

# Glass-Technology International

THE LEADING MAGAZINE FOR THE INTERNATIONAL FLAT GLASS INDUSTRY

January/February • Year 35 • No. 1/2024

glass technology



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POLAND SITE SEES **LiSEC** AT FULL THROTTLE FOR **PRESS GLASS**

J AND G SERIES SHOW **CUGHER**'S AUTOMOTIVE GLASS STRENGTH

FRESHLY-FORMED **DISTECGLASS SL** TO DEVELOP NEW **TUOMAS** BUSINESS LINE

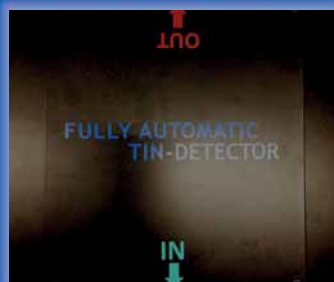
WINDOW STORIES STILL WRITTEN WITH **EDGETECH**'S FLEXIBLE WARM EDGE

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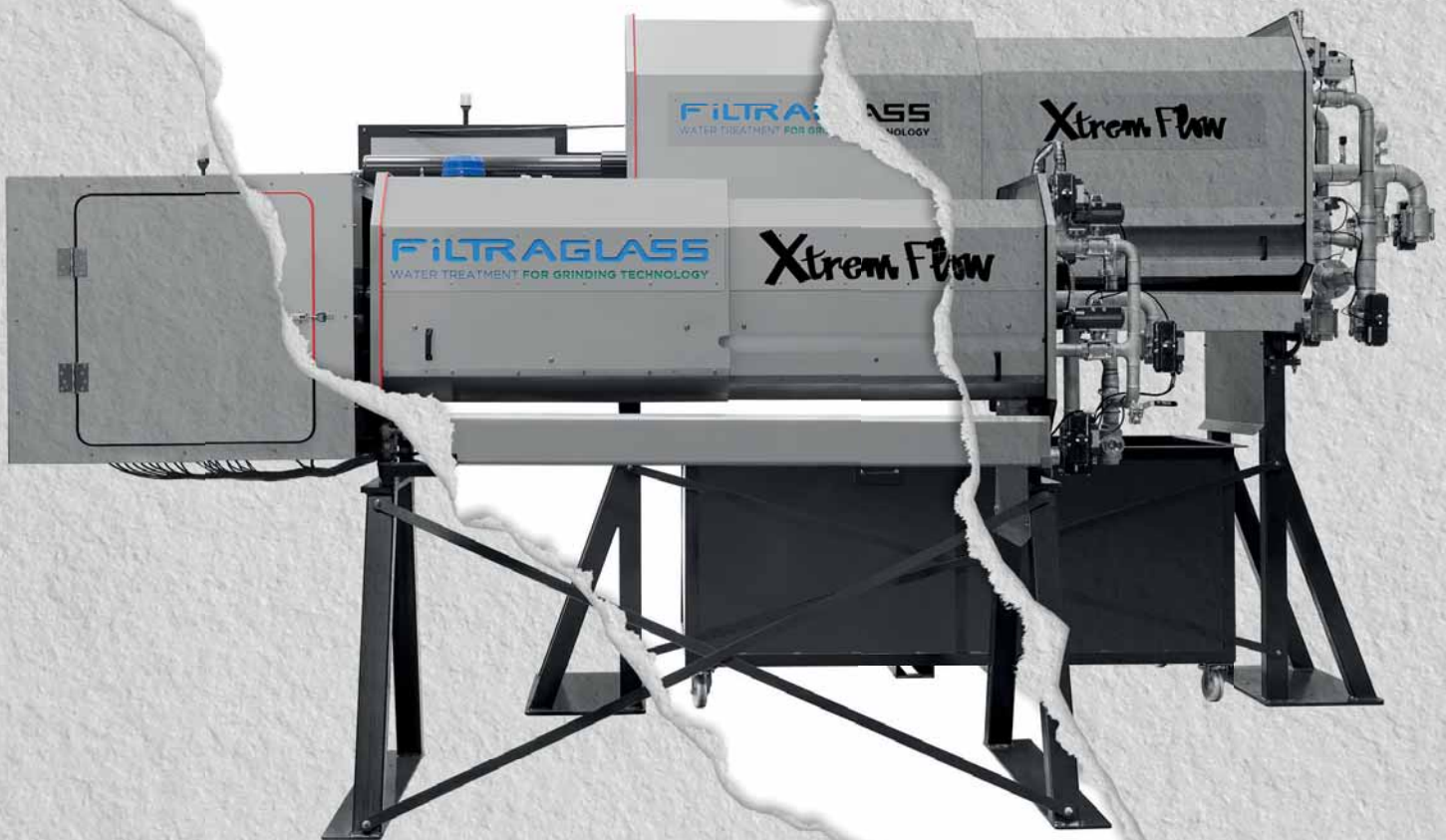
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solution for your insulated glass production.



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**AUTOMATION**

### Poland site sees LiSEC at full throttle for PRESS GLASS

Together with LiSEC, which has been much valued for its reliability and problem-solving capabilities, global flat glass supplier PRESS GLASS continues to be a key player in its high efficiency at its Hungarian site, where LiSEC's advanced automation, logistics and engineering are contributing to mark a benchmark for plant projects in the future.




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**SCREEN PRINTING**

### J and G Series show CUGHER's automotive glass strength

Recent trends in the industry's product lines, CUGHER's plant has designed and produced advanced screen printing machines for automotive glass decoration. While its J Series automates printing for medium to large glasses, its G Series handles segmented glass. Its plant features design features like number 100, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000.




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**PORTFOLIO GROWTH**

### Freshly-formed DISTECGLASS SL to develop new TUROMAS business line

Specialized in both consumable products distribution and technical support for glass manufacturers, TUROMAS is now expanding business with the addition of its new holding company DISTECGLASS SL, which, thanks to 25 years of experience, can now service the glass's sales to other diverse, high-quality products - all supported by a powerful sales network.




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**LASERS**

### Marking 'on the fly' with CERICOM's c-mark technology

With the new CERICOM's c-mark technology, the company has developed a new marking solution for glass. This technology allows for the marking of glass with high precision and speed, ensuring that the markings are clear and durable. The company's advanced 'on the fly' marking further distinguishes the process - ensuring it's exceptionally smart.






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**GAME CHANGERS**

### Edge computing quantum leap sees MAPPI collaborating with SIEMENS

As glass tempering technology leader, MAPPI worked jointly with SIEMENS recently to integrate its Edge Computing, which enhances communication efficiency, control and data security for tempering furnaces. The initiative also ensures higher productivity, better quality, optimal consumption and improved sustainability - all while reinforcing security in glass manufacturing.

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## CONSTRUCTION

### Window stories still written with EDGETECH's flexible warm edge

With restoration of historic windows having taken EDGETECH's Super Spacer™ to Northern Ireland and Mexico, projects have taken a splash in Belfast at both the Bank Buildings and at St Mary's Roman Catholic church of St. Mary's in Dublin. In addition, the Catholic parish church of St. Mary's in Dublin has also engaged the technology.

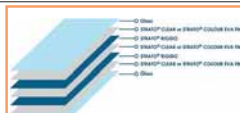



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## LAMINATED GLASS

### STRATO® RIGIDO: SATINAL's structural component for multiple combinations

With a mechanical advantage and great resistance to impact, STRATO® RIGIDO is the ideal choice for the construction of glass facades. Its combination with SATINAL® EMI or SATINAL® EMI+ film offers the best protection for glass structures. Thanks to its high resistance to impact, STRATO® RIGIDO is also the ideal choice for the construction of glass facades in high-risk areas.



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## INDUSTRY EVENTS

### Upcoming CHINA GLASS to promote high-end, intelligent and green

Headed this year by the Chinese Ceramic Society and organized by Beijing Shanghai Exhibition Co. The 33rd China International Glass & Industrial Technology Exhibition (I.T.A. also known as CHINA GLASS), will be held at Shanghai New International Expo Centre from April 23 to 26, 2024.



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## TRENDS

### Surging demand in Construction heralds global growth for ADVANCED GLASS

Higher demand for advanced glass in construction heralds global growth for advanced glass. The market is expected to grow significantly in the coming years, driven by the increasing demand for high-performance glass in various applications.



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## AUTOMOTIVE

### How technological innovation is transforming AUTO GLASS

Technological innovation is transforming the automotive industry, with advanced glass playing a key role in the development of new vehicles. The use of advanced glass in automotive applications is expected to grow significantly in the coming years.



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glass technology

**HEGLA**

### High-Speed Float

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The High-Speed Dimension for Float Glass

Fully automated processes and outstanding acceleration and motion dynamics make our Galactic high-performance solution for cutting float glass. With its adaptability to customers' specific needs and precise, superior performance on-site, the system is sure to impress you.

- High performance due to semi-maintenance free drive
- Proven working results for shapes and straight cuts
- Customer specific configuration with, for example, laser marking, edge decoupling and upgrade for TRF and Etopro

Low Maintenance Galactic

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issue	exhibition/conference	date	venue	deadlines	
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2024	<b>1</b>	<b>MIR STEKLA</b>	27 February 1 March	<b>MOSCOW</b> Russia	<b>Editorial files:</b> <b>02-02-2024</b> <b>Deadline Adv files:</b> <b>09-02-2024</b>
		<b>GPAD - GLASS PERFORMANCE AUTOMATION DAYS</b>	5-6 March	<b>NASHVILLE (TN)</b> USA	
		<b>FENSTERBAU FRONTALE</b>	19-23 March	<b>NUREMBERG</b> Germany	
2024	<b>2</b>	<b>CHINA GLASS</b>	25-28 April	<b>SHANGHAI</b> China	<b>Editorial files:</b> <b>25-03-2024</b> <b>Deadline Adv files:</b> <b>29-03-2024</b>
		<b>AUTOMOTIVE SMART GLASS FORUM</b>	8 May	<b>BOLOGNA</b> Italy	
		<b>CONSTRUMAT</b>	21-24 May	<b>BARCELONA</b> Spain	
		<b>WINDOREX</b>	22-24 May	<b>CAIRO</b> Egypt	
2024	<b>3</b>	<b>GLASS SOUTH AMERICA</b>	12-15 June	<b>SAO PAULO</b> Brazil	<b>Editorial files:</b> <b>03-05-2024</b> <b>Deadline Adv files:</b> <b>10-05-2024</b>
		<b>ICCG 2024</b>	24-26 June	<b>DRESDEN</b> Germany	
		<b>GLASSTECH MEXICO</b>	9-11 July	<b>GUADALAJARA</b> Mexico	
2024	<b>4</b>	<b>GLASSBUILD AMERICA</b>	30 September 2 October	<b>DALLAS (TX)</b> USA	<b>Editorial files:</b> <b>29-07-2024</b> <b>Deadline Adv files:</b> <b>02-08-2024</b>
2024	<b>5</b>	<b>GLASSTEC</b>	22-25 October	<b>DÜSSELDORF</b> Germany	<b>Editorial files:</b> <b>20-09-2024</b> <b>Deadline Adv files:</b> <b>30-09-2024</b>
		ALL GLASSTEC EXHIBITORS ADVERTISING IN THIS ISSUE ALSO RECEIVE A FREE GLASSTEC PREVIEW 			
		<b>VETECO</b>	5-8 November	<b>MADRID</b> Spain	
2024	<b>6</b>	<b>EURASIA GLASS</b>	16-19 November	<b>ISTANBUL</b> Turkey	<b>Editorial files:</b> <b>18-10-2024</b> <b>Deadline Adv files:</b> <b>29-10-2024</b>
		<b>GLASSTECH ASIA</b>	11-13 December	<b>HO CHI MINH CITY</b> Vietnam,	
		<b>ZAK GLASS TECHNOLOGY</b>	December	<b>DELHI</b> India	



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market trends

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- Recyclable materials, green and environmental protection.



NSG GROUP

## New USA solar glass production line announced

**N**SG Group recently announced its plan to invest in additional TCO (transparent conductive oxide) glass production capacity in the United States to support the growing solar market.

In the plan, a float line at the Pilkington North America, Inc. Rossford, Ohio location, a member of **NSG GROUP**, will install online coating capacity and will start shipping TCO glass for solar panel manufacture in the first quarter of calendar year 2025.

The upgraded float line in Rossford, Ohio will support the expansion strategy of First Solar, Inc., the largest solar manufacturer in the U.S.



and a global provider of responsibly produced eco-efficient solar modules, which has a long-standing strategic partnership with NSG Group. The float line will supply glass to First Solar's manufacturing footprint in the U.S., which is forecast to grow to 14 gigawatts of annual nameplate capacity by 2026.

To meet the growing global demand for solar panels, specifically First Solar, NSG Group started operation of the second dedicated float line for solar glass in Vietnam in January 2020, and a new plant in Luckey, Ohio, USA, has been operating since November 2020. The conversion of another NSG group float line in Johor Bahru was recently completed and is now beginning production. The glass produced in these plants is exclusively supplied to First Solar and will bring the total of lines dedicated to First Solar production to five.

NSG Group continues to consider expanding capacity for solar energy glass to ensure it meets First Solar demand.

NSG Group is promoting "Expansion of Value-added Business" as one of the measures listed in the medium-term management plan "Revival Plan 24." The announcement to expand solar glass based on a proprietary online coating technology is part of this strategy.

This project further supports NSG's ongoing efforts to reduce the amount of carbon in the environment by enabling additional clean solar energy generated by First Solar's solar panels.

The Group will continue its efforts to realize its Medium-Term Vision to be "A global glass supplier contributing to the world with high value-added glass products and services."

[WWW.NSG.COM](http://WWW.NSG.COM)

LISEC

## Opening of new Engineering Centre

**A** new Engineering Centre was recently opened at the LiSEC site in Seitenstetten, Austria. Around 140 additional workplaces can be found on an area of 2,000 square metres and four floors. The new building was celebrated in style together with all employees, guests from politics,

the Foundation's Executive Board and Supervisory Board as well as construction partners.

### Construction

Construction work began back in April 2022, with numerous regional partners contributing to the project. "An expansion of the office workplaces in Seitenstetten was absolutely necessary following the merging of the Hausmending and Seitenstetten sites," said LiSEC CFO Oliver Pichler. A total of more than EUR 7M was invested in the construction project. Trends in the world of work, such as collabora- ➔

tion spaces or shared desks, were incorporated into the design. Project Manager and Head of Industrial Engineering/Facility Management, Friedrich Schrenk, said, “We have successfully implemented the Engineering Centre despite a rapid start to construction and many ongoing changes. We are proud of the result and are excited about the growth at the Seitenstetten site. We are optimistic about the future.”

#### New working environment

The office building with an integrated laboratory area offers a new working environment with different room concepts. Employees can choose between quiet and communicative areas, depending on their needs.

Stand-up areas and a “LiSPoint” invite employees to share ideas and act as communication hubs. Tasks can be worked on routinely at the work desks at height-adjustable tables. Focus boxes create space for solving complex tasks in seclusion. Chat boxes, meeting rooms, maker spaces and kitchens complete the room concept.

“We want to offer our employees a modern, future-oriented and attractive working environment. We are only successful thanks to our employees. That’s why we need to focus on a suitable working environment. That’s what we’ve done with the construction of the new Engineering Centre,” says Oliver Pichler.

Gottfried Brunbauer, LiSEC CEO, added, “Seitenstetten has been the main location of the LiSEC Group for many years and will remain so in the future. We will therefore continue to invest in the site. Over the next few years, further modernization steps will follow, both in the office infrastructure and in production.”

