

# Glass-Technology International

THE LEADING MAGAZINE FOR THE INTERNATIONAL FLAT GLASS INDUSTRY

November/December • Year 32 • No. 6/2021

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GKT GROUP INVESTS IN A DIGITAL FUTURE WITH NEW SOFTWARE FROM **HEGLA-HANIC**

**NEPTUN**: EXPERTISE IN EXTREME GLASS CLEANING

**SPARKLIKE'S** NEW DEVICES AT VITRUM

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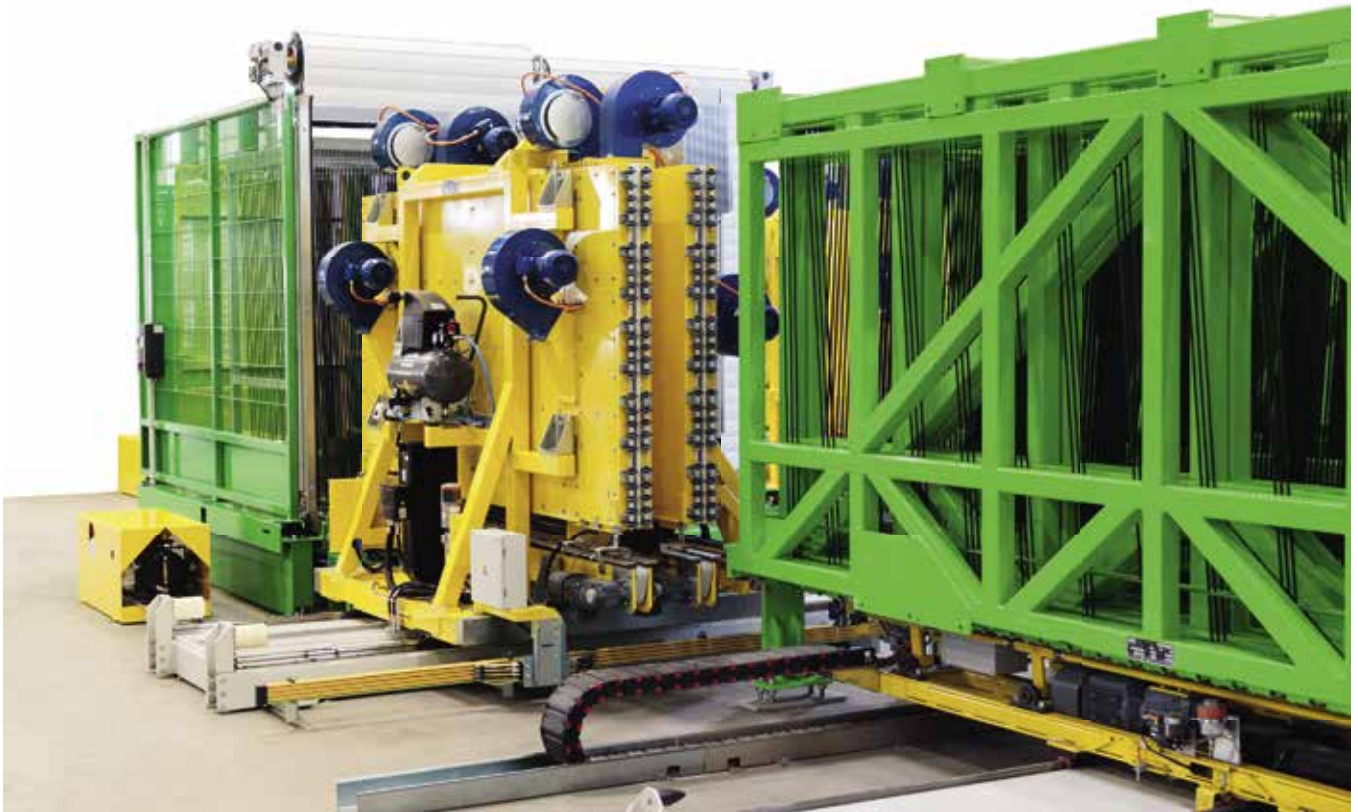
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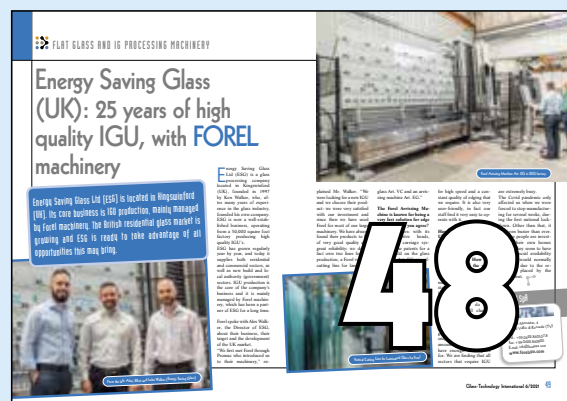
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FLAT GLASS

issue	exhibition/conference	date	venue	deadlines
2022 1	<b>GPD FINLAND</b>	16-18 February	<b>TAMPERE</b> Finland	Editorial files: <b>14-01-2022</b>  Deadline Adv files: <b>24-01-2022</b>
	<b>GLASSPRO INDIA</b>	3-5 March	<b>MUMBAI</b> India	
	<b>FENSTERBAU FRONTALE</b>	29 March/ 1 April	<b>NUREMBERG</b> Germany	
2022	 			Editorial files: <b>14-02-2022</b>  Deadline Adv files: <b>28-02-2022</b>
2022 2	<b>CHINA GLASS</b>	13-16 April	<b>SHANGHAI</b> China	Editorial files: <b>11-03-2022</b>  Deadline Adv files: <b>18-03-2022</b>
2022 3	<b>MIR STEKLA</b>	6-9 June	<b>MOSCOW</b> Russia	Editorial files: <b>29-04-2022</b>  Deadline Adv files: <b>06-05-2022</b>
	<b>GLASS SOUTH AMERICA</b>	29 June/ 2 July	<b>SÃO PAULO</b> Brazil	
	<b>GLASSTECH MEXICO</b>	6-8 July	<b>MEXICO CITY</b> Mexico	
2022 4	<b>GLASSTEC</b>  ALL GLASSTEC EXHIBITORS ADVERTISING IN THIS ISSUE ALSO RECEIVE A FREE GLASSTEC PREVIEW	20-23 September	<b>DUSSELDORF</b> Germany	Editorial files: <b>22-07-2022</b>  Deadline Adv files: <b>31-08-2022</b>
2022 5	<b>GLASSBUILD AMERICA</b>	18-20 October	<b>LAS VEGAS (NV)</b> USA	Editorial files: <b>12-09-2022</b>  Deadline Adv files: <b>26-09-2022</b>
	<b>GLASSTECH ASIA</b>	26-28 October	<b>SINGAPORE</b> Singapore	
2022 6	<b>VETECO</b>	10-13 November	<b>MADRID</b> Spain	Editorial files: <b>14-10-2022</b>  Deadline Adv files: <b>21-10-2022</b>
	<b>ZAK GLASS TECHNOLOGY</b>	date to be announced	<b>MUMBAI</b> India	



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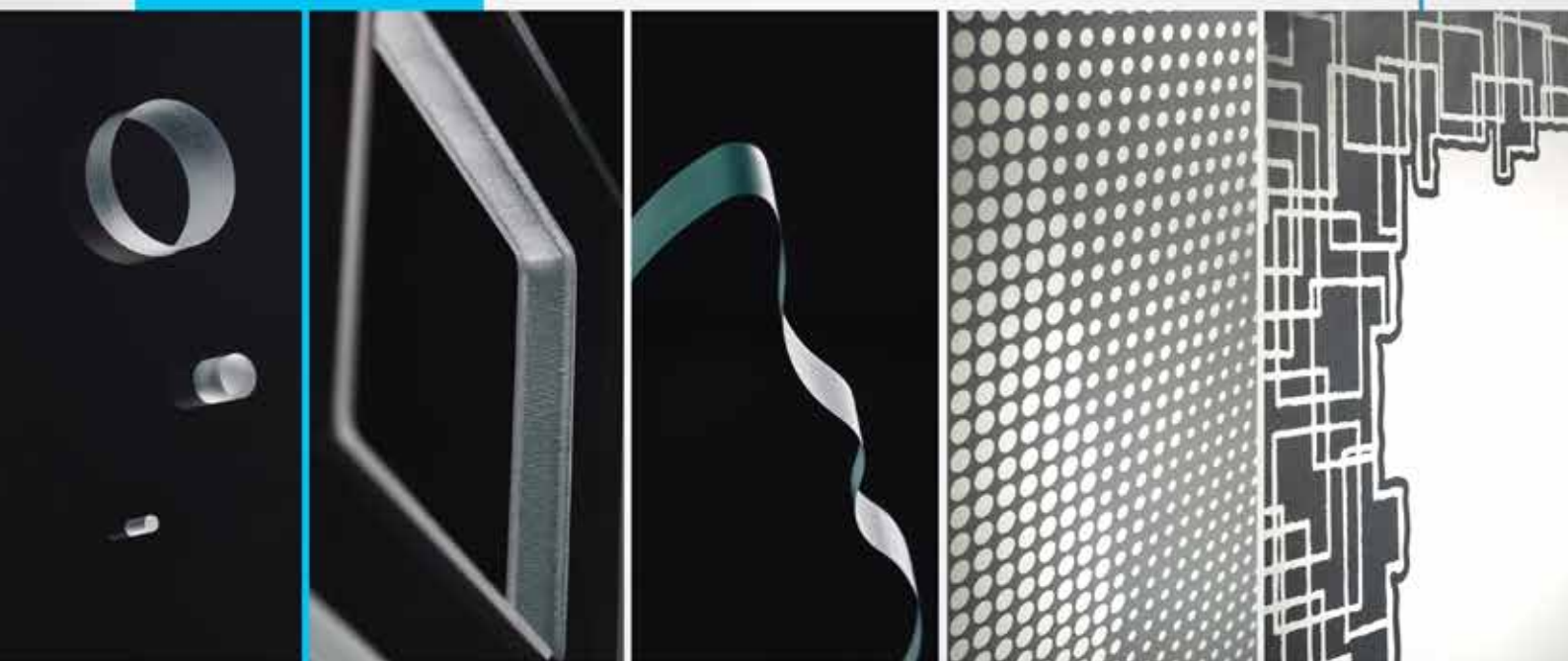


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## LASERMEK

CUGHER

## New division for glassworks - Architecural LAB

**V**itrum 2021 exhibition was an occasion for Cugher to debut its new specialized research center for the Building & Interior Design

sector: the Architecural LAB. The main purpose of this division is that of using the know-how and the experience gained in over 50 years of activity to design highly customized machinery and plants for flat glass, dedicated to the production of civil and industrial applications for building, such as:

- stained glass windows;
- balconies;
- railings;
- solar panels; and
- furnishings and shower enclosures.

