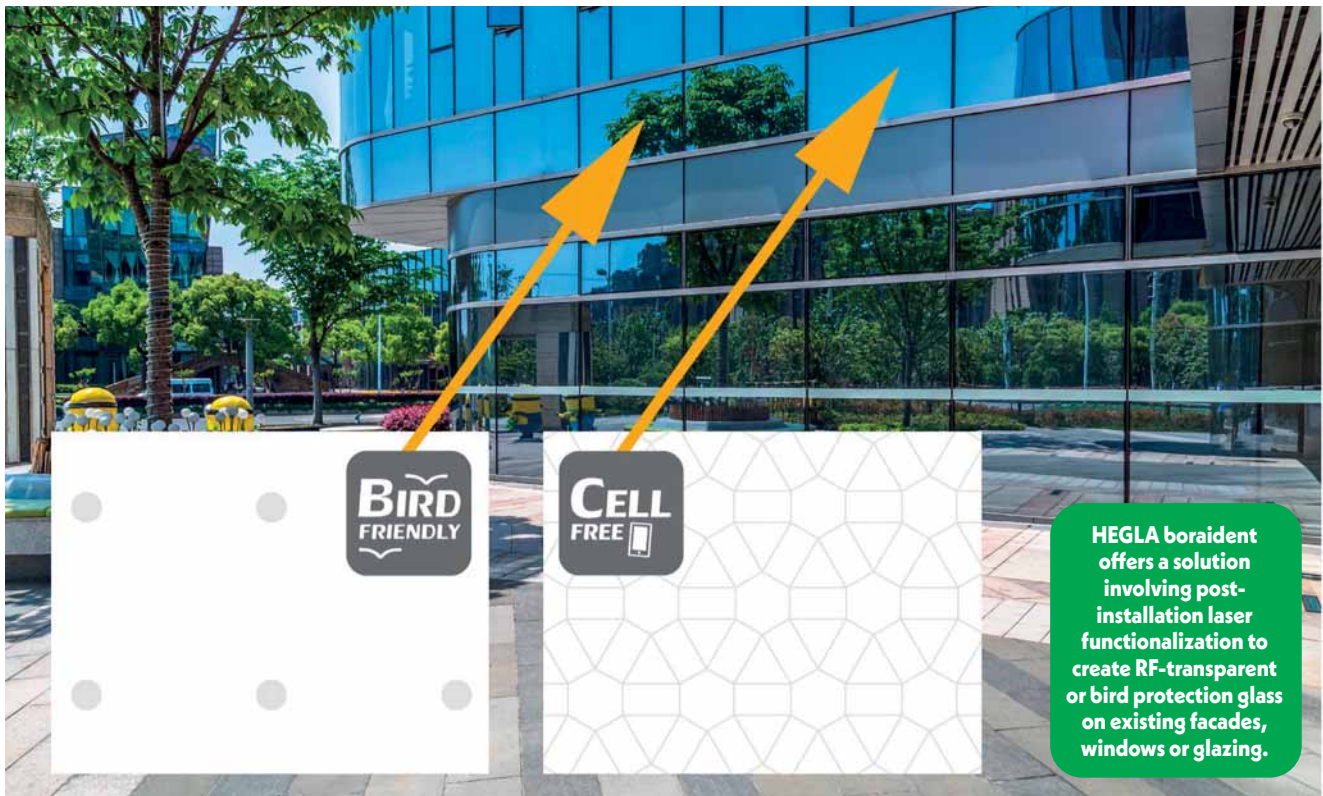
without adjustments. The new structure gives us the freedom to perfectly adapt processes for order entry, warehouse management, material ordering or even billing to the glass-processing industry. This effective integration of processes gave us the possibility to improve our shop-floor mapping. Not only that. In conjunction with the MES, we can implement further workflow improvements in ongoing operation and actively support employees. Also, thanks to a continuous live status check of the processes on the ISO and processing lines, cutting plans are adjusted to generate a temporally coordinated production flow.

When data is acquired in ongoing operation, the operation can be adjusted to prevent a standstill or delay.

GTI: Bernhard, here at Vitrum I see Hegla has identified 'creating added value' as a key focus at the company stand this year. How's that expressed by what you're exhibiting for 2023?
Bernhard Hötger: A clear example of added value is offered in our ProLam LSR for laminated glass cutting, which has become a successful innovation thanks to its laser diode heating system. Here, focused heat application to the cutting contour accelerates the cutting process by twenty per



Equipped with the patented laser diode heating system, the ProLam LSR increases productivity by twenty per cent in terms of pane throughput, while also improving edge quality.



HEGLA boraident offers a solution involving post-installation laser functionalization to create RF-transparent or bird protection glass on existing facades, windows or glazing.

cent and more. The surrounding edge remains cold such that the risk of delamination is systematically reduced and successive cuts can be made free of delay. Almost half of all ProLam systems are shipped with optional diode heating nowadays. This new technology is primarily used for line solutions with two cutting systems and a higher level of automation. It taps the full potential of several linked cutting tables with improved cycle time. With its short boot-up time, the laser diode is a proven energy-saver and, with an operating life of at least 20 000 hours, it's more sustainable than classic heaters. So here's added value for you in abundance if ever I saw it!