[WWW.LISEC.COM](http://WWW.LISEC.COM)



## Super Spacer®

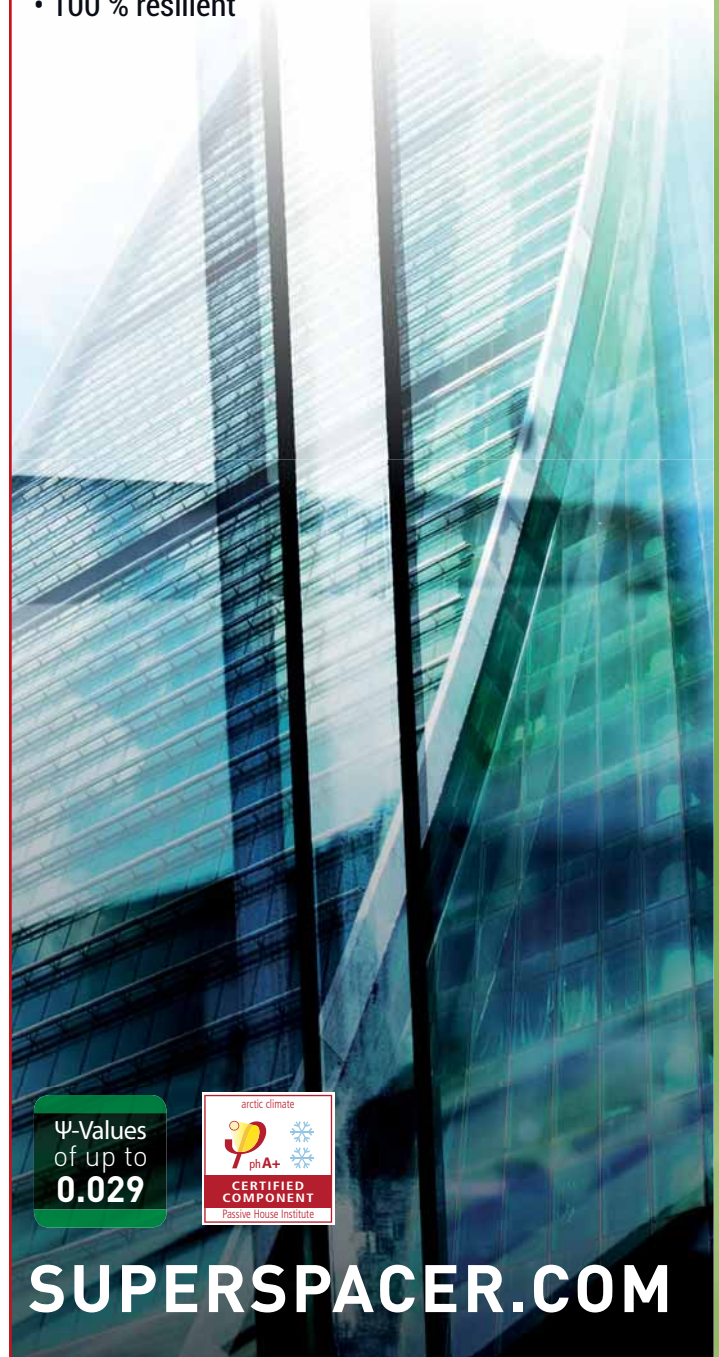
### AUTOMATION IS THE SOLUTION

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CMS

## CMS electa horizontal machining centre redefines space efficiency



**A**s new 3 or 4-axis CNC machining centre for processing flat glass, whether thick, thin, laminated or bulletproof, Scm Group's **CMS electa** features a small footprint and a sizable work area in its category. It can perform many types of machining: rough and polished edge grinding, edge polishing, drilling, milling, cup wheel polishing, diamond disk cutting, diamond and smooth disk engraving and five degree polished chamfering with a cup wheel.

The new and exclusive Metal Synthetic Technology - MST worktable has high inertia and is very thick to dampen vibrations, which contributes to improving the quality of the machined glass.

### Key buyer benefits

- Even larger work area: +17 percent space for fabrication;
- Smaller footprint with up to 43 percent space saving;
- Even higher productivity thanks to axis speed of up to 72m/min;
- Minimal vibrations during fabrication because of the new Metal Synthetic Technology (MST) worktable.

[WWW.SCMGROUP.COM/EN/CMSSGLASS](http://WWW.SCMGROUP.COM/EN/CMSSGLASS)

HEGLA

## Separating IGUs - using imperfect and end-of-life panes

**T**he amount of glass on buildings continues to increase: be it transparent façades and multiple IGUs on new buildings, or windows and panes that are replaced on existing properties at the end of the product life cycle.

With the IG2Pieces assembly line technology, **HEGLA** has developed a solution that can automatically separate insulated glass. At the same time, the company offers a handling concept that retains the purity of the raw material and improves revenues, or enables panes to be reused as such.

### Dealing with imperfect panes and used glass sustainably

To ensure that glass panes remain usable for a range of applications, the aim was to release the individual panes from the spacers reliably, cleanly and without damage, while maintaining high productivity.

The measurement of the ISO dimensions and the insulated

glass structure is fully automated. Once the glass has been removed from the laminate, it can be recycled without any loss of raw material quality. Just like the panes, the unimpaired spacers, including the intact desiccant, are conveyed to a separate system for disposal or recycling.

### Type-specific float glass yields financial advantages

Separated recycling of the individual types of glass yields advantages compared to mixed containers. When panes are professionally separated, this generates added financial value.

The impact on the environment is also positive: panes find their way back to the float tank to close the material circuit, while preserving the quality of the raw material. Further, one kilogram of float glass that is produced from used glass generates around 0.3 kilograms less CO<sub>2</sub>, compared to a classic glass mixture.

### Reuse and repair

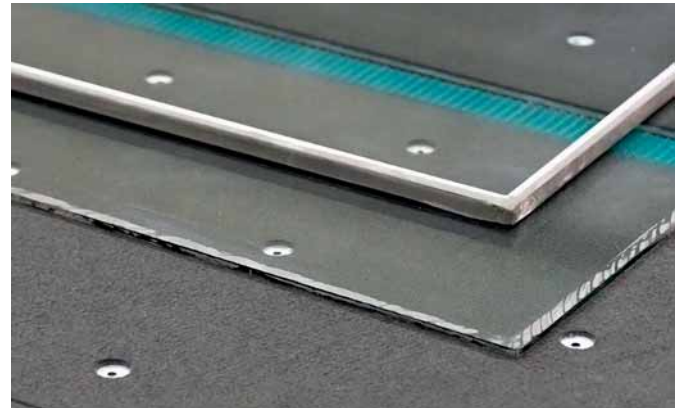
Alongside type-specific recycling, the reuse of undamaged panes is yet another option that increases the recycling rate. If, despite all precautions, there are impurities or surface defects in a freshly produced insulated glass laminate, →

← the individual pieces can be cleanly removed and the defective pane can be disposed of, if necessary.

If repairs cannot be made during the ongoing production process or if no special-purpose cut is available, there is a third option. The clean application of butyl and sealing of separated glass can be planned for follow-up orders and cut to smaller dimensions. Applications here include LSG, high-quality, refined glass or special-purpose glass that is no longer available.

[www.hegla.com](http://www.hegla.com)

[WWW.HEGLA.COM](http://WWW.HEGLA.COM)



#### EMIRATES GLASS & GLASTON

## Jumbo Series expands fleet

**E**mirates Glass LLC, one of the leading organizations in the glass industry and a long-time advocate of **GLASTON TECHNOLOGY**, continues its journey of innovation and quality enhancement with the recent installation of the Glaston Jumbo Series flat glass tempering line featuring Vortex Pro convection technology. This investment marks Emirates Glass' commitment to delivering top-notch architectural glass solutions to the region and far beyond.

"We can proudly say that 60 percent of Dubai is glazed by **EMIRATES GLASS**," said Rizwanulla Khan, Executive President of Emirates Glass, who has been associated with the industry for the past four decades.

#### Expanding to jumbo glass with a new line

To serve evolving market demands, Emirates Glass has continuously invested in new machinery. Their latest addition is the Glaston Jumbo Series tempering furnace with Vortex Pro convection technology. This new line is capable of processing high-performance coated glass with emissivity levels as low as 0.02 and a maximum glass size of up to eight metres.

This investment complements the company's two other **GLASTON** tempering lines – the Glaston ProE Magnum and Glaston RC200.

"Our Glaston Magnum machine dates back to 2006," Khan said. "We have been running it round the clock for all these years, and it still operates perfectly. This gave us the confidence that our next machine should be from Glaston, as well."

#### Achieving remarkable differences

The new tempering line was delivered in November 2020 and has since been a game-changer for Emirates Glass.

"We especially appreciate the Glaston Jumbo's convection control and the Glaston iLook online quality control for distortion and anisotropy," Khan said. "Even our customers have noticed a significant improvement in the quality of the glass they receive. We have been able to reach better optical quality and refined aesthetic glass characteristics in part thanks to the anisotropy control. This has elevated overall customer satisfaction and bolstered our reputation for delivering superior glass products."

The Glaston Jumbo Series has brought about considerable savings, too. "Today, the industry is looking to reduce energy costs in production," Khan noted. "Glass processors expect their machinery to efficiently process large volumes of glass. This is exactly what we were able to achieve with the Glaston Jumbo's effective air and electricity consumption."

[WWW.GLASTON.NET](http://WWW.GLASTON.NET) - [WWW.EMIRATESGLASS.COM](http://WWW.EMIRATESGLASS.COM)



WINDOTEC & HORNOS PUJOL

# Pujol 100 PVB+ to produce hurricane-resistant glass



**W**indotec is located in San Pedro Sula, Honduras, and the company stands out for being a leader in the region as well as the only one in the country specializing for more than 15 years in the field of glass processing. It has recently placed its trust in **HORNOS PUJOL** and in particular, a Pujol 100 PVB+, installing model 40X28-2C.

With this purchase, **WINDOTEC** has managed to consolidate its project of having a factory equipped with the best technology for the production of three variants of laminated glass: conventional laminated glass, armoured laminated glass and impact-resistant or anti-hurricane laminated glass specially designed for sale and installation in the United States and the Caribbean. With Pujol 100 PVB+, Windotec will be able to reduce investment costs and will obtain significant savings in costs derived from greater energy efficiency for each unit of the laminated product. Besides, it will take advantage of the versatility and flexibility offered by the oven for laminating PVB, EVA and ionoplastics (SGP).

With Pujol 100 PVB+ it is not necessary to carry out humidity or temperature control during storage or processing. In addition, Pujol 100 PVB+ avoids the need to invest in expensive and dangerous calendaring systems, which allows one to reduce energy efficiency costs by up to 70 percent compared to traditional autoclave systems and maintain fixed energy costs regardless of production. Pujol 100 PVB+ includes as standard the Pujol e-Connect system, which allows remote monitoring and complete security, in addition to controlling and verifying the quality of production.

Pablo Rishmawi, President of Windotec, said, "We intended to have a factory equipped with the most advanced technology on the market, which is why we opted for Pujol. Without a doubt, our new Pujol 100 PVB+ furnace will be of great help to achieve our goal of entering with full confidence

into a high-potential market such as that of safety and anti-hurricane glass in the United States and the Caribbean."

For his part, Jorge Pujol, CEO of Hornos Pujol, expressed his satisfaction in collaborating closely with the ambitious Windotec project and in the inclusion of Pujol 100 PVB+

"With the implementation of this new project, and thanks to recognized processors like Windotec, we continue to advance in our global expansion strategy in consolidating Pujol 100 PVB+ as a superior quality product. Currently, we have 60 clients whom we are proud to help daily in achieving greater savings and greater competitiveness thanks to Pujol 100 PVB+."

[WWW.HORNOSPUJOL.COM](http://WWW.HORNOSPUJOL.COM) - [WWW.WINDOTEC.COM](http://WWW.WINDOTEC.COM)







## Pujol 100 PVB+ & full automatic lines

Total precision, maximum reliability and greater savings

- It allows the lamination of PVB / EVA / ionoplastics.
- Humidity and temperature control are not required for either storage or treatment.
- Fixed energy costs independent of production volume.
- Cost reduction owing to greater energy efficiency, when compared to traditional autoclave systems.
- 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.

SAINT-GOBAIN GLASS

## Game-changer shatterproof mirror launched

When a mirror breaks, shards of glass can be dangerous for everyone, both for building occupants and for the professionals who handle and install it. That is why Saint-Gobain Glass has developed a new patented solution, namely Miralite® Easysafe, which retains 98 percent of splinters in the event of a breakage.



As a highly versatile mirror, it is designed for homes, where safety is a priority (bathrooms, decorative mirrors, wardrobes, sliding doors...) as well as for high-traffic buildings such as retail (fitting rooms), sports facilities, hotels, etc. Co-developed with SAINT-GOBAIN GLASS clients, Miralite® Easysafe also meets the needs of processors since it is almost as easy to process as a simple mirror and much easier than a traditional safety-backed filmed mirror.

Finally, this technology reduces plastic waste but also the raw materials used in its manufacturing are lead and solvent-free - making it a more sustainable alternative compared to the actual solution.

[WWW.SAINT-GOBAIN-GLASS.COM](http://WWW.SAINT-GOBAIN-GLASS.COM)

TIANJIN NORTHGLASS

## Choice to rely on Softsolution's LineScanner

In 2021, TIANJIN NORTHGLASS integrated a horizontal SOFTSOLUTION's LineScanner immediately after the tempering furnace for the first time to conduct anisotropy and edge stress inspections.

Following the successful deployment of the initial LineScanner, NorthGlass implemented a second LineScanner and an Osprey 10 Complete after the tempering furnace. This made it possible to not only examine anisotropy but also assess the distortion of tempered glass.

As a subsidiary of Luoyang NorthGlass Technology the company has made significant investments to establish a major glass deep-processing enterprise equipped with state-of-the-art technology from NorthGlass.

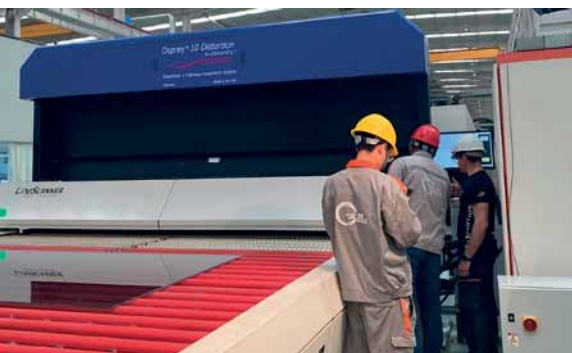
The company boasts impressive production capacities, including an 18-metre ultra-large LOW-E production line covering eight million square metres and additional production lines for tempered glass, laminated glass and safety insulated glass. Tianjin NorthGlass's flagship products, ultra-large energy-saving glass and structural glass products are utilized in Apple's "Glass Spaceship" project in the United States.

The use of the LineScanner ensures precise monitoring of anisotropy in tempered glass, allowing timely adjustments in the tempering process. These real-time data provide comprehensive documentation of glass quality, helping to avoid uncontrolled operations and ensuring consistent quality in the tempering process. The LineScanner examines anisotropies, generates thermal images and determines the edge stress of each

produced pane, highlighting its uniqueness.

The Quality Manager at Tianjin NorthGlass said, "The LineScanner can accurately monitor the anisotropy of tempered glass and provide timely instructions for adjusting the tempering process. This ensures the stability and traceability of quality control."

[WWW.GLASSQUALITY.COM](http://WWW.GLASSQUALITY.COM) - [WWW.NORTHGLASS.GLOBAL](http://WWW.NORTHGLASS.GLOBAL)



**RYZE HYDROGEN & GUARDIAN GLASS**

## Hydrogen provision

**G**uardian Glass operates over 24 float glass lines worldwide and serves 160 countries across five continents. **RYZE HYDROGEN** will support Guardian's UK float glass plant in Goole, East Yorkshire, with hydrogen, used as a technical gas during the

float glass process. The hydrogen supplied will be used in the manufacturing of float glass, the most widely produced form of glass used in car and building windows, as well as mirrors.

Last year, Ryze became a member of Glass Futures to explore the role hydrogen can play in reducing the glass industry's carbon emissions. Jake Harding, Business Development Executive at Ryze, said, "Float gas is a key component for the construction and automotive industries which are, in turn, key pillars of the UK economy."

**GUARDIAN GLASS** Plant Manager, Chris Duguid, added, "Hydrogen is vital to our float gas production processes. Hydrogen is used to create an oxygen-free environment as a blanket to avoid oxidation of the tin onto which we float molten glass. As this is needed 24-hours a day, it is absolutely critical that we partner with a reliable supplier, which is what we have with Ryze."

[WWW.GUARDIANGLASS.COM](http://WWW.GUARDIANGLASS.COM) - [WWW.RYZEHYDROGEN.COM](http://WWW.RYZEHYDROGEN.COM)

**SPARKLIKE**

## Why measure gas concentration?

**S**parklike's customers include insulating glass producers, window and door manufacturers, IG line producers, testing laboratories, energy engineering and construction consultants, real estate developers and building owners.

Since they all operate in the same industry, they face the same challenges, one of which is verifying gas fill rates that impact the quality of the glass. An insulating glass unit without insulating gas can have up to 30 percent lower U-value than with gas filling over 85 to 90 percent.