The Architecural LAB was set up to respond to the need of offering flexible and highly technological solutions to a sector, that of construction, which, after the slowdown due to the difficulties linked to the pandemic, is now growing with considerable potentiality. In particular, besides offering efficient and consolidated turnkey plants, silk-screen printing machines and dryers for industrial companies, Cugher is also investing resources in the design of glass handling machinery for small and medium glassworks.

Cugher's newest automated harps rack system is an interesting solution, created to facilitate the loading and/or the unloading of glass sheets onto vertical production lines, such as those for insulating glass, for glass dimensions up to 3000 mm x 1500 mm (118,11" x 59.05"). The glass, in fact, after being cut, is no longer placed on a rack to be then manually unloaded from the vertical line, but is placed directly on the harp following the production order. Each harp can contain up to 40 glass sheets. The loaded harp is inserted

by the operator onto a modular ground structure that automatically raises it and activates movement. The harp moves forward through the system, unloading the glass sheets automatically one by one in sequence, eliminating the need for manual loading. Once the harp is empty, the operator moves it back to the cutting station for reloading; in the meantime the harps progressively inserted in the system continue the process. This process could be implemented inversely also for the unloading of the line.

The automated system is modular, it can indeed include as many positions as the production needs of each and every customer. Moreover,

the engineering of the system is customized as per the available space in the warehouse and the processed glass dimensions.

The automated harps rack project, with extremely versatile engineering, was developed in response to the direct request of customers, confirming that listening to customers' needs, and responding with highly customized solutions are the essential driving force for machine manufacturers – and Cugher is no exception.

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SATINAL - TK

## Innovative laminating vacuum bags

**S**atinal - TK introduces TKlean Bag, the latest innovative laminating vacuum bag that, combined with STRATO® Glass Interlayers, allows perfect edge finishing and improved glass flatness after the lamination process, drastically reducing the need of expensive labour and cleaning operations.

The state-of-the-art laminating vacuum bag is the result of the constant commitment of the S-Lab R&D department in the continuous improvement of its products and industrial processes.

Satinal is once again demonstrating its technological leadership in developing its safety glass ecosystem of products, ranging from the highest quality STRATO® Glass Interlayers, to the widest range of TK Glass laminating machinery in the industry, from small to big size, and to the innovative selection of accessories for the manufacture of safety glass, improving the daily life of glass operators.

TKlean Bag is the perfect PLUG&PLAY solution for any glass laminator in the world to solve one of the main problems generated by vacuum bag laminating furnaces: edge cleaning and glass distortion. TKlean Bag is compatible with any brand of glass laminating machinery and can be easily installed by Satinal technicians worldwide, without the need of any capital investment.

The Italian ecosystem for safety glass manufacture created by Satinal allows every customer around the world to benefit from the synergies and innovative solutions developed by Satinal over decades of experience in glass processing.

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## NORTHGLASS

# Guinness World Record for the largest single glass window in the world



On 6 August 2021, Tianjin NorthGlass produced the largest single glass window in the world, with an area of 50.869 square meters, nearly 17 meters ultra-high full glass curtain wall, on the first floor of Taikang Group building a Guinness World Record.

Taikang Financial Building is located in the core area of Beijing and is adjacent to well-known buildings such as the CITIC Tower and the CCTV headquarters. The building's height is 223.4 meters, covering a total area of about 8,427 square meters, and a total construction area of about 182,135 square meters. The lobby of the first floor adopts the across-page style all-glass curtain wall, and the seated double laminated insulating all-glass curtain wall system. The size of single glass is 17.1m×3.107m, and the single glass weight is 6.5 tons.

With the rapid development of modern buildings, the decoration of the facade has become increasingly valued. At the same time, people's demand for building space is constantly increasing, and the large glass curtain wall is becoming more and more widely used in the new building curtain wall. The application of large glass curtain wall on the facade increases the overall permeability of the building, provides a broad imagination space for the architect design and also provides a broader vision for users.

The production and processing technology of large glass curtain wall is difficult, quality requirements are high, structural design is complex, and installation and transportation is difficult. The reason why NorthGlass managed to overcome these difficulties is thanks to its strong core technology, research

and development ability, as well as its excellent product quality and years of production and processing experience of large glass curtain walls. The cooperation between NorthGlass and Apple Inc. officially started large glass curtain wall research and development in 2008. In 2009, NorthGlass developed a 12.8-meter large curved tempered glass, used in Shanghai Pudong Apple store. Finally, in 2012 NorthGlass independently developed an 18-meter flat curved tempered furnace, then completed the Hong Kong Taikoo, Apple headquarters, as well as the Taikang financial building and many other large glass curtain wall projects. It then continued to break its research and development record to make a 24-meter production line, making NorthGlass the leader in the large glass-curtain-wall industry.

[WWW.NORTHGLASS.GLOBAL/](http://WWW.NORTHGLASS.GLOBAL/)







## THE NEW GENERATION OF BASIC SERIES (B-SERIES) GLASS TEMPERING FURNACE



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- Standard Gapless Forced Convection System
- NorthGlass New Heating Control System



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## NEW PRODUCTS: NORTHGLASS SINEST

SiNest is a new wall material with high silicon content.

The surface of artificial stone and the cellular matrix are sintered integrally.

It has all the qualities and functions required by the wall:

- Stable and weather resistant, Lightweight and high strength, fire retardant and thermal insulation, Integrated decoration.
- Combined with the fabricated wall components made of light steel.
- The traditional wall becomes simplified and refined.



GUARDIAN GLASS

## Super Jumbo capability added

**G**uardian Glass is responding to demand from architects who are pushing design boundaries with buildings that maximize views and natural light for occupants in interesting, forward-thinking facades while also reaching energy performance codes and standards.

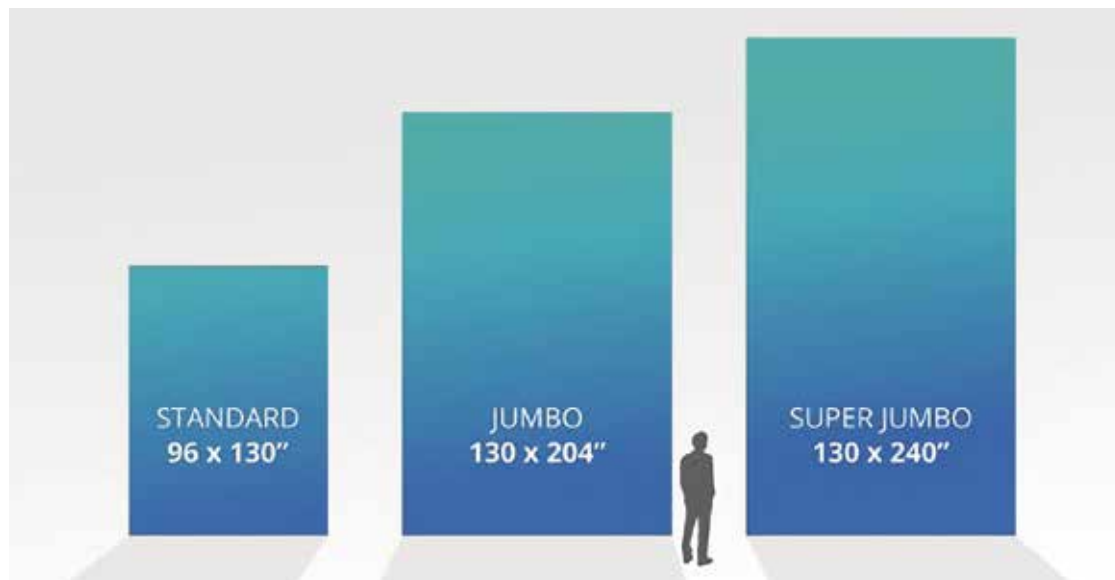
"Super jumbo helps our fabrication customers improve yields on many common commercial sizes and produce oversize insulating glass units that aren't possible with standard jumbo coated glass," said Chris Dolan, Commercial Segment & Technical Services Director at Guardian Glass North America.

Independent Guardian Select® fabricator *Press Glass* is capitalizing on this advantage. Press Glass brought its long-standing expertise in super jumbo – its Polish facility fabricates glass up to 275" – to North America last year. Its Ridgeway, Va. factory was built to accom-

modate 130" x 240" glass.

The fabricator has some of the largest glass sizes available in North America.

"Our customers want larger glass, whether it's commercial or residential," said Piotr Styk, Senior Estimator/Project Manager at Press Glass. "Everyone is calling for expansive views, and the bigger the better. When we were deciding on equipment to purchase for our new facility, we researched the maximum



glass size available in North America. Guardian offered the largest size at 240", so we made sure to equip our facility with machines that could handle that size. At Press Glass, we strive to exceed quality standards. Every order is a custom order, so it's essential that we work together effectively. Our communication with Guardian works very well. It's a very effective partnership."

That partnership has delivered on projects that range from Press Glass' Ridgeway facility, which boasts 231" x 115" triple insulating glass units that include Guardian SunGuard® SNX 51/23 coated glass and SunGuard® SuperNeutral® 68 coated glass, to the under-construction Terminal 5 at Chicago O'Hare International Airport, which uses Guardian SunGuard® SNX 62/27 coating on UltraClear® low-iron glass in a large variety of sizes.

"Even in circumstances where we're not using super jumbo as the standard size, it helps us maximize yield and minimize waste because the cutting optimization is better," said Spencer Green, Area Sales Representative, Press Glass.

Guardian Glass super jumbo glass is available with multiple high-performance Guardian SunGuard® coatings on clear and UltraClear™ low-iron substrates, at 6, 8, 10 and 12mm thickness. These coatings allow architects and designers greater flexibility to specify coated glass that meets their performance and aesthetic goals.

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

## VITRO ARCHITECTURAL GLASS

## Launch of Intercept LiteLock™ system

**V**itro Architectural Glass and GED Integrated Solutions, LLC (GED) have announced the launch of Intercept LiteLock™, a new extruder tip and sealant bead application system that provides licensees of Intercept® insulating glass technology with enhanced efficiency, performance and quality improvements.

Intercept LiteLock™ facilitates 30-50% faster processing speeds on GED's Intercept® Oven & Roll Press while creating a wider manufacturing process window. This results in a more consistent, uniform and secure seal between the Intercept® spacer and the glass lite, which maximizes the service life of Intercept® insulating glass units (IGUs) and enhances window makers' operations by offering increased throughput, lower oven and roll press exit temperatures, reduced energy consumption, reduced consumable parts costs, precise sealant application and a smoother, more forgiving application process.

Compared to the standard GED nozzle tip, which applies a rounded sealant bead during the extrusion process onto the Intercept® spacer, the patent-pending Intercept LiteLock™ nozzle tip applies sealant in a unique bead geometry, resulting in robust adhesion to the spacer metal substrate at near-finished bond line width.

