

Glass-Technology International

March/April • Year 35 • No. 2/2024

THE LEADING MAGAZINE FOR THE INTERNATIONAL FLAT GLASS INDUSTRY

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a Brighter Future Together

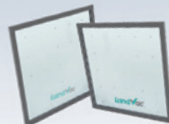


Intelligent Glass Tempering Furnace

LandTiger Smart Factory Solutions



LandVac Vacuum Insulated Glass



China Glass

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Shanghai New International Expo Centre

FOREL AND PRESS GLASS
EYE U.S. PRODUCTION
EXPANSION TOGETHER

NEWLY-EXTENDED
CMS RANGE
OF CNC MACHINING
CENTRES

CUSTOMER
SATISFACTION AT **LiSEC**
AUSTRALIA HOISTED
AS TOP PRIORITY

PILKINGTON MIRAI™
GLASS VERIFIED
FOR ITS SUPERLOW
EMBODIED
CARBON

STRATEGIC
ALLIANCE
BETWEEN
TUOMAS AND
KONKAV
KONVEKS

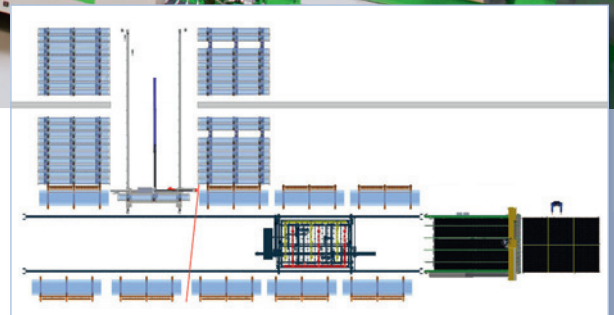
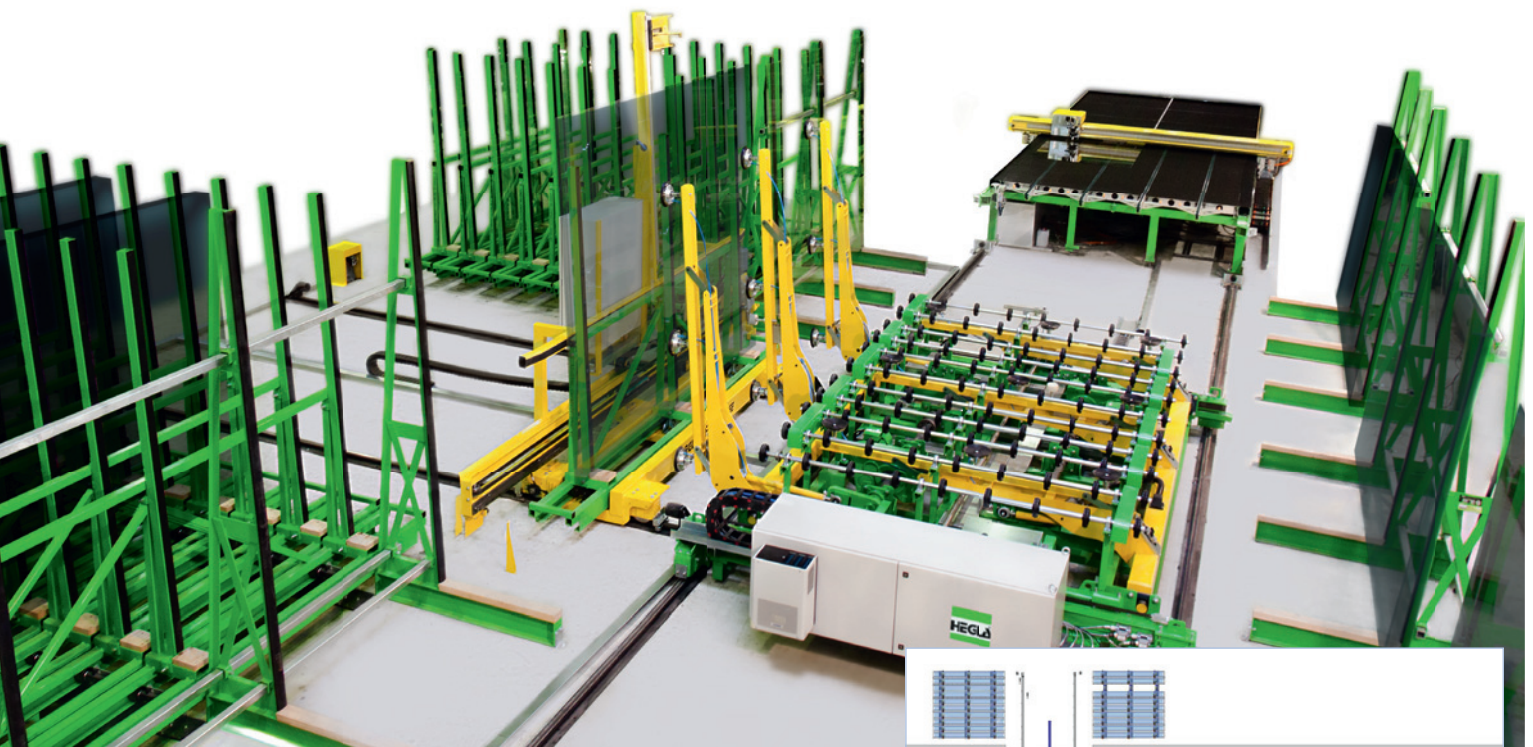
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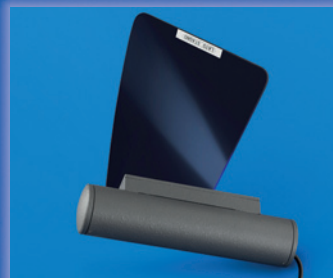
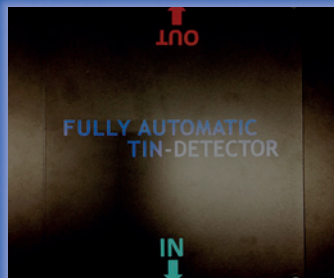
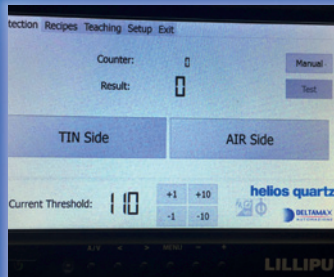
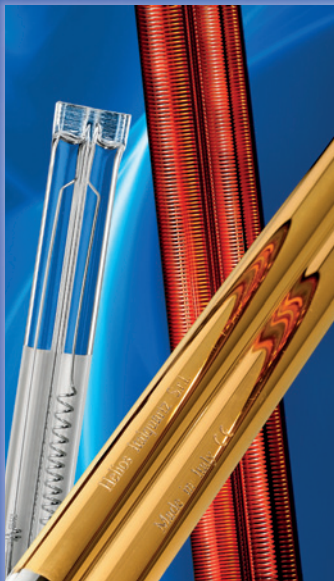
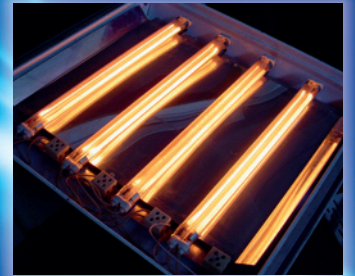
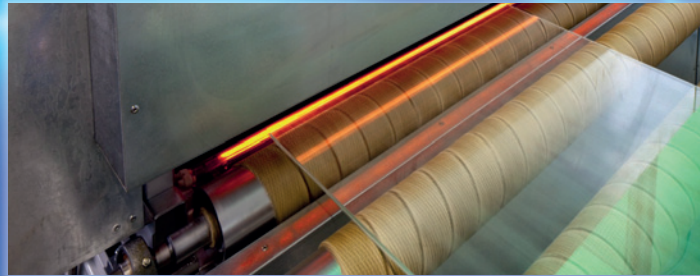
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FOOTPRINT

FOREL and PRESS GLASS eye U.S. production expansion together

Thanks to its collaboration with FOREL's existing plus line, PRESS GLASS has been able to further solidify its position to deliver solutions - all while enhancing its versatility. Having already expanded from Europe to the US over more than thirty years in flat glass production, the company's new coated production will now see it moving ever closer to an automated future within the American market.

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PORTFOLIO EXPANSION

Newly-extended CMS range of CNC machining centres

For both high processing DMU CNC machines, the new series will be perfect for construction, precision design, aerospace, automotive and marine to name but a few.

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SERVICE EXCELLENCE

Customer satisfaction at LiSEC Australia hoisted as top priority

With comprehensive solutions that consistently maintain the track record of its historical success, LiSEC Australia continues to put customer satisfaction first. Having evolved from a small team, the company's client base and customer base now exhibits high technical process and software expertise as they remain poised to lead tomorrow's innovations in glass automation.

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ARCHITECTURE

PILKINGTON Mirai™ glass verified for its superlow embodied carbon

Setting new standards in environmental performance, Pilkington Mirai™ architectural glass was recently verified among its standard float glass counterparts for having the lowest embodied carbon.

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MACHINE TECHNOLOGY


Advancing safety at FOTOVERBUNDGLAS MARL with LamiPress flexibility c-mark technology

Maximizing operational safety glass production while offering flexibility, speed and top quality outcomes, FOTOVERBUNDGLAS MARL's energy efficient LamiPress offers eight times to over 10 times higher yields for both established players and newcomers, thanks to its robust DSE background and versatile glass sizes.

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AUTOMATION

More functionality with CUGHER GLASS industrial robots



Choosing precision with agility is vital towards comprehensive automation. CUGHER GLASS enhances both precision and safety with its industrial robots. A free partner in glass manufacturing, the company's expertise now integrates robotic arms with vision systems - always with a customer-specific approach that offers tailored solutions.

INDUSTRIAL ROBOTS
CUGHER GLASS has recently introduced a new generation of industrial robots designed for precision and safety in glass manufacturing. These robots are equipped with advanced vision systems and are capable of handling a wide range of glass products, from flat glass to curved glass. The company's commitment to innovation and customer satisfaction is evident in its tailored solutions for various industrial applications.

52

NET ZERO

STRATO® has SATINAL helping to stem global warming



Profiting sustainability in performance, STRATO features 100 lines, which have the highest rates of reducing CO2 impact, lowering energy costs and cutting emissions. Pioneered in Italy, the company's CO2-intelligent manufacturer aligns with its commitment to environmentally smart products of prime quality - all in absolute ecofriendly manufacturing.

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ARCHITECTURE

More green building has AGC INTERPANE advancing sustainable living



Architectural glass from AGC INTERPANE features premium quality in London's sustainable Bankside development. Here, before the onset of night, buildings exhibit the company's bright impact glass - contributing to a vibrant, energy-efficient environment. One will also see how AGC Architecture design prioritizes natural light while featuring both well-being and productivity.

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SUCCESS STORY

Driving growth at RCN SOLUTIONS through innovation and tradition



RCN SOLUTIONS' new rotary grinding system with four positions enables operational change of the company as well as its made in Italy offer - ensuring high quality standards while reflecting an evergreen commitment to excellence.

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SECTOR TECHNOLOGY

Streamlined systems: SCHIATTI's advancements in glass processing



BUILD EFFICIENCY
SCHIATTI's advanced glass processing systems are designed to streamline operations and improve efficiency. The company's focus is on providing reliable and high-quality solutions for various glass processing needs. The new machinery is a key component in their commitment to excellence in the industry.

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E-mail: publications@glassonline.com • www.glassonline.com

PUBLISHING DIRECTOR: Arcangelo Altamura

EDITOR-IN-CHIEF: Marco Pinetti

ASSOCIATE EDITOR

Nicolaas François Fouché | nick.fouche@glassonline.com

CONTRIBUTORS

Alexander Roe, Jennifer Pressman, Alison David, Zoë Elaine Whitten

ADVERTISING

ITALY: Maurizio Lozza | maurizio.lozza@glassonline.com

WORLDWIDE: Luciano Molina | luciano.molina@glassonline.com

GRAPHIC DESIGN

Sonia Previato | sonia.previato@glassonline.com

Cristiano Guenzi

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LANDGLASS TECHNOLOGY Co. Ltd
Guangjian Building No.12
Wangcheng Road
471000 Luoyang
Henan Province - China
Tel.: +86-379-65298883
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E-mail: marketing@landglass.com
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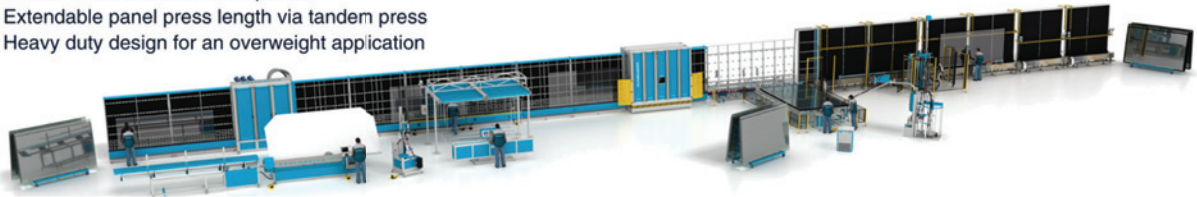
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issue	exhibition/conference	date	venue	deadlines
2024				Editorial files: 19-01-2024 Deadline Adv files: 26-01-2024
2024	1	MIR STEKLA 27 February 1 March <hr/> GPAD - GLASS PERFORMANCE AUTOMATION DAYS 5-6 March <hr/> FENSTERBAU FRONTALE 19-23 March	MOSCOW Russia <hr/> NASHVILLE (TN) USA <hr/> NUREMBERG Germany	Editorial files: 02-02-2024 Deadline Adv files: 09-02-2024
2024	2	CHINA GLASS 25-28 April <hr/> AUTOMOTIVE SMART GLASS FORUM 8 May <hr/> CONSTRUMAT 21-24 May <hr/> WINDOREX 22-24 May	SHANGHAI China <hr/> BOLOGNA Italy <hr/> BARCELONA Spain <hr/> CAIRO Egypt	Editorial files: 25-03-2024 Deadline Adv files: 29-03-2024
2024	3	GLASS SOUTH AMERICA 12-15 June <hr/> ICCG 2024 24-26 June <hr/> GLASSTECH MEXICO 9-11 July	SAO PAULO Brazil <hr/> DRESDEN Germany <hr/> GUADALAJARA Mexico	Editorial files: 03-05-2024 Deadline Adv files: 10-05-2024
2024	4	GLASSBUILD AMERICA 30 September 2 October	DALLAS (TX) USA	Editorial files: 29-07-2024 Deadline Adv files: 02-08-2024
2024	5	GLASSTEC 22-25 October <hr/> ALL GLASSTEC EXHIBITORS ADVERTISING IN THIS ISSUE ALSO RECEIVE A FREE GLASSTEC PREVIEW  <hr/> VETECO 5-8 November	DÜSSELDORF Germany <hr/> MADRID Spain	Editorial files: 20-09-2024 Deadline Adv files: 30-09-2024
2024	6	EURASIA GLASS 16-19 November <hr/> GLASSTECH ASIA 11-13 December <hr/> ZAK GLASS TECHNOLOGY December	ISTANBUL Turkey <hr/> HO CHI MINH CITY Vietnam <hr/> DELHI India	Editorial files: 18-10-2024 Deadline Adv files: 29-10-2024

THE PERFECT

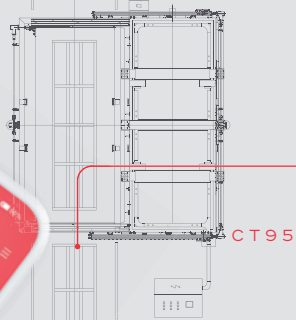
REMOTE APP CONTROL



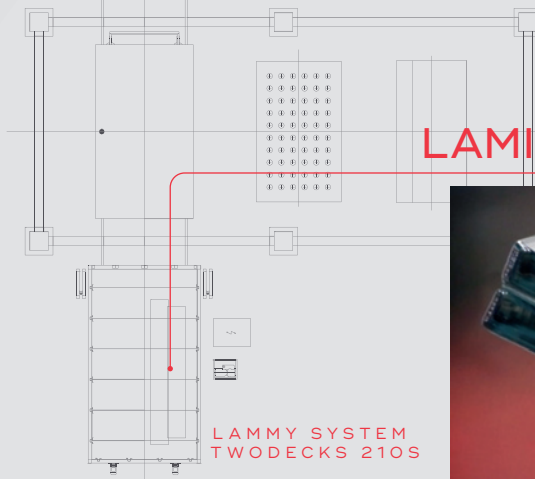
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LAMINATING



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GRENZEBACH-SORG ENGINEERING

New Managing Director announced

Grenzebach-SORG Engineering (GSE), a partnership between Grenzebach and SORG, two family-run glass industry pioneers, has announced Robert Homer's assumption of the role of Managing Director. With Robert Homer, GSE welcomes an experienced glass professional who is well-versed in implementing float and solar glass projects. With this appointment, GSE will strengthen its engineering and project management capabilities.

GSE offers a wide range of engineering services and project management services to glass manufacturers.

"I'm looking forward to being a big part of **GRENZEBACH-SORG ENGINEERING's** journey," said Homer. "With our portfolio of products and services, I am dedicated to developing new synergies for our customers with a one-stop solution."

Robert Homer is a familiar figure in the glass industry, having spent more than 20 years in the business. Working for several well-known glass manufacturers throughout his career, Robert has acquired significant Project Engineering experience and has overseen major international projects. This included successfully delivering new float and solar manufacturing facilities across Europe, Asia, India and North and South America.

In August 2022, Robert joined Grenzebach as Business Development Manager. His role as Managing Director of GSE was effective from January 1st of this year.

"Coming together with one vision, we proactively lead our holistic approach further. And I'm delighted to have such an experienced project manager on board. Also, I would like to thank Dennis Schattauer for his engagement," said Ralf Czeschka, Managing Director at GSE. Stepping up as new Managing Director of GSE, Robert succeeds Dennis Schattauer, who is taking over an important position at Grenzebach in Bad Hersfeld. "I'm happy to hand over GSE in a stronger position to further develop our customers' expectations of this exciting joint venture," said Dennis Schattauer, Sales Director of Grenzebach Building Materials.

WWW.GSE-GLASS.COM

GUARDIAN & VELUX

Joint development of tempered vacuum insulated glass

Guardian Glass and Velux Group recently entered a joint development agreement concerning tempered vacuum insulated glass (VIG).

The agreement will allow **GUARDIAN** and **VELUX** to develop manufacturing processes and capabilities together to meet the growing, evolving demand for VIG.

"We are very pleased to enter into this agreement with Guardian Glass," said Lars Petersson, CEO of Velux Group. "Glass is a key material in Velux roof windows and we are keen to investigate together with Guardian how to advance its capabilities and integrate this into our products to benefit our customers."

Ron Vaupel, President of Guardian Industries, added, "The Velux Group's leadership in architectural roof windows and decades of expertise in high volume fabrication of window systems makes the company the ideal partner for us to make VIG technology available to a broader market. Combined with Guardian's years of proven tempered VIG expertise, we expect to propel VIG into a new era."

With more than 170 years combined innovation and experience, Guardian and Velux will leverage their collective technical teams, intellectual property and additional tools to advance tempered VIG technology.

WWW.GUARDIANGLASS.COM - WWW.VELUX.COM



NSG GROUP

Early closure of a float line at Weiherhammer site

NSG GROUP recently announced its decision to cease production on a float line at the Weiherhammer plant, in Germany, ahead of the cold repair planned for next year. The decision comes as a consequence of a review of the current demand and supply situation in the Central European Architectural Glass market, which expects steady market growth in the long term.

It is anticipated that the production will cease in summer this year, around 12 months prior to the planned repair which will commence in June of next year. The Group expects neither material additional one-off costs nor redundancies as a result of this early closure of the float line.