Last year **SPARKLIKE** did a customer survey to understand its customers better. This included insight into how Sparklike devices are perceived and what are the drives to purchase.

**Glass industry demand puts pressure on quality assurance**

In the survey, there were five answers, in addition to an open field to write some personalised answer. Based on these results, the most common reason to invest in Sparklike's gas measuring devices was to meet industry requirements and legislation. After that was achieving higher quality standards for glass and to meet customers' demands.

Gas content is a significant factor in improving the energy efficiency

of insulating glass and therefore an important part of global energy saving efforts. This explains why one motive to monitor the gas level of IGUs is to improve and prove the product's energy efficiency.

The fifth reason to purchase was gaining a competitive advantage by overachieving industry standards for product quality.

**Five reasons to invest in gas concentration inspection**

- To meet the industry requirements /legislation
- To achieve higher quality standards
- To meet client demand
- To improve products' energy efficiency
- To gain competitive advantage by overachieving industry standards for product quality

**Sparklike devices**

- Sparklike Handheld™ – for double glazed insulating glass units
- Sparklike Laser Portable™ – for double and triple glazed insulating glass units with coatings and lamination
- Sparklike Laser Integrated™ insulating gas measurement station integrated to the IG-line – for double and triple glazed insulating glass units with coatings and lamination.

[WWW.SPARKLIKE.COM](http://WWW.SPARKLIKE.COM)



POLFLAM

# Innovative low-carbon, fire-resistant glass



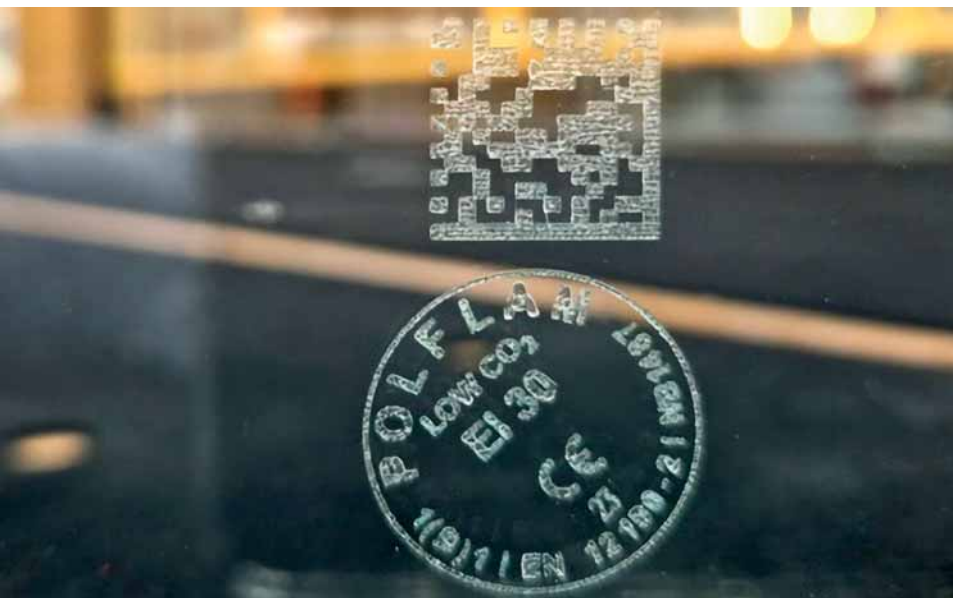
**POLFLAM GAIA**

Inspired by the timeless essence of a Greek goddess, POLFLAM's revolutionary product symbolizes the nurturing spirit of Mother Earth and is a groundbreaking solution dedicated to preserving the planet. Here, seeking to pioneer a new era, Polflam Gaia is a truly cutting-edge low-carbon fire-resistant glass - thoughtfully crafted through the fusion of hydrogel technology from the Polflam factory and the distinctive attributes of Pilkington Mirai™ low-carbon float glass. Indeed by employing environmentally conscious methods, such as the use of alternative fuels, renewable energy and raw material recycling, this glass ensures a significantly reduced carbon

footprint.

By using eco-friendly material and advanced production techniques, Polflam has successfully cut CO2 emissions during the manufacturing process by up to 65 percent compared to standard fire-resistant glass.

Polflam Gaia with its reduced carbon footprint can achieve superior results in Green Building Labels environmental certification, aligning seamlessly with LEED, BREEAM and DGNB standards. This product makes it easy to reach the highest standards of eco-friendly construction. With fire resistance ranging from EI15 to EI180, this glass aims to not only be an eco-friendly innovation but also a partner in creating a sustainable and vibrant living space.



Independently evaluated by a third-party institute conducting a comprehensive Life Cycle Assessment (LCA) and an Environmental Product Declaration (EPD), the hope is that a new EPD will confirm Polflam Gaia as the fire-resistant glass with the lowest carbon footprint on the market by the end of the first quarter of 2024.

[WWW.POLFLAM.PL](http://WWW.POLFLAM.PL)



## GLASS TEMPERING FURNACE

### VULCAN

#### FLAT AND BENT GLASS TEMPERING FURNACE

Patent Convection System **MATRIX PLUS**  
for Low-E glass triple silver

**iTemper** highly advanced 4.0 management software

High efficiency with minimum power consumption  
for glass tempering in thickness from **2.5 to 25 mm**



**2024 NEWS "GLASS BREAK ALERT"**

Automatic glass breakage detection system

**Cutting-edge technology at production support**

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Tel: +39 0721 283519  
[www.glasscompany.com](http://www.glasscompany.com)  
[info@glasscompany.com](mailto:info@glasscompany.com)

# FLAT AND BENT

NSG GROUP

# Production line of solar glass starts operation in Malaysia



**N**SG Group recently announced the warm up of a newly converted TCO (transparent conductive oxide) facility in Malaysia. In this investment, an existing float line at the Johor Bahru factory of Malaysian Sheet Glass SDN BHD, a member of **NSG GROUP**, has been converted to begin producing TCO glass from December of last year. The investment is to support the expansion strategy of First Solar, Inc., a leading American solar technology company and global provider of responsibly produced eco-efficient solar modules, which has a long-standing strategic partnership with NSG Group. The float line will supply glass to First Solar's Southeast Asia manufacturing footprint.

In order to meet the growing global demand for solar panels manufactured by First Solar, NSG Group started operation of the second dedicated float line for solar glass in Vietnam in January 2020, and a new plant in Luckey, Ohio, USA has been operating since November 2020. The glass produced in these plants is exclusively supplied to First Solar.

The Group is also considering expanding further capacity for solar energy glass in the USA, to ensure it meets solar glass demand by First Solar.

NSG Group is promoting "Expansion of Value-added Business" as one of the measures listed in the medium-term management plan "Revival Plan 24." (RP24) The expansion of solar glass based on NSG's proprietary online coating technology is part of this strategy and also of their aim to contribute to solving global environmental issues, including promoting the shift of renewable energy.

The Group will continue its efforts to realize its Medium-Term Vision to be "A global glass supplier contributing to the world with high value-added glass products and services."

[WWW.NSG.COM](http://WWW.NSG.COM)

GUARDIAN GLASS & KURURAY

# Partnership to obtain a DTA for the French market

**G**uardian Glass and **KURURAY** have partnered to obtain a Document Technique d'Application (DTA) for the French market, for the compatibility of Guardian SunGuard™ High Durable (HD) coatings (coating against interlayer) and SentryGlas® Xtra™ interlayer material. This combination offers architects and façade consultants a new opportunity to design a building envelope with high strength and energy performance. Laminated Guardian SunGuard™ HD glass with SentryGlas® Xtra™ interlayer is particularly suitable for monolithic applications such as the outer envelope of double skin façades, canopies or atriums, as well

as applications that require high resistance to mechanical and/or wind loads. The DTA validates all glass compositions where SentryGlas® Xtra™ is in direct contact with Guardian SunGuard™ HD coatings.

**Combination of benefits**

SentryGlas® Xtra™ is part of SentryGlas® ionoplast interlayers which are indicated as being five times more tear resistant and up to 100 times stiffer than conventional PVB interlayers. Aside from its strength, SentryGlas® is much less susceptible to moisture exposure. Due to the structural properties of the interlayer, the use of SentryGlas® can also reduce overall glazing thickness, typically by up to 30 percent. In addition, this reduction in glazing thickness can result in lowering the embodied carbon by approximately 27 percent.

Guardian SunGuard™ HD coatings are made from highly resistant materials, which make them particularly suitable for mono- →

← lithic applications. Guardian SunGuard™ HD solar control glass offers various aesthetics and external reflectivity, as well as different levels of light transmission and solar factor.

Matthieu Laude, Product Manager at GUARDIAN GLASS in Europe, said, "We are delighted to announce this product partnership with Kuraray which further positions our Guardian SunGuard™ HD solar control products as an ideal solution for monolithic applications. Laminated Guardian SunGuard HD glass with SentryGlas® Xtra™ interlayer offers several advantages for customers, not only from the combination of material properties. Having a readily available French DTA certification can save customers time and effort in applying for a certification specific to their project and can reduce the costs associated with this."

#### Environmental stewardship and product certification

Both SentryGlas® and SunGuard™ HD products have Environmental

Product Declarations (EPDs) available. FDES (Fiches de Déclaration Environnementale et Sanitaire – Environmental and Health Declaration Sheets) are available for the Guardian coated glass. SunGuard™ HD products are bronze level v3.1 Cradle to Cradle certified®, as are all Guardian float glass, laminated glass and coated glass products manufactured in Europe.

[WWW.GUARDIANGLOSS.COM](http://WWW.GUARDIANGLOSS.COM) - [WWW.TROSIFOL.COM](http://WWW.TROSIFOL.COM)



#### ŞİŞECAM

## Reduction of carbon emissions with AI technology

Committed as always to developing solutions for a sustainable world and more efficient production processes, **ŞİŞECAM** is currently implementing the Glass Colour Optimization Project (CROP) with Artificial Intelligence and Machine Learning Methods. This initiative aims to eliminate colour issues during the manufacture of glass. The project will reduce the production waste rate and the resulting carbon emissions.

The forward-looking project is being carried out by a consortium that includes Şişecam, Koç University, TÜBİTAK Artificial Intelligence Institute and Analythinx. CROP aims to develop an infrastructure to minimize colour differences and to identify and quickly resolve the root cause of colour-related problems in glass production with artificial intelligence models. Designed to improve colour quality in the glass industry, the project will integrate advanced technology and artificial intelligence know-how into production operations while expanding the country's industrial knowledge base.

CROP will start at the Şişecam Eskişehir Glassware plant and last for two years. This initiative once again demonstrates the value Şişecam attaches to innovation and continuous development. The project is expected to have a major impact through information transfer to other Şişecam plants.

CROP is one of 17 projects supported as a result of TÜBİTAK's 1711 Artificial Intelligence Ecosystem Call last year. The project includes modelling that will help manage the change created by artificial intelligence, achieve results to benefit humanity, produce value from artificial intelligence and achieve full independence in critical technologies.

[WWW.SISECAM.COM](http://WWW.SISECAM.COM)



GLASTON

## Science-based emission reduction targets submitted for validation

**G**laston commits to reducing absolute scope 1 and 2 GHG emissions by 50 percent by 2032, compared to the 2022 base year. The target is in line with limiting global warming to 1.5 degrees Celsius, which is currently the most ambitious criterion for setting science-based targets. Glaston also commits to reducing the scope 3 GHG emission intensity by 58 percent per square metre of sold glass processing capacity within the same target period. Next, the target will be evaluated by the SBTi, and **GLASTON** estimates that the final, validated target will be published during the second half of 2024.

Päivi Lindqvist, Glaston's CFO and sponsor of the strategic cornerstone project for sustainable business, said, "Promoting sustainable development is an integral part of our business strategy as our technologies enable more energy-efficient and safe glass products. Reducing our carbon footprint is one way to demonstrate our commitment to sustainability, and frontrunner position. In 2022, we achieved our first emissions reduction target when we reduced CO2 emissions from our own operations by over 50 percent in relation

to net sales compared to the 2020 level.

"That was only the first small step in this work as the biggest emissions driver for us is the value chain and especially the lifetime electricity consumption of the equipment we have delivered to our customers. We therefore needed to raise the bar and have now worked on our new emissions reduction targets in line with the SBTi's criteria."

### **Ambitious target**

Glaston's scope 1 (direct greenhouse gas emissions) and scope 2 (purchased energy emissions) form a minimal share of Glaston's total emissions. Around 99 percent of

all emissions related to Glaston's activities have been generated in the company's value chain (scope 3) and the most significant sources of emissions are the use of sold products and purchased goods and services. In 2022, Glaston's total emissions were 685,641 equivalent CO2 tonnes, of which the scope 1 and 2 emissions were 1,491 equivalent CO2 tonnes and the scope 3 emissions were 684,150 equivalent CO2 tonnes.

As glass processing, especially the glass tempering process, requires a certain amount of energy and Glaston has already for decades worked on reducing the electricity consumption of its products, further improvements are not easy to achieve. Marko Mökkönen, Head of Sustainability at Glaston, characterizes the scope 3 reduction target as ambitious.

He said, "In order to reach the scope 1 and 2 targets, Glaston plans to phase out the use of natural gas, and other fossil energy sources in its operations and further increase the share of renewable energy significantly. To reach the scope 3 intensity target, Glaston has to further improve the energy efficiency of the sold products, support customers in their emissions reduction initiatives, and implement measures to decrease emissions in other parts of the value chain like purchased goods."

[WWW.GLASTON.NET](http://WWW.GLASTON.NET)



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Feel the customer with Bando's heart**

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**ADVANCED EDGE QUALITY**



**INDUSTRY 4.0**



**SATELLITE NON-TEMPLATE BREAKOUT**



**AUTOMATIC GRINDING VACUUM CUP CHANGE**



**IoT**

**FACTORY AUTOMATION FOR AUTOMOTIVE, FPD, SOLAR PANEL,  
ULTRA THIN GLASS AND SPECIALTY GLASS**



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VITRO

## Production line in Carlisle, USA

Vitro Architectural Glass has announced that one of the raw-glass production lines of their plant in Carlisle, Pennsylvania, USA, will become temporarily idle. The shut-down is needed to reconfigure the production line 1 to manufacture solar panel glass for First Solar, it will start in the first quarter of 2024 and it will affect approximately 90 positions.

In October of last year, VITRO received a second contract with First Solar that the company says is expected to generate additional sales of USD 1.3 billion. The company expects to invest approximately USD 180M to update the Meadville and Carlisle facilities for First Solar production.

“We thoroughly analysed our current operations and assessed future production demands to ensure that we can continue to reliably serve our current customers, while also accommodating this new business with First Solar,” said Ricardo Maiz, President of Vitro Architectural Glass. According to Maiz, the line is “the most strategic line for Vitro to reconfigure for solar glass production” and it should be back online during the second half of 2025 at the latest. Line 2 will continue to manufacture products for commercial and residential glass customers.

“We are extremely excited about the future and how this re-alignment positions us for the upcoming years,” said Maiz. “It’s never an easy decision to idle production, even on a temporary basis, but Vitro is committed to manage its business with a long-term view and continue to be the best supplier we can be for our core customers.”

The Carlisle facility is one of five Vitro plants in the United States.

[WWW.VITROGLAZINGS.COM](http://WWW.VITROGLAZINGS.COM)



RIOU GLASS

## Acquisition of Vidresif

Riou Glass recently decided to acquire Vidresif, a Spanish glazing manufacturer, as part of its development strategy. For RIOU GLASS it marks the first complete acquisition outside France. In the last 18 months Riou Glass has acquired a stake in the Italian glassmaker Cappelletti & Roleri and in the Belgian group Euroglas and all the shares of the Loire-based company Diffuver.

Established in 1979 by Pierre and Christiane Riou, Riou Glass is an independent French family group which employs almost a thousand employees across 16 processing sites in France, as well as a float glass plant, Eurofloat in Salaise-sur-Sanne.

[WWW.RIOUGLASS.COM](http://WWW.RIOUGLASS.COM)



GLASSTEC 2024

## Call for Papers - Conference

The GLASSTEC 2024 conference will again be held in parallel with the biggest international trade fair revolving around the material that is glass. At this high-calibre conference, solutions to the current challenges and developments are to be presented and discussed by experts.