"Chief among the many benefits of Intercept LiteLock™ is the high-speed processing power unlocked by this new sealant bead application technology," said William Davis, Senior Technical Services Engineer at Vitro Architectural Glass. "The Intercept LiteLock™ nozzle tip design reduces the amount of required squeeze-out during the roll-pressing process, so Intercept® can run faster and at lower post-heating process temperature, which results in a cooler IGU at the oven and roll press exit conveyor that is near ready for argon filling and fourth corner sealing." In addition to standard double glazed IGUs, the Intercept LiteLock™ system has been rigorously tested with triple glazed IGUs across multiple oven and roll press speeds and temperatures to establish effective processing recommendations that will ensure robust glass and spacer adhesion, including the traditionally difficult to bond center lite.

Residential window manufacturers can upgrade their existing GED SmartExtruder™ i-3 sealant and desiccant application systems to the new Intercept LiteLock™ system with a minimally invasive process.

The Intercept® spacer system, which is constructed in a U-channel design with tin-plated steel or stainless steel rather than traditional box shaped metal or foam, has been fabricated into more than 600 million windows in Europe and North America.

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



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## AGC AUTOMOTIVE BELGIUM

## Plans to restructure

**A**GC Automotive Belgium informed its works council of its intention to carry out a restructuring plan for the Fleurus site in Belgium. A repositioning of the activity is essential to ensure the long-term survival of the site.

For several years now, the European group's windscreen business has been under pressure and has struggled to make profit on this product range. This is the consequence of fierce competition between European glassmakers, accentuated for several years by the arrival of Chinese suppliers in the same geographical area. This pressure is even more reinforced as with the technological evolutions linked to vehicle connectivity, specifications have evolved, and production tools must be able to adapt to them.



At the same time, the automotive market is undergoing profound changes, such as changes in vehicle engines, the growing success of car-sharing systems and the expected advent of autonomous cars. All of this is causing potential buyers to delay their purchase decision, resulting in a widespread decline on the automotive market.

Car manufacturers – AGC's customers – are reacting by merging to form "heavyweights" capable of achieving significant economies of scale, intensifying competition between their suppliers, and ultimately lowering the prices of their components, including glazing. Unfortunately, this price war is often accompanied by strong pressure on the level of quality required, on the one hand to stand out from the other manufacturers, but also on the other hand to have leverage and put additional pres-

sure during consultations for future contracts to be awarded.

The AGC Group is finding it difficult to position itself on enough new vehicle models to ensure a correct level of saturation on all its laminated glass production lines, hence the sharp drop-in activity that has been observed for several years now. This difficult situation has clearly been exacerbated by the COVID-19 crisis, with a drop that economists believe will not be compensated before a period of three to five years.

In this context, the Fleurus plant has so far been unable to obtain any new models for the coming years. Considering that the average development time for a new vehicle is three years, its production level will be around 500,000 units per year, with a forecast drop of around 100,000 units per year from 2023. In other words, if no new impetus is given, the forecast for 2026 is less than 200,000 pieces.

It is therefore essential to find solutions to reduce the factory's production costs, both fixed and variable, to adapt them to the reduction in activity. These savings are essential both to reduce the expected financial losses for the years 2021-2022 and to try to ensure the site's long-term survival by attracting new models and/or new investments.

The Group is therefore forced to initiate a restructuring plan at the Fleurus site. The factory currently employs 188 people and is considering reducing its workforce by 40 people. A social plan, as well as the related support measures, will be examined with the various partners concerned.

[WWW.AGC.COM/EN/](http://WWW.AGC.COM/EN/)

FERRO

## Shareholders approve acquisition by an affiliate of Prince

**F**erro Corporation, a leading global supplier of technology-based functional coatings and colour solutions, announced that its shareholders voted overwhelmingly to approve its acquisition by an affiliate of Prince International Corporation at a special meeting of Ferro shareholders held recently.

Under the terms of the proposed merger, Ferro shareholders will have the right to receive USD 22.00 in cash, without interest and less any applicable withholding taxes, for each share of Ferro common stock that they own immediately prior to the effective time. Upon the terms and subject to the satisfaction or waiver of the conditions set forth in the merger agreement and in accordance with the Ohio General Corporation Law, at the effective time of the merger, PMHC Fortune Merger Sub, Inc., an affiliate of Prince, will merge with and into Ferro, with Ferro continuing as the surviving corporation in the merger and as a direct or indirect wholly owned subsidiary of Prince.

Ferro continues to anticipate that the closing of the merger will occur in the first quarter of 2022 pending antitrust and regulatory approvals, and satisfaction of other customary closing conditions.

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



## Autoclave-free Lamination System for Flat Glass Production

Energy- and cost-efficient inline production of laminated glass

- Fast lamination due to contact heat transfer under vacuum
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[burkle.tech](http://burkle.tech)



RCN SOLUTIONS

## REVA BF: constant quality and assistance

It may be true that lamination with EVA is a very simple job but production must be very accurate. While there is no need for special storage or a clean room, the attention on this delicate product is still a serious matter.

The chemical formula of REVA BF developed by **RCN Solutions** assures high performances in adhesion, transparency and durability.

Based on experience, the company is aware that any slight chemical variation can compromise the performance of the product because the balance of the composition of the elements is an imperative procedure. That does not mean development is not considered or possible, rather it is a crucial matter in RCN's future plans.

But customers' opinion come first, and those who have validated REVA BF in their production and have experienced superb results with the product, fear that any variation could somehow compromise quality output. In this regard, RCN is receiving recommendations to keep REVA BF unchanged, giving constancy to the product, and the company understands the position of the clients' desire for reliable production and is doing



ing its very best to satisfy this matter.

The quality is mainly based on the raw materials: there is no use of recycled EVA in RCN production and the resin, supplied by one of the major international manufacturers, is the key point of the REVA BF.

Granting excellent products is one of the main purposes of RCN Solutions and involves serious quality controls, in addition to care in material mixing and measures to prevent contamination deriving from impurities.

Last but not least, when the choice for a special product is on the table, price helps to identify the quality rate offered by the product, and the cheaper you go the poorer are results and durability. Thus, it is fundamental to consider that top rate interlayers have among their properties, the technical assistance from the manufacturer – a service having added value and making REVA BF a first choice product.

[WWW.RCNSOLUTIONS.IT/EN/HOME-ENGLISH/](http://WWW.RCNSOLUTIONS.IT/EN/HOME-ENGLISH/)

NSG GROUP

## Battery storage system for Pilkington plant in Canada



**NSG Group** is committed to initiatives that reduce energy consumption and carbon (CO<sub>2</sub>) emission by using energy more efficiently and effectively. In line with this objective, NSG Group has partnered with Convergent Energy + Power (Convergent) to provide a battery storage system for its **Pilkington** plant in Collingwood, Ontario, Canada.

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



AGC GLASS EUROPE

## Inauguration of renovated float glass production line

A ribbon ceremony was recently held for the inauguration of the renovated float glass production line in Bor, Russia. This float line was shut down to carry out a cold repair and was upgraded with new technologies improving its performances in terms of safety, environment, energy consumption, productivity and quality – true to **AGC Glass Europe's** commitments.

In presence of numerous guests, partners, local authorities and representatives of the press, the ribbon was cut



by Andrey Sanosyan (Vice-Governor of Nizhny Novgorod region) and Marc Michielsen (Ambassador of Belgium in Russia) – both in the middle of the photo – together with AGC managers.

[WWW.AGC-GLASS.EU/EN](http://WWW.AGC-GLASS.EU/EN)

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LiSEC

## Order intake record broken

**2**021 has been a successful year for LiSEC: for the second time this year, the company has managed to hit a monthly order intake volume of more than EUR 30 million – the second time since the company's founding. With an order intake of

EUR 34.5 million, the global leader in technology for innovative individual and complete solutions in the field of flat glass processing and finishing was able to set a new benchmark in August 2021, celebrating the highest monthly order intake in the company's history.

This success is mainly attributable to recent, highly automated projects carried out by LiSEC in Poland, New Zealand, the USA and Bosnia, and thus the trust that customers in these countries have placed in reliable LiSEC solutions.

The company managed to hit its 2021 order intake target for machinery and software by the end of July. "We are very proud that we have already hit or exceeded all of our order intake targets for fiscal year 2021. Firstly,

I would like to thank our customers for the huge amount of trust they have placed in our solutions and in ourselves as an all.in.one:solutions provider to the flat glass processing industry. Secondly, I would like to thank our sales team in Germany and abroad for their outstanding performance. Our pioneering role in product development, which is years in the making, coupled with our production expertise in the glass industry, which is brought to bear in our sales consultation work, is hugely appreciated by our customers. We can be proud of this," said Christian Krenn, Director of International Sales, commenting on the impressive order intake volume.

Oliver Pichler, CFO, is also proud of this success. "We've managed to break a few of LiSEC's financial records already this year. We are currently heading for a 60% increase in our order intake volume in 2021. In addition to the commercial success, I am particularly pleased that after 2020, the year of the pandemic, our customers' willingness to invest has shot up again, and a growing number of customers are recognizing the benefits of our innovative comprehensive system solutions, such as those we have successfully implemented in New Zealand and Austria in recent months, and are therefore choosing to partner with LiSEC." High-quality machines, innovative software and reliable after-sales service – at LiSEC, customers get everything from a single source. LiSEC's experts will help visitors to find the ideal solutions. "If we are to cement our customers' trust not only in our individual solutions but also in our all.in.one:solutions and keep it that way over the long term, then all of our company's products, services and segments must be seamlessly interlinked. To this end, we have systematically optimized our internal structures over the past few years and will continue to do so," said CEO Gottfried Brunbauer, emphasising how important customer orientation and innovative, integrated comprehensive solutions are to LiSEC.

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



A large industrial machine, the LiSEC TPA, is shown in a factory environment. The machine is primarily white with a prominent red section on the side. It features a safety cage with black metal mesh. The text "best in glass processing" is printed vertically on the white part, and the "LiSEC" logo is on the red part. The machine is designed for processing glass units.

# TPA

## High Speed and High Quality

New standards for the production of insulating glass units with thermoplastic spacers

- Most accurate TPA material application
- Permanent support of all center glasses
- 20% higher output due to vertical lift over



NSG GROUP

## Invisible connectivity thanks to high-tech glass

Imagine a high-tech world that combines the beauty and design possibilities of glass with the complete absence of the wires required for our everyday technology – a vision that has been made possible through a collaboration between **NSG Group** and innovative product design company Cohda.

With a technology that uses transparent conductive coatings to transfer power to any device without the need for wires, Power-Tap, developed by Cohda, is a transparent lamination of non-conductive and conductive glass such as NSG TEC™. The arrangement allows power or data to be transferred across individual layers within the lamination. Pre-machined apertures create taps to the positive and negative charged inner coatings that supply power delivery to embedded devices. These connected devices appear to be freely floating within an optically clear glass panel with no visible means of power connection.

NSG TEC™ is an electrically conductive glass that is suitable for a



wide range of applications, for example in visual displays. Thanks to its high light transmission, durability of the glass coating and the potential for thermal treatment, it is a versatile product. It is perfectly suited for applications with P-Tap technology.

Removing the need for wires offers designers, architects and engineers limitless opportunities for creativity by being able to locate powered devices within transparent structures.