GTI: Thomas, what can you tell us about technologies Hegla boraident is exhibiting here today?
Thomas Rainer: What's all the rage is our new solution for the post-installation functionalization of façades and windows, which also comes as a strong invitation to property owners to pay more attention to the problem of bird strikes on panes or limited RF transparency - until the panes have already been installed. Here, CELLFree Mobile and BIRDFriend Mobile laser solutions can be implemented to functionalise façades on site, even after they have been in place for years. To reduce mobile radio loss, the metallic functional coatings of Low-E, for exam-

ple, are transformed with ultra-thin lines to enable high-frequency communication waves to pass through the pane without attenuation. For bird protection glass, small dots are applied five centimeters apart with a laser transfer printing process. This has a triple effect: first, the semi-transparent dots are printed so close together that birds perceive them as impossible to fly through. Second, the pattern breaks up any realistic reflections that mirror the bushes or trees in the environment, which would normally attract birds. The third effect is the way in which the pattern changes UV reflections, sending out another warning signal to birds. This is no paltry

innovation. Mind that the American Bird Conservancy has confirmed the high efficacy of our bird protection glass on its all-important first page. Here, the quality of the glass is not impacted by printing the surface texture on it, and the texture still fulfills its function after 20 years.

Hegla GmbH & Co. KG



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Dynamic transparency: INNOPTEC's 'intelligent glass' revolution

At a stand all abuzz with curious visitors to Vitrum 2023, Glass Technology International Senior Editor Nick Fouché spoke to Dr Luigi Cattini, CEO of INNOPTEC, about the innovative technologies for glass that his company was showcasing this year.

GTI: Dr Cattini, what would be your comment on Innoptec's performance over 2023 as compared to that of 2022?

Luigi Cattini: Concerning indications from the markets, we saw some deceleration in the first part of the year. As you can see, there are now signs of recovery. This trade show is rather well-frequented. However, as I noted the first half of 2023 indicated a conspicuous slowdown

in Italy which means that, overall, this year won't be among the most favourable. We've been enjoying some improvement since July with more frequent orders, and here at Vitrum today we're making many positive contacts. That may be a sign of recovery. Interestingly, our strongest contacts so far are coming from countries outside of Italy: mostly from Europe, but also from the Atlantic and Gulf countries.

GTI: Can you talk about any innovative projects your company is currently working on?

LC: Sure. This year we are introducing the SPD film. It's particle distribution, which allows for the regulation of energy passing through glass panes coupled with an variation in blue colour intensity. It's a product for which we're developing technologies

for various applications. So that's what we're onto now. Thanks to its high quality here we have very ambitious expectations because this film effectively controls energy passing through glass panes - essentially reducing energy during the summer and releasing light and energy transmission in winter. To date what I can report is that we already have many requests and a great show of interest.





GTI: Going forward, how would a product of this kind affect our day-to-day lives?

LC: In a nutshell, this technology allows for dynamic transparency of windows and internal partitions - something which static glass can't do. This is dynamic glass, whether we're talking energy transmission or colour transmission. In this way, the glass also allows for privacy. So like many things in modern life, glass too is becoming dynamic. This is a glass that, during the day, can change hour-by-hour - so it's no longer a glass that merely offers static transparency alone. The glass itself needs a lot of technological knowledge, tech service and quality control. Here, indeed, we additionally must be alert to the delicate compromise between different parameters

-already at production- to ensure that this balance remains uniform over time. It calls for dedicated commitment from the team. So our people on the shop floor have to have the specialised

knowledge of physics and chemistries which fully lead to an effective and reliable product. Consequently, our employees need to be both carefully selected and well-trained.

INNOPTEC SRL

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Innovation and success do **TUROMAS** proud at Vitrum 2023

Among the exhibiting companies at Vitrum recently, TUROMAS was proud to conclude this year's edition with a more than positive balance - with stand traffic exceeding all expectations of this machinery leader for the storage, loading and cutting of glass.

As leading trade show for glass processing, Vitrum was held from 5 to 8 September at the Fiera Milano Rho exhibition centre, attracting participants and exhibitors from all over the world - not only as a commercial event but as a place where history, evolution and innovation all intersected through showcasing the magic of glass.

STAYING IN THE THICK OF THE ACTION

Strategically positioned, the Turomas stand not only attracted the attention of potential customers. It also served as a meeting place for existing customers from Spain,



Portugal and other European and South American countries - together there for the opportunity to say hello and exchange impressions such that the company's presence saw important agreements recommence for markets within the Middle East, South America, Europe and Africa. In this way Vitrum 2023 served as a testimony to the company's commitment to the event, but also to innovation, quality and excellence in the field of glass machinery. Not surprisingly, therefore, industry professionals from all over the world converged on the stand - all to get the latest news and be updated on current de-

velopments of the Spanish brand.

LEADERSHIP TEAM

This year's edition saw Turomas represented by General Manager Antonio Ortega, Vice-president Álvaro Tomas, Sales

Director for Spain and Portugal Álvaro Doñate, Sales Director for Europe Oriol Llorens and Marketing Manager Teresa Catalán. Said Turomas Vice President Álvaro Tomás: "Vitrum has exceeded our expectations. Though we're mindful

that the European economy will present some challenges over the coming months, we've nonetheless found a number of very interesting projects being either reactivated or accelerated. Here we've identified potential projects in several countries - opening up exciting opportunities in markets such as Kuwait, Saudi Arabia, Mexico, Colombia, Ukraine, Morocco, Algeria, South Africa and France. This shows that there's significant potential for our business in various parts of the world."