### Hot topics

The focus will predominantly be upon the topics Circular Economy, Digital Technologies as well as Decarbonisation. Indeed, decarbonisation and resource saving processes are among the principal issues of today, which also affect the energy-intensive glass industry. These are the levers for the glass industry to tap into significant potential for the future:

- Circular Economy – Energy, resources and recycling in the glass industry
- Digital technologies – Digitalisation, “Machine Language” and AI
- Decarbonisation – New key technologies and sustainable raw materials

### Conference talks

The most current issues of our time feature in all areas of the glass world: glass production, glass processing and finishing as well as glass products and applications.



With its openly accessible lecture stage, the glasstec conference will be allowing companies to introduce their solutions and developments in these areas.

Proposals can be submitted for lectures that deal with at least one of the above-mentioned challenges. An expert jury will select the most exciting and innovative contributions.

### Conditions of participation

1. Participation is only possible for exhibitors at glasstec 2024. Non-exhibitors may apply subject to not pursuing any commercial interests.

2. The contribution shall address at least one of the three glasstec topics mentioned above.
3. Submission of a contribution does not guarantee acceptance. Messe Düsseldorf reserves the right to select corresponding lectures with the support of a jury of experts.
4. Presentations shall be expert lectures and not be used for product advertising.
5. Lecture duration: 20 minutes, including 5 minutes for Q&A. Presentations are welcome in German or English (simultaneous interpretation will be provided on site).
6. Deadline for submissions: 1 June 2024
7. By the end of June 2024 at the latest companies will receive a response on whether and when their lectures will be featured. Upon inclusion in the agenda, participation will be free of charge.

[WWW.GLASSTEC-ONLINE.COM](http://WWW.GLASSTEC-ONLINE.COM)

BIESSE

## Acquisition of entire GMM Finance share capital

**B**iesse S.p.A. recently signed a contract for the acquisition of the entire share capital of GMM Finance S.r.l., the holding company of the GMM Group which comprises **GMM S.p.A.**, **Bavelloni S.p.A.** and **Techni Waterjet Ltd.**, as well as their Italian and foreign subsidiaries, active in the stone, glass and other materials' machining segments. This operation is in line with **BIESSE's** strategic plan that provides for growth also through acquisitions.

[WWW.BIESSEGROUP.COM](http://WWW.BIESSEGROUP.COM)



GLASTON & HEGLA

## Asia-Pacific regional partnership formed

**G**laston and Hegla, both leaders in their respective areas of business in the glass machinery industry for architectural and automotive glass applications, have entered into an exclusive partnership covering the majority of the Asia-Pacific region.

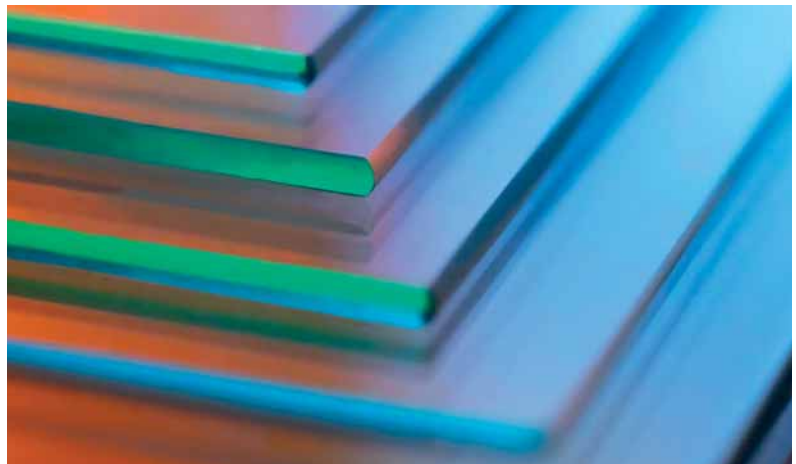
The goal of the partnership is to strengthen the offering of both parties for the benefit of customers. With the complementary product offering, both companies can meet glass processors' growing demand for automation and integration providing comprehensive solutions, faster response and services to the customers thanks to the broader network in the region.

Effective March 2024, **HEGLA's** sales and distribution activities in the area will draw upon the resources and network of **GLASTON** Group. The partnership covers the whole region except for Japan, South Korea and China.

"In Hegla, we have the ideal partner as their complimentary offering will provide a perfect addition to our product range. Glaston is now able to offer the full product range to those customers who want to combine our heat treatment and insulated glass production with highly automated shop floor logistic solutions there-

by substantially increasing efficiency and productivity. We are excited to start this new co-operation," said Sasu Koivumäki, CSO at Glaston Corporation.

"With Glaston, we are able to provide highly customized solutions for clients including the integration of Glaston's heat treatment and insulating glass production into our highly automated and integrated shop floor logistic solutions in one of the largest and fastest growing regions of the world," said Bernhard Hötger, CEO of Hegla Group.



[WWW.GLASTON.NET](http://WWW.GLASTON.NET) - [WWW.HEGLA.COM](http://WWW.HEGLA.COM)



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[www.italcarrelli.eu](http://www.italcarrelli.eu)



MARVAL

## New complete line installed

**M**arval recently completed a successful installation and testing in Isernia, at **Vetreria Di Bucci**, a well-known company that boasts prestigious references

among its customers, specialized in the production of double-glazing for construction and in glass fittings for stage sets, television studios and events. Their achievements include the stage of the festival of Sanremo as well as supplies for the stage sets of “Dancing with the Stars” and “The Masked Singer.”

The Molise-based company -which employs around twenty people, was founded in the 1970s and is currently run by the second generation- has decided to equip itself with a complete **MARVAL** line for the production of insulating glass, consisting of a “Top Wash” washing machine, a “Top Press” press with a rotating back and a “Robo Seal” sealing machine, which will be delivered and tested within a few weeks.

[WWW.MARVAL.GLASS](http://WWW.MARVAL.GLASS)



A+W SOFTWARE

## Nabil Mourad welcomed as he joins growing North American team

**A**+W Software recently welcomed Nabil Mourad as a Professional Service Consultant for the North American market. Nabil has extensive experience (13+ years) implementing A+W software solutions throughout the world. In his North American capacity, Nabil will train customers, implement new



software solutions, and help customers build stronger brands and procedures with a focus on the A+W Clarity (glass) customers. Reflecting on his new role, Nabil Mourad said, “Joining A+W Software’s North American division allows me to put my A+W expertise to work utilizing my software knowledge,

solving customer challenges and driving their production goals. Our customers’ curiosity drives me to contribute to their continued success, all while contributing to A+W’s ongoing growth.”

Mourad brings considerable knowledge of **A+W SOFTWARE** solutions to the North American market as demonstrated by his abilities in A+W’s Middle Eastern market. With an eagerness to help customers and his extensive expertise of A+W’s software solutions, Nabil has been able to jump straight in and help existing customers since he joined the team in August of last year because as a “software and glass geek, I’m truly excited to combine two of my favourite things together in a job that I love.”

When not working with customers, Nabil spends time with his family, which he says grounds him. Additionally, he loves spending time with his dogs, exercising and in nature.

John Staiano, COO of A+W Software North America, shared his excitement about the addition of Nabil Mourad to the Professional Service team. “The addition of Nabil from the Middle Eastern team is a strategic move for the benefit of our North American customers. By increasing the size of our Professional Services team, we are increasing our service of new and existing customers because software solutions are invaluable in our software-hungry industry. I anticipate appreciable success and growth for our A+W customers in North America in the coming months and years based on this strategic addition.”

[WWW.A-W.COM](http://WWW.A-W.COM)

## PRESS GLASS

## Investment in world's first Glaston ProL convection upgrade



Since establishing their presence in the USA through an acquisition, Poland-based **PRESS GLASS** has continued its brisk growth based on the same values that make it such a well known glass fabricator in Europe and the UK. The company's latest investment in the USA is a Glaston ProL convection control upgrade at its Ridgeway, Virginia plant.

### Bringing European expertise to high-quality US glass production

**GLASTON** and Press Glass share a long-standing partnership. Most of the tempering lines in Press Glass's European facilities are from Glaston. The company's US branch has Glaston FC Series and Jumbo Series tempering lines at the Ridgeway factory for larger projects and an additional smaller line in Stoneville for smaller IG units and heavier interior glass. Currently, a fourth line -another tempering furnace- is being assembled and will be delivered soon. "Glaston is considered the 'Cadillac' of the market," said Gregg Vanier, Director of Manufacturing and Technology at Press Glass. "The price point may be higher, but a Glaston machinery lasts longer and produces higher quality."

In another move forward, Press Glass was the first in the world to invest in Glaston's convection upgrade for its lamination line in Ridgeway, completed in April of last year.

"It was clear we needed to upgrade when the market started asking for more complex end products. We needed better control to help process the multilayer laminates that are more common in the US market than the monolayers in Europe," Gregg explained.

The ProL convection upgrade helps eliminate trapped air inside the layers that causes a lack of adhesion.

"Since commissioning, we have been able to gain traction in the market. We just had our most efficient production period in terms of square footage produced per day. The upgrade also led to higher quality, enabling us to reach 98 percent on-time delivery."

He also emphasized that remakes have gone down since the upgrade, and this helps manage production costs.

Additionally, the new upgrade features have significantly simplified the lamination process itself, further contributing to the overall efficiency.

[WWW.GLASTON.NET](http://WWW.GLASTON.NET) - [WWW.PRESSGLASS.COM](http://WWW.PRESSGLASS.COM)

## R.C.N. SOLUTIONS

## New machine installed in Saudi Arabia

**R.C.N.** Solutions recently took part in a lamination project in Saudi Arabia. Zouhair Albitar, owner of Albitar Factory, located in Dammam, Saudi Arabia, has chosen **R.C.N. Solutions** for his lamination solution. Founded by the late Sheikh Mr Kamal Badawi Albitar in 1974, Albitar Factory now includes a glazier company boasting versatile productions:



from building to architectural, interior and exterior installations, they devote time to quality and innovation. But this company is much more: it is also steel, stainless steel and aluminium windows, complementary productions that make Albitar an important local manufacturer.

Here's why it has decided to go for one Lammy System 4+2, with an active size of 5,000 by 2,500 millimetres. Consisting of two independent laminating chambers equipped with two shelves each with RD Clean Concept bags, one over-top storage unit with three positions, two extra shelves with two Silikosoft bags, a lifting platform with a capacity of 2000 kilograms and the RCN Easy Connect Application for remote control. The customer also added one climate box to store REVA rolls and protect them from critical high temperatures of the area.

[WWW.RCNSOLUTIONS.IT](http://WWW.RCNSOLUTIONS.IT)

# Poland site sees LiSEC at full throttle for PRESS GLASS

## **P**RESS GLASS NOWOGARD, FULLY-AUTOMATED BY LISEC

Over the last 30 years Press Glass has grown from a single facility into a household name among flat glass suppliers. 15 international facilities spread across Poland, Croatia, Italy, the UK and the US produce quality interior and exterior glass for the commercial and residential market. With an export rate of 80 percent, the company supplies Scandinavia, the Baltics, Central and Southern Europe, the UK as well as North America.

Despite being one of the largest independent IG producers in Europe, Press Glass remains a privately-owned company with a lean, agile leadership structure. This allows it to quickly adapt to a changing market. With numerous production facilities and a wide range of products, the company is able and willing to meet its customers more than halfway. “We allow the market to test us,” says Press Glass

Technology Development Director Jakub Krakowski at, “And we are, of course, competitive.”

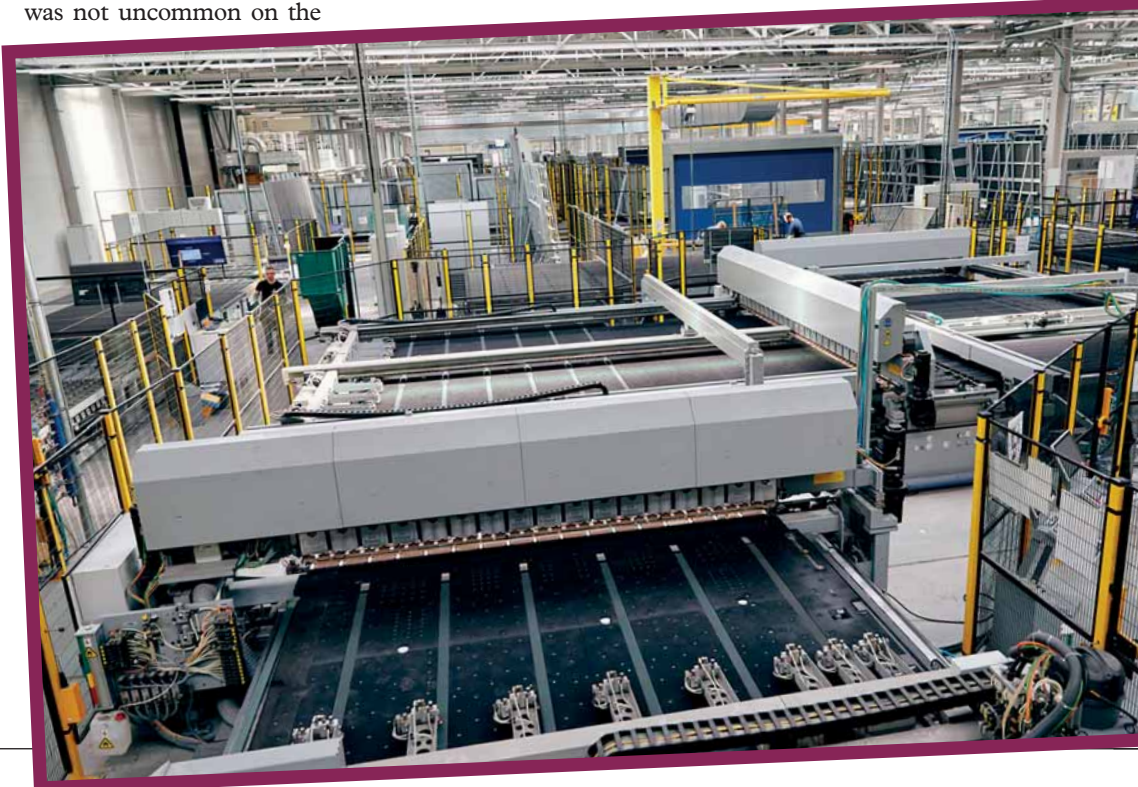
### **HIGH-PERFORMING LOGISTICS**

Cooperation between Press Glass and LiSEC goes back almost 30 years. “From the very first facility, we bought high-end technology from LiSEC. Back then, that was not uncommon on the

Polish market,” recalls Krakowski. “We are very transparent about building long-term partnerships with our suppliers. For us, a good partnership is mutually beneficial, allowing us to meet challenges and solve problems together.”

When the company planned its most automated facility to date, it once again trusted LiSEC. Krakowski, as head

of a team of technicians who accompany the introduction of innovative solutions at Press Glass, talks about the intentions with the Nowogard project: “Our goal was to create a copy and paste facility, which Press Glass can reproduce in any new location. At Nowogard we looked into every process and worked out all the kinks.”





Together with LiSEC, which has been much valued for its reliability and problem-solving capabilities, global flat glass supplier PRESS GLASS achieved a new boost to its high efficiency at its Nowogard site, where LiSEC's advanced automation, logistics and an emphasis on sustainability all mark a benchmark for joint projects in the future.

Located in northwestern Poland not far from the Baltic Sea, Press Glass Nowogard operates six cutting lines: one fully-automatic laminated glass cutting line and one additional lami-cutting bridge as well as five monolithic cutting tables. The six lines are fed by a gantry system on one end, and they feed into two large buffer systems on the other end. Each buffer in turn supplies two IG lines.

Buffering and sorting play crucial roles in optimising the material flow and machine utilisation. Intralogistics ensures process stability and reliable supply during various processing steps, even with different glass types. For instance, only the uncoated side of coated glass is touched, preserving the coating. A slight tilt angle (approximately 2°) during glass transport also protects the coating. LiSEC offers high-quality systems, available 24/7 with minimal maintenance - accommodating various glass sizes and shapes.

Looking back on the project, Krakowski remembers the challenges: "The schedule was very tough. In 2017 the market was very strong and customer demand was high. We already had pro-

duction on the lines while we were still fine-tuning the machines and while the software developments were still being tested. From the first IG unit off the line, it took about two to three years until everything was working to our full satisfaction."