Devices such as USB sockets, induction charging pads, motors, cameras, sensors and digital displays can all be seamlessly integrated.

Early applications include LED lit display cases and shelving units for museums and induction charging 'smart' tables for high-end retail stores. Wider applications, some perhaps yet unimagined, will span a multitude of markets including Architecture, Security, Automotive, Retail and Lighting.

*Photography: Cohda Design Limited*

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

SAFELITE GROUP

## Acquisition of Unique Payless Auto Glass

**Safelite® Group**, the leading vehicle glass services and recalibration company in the USA and owner of Safelite AutoGlass®, announced an agreement to acquire the assets of **Unique Payless Auto Glass** in Fremont, California.

"We're pleased to welcome Unique Payless Auto Glass associates to the Safelite family," said Tom Feeney, president and CEO of Safelite Group. "Open since 2017, their focus on exceptional customer service and treating each other like family nicely align with our mission and values, making this acquisition a terrific addition to our business."

Safelite is known for its excellence with vehicle glass repair, replacement and recalibration services. "This is a fantastic opportunity to utilize the skills and talents of their team while honouring their legacy," continued Feeney. "Together, we will deliver the value of personal care and memorable customer service we provide through the Safelite AutoGlass brand in every community."

Unique Payless Auto Glass will leverage Safelite's excellent operational systems, advanced safety system expertise (recalibrations), world-class distribution network, global purchasing power and strong insurance and commercial relationships.

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



AGC

## Innovative enhanced connectivity glass antenna trialled by Proximus

**P**roximus and AGC have joined forces to demonstrate the efficiency and great performance of WAVEATTOCH, a new glass antenna developed by AGC that not only integrates seamlessly into building facades, but also enables operators to accelerate deployment at low cost thanks to its ease of installation.

Since the new glass antenna is transparent and installed indoors (while delivering outdoor coverage), it blends in perfectly with the surrounding urban environment. This makes WAVEATTOCH the perfect transparent alternative to antennas in city centres to provide enhanced mobile data services at higher speeds and for more people.

The WAVEATTOCH antenna is available for most telecommunication frequencies used in Belgium and can be used with any technology (2G, 3G, 4G, 5G). In addition to WAVEATTOCH, AGC has developed the GIL (Glass Interface Layer) and WAVETHRU technologies, allowing WAVEATTOCH antennas to be being installed on any type of insulating glazed facades and ensuring that EMF emissions are within defined regulatory limits.

Bernard Monville, Head of WAVE Venture, said, "Glass antennas can be installed at lower heights and require less transmission power to cover dense urban areas, enabling Proximus to comply with one of the world's most stringent EMF standards."



Inside view on WAVEATTOCH - Photographer: Tom Vandewiele, Digital Imaging - © AGC Glass Europe



Outside view of WAVEATTOCH - Photographer: Tom Vandewiele, Digital Imaging - © AGC Glass Europe

The glass antenna being tested at the Proximus Tower is a 5G antenna (3.7 GHz, 4x4 MiMo) connected to the Proximus 5G network. It was developed at the AGC research centre in Gosselies, Belgium, a state-of-the-art facility that develops and tests integrated antenna glazing technology (for buildings and cars) designed to meet growing connectivity needs.

Geert Standaert, Chief Technology Officer at Proximus, said, "We will continue our trials with AGC. The potential for urban, dense urban and indoor configurations is promising. We look forward to more rollouts in the future."

[WWW.AGC-GLASS.EU/EN](http://WWW.AGC-GLASS.EU/EN)

## POLFLAM

## Expanding fire-resistant glass size offerings

**P**OLFLAM announced development a new glass product by successfully increasing the maximum height of a single pane of POLFLAM BR glass to 4800 mm.

Large-format POLFLAM BR EI 120 fire-resistant glass pane during the first minutes of testing in the Gryfitlab laboratory – high-precision control of the test furnace parameters (temperature and pressure) allows for an accurate simulation of conditions during a real fire.

This latest glass offering comes with an EI 120 fire-resistance rating, one of the highest for this product size. It has also passed all safety testing protocols in the notified laboratory Gryfitlab. This new line was developed in response to architects' expectations and current market trends.

In doing so, POLFLAM makes a definitive statement: "We are ready to face even the most ambitious production challenges." POLFLAM BR glass is used for fire-resistant structural glazings. The large glass pane surface area does not require any additional structural elements. This allows for better lighting of interior spaces and makes glass partitions aesthetically pleasing. POLFLAM BR glass solutions are a popular choice for the interior design of office, commercial and public utility buildings. POLFLAM manufactures fire-resistant glass both for indoor and outdoor use. The company's products are sold in most markets across the European Union. In the coming months, POLFLAM will open a new factory in Tarczyn, near Warsaw, allowing the company to triple its production capacities.

When exposed to high temperatures, POLFLAM fire-resistant glass changes its structure and appearance, while retaining its shape, this serves as a solid barrier against fire and thermal radiation for over 120 minutes.

[HTTPS://POLFLAM.PL/EN/](https://polflam.pl/en/)







## The only EVA with better properties than PVB

Evalam is the international reference brand of EVA for architectural use, our products are designed and manufactured in our factory in Europe from our formulation.

Evalam Visual offers unique characteristics that make it the only EVA on the market with better properties than PVB, representing perfection and the highest level of reliability in all projects.

Its excellent and incomparable transparency, high adhesion, great sound insulation, and cross-linking not comparable on the market, make it the perfect product. Evalam Visual is the ideal lamination solution in applications where optics and durability are essential requirements.



GLASTON

## Deal for new-generation automotive line closed

**G**laston has closed a deal for an automotive solution for production of large-size bent and tempered sidelites. Glass used in the automotive industry has evolved considerably over the years. Growing environmental awareness and energy efficiency requirements as well as drivers and passengers requirements for a safe and comfortable automotive experience are driving the design of automotive glazing.

"This means new and changing requirements. As the technology leader we see a lot of new as well as additional opportunities. Reflecting the market trends and requirements, and in line with our revised strategy, we will continue to develop automotive heat treatment products to complement our market leading pre-processing products for an integrated offering. In addition, we will focus on selected automotive display applications," said Robert Prange, SVP Automotive and Display at Glaston Corporation.

After a slow start to the year, demand in the Automotive market started to pick up during spring with production starting to recover. As disclosed in Glastons half-year financial report, the more positive outlook was reflected in increased investment activity in the market for new machinery, and good market activity was noted in China, with many new projects. Also, good recovery was recognized in the North American market.

Increased activity has recently been noted also in the EMEA area. In August, Glaston closed a deal for a HTBS line for production of big size bent and tempered sidelites with an existing flat tempering customer that is expanding their production to Automotive.

"With its flexibility and high end-product quality, the HTBS (Horizontal Bending and Tempering System) line enables glass processors to meet all current market requirements. The HTBS relies on Glaston's broad technological expertise in heating and convection technology and enables processing of even more challenging glass types," said Tuomo Nuottimäki, Director for Glaston's Heat Treatment Automotive Business.

The HTBS technology is utilized by world-known original equipment manufacturers (OEM) and automotive replacement glass (ARG) processors that deliver bent and tempered glass in big sizes with superior quality. The line has the capability to process glasses up to size 2400 x 1700 mm and enables the customers to take their automotive offering to a new level.

The order is booked in Glaston's Q3/2021 received orders and the line will be delivered to the customer in June 2022.

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

TECGLASS

## Renewed partnership with Paragon Tempered Glass

**T**he partnership between **Paragon Tempered Glass** and **Tecglass** began in 2017 through *IGE Glass Technologies*, Tecglass' exclusive representative for North America, with the installation of the first VITRO-JET SINGLE PASS EVOLUTION digital line at their Niles, Michigan, USA, facility.

A fully automated digital line providing dizzyingly capacities with a constant printing speed of 9 meters per minute, posi-

tioning Paragon as a reference and pioneer in the USA market betting on Tecglass digital printing systems for high industrial production within the principal glass markets.

Solidity, reliability, high levels of flexibility and high production capacities provided during these three years of operations with Tecglass technology, have made Vitro-Jet Single Pass Evolution a fully consolidated and proven technology, heading to Paragon Tempered Glass to the acquisition of another complete SINGLE PASS EVOLUTION digital line for its facilities at Antwerp, Ohio.

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



## CMS GLASS TECHNOLOGY

## New director



From left: Carlo Propersi and Dario Campagnola

**C**arlo Propersi, CEO of CMS North America, returns to **CMS SpA** as the director for CMS Stone Technology, CMS Glass Technology and CMS Metal Technology Division.

Mr. Propersi said, "I am ready for this new challenge that starts with important growth objectives for the next three years. Although deciding to leave the American branch was not very easy. There is an extraordinary group of people with whom I have worked very well. However, I am very confident because the new CEO of CMS North America, Inc., Mr. Federico Laschet, is an excellent professional with enormous international experience in the machinery and automation sector. He will give an added value to the growth of CMS in the North American market." With this change, Propersi takes the role, which was occupied until now by Mr. Dorian Campagnola, who for personal reasons leaves CMS as a full time employee. Campagnola will remain as an advisor for important strategic projects working directly with Mr. Giovanni Negri, CEO of CMS SpA.

Negri said, "I am extremely convinced that this new team, thanks to the extensive experience in the sector and the strong attitude, will contribute towards innovation and vision. This will allow us to achieve all the challenging objectives we have set for the three-year period 2021- 2023. Together with the whole CMS team."

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

## ŞİŞECAM OTOMOTIV

## Investments in further Softsolution LineScanners

**Ş**işecam, Otomotiv A.S., is one of the leading flat glass manufacturers in Europe and measured by production capacity the fifth largest flat glass producer in the world. Numerous innovations originate from Şişecam, with which the company has left a lasting mark on the development of the flat glass industry in the long term.

The company has relied on LineScanners from **Softsolution**

for many years and has recently invested again in two horizontal LineScanners for the detection of specially applied defect markings. The two LineScanners are each 2900 millimetres wide and were positioned after cutting to check unwashed slices for their defect marks.

Currently, Şişecam operates in the flat glass sector with 10 production facilities in six countries, supplying the construction, furniture, energy and household appliance industries with an ever-expanding range of products.

"Softsolution is proud to supply Sisecam Otomotiv A.S. as a long-term customer with quality assurance systems for defect detection," said Area Sales Manager Jonas Pfannenstill.

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





A+W

## Software for new highly automated PRESSGLASS plant



**P**RESS GLASS, a leading flat glass processor, and **A+W Software**, a leading software provider for the flat glass and window industries, have started cooperating on a project to build a new, highly automated insulated glass production plant in Lithuania.

This project is the culmination of several years of technological dialogue between the companies. PRESS GLASS has made a strategic decision to successively automate its insulated glass plants. An analysis focused on the complexity and effectiveness of software solutions for the glass industry resulted in the formation of a partnership with A+W Software.

From a technical point of view, a systemic approach to dynamic optimization and automation of the cutting area, management of automatic sorters, packaging optimization, and capacity planning all played a key role in this decision.