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PROMAT

Fire-rated window for Scottish museum

Fire resistant glazing system Promat SYSTEMGLAS® has been chosen for the replacement of a large multi-pane window as part of a refurbishment project at Scotland's National Museum of Rural Life in East Kilbride.

Spanning nearly seven metres with a height of one metre, the new viewing window not only improves aesthetics and acoustics, but it helps the museum's operator, National Museums Scotland, to optimise fire safety within the building it has occupied since it opened in 2001.

Working with Hoskins Architects, **PROMAT UK** was tasked with developing a fire rated solution for the prominently located window in the main exhibition hall. The brief demanded EI (integrity and insulation) protection for 60 minutes in line with the fire strategy.

The timber frame SYSTEMGLAS Ligna EI60 system was chosen, incorporating the intumescent Promat Promaseal-PL® Strip around the perimeter of the frame as part of a tested solution. The window was split with three vertical mullions, with Promat F1 glass used in line with its fire test certification which confirms its suitability for use in a landscape orientation. The resulting glazing provides an EI60 fire rating with the added benefit of UV stability, as well as an excellent acoustic rating of 45dBw.

Main contractors FES engaged with Promat SYSTEMGLAS recommended installer, Rated Solutions, to complete the installation of the window, as well as provide a Promat timber fire rated door and over panel within the cafeteria area. Given this clear and traceable supply chain covering raw materials sourcing, manufacturing and in-



stallation, Promat UK was able to issue a certificate of conformity on completion of the glazing and door, in line with its 360-degree 'wheel of assurance' and the golden thread, to offer additional peace of mind for building staff and visitors.

In addition to the Ligna timber frame system, Promat SYSTEMGLAS provides architects with the scope to create fire resistant glass screens, with or without doors, and numerous other glazing elements with steel frames, or frames which can be over-clad, painted or concealed in the surrounding walls, floors and ceilings to give a virtually frame-less look.

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EDGING MACHINES

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ROBOTIC SYSTEMS

LAMINATING LINES

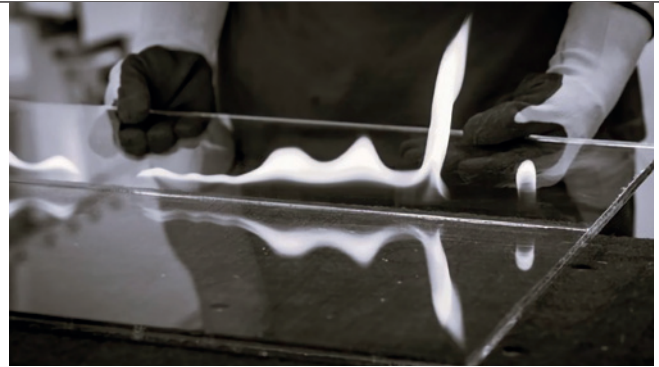
MIRROR SILVERING LINES



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GLASS FOR EUROPE

EC builds plan for industrial leadership in advanced materials



The European Commission (EC) recently published a communication on Advanced Materials for Industrial Leadership to outline its strategy for 'advanced material' research, innovation and production in the EU.

The EC outlined its intention to keep the current EU leadership in this sector, reach strategic autonomy regarding advanced materials and attain Green Deal objectives with the help of research and production of advanced materials.

GLASS FOR EUROPE is pleased to observe that the EC has acknowledged glass as an example of material for which research and innovation must be supported to enable greater well-being in buildings.

Within the numerous other sectors and priorities for boosting research and innovation on advanced materials, glazing material can play a key role, for instance on:

- improving energy efficiency in buildings by using high-performance glazing;
- improving circularity and addressing environmental performance in both the construction and mobility sectors. Flat glass is infinitely recyclable, and there is space to increase the amount of end-of-life flat glass recycled in closed-loop;
- contributing to renewable and low carbon energy conversion and generation through innovation and development of solar glass and mirrors to contribute to the objective of renewing the EU solar PV value chain.

The journal Nature recently argued that glass really comprises the hidden gem in a carbon-neutral future.

Here Glass for Europe's members stand ready to take their part in the research, innovation and production needs for advanced glass to contribute to the objective communicated by the EC and welcome the will to sustain the advanced material industry in the EU for the achievement of the Green Deal's objectives.

WWW.GLASSFOREUROPE.COM

NORTHGLASS

Fusion of elegance at Shanghai Grand Opera House

NorthGlass recently announced its latest venture: excellent integration of NORTHGLASS glass with the Shanghai Grand Opera House.

Situated in the Expo Houtan neighbourhood, along the banks of the Huangpu River, the Shanghai Grand Opera House is not merely an emblematic cultural building; it is a masterpiece where architectural aesthetics are seamlessly integrated. Each detail of this site is meticulously crafted, combining UHPC

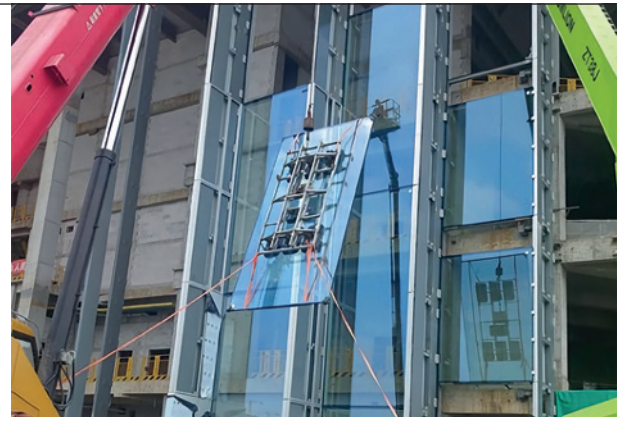
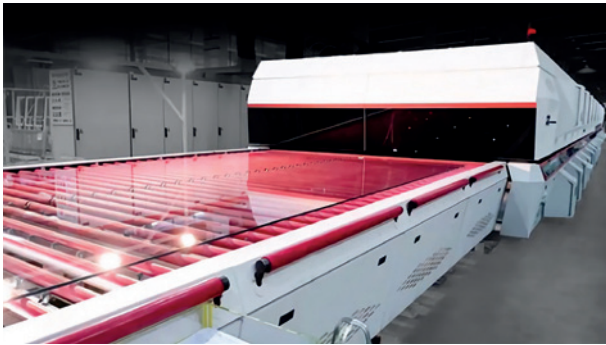


(Ultra-High Performance Concrete), wood and NorthGlass glass into a modernist architectural style brimming with aesthetic appeal.

The opera house comprises public lobbies, a grand opera hall, a medium-sized opera hall and a chamber opera hall, set to open next year. Its exterior, spiralling outward from the public

lobby, resembles a gently unfolding Chinese fan.

The fan's handle and the three opera halls are adorned with NorthGlass's large curtain wall glass. The Shanghai Grand Opera House primarily utilizes multi-layer ultra-white tempered homogeneous laminated insulating glass, with a four-layer laminated hollow as the main feature. The grand opera hall is equipped with nearly 13 metres high, eight-layer super large and thick laminated insulating glass, covering a total area of about 16,000 square metres.



The fan shape holds a beautiful symbolism in traditional Chinese culture, presenting an eye-catching design that slowly unfolds along the Huangpu River, offering an international aesthetic while showcasing a Chinese ambience.

The Shanghai Grand Opera House is a collaborative design effort between the renowned Norwegian architectural firm Snøhetta and the East China Architectural Design & Research Institute (ECADI), with Shanghai Mei Shi Design Studio as the curtain wall consultant and Shenzhen Sanxin collaborating to create the opera house's curtain wall system.

WWW.NORTHGLASS.GLOBAL

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GLASTON & AGC INTERPANE

Leading-edge maintained

AGC INTERPANE's Plattling plant, located at the gateway to the Bavarian Forest, produces high-quality semi-finished glass products and insulating glass. Since 2012, AGC Interpane has been coating glass up to 18 by 3.21 metres. This extra-long glass can be coated with a variety of solar control layers or iplus thermal insulation layers.

AGC Interpane has been a long-term customer of **GLASTON** and the earlier brands that now belong to the Glaston family. The company currently has three Glaston insulating glass lines and one Glaston tempering line. The most recent addition, the Glaston JUMBO XXL FLEX line,



was customized for AGC Interpane. The line was ordered in 2021 and commissioned in April 2022. It allows **AGC INTERPANE** to automatically produce jumbo formats up to 3.3 by 6 metres.

Earlier, these could only be produced semi-automatically or with additional manual effort. The line includes standard components for edge deletion, glass cleaning and glass inspection as well as several specially engineered features.

The first unique feature is the FLEXSPACER'TWINAPPLICATOR, a twin-headed applicator for the automatic application of Super Spacer® material including T-Spacer™ butylin.

The second feature is the UNIT'ASSEMBLER, a heavy-duty assembly, gas-filling and press robot, which automatically processes four-sided stepped IG units with a stepped bottom edge of up to 250 millimetres. Other special formats can also be automatically filled with gas. Until Glaston made this automatic production possible, such units could only be produced manually.

The third special feature is the heavy-duty Glaston sealing robot SPEED'SEALER, which opens up new sealing possibilities. Its dynamic mixing system helps AGC Interpane quickly manufacture deeper sealings.

"Glaston has given AGC Interpane a unique constellation in the spacer application sector. We are the only ones in the world to have this configuration," said Daniel Bruckelt, Production Manager Insulating Glass of AGC Interpane in Plattling. "The UNIT'ASSEMBLER allows us to process special shapes and fill them automatically with gas. The SPEED'SEALER has eliminated any bottleneck at the end of the line. This means that it is now possible to automatically produce large insulating glass units weighing up to 600 kilograms per metre."

WWW.INTERPANE.COM - WWW.GLASTON.NET

ŞİŞECAM

USD 114M to be invested in three new coated glass lines

Şişecam recently announced its decision to invest USD 114M in three new coated glass lines. With their total capacity of almost 20 million square metres these cutting-edge lines will be located in Turkey, Italy and Bulgaria.

As part of the investments planned to commence operations next year, the company will invest in a coated glass line with an annual capacity of seven million square metres at its flat glass production facility under construction in Tarsus, Turkey. Additionally, **ŞİŞECAM** will invest in a coated glass line with an annual capacity of 6.5 million square metres at its flat glass facility in Northern Italy. Şişecam will also invest in a line with an annual capacity of six million square metres at its flat glass facility in Bulgaria.

These investments, totalling USD 114M including working capital requirements, will bring the total number of Şişecam's →

← glass coating lines to seven worldwide. The objective is to elevate Şişecam's existing coated glass capacity, currently around 22 million square metres based on an average product mix across four different lines, to approximately 42 million square metres through these strategic investments.

Dr Ahmet Kirman, Şişecam's Chairman and Executive Member of the Board of Directors, said, "Each strategic investment we undertake enhances our ability to grow and progress. Our most recent decision, aimed at addressing the rising demand for coated glass within the flat glass sector, marks a significant milestone. This initiative will almost double Şişecam's production capacity for coated glass. While strengthening our leadership in the architectural glass market in Turkey, it will also facilitate our access to a broader customer base globally with higher competitiveness.

"These investments will elevate the share of high-value products within our total production volume and augment our product portfo-

lio. Additionally, the investments will facilitate Şişecam in achieving a more flexible management of its supply chain, leading to heightened operational efficiency."

WWW.SISECAM.COM.TR



AGC GLASS EUROPE & VAN HUËT GLASS LOGISTICS

Partnership renewal

The partnership between **AGC GLASS EUROPE** and **VAN HUËT GLASS LOGISTICS** is to be formally extended till 2029.

Van Huët has been taking care of AGC Glass Europe's glass logistics with the Logiglass concept for some years already. The company specializes in transporting glass with modern, lightweight glass loaders that haul large sizes of unpacked glass directly from the factory. However, Van Huët also has a solution for transporting all kinds of sizes of (un)packed glass without a stillage or packing material. The Logiglass trailer is the solution with a built-in crane, making loading and unloading quick and easy. No packaging material means no waste, and the glass is transported safe and secured.

WWW.AGC-GLASS.EU - WWW.VANHUET.COM



CGI & GLASTON

Strategic partnership

One of the largest independent IT and business consulting services firms in the world, CGI has agreed with GLASTON on a strategic cooperation, whereby the company becomes Glaston's main global partner in the group's IT services and in advancing digital transformation.

Glaston is a leader in its industry, providing machines and equipment as well as related services for glass heat treatment, insulating glass production and mobility, display and solar glass production. To strengthen its international competitiveness, Glaston has chosen CGI as its main partner to harmonize and modernize the group's IT systems and streamline the day-to-day activities of its employees by renewing end-user services in all its operating countries.

"It is important to us that our partner understands the operating environment of the manufacturing industry as well as the needs of our international and growth-oriented business," said Glaston's VP, ICT & Digitalization Janne Puhakka. "We were also impressed by CGI's corporate culture, which emphasizes the desire to listen to the customer and develop services in close cooperation. Such a foundation is safe to build future growth and rely on when we consolidate operations and develop our business."

"In the partnership between CGI and Glaston, the strategic components of our service delivery model are clearly visible," said Niraj Sood, Senior Vice President Consulting Services, Manufacturing Business Unit at CGI in Finland. "Glaston benefits from our strong local presence combined with the expertise of our global service centres. It has also been important to see how our solution-oriented customer service and quality culture have convinced Glaston of our ability to assist them in the next steps of growth and leveraging its global reach."

WWW.CGI.COM - WWW.GLASTON.NET

GLAS TRÖSCH

Kantonalbank Hall - a versatile venue

At the beginning of this year a new building was introduced to St Gallen, Switzerland: the Kantonalbank Hall. Designed by Iig Santer Architekten and built to meet the infrastructural requirements of the popular trade fair location, it impresses with its straightforward, spacious design.

Located close to the A1 motorway, this top-class exhibition and event hall can accommodate up to 12,000 people and is suitable for a wide range of uses from congresses and trade fairs to sporting events, concerts and cultural events.

GLAS TRÖSCH supplied two of its top products for the construction, featuring the coatings SILVERSTAR SUPERSELEKT 35/14 and SILVERSTAR COMBI NEUTRAL 51/26.

SILVERSTAR SUPERSELEKT 35/14 is a glass solution char-

acterized by strong solar control properties and high light transmission, optimum for roof glazings. SILVERSTAR COMBI NEUTRAL 51/26 is used in the façade, protecting against the sun and allowing plenty of light into the room, while also being a top thermal insulation glass.

WWW.GLASTROESCH.COM



CGI and Glaston enter into a strategic partnership to advance Glaston's international growth and digital transformation

[Learn more →](#)



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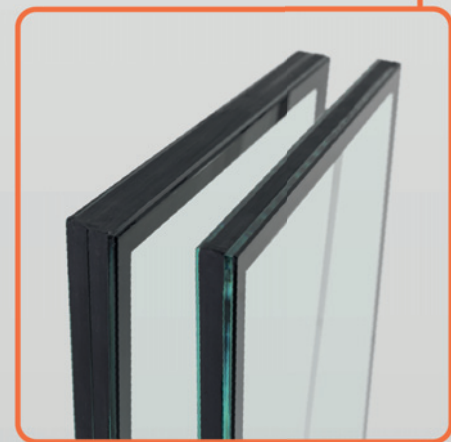
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FOR **FLAT** AND **BENT** GLASS

LISEC & KONG WENG

Long-time companions in an emerging market

Kong Weng Glass, in Meru, Malaysia, 23 kilometres from Kuala Lumpur, fully utilises the opportunities afforded by emerging markets in conjunction with automated machine production and his heart beats for the technologies of the future.

Contact between Kok Cheong, owner of Kong Weng Glass, and LISEC was initially made in 1988 at Glasstec in Düsseldorf.

The informative discussion back then remains a vivid memory for Kok Cheong to this day: “The LiSEC team is passionate about its products and solutions. You could tell that in the conversation even back then. I was fascinated by the functionality and glass processing quality of the system presented, and I can still recall how impressed I was by the glass sample on display and the machine.”

KONG WENG manufactures glass products from flat glass processing and mirror processing over a production area encompassing 4,300 square metres. Furthermore, the company offers various production processes - from bending and tempering small glass to water jet cutting and glazing solutions.

At the heart of production lie the LiSEC cutting systems: a GFB-37/26, which was purchased in 1997 shortly after significant expansion of the production area. The company’s strong maintenance culture means that the cutting table can still be fully utilised. “The machine is in such good condition, it could be displayed in a LiSEC museum,” said Kok Cheong. Since 2020, the Base-Cut 3726 has also increased production capacity at Kong Weng, meaning that the company’s specialisation in the processing of flat glass can be realised even more effectively.

With sales of USD 3.5M, Kok Cheong and his company have a clear priority: delivery reliability.

“And that is also the reason why we have invested in a second LiSEC cutting system despite limited space. If we can’t supply our customers on time and with high quality products, our customers can’t deliver either. This results in a vicious circle of dissatisfaction that we want to avoid at all costs,” added Kok Cheong. “Customer satisfaction is the key to success. Many people do not fully understand how to run a company; their goal is to make a profit. But profit alone cannot be the goal. The aim must be to do a good job - in other words, to satisfy the customer.”

LiSEC will also play a role at Kong Weng in the future: a replacement for the GFB cutting table is being considered, in order to steer in the direction of strategic future goals with full production capacity.

WWW.LISEC.COM



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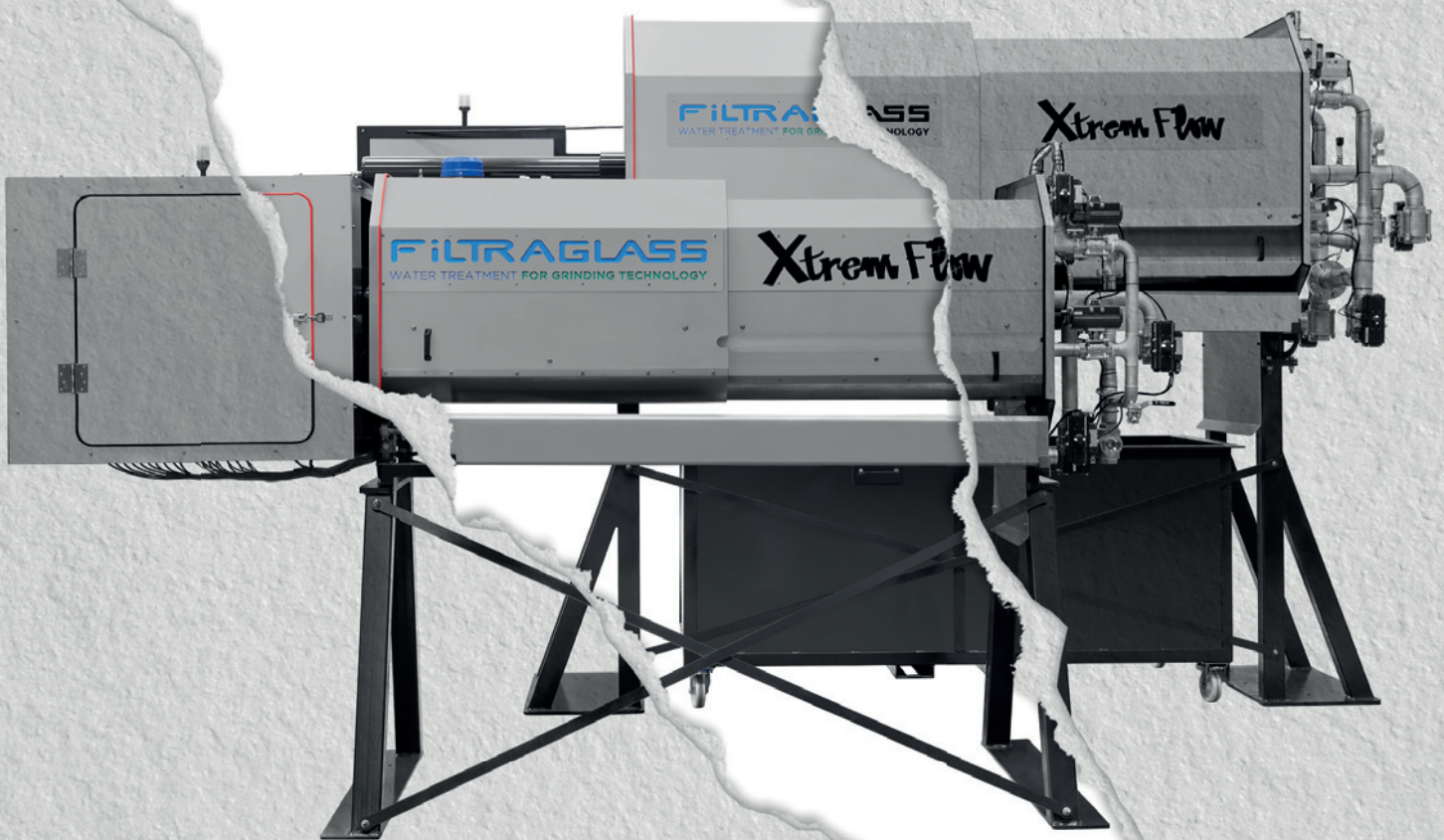
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AGC

Transfer of Russian operations completed



Having been considering the transfer of its Russian business since February of last year, **AGC GROUP** has announced confirmation of the transfer. Now, with its completion, the Group has fully withdrawn from the Russian market.