Turomas

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GLASS MACHINERY PLANTS & ACCESSORIES is a bi-monthly periodical with about 100 pages of product news, current world news, focus on..., technical articles and dossiers, worldwide exhibitions, glassworks in the world, Yellow Pages, etc.



1989

Glass-Technology International

GLASS-TECHNOLOGY INTERNATIONAL is the leading international magazine for professionals involved in the flat and bent glass industry, from building to automotive, and from furniture to household appliances. **G-TI** is useful for those working in float glass plants as well as glass processors/fabricators, glazing contractors, automotive glass installers, window and door manufacturers, glass merchants, wholesalers, etc. With about 100 pages per issue, it is the bi-monthly tool for keeping abreast of new technology, new products, company life and all innovations in the world of flat and bent glass.

Annual Guides



1990

Glass Industry Directory 2023

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



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FLATGLASS 2023 world directory

The **FLAT GLASS WORLD DIRECTORY** is a unique international annual guide providing a complete overview of glassworks and suppliers for the flat glass sector. More than 150 pages of company profiles and information about worldwide glassmakers, glass processors and suppliers, including addresses, management, sister companies, plants, number of employees, turnover, banks, year of company foundation, capital, trademarks, areas of activity, innovations, sales network, exhibitions, and, of course, interactivity in digital format, make the **FLAT GLASS WORLD DIRECTORY** the annual reference point for the international flat glass industry.

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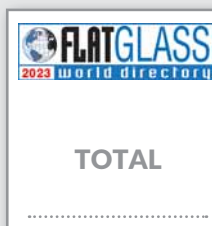
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Decarbonizing High-Rise Construction with SOM's Christoph Timm

At a recent Helsinki seminar on the latest high-rise glass design and construction innovations entitled 'The High-Rise Northern Exposure, organized by Jorma Vitkala,' construction innovation agent Aarni Heiskanen of AEC Business took the occasion to interview Christoph Timm, Principal at SOM New York, following his keynote speech 'How SOM is decarbonizing the built environment - A holistic approach to decarbonization.'

AARNI HEISKANEN: Thank you very much for giving an excellent presentation today. You mentioned that many things have changed over the last 10 years from what you showed us today. What are the main changes you've seen?

Christoph Timm: I think the main change is really the focus on embodied carbon. In the past we've been focusing a lot on the operational carbon that the construction industry is emitting into the atmosphere. Now the awareness for embodied carbon is the big change in the last 10 years, I would think. Ten years ago, we were aware of it, we called it embodied energy. But the extent of awareness has changed tremendously.

AH: Your company is a multi-disciplinary company, and you have many in-house experts. But do you think that we in design have enough information to

be meeting these challenges that we are having now in construction? And where do we learn these new things from?

CT: That is a very good question. I think we all must learn from each other. But there is plenty of information, plenty of databases about embodied carbon out there. Manufacturers are more and more willing to help you with getting information that is needed to do these evaluations.

And you do not necessarily need to trust the generic databases - you can get specific product information. As an example, for glass makeup, you don't have to use generic data. Instead, you can get a specific glass makeup that you're planning to use, for example, in the building, and get the embodied carbon footprint from the fabricator, from the glass processor. So that's the service that is out there for all



of us to just tap into. But not everyone knows about this and uses these services of the glass industry.

There are also organizations that focus on providing information or sharing data. And so, a lot of materials are out there. But frankly, it's just a lot of work and it takes time to educate yourself about embodied carbon and get a feeling for it. A small architectural firm often may not have the resources to really learn about it.

So, I'm in a fortunate position that we have some experts in the house that all they do is focus on learning and then teaching us about carbon.

AH: I imagine that's not always the case because there are so many small compa-

nies, small design firms, and studios in this industry. Will there be a gap between these smaller and larger design firms, the knowledge gap?

CT: I am sure there is for some time, but I think the industry will be smart enough to produce material that is easily digestible so that this gap will be shrinking over time.

AH: You mentioned collaboration with contractors, I guess, and manufacturers as well. Oftentimes, contractors are really conservative. How do you make them perhaps renew their processes and their attitudes?

CT: Well, first, I have the greatest respect for contractors because they build. I personally do not build, I just plan. They take respon-

sibility often for their work on a much different level than I do. That is something I really wanted to say first. Then we must educate them; usually about our mostly academic thinking, maybe some testing, maybe some experience from a previous project where we did something successfully, and then explain to them what we are thinking for the task at hand. It's the architect's role or the facade consultant's role to make sure that the contractor does not have fears, does fully understand what your plan was when you designed a certain system. And I think then the risk fear will go down, and you get a much better price as well from the contractor.

AH: We know that the con-

struction industry's productivity hasn't evolved in a positive way, at least over the last decade. One of the solutions might be more industrialized construction, more prefabrication. Have you seen an increase in your project in prefabrication and this production?

CT: We are trying to bring more products or more fabricated products to site so that there is less site work, site labor. That will give you a better value. It also gives you usually a higher precision. It gives you a quicker schedule on site. So, we're absolutely trying. Not every project is as conducive to this approach, but it is on our radar. It is one of the concepts that we always investigate.