Another important factor is A+W Software's long-term development strategy, which makes the Polish office a dynamic unit operating on the local market, one that at the same time supports activities in other markets. This enables A+W Software Poland to increase the available resources and develop its employees' skills for various markets that are important to PRESS GLASS.

There was a kick-off meeting in Szczecin in the first half of July with project teams from both companies participating, thus initiating the commencement of this joint project.

Hubert Woźniak, Country Manager A+W Software Poland said, "Although A+W is a global software provider for the flat glass and carpentry industry, with the global nature of our business, we always try to be as local to the customer as possible. It is the development of local organizations that allows us to better understand the challenges our clients face and respond to these in the form of solutions and the functionality of our products. We are very pleased that PRESS GLASS appreciates this fact and that we will have the opportunity to work together on this unique project, which will create one of the most modern factories in the flat glass industry."

"This new factory will provide an opportunity for PRESS GLASS to do detailed benchmarking with regard to productivity, factory yield, etc," added Alfred Cortisse, COO of the EMEA/APAC Business Unit A+W Clarity. "The mixture of concepts and solutions that will contribute to this project will allow us to find the best way into the future of the glass industry."

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

AGC GLASS EUROPE

## Inauguration of renovated float glass line in Řetenice

**A** ribbon ceremony was held in **AGC Glass Europe's** plant in Řetenice, Czech Republic, to inaugurate the renovated float glass line, which was shut down to carry out a cold repair of the furnace and connected utilities.

This float line features the innovative hot oxy-combustion technology, using 100% oxygen as an oxidiser instead of air,

which results in a decrease of melting energy consumption and a reduction of CO<sub>2</sub> and NO<sub>x</sub> emissions. This furnace design is one example of AGC's continuous quest to reduce its environmental impact.

The ribbon was cut by AGC managers, in presence of employees of the plant, the engineering team and overhaul.

[WWW.AGC-GLASS.EU/EN](http://WWW.AGC-GLASS.EU/EN)

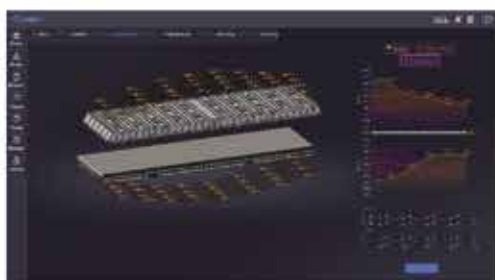


## THE BASE OF GLASS PROCESSING 4.0



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Enabled

### SMART CONTROL SYSTEM



- HUGE DATA BASE, AUTOMATIC RECIPE SETTING, FREE THE OPERATOR
- RECIPE DATA BASE KEEP UPGRADING, HIGHER AND HIGHER TEMPERING FLATNESS, SURFACE PRESSURE EVENNESS, AND OPTICAL QUALITY
- ALL PROCESSING DATA SAVED IN CLOUD, CAN BE TRACED BACK EVEN AFTER GLASS DELIVERED
- DETAILED DATA BASE EASY THE MANAGING REQUIRED DIAGRAM
- WITH THE HELP OF ITEMPER APP, CLIENT CAN EASILY GET ONLINE SUPPORT FROM JINGGLASS PROFESSIONAL TECHNICAL TEAM
- CAN BE UPGRADED FOR BOROSILICATE 4.0 GLASS AND HIGH PRESSURE FIRE RESISTANT GLASS TEMPERING



## GUARDIAN GLASS

## Investments in Goole plant, UK

**G**uardian Glass is investing significantly in its Goole, East Yorkshire, UK float glass production plant to increase the company's ability to supply float glass, primarily to the UK and Ireland, while also improving the plant's energy efficiency.

The cold tank repair, which began in April, 2021, and will be completed in October, will rebuild the furnace with one of the most advanced technologies available, and expand the melting capacity by 20 percent to 825 metric tonnes per day.

"Guardian Glass is investing in the future of commercial and residential building in the UK and Ireland," said Guus Boekhoudt, Executive Vice President, Guardian Glass. "This work assures that Guardian can continue to support the evolving demands of our customers with greater capacity, efficiency and environmental stewardship. It also underscores our Vision to be a preferred partner to our customers, suppliers, employees and communities based on a foundation of mutual benefit."

As one of the world's largest manufacturers of float, coated and fabricated glass products, and the only UK glass manufacturer with building products achieving the bronze Cradle to Cradle Certified™ Products Standard version 3.1, Guardian is committed to our Stewardship Framework. This core principle ensures that we consider environmental, social and corporate governance priorities in our day-to-day operations as we strive to find more efficient uses of resources, continuously improve our products and services and strengthen partnerships with our local communities around the world.

The Goole facility produces a wide range of float, coated and laminated glass products. Almost 100% of the solar control glass produced at the facility supplies projects within the UK.

Enhancements to the Goole facility include:

- A furnace with improved energy efficiency and increased output.
- Enhanced automation to provide more reliable operations and reduce manual tasks. This enables team members to advance their skills by taking on more challenging responsibilities.
- Ongoing initiative to recycle cullet. Increasing the cullet ratio in products cuts energy consumption, reduces raw materials and reduces waste.

"Operations transformation improves efficiency and effectiveness, which boosts productivity and gives Guardian Glass a competitive advantage," explains Goole Plant Manager Chris Duguid. "These changes are critical to demonstrate to our partners that we value them and will continue to support them with industry-leading products and services. We're very proud of the team's execution, especially during this challenging time."

[WWW.GUARDIANGLOSS.COM/EU/EN](http://WWW.GUARDIANGLOSS.COM/EU/EN)





SEDAK

## Bird protection thought big

Large-area glazing on buildings – regardless of how heavily structured it is – brings with it the risk of not being seen by birds. Reflections of trees or particular lighting conditions cause danger for birds as they have only limited spatial vision. Therefore, there are various solutions on the market designed to reduce bird collisions. The basis of the idea is to make the glazing recognizable for birds without having too much negative effect on the view through the glass.

Now **sedak** has managed to achieve optimal collision protection (efficiency: collisions reduced to ten percent) whilst printing less than two percent of the glass area. The glass processing company has thereby achieved two new records: no other bird-protection glass needs so little printed area for its protective effect; at the same time it achieves a higher level of protection (defined according to norm ONR 1040) than the alternative concepts. This has been confirmed by a scientific analysis performed by the internationally recognized institute “Collision Laboratories” (Hohenau-Ringelsdorf / Austria), specialized in bird protection.

The scratch and UV-resistant patterns are put onto the glass using digital printing. When it is further processed into laminated panes, the printing is on the outside (POS1). Thus insulation and safety glass with highly effective bird protection can be created up to a format of 3.60 x 20 meters.

[WWW.SEDAK.COM/EN/](http://WWW.SEDAK.COM/EN/)

TRIULZI

## Positive response from Vitrum

During the recent edition of **Vitrum 2021**, **Triulzi** presented innovative products that attracted numerous visitors. The recent restyling of Triulzi machines, such as the TOSCA-NA model designed for small laboratory glass, features a more compact design, smaller footprint and easier maintenance. Triulzi also presented the CRISTAL MUNDUS model,

equipped with a patented polishing module and decreased noise level achieved across its entire product range, including jumbo vertical washers.

The company is also looking to develop integrated processing solutions, and the interaction with Industry 4.0 is becoming a standard.

In conclusion, Vitrum was an occasion for conviviality and the sharing of ideas, in anticipation of the next meeting which will coincide with an important timeline in Triulzi's history of 70 years of presence on the market.

[HTTPS://TRIULZI.COM/EN/HOME](https://TRIULZI.COM/EN/HOME)



# Developments in technology and software from **INTERMAC** at Vitrum

**T**his year's Vitrum was a special chance for all those involved in the glass sector to meet and speak about what they have been doing over these last two years. Glass-Technology International spoke to Intermac to get an update on products, company life and new developments.

Our first contact was Lanfranco Fontanelli, Glass, Stone and Advanced Materials Sales Director, who spoke about the company's most innovative solutions on show, such as the MASTER 33.5 machining centre, GENIUS COMBY PLUS cutting benches, the BUSETTI F12 double edged grinder, the PRIMUS 402 water-jet technology, and the VERTMAX ONE vertical machining centre integrated with the AQUA vertical washer.

What's more, all Intermac's numerically controlled ma-

During Vitrum 2021, we spoke to three key people of Intermac from three different departments and dealing with three completely different aspects of the company, its work, developments and — last but not least — growth.



chines are now equipped with the company's new IC software.

**Glass-Technology International (GTI):** What has Intermac been working on in these past two years since the last trade show?

*Lanfranco Fontanelli, Glass, Stone and Advanced Materials Sales Director:* Our main focus during this period was regarding the development of software – both for our machines, as well as for production management. We were also working on the product that we launched last year, in 2020, during our in-house event, which was in part digital and in part in direct presence. This product – VERTMAX ONE vertical machining centre was introduced again here at

Vitrum, now integrated with the AQUA vertical washer. Consolidating the integration of various machines, in response to increasing demand from customers for more machine automation – demand caused principally by the pandemic and lockdowns, was also a focus for us.

The benefits of this increased automation also include personnel safety, and the guarantee of maintaining the right distance between machine operators in the production unit.

But our biggest innovation here at Vitrum is our IC software, which is a cad/cam software, and has taken us about two years to develop.

Our aim in the development of IC was to simplify the work of operators as much as possible, and this is now possible thanks to the software's extreme easy of use.

IC is also the perfect response to the ever more complex designs coming from architects, as the software reads the design, identifying if the design regards a table or a shower enclosure, for example, identifying which type of processes need to be carried out: notches, holes or other, finding the right tools for the processes all completely automatically.

**GTI:** So this means that one single operator can carry out all these operations – even from the office and not from the production area?

*Lanfranco Fontanelli:* Yes. The only activities carried



out by the operator near the machine is to 'instruct' the machine to select the glass sheet to be used.

During the development to improve the algorithm behind the IC software, we worked with 19 of our customers, elaborating an incredible number of projects from them: 30,000!

This was necessary to enable the software to be able to identify all aspects automatically.

**GTI:** Can the software also identify if a project is feasible?

*Lanfranco Fontanelli:* Yes, and more. The software automatically applies the feasible machining operations to the drawing, by selecting the most suitable strategies and technologies to perform the job, and highlights any parts of the drawing requiring manual interventions by the user.

Here at Vitrum, we also have

on show a machine from each of our product ranges: cutting tables, Waterjet cutting – which is requested more and more in this period thanks to its ability to carry out special and specific processes requested by today's architects and designers.

Work centres are also seeing continuous and increasing demand, also for the possibility of carrying out special processes. There are in fact, some processes that can only be carried out by a work centre.

Today's work centres can also be vertical, even if there are some processes that can only be carried out on a horizontal work centre such as high precision.

So IC is indicated for horizontal and vertical work centres, and Water Jet technology, which means where a cad-cam is required, and is applied after the glass has been cut, identifying the op-







erations than need to be carried out.