Transferred companies

- AGC Bor Glassworks JSC, Nizhny Novgorod Oblast, Russian Federation.

Net sales (Actual results for 2023) JPY 14.6 billion.

Main business: Manufacture and sale of architectural and automotive glass.

- AGC Flat Glass Klin LLC, Moscow Oblast, Russian Federation.

Net sales (Actual results for 2023) JPY 19.5 billion.

Main business: Manufacture and sale of architectural glass.

Transferor: Igor Mikhailovich Leytis (Russian businessperson).

Transfer price: Not disclosed in accordance with the confidentiality agreement with the transferor.

Impact on business performance

The transfer is expected to result in Other Expenses of EUR 220M (approximately JPY 35 billion) mainly due to the realization of “Exchange differences on translation of foreign operations” in accounting. This loss has been incorporated into the financial forecast for the current fiscal year, which was announced on February 7 of this year.

WWW.AGC.COM

VITRUM

XXIV Edition dates announced: Milan, 16-19 September 2025

Official dates for next year’s edition of **VITRUM** were announced at the yearly general meeting of GIMAV (Italian Association of Machinery and Accessories for Glass Processing), which was held on February 21 of this year at the headquarters of Forel in Vallio di Roncade, Treviso, Italy. Always a prestigious event for the glass industry, the trade show is scheduled to take place from September 16 to 19 at Fiera Milano-Rho.

During the meeting, associates emphasized the significance of Vitrum as a showcase for cutting-edge technologies advanced by both Italian and international companies. Indeed last year’s edition witnessed a substantial return of visitors following the post-COVID period - with over 53 percent of qualified attendees

from 90 countries worldwide. Notably, 54 percent hailed from European countries, 29 percent from Asia and the remaining 17 percent from the rest of the world.

Fiera Milano, which has always hosted the event, reported a remarkable growth trend in exhibition attendance this year. Approaching pre-COVID numbers, that trend has left organizers highly upbeat about expectations for next year.

WWW.GIMAV.IT





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NSG GROUP

Successful start to Europe's first carbon capture trial



NSG GROUP recently announced that Europe's first carbon capture trial on a flat glass manufacturing plant has successfully started in the business' UK Group, **Pilkington United Kingdom**, as part of a national project led by C-Capture.

The trial forms part of the 'XLR8 CCS – Accelerating the Deployment of a Low-Cost Carbon Capture Solution for Hard-to-Abate Industries' project. Led by C-Capture, developers of next generation technology for CO₂ removal, XLR8 CCS aims to demonstrate that a low-cost carbon capture solution is a reality for difficult-to-decarbonize industries in the race to net zero.

XLR8 CCS is funded by the UK Government's Department of Energy Security and Net Zero with GBP 1.7M of funding secured from their GBP 1 billion Net Zero Innovation Portfolio. The funding is part of the GBP 20M Carbon Capture, Usage and Storage (CCUS) Innovation 2.0 programme, aimed at accelerating the deployment of next-generation CCUS technology in the UK. Additional private sector contributions support a GBP 2.7M total for this multi-industry project.

One of C-Capture's carbon capture solvent compatibility units (CCSCUs) has now been deployed at Pilkington UK's float furnace at the Greengate glass manufacturing site in St Helens, part of NSG Group. Following pre-installation commissioning at C-Capture, the unit was connected at the base of UK5 furnace chimney. The CCSCU is now successfully separating CO₂ from the waste flue gas.

The trial at the Greengate site will continue for several months to assess the compatibility of C-Capture's proprietary solvent-based technology with real-world flue gasses from an industrial glass making furnace. A further five carbon capture trials will take place across the UK as part of the XLR8 CCS project at industrial sites owned by project partners Glass Futures, Heidelberg Materials and Energy Works Hull - in conjunction with leading consulting and engineering company, Wood. Carbon capture solvent compatibility units (CCSCUs) designed and built by C-Capture and Wood will be installed and operated on partner sites.

Project success will see C-Capture and its project partners well-placed for deployment of commercial-scale carbon capture facilities across the three industries by 2030 which could capture millions of tonnes of CO₂ per year.

NSG Group is actively working on environmental issues and successful manufacturing experiments by using hydrogen energy and 100 percent biofuel.

WWW.PILKINGTON.COM

VITRO ARCHITECTURAL GLASS

Low-carbon, energy-efficient low-e glass

As part of US President Biden's Investing in America agenda, the General Services Administration (GSA) recently awarded over USD 10M to select windows made of low embodied carbon (LEC) glass to be featured in an existing renovation project at the Lewis F. Powell Jr. US Courthouse and Annex buildings in Richmond, Virginia, USA.

VITRO ARCHITECTURAL GLASS recently announced that its Solarban® 60 solar control low-e glass was selected by the GSA for the Powell Courthouse and Annex renovations. Solarban® 60 glass meets one of the limits (top 40 percent) established in GSA's IRA Low Embodied Carbon Material Requirements for flat glass. Additionally, Solarban® 60 glass meets the courthouse's efficiency, performance, and aesthetic needs while generating fewer emissions from manufacturing, with a third-party verified global warming potential (GWP) of 1,350 kilograms of carbon dioxide equivalent per metric tonne, which is six percent lower than North America's flat glass industry standard figure. →

← With its ability to transmit 70 percent of the available visible light while blocking 62 percent of the sun's heat energy, Solarban® 60 glass offers year-round comfort for occupants, significant energy savings and a clear, colour-neutral appearance.

Vitro's production teams have taken several significant steps to lower embodied carbon generated during glass production, which is challenging because flat glass manufacturing makes up more than 75 percent of the GWP of double-pane insulating glass units (IGUs).

Strategies to lower embodied carbon include using batch material more efficiently, implementing furnace control systems to reduce the variability of melting temperatures and fuel consumption, adding low-NOx burners and variable frequency drives on cooling fans to reduce energy use, installing energy-efficient LED lighting and driving supplier improvements.

A highlight of these efforts is Vitro's pioneering use of oxy-fuel technology at three plant locations in the US Vitro's patented

oxy-fuel furnace technology melts glass raw materials such as sand and silica carefully, mixing pure oxygen (instead of air) with natural gas, significantly improving its energy and environmental performance. This technology and process reduces energy consumption in glass-melting furnaces by as much as 20 percent, cutting greenhouse gas emissions in half.

WWW.VITROGLAZINGS.COM



TUOMAS & CVGLASS

Machines purchased to meet growing demand

Formed in 2012 from the merger of the companies Viplasa, Alvisan and Cristalde, **CVGLASS** is consolidated with a rich history in the glass sector, making the most of human and technological resources to become a benchmark in the glass market. With two production centres located in Polígono Industrial Juncaril and Vegas del Genil, both in Granada, Spain, CVGLASS has a total surface area of 6,000 square metres of facilities. This robust infrastructure supports its production capacity and its commitment to quality and innovation.

CVGLASS has recently invested in new **TUOMAS** cutting machines to meet the growing demand for glass. These machines stand out for their cutting precision, reliability and close and efficient technical service. The easy and simple operation of these machines, together with their low material breakage rate, make them the perfect choice for CVGLASS' needs.

WWW.TUOMAS.COM - WWW.CVGLASS.CO.UK



BAVELLONI

Bavelloni double-edging technology chosen



For over 35 years, **VETRERIA LO.DA.**, situated in San Giorgio delle Pertiche, PD, Italy, has been operating in the produc-

tion and sale of glass for the construction and furnishing sectors, guided by their corporate philosophy, 'invest in quality.'

To fortify this commitment, they recently integrated **Bavelloni HE500** double-edging technology for processing flat edges with arrises. Productivity, accuracy and flexibility are all key features of Bavelloni HE500 double-edging lines; available in four models depending on the number of spindles, they can be customized in a variety of configurations according to the layout, to the maximum workable sizes, to glass profiles and to the automation level.

The model HE500 11 6000x3300, now fully operational at LO.DA.'s facility, aligns superbly with their requirements. They opted for the largest size in this series to meet the demands of producing jumbo glass panes.

With various options on-board and accessories, this double edging line ensures maximized productivity. Automatic intermediate bars, automatic regulation of polishing wheel pressure, barcode reader and tilting tables for seamless loading and unloading contribute to reduced set-up times for boosted productivity.

This line features a customized tool configuration with 11 positions on each side, including oscillating, corner cutting and low-e removal spindles. This guarantees high versatility, allowing it to tackle a diverse range of glass processing tasks.

WWW.BAVELLONI.COM

LISEC

ARL-45F LED display for desiccant level in spacers

With desiccant filling machine **ARL-45F**, spacer frames made from all common materials can be filled with **LISEC's** desiccant, both as rectangular frames and as shapes. Filling at the back of the frame guarantees a stable process, even with delicate plastic materials. The optional measurement of the desiccant quantity can ensure that there is sufficient desiccant in the frame compared to other systems.

Functions included as standard

- Automatic drilling of the spacer frame on the rear side of the short and long frame leg
- Adjustment of the optimum working height by means of a pneumatic lifting device

- Automatic pumping of the granulate from a 200 litre drum to the filling devices
- Simultaneous filling of two sides of the spacer frame with granulate
- Sealing the drilled hole with butyl

Optional functions

- Measurement and documentation of the desiccant filling quantity
- Equipment for processing heat-flexible spacers (Swisspacer, Multitech, Thermobar, TGI Precision)
- Processing of frames with a maximum size of 3,500 by 1,200 millimetres

WWW.LISEC.COM





THE GREEN CHOICE



reduction of:
rejected glass area
machinery wear
electricity consumption
water for washing



N1 Italian Pavilion
Stand 171



Quality is invisible



The innovative **OPT** scanner checks the jumbo\regular plates, **even if not washed**, before cutting, to identify structural defects and eliminate them, optimizing the entire production cycle.



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CSR & SAINT-GOBAIN

Confirmation of acquisition proposal

Referring to media speculation in relation to interest in an acquisition by SAINT-GOBAIN, CSR recently confirmed that it has indeed received a conditional, non-binding, indicative proposal from Saint-Gobain to acquire 100 percent of the shares in CSR by way of scheme of arrangement for a price of AUD 9.00 cash per share (the Proposal).

Under the Proposal, CSR would be entitled to pay a final dividend of up to AUD 0.25 per share for its financial year ending 31 March of this year, which would be deducted from the cash offer price.

The Proposal is subject to a number of conditions, including (but not limited to):

- Completion of satisfactory due diligence
- Entry into a scheme implementation deed on customary terms and conditions
- The unanimous recommendation from the CSR Board to vote in favour of the proposed transaction (in the absence of a superior proposal and subject to the independent expert concluding that the transaction is in the best interests of CSR's shareholders)
- Certain regulatory approvals (including Foreign Investment Review Board)
- CSR shareholder approval

The Proposal follows an earlier indicative offer and a period of negotiation, which included the provision of value impacting due diligence. Following review of the Proposal, the CSR Board unanimously resolved to pursue the Proposal. CSR is currently providing Saint-Gobain with confirmatory due diligence access to progress to a binding transaction at an agreed offer price of AUD 9.00 per share.

The CSR Board notes that there is no certainty that the Proposal will result in a binding offer for CSR. The CSR Board will continue to keep the market informed as appropriate and in accordance with its continuous disclosure obligations. CSR will make no further comment at this time.

CSR shareholders do not need to take any action in relation to the Proposal.

CSR has appointed UBS Securities Australia Limited and Herbert Smith Freehills as financial and legal advisers respectively.

This announcement was authorised for release by the Board of Directors of CSR Limited.

WWW.SAINT-GOBAIN.COM





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- Maximum precision and reliability.
- Reduction of raw material costs, requires fewer layers of film than PVB tempered glasses.
- It does not require a pre-laminate line.
- Requires less plant space.
- Minimal operator effort.
- High production rates.
- Ready for Industry 4.0.

SOLARCYCLE®

Solar panel glass plant to be opened in Georgia, USA

SOLARCYCLE®, an advanced technology-based solar panels recycling company, recently announced in partnership with Georgia Governor Brian P. Kemp, that the company will create more than 600 new full-time jobs in Polk County, Georgia, USA, investing an estimated USD 344M in a solar glass manufacturing facility in Cedartown.

The facility will be the first-of-its-kind in the country to use recycled materials from retired solar panels to make new solar glass. SOLARCYCLE currently operates facilities in Odessa, Texas, and Mesa, Arizona, and has inked long-term partnerships with more than forty of the nation's largest solar energy companies to reuse and recycle their solar panels including Georgia-based solar manufacturer Qcells. The company's advanced, proprietary recycling technology allows it to extract 95 percent of the value from used solar panels.

SOLARCYCLE's new facility in Georgia will position the company as one of the first manufacturers of specialized glass for crystalline-silicon (c-Si) photovoltaics in the US, with the capacity to make five to six gigawatts worth of solar glass every year. The glass will be sold directly back to the domestic solar manufacturers and fill a critical gap in the country's supply chain to build more solar panels in America.

"There is no question that solar panel manufacturing is booming in the State of Georgia. We are thrilled to join the team and build our recycled solar glass plant in Cedartown, which will bring hundreds of good-paying jobs to Georgia and help the industry in its goals to build fully American-made clean energy solutions," said Suvi Sharma, CEO and Co-Founder of SOLARCYCLE. "We look forward to continued collaboration with the State of Georgia and the City of Cedartown."

SOLARCYCLE will construct a new manufacturing facility located at Cedartown North Business Park, a Georgia Ready for Accelerated Development (GRAD) certified site. The plant, which will be the first of SOLARCYCLE's facilities to manufacture glass in addition to recycling solar panels, is scheduled to begin construction this year and will be operational in 2026. SOLARCYCLE will create full-time jobs in manufacturing, engineering, management, research and design as well as support staff.

WWW.SOLARCYCLE.US



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FOREL and PRESS GLASS eye U.S. production expansion together

With over thirty years of experience, Press Glass has expanded its operational strategies by extending its production horizons from Europe to the United States. After establishing a highly dynamic and modern organization, it currently positions itself as one of the leading global players in the flat glass processing market. The company's first step on American soil was the acquisition of Glass Dynamics, a family-run business in Stoneville, North Carolina. At the time, the production standards met the needs of simple projects with limited final dimensions. "Back in 2017, our focus was on medium and small-sized projects, such as commercial facades, shop windows, and other minor applications," says Director of Manufacturing and Technology at Press Glass Inc. Gregg Vanier.

PRESS GLASS AND FOREL: IN LOCKSTEP TOWARDS NEW HORIZONS

Just two years later, in 2019, expansion continued with the construction of a new production plant in Ridgeway, a small town in the Virginia countryside. This facility, which became operational in 2020, introduced more complex machinery

to meet the demands of an ever-evolving market. It marked a significant advancement towards specialization in the production of structural glass for commercial buildings. Here the offering was diversified into a wide range of products: from high-quality tempered glass to laminated glass - including printed glass and insulating glass units.

To meet the demands from the world of architecture and contracting, finished product sizes required a more advanced production and logistical asset. Hence, as Gregg Vanier stated after presenting an overview of the multinational's evolution, the need to collaborate with Forel: "Our competitive advantage lies in the exceptional quality



From left, Peter Zawada - Engineering Investments Project Manager at Press Glass Inc., Rafal Wrona - Special Glass Production Director at Press Glass Inc., Gregg Vanier - Director of Manufacturing and Technology at Press Glass Inc., Maciej Migalski - President of Press Glass Inc.

Thanks to its collaboration with FOREL's insulating glass line, PRESS GLASS has been able to further solidify its dedication to tailored solutions - all while enhancing its versatility. Having already expanded from Europe to the US after more than thirty years in flat glass processing, the company's new coveted partnership will now see it moving ever closer to an automated future within the American market.

understand customer needs and offer tailor-made solutions, meeting their requirements despite the challenges of managing large glass sizes. Choosing Forel as a supplier for the expansion in the United States means having identified the ideal partner. Here, in deeply entering the dynamics of a market yet to be discovered, it was necessary to rely upon a company that can respond with a wide and innovative product line, developed to meet unique requirements and needs. Here, Forel's organization, with a branch in Minnesota, has allowed for close monitoring of all project phases. It is thanks to this presence on the territory that the project's evolution has been constantly monitored with flexible management of any unforeseen events - as well as effective achievement of the set goals.

With Forel's No Limits Insulating Glass line, purchased by Press Glass and introduced in the Ridgeway facility, it is possible to manage any format requested by customers with versatility: from the more contained format to Jumbo sizes with a maximum configurable height of 3,300 mm and for an extension in length of up to 6,000 mm. This type of product offers the customer the possibility to choose the most suitable tailor-made configuration for their needs. A direct consequence of this innovation is that it has afforded Press Glass the possibility to specialize in the pro-

Press Glass Inc. facility with an overview of Forel processing lines.



of our products, achieved through the use of first-rate machinery and the high qualification of our operators. Indeed the reason we chose to collaborate with Forel is because of their vertical processing machines and insulating glass lines since we were looking for machinery that was precise,

fast and reliable." Vanier continues: "Pre-temper processing is one of the most relevant activities within our production cycle and is very susceptible in terms of accuracy, quality, simplicity, and yield. These characteristics are fundamental for our monolithic glasses in view of their future installations as balustrades, handrails,

or shower systems, where the combination of aesthetics and safety is the starting point."

THE IMPORTANCE OF LISTENING: ORIENTATION TO CUSTOMER NEEDS

Press Glass has managed to stand out in the global market thanks to its ability to

duction of structural and architectural glasses which find application in the commercial and design fields. With attention and sensitivity placed on the theme of energy saving; the possibility of packaging an insulating glass panel with three or even four glass sheets and with a maximum insulating thickness of up to 100 mm, significantly impacts the energy efficiency of the buildings in which these glass panels will be installed.

A SHARED PERSPECTIVE OF THE FUTURE

Although managing the installation of machinery for Jumbo-sized sheets might

have seemed a challenge during the pandemic, the Press Glass work team was fully supported for a successful outcome by Forel's team. During the months of the installation phase, internal staff training courses were conducted in addition to the plant's testing phase for prompt management of any emer-

gencies. Here reliability continues to be guaranteed after the installation phase by Forel's Service Support - delivered through the onboard Forel Remote Control system: a virtual technician of sorts that can intervene immediately in case of anomalies while minimizing any machinery downtime. As Vanier concludes deci-

sively regarding the next step in the market: "The future is automation." At that he announced that the Ridgeway plant will be further expanded in the near future to increase its production capacity and consolidate its position in the American market - counting on Forel as main partner for the growth path.



Overview of the milling drill combined with the grinding machine.