But those challenges did not come without rewards. "Right now, I can say that this is our most efficient facility in terms of production per shift per person, so we produce more glass with fewer operators. And we have the lowest losses in glass, due to the automation -we largely eliminated manual handling- but also owing to better internal logistics. We have fewer quality issues, fewer claims, fewer problems." Indeed the Nowogard site supplies 15 - 20 percent of Press Glass' total residential production volume.

Here Krakowski highlights another benefit of the sorting system: "Our customers have very high demands on the sequence of the glass sheets on the racks, different types of labels, different shipment days, etc. - a lot of different small things we need to deliver. This is helping quite significantly: We produce pretty much 99 percent on time. And



if something goes wrong, we have a partner that we can call in, and they come over quite fast and solve the issue."

### WHAT'S NEXT UP FOR PRESS GLASS AND LISEC?

With the Nowogard site up and running, Krakowski and his team are already working on new projects. The next development with LiSEC is being realised in the UK, combining three facilities in Wales under one roof. "Due to the softer market, we have more time to develop things, which is good, but on the other hand, the pressure is required to make it faster. It's always a matter of finding the balance."

Looking back on his own 12 years working at Press

Glass, Krakowski sums up his experience with LiSEC: "At some point, we had to make the strategic decision to diversify our machine and software suppliers, which provides us with an interesting test environment within our own group of companies. For me, there are not many suppliers that can deliver complete and robust solutions that work 24 hours a day, seven days a week." Still, working under those kinds of conditions, something can go wrong. "And it will go wrong eventually, inevitably," says Krakowski, speaking from experience. "Then you need somebody who can support you. In our company, many people on the technical team and the

production teams have more than 20 years of experience. They need someone on the other side who knows what they're talking about. A reliable partner that knows how to solve your issue, or who's at least willing to sit down and find the solution together with us. In that way, we consider LiSEC reliable."

### A FUTURE OF AUTOMATION AND SUSTAINABILITY

Krakowski's opinion about markets and industry changes is: "The biggest change we and everyone else surely observes on the Polish market is that automation is coming and of course digitalization is coming. For 10, almost 20 years we have been talking about industry 4.0. It used to be un-



clear how it would look. Now Nowogard is our first facility with this degree of automation, and automation has factored in all our projects since. Beside better quality and

higher efficiency, we also want to utilise manpower in the best way possible, which means removing heavy work such as lifting glass many times over. Another thing more and more of our customers especially on the Scandinavian market request is detailed information on the production process, for example: How much power was used to produce this IG? What was the water consumption? Which renewable resources were used, how high was the share of green energy? So, we of course get all the required certifications. We also add photovoltaic installations on every new project, as well as any older facility where it's possible. Our latest production in Lithuania for example is almost fully-powered

by photovoltaics. Investing in renewable energy is pretty much the only direction you can go."

## 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 with about 1,300 employees and 20 locations achieved an export ratio of more than 95 percent and generated sales of almost EUR 300 million. 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.

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# J and G Series show **CUGHER's** automotive glass strength

## **M**ORE TRACTION FOR PRODUCTION

Having invested in the Cugher's capability to provide big and technological plants for screen printing, its customers can now see the result of their trust in the company's 7.600 m<sup>3</sup> production plant. Today Cugher is able to design and produce a wide range of products for processing flat glass, from consolidated silk screen printing machines to dryers and handling systems - all perfectly synchronized and automated to ensure high productivity and the typical quality standards of the automotive sector. For vehicle glass manufacture, complex plants necessitate the capacity to reach high volumes of final products with a minimum percentage of bad glass and maximized desired quality. As for glass decoration, screen printing current-

Having earned the trust of some of the industry's greatest titans, CUGHER's plant both designs and produces advanced screen printing machines for automotive glass decoration. While its J Series automates printing for medium to large glasses, its flexible G Series handles asymmetrical glasses. A global industry player, Cugher now numbers AGP, Sisecam, Saint Gobain and AGC among its customers.





J Series

ly performs the best and is the most profitable solution for the automotive industry. Perfecting this technique, Cugher has strengthened over the years as a brand.

### **CRAFTING QUALITY**

Cugher printing machines guarantee a +/- 0.08 mm repeatability, ink system unity, very short cycle time (from six to 15 seconds) and extremely easy maintenance. The engineering of each machine is meticulous in every detail to ensure precise results with all parameters per-

fectly set. All printing machines are equipped with digital proportional valves, anti-drop system, printing bridge rotation, automatic peel off, motorization for frame movements and pneumatic block of squeegee, flood bar and frame to avoid losing the register. Furthermore, each machine can be integrated with other sophisticated accessories to simplify operations - such as the edge-to-edge system for edge printing, the logo printing head, system unity to troubleshoot corner breakage and an automatic ink distributor.

### **RELIABLE KNOW-HOW**

The expertise of Cugher professionals will suggest the ideal line solution to accommodate the specifications of single production requirements - all the while considering plant space availability, productivity, glass material, shape and dimension. Every project is perfectly customized such that the final layout is the result of a continuous dialogue to ensure satisfaction respecting every need. Cugher has developed veritable workhorses of screen printing for the

automotive industry, namely the J and G series respectively.

### **THE J SERIES**

A completely automated printing machine that can process glass to medium and large dimensions, i.e. up to 2500x4000 mm. The glass arrives via inlet conveyor through motorized belts, which lower directly in the printing table where the glass is centered thanks to adjustable pins. When the printing process ends, the transportation system lifts to transfer the glass onto the exit conveyor.



G Series

### THE G SERIES

Being more suitable for asymmetrical glasses, the G Series is extremely flexible given that it can process either single big glasses (windshields or backlites) or double smaller glasses (sidelites) - always ensuring fast cycle time. Here speed performance is obtained through shuttle transportation equipped with two

independent supports that include vacuum cups which collect the glass in the inlet conveyor, whereupon it gets centered by a multi-axial system. The glass is then transferred very swiftly and with accuracy onto the printing table for decorating.

### CELEBRATING GROWTH

For Cugher, the J and G

series have made history in the automotive sector - satisfying the projects of such big multinationals as AGP, Siseecam, Saint Gobain and AGC. The company has seen significant growth thanks to its development of screen printing lines for automotive - making it a robust partner globally for both personalized and complex solutions.

**Cugher Glass Srl**



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# Flagship project by **SWISSPACER** a beacon of sustainable refurbishment

With state-of-the-art insulating glazing fitted with warm edge spacer bars from SWISSPACER that meet the high requirements for energy efficiency, the iconic high-rise building 'Cité Administrative' in the Belgian city of Liège just underwent extensive refurbishment - seeing transformation into an almost carbon-neutral structure.





## **A<sup>N</sup> ARCHITECTURAL SYMBOL FOR THE FUTURE**

The construction of the ‘Cité Administrative’ administrative building dates from the 1960s, originally designed by the architects Jean Poskin and Henri Bonhomme, had the ambitious aim of centralising the urban services of Liège all in one place - and the 18-storey tower has been a symbol of the city’s skyline ever since. Funded by (among other players) the European Union and the province of Wallonia, the 67-metre-tall building -situated between the district of Feronstrée and Quai de la Batte, directly on the Maas River- was extensively refurbished and transformed into an urban flagship project in terms of sustainability. The idea was to turn the iconic high-rise into a ‘lowest energy building’ (almost zero energy building) in accordance with the EU’s Energy Performance of Buildings Directive. To this end, the city of Liège organised a competition for the project. The architectural firms Canevas and Baumans-Deffet as well as the construction company Groven+ Portal SA -which put together a team of specialists for concrete, façades, specialised technology and interior fittings- took part



in the competition and ultimately emerged as the winner with an integrated and holistic renovation concept.

### **PLEASANT WORK AND COMPREHENSIVE SERVICE**

Talking about the refurbishment concept Stéphane Marville, architect of Canevas, explains: “Apart from the sustainability objectives, the project was mainly about optimising the use of space and creat-

ing an environment for workers and citizens that is fit for the future.” To this end, the office tower was refurbished from the ground up, while the existing plinth structure was demolished and replaced by a new, four-storey volume on the south side of the building. Inside, the ‘Cité Administrative’ and new annex now bring all the city’s social and other services together in one place - from rooms for social administration to areas for the administrative police and public safe-

ty, cafeteria and meeting rooms to the classic citizens’ services on the ground floor. There’s also the large panoramic terrace on the 18th floor with a view of the city - a highlight in every sense.

### **REFURBISHMENT MEASURES WITH CARBON NEUTRALITY**

Energy-efficient refurbishment and modernisation of the ‘Cité Administrative’ included numerous measures. Photovoltaic panels covering 1,600 square metres were installed on two façades to generate energy and the entire building envelope was upgraded and optimised in terms of energy efficiency. The planners also developed a holistic concept for the building’s automated ventilation, cooling, heating and lighting - which extends to façade design. Says Marville: “We had to find the right balance between natural lighting and limiting overheating in summer. We therefore proposed projecting bonnets on the vertical façade and horizontal valances on the south façade. This made it possible to work with glazing with a relatively low solar factor on the north façade, allowing plenty of sunlight into the interior and achieving a high level of transparency. This in turn reduces the need for artificial lighting.”



## ENERGY-EFFICIENT INSULATING GLAZING WITH WARM EDGE SPACER BARS

Curtain walling façades manufactured specifically for the project by Groven + Portal SA (Herstal/Belgium) are used on a total of 4,600 square metres on the south-east and north-east sides of the building. To meet the high requirements for thermal insulation and energy efficiency, the aluminium façade elements were realised with Ultraone NG double



glazing and SprimoLight 70/37 solar protection glazing from Sprimoglass (Sprimont/Belgium). Integrated into the glazing edge of all glazing units is the innovative warm edge spacer bar Swisspacer Ultimate. Camille Trachet, Sales Manager at Sprimoglass, explains: “All Swisspacer spacer bars come with an Environmental Product Declaration (EPD) containing all the information needed for a sustainable building assessment. That was an important factor in awarding the order for this prestigious project.” The spacer

bars installed in the glazing edge increase the temperature at the glass edge by up to 2° C, which ensures much lower thermal conductivity and very good Psi values. The warm edge also avoids the formation of condensation and reduces the risk of mould. Miguel Crispin, Sales Manager at Groven+ Portal SA, sums it up well: “The goal was to sustainably improve the energy scorecard of the building envelope. With the glazing units used, we achieve very good U values of 1.0 W/m²K - with the spacer

bars from Swisspacer also contributing an important part of this.”

Following completion of the €31,000,000 refurbishment programme, the ‘Cité Administrative’ in Liège is now fit for the future and almost fully carbon-neutral.

**SWISSPACER**

**SWISSPACER**

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# Freshly-formed **DISTECGLASS SL** to develop new **TUROMAS** business line

**D**istecglass SL, a new holding company of Tuomas, was recently created to focus on the specialised distribution of consumable products for companies dedicated to the manufacture and transformation of glass. Distecglass is to be located in Teruel, where it will be starting its journey with the incorporation of a fresh team - all buoyed up with its own rich experience having been specially-recruited to make the project a success, together with the added support of professionals from Ada Distribuciones.

As the experience of the new team and that of the Tuomas Group itself is jointly leveraged to lead this project, a robust national sales network has been set up: Adetec in the south, Satecris in the centre, NTPS in the north and Tecnicglass in Catalonia and the Balearic Islands - which will be sharing most of the national

sales network with Tuomas. This marks a significant step for Tuomas, clearly reflecting its vision for growth. Indeed the inclusion of Distecglass affords the group an opportunity to diversify its product range while further strengthening its position in the market.

## **TECHNICAL GLASS AND FAÇADE SOLUTIONS**

Distecglass specialises in the distribution and technical advice of consumable products for companies dedicated to the manufacture and transformation of glass. With over two decades' ex-

perience, the company has consolidated its presence in Spain and Portugal, expanding into international markets, including Latin America, Europe and North Africa. Representing such globally-recognised brands as Sika, IGK, Otto Chemie,



A specialist in both consumable products distribution and technical advice for glass manufacturing, TUROMAS is now expanding business with the addition of its new holding company DISTECGLASS SL which, thanks to 20 years of experience, can now further the group's aims to offer diverse, high-quality products - all supported by a powerful sales network.

Logli Massimo and EDTM, Distecglass offers high quality, certified products. Beyond distribution, it provides services that add significant value to the customer experience, including expert technical advice, support throughout the project and streamlined delivery processes.

### CUSTOMER DIVERSITY

Customers include manufacturers of insulating glass units, glass façade and curtain wall industrialists, glass enclosure specialists, glaziers, engineers, architects and specifiers. All reflect Distecglass' ongoing commitment to adapting to the specific needs of each partner - thereby consolidating



its long-lasting and mutually beneficial relationships. In sum, the company has a wide range of products, covering the needs of the following families:

- Manufacture of Insulating Glass Units
- Manufacture and Installa-

tion of Glass Facades

- Manufacture and Installation of Windows and Doors
- Glazing and Installation Tools
- Technical Adhesives and Sealants
- Transport and Storage of Glass

- Glass Tapes and Foils
- Glass Fittings
- Cutting Table Accessories
- Glass Machinery Spare Parts



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# Marking 'on the fly' with CERICOM's c-mark technology



c-mark laser marker as  
'stand-alone' solution

Ever the technological innovator, CERICOM has transformed glass component tracking within production cycles with the advent of its laser marker. The device transcends conventional methodologies - imprinting directly upon glass without requiring supplementary materials. The company's advanced 'on the fly' marking further distinguishes the process - rendering it exceptionally swift.

While the laser marking of metals and plastics has entrenched itself in various industries as an excellent facilitator of continual product tracking, the glass industry has nonetheless grappled with unique challenges during processing. The more common solutions out there have often fallen short - plagued by either unsatisfactory quality results or exorbitant acquisition and operational costs. This void was addressed last year when the groundbreaking 'c-mark' marking module emerged - finding application in areas that demand top-notch marking quality, particularly in the safety glass, automotive, medical, jewelry and perfume industries. Compatible with both sluggish and high-speed production lines, the inclusion today of optional 'on the fly' marking technology has now slashed processing times significantly.

## NEW INTERFACE

Pioneering a new interface, the manufacturer recently



**c-mark module in combination with the c-vertica vertical glass processing machine**

introduced an MQTT interface, which integrates seamlessly with external systems such as ERP, as well as automated production environments. Propelling the c-mark beyond mere tracking, this makes provision for glass component documentation that spans entire life cycles. Augmenting that innovation, a corresponding reading unit will effortlessly capture laser-marked QR codes and barcodes, thereby laying the groundwork for a future cloud-based database solution. A leap into the realm of Industry 4.0 and IoT integration, all this adds unparalleled value for customers.

**CERICOM C-MARK ADVANTAGES**

The Cericom c-mark system boasts a myriad of advantages, positioning itself as a revolutionary solution for permanent marking upon diverse glass types,

with a special emphasis on safety glass. Within seconds its high-speed functionality transfers letters, numbers, logos and machine-readable codes onto glass surfaces. Notably, this environmentally-friendly, cost-effective marvel circumvents the need for consumables - marking a departure from traditional practices. The c-mark system integrates seamlessly into existing machinery and equipment, offering a 'stand-alone' solution for those seeking independent deployment.

**C-MARK SYSTEM COMPONENTS AND PRODUCTION INTEGRATION INDICATIONS**

Comprising a marking module and laser, 2D galvo scanners and a focusing lens -optionally equipped with variable focal lengths- c-mark's adaptability is further enhanced by a special adapter plate that facilitates easy integration into

## ABOUT CERICOM

Since 2002, Cericom (known formerly as Cerion) has been developing, manufacturing and distributing laser machines for glass processing worldwide. The company has expanded its product portfolio over the years to offer a wide range of solutions for the laser processing of glass. Whether it's marking, drilling, cutting, frosting, internal engraving, coating removal, or structuring, Cericom has suitable solutions for all these applications. No matter the size, whether it's DIN A4 or 3 x 6 metres, or the orientation, horizontal or vertical, or indeed whether it's a standalone solution or part of a production line, Cericom provides its customers with tailored technology that is well-suited to their specific application.

existing equipment. The rotatable laser scan head adds a layer of versatility - allowing variable laser beam output for overhead processing, as required. Completing the ensemble, a control cabinet and application-specific software will offer a comprehensive user experience. Robust cable connections, designed for drag chains, secure the laser marking module - ensuring both durability and secure data transfer. In sum, the Cericom c-mark system emerges not only as a technological marvel

but also as a beacon of innovation in the seamless integration of glass marking into diverse production environments.