**GTI:** What is the size limit of the glass that can be processed?

*Lanfranco Fontanelli:* This depends on the machine. IC knows which machine is going to be used, and knows the limits that the machine

has in terms of possible machining and/or glass sizes.

*Raphaël Prati, Biesse Group's Chief Marketing & Communications Officer:*

There are, however, two important aspects to bear in mind. The first is what glass makers request and expect, and which concerns what

we generally call logistics – movement and handling of glass inside glassworks. The second is to be able to move daily operations more and more towards intuitive software that can – in some cases – also ‘fill’ the cultural gap that is often present. In fact, glassmakers are sometimes afraid of, which range from NC machines to the more ‘sophisticated’ technology that we develop, while these developments actually make their life much simpler – if the machine manufacturer is able to combine his machines and software in the best way possible.

**GTI:** So how could we actually describe IC software in just a few words – speeding up or facilitating operations?

*Raphaël Prati:* I would say that the word facilitate is the best way of describing the reason to use IC.

Another very important aspect is the interaction between the different machines. So this type of software is therefore aimed at glassmakers with more than one different type of machine – allowing to manage several different machines inside the same glassworks. This is where we can clearly see the facilitation of production operations.

**GTI:** What type/size of glassworks are we speaking about: small, medium ...?

*Gianluca Grianti, Diamut Tooling Division Director:* IC is for glassworks work-

ing on glass for the furniture and building sectors. In any case, in today's market, even the smallest artisan glassmaker is almost obliged to have a work centre and, thanks to the new generations working in companies, are much more open to the use of digital means.

Another reason for being ‘digital’ is that glass now has to be certified and with quality standards responding to the standards of its use.

And, once again, this being digital allows glassmakers to satisfy the needs and demands of architects and designers.

Being able to produce great numbers of glass panels exactly the same with regards to size, finishes and quality is, of course, an important characteristic that glassmakers must have and that IC provides.

This year, Diamut has developed a number of tools in collaboration with Intermac to develop machines and tool which, together, guarantee the quality of finished products and processes for end customers.

Glass is, due to the numerous applications both in building and interior design applications, is tempered to guarantee safety first and foremost, as well as energy savings and integrity of IG units.

These special types of glass must therefore be processed by quality machines and tools, which is exactly what Biesse Group, with Intermac and Diamut, guarantees.



Aesthetic features such as polishing are also important, especially with regards to the glass used for the furniture industry.

**GTI:** During these last two years we have learned different ways of interacting with customers, what is your opinion about this 'new' way of working?

*Gianluca Grianti:* Our products are considered as 'consumables' and for Diamut and Intermac, trade shows are an essential way of contacting, speaking to and interacting with our customers. And being able to attend shows and visit our clients once again is a real positive indication of coming back to normality.

In any case, we are seeing important growth trends and market response, and we have, also carried out developments, without ever stopping. In fact, we are here at Vitrum with our new software, new machines and new tools.



## ACQUISITION OF FORVET COSTRUZIONE MACCHINE SPECIALI S.P.A.

Biesse Group signed the agreement for the acquisition of 100 per cent of the shares of Forvet Costruzione Macchine Speciali S.p.A., a manufacturer of special automated machines for glass machining on 11 October 2021.

This operation, in line with Biesse Group's strategic plan, will increase the product portfolio of glass machining centres, a sector in which the Group has been present since the second half of the 1980s with Intermac brand technologies. Indeed, thanks to the introduction of Forvet S.p.A.'s proprietary technologies, the group strengthens its offer towards the high end of the market by offering highly automated, customised and unique machines and systems.

"This is a strategic acquisition that allows us to complete the range of glass machining centres with complementary industrial solutions that can be perfectly integrated with our technologies, thus offering technologically advanced customers modular lines and automated systems that can guarantee high levels of productivity and flexibility," said Roberto Selci, Biesse Group CEO.

Forvet S.p.A., founded in Volvera, Turin, in 1990, is a unique reference in the market for the production of automated lines that encapsulate a high level of know-how, capable of producing a complete product in a reduced space, including loading, unloading and intra-logistics operations that can be customised according to customer needs.

Biesse Group is multinational leader in technology for processing wood, glass, stone, metal, plastic and composited materials. It designs, manufactures and distributes machines, integrated systems and software for manufacturers of furniture, door/window frames and components for the constructions, ship-building and aerospace industries.

The Group realizes the 85 per cent of the total turnover outside Italy, using 13 premises, 39 subsidiaries, 300 selected dealers. Its customers include some of the most prestigious names in Italian and international design.

Founded in Pesaro in 1969 by Giancarlo Selci, Biesse has been listed in the STAR segment of the Italian Stock Exchange since June 2001. It has almost 4,300 employees distributed globally.

Intermac - Biesse Spa

**INTERMAC**

Via dell'Economia 40  
61122 Pesaro (PU) - Italy  
Tel.: +39-0721-483100  
Fax: +39-0721-482148  
E-mail: sales@intermac.com  
[www.intermac.com](http://www.intermac.com)



# GKT Group invests in a digital future with new software from HEGLA-HANIC

## THE IMPORTANCE OF GOOD SOFTWARE

There are many reasons for the increase in software development, including growing cost pressure, the increasing proportion of complex products and the goals of Industry 4.0. As a result, requirements are

The future of the glass sector is networked and digital. For many years, investments in machine fleets and automation have promised both competitive and quality advantages, but today software is just as important.

"The decision to implement new software is also a question of trust, mutual goals and constructive collaboration," said GKT Managing Director Peter Egg (left), speaking about the collaboration with HEGLA-HANIC and the company's managing director, Dr. Jan Schäpers (right)

continually rising to a higher level. New machine generations with more sensors, high-tech control units and extensive options are not only a consequence of this development: they also contribute to the transformation. With a significantly higher throughput and increasingly common system daisy chaining, process complexity has increased to the point that intelligent, user-friendly and flexible software is necessary for companies that want to produce at full potential.





## OVERARCHING MACHINE OPTIMISATION AND CENTRALISED SOFTWARE SOLUTION

At the beginning of this year, the GKT Group from Brakel in Germany (Eastern Westphalia-Lippe) geared up for the future by expanding its production technology and implementing a new software system. For even greater flexibility, automation and further growth, the company has invested in a double edging and drilling machine, a highly automated float glass cutting system with a break-out system and an insulated glass line. Almost in parallel, the company switched to an

ERP and production planning software from HEGLAHANIC that drives the machines and processing lines according to needs. It optimises individual production steps, automates them in precise synchronisation with the cycle, and monitors and transparently maps them. For the newly implemented

ERP functionality, all processes – such as order entry, work preparation, purchasing, warehouse management and logistics – are centrally pooled and directly accessible.

### HIGHER COMPLEXITY, SHORTER CYCLES

“Every system has its time,” said GKT Manag-

ing Director Peter Egg with conviction. “We were well positioned, our processes functioned properly and we probably could have continued to work with the existing software.”

“However, our experiences in recent years showed that the complexity of incoming orders would continue to increase, as would customers’ desires for shorter delivery times and ultimately, the competitive pressure driving faster and faster cycle times. As a medium-sized provider, we are appreciated for delivering on schedule, for our high quality, broad product spectrum – and for our flexibility,” reported Egg. That is why his project requirements included creating an overarching, company-wide data structure with even greater clarity and transparency in the spirit of integrated corporate management. Simple visualisation of KPIs, along with real-time access to every single order and an overview of the available capacity on the toughened glass furnace or the insulated glass line, were on his shopping list. The goals of



The PPS takes delivery dates, machine capacity and inventory into consideration while optimally compiling orders and forwards them to the relevant production stations as work orders. Here in Cutting, for example, Daniel Bonsch can access the status of each individual process, prioritise workflows and monitor progress in real time.



The level of digitalisation and automation in Production was significantly raised. Marcel Müller, trainee in flat glass technologies, is able to instantly track pending orders and processing progress and, in close coordination with the other departments, can ensure that orders are completed on schedule and with the quality required

maximum cycle time optimisation, process support for automated and semi-automated workflows and optimal dovetailing were defined in partnership with HEGLA-HANIC.

### NETWORKED WORK AREAS WITH INTEGRATED PROCESSES AND DATA

Since the production processes and commercial tasks were migrated to the new system, the individual work areas are now networked even more closely. For example, all orders are first recorded in the ERP

and then broken down into their processing steps by the system.

Warehouse inventories are checked and, if required, a purchase requisition is generated that can be digitally exchanged with one or several suppliers. The PPS takes factors such as delivery dates, machine capacity, inventory and material utilisation into consideration while optimally compiling orders and then forwards them to the relevant production stations as a work order.

“For our production, this means a high level of automation and daisy-chaining

the individual processing steps with short cycle times and a degree of workflow perfection that is impossible to achieve without the corresponding software support,” explained Dr. Jan Schäpers, the managing director of HEGLA-HANIC. The new software also contributes other benefits when it comes to handling complex and precisely timed workflows, and above all, work preparation. Production progress can be tracked and machine capacity can be viewed at any time, and if priorities change, a machine malfunctions or an

urgent order comes in, managers can react immediately. The existing production plan is adjustable based on recommended or free parameters. “In this way, it is possible to ensure a continuous production flow even in the face of unexpected incidents, either manually or through the user-friendly system, across all processing stations,” added Schäpers.

### ACCELERATED PROCESSES THROUGH CENTRALISED DATA MANAGEMENT

“We were able to boost the level of digitalisation and



automation in Production. The status of production orders can be viewed at almost any workstation, which dramatically accelerates our processes and ensures that orders are completed on schedule and with the quality required," said Peter Egg. The master and order data are centrally filed, making them available error-free to Accounting, Production and even Logistics. The processes for recording orders were also simplified. With the integrated CAD module, processing has been automated using saved templates and a customer-specific free form can be either directly drawn or imported as a DXF file.

The position of a hole or mullion can be directly saved in the system and automatically transferred to the production system. The software also has a shipping module that provides digital

added value and direct feedback. As soon as a unit is sent to the shipping department, feedback is sent to the order system, enabling production progress to be tracked transparently and at any time.

To provide integrated support to shipping, HEGLA New Technology developed a tablet app specifically for GKT and its process requirements. It completely digitalises, documents and simplifies the workflows in picking and shipping.

In the new HEGLA-HANIC system, the next (external) digitalisation step has already been completed for GKT. Both customer orders and in-house orders for purchased parts and services can be digitally exchanged between the IT systems.

### RE-EVALUATION OF THE VALUE CHAIN

"The decision to implement new software is also a question of trust, mutual goals

and constructive collaboration," explained Egg. Together, the companies created a vision and were able to implement it in a very short time. The agreed-upon project duration of only seven months was comparatively short. The successful implementation shows all the more how focused the analysis and optimisation of processes and their integration into the software can be, even in a project with such a high level of complexity.

GKT Managing Director Peter Egg designed the timing to support another goal for the well-being of his employees: the project schedule needed to be as compact as possible in order to avoid unnecessary stress for the participants.

The GKT Group in the Eastern Westphalian town of Brakel was founded in 1978 and currently has around 150 employees.