GREGG VANIER
DIRECTOR OF MANUFACTURING AND TECHNOLOGY

FOREL SpA

FOREL

Via per Monastier, 4
 31056 - Vallio di Roncade TV
 - ITALY
 Tel.: +39-0422-840507
 Fax: +39-0422-840900
 E-mail: info@forelspa.com
www.forelspa.com


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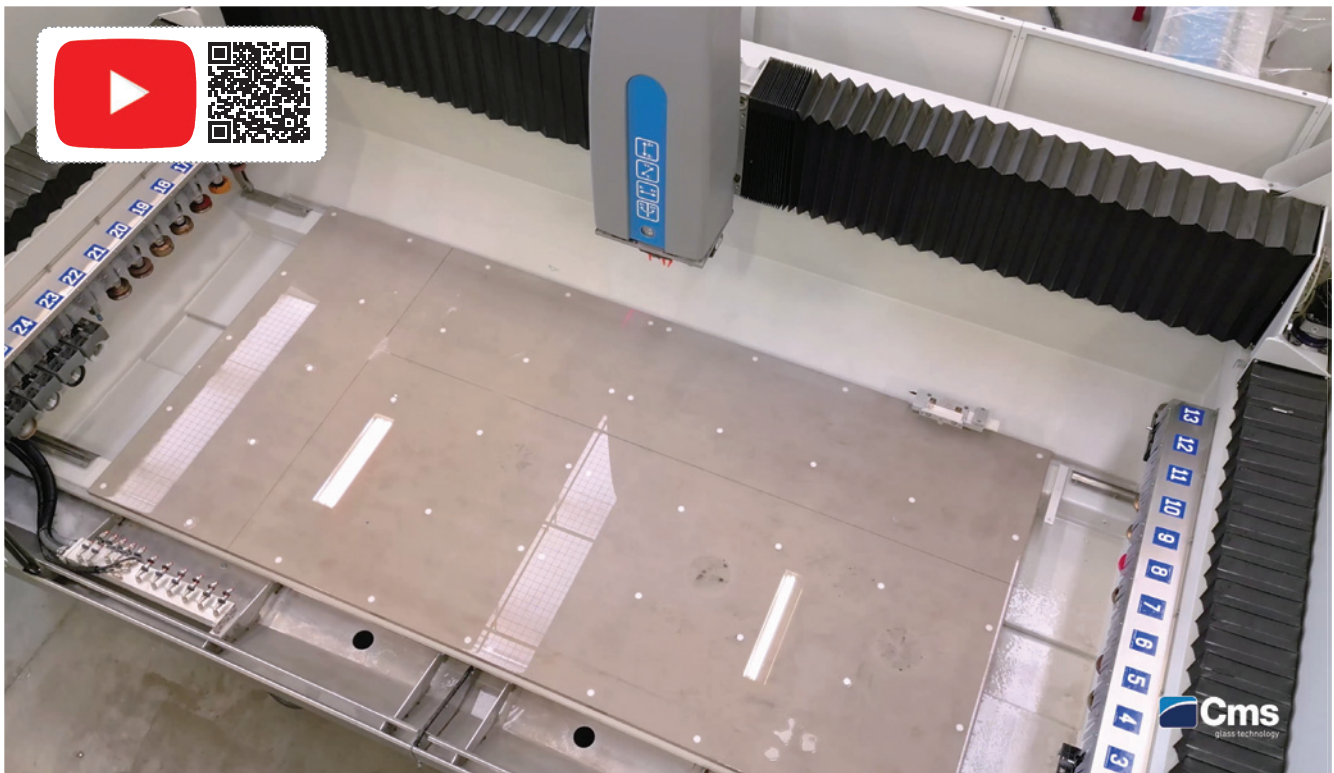
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Newly-extended CMS range of CNC machining centres



The current range of CNC horizontal and vertical machining centres, already extensive, was further expanded recently with the introduction of the new Electa horizontal machining centre - together with the new Taktika vertical machining centre.

ELECTA

CMS Electa is a new 3- or 4-axis CNC machining centre for processing flat glass, whether thick, thin, float or laminated.

Electa features the smallest footprint and largest working area in its category. Instead of the traditional aluminium work table it's equipped with

a unique Metal Synthetic Technology (MST) work table that has a high inertia and thickness which dampens vibrations while helping to improve processed glass quality. The 3-axis version performs grinding, edge polishing, drilling and milling, while the 4-axis version can also perform cup wheel polish-

ing, diamond disc cutting, engraving and 5° chamfering. With a maximum axis speed of 72 m/min, Electa guarantees top performance and is optimum for increasing productivity since it performs high-speed grinding and can machine multiple workpieces on the same worktable.

For both flat and bent glass processing, CMS Glass Technology's CNC machining centres, cutting tables, seaming machines and waterjet cutting systems can all be applied within a range of sectors. Among these we can list construction, interior design, aerospace, automotive and marine - to name but a few.

Electa comes with a Console built into the machine. The 21.5" touch screen takes full advantage of the new operator interface and the operator is constantly guided through the most common steps while operating the machine.

The tool magazines are located to the side of the machine for better accessibility and to offer the operator a better view of the tools in the magazine. Electa is part of the CMS range of 3/4-axis horizontal machining centre, which also includes Gea and Speed, as well as the Maxima 5-axis CNC machine.

TAKTIKA

Taktika is the compact vertical machining centre de-

veloped by CMS for the greatest flexibility in small spaces. Conceived for small and medium-sized glass factories that need to increase their efficiency, it is also suitable for larger companies that want the flexibility to manage small batches of glass. Taktika is equipped with two operating units (each with a water film presser specially developed by CMS to guide the glass during processing), a fully-automated dressing system for grinding wheels and core drill bits, and suction cup units with an uncompromising workpiece holding system. The vacuum is created by a Venturi system that not only ensures top performance, but also con-



Electa: 3/4 axis CNC machining centre



sumes 87% less electricity than conventional vacuum pumps. Taktika can perform seaming, grinding, polishing, milling and coaxial drilling. It can be used stand-alone or in line with a vertical washing machine to wash the glass immediately after processing. Taktika is equipped with SCADA (Supervisory Control and Data Acquisition) software to supervise and monitor all the main machine components through specific synoptic views. Taktika is part of the CMS range of vertical machining centres, which consists of the Ypsos vertical machining centre for drilling, milling and edge machining and the VertecMill vertical milling-drilling machine.

Taktika: vertical machining centre





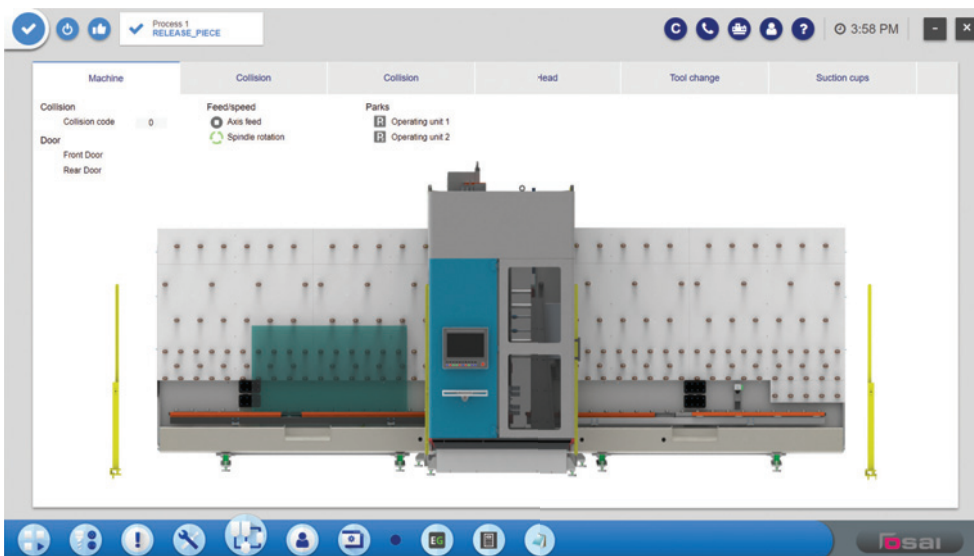
SOFTWARE

All CMS machines, including the new Electa and Taktika machining centres, feature the new CMS Active software interface, which is designed to simplify human-machine inter-

action and make the process super-efficient. Moreover, CMS machines come with a one-year free subscription to CMS Connect, the innovative industrial-IoT platform. CMS Connect displays, analyses and

monitors all data from connected machines in real time, turning it into information that can be exploited to increase productivity while reducing both operating and maintenance costs. Indeed the customer can

access the information from any device. Thanks to its tradition and experience, CMS Glass Technology is a main player today in the glass fabrication sector, providing anything from standard machines to fully-automated and custom systems - all to meet customer needs.



CMS GLASS TECHNOLOGY



Via A. Locatelli, 123
24019 Zogno - BG - ITALY
Tel.: +39-0345-64111
E-mail: info@cms.it
www.cms.it



Customer satisfaction at LiSEC Australia hoisted as top priority

When LiSEC first entered Australia, it was a humble beginning. The Sydney branch, established back in 2006, operated with a team of just three. Angela De Maina, Projects and Service Coordinator and a long-term employee, recalls in the early days they processed only a handful of orders and responded to a couple of queries in a day. Since then, the subsidiary has experienced remarkable growth, a testament to its

commitment to excellence and innovation. Today, the team has expanded to twenty-nine, functioning seamlessly across three core departments: projects, service, and spares.

A CONSOLIDATED REGIONAL FOOTPRINT

LiSEC now holds an impressive share of glass machinery and software in the region. With such a substantial presence, effective collaboration

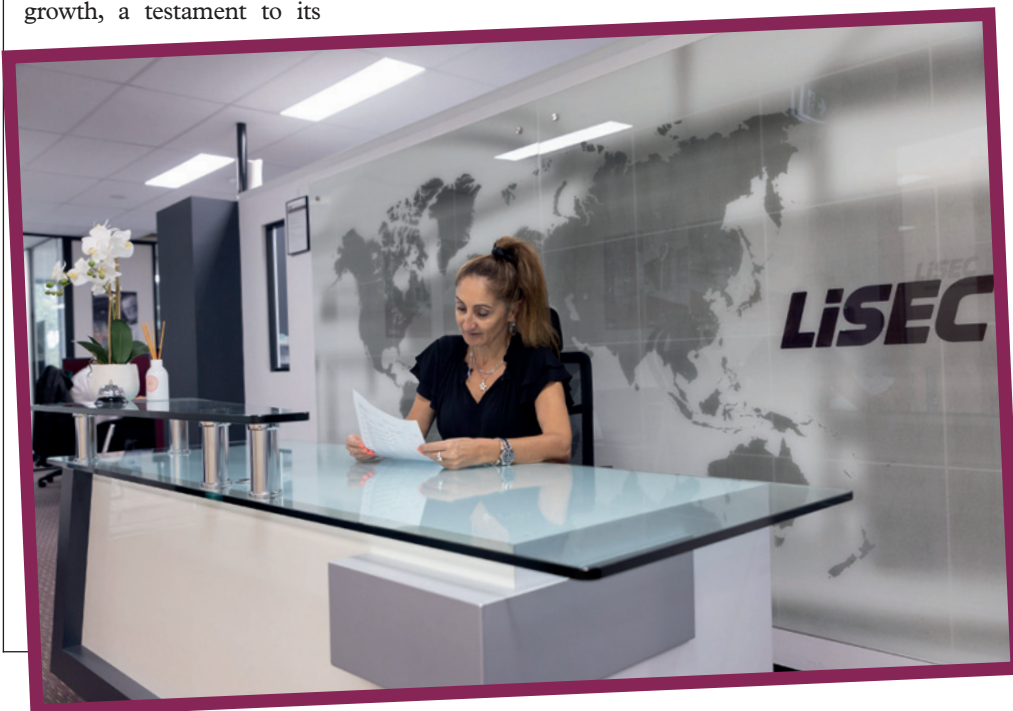
within the team is essential. Meeting customer demands requires a synchronised effort and a shared vision. At LiSEC Australia, it's not just about business; it's about building relationships. The professional bonds among colleagues extend beyond office walls, creating a close-knit team that operates like a small family.

The machinery service and spares department serve as a driving force behind the company's operations. Na-

tional Projects and Service Manager, Ben Cutler leads the team of ten who spend most of their time on the road - working on installations, machinery rebuilds, and mechanical adjustments.

LOGISTICS

Australia's vast land expanse poses logistical challenges for the team. With technicians scattered across the country, service technicians must be versatile. These 'all-rounders' blend mechanical and electrical knowledge - a dual trade to support LiSEC machinery nationwide. Each customer site presents unique conditions, with varying machines and workflows. Factor in the rapid evolution of mechanical and digital technology, and adaptability becomes essential. The service department has recently strengthened its footprint by recruiting additional technicians due to commence in March and April to support New South Wales, Western Australia, and Victoria - one installation and adjustment at a time.



With comprehensive solutions that consistently maintain the traction of its historical successes, LiSEC Australia continues to put customer satisfaction first. Having evolved from a small team, the company's close-knit staff - more numerous now - exhibits both logistical prowess and software expertise as they remain poised to lead tomorrow's innovations in glass automation.

SOFTWARE

Simultaneously, the software department plays a pivotal role by providing critical support for functions like GPS.order, prod, and autofab to clients in Australia and New Zealand. Led by Adam Zinman, Head of Automation HUB Region Oceania / SE Asia, this dynamic team of six specialises in intricate and highly technical software domains. The department has seen recent changes. They extend their gratitude to Varun Mohan, Support Engineer, whose significant contributions have helped ensure the team's suc-



cess. As Varun embarks on new endeavours in Dubai, he will continue to support Australian customers from afar. Alongside senior technicians Isaac Watts,

Ryan Boyd, and Mutahir Hameed, the team warmly welcomes two new members: Yathuran Balachandran and Michael Hallinan. Yathuran, who joined in September of last year, has integrated with ease into the team and brings a strong background in IT support, management, and order entry. Michael, who came aboard in January, boasts five years of experience with Rockwell Automation. His specialisation in PLC's and MES ensures a smooth transition into his new role.

ALL EYES TRAINED AHEAD

Going forward into 2024, LiSEC Australia's vision is to be the partner of choice for glass processors' automation requirements and their digital transformation journey. Twain Drewett, Head

of HUB Region COS - Oceania / SEA, explained the future plans thus: "Our key focus is to increase LiSEC's value proposition to existing and new customers by providing 'all-in-one solutions' that combine top-tier machinery and software with quality end-to-end support services, with customer success central to all that LiSEC do every day."

ABOUT LISEC

With headquarters in Seitenstetten/Amstetten, Austria, LiSEC is a worldwide group of companies that for over 60 years has provided individual and comprehensive solutions in flat glass processing and refining. Its businesses include machines, automation solutions and services. In 2023, the group achieved an export ratio of around 95 percent and generated sales of almost EUR 300M with roughly 1,300 employees and 20 locations. LiSEC develops and manufactures glass cutting and sorting systems, single components and complete production lines for fabricating insulating glass and laminated glass, as well as machines for glass edge processing and tempering. With reliable technology and intelligent automation solutions, LiSEC sets standards in quality and technology and significantly contributes to the success of its customers.

LiSEC Austria GmbH

LiSEC

Peter Lisec Street 1
3353 Seitenstetten - AUSTRIA
Tel.: +43-7477-405-0
Fax: +43-7477-405-80
E-mail: sales@lisec.com
www.lisec.com

PILKINGTON

Mirai™ glass verified for its superlow embodied carbon

Setting new standards in environmental performance, Pilkington Mirai™ architectural glass was recently identified among its standard float glass counterparts for having the lowest embodied carbon.

Arturo Benini-
Technical
and
Marketing
Manager



Photo: Kristoffer Wittrup





With its impressive 52 percent reduction in total embodied carbon in comparison with so many alternative choices out there, Pilkington Mirai™ has been singled out for being a truly sustainable option in today's market.

RIGOROUS THIRD-PARTY VERIFICATION

The certification process affirmed the exceptional eco-friendliness of Pilkington Mirai™, which was launched last year. The Environmental Product Declaration (EPD) played a crucial role in this recognition, provid-

ing valuable information about the product's environmental impact. Along with other indicators, EPDs provide data about the global warming potential (GWP) of products by assessing the carbon emitted at each stage of a product's lifecycle. Manufacturing and transport, emissions generated while the product is in use, and the disposal of the glass at the end of its lifespan are all evaluated and reported in the EPD.

Pilkington Mirai™ glass has been achieved by using a combination of alternative fuel, high recycled glass content and green electricity sources,

as seen in Pilkington UK, where hydrogen was used to power all production, instead of natural gas. In this way, as well as achieving 52 percent less total embodied carbon, Pilkington Mirai™ maintains the identical neutral aesthetics, exceptional quality and performance as the Group's standard product.

RAISING THE BAR HIGH

Pilkington Mirai™ glass also adheres to the strictest standards of sustainable building design, contributing to prestigious certifications such as LEED and BREEAM. Without compromising

performance or aesthetic appeal, and with a carbon footprint as low as 5 kg CO2e per square metre for the 4 mm thickness, a To the market Pilkington Mirai™ comes as a truly environmentally-friendly glass - which means that architects and specifiers can make informed, eco-conscious decisions by utilising the comprehensive data provided by the EPD.

SETTING THE TREND

Arturo Benini, Pilkington Italia's Technical and Marketing Manager, said: "Verification of Pilkington Mirai™ as the lowest carbon glass of its kind represents a major step



Photo: Kristoffer Witttrup

forward for the built environment on its journey towards a new era of low embodied carbon buildings. The glass enables building designers to immediately improve the carbon impact of their

projects, while still offering the same attributes and performance expected from regular architectural glass. The EPDs for Pilkington Mirai™ and our broader portfolio, offers architects, developers and asset owners

glass that will be transformational in helping them to achieve their carbon objectives. The EPD for Pilkington Mirai™ joins 21 additional EPDs, already available for the entire range of Pilkington Italia glass products, in-

cluding clear and extra-clear float glass, laminated glass, and coated glass, and further establishes glass as the primary material of choice for sustainable architecture.”



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Advancing safety at FOTOVERBUNDGLAS MARL with LamiPress flexibility c-mark technology



Founders Michael Muschiol (left) and Alexander Muschiol have perfected their innovative 'LamiPress' laminating technology for high-quality laminates with PVB and SGP films over the past 15 years. Image courtesy of Fotoverbundglas Marl GmbH / LamiPress

Those who outsource high-quality laminated safety glass (LSG) and special products from the autoclave operation and manufacture them with 'LamiPress' machine technology work at advanced flexibility and added speed - all while achieving optimum LSG quality. Depending on the degree of automation, between 50 and 750 square metres of laminated safety glass can be laminated by just two to four employees per shift, with an energy input of less than 10 kW/h per square metre of laminated safety glass. In contrast to the process within the autoclave, which often takes more than six hours, cycle time in the LamiPress starts from just 45 minutes.

Redefining laminated safety glass production while offering flexibility, speed and top-quality outcomes, FOTOVERBUNDGLAS MARL's energy-efficient LamiPress offers cycle times as low as 45 minutes - an ideal solution for both established players and newcomers, thanks to its reduced CO2 footprint and increased added value.

No post-processing of the laminated safety glass edges is necessary, even with complex geometries or drill holes. Here the LamiPress is also interesting for newcomers: In-house LSG production increases the depth of production, which

means shorter transport routes, a reduced CO2 footprint and increased added value.