We also for sure try to make our buildings more



cost-efficient, with a higher quality, and have less waste on site. I spoke about this during my talk about the Billie Jean King Main Library, that most of the wood was prefabricated in the shop. There were no field penetrations for the joist plug-ins, this was all shop prepped.

So, absolutely, we look at this approach on every project, the prefabrication approach. And sometimes, frankly, we also must do it because we're beginning to use certain types of concrete, low carbon concrete that just take longer

to cure. And so, then you can't have it cure on site. It has to be cured in the shop and then you bring it to site as modules.

AH: We are also talking a lot about timber construction and cross-laminated timber, and so on. How do you see the use of timber in high-rise construction in the future? Somebody said that the structures become so huge that it's impractical. But what do you think about the future of timber in high-rise?

CT: Well, definitely, timber will have its part in the

high-rise construction. I think the question is what is the extent of it? Is it going into the columns or is it only on the slab? Is it going to be a fully timber construction or maybe only a

hybrid solution? So that's the real question.

I think timber will find its place. It will not be the solution for everything in terms of carbon, but it's definitely



one approach that also has, to me as an architect, a huge appeal because who doesn't like looking at some wood framing or wood ceiling? It's just a very beautiful material.

AH: Unfortunately, we cover it with some fire protection.

CT: Well, that definitely defeats the purpose for me. I would love to have it exposed for sure.

AH: I imagine you use many digital technologies in your work and project. Now we are seeing the rise of AI and machine learning. What do you think about that as a designer? Is it a threat, or is it an opportunity for you?

CT: It's an absolute opportunity. We have groups at work who specifically are looking into AI, and using it as a tool for all kinds of tasks, sometimes as simple as generating agendas for meetings. But so far this is all very experimental.

AH: Is there something in the current process of designing and building high-rise buildings that you would like to change?

CT: I would love, as a general comment, I would love to cover up less. Because if you look at the current state of most of the buildings we're doing, there is a layered and additive approach. For example, we have a steel superstructure and then we clad it, we put something in front of it, like dry wall or column clad-

ding. These are all components that we do not need really, but they all have a carbon footprint, and they go to the landfill usually after a short life span, which is much shorter than the overall structure. So if we could stop covering up, that would be, I think, a fundamental win for all of us.

AH: Finally, what's next for you in the future? What are

you doing next?

CT: I'm dreaming of finally getting to use a vacuum-insulated glass on a bigger scale project. To me, that is a technology that I want to learn about because I see there's a potential for not just the operational carbon but also the embodied carbon and longevity benefits. So it seems like a slam dunk but we haven't used it on a bigger project.

ABOUT CHRISTOPH TIMM

Christoph Timm has an education Degree in Architecture from Universität Karlsruhe, Germany, and Cand. Architecture Degree from RWTH Aachen University, Germany. He has more than 25 years of experience in the creative field. During his career, Christoph has designed various projects encompassing products, furniture, streetlights, and architectural spaces.

At SOM, he currently serves as Senior Leader of the Enclosure Group, whose practice is embedded among the various architectural design and engineering studios in the New York office. Christoph's expertise is in building enclosures, both in their aesthetically crafted appearance in varying light conditions and in performance.

With the developing climate crisis, Christoph focuses on all building components through the lens of expended energy to fabricate vs. the benefits during their service life. This holistic approach to buildings with the parallel investigation for reduced, reused, or recycled components is needed today.

Within SOM, Christoph has started a construction site visit program that regularly takes young architects to different construction sites in the city to create a better understanding of construction complexities and how these conditions influence design.

Christoph participates or acts as a design critic on most of SOM's New York projects. Outside of SOM, Christoph shares his expertise actively at conferences and industry events. He has lectured on design and building performance-related topics in North and South America, Europe, the Middle East, and Asia.



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Schiavo
SGM (division of Vismara)
Vismara

ACCESSORIES

Helios Quartz

Idrotecnica
Neptun
Schiavo

Mirror production

COMPLETE PLANTS & CONVEYORS FOR MIRROR PRODUCTION

Bovone Elett.
IOCCO Group
Triulzi

PAINTING EQUIPMENT

Dongguan Byronsion Machinery Co., Ltd.
Fenzi
IOCCO Group
Triulzi

DRYING OVENS

Bovone Elett.
CMS
Dongguan Byronsion Machinery Co., Ltd.

AUTOMOTIVE MIRROR BENDING FURNACES

Bovone Elett.
Tecnosens
MANUAL SILVER- SPRAYING EQUIPMENT

Fenzi

Glass Company

PAINTS AND CHEMICAL PRODUCTS

Fenzi

ACCESSORIES

Fenzi

Helios Quartz

Insulating glass

COMPLETE INSULATING GLASS LINES

Ashton Industrial Sales
Bavelloni
Best Makina
Di Gregorio
Forel

Glass Company

Glaston Group

Lisec
Marval
Neptun
Schiavo
SGM - Special Glass Machinery
Thermoseal Group
Triulzi