Peter Egg is the second generation to manage the company. The product portfolio includes insulated glass, single-pane safety glass, laminated glass and mullions for insulated glass in a wide variety of designs and combinations. Germany and its immediate neighbours comprise the core sales region of the GKT Group. The Group's customers are window companies, metalworkers, joiners, distributors, interior converters, workshops and private/end customers.



Hegla Gmbh & Co. Kg



Industriestrasse 21  
37688 Beverungen - Germany  
Tel.: 0049-5273-9050  
Fax: 0049-5273-905252  
E-mail: info@hegla.de  
[www.hegla.com](http://www.hegla.com)

HEGLA New Technology developed a tablet app specifically for GKT and its process requirements. It completely digitalises, documents and simplifies the workflows in picking and shipping. Employee Björn Götz uses it for fast access to comprehensive information. He can view all the data he requires and react flexibly





# AYROX calibration laboratory obtains ISO 17025 accreditation

For more than 15 years, Ayrox laboratory in Brussels, Belgium has been performing polarimeter calibrations and testing services for glass and plastic manufacturers, car manufacturers, plastic extruders and many others in the glass and polymers industry.

## HISTORY

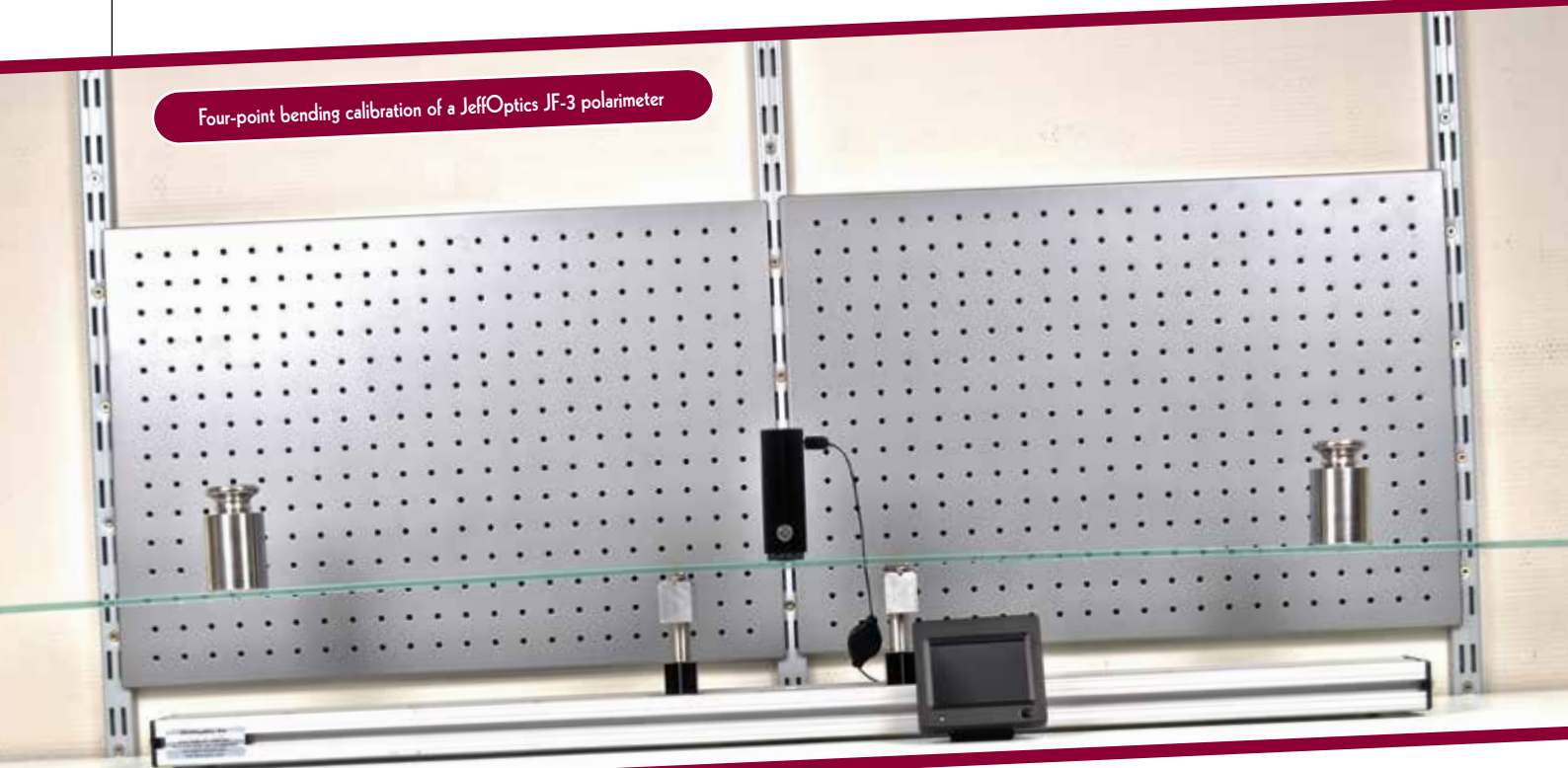
Beginning as a repair, maintenance, and calibration station for

Strainoptics stress measurement instruments for Europe, Ayrox Laboratory has over the years, extend-

ed its calibration scope to all kinds of polarimeters from different manufacturers. "It was a natural deci-

sion to go to the next level and get an internationally recognised status for our laboratory by reaching for ISO 17025 accreditation" says Laboratory Manager Mikko Suomi. "Indeed, the trend in the industry has been going towards the growing importance of quality assurance in companies, such as ISO 9001 and IATF 16949, which naturally also implies using certified service providers. With our accreditation we can provide an even better service to our clients" he adds.

Four-point bending calibration of a JeffOptics JF-3 polarimeter





Four-point bending calibration of a Strainoptics GASP polarimeter

## THE PROCESS OF CALIBRATION

Upon reception at Ayrox calibration laboratory, each instrument is thoroughly examined. In consensus with the customer, it is brought to its best possible condition through cleaning, maintenance, repairs and upgrades if available. "With the ISO accreditation we are now able to offer an additional, more precise calibration procedure allowing a lower instrument uncertainty. Using this new method we are able to determine the constant of any surface stress polarimeter or measure the optical components of a transmissive polarimeter for each used wavelength" says Calibration Specialist Andre Silnov.

## THE IMPORTANCE OF USING CALIBRATED MEASURING INSTRUMENTS

In today's competitive market, every company

strives for the highest quality. Quality can be defined as a set of properties that make something correspond well or poorly to what is expected of it. These properties can be normative requirements based on security, visual requirements, design, durability or energy saving properties to name a few. The only way of determining whether the product meets the requirements is to measure and test. But testing and measuring results are only as trustful as the instrument used.

This is where calibration comes into play. As a calibrated instrument has been verified against known standards and its measurement precision is determined during calibration, a properly calibrated instrument ensures accurate readings.

Most normative requirements impose the use of instruments regularly calibrated according to a calibration plan.

## ISO 17025 ACCREDITED CALIBRATION

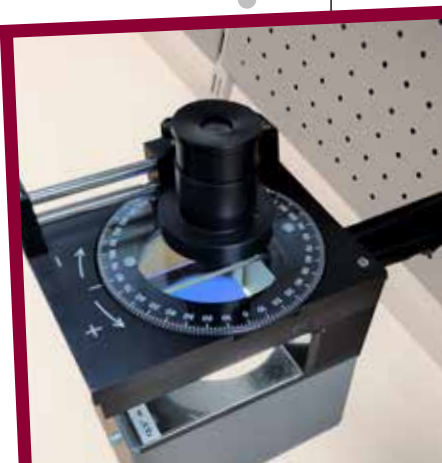
The next level in ensuring and proving the quality of production is to have measurement instruments calibrated by an accredited laboratory.

Accredited laboratories such as Ayrox provide traceability of measurements to the International System of Units (SI). This guarantees comparable measurements worldwide, as all accredited laboratories aim at providing results traceable to SI. In addition to this, accredited calibration laboratories are audited, their calibration methods are validated annually and audited by an official national laboratory accreditation institute ensuring the best methods possible, and their correct execution.

Finally, more and more regulated industries require using ISO 17025 accredited calibration laboratories to ensure high quality calibrations and traceability for their instru-

ments and measurements. This is for example the case for the automotive industry where IATF 16949 requires additional evaluations by the manufacturer if an ISO 17025 accredited calibration laboratory is not used.

Ayrox laboratory specialists do much more than just calibration and testing. Our technicians are available for questions, they regularly provide trainings and advice on current and future quality control possibilities.



Method-B calibration for Sharples S-67

Ayrox SRL



Avenue De Fre 98 Boite 7  
B-1180 Bruxelles - Belgium  
Tel.: 0032-2-3756198  
Fax: 0032-2-3720351  
E-mail: [deals@ayrox.com](mailto:deals@ayrox.com)

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



# Energy Saving Glass (UK): 25 years of high quality IGU, with **FOREL** machinery

Energy Saving Glass Ltd (ESG) is located in Kingswinford (UK). Its core business is IGU production, mainly managed by Forel machinery. The British residential glass market is growing and ESG is ready to take advantage of all opportunities this may bring.

Energy Saving Glass Ltd (ESG) is a glass processing company located in Kingswinford (UK), founded in 1997 by Ken Walker, who, after many years of experience in the glass industry, founded his own company. ESG is now a well-established business, operating from a 30,000 square foot factory producing high quality IGU's.

ESG has grown regularly year by year, and today it supplies both residential and commercial sectors, as well as new build and local authority (government) sectors. IGU production is the core of the company's business and it is mainly managed by Forel machinery, which has been a partner of ESG for a long time.

Forel spoke with Alex Walker, the Director of ESG, about their business, their target and the development of the UK market. "We first met Forel through Promac who introduced us to their machinery," ex-



From the left: Alex, Elliot and Luke Walker (Energy Saving Glass)





Forel Arrissing Machine Art. EG in ESG factory

plained Mr. Walker. “We were looking for a new IGU and we choose their product: we were very satisfied with our investment and since then we have used Forel for most of our large machinery. We have always found their products to be of very good quality and great reliability: we do in fact own two lines for IGU production, a Forel vertical cutting line for laminated

glass Art. VC and an arrissing machine Art. EG.”

**The Forel Arrissing Machine is known for being a very fast solution for edge processing, do you agree?**

Absolutely, yes: with its two operative heads, the double carriage system and the patents for a perfect hold on the glass sheet, the Art. EG can of-

fer high speed and a constant quality of edging that we require. It is also very user-friendly, in fact our staff find it very easy to operate with it.

**How do you evaluate the UK market today? Is it growing, is it stable or is it going down? What could be the next trend be in the glass business? How did the last year of the pandemic affect your activity?**

At present, we find the market in a very healthy state. The demand for I.G.U in the UK is higher than what is being manufactured and I do not believe this will change for the rest of 2021. The only issue that is holding us back is the UK glass shortage, so we are only able to produce the amount of IGU's that we have enough stock glass for. We are finding that all sectors that require IGU

are extremely busy.