JOURNEY TO ENDURING SUCCESS

Founded in 2007 by Michael Muschiol, Fotover-

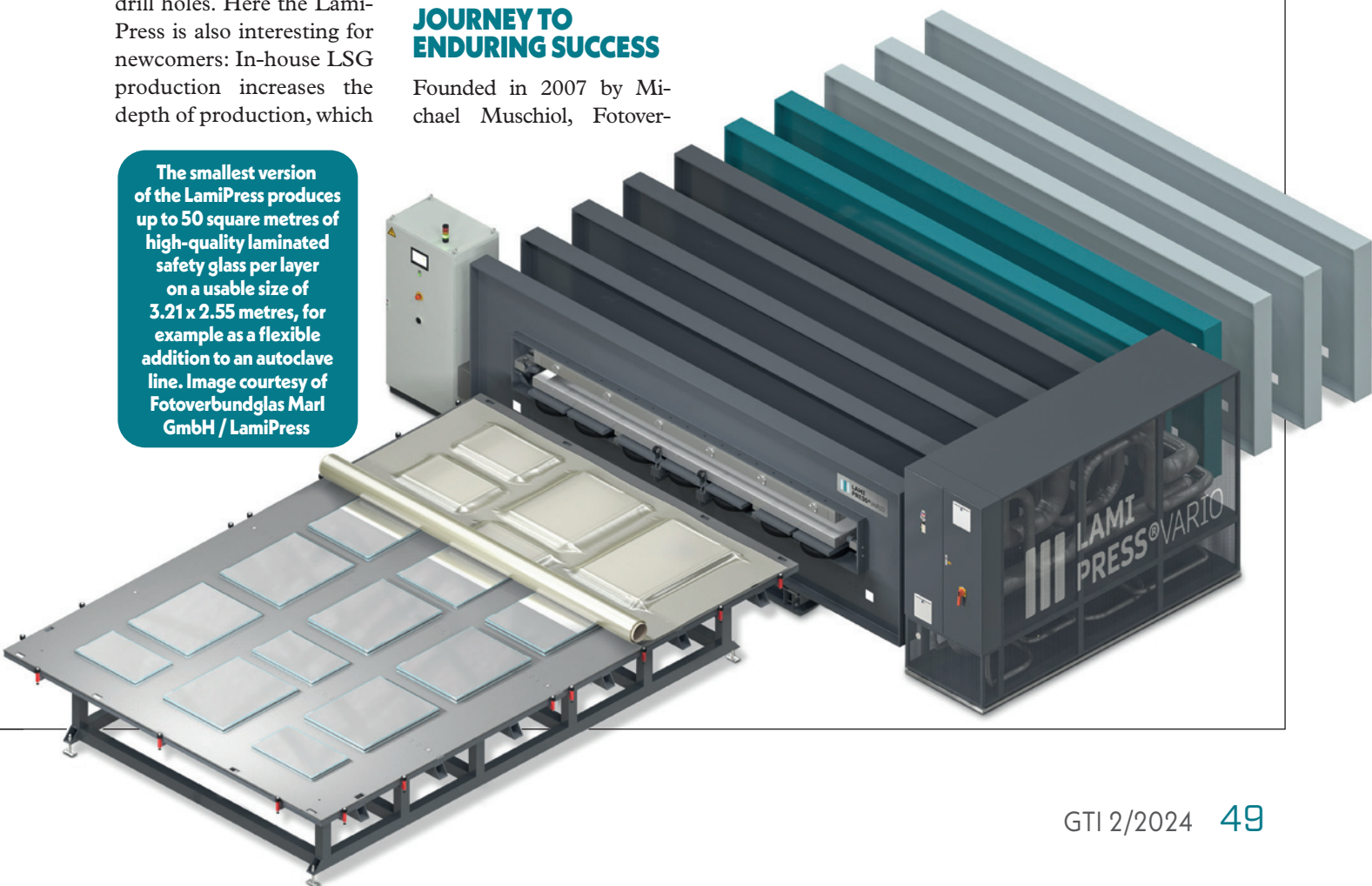
bundglas Marl GmbH was one of the first companies to print on PVB films - mostly producing finished individual items that are both customised and of high-quality. However, the available machine technology at the time was suboptimal. Autoclaving individual items or small series meant long delivery times and high costs while conventional autoclave-free lamination led to quality problems and high failure rates. This is why the resourceful engineer developed his own lamination technology, which has been patented since 2010: the 'LamiPress'. Today, mechanical engineering comprises the main business of the family-run

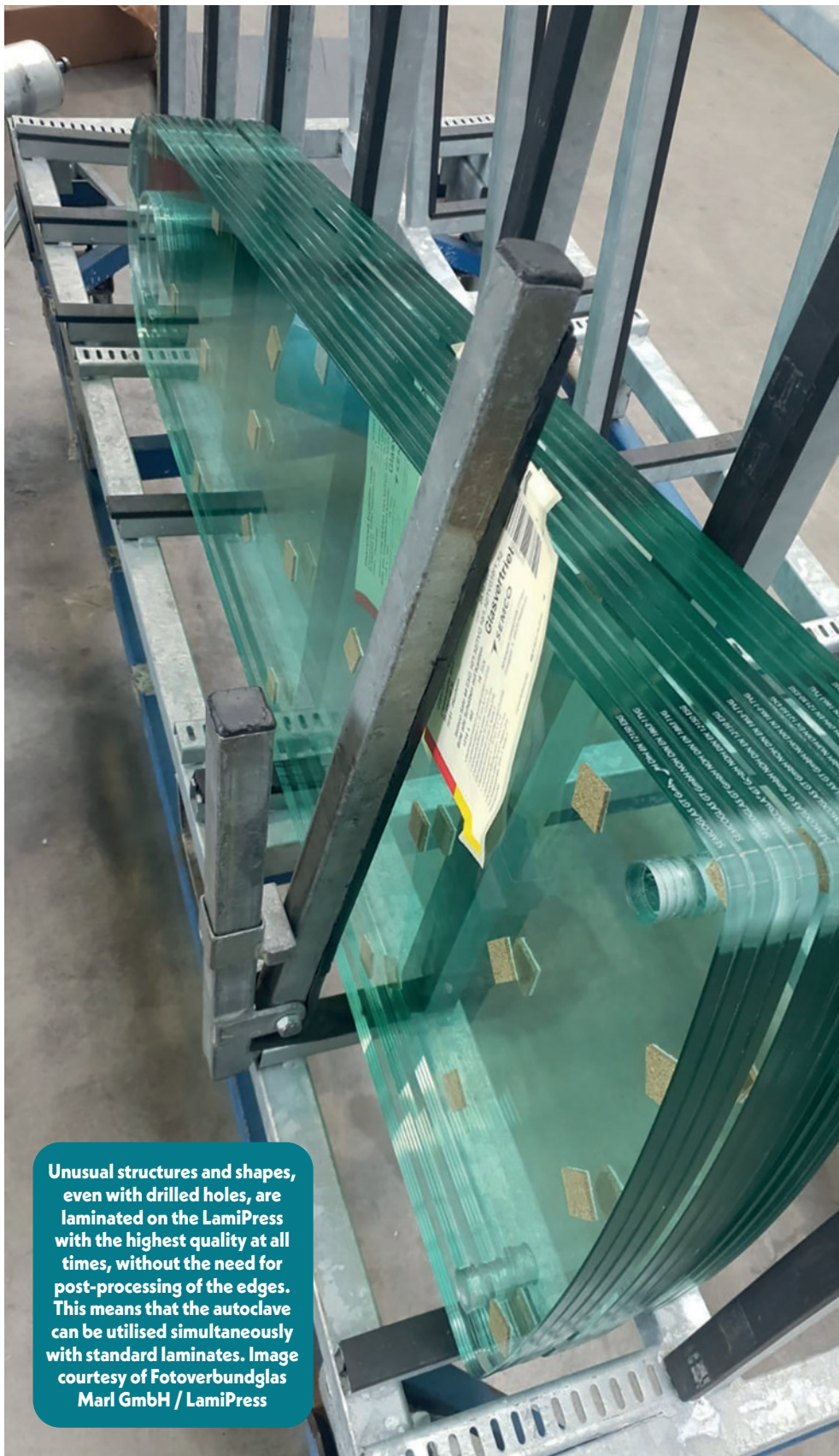
company, with 19 machines already in operation internationally - including at some 'big players in the flat glass industry.'

HOW LAMI PRESS WOWS CUSTOMERS

"The reason for the success of this solution, still technically-unique, is the flexibility that arises in production when small quantities, special geometries or complex structures are transferred to the LamiPress," says Alexander Muschiol, son of the founder and engineer at the company. "This relieves the autoclave, which can be used with large series, while the LamiPress, with its significantly smaller process space, produces the par-

The smallest version of the LamiPress produces up to 50 square metres of high-quality laminated safety glass per layer on a usable size of 3.21 x 2.55 metres, for example as a flexible addition to an autoclave line. Image courtesy of Fotoverbundglas Marl GmbH / LamiPress





Unusual structures and shapes, even with drilled holes, are laminated on the LamiPress with the highest quality at all times, without the need for post-processing of the edges. This means that the autoclave can be utilised simultaneously with standard laminates. Image courtesy of Fotoverbundglas Marl GmbH / LamiPress

As DoublePress version and with a usable size of 6 x 3.21 metres, the LamiPress can produce up to 250 square metres per shift. Image courtesy of Fotoverbundglas Marl GmbH / LamiPress

ticularly high-quality batch one glass, special formats, laminates with tempered or toughened glass, special coatings and PVB or SGP films faster and more energy-efficiently. This saves a lot of time and energy and reduces the CO2 footprint of our own production.” LamiPress is the only alternative process worldwide for the production of laminates with PVB and SGP films that has been successfully tested and extensively certified for a wide range of laminated safety glass products. Over the course of many years of cooperation with Kuraray (Trosifol and Sentryglas films) and



Eastman (Saflex and Vanceva films), the overpressure process of the systems has been perfected and is now a conspicuously reliable process on the market. Even special films with bird protection properties, switchable films, GIPV modules or vacuum glass with PVB and Sentryglas films can be laminated.

MODULAR DESIGN FOR FUTURE EXPANSION

Muschiol and his engineers also plan and design customised systems based on the product mix, hall planning and requirements. Says Alexander Muschiol: "Our smallest system is in

use at the Technical University of Darmstadt for research and development projects with small series. The largest system to date is located in Lithuania at Glassbel - where multilayer laminates up to a format of 3 x 8 metres are produced. However, we also have plans for 4 x 20 metres." There are also series models: the smallest variant is the 'High Value' solution. In this rotary version with a usable size of 3.21 x 2.55 metres, up to 50 square metres of high-quality laminated safety glass can be produced per shift - for example as a supplement to an existing autoclave line. This means that special prod-

ucts and small batch sizes can be discharged into the LamiPress before pre-compounding - which also guarantees a failure rate of less than one per cent. This optimises the process flow on the VSG line and increases the capacity on the base line by up to 30 percent. The second variant is the 'Everybody's Autoclave', which is useably sized at 4 x 3 metres and has an output of 100 square metres per shift. Here, the glass packs are fed via the so-called 'Lami-Store'. The third solution, 'Max. output', produces up to 250 square metres per shift in a fully-automated process within the 'Lami-DoublePress' feeder with usable dimensions of 6 x

3.21 metres. Intelligent software with hundreds of pre-stored configurations (glass thicknesses, structures, film types, etc.) ensures maximum process reliability, easy-to-control production and excellent results.

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More functionality with **CUGHER GLASS** industrial robots

Optimizing processes while signaling a shift towards comprehensive automation, CUGHER GLASS enhances both precision and safety with its industrial robotics. A true pioneer in glass manufacturing, the company's expertise now integrates robotic arms with vision systems - always with a customer-centric approach that offers tailored solutions.

The complexity of highly-synchronized and automated screen printing lines designed by Cugher over its decades of activity has inevitably led the company to add robotic solutions to its offer. All true allies of humans today, they are essential now to the modern industry.

ROBOTIC ARMS

Industrial robots -or, in this specific context, robotic arms- initially developed to overcome the limitations of traditional methods. Nowadays they are essential tools for simplifying complex or dangerous operations. The technology itself brings numerous benefits. On one





hand, processing quality improves because operations are more precise, fast, and uniform. On the other, labour costs decrease in comparison to manual activities, as well as the direct risks for operators related to the handling of hazardous tools or materials diminish. Last but not least, the quality of the operator's work improves, given that they now act as supervisors of technology rather than direct executors of repetitive and exhausting tasks.

AUTOMATED SCREEN PRINTING

Cugher was among the first companies in the world to automate the screen printing process on flat glass.

Indeed the recent introduction of robotic applications, made possible by years of specialization in industrial automation, demonstrates the company's full intent to pursue progress and to provide its customers with increasingly comprehensive systems that increase efficiency and decrease process costs. Here Cugher adds to its offer multifunctional and versatile devices, for which hardware depends upon the choice of robot supplier (including such prominent names as ABB, Fanuc, Kuka), with software programming directly managed by Cugher professionals - all experts in writing various codes acquired through specific training.

PARTNERING WITH CUSTOMERS

The consultancy approach Cugher adopts with its customers leads to the optimal solution for robot purchase for each project. That includes careful evaluation of specifications, available spaces, existing or future machinery, and the requisite (exclusive) feasibility studies from potential robot application suppliers. Often, however, it is the customer, already a user of robotic solutions, who chooses the supplier, and in such cases, Cugher adds its know-how for both code writing and tool manipulation design. In the landscape of flat glass plants, and more generally

in the industry of handling sheets of different materials, Cugher proposes the use of anthropomorphic robots with up to six axes of movement - allowing great flexibility in operations. However, what defines the robot within the plant is the tool, the instrument placed at the end of the robotic arm, which is designed to manipulate objects and is specific to the required processing/movement - thus allowing the applicability of the technology. Along with the tool, Cugher experts evaluate, design and produce -if necessary- all the surrounding handling based on the operation required by the specific production line specifications. In this way, Cugher is both an integrator of robotic



solutions and a single supplier for the entire screen printing line, from loading to unloading.

SOLUTIONS

Cugher implements two families of solutions in its projects, namely robotic islands for material handling and coupling the robot system with vision systems. Robotic islands are machine sets organized within an automatic working area. They include robot manipulators that are controlled automatically. Among robotic islands, Cugher successfully designs mainly loading/unloading and palletizing islands, en-

suring the continuity of operations. Through robotic islands, productivity increases significantly, and each island can always be quickly converted if the company needs to change the type of processing. The solution that includes coupling the robot system with vision systems guarantees a constant quality standard because the vision system communicates essential information in real-time to the robot, which reacts accordingly. This combination proves effective when automatic handling is not always precise, while processing requires extremely accurate positioning. The

robot collaborates with the vision system to make different adjustments each time. Vision systems have always been an integral part of Cugher's product range, but the company has the necessary expertise to integrate third-party systems with its robots. Cugher has built its reputation by always putting the customer first. Here the introduction of functional robotic technology into its projects shows the company's commitment to being an increasingly solid and competent partner in every aspect. Screen printing plants and the handling of flat glass have been the

productive soul of the company until now, but today Cugher is proud to announce its commitment to be a turnkey supplier and/or integrator of automated robotic solutions.

Cugher Glass Srl



Via G. di Vittorio, 70
20026 Novate Milanese (MI)
ITALY
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STRATO[®] has **SATINAL** helping to stem global warming



Prioritising sustainability in performance, STRATO® features EVA films, which have the triple effect of reducing CO2 impact, lowering energy costs and cutting emissions. Pioneered in Italy, the company's EVA interlayers manufacturer aligns with its commitment to environmentally smart products of prime quality - all to advance ecofriendly manufacturing.

It is well known that climate change refers both to long-term natural and man's hand shifts in temperatures and weather patterns. Human activities have been the main drivers of climate change and greenhouse gas emissions. As human beings are the main culprits of global warming, they should take to heart the global issue and implement resolute actions. According to the European Commission, "...as every tonne of CO2 emitted contributes to global warming, all emissions reductions contribute to slowing it down. In order to stop global warming completely, CO2 emissions have to reach net zero worldwide. In addition, reducing emissions of other greenhouse gases, such as methane, can also have a powerful effect on slowing global warming – especially in the short term".

ECHOING THE CALL TO ACTION

The looming climate emergency has been ur-

gently demanding a strong response. Many companies have been adopting a positive impact and a responsible approach within their supply chain, taking decisive steps towards a brighter, greener future, leading to an ecological renewal of market dynamics.

In this scenario STRATO® has, de facto, adopted a sensitive approach and has been investing in transformative next-generation technologies to achieve net-zero. STRATO® was recently the object of in-depth analysis aiming to assess the environmental profile of its product range, in terms of CO2 impact, considering the life cycle of the materials and secondary products involved.

STRATO® has obtained the ISCC PLUS certification with a score of 1,13 [kg CO2 eq], thanks to its STRATO® Carbon free product range. With 1.13, the environmental profile of STRATO® is a reference score for developing a road map toward zero-carbon aspirations in 2050. The challenge is to create a

sustainable option for customers who would buy responsibly with a look at the global warming impact.

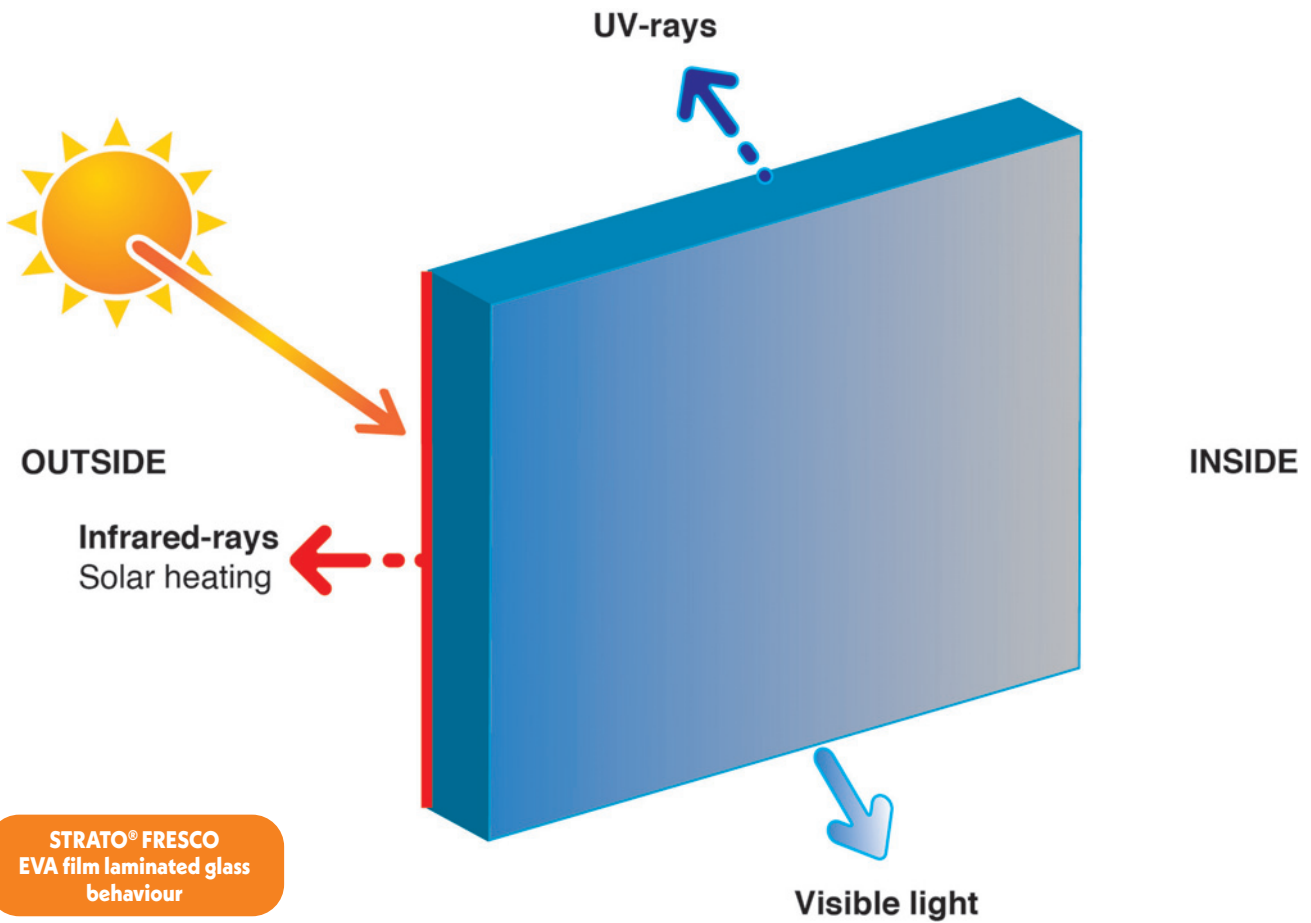
SUSTAINABILITY: FACTORING IN PERFORMANCE

Above all, STRATO® has designed a wide range of products that mainly run on a double track:

Performance: control of the UV-rays and NIR energy from the outside to the inside of buildings

Sustainable: contribution in reducing the impact of CO2 emissions

Concerning the first point, STRATO® EVA is a thermosetting material that creates three-dimensional bonds at molecular level during the lamination process. This notable feature makes STRATO® EVA film not sensitive to humidity, water and (in particular) to unforeseen weather conditions - a direct consequence of the climate change so far. STRATO® FRESCO is an innovative, high-performance EVA film belonging to STRATO® SOLAR CONTROL product range. It reduces UV and NIR energy - allowing the highest visible light transmission. A new generation of high-performance EVA film that uses nanoparticle technology, it has been formulated to give efficient solar control properties to laminated safety glass. STRATO® FRESCO can replace low-emission glass because it reduces the heat transmission.