AUTOMATIC SEALING LINES

Bavelloni
Easy Automation
Forel

Glaston Group

Lisec Group
Marval
Teknik Elmas
Tesir Makine

AUTOMATIC SPACER BENDING MACHINES

Bavelloni
Best Makina
Fenzi
Forel

Glaston Group
IOCCO Group
Lisec Group
Marval
Schiavo
Thermoseal Group

DESICCANT SALT FILLING MACHINES

Ashton Industrial Sales
Bavelloni

Best Makina

Di Gregorio
Fenzi

Forel

Glaston Group
Lisec Group
Marval
Neptun
Schiavo
Stefani
Tecno Glass
Thermoseal Group
Triulzi

SPACER CUTTING SAWS

Ashton Industrial Sales
Bavelloni

Best Makina

Di Gregorio
Fenzi

Forel

Lisec Group
Marval
Neptun
Schiavo
Tecno Glass
Tesir Makine
Thermoseal Group

BUTYL EXTRUDERS

Bavelloni
Best Makina
Di Gregorio
Forel

Glaston Group

Lisec Group
Marval
Neptun
Schiavo
Si.Ste
Stefani
Tecno Glass
Thermoseal Group
Triulzi

HOT-MELT EXTRUDERS

Bavelloni
Best Makina
Di Gregorio
Easy Automation
Fenzi

Forel

Lisec Group
Marval
Neptun
Schiavo
Si.Ste
Stefani
Tecno Glass
Thermoseal Group
Triulzi

POLYURETHANE EXTRUDERS

Bavelloni
Best Makina
Easy Automation
Fenzi

Forel

Glaston Group
Lisec Group
Marval
Schiavo
Tecno Glass

POLYURETHANE ENCAPSULATION

Glaston Group
Lisec Group
Marval
Schiavo

SILICONE EXTRUDERS

Best Makina
Di Gregorio
Fenzi

Forel

Glaston Group
Lisec Group
Marval
Schiavo
Tecno Glass
Triulzi

POLYSULPHIDE SEALANT EXTRUDERS

Best Makina
Fenzi
Forel
Glaston Group

Lisec Group
Marval
Schiavo
Stefani
Tecno Glass
Triulzi

GAS FILLING EQUIPMENT

Di Gregorio
Fenzi
Forel

Glaston Group

Lisec Group
Marval
Neptun
Schiavo
Si.Ste
Sparklike
Stefani
Tecno Glass
Thermoseal Group

DESICCANT SALTS

Ashton Industrial Sales
Di Gregorio
Fenzi
Neptun
Schiavo
Stefani
Tecno Glass
Thermoseal Group

SPACERS/PROFILES

Ashton Industrial Sales
Edgetech Europe
Fenzi
Schiavo
Tecno Glass
Thermoseal Group

GEORGIAN BARS

Ashton Industrial Sales
Hegla
Tecno Glass
Thermoseal Group

BUTYL

Ashton Industrial Sales
Fenzi
Stefani
Thermoseal Group

POLYSULPHIDE SEALANTS

Fenzi
Stefani

HOT MELT

Ashton Industrial Sales
Fenzi
Stefani
Thermoseal Group

OTHER SEALANTS

Fenzi
Stefani

PANTOGRAPHYS

Fratelli Pezza

ACCESSORIES

Ashton Industrial Sales
Deltamax Automazione

Forel

Helios Quartz

Schiavo
Sparklike
Stefani
Tesir Makine
Triulzi

Tempering

TEMPERING FURNACES (ARCHITECTURAL GLASS)

Glass Company
Glasstech Inc.
Glaston Group
Hornos Industriales Pujol
Jinglass
Keraglass
Landglass Technology
Lema
Lisec Group
Mappi International
Mazzaroppi Engineering
Schiavo

North Glass Technology

Tecnosens
Tekno Kilns
Texpack

TEMPERING FURNACES (AUTOMOTIVE GLASS)

Glass Company
Glasstech Inc.
Glaston Group
Jinglass
Keraglass
Landglass Technology
Mappi International
Mazzaroppi Engineering
Satinal
SGLASS

North Glass Technology

Taifin
Tecnosens
Texpack

CHEMICAL TEMPERING EQUIPMENT

Glass Company
R.C.N. Solutions

ROBOT FOR CLEANING SILICA ROLLERS

Eurotech Way

ACCESSORIES

Deltamax Automazione
Fenzi

Glass Company
Glaston Group
Helios Quartz
Hornos Industriales Pujol
Keraglass

Landglass Technology
Mappi International
Mazzaroppi Engineering
R.C.N. Solutions
Satinal
SGLASS
Taifin
Tekno Kilns
Torgauer Maschinenbau

Bending

BENDING FURNACES (ARCHITECTURAL GLASS)

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

BENDING FURNACES (AUTOMOTIVE GLASS)

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

ACCESSORIES

Ayrox
Deltamax Automazione
Glass Company
Glasstech Inc.
Glaston Group
Hornos Industriales Pujol
Keraglass
Mappi International
Satinal
Softeco
Tekno Kilns

Laminated glass production

COMPLETE PLANTS FOR LAMINATED GLASS

Bovone Elett.
Bottero
Forel
Glass Company
Glaston Group
GPM Automation
Hornos Industriales Pujol
IOCCO Group
Italmatic
Lisec Group
Mazzaroppi Engineering