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**Markings created with laser marker**



# Edge computing quantum leap sees **MAPPI** collaborating with **SIEMENS**

As glass tempering technology leader, MAPPI worked jointly with SIEMENS recently to introduce its Edge Computing, which enhances communication, efficiency, control and data security for tempering furnaces. The innovation also ensures higher productivity, better quality, optimum consumption and improved maintenance - all while revolutionising security in glass manufacturing.

The intricate relationship between glass processing and technology has always been distinctive. For one thing, the art of working with glass - especially tempering it - demands specific techniques and tools. Then there's the fact that such processes are challenging to standardise, being tailored precisely to the unique needs of individual clients. Compounding this complexity, new variants in thickness, colour and properties are all intro-





duced annually - creating a dynamic landscape.

### **HARNESSING INNOVATION**

Here technology emerges as a crucial ally for glass manufacturing inasmuch as it offers flexibility, consistent quality, cost optimisation and waste minimisation. Indeed pursuing this goal has been the primary objective of Mappi - not just recently but right since it started out three decades ago. Each Mappi furnace boasts flexibility, user-friendly simplicity and optimal energy consumption management. That achievement is rendered possible through top-tier materials, unconventional design and an extensive use of electronics - all of which present ever more ambitious challenges.

Today, the new frontier is marked by optimising integration between machinery and the entire production cycle, thereby transcending the boundaries of Industry 4.0. Such optimisation comes with ambitious digitization by which networks are traversed by created data streams. However, as we now understand, 'data flow' can equate with 'risk.' Every gateway through which thousands of pieces of information pass may become a potential threat as hunting ground for cyber attackers, whether for data theft, patent infringement, or disrupting production. Consequently, even in what may seem a field far removed from glass tempering, the race for innovation and security is underway.

### **DATA PROTECTION**

Dedicated to the security of its clients, Mappi has chosen to invest its research in Edge Computing, an innovative computing paradigm referring to networks and devices located at or near the user. Here data gets collected and processed by such machines as tempering furnaces and production cycle management systems that will then control, plan and optimise the entire supply chain. Edge Computing involves processing data closest to the point of generation, thus allowing for higher speeds and volumes while yielding immediate results and real-time action. This also enables the company to retain data internally - so enhancing security.

### **MAPPI EDGE COMPUTING (MEC)**

This is Mappi's power-packed enhancement package, developed in collaboration with Siemens. Here, for the first time, a tempering furnace can communicate seamlessly and reliably - combining efficiency, control, planning, data security and response speed. That said, this does not exclude the option to use all or part of the data in Cloud systems for exchange with other systems or ERPs. The system involves using more data, faster processing, and with the help of artificial intelligence, it can conduct predictive checks on the machine. In terms of tangible benefits, MEC translates into four critical areas of improvement - all of which are vital for profitability within every glassworks, namely:



GAME CHANGERS

### HIGHER PRODUCTIVITY

MEC optimises workflows, maximises production capacity and produces more efficiently, eliminating time and resource wastage without compromising flexibility - which is rather enhanced.

### BETTER QUALITY

MEC selects parameters for optimal glass quality, regardless of the desired outcome, and compares and verifies them with tempered glass. This way, the system learns and acts in a continuous improvement process.

### OPTIMUM CONSUMPTION

MEC measures and continuously monitors energy consumption very precisely, providing insights into usage as well as ways to enhance performance through continuous fine-tuning policies.

### GREATER MAINTENANCE

MEC, through a network of sensors, monitors maintenance-prone areas and will issue advance warnings if intervention is needed, thereby preventing problems and machine downtime and resulting in substantial production cost savings.



Mappi International Srl



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# Window stories still written with **EDGETECH**'s flexible warm edge

## **S**UPER SPACER® COMBINES MONUMENT PRESERVATION AND CLIMATE PROTECTION

In recent years, the restoration and reproduction of historic windows has increasingly been discussed in terms of thermal insulation. Selected projects in Northern Ireland and Austria show how the requirements of monument protection, the expectations of style-conscious building owners and climate protection targets can be fulfilled at the same time. Although completely different in terms of their realisation, energy-efficient insulating glass with the Super Spacer® warm edge spacer system was used in all three cases.

## **RECONSTRUCTION WITH AUTHENTIC GLAZING**

The Bank Buildings, a jewel of Victorian Belfast, are lo-



With restoration of historic windows having taken EDGETECH's Super Spacer® to Northern Ireland and Austria, projects have made a splash in Belfast at both the Bank Buildings and at Adare Manor Hotel. For energy efficiency, the Catholic parish church of Saint Margaret in Apetlon has also employed the technology.



cated in the centre of the Northern Irish capital. The five-storey building ensemble has been owned by the Irish fashion chain Primark since 1979 and has been a listed building since 1980. Pillars of polished red granite flank the large windows on the main façade, while red sandstone characterises the upper floors of the building, which is topped by a huge iron clock face.

The building, designed by architect W.H. Lynn for a Belfast textile trading company, was opened a year before the end of the Victorian era. With its large window fronts on the one hand and classic elements such as columns, rectangular ribbon windows and an attic balustrade on the other, the former department stores symbolise the transition from historicism to the 20th century. The fact that the banking buildings have already survived two fires is not visible. The last and most

devastating one in 2018 destroyed the entire timber construction and practically the entire supporting structure. The steel stiffening beams, and the original cast-iron supporting pillars had either collapsed or been weakened. Only the non-load-bearing enclosing walls remained standing.

Historic buildings can be more than just a landmark or the legacy of an architectural era. Benedict McAteer, research fellow at the School of Natural and Built Environment at Queen's University in Belfast, describes the feelings of Belfast residents after the disaster: "The fire has made us realise how we need buildings to explain what we have been through, what a city has endured and what it is that we enjoy about living there." The Belfast Telegraph wrote immediately after the fire: "She was Belfast. Not just a bricks and mortar city centre structure. But a grand

old lady who'd seen and survived horror and history, who'd witnessed centuries of change and challenge and had gracefully, seamlessly adapted and endured."

After the initial impulse to demolish the charred skeleton, an exemplary reconstruction based on the original model began. Each removed stone was numbered, and natural stone and marble for the new façade was sourced from the same quarries in Finland, Scotland and Portugal that had supplied the original materials in the 19th century. IMC Glass supplied a total of 300 units from its Slim-Glaze range to replace the single-glazed windows from the 3rd floor upwards, which were also manufactured according to the historical model and installed in 1980. "This super-slim double glazing makes it possible to retain the original style with excellent thermal efficiency. With a unit thickness of just

14 mm, they achieve a Ug value of 1.2 W/m<sup>2</sup>K," explains Managing Director Aaron McCreanor.

IMC's specialist insulating glass products are characterised by a slim yet low edge seal and krypton gas filling. "IMC Glass is the only company in Ireland, and only one of two in the British Isles, to have been awarded a Kitemark for testing BS EN 1279-2 and BS EN 1279-3 for moisture absorption and gas leakage rate," continues McCreanor.

"The difficulty in manufacturing insulating glass with such a thin glass structure lies in ensuring gas-tightness over a long period of time and preventing condensation from forming in the space between the panes." In order to achieve the excellent Ug values of up to 1.1 W/(m<sup>2</sup>K) for thin double glazing, they are filled exclusively with xenon or krypton and are also thermally insulated. "Using argon would



reduce energy efficiency by around 40 percent,” explains McCreanor. The icing on the cake is the Super Spacer® Heritage spacer, a flexible warm edge that was specially developed for double glazing in the restoration sector. With a height of just 3 mm, it can also be installed in frames with very low glass inserts without being visible.

### EXTRA-THIN DOUBLE-PANE INSULATING GLASS REPLACES SINGLE-PANE GLAZING

A report jointly published by the Glass and Glazing Federation and British Glass in October 2023 shows that around 98 percent of windows in the UK do not meet the current minimum Ug-value standard of 1.4 W/(m²K). Heat loss due to inefficient windows is up to three times higher than in countries such as Germany, Austria, or Sweden. “Our Slim-Glaze products with Super Spacer Heritage can be exchanged for single glazing in many cases. If the frames are no longer worth preserving, they can be authentically rebuilt.” The luxury Adare Manor Hotel & Golf Resort in County Limerick, built in the mid-19th century in neo-Gothic style as a private family residence, has already taken this step. Wherever possible, the historic glass was reused, and all mod-

ern single-glazed windows were replaced with double glazing. IMC Glass supplied a total of around 1,100 insulating glass units to three different window manufacturers for the renovation of the main house and Carriage House. “In addition to energy efficiency, the lower dew point was particularly important for the client. Condensation is not only a visual and health problem, but also attacks the wooden frames.”

### ARCHED ARTIST'S WINDOWS MAKE THE CHURCH EXTENSION SHINE

The heritage-listed Catholic parish church of St Margaret in the Burgenland municipality of Apetlon is a special feature. Completed in 1797, the church was always so well attended that it was extended in 1974/1975 with a modern, octagonal concrete extension in the Brutalist style designed by architect Josef Patzelt. The extension is cantilevered without pillars, the pews are arranged around a popular altar and the church's patron saint, St Margaret, looks down on the faithful from the high altar dating from the end of the 18th century.

The two window bands with a total of 36 panes of six mm Plexiglas illuminate the interior with natural daylight. Having failed to withstand wind loads at times in the past, they were arched outwards.

Coloured church windows had been planned from the outset, and in September 2023 the long-held wish of the Apetlon parish finally became reality. With her abstract and yet narrative depiction of the life and martyrdom of St Margaret of Antioch, the Berlin artist Marie-Luise Dähne also solved the functional task of softening the strong sunlight while at the same time preserving the visual to nature outside. Symbols, such as the cross, the iron combs and the pearls - Margaretha means ‘the pearl’ in Greek - run through the entire series of motifs. At the entrance to the church, the discs are dark and are reminiscent of Margaret's godless childhood as the daughter of a pagan priest. Small golden beads, increasing

in number as the window bands progress, symbolise her faith, which enables her to survive torture, the devil's temptations and finally the execution, and on the other hand the growing Christian community. In the renowned Paderborn atelier for glass painting, Peters transferred the design by hand using ceramic colours onto the 6 mm tempered safety glass panes in formats ranging from 1.6 x 1.3 m to 2.6 x 1.4 m and then melted the motifs at 600 degrees Celsius. “We have been working with Marie-Luise Dähne again and again for many years,” enthuses project manager Christoph Sander. “She manages to merge her artwork with the architecture. In Apetlon, St Margaret is thus physically and spiritually transformed into a source of light.”





## FLEXIBLE SPACER AVOIDS THERMAL BRIDGES AT THE EDGE OF THE GLASS

Based on the old Plexiglas panes, the monument protection authorities made curved panes a requirement. The Vandaglas site - Vandaglas Döring Berlin was commissioned to manufacture the 3D moulded insulating glass units, CurvePerformDGU from

CurvePerformMono 'Free-form curved' outer pane 6 mm with a flat laminated safety glass as a decorative counter pane in the insulating glass units. As part of the glass refurbishment, the windows were also to be modernised in terms of energy efficiency. The flexible Edgetech Super Spacer® TriSeal SG and Dow Corning 3362 were therefore used for the edge seal. Van-

daglas Döring site manager Carsten Kunert commented about the project: "The convex cavities are moulded out of the flat pane. This looks unspectacular at first glance, but the geometry of multi-axis curved panes is complex and therefore makes it difficult to predict the material behaviour during bending and after installation. Based on our many years of experi-

ence, we have once again opted for the flexible Super Spacer spacers for the Apetlon insulating glass units. They are easy to apply, support resistance to wind loads and make a significant contribution to energy efficiency, as there are no thermal bridges at the edge of the glass."

## ABOUT EDGETECH EUROPE

Located in Heinsberg, Germany, Edgetech Europe GmbH is a fully-owned subsidiary of Quanex Building Products Corporation, which is a global, publicly traded manufacturing company primarily serving OEMs in the fenestration, cabinetry, solar, refrigeration and outdoor products markets. Its services markets in continental Europe have a total of 490 employees and 17 extruders. The company seeks to be 'A Part of Something Bigger' by improving the performance and aesthetics of end products through continuous innovation - helping customers achieve greater production efficiencies while giving back to communities where it operates.

Edgetech Europe GmbH

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# STRATO® RIGIDO: SATINAL's structural component for multiple combinations

Ensuring top-tier impact protection for glass structures, STRATO® RIGIDO by SATINAL uses three-dimensional bonds by laminating with STRATO® EVA film. Here the combination of STRATO® EVA with STRATO® RIGIDO's stiffness allows for versatile lamination. Also, being moisture-resistant and customizable, it meets the most stringent safety guidelines.

film so mechanical, adhesive and optical properties can be achieved.

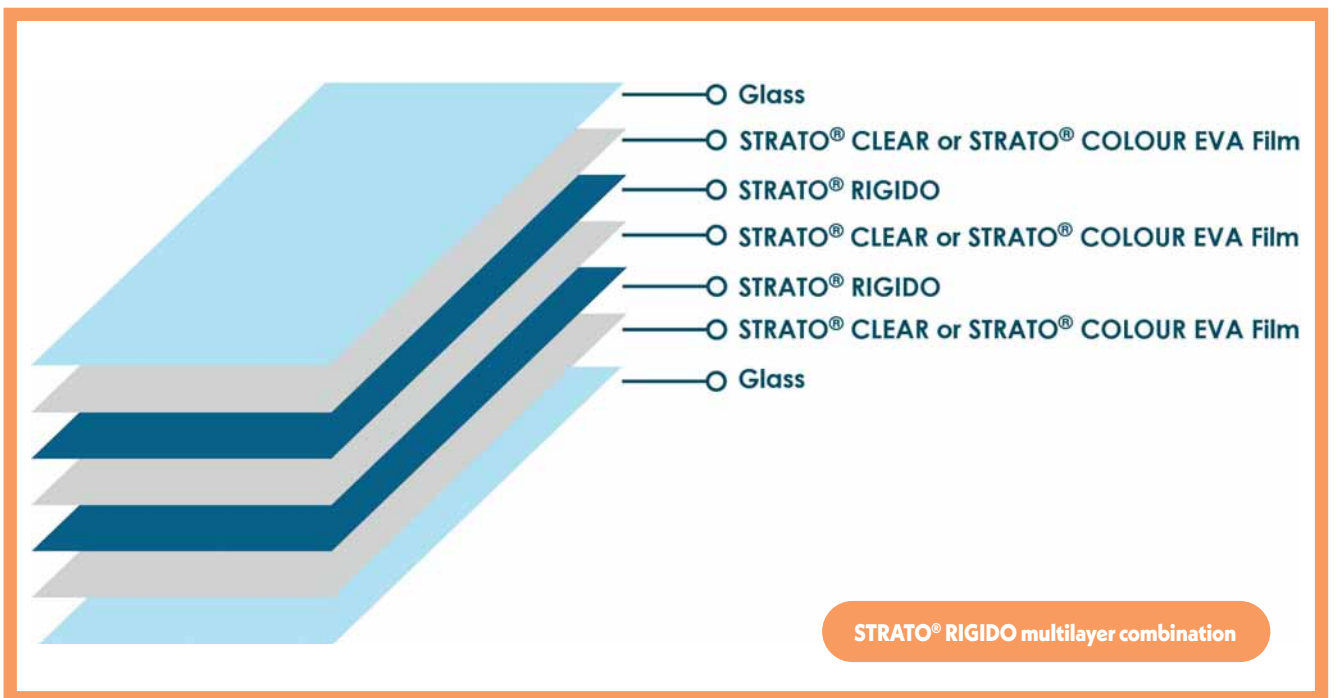
STRATO® EVA, which ensures the adhesion of STRATO® RIGIDO to glasses, is a thermosetting material. Differently from PVB film, it creates three-dimensional bonds at molecular level during the lamination process - making STRATO® EVA structurally safe in lamination terms.

The great mechanical properties of STRATO® EVA, combined with the stiffness of STRATO® RIGIDO, allow it to lami-

A special structural interlayer, STRATO® RIGIDO ensures one of the highest levels of protection against strong impacts. Indeed, even if the glass component breaks, the laminated structure is not weakened - such that the stability and safety of the product remain jointly preserved.

STRATO® RIGIDO must be laminated with two sheets of STRATO® EVA





nate any thickness of glass - thereby guaranteeing the same structural loading any time - and over time.