DURABILITY

The second point is related to STRATO® FRESKO being specifically formulated to provide exceptional durability when exposed to weather conditions and great sound insulation. It significantly reduces energy costs and CO2 impacts by controlling solar heat energy.

In simple terms, if we analyse the behaviour of a laminated glass with one or more STRATO® FRESKO EVA sheets we will notice that the value of the transmission of the visible light is opposite to that of the infrared rays. A great performance of STRATO®

FRESKO EVA films that let a comfortable indoor environment. By reducing the use of air conditioning, customers will get economic benefits – like reduction of electricity costs - and also environmental reduction of Greenhouse Gas Emissions.

STRATO® has been paving the way to a new generation of green products that aims at an innovative path toward the limitation of GHG emissions - a tool to achieve the 2050 net zero goals and, hopefully, a motivation to others to implement similar solutions in their manufacturing strategies.

PIONEERING FILM PRODUCTION

Satinal SpA was the first EVA film production site in Italy - a reference point Europe-wide for the supply of 100 percent made in Italy EVA interlayers.

STRATO® is an optimum partner for high quality applications, to offer new aesthetic design solutions and create modern and elegant laminated glasses - guaranteeing colour uniformity, UV protection and excellent colour stability over time.

Quality controls are commonplace in Satinal's R&D Lab. The company's mission is to constantly offer a prime

quality and green product in line with a sensitive vision of the Group - all while responding to a demanding clientele and being increasingly attentive to both sustainability issues and low environmental impact behaviour.

Satinal Spa
TK - Strato

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Via del Lavoro, 1
22036 Erba (CO) - ITALY
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More green building has **AGC INTERPANE** advancing sustainable living

Architectural glass from AGC INTERPANE features prominently in London's sustainable Bankside Yards development. Here Arbor, the first of eight buildings, exhibits the company's bright impact panes - contributing to a vibrant, energy-efficient environment. One will also see how PLP Architecture design prioritises natural light while fostering both well-being and productivity.

Bankside Yards, in the heart of London, is set to be the UK's first large mixed-use development - with no use of fossil fuels and net-zero CO₂-emission from day one. Designed by

PLP Architecture (London), 'Arbor' is the first finished building of eight that have been planned here within 3.3 hectares of public space, which includes eight public



squares, 14 historic railroad arches and new retail and cultural spaces. Here the architects' concept for the 19-storey design was to create a sustainable and ultra-modern office building that, in line with the changing demands of the post-Covid era, promotes meaningful and productive interaction between people rather than just providing space to work. Integrated into the intelligent 'Energy Sharing Network' of the new district and supplied with renewable energy, it has achieved the 'BREEAM Excellent' certificate - WELL Gold is on target. The intelligent closed cavity façade for maximum daylight transmission, which



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Scheldebouw (Netherlands) realised with iplus 1.0 thermal insulation glass and extraordinary bright impact panes from AGC Interpane Architectural Glass, also contributes to this.

MAKING CONNECTIONS

With 'Bankside Yards', a cultural and infrastructural connection between the South Bank and Bankside is being created along Lon-

don's South Bank after 150 years - a model sustainable and vibrant neighbourhood in which work and life, culture and state-of-the-art technologies, nature and art are to find a connec-

tion. ‘Arbor’ is the first of the buildings planned by PLP Architecture and realised with façade builder Scheldebouw in the first construction phase of the ‘Bankside Yards Masterplan’ on the south bank of the Thames, ‘floating’ above the access to the bustling Blackfriars station through 14 historic railway arches integrated into the building concept.

USER-FRIENDLY DESIGN

PLP designed the building with a clear focus on holistic

sustainability and the well-being of the building’s users: high ceilings and the floor-to-ceiling, three-metre-wide glazing of the closed cavity façade (CCF) provide plenty of natural daylight and open up panoramic views over the city. At street level, where the building and urban space meet, a large glazed lobby and external plaza ensure a seamless connection with the surrounding neighbourhood. The addition of the building creates a series of public spaces designed to encourage dynamic interaction between building users, visi-

tors and residents. The first public space leads through the elevated arches of the historic railway, next to the glazed and 14-metre high lobby as a transition into the interior of the Arbor. Here, escalators transport building users to a terrace-like interior landscape that can be used as both a work and social space. On the two levels above, there are communal work areas, a café and double-height event rooms behind dramatic six-metre-high glazing, which are designed to promote productivity and encourage ‘big thinking’ with an exceptional amount of natural daylight. Floors 18 and 19 also have this generous height, with an expansive space behind them connected to a large outdoor terrace that can be used for training, yoga and as an open-air cinema. On every second floor, the architects also created vital transition zones between the exterior and interior spaces by means of spacious terraces, with their own microclimate and attractive planting for a high level of biodiversity.

CLOSED CAVITY FAÇADE WITH INTERNAL SHADING

The Closed Cavity façade realised by Scheldebouw (Netherlands) is a central part of the concept, which aims to utilise daylight and achieve excellent energy efficiency: The inner shell is formed by a double thermal insulation glazing, the outer skin by a thin laminated safety glass unit. In order

to achieve the highest possible daylight transmission, colour neutrality and excellent thermal insulation of the large-format glazing elements, AGC Interpane Architectural Glass combined around 15,000 square metres of highly efficient iplus 1.0 thermal insulation glazing in all required dimensions on the inside of the façade with laminated safety glass impact panes made of low-iron float glass ‘Clearvision’, which are intended to transmit maximum daylight into the building. In all other parts of the façade, the low-iron AGC base glass ‘Clearvision’ is used, for example in the partially screen-printed parapet glazing. The space between the inner and outer façade shell is completely encapsulated. This cavity is supplied with dried and purified air under slight overpressure during operation, which prevents condensation and dirt deposits. The profiles in a closed cavity façade can be particularly delicate, and the glass formats are particularly large at three metres wide. Inside the façade cavity, Scheldebouw installed automated or manually operated louvres under clean room conditions to shade the façade as required. On average, only around ten percent of the heat radiation that hits the outside of the façade reaches the inner shell throughout the year. In favour of maximum daylight transmission, it was thus possible to dispense with



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an additional solar control coating on the glazing, which greatly reduces the use of electric lighting in the morning and evening hours.

Daniel Moore, Partner PLP Architecture describes: “Technically speaking, Arbor’s façade has been extremely successful and delivers exceptional performance. However, I’d say where it really excels is in the experiential effect it creates for anyone in the building. The large 3-by-3-metre glazed panels bring in huge amounts of natural light and frame incredible views over London on all sides of Arbor. They’re of such a scale and clarity that you can’t be in the building and not feel the ‘wow-effect’. Over time, we will be able to see this

having a notably positive effect on occupants’ health, wellbeing and creativity.”

THE SUSTAINABLE ‘BANKSIDE YARDS MASTERPLAN’

As part of the Bankside Yards masterplan, Arbor is integrated into a fifth-generation low-temperature energy network that spans a total area of 5.5 hectares. This is the term used to describe heating networks at a very low temperature level, which are connected to decentralised heat pumps in buildings and raised to the required flow temperature of the heating system. The term comes from the English term ‘fifth generation district heating and cooling’ (5GDHC). This network is utilised by the entire connected infra-

structure in Bankside Yards and leads to greater energy efficiency and immense CO2 savings. Arbor is also carbon neutral in operation, powered by electricity from renewable sources, despite the extensive flexible workspace of almost 223,000 sq ft. (around 21,000 square metres) across 19 floors. Arbor recently achieved the demanding ‘EPC A’ rating (Energy Performance Certificate) for its outstanding energy efficiency. Compared to standard buildings in this class, it saves around 30 per cent energy, thanks in part to real-time monitoring via smart metering and sensor-controlled LED lighting to avoid unnecessary use. State-of-the-art technologies also enabled the ‘WiredScore Platinum’

certificate for the building’s digital connectivity. Employees and the public are also to contribute to the CO2 neutrality of the new neighbourhood and will find 330 new bicycle parking spaces and a connected bicycle maintenance station.

AGC INTERPANE ARCHITECTURAL GLASS GMBH

AGC INTERPANE

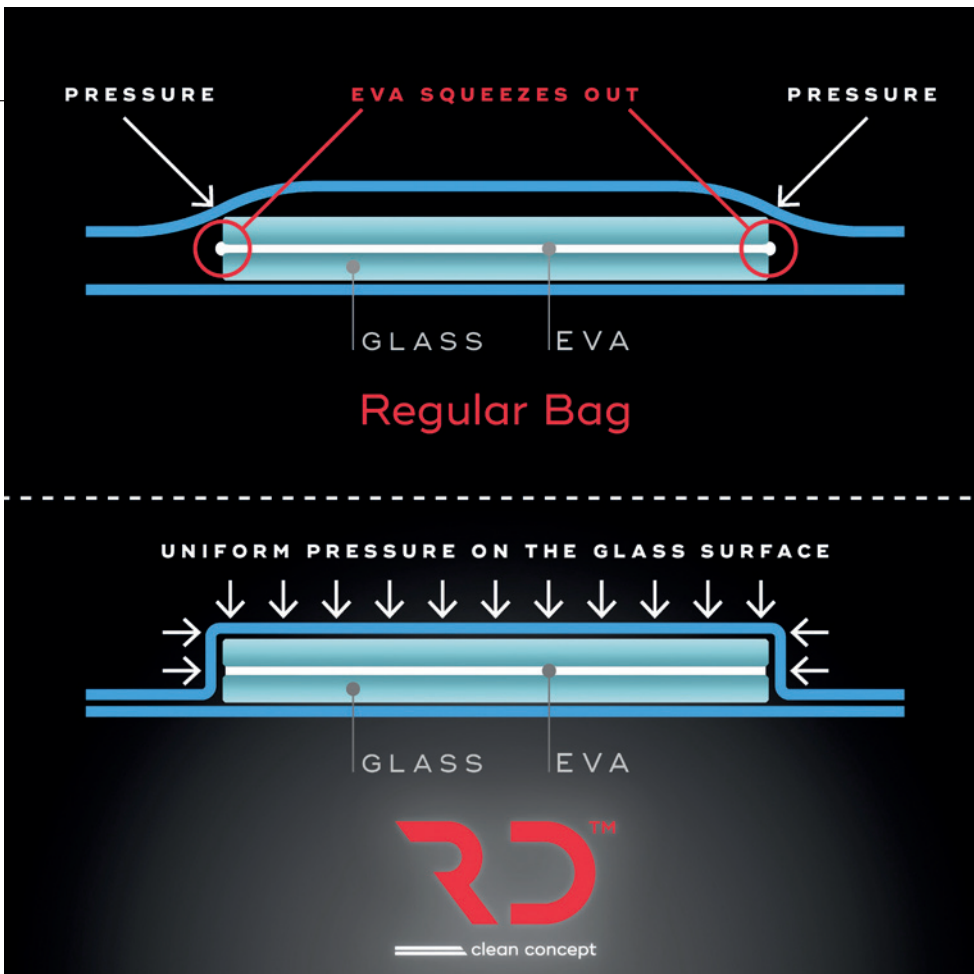
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Driving growth at **RCN SOLUTIONS** through innovation and tradition

RCN SOLUTIONS' new rotary bending system with four positions embodies generational change at the company as well as its made in Italy ethos - ensuring high quality standards while reflecting an evergreen commitment to excellence.





REVA BF. Certified to both European and US standards, the product combines RCN machine technology for lamination that can reach zero rejections - a most significant feat when one considers that lamination is the last job after washing, cutting, drilling, edge-shaping and tempering. Consequently, a poor result would involve unwanted costs. Here 6+6 mm glass can be processed in 75 just minutes with low energy consumption, given that maximum consumption occurs within the first 20-minute ramp, whereupon the kiln will later check the process and adjust due temperature by an on/off system. With RCN, customers have many model machines to choose from - all of different sizes and with a layout that will satisfy most glaziers worldwide, who can rely on a service that's tailored to production needs.

CHEMICAL TEMPERING

As for special jobs, the chemical tempering process can offer several guarantees, namely robustness, excellent optical rate, high mechanical resistance to impact and such added specifics as the possibility to drill after tempering. Today chemical tempering of glass garners much interest given that very thin

With their typically fresh ideas and ways of working, family companies are often prime witnesses of generational change. The same can be said of RCN Solutions, where a young new team is currently flanking a more senior group with both feasibility studies and innovations - all to respond to different needs. Indeed much that's new is coming out from RCN Solutions. The company's very structure -attentive to the ever-changing needs of the market- is internally-wired to drive improvement: whether in offers, production, lead time or service.

RD CLEAN CONCEPT

Since 2021, RCN has taken

forward such novelties as RD Clean Concept - a patented bag-system for clean edges in lamination. The product has met with great success thanks to reduced labour time, cost cuts and superb glass flatness at the end of the process. Installable in most laminating machines currently available on the market, it helps glass flatness too. RD Clean Concept was the result of studies into different materials, specifically a rigid module combined to a flexible one. Between the two modules thickness and elasticity are variable according to compression homogeneity on the glass - which also prevents the laminating interlayer from getting thinner owing to pressure from oth-

er bag types pressed mainly at the edges (squeezing renders the lamination interlayer thin at the edges and so potentially disqualified in measurement terms for safety glass). RCN machines have also been subject to development, multiplying to allow some companies to laminate jumbo size glass, built in modules of up to six metres and over and all with an attractive body design. Here's where Multiplied, much like other RCN machines, is equipped with optimum quality components - along with RCN Easy App Connect for remote control.

REVA BF

Since 2011 RCN has been distributing its own laminating interlayer,



RIVA BY RCN CHEMICAL TEMPERING LINE

glass -from a minimum of 0.5 mm- can now lighten certain final installations without compromising safety. Despite the relatively long process time the benefits remain very significant as compared to other hardening solutions. After the lamination process, chemically-tempered glass becomes high-safety glass. Being very strong, chemically-tempered glass that's laminated is difficult to break. It will also stand in place before collapsing - offering time enough for people to repair to safety.

BENDING ROTARY SYSTEM

RCN Solutions has enduring experience in manufacturing bending kilns. Here the company's Eco Special line has been studied and built with different heating areas in order to perform complex curves. But where the company really raised the bar recently was with its rotary bending system - a self-excluding, twin-axle machine that's equipped with four working positions and controlled movement. Its size is 4000x5500xH2000 mm.

Of these, the first was delivered and installed at the end of January 2024 at an Italian company that works in the automotive and yacht industry. Composed of four stages, loading/unloading, heating up, bending and cooling, the new machine has launched RCN into a new age, namely automation and automatic transfer - all perfectly in line with the times. Here, RCN machines and equipment jointly contribute to guiding customers to a production that troubleshoots imperfections

- meaning saving in both time and costs. It also facilitates provision of an important service, namely that of supporting customers faced with potential difficulties associated with specific jobs that may necessitate prior discussion.

MADE IN ITALY

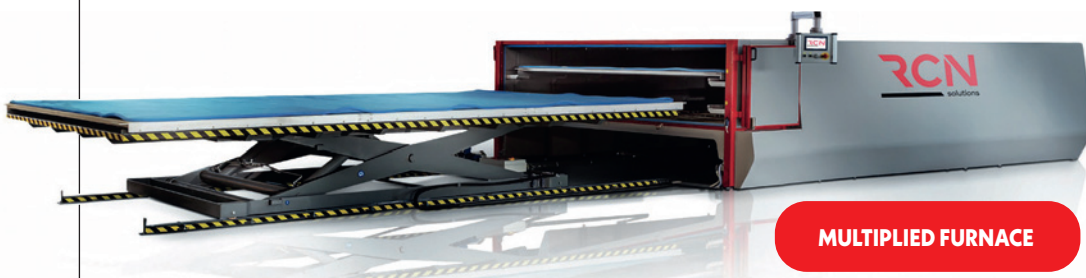
Here evolution and development are both carried out with a close eye on the Made in Italy priority, which comes as a synonym for quality, research, care and service: all with that signature Italian touch of creative ability - that one tradition today's new RCN generation could never do without.

Visit
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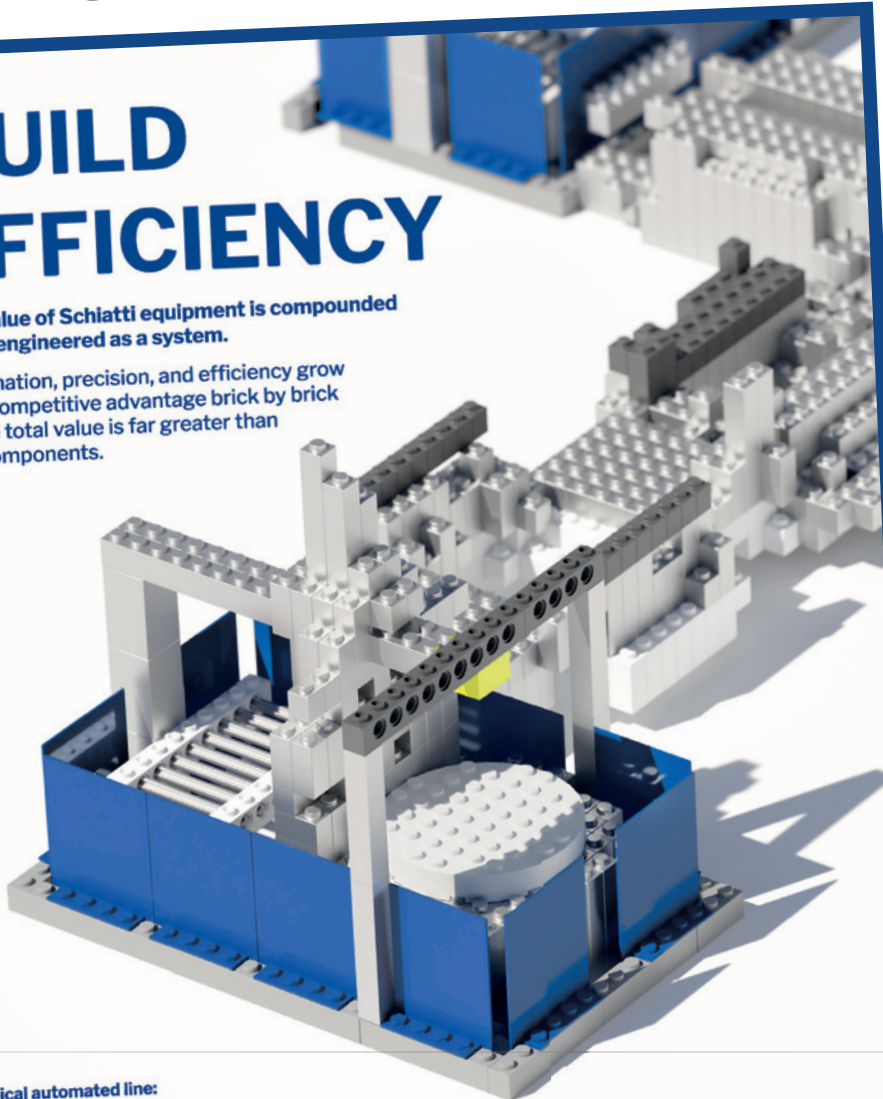


Streamlined systems: SCHIATTI's advancements in glass processing

BUILD EFFICIENCY

The value of Schiatti equipment is compounded when engineered as a system.