R.C.N. Solutions

Satinal
Si.Ste
Texpack
Triulzi

LAMINATED WINDSCREEN BENDING FURNACES

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

AUTOCLAVES

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

AUTOCLAVE-FREE LAMINATED GLASS PRODUCTION

Bürkle

CLIMATIC CABINS

Forel
Glaston Group
GPM Automation
IOCCO Group
Lisec Group
Triulzi

INFRARED OVENS

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

MANGLES

GPM Automation

PRESSES/BENDING MACHINES

Forel
IOCCO Group
Lisec Group
Triulzi

RESIN LAMINATING MATERIALS AND EQUIPMENT

IOCCO Group
Satinal

Teknik Elmas
Torgauer Maschinenbau

EVA (ETHYLENE VINYL ACETATE)

Satinal

PVB

Everlam
Kuraray - Trosifol
Tecnosens

PVB - SHAPING AND CUTTING EQUIPMENT

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

PVB - WIRING TECHNOLOGY FOR HEATABLE LAMINATES

Ayrox
Easy Automation
ECOL
Softeco

EVA (ETHYLENE VINYL ACETATE)

Tecnosens

ACCESSORIES

Ayrox
Bottero
Deltamax Automazione
Eurotech Way
Glaston Group
Helios Quartz
Hornos Industriales Pujol
IOCCO Group
Lisec Group
Satinal
Simtech
Softeco
Taifin
Triulzi

Drilling

AUTOMATIC DRILLING LINES

B Solution
Bando Kiko
Bavelloni
Biesse Group
Dongguan Byronsion Machinery Co., Ltd.
Glaston Group
IOCCO Group
Neptun
Schiatti Angelo
Schraml Glastechnik GmbH

SGM (division of Vismara)

SKG - Skill Glass

Teknik Elmas

Tesir Makine

Vismara

MULTI-SPINDLE DRILLING MACHINES

B Solution

Bando Kiko

Bavelloni

Biesse Group

CMS

Glass Company

Glaston Group

IOCCO Group

Neptun

Schiavo

Schiatti Angelo

SGM (division of Vismara)

SKG - Skill Glass

Teknik Elmas

Tesir Makine

Vismara

DRILLING MACHINES WITH OPPOSITE DRILLING HEADS

B Solution

Bando Kiko

Bavelloni

Biesse Group

Bottero

CMS

Di Gregorio

Fenzi

Glaston Group

Hiseng Glass Machinery

IOCCO Group

Lovati

Neptun

Schiavo

Schiatti Angelo

SGM (division of Vismara)

SKG - Skill Glass

Teknik Elmas

Tesir Makine

Vismara

COLUMN DRILLING MACHINES

B Solution

Bottero

Di Gregorio

Fenzi

Neptun

Schiavo

SGM (division of Vismara)

Si.Ste

Tesir Makine

Vismara

PORTABLE DRILLING MACHINES

CMS

Fenzi

Schiavo

Si.Ste

Teknik Elmas

Tesir Makine

DRILLING AND MILLING MACHINES

Bavelloni

Bottero

CMS

Biesse Group

IOCCO Group

Lovati

Neptun

Schiavo

Schraml Glastechnik GmbH

SGLASS

SGM (division of Vismara)

Teknik Elmas

Tesir Makine

Vismara

DIAMOND DRILLS

ADI - Surface Group

Bovone Diamond Tools

Diamut - Biesse

Duezeta Srl

Fenzi

Glaston Group

Mole Moereschi

Neptun

Schiavo

Si.Ste

Teknik Elmas

Tesir Makine

Vincent - Surface Group

ACCESSORIES

CMS

Duezeta Srl

Fenzi

Neptun

Schiavo

Si.Ste

Teknik Elmas

Other equipment and plants

TURNKEY PLANTS / ENGINEERING - FOR BUILDING GLASS

Bando Kiko

Bottero

Cugher Glass

Glaston Group

Horn

Biesse Group

IOCCO Group

Keraglass

Lisec Group

Torgauer Maschinenbau

TURNKEY PLANTS / ENGINEERING - FOR AUTOMOTIVE GLASS

Bando Kiko

Bottero

Cugher Glass

Easy Automation

Horn

Glaston Group

Biesse Group

IOCCO Group

TURNKEY KEY PLANTS / ENGINEERING - FOR DISPLAY GLASS

Bando Kiko

Cugher Glass

Torgauer Maschinenbau

EDGES ROLLER COATING MACHINE

Eurotech Way

WORK CENTRES - CNC CONTROLLED

Bando Kiko

Bavelloni

Bottero

Glass Company

Glasstech Inc.

Glaston Group

Hegla

Biesse Group

Neptun

SKG - Skill Glass

FLOAT PLANTS / LINES (EQUIPMENT & ACCESSORIES)

Bovone Elett.