### OPEN EDGE APPLICATIONS

STRATO® RIGIDO is not a hygroscopic material and therefore has no issues with moisture. Moreover, STRATO® EVA film is not sensitive to humidity, water, temperature fluctuations and more. Here's why the STRATO® product range is compatible with indoor as well as outdoor applications without the risk of delamination. So STRATO® EVA laminated glasses can be installed against the most extreme weathers.

### TRANSPARENCY AND FROSTING EFFECT

For optimum transparency, it is recommended to laminate STRATO® RIGIDO with two sheets

of STRATO® CLEAR EVA film - otherwise known as the non plus ultra of EVA films for the architectural glass market. This provides a completely natural, transparent and neutral-looking glass thanks to its high degree of transparency and UV protection. Where privacy is a must, STRATO® RIGIDO can be combined with the STRATO® FROST EVA film product range, which consists of three different finishings (STRATO® LEGGERO, STRATO® SATINATO and STRATO® LATTE). This affords different levels of opaque effects and transparencies (from 2 to 65 percent of light transmission) according to STRATO® FROST EVA film finishing options. It also performs a double action, thus capturing and spreading the light homo-

geneously and without reflections.

### INTEGRATING COLOURS

STRATO® RIGIDO can be assembled with STRATO® COLOUR EVA film - matching colour and safety all in one project.

STRATO® COLOUR EVA film collection offers both solid and transparent colours, allowing for the personalization of structural surfaces with modern and cutting-edge shades.

One can also combine STRATO® COLOUR EVA film with STRATO® RIGIDO and STRATO® FROST EVA film, all together in one laminated glass, for an optimum colour-frosted finish.

### WHAT ARE MULTILAYER COMBINATIONS?

Safety and stiffness are mandatory when it comes to

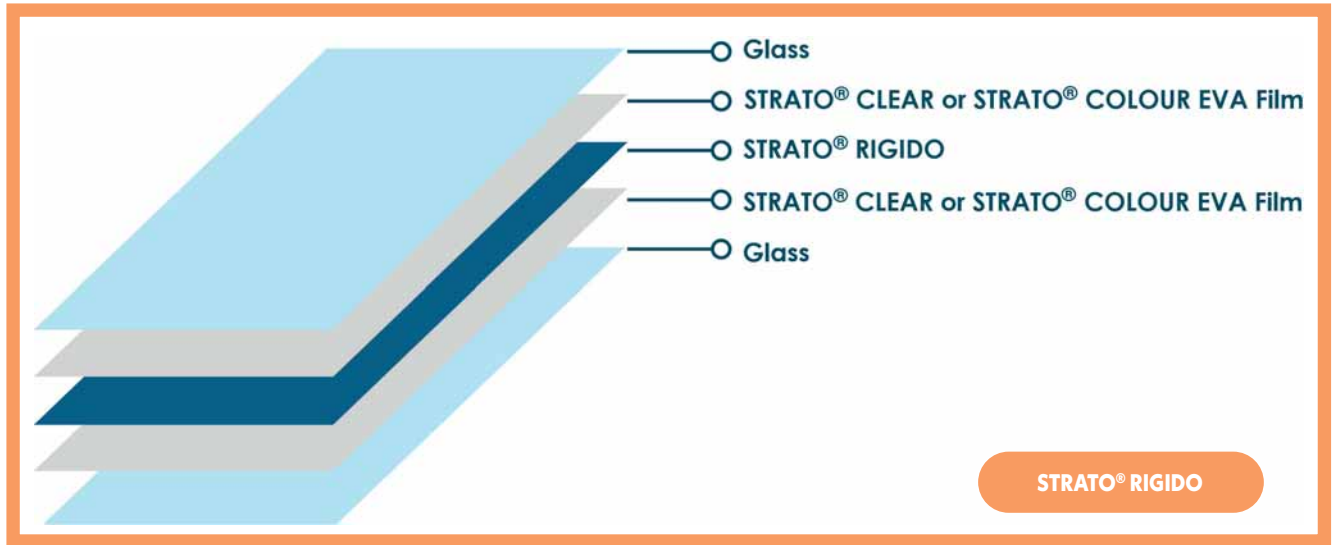
project buildings, canopes, ceilings, floors, facades and more. It is clear that the combination of safety and styling is definitely possible with the STRATO® product range.

STRATO® RIGIDO must be assembled inside two sheets of STRATO® EVA film and two panes of glasses, but multiple combinations are still possible.

The infographic example will easily demonstrates how panes of glass can be combined with multiple sheets of STRATO® RIGIDO and STRATO® EVA films - thereby meeting the approval of architectural guidelines in terms of structural safety.

### DIMENSIONS, THICKNESS AND LENGTH

Last but not least, dimensions are important. Here's why STRATO® RIGIDO



is available in different formats and widths. STRATO® RIGIDO is also available in different thicknesses and roll lengths.

**ABOUT SATINAL**

Satinal Spa was the first EVA film production site in Italy - a reference point Europewide for the supply of 100 percent made

in Italy interlayers. To this, STRATO® RIGIDO was added, which is available in different sizes and thicknesses - all to respond to multiple use purposes.

The application of STRATO® EVA film involves a process that requires great precision for both applied temperatures and cycle

times. Quality controls, which are carried out in Satinal's R&D Lab, aim to guarantee excellent adhesion of the material to the glass surface. Here in-depth experience acquired by Satinal in the treatment of EVA-based materials means that potential applications can be mastered and their characteristics fully exploited.

Satinal Spa  
TK - Strato

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# CHINA GLASS 2024

## The 33<sup>rd</sup> China International Glass Industrial Technical Exhibition

Shanghai New International Expo Centre

April 25<sup>th</sup>-28<sup>th</sup>, 2024

**Organizer: The Chinese Ceramic Society**

**Executive Organizer: Beijing Zhonggui Exhibition Co., Ltd.**

**Supporter: China Building Materials Federation**

**China Architectural & Industrial Glass Association**

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# Upcoming CHINA GLASS

to promote high-end,  
intelligent and green

Hosted this year by the Chinese Ceramic Society and organized by Beijing Zhonggui Exhibition Co, the 33rd China International Glass Industrial Technical Exhibition Ltd, also known as CHINA GLASS, will be held at Shanghai New International Expo Centre from April 25 to 28, 2024.

As one of the world's largest and most influential comprehensive industry exhibitions, the China Glass exhibition always serves as an important platform for guiding industry development while promot-

ing technological innovation as well as economic and trade cooperation. Here's why it has been so strongly supported by both domestic and international industry organizations and institutions, including China Build-





ing Materials Federation, China Architectural and Industrial Glass Association and China National Association for Glass Industry among others.

### A TRULY GLOBAL BUSINESS COMMUNITY

Exhibition space will be extending to nearly 90,000 square metres, catering to almost 900 manufacturers (over 160 of which are international) from 28 countries and regions. These cover China, the United States, Germany, Italy, France, the United Kingdom, Ja-

pan, South Korea, Switzerland, Austria, Belgium, Finland, Israel, Singapore, Turkey and Brazil - all of which have confirmed their participation at the trade show. But there's more. Well-known enterprises both from China and abroad will make their brilliant appearance. Numbered among these are Glaston, LiSEC, Von Ardenne, SEFPRO, Vesuvius, Air Products, Honeywell, Bottero, Olivotto, Triumph Science & Technology, CSG Group, Yao-hua Glass Group, Xinyi Ultra-thin Glass and Luoyang Northglass.

### A VIVID INDUSTRY SCREENSHOT

Adhering to the concept of 'Specialization, Internationalization and Scale,' the China Glass Exhibition will be providing a display platform as well as an 'arena' at which both domestic and foreign manufacturers will be showcasing new technologies, products and equipment. China Glass 2024 will have many national and international manufacturers - all launching new products in the field of green, low-carbon and intelligent manufacturing. More on the exhibition can be viewed from its official website at chinaglass-

expo.com - from which online pre-registration for China Glass 2024 attendees can also be done.

CHINA GLASS  
2024



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# Surging demand in Construction heralds global growth for **ADVANCED GLASS**

Nester's latest report on the **ADVANCED GLASS MARKET** expects significant demand worldwide - all driven by aerospace, safety glasses, solar panels and renewable energy. Here research also points to a robust North America construction industry and solar adoption, anticipating revenue dominance by 2035.



**Aashi Mishra**  
Senior Content Writer

In a recent market analysis titled 'Advanced Glass Market: Global Demand Analysis & Opportunity Outlook 2035,' conducted by Research Nester, an exhaustive examination of the global advanced glass market has been presented. The comprehensive report delves into competitor analysis, providing a nuanced overview of market segmentation based upon

glass type, end-use sector, application and region over the forecast period spanning 2023-2035.

## **FRESH MOMENTUM**

The report not only explains industry growth indicators. It also scrutinizes potential constraints as well as supply and demand risks - all while engaging in a detailed discussion on prevailing and future market trends. By their insights, these analyses aim to empower organizations to navigate what's anticipated to be a volatile future by identifying a continuous stream of growth opportunities. Moreover, the market is poised to witness significant momentum over the coming years - potentially unveiling promising prospects for growth.

## **A WORLDWIDE TREND**

Research Nester asserts that the advanced glass market

is poised for substantial expansion driven by an escalated demand for glass in the aerospace industry. The trajectory of market growth is further bolstered by the rising need for safety glass and an increased use of advanced glass in solar panel manufacturing. Indeed the global consumption of renewable energy is projected to reach approximately 25 exajoules, underscoring the pivotal role of advanced glass in the renewable energy landscape. Here the market's impetus is also fueled by the soaring sales of optics and lighting, coupled with a growing inclination towards television. Notably, the global television segment, valued at nearly USD 150 billion in 2022, is expected to contribute significantly to market growth over the forecast period.

## RESIDENTIAL CONSTRUCTION

Segmented by end-user typology, the global advanced glass market encompasses commercial, residential construction, infrastructure, automobiles, electronics and sports & leisure. The residential construction segment is anticipated to secure the highest revenue by the end of 2033, exhibiting substantial growth attributed to increased spending on building construction. In the USA alone, residential and nonresidential construction saw total spending of approximately USD 900 billion and USD 500 billion

in 2022, respectively.

## MARKET COMPASS

Geographically, the North America advanced glass market is expected to yield the highest revenue by the end of 2035. This projection is substantiated by the flourishing construction industry and the increased adoption of solar energy. In 2022, the USA witnessed the installation of nearly 20 million solar panels, with approximately 1.5 million households harnessing solar energy. These factors collectively contribute to the anticipated growth of the market in the forecast period.

## THE GEOGRAPHY OF COMPETITION

The global scope of the research extends across North America, Europe, Latin America, Asia-Pacific, and the Middle East and Africa. The report includes a comprehensive analysis of the advanced glass market size, year-on-year growth, competitive study of market players, investment opportunities, and future demand

# AUTHOR BIO

An experienced research writer, strategist and markets watcher with a demonstrated history of research in various industries.

outlook. The competitive scenario of the global advanced glass market is delineated with the profiles of such key players as Tyneside Safety Glass Co. Ltd, Advanced Glass & Mirror Inc., Sisecam Group, AGC Group, Compagnie de Saint-Gobain S.A, Fuyao Group, Huihua Co., Limited, Koch Industries, Inc., Nippon Sheet Glass Co., Ltd., and Corning Incorporated, among others. These profiles encompass crucial information such as business overview, products and services, key financials, and recent news and developments.

## MARKET EVOLUTION

In sum, the report provides a comprehensive overview of the global advanced glass market, offering valuable insights for industry consultants, equipment manufacturers, existing players seeking expansion opportu-

nities, new entrants exploring possibilities, and other stakeholders. It equips them to align their strategies with ongoing and anticipated market trends, ensuring a market-centric approach in the evolving landscape.





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**E-TECH.SHOW/SMART-GLASS-FORUM**

# How technological innovation is transforming **AUTO GLASS**

## **S**ECURE IN THE DRIVER'S SEAT

From relatively modest origins, auto glass has experienced a remarkable evolution, forging a fascinating path through automobile history. In the initial era of motoring, cars made use of traditional glass, which presented a notable safety risk owing to the tendency to break upon

impact. That said, recent advancements in material science have since elevated auto glass towards becoming an essential element to our vehicles - effortlessly harmonising both safety and aesthetics.

## **A FRESH FOCUS UPON SAFETY**

Essentially auto glass serves as a robust protec-

tor of the safety of both car drivers and their passengers. As such it acts as a powerful barrier against such external factors as airborne debris and adverse weather conditions, simultaneously offering structural support in the face of unexpected collisions. These fundamentals of safety have undergone significant changes

- all courtesy of groundbreaking advancements in the materials used for auto glass.

## **MATERIALS** **Shatter-free**

One new feature, laminated glass, consists of two glass layers encasing a central one of polyvinyl butyral (PVB). A truly refined combination, it will





Frequently overlooked yet no less consequential, the significance of AUTO GLASS lies in its dual purpose within vehicles, namely that of safeguarding drivers and passengers while playing a crucial design function in elevating a vehicle's visual allure. In this issue of Glass Technology International we examine how current advancements are both reshaping earlier safety measures and injecting a fresh sense of style into our experiences on the road.

adeptly prevent the danger of shattering, thereby significantly reducing risks associated with airborne glass fragments.

#### Tempering

For side and rear windows tempered glass takes pole position. Designed to break into relatively harmless fragments, it minimises the risk of serious injuries in the event of an accident.

#### Windscreens

The progression of windscreens goes beyond materials, given that the tendency now is to emphasise intricate design elements. Safety, too, is much enhanced by such features as crumple zones and reinforced edges - which dually minimise potential harm in high-impact scenarios.

Then there are the advancements in auto-glass technology, which have significantly contributed to both vehicle safety and aesthetics. Here options for upgrades to auto glass can really be impressive - elevating both vehicle safety and appearance for those car owners out there

who are after enhancing their vehicles with top-tier auto glass.

#### Look and feel

The realm of auto glass transcends safety, exerting an indelible influence on the visual identity of vehicles. Recent strides in auto glass design have provided vehicle owners an expanded canvas for personalization.

#### Opacity that won't compromise visibility

Commonly identified as tinted glass, privacy glass adds a mysterious charm to the outer appearance of a vehicle. It will grant occupants any sought-after seclusion while helping to sustain ideal cabin temperatures. Then there's the mastery of tinted glass, which achieves its pinnacle in customization. This

goes beyond merely reducing glare - infusing vehicles with a sense of individuality and elevating the comfort of passengers.

#### Full vehicle design makeovers

Carefully selecting just the right auto glass has the power to completely alter the overall visual appeal of a vehicle - transforming it into either a stylish, refined masterpiece or a lively,





sporty chariot - customising it to align completely with owner preferences.

### WHAT'S ALREADY TURNING HEADS

**Glass just got a whole lot smarter**

Leading the way in innovation, smart glass has the ability to effortlessly change either its transparency or its opacity as it adapts to external conditions or user preferences - a technological wonder that's ushering in improved comfort, privacy and increased energy efficiency all at once.

#### HUDs

Incorporated into windshields, head-ups displays signal an era characterised by both convenience and safety. As informative

displays they take up the driver's field of vision - enhancing her/his experience on the roads while imparting a futuristic appearance to vehicles.

#### Towards design that's also secure

These groundbreaking technologies go beyond prioritising safety in that they blend seamlessly with aesthetics - all to merge form and function into a sophisticated harmony.

### AN EYE TO THE PLANET

**Putting the environment first**

Of late the auto glass sector has initiated an environmentally-conscious path with a dominance of sustainable materials and ecologically responsible

manufacturing methods that has markedly reduced the impact of emissions in glass production.

#### Aboard the circular economy

Capabilities in recycling auto glass have heralded a new era that's focused upon both conserving re-

sources and minimising waste. Through the recycling process, old auto glass is rejuvenated and integrated into new manufacturing projects. Here creative companies and individuals have also taken advantage of the opportunity to re-



purpose auto glass - turning it into functional art that's adaptable furniture or even novel construction materials.

#### More green, more responsible

With growing environmental apprehensions, the auto glass industry is prepared to strengthen its dedication to sustainability. Subsequent innovations will continue to propel the eco-friendly evolution of auto glass - enhancing its safety, style and ecological responsibility.

#### Priorities moving forward

Despite the remarkable advancements made, auto glass technology continues to face ongoing challenges. Here finding the ideal balance between safety and weight reduction, while maintaining optimal clarity and visibility in challenging conditions, remains a persistent endeavour.