Automation, precision, and efficiency grow your competitive advantage brick by brick so the total value is far greater than the components.



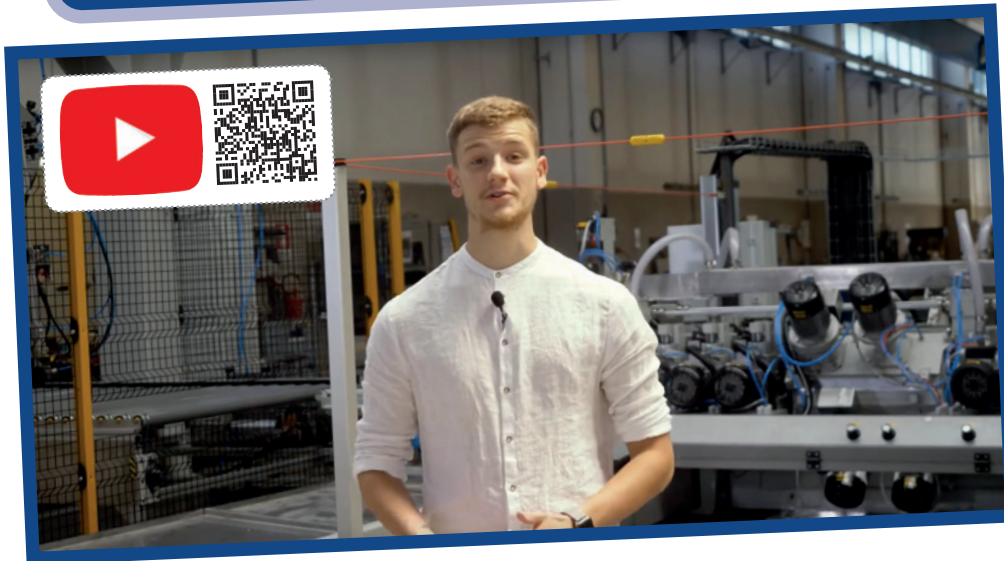
Typical automated line:

- Automatic loading machine with turntable.
- Two double-edging machines for flat or pencil edge profile connected by a transfer table.
- Double-headed drilling center with 4 drilling positions.
- Automatic unloading machine with turntable.

BUILDING EFFICIENCY

Each year, through its advertising page, Schiatti chooses to talk about some topic that represents a meeting point with both its customers and the industry to which it has been devoted for over 50 years. Saying 'glass processing machines' means naming a significant and wide field, in which the variables to be considered concern not only technology but also -and increasingly- sustainability, automation and energy saving - all characteristics that are inextricably linked. Within the glass sector, as in various others, any process is often part of one that's longer and more complex, in which various machines are involved - each used for a specific step. Here's why Schiatti went the extra mile recently to explain how important the concept of modularity is. Its machines are designed

Emphasizing modularity, efficiency and integration in its glass processing machines, SCHIATTI's 2024 campaign showcases in-line systems and iconic modular designs, highlighting how the company's solutions optimize productivity, precision and automation for the industry's evolving needs.



and built to satisfy a specific glass processing phase (grinding, drilling, etc.) but also, if positioned in a line, to complete an entire work cycle. Here every machine is an excellent 'unicum' optimized from every point of view once brought into line - and with benefits that multiply.

IN-LINE MACHINES - FOR A COMPLETE CYCLE

Schiatti's 2024 advertising

campaign serves as an example of how, by integrating the company's machines within a system, it is possible to obtain a complete glass processing cycle - optimized in every part and thereby rendered more productive. One central process, in this case grinding, is combined with 'collateral' processes, namely phases that either precede and/or follow it. Thanks to connection of the machines the operator will be able to start the process while simply monitoring its

effective progress. Here the result of in-line processes has proven to be more efficient (the operator can dedicate himself to other things), faster and more precise (the machines are automatically set according to the specifications of each individual process, based on programming, for the best safety and effectiveness).

SYSTEM MACHINES

In this case a line of bilateral flat edge grinders (two machines connected by a

transfer table) were combined with a loader and an unloader with a rotary table and a four-head drilling centre. All the operator has to do is to provide the system with the glass sheets, which will be returned to him once the processing is finished.

WHY THE ICONIC BRICKS

Schiatti has chosen to rebuild its machines using those historic 'modular bricks' accomplices of our childhood games - always protagonists of the engineering dreams of both adults and children. These represent a simple, shared symbol with which to talk about modularity, jointness and efficiency. Taken individually, it is difficult to imagine what they could compose but, once assembled, each takes its place in a perfect fit. As for the bricks, each project commences from the desired result envisaged. From there the company listens to the needs, finds the answers, then assembles the optimum solution.



Schiatti Angelo Srl



Via alla Porada 188
20831 Seregno (MB) - ITALY
Tel.: +39-0362-238496
E-mail: info@schiattiangelosrl.com
www.schiattiangelosrl.com

Strategic alliance between **TUROMAS** and **KONKAV** **KONVEKS**

Serbian flat glass cutting specialist **KONKAV KONVEKS** recently cemented its position on the international market via close cooperation with **TUROMAS**, a leading flat glass processing machinery manufacturer - all to optimise production while meeting the demands of large-scale projects the world over.

Located in the Serbian capital of Belgrade, Konkav Konveks operates from its own premises, where management now plans to expand in the near future. The company relies upon an automated infrastructure, which was recently strengthened with the installation of equipment from leading European brands, including Turo-mas - thereby improving both efficiency and quality in all production processes.

TEAMING UP

Thanks to this upgrade





the company is now in a privileged position to better meet market demand, stay at the forefront of its industry and offer its customers highly-competitive products. The editorial team at Glass Technology International recently spoke to Milomir Radovanović, CEO and co-owner of Konkav Konveks who, highlighting the transformation of his company over the past decades, shared his experience of joining Tuomas. Said Radovanović: “Our history goes back almost 30 years when we were initially focused on the automotive industry. However, in the early 2000s, we decided to diversify operations into the construction sector, which oriented our entire infrastructure towards jumbo glass processing.”

EQUIPMENT SUPPLY

This transition to larger-scale projects prompted Konkav Konveks to look for cutting-edge solutions that would allow it to adapt to change while simultaneously improving the productivity and quality of its products. Here Radovanović highlights the choice of Tuomas as main equipment supplier as a crucial step in this direction: “Installation of the Tuomas equipment went flawlessly,” he says. “We were very satisfied with the quality right from the start, which confirmed our decision to continue our cooperation.” Indeed the reliability and quality of Tuomas machines soon proved fundamental for Konkav Konveks - especially in the execution

of large-scale projects. Radovanović stresses the importance of having robust and reliable machinery to maintain productivity and quality in projects of significant magnitude. “Our slogan, ‘glass surrounding you’, reflects our commitment both to excellence and innovation,” he explains. “Tuomas shares this vision by providing us with equipment that can work 24/7 without compromising on quality or efficiency. The company’s latest projects include those of Kula West 65, business building GTC X, Airport City and Sava Center - all in the city of Belgrade.

RUBI 516C AND CUTTING TV

Here the machines installed by the leading Ser-

bian manufacturer consist of two automatic glass cutting lines. The most recent addition was the complete RUBI 516C float cutting line, an advanced solution equipped with magnetic drives which guarantees unprecedented performance and quality in any cut, being the only cutting table with this technology - both in Serbia and most of the Balkans. It incorporates a cutting system bearing four individual cutting tools with automatic selection. Each has its own roller, lubrication system and pressure cylinder - all specifically-dimensioned for its cutting range. But it doesn’t end there. An additional software, Cutting TV, has been installed to assist in the process of opening cuts. It displays optimizations automatically such that, at a glance, the operator has all the information needed for the cutting process. Once the cutting table has evacuated the workpiece, the display changes automatically without the need to operate any buttons or foot pedals.

LAM 506SXR

The first addition was the LAM 506SXR laminated glass line - equipment that allows fully-automatic positioning, rotating, pickling, cutting and separating of glass of up to 12 + 12 mm. This technological solution guarantees an efficient, high-precision



process in the cutting of jumbo laminated glass panels - making it possible to maximise all resources to achieve high quality results, even in large thicknesses. These machines feature advanced control technology - offering remarkable speed and pre-

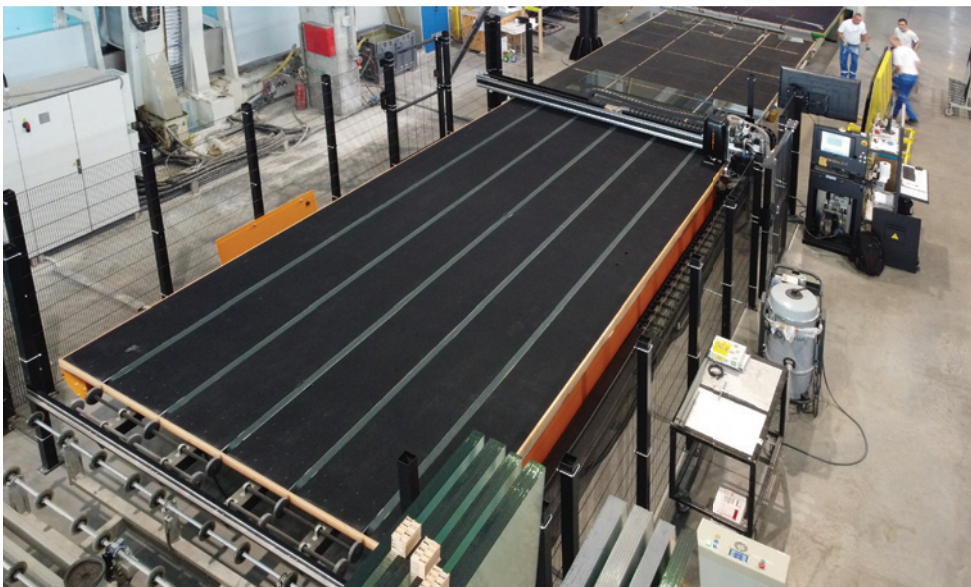
cision that significantly reduces loading time while increasing productivity effectively.

COLLECTIVE INTELLIGENCE

The partnership between Konkav Konveks and Tuomas marks successful

collaboration between the two companies - each one a leader in its field. Both are committed to excellence and customer satisfaction - which has enabled them to expand globally and set new standards in the glass industry. With ambitious projects on the horizon,

Konkav Konveks continues to rely on Tuomas as its strategic partner to achieve new goals in the flat glass industry.




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Carretera Estación Km. 15, 8
44415 Rubielos De Mora
Teruel - SPAIN
Tel.: +34-978-804158
Fax: +34-978-804380
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www.tuomas.com



KONKAV KONVEKS
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Glass tempering furnaces: **MAZZAROPPI** dispels three common myths

By focusing on today's more compactly-sized glass tempering furnaces as well as their reasonably-priced installation and improved energy-efficiency, MAZZAROPPI takes a look at how recent innovations have favourably transformed these machines over the years - decidedly for the better.





Numerous companies and glassworks could revolutionise their business by acquiring their own glass tempering furnace. Nonetheless, they often hesitate to take this step. This may be partly due to certain misconceptions that ignore technological advancements that have completely transformed these machines in recent years. Though most consider themselves fully aware of the capabilities of the latest generation of tempering furnaces, Mazzaroppi recently considered the following trio of false assumptions about these highly-specialised machines with a view to redressing them:

A MODEST-SIZED GLASSWORKS CANNOT ACCOMMODATE THE SPACE REQUIRED TO INSTALL A TEMPERING FURNACE >FALSE

Nowadays, there are glass tempering furnaces that

are specifically-designed for medium-small glassworks. Their more compact design affords them an easy fit even in limited spaces. For example, the TP Compact by Mazzaroppi is only 15-19 metres long, which makes it possible to install in any standard workshop.

INSTALLING A TEMPERING FURNACE ALWAYS REQUIRES EXPENSIVE CONSTRUCTION WORK AND AN UPGRADE TO ONE'S ELECTRICAL SYSTEM >FALSE

Models out there like the Mazzaroppi TP Compact furnace are designed to troubleshoot any necessi-

ty for construction work or support walls. Here's why installing the new machinery is less expensive because, given that it involves neither demolition nor renovation. But there's more. Regarding the electrical system, solutions exist that can be operational with just a 200 kW cabin. Indeed some tempering furnaces equipped with technologies designed to enhance energy efficiency can even reduce the electrical cabin costs by up to 70 percent.





CONSUMPTION OF A TEMPERING FURNACE IS ALWAYS HIGH, MAKING IT AN UNPROFITABLE INVESTMENT >FALSE

Tempering glass requires energy, true enough. However, the latest innovations introduced on the market make it possible now to significantly reduce the energy consumption of tempering furnaces in ways that were unimaginable until recently. With Mazzaroppi furnaces, for instance, one can save up to 70 percent on energy compared to other competing solutions - all the

while ensuring very high glass tempering performance.

Such a significant reduction in bills is possible thanks to specialised technologies specifically designed to optimise the energy efficiency of systems. Here, for example, Start&Stop technology allows for furnaces to be powered off every evening such that they can be brought to rise rapidly to temperature the next morning. Likewise for those based upon multi-zone control systems that are designed to heat only those areas occupied by the glass sheet - wasting no non-necessitated energy while concentrating it instead where it's needed. This is why choosing a

technologically-advanced furnace can reduce energy consumption facilitating a quicker return on the initial investment.

Innovations in the world of glass tempering are ongoing. Indeed it's possible today to ensure astounding energy performance by choosing the most suitable tempering furnace model for one's needs. For anyone after a furnace that will leave them unconcerned about bills while surpassing typical misconceptions around the machines themselves, Mazzaroppi solutions can offer a really cool alternative. Within this sector they're super energy-efficient - thanks to know-how that's been consolidated and deepened over decades of both activity and continu-



ous research into new technologies - all specially wired to meet the precise needs of companies.

Mazzaroppi Engineering srl



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Via Cagliari 49
04011 Aprilia (LT) - Italy
Tel.: +39-06-92854602
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NEPTUN celebrates 10 successful years of QUICK model

THE BEGINNING OF THE STORY

Taking advantage of previous experience in vertical processing, Neptun launched the QUICK project in 2014 - an innovative solution for drilling and milling with the aim of combining maximum productivity and precision performance with reliability, low maintenance costs and ease of use. The Quick line was

born, consisting of the QUICKDRILL drilling machine and QUICKMILL milling machine - ideal for the processing of doors, shower cubicles, refrigerated counters, balconies, shelves, wall partitions etc. A peculiar characteristic of the line was its flexi-

bility. The two machines could be purchased at separate times. Here, work direction was at the discretion of the operator and processing could either be in line or stand alone mode with the two NCs processing different production batches at the same

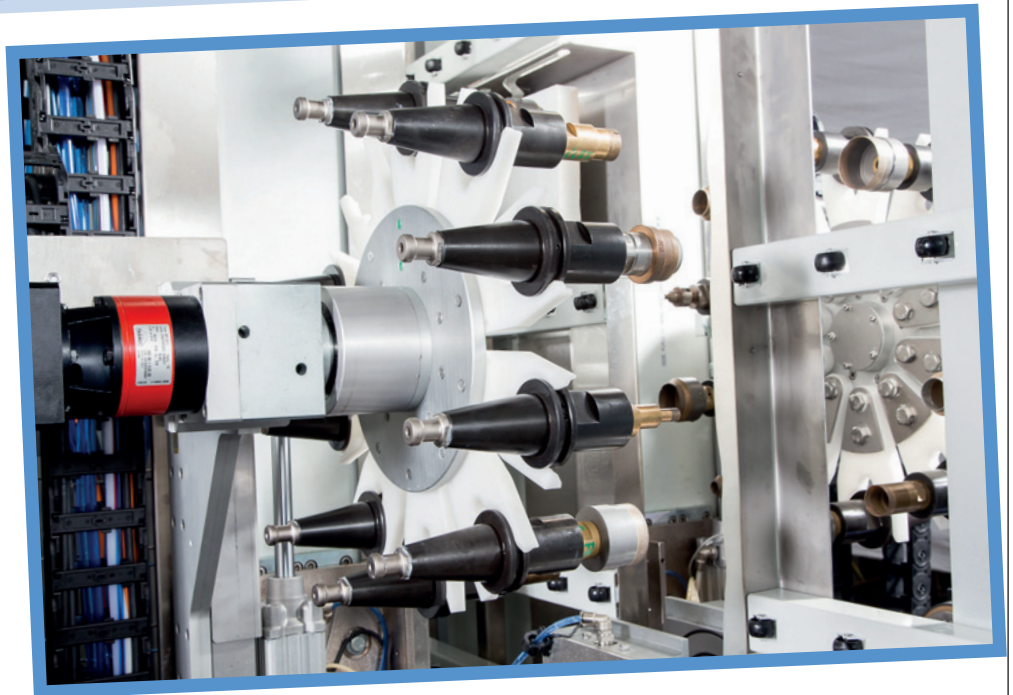
time. Another unique feature was the milling with the glass still, with suction cup always positioned close to the work area. Compared to other vertical NCs that moved the glass and had suction cups in a fixed position, this solution allowed optimum speed and quality of work - greatly reducing the risk of glass breakage.



This year NEPTUN proudly announces the launch of its third QUICK vertical numerical control series for drilling and milling/grinding glass. The QUICKDRILL-T10 and QUICK2-T10 models jointly mark the pinnacle of a technological journey that began ten years ago - adding innovative solutions, patents and customizations requested by customers who are after increasingly reliable, high-performance components and materials.

SHOWER DOOR PROCESSED IN JUST OVER THREE MINUTES

This singular flexibility and productivity led to immediate worldwide success, so much so that already in 2018 the second QUICKLINE series was released - enriched by the QUICK-DRILL T8. It exhibited performance functions that were even more elevated - all coupled with the innovative Quick 2-T8, which brought the drilling and milling operations together.



SERIES 2 SALES SUCCESS DRIVES EXPANSION OF THE RANGE

The second series therefore expanded upon range while rendering the strengths of the first series more robust, adding certain functions required by the evolution of the market and extending the possibilities for inter-connecting control unit to company ERP from an INDUSTRY 4.0 perspective. No surprise then that these models quickly established themselves on the market for being super fast, accurate vertical NCs for drilling and milling. Their strong points include the following:

- Automatic tool change in a maximum of eight seconds thanks to the 8+8 position rotary magazines mounted directly above the spindles
- Simultaneous movement of glass and spindle axes at 25 mtr/min, with positioning tolerance of 0.15 mm constant over time guaranteed by magnetic linear encoders.
- Drilling speed up to 4 mm per second thanks to the patented DCS (Drive Control System) which optimizes performance based on the quality of the tool - even allowing inex-





perienced operators to maximize results.

- Milling-grinding operation with glass still, automatic measuring and dressing of tools.
- Possibility of complete integration with company management and Quickservice remote assistance.

Over successive years the range was completed with the addition of the entry-level QUICK-MILL 100 model and the QUICK 280-45 jumbo models for architectural glass. This last one can be installed stand alone or in line mode with QuicMill or vertical washer with a working capacity of up to 2.8 m in height and 6.0 mm in length. At the end of 2023 Neptun had more than machines installed both in line and

single units. Now the company expects to celebrate 250 units in sales by year-end. QUICK models of any type are present in 43 countries in Europe, USA and Japan, as well as in Africa, South America and Asia. There are even QUICK machines working in places you wouldn't expect such as Libya, Iraq, Iran, Kenya, Ivory Coast and China. Indeed the vast range, from the entry level model to the most performing and automated, makes the machines attractive to both large and small companies.