Horn

IOCCO Group

CULLET HANDLING SYSTEMS

ECOL

COMPLETE BATCH PLANTS

Zippe

VACUUM COATING EQUIPMENT AND PLANTS

Giardina Group Glass

Division

Glass Company

North Glass Technology

ENAMELLING EQUIPMENT AND PLANTS

Giardina Group Glass

Division

Glass Company

Rollmac division of GeMaTa

DRYERS AND ENAMELLING FURNACES

Bürkle

Giardina Group Glass

Division

Tecglass S.L

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SPRAYING TECHNOLOGY

Bürkle
Giardina Group Glass
Division

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

Bürkle
Giardina Group Glass
Division

SANDBLASTING SYSTEMS, EQUIPMENT AND PLANTS - OPTIMIZERS

Di Gregorio
Fenzi
Fratelli Pezza
Glass Company
Schiavo
SKG - Skill Glass

DIGITAL INKJET P RINTERS

Glass Company
System Ceramics
Tecglass S.L
TecnoFerrari

SCREEN PRINTING EQUIPMENT AND PLANTS

Ayrox
COMSS
Cugher Glass
Deltamax Automazione
Dongguan Byrnsion
Machinery Co., Ltd.
ECOL
Eurotech Way
Glass Company
Keraglass
Rollmac division of GeMaTa
North Glass Technology
Softeco
TecnoFerrari

SCREEN PRINTING F RAMES

COMSS
Dongguan Byrnsion
Machinery Co., Ltd.

SCREEN PRINTING DRYING SYSTEMS

COMSS
Cugher Glass
Dongguan Byrnsion
Machinery Co., Ltd.
Glass Company
Rollmac division of GeMaTa

EDGES ROLLER COATING MACHINE

Giardina Group Glass
Division

ACIDING GLASS EQUIPMENT AND PLANTS

Lisec Group
Rollmac division of GeMaTa

LASER DECORATING MACHINES

Ashton Industrial Sales
Glass Company

LASER MARKING

Ashton Industrial Sales

Artistic glass production

CERMAMIC INKS

Glass Company
Tecglass S.L

CHAMBER ELECTRIC KILNS

Glass Company
Keraglass
Tekno Kilns

ACCESSORIES

Deltamax Automazione
Helios Quartz

CUTTERS

Si.Ste

CUTTING WHEELS

Si.Ste

MANUAL GRINDING MACHINES

Di Gregorio

UV ADHESIVES

Si.Ste

Miscellaneous

ADHESIVES FOR GLASS BONDING

Si.Ste

AUTOMATION

Ashton Industrial Sales
Easy Automation
Horn
IOCCO Group

Tecnosens
Torgauer Maschinenbau
Zippe

AUTOMOTIVE GLASS APPROVAL SERVICES

Ayrox
Softeco
Tecnosens
Teknik Elmas

AUTOMOTIVE GLASS QUALITY CONTROL

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

CE MARKING - QUALITY CONTROL EQUIPMENT FOR GLASS IN BUILDING

Ayrox
Softeco

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

Bürkle

COLOURS & ENAMELS - OTHER APPLICATIONS

Ayrox

CUTTERS

Tesir Makine

CUTTING WHEELS

Talamoni
Teknik Elmas
Tesir Makine

DEIONIZING AND WATER SOFTENING EQUIPMENT

Fenzi
Forel
Glass Company
Idrotecnica
Immes
Lisec Group
Triulzi

DIAMOND ROUTER EQUIPMENT - PORTABLE

Teknik Elmas
Tesir Makine

FLAT GLASS QUALITY CONTROL DEVICES

Ayrox
Deltamax Automazione

Forel
IOCCO Group
Softeco
Tecnosens

FURNACES

Glass Company
Horn
Texpack

FURNACES / HYDROGEN GENERATORS (WATER ELECTROLYSERS)

Nel Hydrogen

GLASS COATING AND TINTING

Bürkle
Glass Company
Rollmac division of GeMaTa

GLASS TREATMENT FILMS

Glass Company

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

Horn
Keraglass
Texpack

HINGES FOR GLASS DOORS

Si.Ste

INSPECTION INSTRUMENTS & INTENSIMETERS

Tecnosens

INFRARED TUBES

Helios Quartz
Deltamax Automazione

KILNS

Glass Company
Keraglass
Lisec Group
Tekno Kilns
Fenzi

METAL ACCESSORIES

Si.Ste
Teknik Elmas
Tesir Makine

METALLIC SECTIONS

Fenzi
Tesir Makine

NUMERICAL CONTROL SYSTEM (CNC) FOR ALL GLASS PROCESSING MACHINES

Glass Company

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Prodim
OPTICAL DISTORTION ANALYSERS FOR AUTOMOTIVE GLASS
IOCCO Group
Keraglass
Tecnosens
OPTICAL INFRARED THERMOMETERS
Optris
POLYMER MACHINE PARTS
Simtech
POWDER OR LIQUID APPLICATION SYSTEMS FOR PROTECTING FLOAT GLASS
BOST
Cugher Glass
Glass Company PUMPING AND APPLICATION SYSTEMS (AUTOMOTIVE GLASS)
IOCCO Group
PURIFIERS FOR REFLUENT WATER
Dieffe Macchine
Immes
PUTTIES AND SEALANTS
Fenzi

QUARTZ EQUIPMENT
Helios Quartz
SHAPE CHECKING DEVICES
Easy Automation
IOCCO Group
RAW MATERIALS
BOST
SHOWER ENCLOSURES
SGM (division of Vismara)
Vismara
SIC HEATERS
Helios Quartz
SOFTWARE SYSTEMS FOR PRODUCTION CONTROL
A+W Software
CMS
Cugher Glass
Deltamax Automazione
Edgetech Europe
Forel
Lisec Group
Optima
Prodim