### WHERE TODAY'S TRENDS ARE LEADING

#### Integration with autonomous vehicles

As autonomous vehicles assume a more significant presence on our roads, auto glass will be the linchpin for seamless sensor integration and an immersive driving experience.

#### Connectivity and safety

We can expect the widespread adoption of sophisticated HUDs coupled

with a growing range of connected features embedded in auto glass - all of which will transform the windshield into a versatile digital hub. Add to this the persistent commitment to research and development, which will certainly result in safer auto glass solutions while ensuring a decrease in the severity of injuries during collisions.

#### In sum

Originally confined to mere transparency, auto glass has since evolved into a vibrant and essential aspect of contemporary vehicles. It seamlessly integrates safety, style and ecological responsibility - ultimately serving as the canvas on which the narrative of our automotive journey continues

to unfold. As innovation progresses in shaping the terrain, staying connected to the ever-changing realm of auto glass technologies becomes always more crucial for passionate automobile enthusiasts - all to ensure we can hit the road with the right blend of assurance, style and environmental consciousness.

## SAVE THE DATE



Be sure to attend the Automotive Smart Glass Forum at E-Tech Europe 2024 on 8 May at Bologna Exhibition Center, hosted by Glass Technology International. Hear today's leading experts in the field speak about the latest windshield technologies. Presenting companies that have so far confirmed their participation appear below:

**Company:** Flabeg Automotive Germany

**Speaker:** Dr Matthias Schiller, CTO

**Presentation Title:** Still using plastics instead of glass?

**Company:** Marposs

**Speaker:** Dr Luca Bruni, Product Manager

**Presentation Title:** Flexible and non-contact measure

**Company:** Olympias AG

**Speaker:** Dr Agamemnon Varonos, CEO

**Presentation Title:** Beyond Obstructions: A-Pillars Reimagined for Tomorrow's Safety. The Panoramic Windshield System

Check out the E-Tech 2024 website: Exhibition and conference on advanced batteries and innovative technologies for automotive and electric vehicle production.





# Glass sector in **RUSSIA** undergoes painful transformation

**Eugene Gerden**  
Freelance Contributor

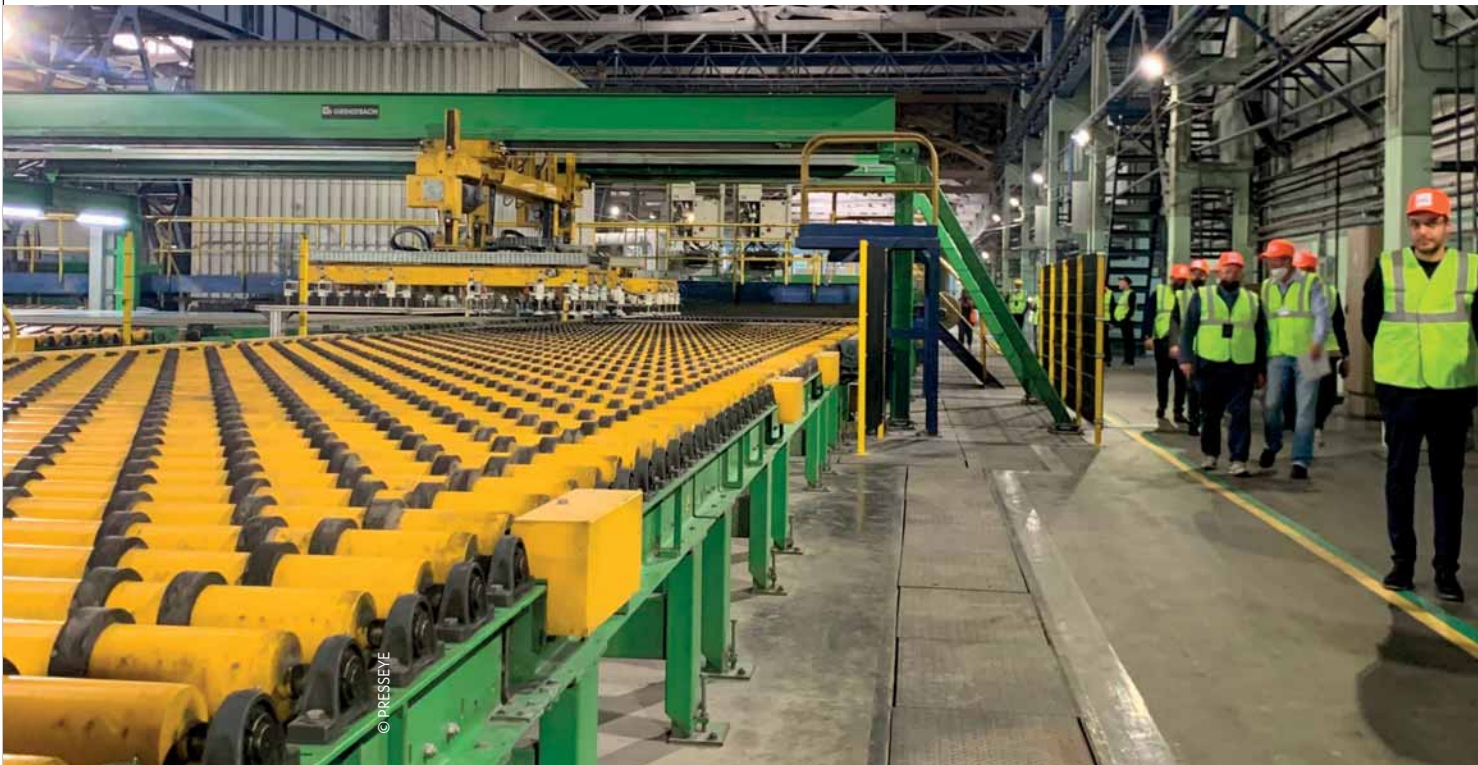
**B**efore 24 February 2022 the Russian glass sector boasted remarkable achievements, experiencing annual growth

rates of 7-8 percent and beyond. Two comprehensive 10-year development programmes, spanning from 2000 to 2010 and from 2011 to 2020, contributed significantly to the sector's success. During this period,

sheet glass output surged from 86 million square metres to an impressive 246 million square metres, while glass container production soared from 5.6 billion pieces to 14.6 billion pieces.

## THE UNRAVELING

The eruption of the Russian-Ukrainian military conflict shattered hopes for sustained growth - ushering in a severe crisis. Confirming this downturn, Natalya Popkova,

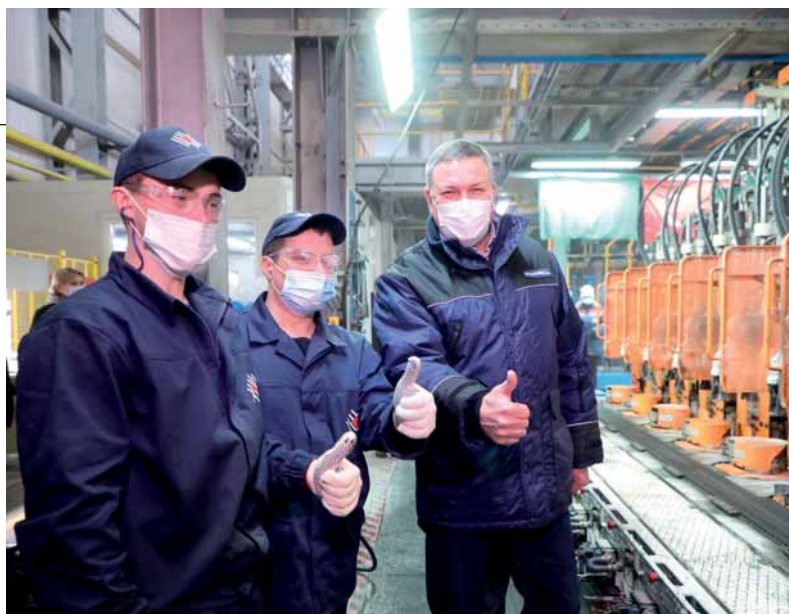


In RUSSIA the glass industry recently found itself at the epicenter of transformation - grappling with the impacts of tightening sanctions and increased international isolation. Once a beacon of growth, it now finds itself facing unprecedented pressures that have stemmed from the conflict in Ukraine and the ensuing geopolitical fallout.

Deputy Director of the Department of Metallurgy and Materials at the Ministry of Industry and Trade, acknowledged an eight percent year-on-year decline in glass production in the previous year - with indications pointing to further declines in the current year.

### EXPORT WOES AND GLOBAL IMPACT

The industry's predicament is exacerbated by a significant drop in exports, traditionally a major revenue source for Russian glassmakers. Global majors, operating within Russia, have largely suspended their operations. Despite rumours



of potential resumptions, most global producers show little inclination to reinstate Russian operations in the short term. The imposition of bans on Russian glass exports to Western markets has further compounded the challenges, with exports plummeting from up to 30 percent of annual output to nearly negligible levels.

### STRATEGIES FOR RECOVERY

To counteract these industry woes, head of StekloSouz Viktor Osipov has called for stimulating domestic consumption and reviving science and mechanical engineering. He proposes a focus on the production of double-glazed windows, an area where Russia lags behind global averages, with per capita consumption ranging from 3-5 square metres as compared to 23-25 square metres in the EU.

### IMPORT DEPENDENCY AND GOVERNMENT RESPONSE

The industry's high dependence on imported

equipment has hindered planned repairs, with Western sanctions making the supply of equipment challenging. The Russian government, cognizant of the industry's struggles, faces limitations in providing substantial support due to budget constraints. However, initiatives such as tax and customs exemptions, compensations, and subsidies for exports to new markets in Asia are being explored. Natalia Popkova indicates potential compensations to the industry reaching RUB 2 billion (USD 22 million) this year.

### MOVING ON

In sum, any conclusion to the current crisis could potentially signal a resilient path forward. This would necessarily involve a delicate balance of stimulating domestic demand, addressing industry challenges and exploring new export markets. The industry's ability to adapt and innovate will determine its success in overcoming such obstacles with a view to emerging stronger in the post-sanctions era.



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## AUTOMATIC SEALING LINES

Bavelloni  
Easy Automation  
**Forel**  
**Glaston Group**  
Lisec Group  
Marval  
Teknik Elmas  
Tesir Makine

## AUTOMATIC SPACER BENDING MACHINES

Bavelloni  
**Best Makina**  
Fenzi  
**Forel**  
**Glaston Group**  
IOCCO Group  
Lisec Group  
Marval  
Schiavo  
Thermoseal Group

## DESICCANT SALT FILLING MACHINES

Ashton Industrial Sales  
Bavelloni  
**Best Makina**  
Di Gregorio  
Fenzi  
**Forel**  
**Glaston Group**  
Lisec Group  
Marval  
Neptun  
Schiavo  
Stefani  
Tecno Glass  
Thermoseal Group  
Triulzi

## SPACER CUTTING SAWS

Ashton Industrial Sales  
Bavelloni  
**Best Makina**  
Di Gregorio  
Fenzi  
**Forel**  
Lisec Group  
Marval  
Neptun  
Schiavo  
Tecno Glass  
Tesir Makine  
Thermoseal Group

## BUTYL EXTRUDERS

Bavelloni  
**Best Makina**  
Di Gregorio  
**Forel**  
**Glaston Group**  
Lisec Group  
Marval  
Neptun  
Schiavo  
Si.Ste  
Stefani  
Tecno Glass  
Thermoseal Group  
Triulzi

## HOT-MELT EXTRUDERS

Bavelloni  
**Best Makina**  
Di Gregorio  
Easy Automation  
Fenzi  
**Forel**  
Lisec Group  
Marval  
Neptun  
Schiavo  
Si.Ste  
Stefani  
Tecno Glass  
Thermoseal Group  
Triulzi

## POLYURETHANE EXTRUDERS

Bavelloni  
**Best Makina**  
Easy Automation  
Fenzi  
**Forel**  
**Glaston Group**  
Lisec Group  
Marval  
Schiavo  
Tecno Glass

## POLYURETHANE ENCAPSULATION

**Glaston Group**  
Lisec Group  
Marval  
Schiavo

## SILICONE EXTRUDERS

**Best Makina**  
Di Gregorio  
Fenzi  
**Forel**  
**Glaston Group**  
Lisec Group  
Marval  
Schiavo  
Tecno Glass  
Triulzi

## POLYSULPHIDE SEALANT EXTRUDERS

**Best Makina**  
Fenzi  
**Forel**  
**Glaston Group**  
Lisec Group  
Marval  
Schiavo  
Stefani  
Tecno Glass  
Triulzi

## GAS FILLING EQUIPMENT

Di Gregorio  
Fenzi  
**Forel**  
**Glaston Group**  
Lisec Group  
Marval  
Neptun  
Schiavo  
Si.Ste  
Sparklike  
Stefani  
Tecno Glass  
Thermoseal Group

## DESICCANT SALTS

Ashton Industrial Sales  
Di Gregorio  
Fenzi  
Neptun  
Schiavo

Stefani  
Tecno Glass  
Thermoseal Group

## SPACERS/PROFILES

Ashton Industrial Sales  
**Edgetech Europe**  
Fenzi  
Schiavo  
Tecno Glass  
Thermoseal Group

## GEORGIAN BARS

Ashton Industrial Sales  
**Hegla**  
Tecno Glass  
Thermoseal Group

## BUTYL

Ashton Industrial Sales  
Fenzi  
Stefani  
Thermoseal Group

## POLYSULPHIDE SEALANTS

Fenzi  
Stefani

## HOT MELT

Ashton Industrial Sales  
Fenzi  
Stefani  
Thermoseal Group

## OTHER SEALANTS

Fenzi  
Stefani

## PANTOGRAPHS

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

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Lisec Group  
Mappi International  
Marposs  
**North Glass Technology**  
Schiavo  
Tecnosens  
Tekno Kilns  
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

## 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  
Texpack

## BENDING FURNACES (AUTOMOTIVE GLASS)

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

## ACCESSORIES

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

## Laminated glass production

## COMPLETE PLANTS

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

## LAMINATED WINDSCREEN BENDING FURNACES

ECOL  
**Glass Company**  
Glasstech Inc.

**Glaston Group**  
Keraglass  
Mappi International  
Marposs  
Taifin  
Texpack

## AUTOCLAVES

Bürkle  
**Glass Company**  
**Glaston Group**  
GPM Automation  
**Hornos Industriales Pujol**

Italmatic  
Lisec Group  
Triulzi  
**AUTOCLAVE-FREE  
LAMINATED GLASS  
PRODUCTION**

## CLIMATIC CABINS

**Forel**  
Glaston Group  
GPM Automation  
IOCCO Group  
Lisec Group  
Triulzi

## INFRARED OVENS

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



click here

Eurotech Way  
**Glaston Group**  
**Helios Quartz**  
**Hornos Industriales Pujol**  
 IOCCO Group  
 Lisec Group  
 Satinal  
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 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  
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 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  
 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**

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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

## ACCESSORIES

Deltamax Automazione  
**Helios Quartz**

## CUTTERS

Si.Ste

## CUTTING WHEELS

Si.Ste

## MANUAL GRINDING MACHINES

Di Gregorio

## UV ADHESIVES

Si.Ste

## Miscellaneous

### ADHESIVES FOR GLASS BONDING

Si.Ste

### AUTOMATION

Ashton Industrial Sales  
Easy Automation  
Horn  
IOCCO Group  
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  
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  
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  
Immnes

### PUTTIES AND SEALANTS

Fenzi

### QUARTZ EQUIPMENT

**Helios Quartz**

### SHAPE CHECKING DEVICES

Easy Automation

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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

Marposs

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

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Helios Quartz

## UV PORTABLE MACHINES

Helios Quartz

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1988



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



1989



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

Annual Guides



1990



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



2013



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

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Tuesday, February 14, 2023



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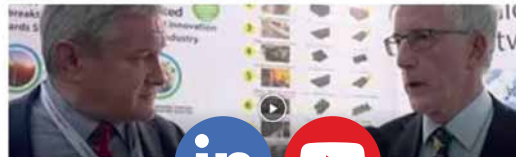
**Glass Futures announces the appointment of two new Board Members**

13 February 2023



**Customers involve IOCCO in feasibility studies for whole car glass sets**

Among IOCCO's contribution in the manufacture of systems for the air extraction during the lamination of windscreens, laminated sidelights and sunroofs is the notable improvement for both concept and fabrication of vacuum bag furnaces....





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