2024: ANOTHER LEAP FORWARD FOR QUICK-T10

This year Neptun announced the launch of

the QUICK series 3 range.

True to form, this wasn't either a simple restyling but a new machine keeping all the strengths of those which preceded it - enhancing them and adding new features and even more reliable components. The focus of engineering for new model was the architectural sector, as well as for glazing paddle courts. Here the dimensions and weights of the glass are very demanding and the production cycles are tight. The new series stands out for its more robust modular structure - suitable for 24/7 management of heavy sheets compared to glass doors, shower enclosures and glass for interiors or household appliances.

Besides the reinforced, modular structure the following features stand out:

- Rotary magazines mounted on spindles with 10+10 positions for tool changes in less than eight seconds;
- New more powerful liquid-cooled spindle with ISO 40 cones for uncompromising performance heavy glass;
- Wider working area and workable minimums lower than those of the previous series;
- Greater use of stainless steel and anodized aluminum to eliminate any risk of rust over time;
- Power panel inserted in the machine body to reduce floor space.
- Software with simpli-



fied interface for rapid programming -even remotely- and graphically clearer diagnostics to facilitate complete maintenance.

The T10 series continues in the wake of previous models and will be available in versions with workable heights of 170, 220 and 280 cm. Here the target is high productivity glass factories with high automation or for heavy architectural processing. The T8 series will remain in production - destined for companies producing doors, interior glass, automotive and industrial refrigerators, i.e. all applications with smaller glass dimensions. In sum, the expectation is great and the results are evident from the number of orders already received - even before the official launch.



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Regular 2023 industry growth has GIMAV upbeat about 2024

For the first time last year the overall turnover of the Glass Processing Technologies Sector exceeded EUR 3 billion - recording a three percent increase compared to 2022. Yet while that figure might appear modest at first blush, what's super-positive is that all this comes in the wake of two years of solid growth following the 2020 fall which accompanied the pandemic. As such, it consolidates a trend that, save for the Covid interlude, would have continued regularly notwithstanding.

The glass processing technology sector exceeded EUR 3 billion in sales last year - indicating a 3 percent YoY increase. Exports comprised two-thirds of total sales and the domestic market grew by 5.8 percent. Signaling a positive rebound from the 2020 pandemic, such resilience of the industry was recently acknowledged at GIMAV's 2024 meeting of its shareholders (Italian Association of Machinery and Accessories for Glass Processing).



Dino Zandonella Necca - President

ANNUAL SHAREHOLDER'S MEETING

Recently compiled by the GIMAV Study Center, preliminary figures for the glass processing technology sector were presented on 17 January 2023 during the GIMAV Shareholders' Meeting. Commenting upon those indices, President Dino Zandonella Necca, offered the following considerations: "2023 was

a year of consolidation, characterized by growth that could be defined as normal, in the best sense of the term, after the technical rebound following the slump of 2020. After the +25.5 percent in 2021 and the +16.5 percent in 2022, some deceleration was foreseeable over 2023 where growth stabilized (+3 percent), confirming a trend that, when compared with the last year of 'normality', namely 2019,



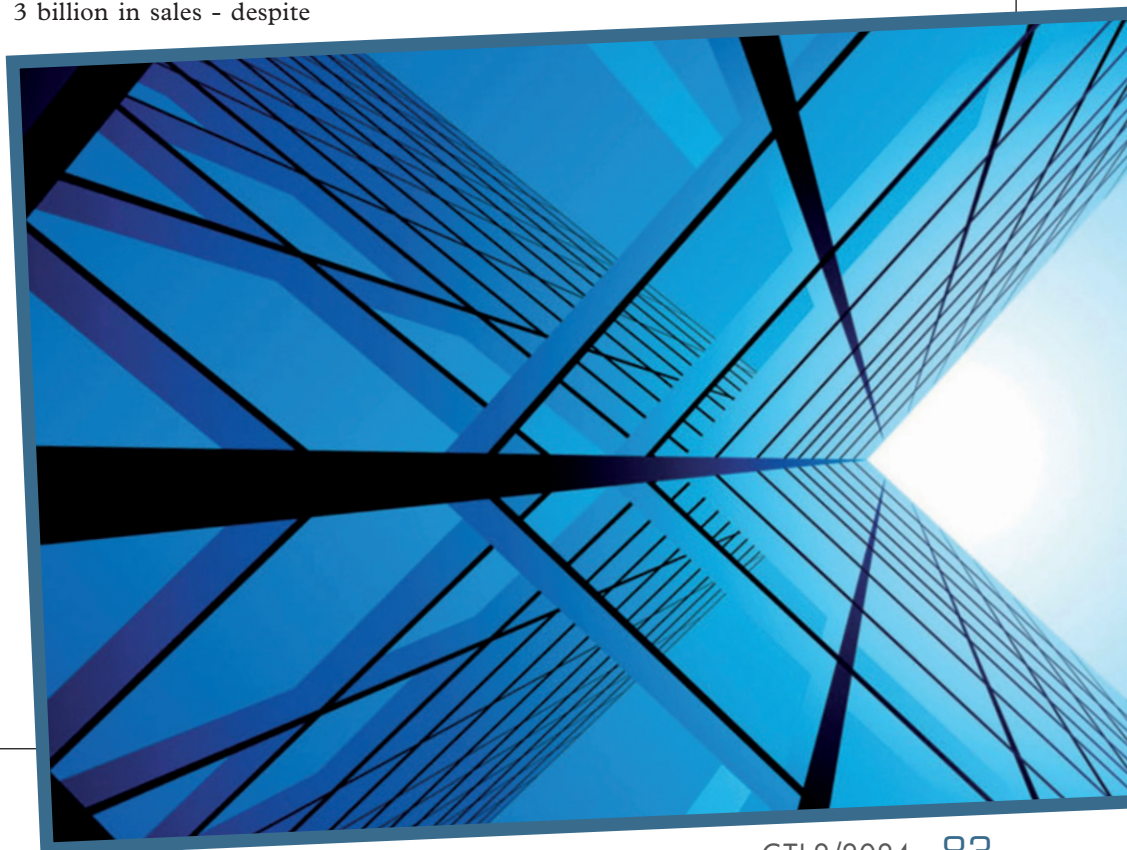
continued smoothly, aside from the Covid interlude. Here, the positive results we are seeing are the result of the work of all the industry players who, thanks to investments and innovations -for example in the field of energy efficiency- are helping to keep the industry vibrant, modern and increasingly sustainable. If we look at, say, the real estate market we can see that, in a context in which the other sectors involved are in recession, the glass sector is instead reacting well and much more competitively with regard to alternative materials - something from which the technology industry also benefits in consequence. Considering all this, we can speak of an industry which has returned to its prime”.

WHAT THE NUMBERS TELL US

Indeed for the first time in its history the industry is expected to exceed EUR 3 billion in sales - despite

uneven trends in the three divisions by which it is comprised: from accessories -substantially stable compared to +0.2 percent in 2022- to hollow glass,

up by 2.1 percent, and flat glass, up by 6.5 percent. Exports continued to be the most important item of sales, totaling around 2 million. That’s equivalent





to two-thirds of total sales - indicating the importance of the international market for the industry notwithstanding the fact that the year wasn't particularly lively (+0.4 percent compared to 2022). Exports also showed differentiated trends, with accessories and flat glass down slightly in 2022 (1.2 percent and 0.6 percent respectively) and hollow glass, instead, up by 6.2 percent.

Apart from the stable, we see slightly improved performance on the international market. The domestic market, which grew

by 5.8 percent, performed even better. Italian manufacturers (+8.1 percent in domestic deliveries) took particular advantage of this spirited domestic market compared to their competitors in the international market (+1.9 percent in imports).

Here, again, the trends in the flat glass, hollow glass and accessories sectors differed. In flat glass processing technologies, the domestic market reached +18.8 percent, domestic deliveries grew by 17.7 percent and imports by 33.4 percent. The domestic accessories market

showed a similar trend, albeit with smaller percentages (+3.8 percent), imports up by 4.5 percent and domestic deliveries by 3.1 percent. Instead the domestic hollow glass technology market showed an opposing trend (-13.5 percent), with domestic deliveries down by 9.8 percent and imports down by 17.7 percent.

TRADE BALANCE

The Industry trade balance was 1.4 billion, a very positive figure but slightly down against 2022 (-0.2 percent). The trade balance of the accessories sector fell by 7.3 percent, as already noted,

as a result of the growth in imports and a simultaneous drop in exports. The trade balance of the flat glass technology sector fell by 2.3 percent as a result of exports remaining more or less stable - penalized by a growth in imports at more than 30 percent. Instead the balance of the hollow glass sector was extremely positive (+16.7 percent) where, unlike the other sectors, imports fell by 17.7 percent and exports rose by 6.2 percent.

That the industry as a whole finds itself in excellent form is also confirmed by the competitiveness indexes. Here almost two-thirds of

production sales are destined for abroad (demonstrating the ability to penetrate the international market) and more than 50 percent of the domestic market is covered by Italian manufacturers - similarly showing the great capacity of the latter. Looking at the overall trend for the industry in 2023, international market penetration capacity fell slightly due to a decrease in the flat glass technology and accessories segment in this sense, from 61.3 percent in 2022 to 57.2 percent in 2023, and from 67.7 percent to 66.8 percent, respectively - offset by the growth of the hollow glass technology segment, from

74.4 percent in 2022 to 77.4 percent in 2023. However, the industry's overall ability to dominate the domestic market grew (in 2022 it was 62.8 percent and in 2023 it was 64.1 percent), where the decline in the domestic market penetration capacity of the flat glass technology segment (from 93.2 percent to 92.3 percent) and accessories (from 48 percent to 47.6 percent) was offset by the growth of the hollow glass technology segment (from 53.1 percent to 55.4 percent).

NICHE MARKET

Among the segments that make up the industry and are in a position of excel-

lence, the only exception is that of accessories and other technologies, which form a prestigious niche market. "We can say that 2023 was a year of positive normality," said GIMAV Director Fabrizio Cattaneo. "There were, overall, good results for all segments which, with the exception of perhaps a couple of specific cases, consolidate the trend of the past year. Those suffering a slight slowdown to a greater extent were, perhaps, the Made in Italy accessories which, as the competitiveness indices show, nonetheless stand out more than other sectors for their niche production - not exactly the most typical investment choice in a phase

of consolidation. At a time in history when we had no reason to expect dramatic leaps forward, these results do not surprise us. Quite to the contrary, they are reassuring - making us optimistic for the future."

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GIMAV

Via Petitti, 16
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Thermoseal Group

DESICCANT SALTS

Ashton Industrial Sales
Di Gregorio
Fenzi

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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

PANTOGRAPHES

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
Lisec Group
Mappi International
Marposs
North Glass Technology
Schiavo
Tecnosens
TK
Tekno Kilns-Pujol
Texpack

TEMPERING FURNACES (AUTOMOTIVE GLASS)

Glass Company
Glasstech Inc.
Glaston Group
Jinglass
Keraglass
Landglass Technology
Mappi International
Marposs
Mazzaroppi Engineering
North Glass Technology
Satinal
Taifin
Tecnosens
Texpack

CHEMICAL TEMPERING EQUIPMENT

Glass Company
R.C.N. Solutions
TK

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
Taifin
Tekno Kilns
Torgauer Maschinenbau

Bending

BENDING FURNACES (ARCHITECTURAL GLASS)

Hornos Industriales Pujol

Jinglass
Keraglass
Mappi International
Marposs
Mazzaroppi Engineering
R.C.N. Solutions
Tecnosens
Tekno Kilns-Pujol
Tk
Texpack

BENDING FURNACES (AUTOMOTIVE GLASS)

Glass Company
Glasstech Inc.
Glaston Group
Jinglass
Keraglass
Mappi International
Marposs
Mazzaroppi Engineering
R.C.N. Solutions
Tk
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-Pujol
TK

Laminated glass production

COMPLETE PLANTS

Bovone
Bottero
Forel
Glass Company
Glaston Group
GPM Automation
Hornos Industriales Pujol
IOCCO Group
Italmatic
Lisec Group
Mazzaroppi Engineering
R.C.N. Solutions
Si.Ste
Texpack
Tk
Triulzi

LAMINATED WINDSCREEN BENDING FURNACES

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

AUTOCLAVES

Bürkle
Glass Company
Glaston Group
GPM Automation
Hornos Industriales Pujol
Italmatic

AUTOCALVE-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
Tk
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
Marposs
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
Softeco
Taifin
Triulzi

Drilling

AUTOMATIC DRILLING LINES

B Solution
Bando Kiko
Bavelloni
Biesse Group
Glaston Group
Biesse Group
IOCCO Group
Neptun
Schiatti Angelo
SKG - Skill Glass
Teknik Elmas
Tesir Makine
Vismara

MULTI-SPINDLE DRILLING MACHINES

B Solution
Bando Kiko
Bavelloni
Biesse Group
CMS
Glass Company
Glaston Group
Biesse Group
IOCCO Group
Neptun
Schiavo
Schiatti Angelo
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
SKG - Skill Glass
Teknik Elmas
Tesir Makine
Vismara

COLUMN DRILLING MACHINES

B Solution
Bottero
Di Gregorio
Fenzi
Neptun
Schiavo
Si.Ste
Tesir Makine
Vismara

PORTABLE DRILLING MACHINES

CMS
Fenzi
Schiavo
Si.Ste
Teknik Elmas
Tesir Makine

DRILLING AND MILLING MACHINES

Bavelloni
Biesse Group

Bottero

CMS
IOCCO Group
Lovati
Neptun
Schiavo
Teknik Elmas
Tesir Makine
Vismara

DIAMOND DRILLS

ADI - Surface Group
Bovone Diamond Tools
Diamut - Biesse
Fenzi
Glaston Group
Mole Moreschi
Neptun
Schiavo
Si.Ste
Teknik Elmas
Tesir Makine
Vincent - Surface Group

ACCESSORIES

CMS
Fenzi
Neptun
Schiavo
Si.Ste
Teknik Elmas

Otherequipment and plants

TURNKEY PLANTS / ENGINEERING - FOR BUILDING GLASS

Bando Kiko
Biesse Group
Bottero
Cugher Glass
Glaston Group
Horn
IOCCO Group
Keraglass
Lisec Group
Marposs
Torgauer Maschinenbau

TURNKEY PLANTS / ENGINEERING - FOR AUTOMOTIVE GLASS

Bando Kiko
Biesse Group
Bottero
Cugher Glass
Easy Automation
Horn
Glaston Group
IOCCO Group
Marposs

KEY PLANTS / ENGINEERING - FOR DISPLAY GLASS

Bando Kiko
Cugher Glass
Marposs
Torgauer Maschinenbau

EDGES ROLLER COATING MACHINE

Eurotech Way

WORK CENTRES - CNC CONTROLLED

Bando Kiko
Bavelloni
Biesse Group
Bottero
Glass Company
Glasstech Inc.
Glaston Group
Hegla
Neptun
SKG - Skill Glass

FLOAT PLANTS / LINES (EQUIPMENT & ACCESSORIES)

Bovone
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 ENAMELING FURNACES

Bürkle
Giardina Group Glass Division

SPRAYING TECHNOLOGY

Bürkle
Giardina Group Glass Division

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

Bürkle

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Giardina Group Glass Division

SANDBLASTING SYSTEMS, EQUIPMENT AND PLANTS - OPTIMIZERS

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

DIGITAL INKJET PRINTERS

Glass Company
System Ceramics
TecnoFerrari

SCREEN PRINTING EQUIPMENT AND PLANTS

Ayrox
COMSS
Cugher Glass
Deltamax Automazione
ECOL
Eurotech Way
Glass Company
Keraglass
North Glass Technology
Rollmac division
of GeMaTa
Softeco
TecnoFerrari

SCREEN PRINTING FRAMES

COMSS

SCREEN PRINTING DRYING SYSTEMS

COMSS
Cugher Glass
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

CHAMBER ELECTRIC KILNS

Glass Company
Keraglass
Tekno Kilns-Pujol

ACCESSORIES

Deltamax Automazione
Helios Quartz
Tk

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
Marposs
Tecnosens
Torgauer Maschinenbau
Zippe

AUTOMOTIVE GLASS APPROVAL SERVICES

Ayrox
Marposs
Softeco
Tecnosens
Teknik Elmas

AUTOMOTIVE GLASS QUALITY CONTROL

Ayrox

Bando Kiko

Cugher Glass
Deltamax Automazione
Glaston Group
IOCCO Group
Marposs
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

Teknik Elmas
Tesir Makine

DEIONIZING AND WATER SOFTENING EQUIPMENT

Fenzi
Forel
Glass Company
Idrotecnica
Lisec Group
Triulzi

DEIONIZING AND WATER SOFTENING EQUIPMENT

Immnes

DIAMOND ROUTER EQUIPMENT - PORTABLE

Teknik Elmas
Tesir Makine

FLAT GLASS QUALITY CONTROL DEVICES

Ayrox
Deltamax Automazione
Forel

IOCCO Group
Marposs
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

Marposs
Tecnosens

INFRARED TUBES

Helios Quartz
Deltamax Automazione

KILNS

Glass Company
Keraglass
Lisec Group
Tekno Kilns-Pujol
Tk
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
IOCCO Group
Prodim

OPTICAL DISTORTION ANALYSERS FOR AUTOMOTIVE GLASS

IOCCO Group

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Keraglass
Tecnosens

OPTICAL INFRARED THERMOMETERS

Optris

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

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

Glaston Group
GPM Automation

Lisec Group

SURFACE STRESS MEASUREMENT INSTRUMENT

Ayrox
Glass Company
Tecnosens

WINDSCREEN STRESS MEASUREMENT INSTRUMENT

Tecnosens

WINDSCREEN AND BACKLITES

Marposh
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

TRADE ASSOCIATIONS

Teknik Elmas
Tesir Makine

UV LAMPS

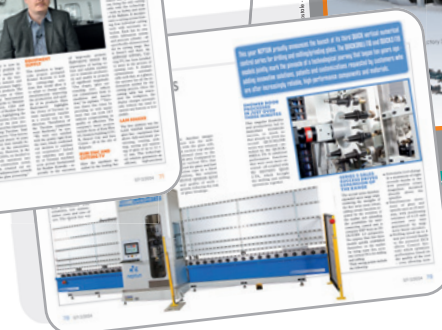
Helios Quartz

UV PORTABLE MACHINES

Helios Quartz



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MÜNCHEN



GLASSTECH ASIA FENESTRATION ASIA

20th Anniversary of The Glass Hub of Southeast Asia

11 - 13 DEC 2024

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>200
Exhibitors



~4,500 sqm
Gross Exhibition
Area



New Networking
Platforms



>3,000
Qualified Buyers



50+
Visiting Countries



Exhibitor Profiles:

- Architectural Glass Profiles
- Chemical Building Products
- Curtain Walls
- Digital Products & IT
- Glass Accessories
- Glass Production & Manufacturing Technology

- Glass Products & Applications
- Hardware
- Processing & Finishing
- Solar Technology
- Sun-shading
- Window & Door System

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Productivity and flexibility at the highest levels



we cut glass

Bottero has always been committed to promoting the development and popularity of laminated glass.

By constantly researching and developing new technological solutions that are able to improve production, as well as increase its possible range of applications.

Bottero cutting lines for laminated glass are the final answer to the growing demand for productivity and flexibility that the market requires.

548LAM represents the point of reference in the cutting systems of laminated glass and it is available in a stand-alone version and a dual-line combined with a monolithic cutting table (**BKM**, **BCS** and **EVO** ranges).

The **548LAM** contains various levels of automatization that is able to manage fully automatic, complex optimizations with **X**, **Y**, **Z** and **W** cuts on float glass and low-E up to **12 + 12mm** of thickness.



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