SOLDERING EQUIPMENT FOR ELECTRICAL CONNECTORS FOR WINDSCREENS AND BACKLITES
Ayrox
Easy Automation
Softeco
SORTING SYSTEMS
Forel
Glaston Group
GPM Automation
Lisec Group
SURFACE STRESS MEASUREMENT INSTRUMENT
Ayrox
Glass Company
Tecnosens
WINDSCREEN STRESS MEASUREMENT INSTRUMENT
Tecnosens
WINDSCREEN AND BACKLITES
Tecnosens
TESTING FOR SOLDERINGS
Ayrox

Easy Automation
Softeco
TESTING DEVICES OF BACKLITES ELECTRICAL HEATING
Ayrox
Easy Automation
Softeco
THERMAL IMAGING SYSTEMS
Glass Company
Easy Automation
Optris
TIN FLOAT BATH FURNACES
Horn
IOCCO Group
TIN FLOAT BATH SIDE DETECTION DEVICES
Tecnosens
UV LAMPS
Helios Quartz
UV PORTABLE MACHINES
Helios Quartz



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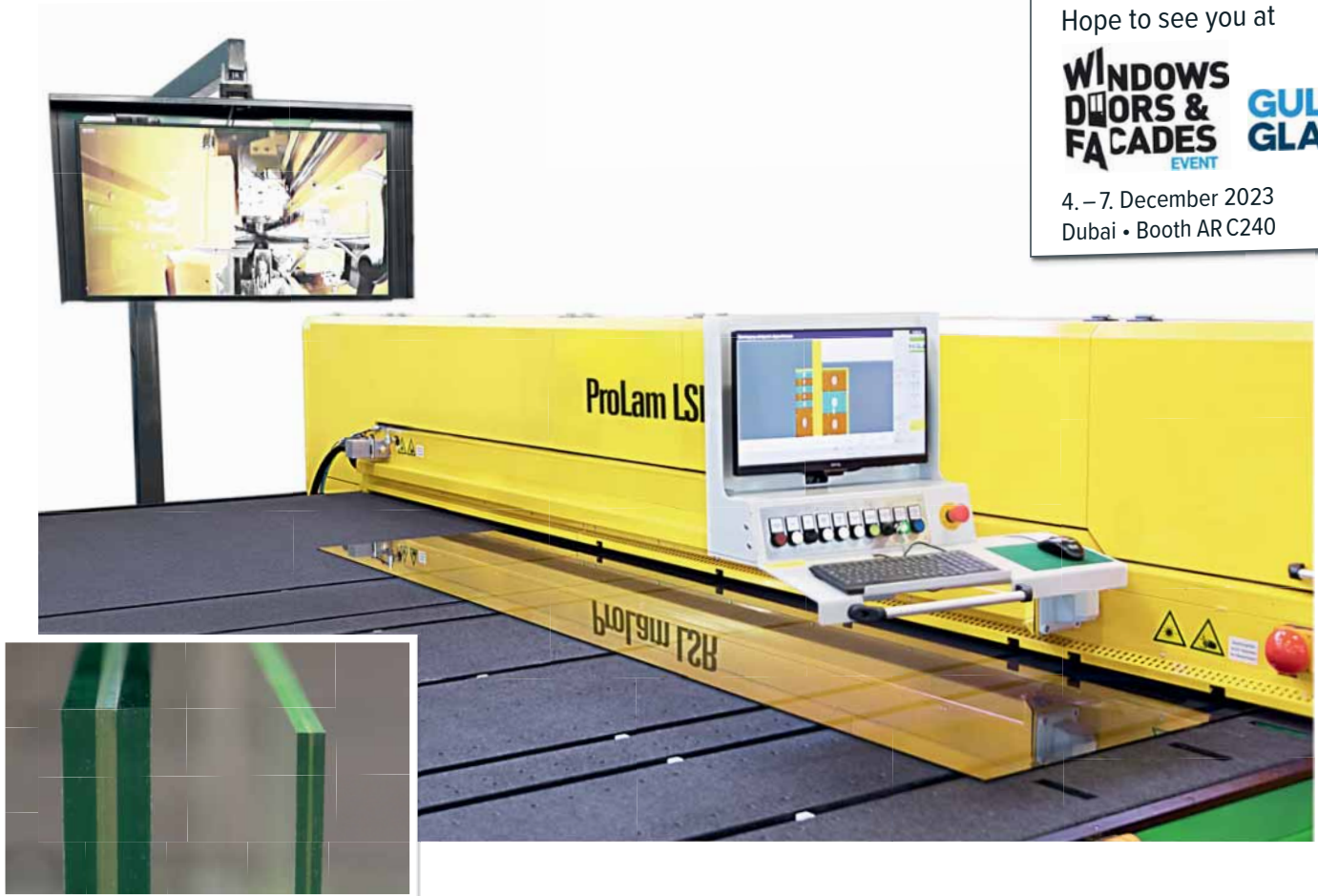
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Functionality and performance are our top priorities here at HEGLA, which is why we know that we don't have to go all out on flashy advertising or stylish design. Instead, with our new ProLam LSR, offering laser film separation and premium German quality, we know we're really onto something. As the most productive LSG system on the market, it never fails to achieve the most outstanding edge quality with pinpoint laser heating technology. Its many benefits include:

- A reduction of the total processing time by at least twenty per cent compared to the industry standard
- Perfect laminate edges without delamination
- Cold edges to ensure follow-up cuts can be made straight away