The Covid pandemic only affected us when we were forced to stop manufacturing for several weeks, during the first national lockdown. Other than that, it has been busier than ever. I believe people are investing in their own homes because they seem to have more financial availability that they would normally have, but due to the restrictions placed by the government.



Vertical Cutting Line for Laminated Glass by Forel

Forel SpA

**FOREL**

Via per Monastier, 4  
31056 Vallio di Roncade (TV)  
Italy  
Tel.: +39-0422-840507-8  
Fax: +39-0422-840900  
E-mail: [info@forelspa.com](mailto:info@forelspa.com)  
[www.forelspa.com](http://www.forelspa.com)

# Rocalux by TVITEC wins the Innovative Product of the Year Award

The continuous innovation by one of Spain's largest high-performance glass manufacturers, Tvitec has been awarded in the field of sustainable glass. Rocalux by Tvitec, the range of architectural glass that moulds into any natural surface for construction, has won the Innovative Product of the Year Award organised annually by the 'Castilla y León Económica' group.

## A PRESTIGIOUS AWARD

In the 15th edition of the prestigious award, which recognises the best entrepreneurs and companies in the Castilla and León regions of Spain, the jury was convinced by the work presented by Tvitec and the considerable potential it offers for construction.

The official award announcement was: "Tvitec System Glass has developed Rocalux, an innovative textured architectural glass surface that is capable of sustainably reproducing







quartzite, slate, wood or other finishes. Additionally, the innovative product award will provide an important boost, as Tvitec's Communications Director Roberto Arias notes, for the launch of a EUR 60 million investment in a new plant with a surface area of over 100,000 metres. This factory will be responsible for the mass production of the different Rocalux models needed for the national and international markets.

any type of building material. The innovation and digital technology implemented by the company, headed by Javier Prado Ovalle, makes it possible to eliminate the inherent light reflection of glass, to give it an optimal matt appearance for opaque enclosures, among other applications”.

### GLASS THAT REPRODUCES CONSTRUCTION MATERIAL

Through digital printing and by means of an inkjet system and other sophisticated transformation processes, Rocalux can faithfully reproduce any natural construction material finish, especially that of stone and all its derivatives. This minimises the environmental impact generated by the extraction of these resources, while at the same time giving it the advantage of being incorporated into eco-efficient double- and triple-glazing. Rocalux can imitate the appearance of natural stone, marble,

quartzite, and slate, but also wood and terracotta and a range of other building materials – both for exterior and interior design. The Rocalux range by Tvitec can be manufactured in both flat and curved pieces and up to 12 metres.

### IMITATING MARBLE, NATURAL STONE, QUARTZITE, SLATE, WOOD OR OTHER FINISHES

Rocalux range is already used successfully in the development of both building façades and interior

design, imitating any type of marble, natural stone,



Tvitec System Glass



Polígono Industrial el Bayo,  
Parcela 19  
24492 Cubillos del Sil (León)  
Spain  
Tel.: +34-98-7021925  
Fax: +34-98-7021924  
E-mail: comunicacion@tvitec.com  
[www.tvitecglass.com](http://www.tvitecglass.com)



# NEPTUN: Expertise in extreme glass cleaning

## A CHALLENGING PROCESS

Tiny imperfections, even invisible to the naked eye, can significantly compromise the results. At best, the final piece must be rejected at the end of the washing process, regardless of its value. The aggravating circumstance is that faults sometimes appear after several years.

The real challenge of the washing cycle is to maintain the required quality over the entire surface of the glass constant over time.

This quality is often not measured optically but in terms of 'surface tension'.

Glass washing is the beginning and end of every process, such as for IG and solar panels, tempered, silk-screened and printed, laminated glass, etc. In many processes, the quality of washing and drying are crucial elements that define the quality of the final outcome.

Less considered but more complex is the drying cycle. Here the challenge is to obtain perfect drying, at the highest possible speed within

legal limits on noise.

## THE SOLUTION

Neptun had, from the very beginning, a clear idea of the key

role of washing in glass processing and resorted to technology to have a machine performing and reliable for more extreme production processes.





The company's machines can clean both horizontally and vertically, small sized glass from 80x100mm up to sheets of 3.3 x 6 meters and over, and thickness ranging from 0.7mm up to stratified 80mm glass, with a loading capacity of up to 350 kg/meter.

Thanks to a wide range of options, Neptun has created specific solutions for all industries, from solar panels, to high-speed washing for appliances, (up to 20 mtr/min), from ceramic ink and screen printing application, to medical and food industries.

The experience developed in the past years in various sectors for special applications allows us to tackle 'standard' processes, such as lamination, double glazing, architectural and furniture glass washing, very easily.

### THE A-QUAL SYSTEM

In the most advanced versions, Neptun washing ma-

chines ensure constant and precise control of the most advanced versions of Neptun's washing machines, which ensure constant and precise control of the temperature, and purity of the water in terms of the presence of minerals and bacteria.

**The A-qual system** allows automatic control and management of water quality, to achieve and maintain precision up to 5 microsiemens,

while minimizing water consumption. For more sensitive processes, such as in the medical and food sectors, Neptun machines reduce the dangerous proliferation of algae and bacteria with UV lamp filtering systems.

### THE PLC, NEW FEATURES

The powerful PLC, when present, allows to set

the pre-activation times of heating and, with the **Night-care function**, a cycle of emptying, rinsing and filling the tanks while the machine is not running. In this way, operators can find the machine ready, with clean water and at the required temperature, at the beginning of their work shift. As an option, a group of **flowmeters** is available to





signal the status of filters and nozzles, and to clean or replace them in time.

Last but not least, depending on the required washing intensity, the company offers a dedicated sets of brushes with rotation managed by inverters. Washing low-E, triple silver and sandblasted glass are two different worlds.

In the drying area, the **SmartSpeed** function automatically manages the speed to ensure perfect drying, even of the back edge of the glass at maximum washing speed.

In screen printing applications, **ionizing devices** allow to reduce the electrostatic charge and maintain the state of cleanliness when the glass passes from the washing machine to printer downstream.

The patented **Ecosave system** allows to optimize air flows by concentrating them only on the plate surface inside the machine, with considerable energy saving capacity.

The PLC manages all data that can be exported to keep track of process pa-

rameters and diagnostics, with total control of production and costs.

Online assistance is ensured by the Quickservice, implemented via the 'SEVIO Router' remote control module with dedicated IP for maximum security.

### ENVIRONMENTAL SUSTAINABILITY AS A PRIORITY

Neptun technical solutions have always been based on environmental sustainability, i.e. avoiding waste of energy, water, improving the quality of work, while maximizing the production cycle:

1. The automatic management of the water heating cycle, the Ecosave system and the automatic timed shutdown of all machine functions contribute to significant energy savings.
2. The A-quality water quality

control system with solenoid valve connected to the reverse osmosis demineralizer, ensures automatic replacement of the quantity necessary to maintain the pre-set quality, drastically reducing water consumption.

3. The Ecosave system reduces the fan noise by many decibels.

These are just some of the many concrete results of Neptun's daily commitment to create intelligent, flexible and unique solutions.

The Tornado, Wave and LV washing machines are the result of the company's in-depth experience in cleaning glass. Hundreds

of special applications to make 'daily work' easier, more profitable and sustainable, always.

Neptun Srl



neptun  
ADVANCED PROCESSING SYSTEMS

Via Mazzini n. 63 E/F  
22070 Rovello Porro (CO) - Italy  
Tel.: +39-02-96979011  
Fax: +39-02-96754375  
E-mail: [info@neptunglass.com](mailto:info@neptunglass.com)  
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# SPARKLIKE's new devices at Vitrum



distributors in Asia, North America and around Europe.

## Tell us a little about your products?

The Sparklike Handheld™ (formerly known as Gas-glass Handheld) has become the industry standard for non-destructive measurement – and is used by insulating glass manufacturers, window and door manufacturers and testing laboratories worldwide. Sparklike Handheld™ is designed for determining the argon or krypton gas concentration in double glazed units.

The Sparklike Laser Portable™ 2.0 can determine any insulating gas concentration on triple- and double-glazed

Sparklike is the developer of the world's first and only non-destructive gas fill analysers for insulating glass windows and doors. Sparklike devices are based on the company's proprietary and patented technology, which allows insulating glass manufacturers to measure the insulating gas concentration — without having to break the insulating glass unit. Controlling and determining the gas concentration inside the insulating glass units requires effective and reliable tools

to meet the increasing and tightening industry requirements. Sparklike showed its products at Vitrum, where Glass-Technology International spoke to Jukka Manner, CEO, who gave a clear outlook on the company's current situation.

## What has changed in the past two years in your company?

We are expanding greatly, we have a strong growth strategy and we are hiring new people in sales and in production. We have a clear

roster for the next three years and we have new versions of our products. We have many systems running around the world, expanding and getting much bigger.

## Where is the company working?

We are located in Helsinki, where we have our head-quarters and we have a sales representative office in China. We also have 16





Sparklike is one of the Industry leaders in insulating gas measurement with devices that are developed and made in Helsinki, Finland. Since 2000 the company has sold over 2,000 devices worldwide. The devices produced by Sparklike are used daily by world leading insulating glass manufacturers, testing laboratories and window manufacturers.



Sparklike Laser Integrated™ is an automated insulating gas measurement station, which is integrated in the IG production line and has a fixed position, integrated after the gas fill.

Sharing the measuring technology of the Sparklike Laser Portable™ devices, Sparklike Laser Integrated™ enhances quality control to a new level. Insulating glass units are measured automatically after the gas press, and all the results are recorded to its memory with the possibility of being sent back to the IG-line or its ERP-system.

#### **Do the devices work on different types of insulating glasses?**

Yes, the Sparklike device can measure IG units with clear glasses but also special glasses. The Sparklike Lasers were specially developed for measuring gas concentration of double and triple glazed iunits with lamination and different coatings. The type of glass used for buildings depends on the country and market area. For example in the north of Europe, in Scandinavia specifically, it is very common to have triple glazed insulating glasses.



#### **Does the gas between the glass diminish over time or does it stay the same?**

Based on field studies we and our partners have made, we know that low gas concentration in IG units is often a reality. This can be due to low gas fill rate in production stage or gas leakage due to different quality issues. According to DIN EN 1279 part 3 tolerable gas loss is less than one per cent per year. At the moment, there is no regulation on gas filling rate level itself.

#### **We come from very difficult times, what do you think the future looks like for fairs?**

It is likely that trade fairs will not have the same importance anymore; due to covid

we knew that there would not be as many visitors as before at the fair. Fairs like Vitrum are still very useful to get contacts and to grow business so we will keep attending, but I think there will be more online events and presentations. It is different to show the products in real life, but we could still show our products remotely and it could actually be more efficient in terms of time and money.

Sparklike Oy



**Sparklike**

Hermannin Rantatie 12 A 21  
00580 Helsinki - Finland  
E-mail: [sales@sparklike.com](mailto:sales@sparklike.com)  
[www.sparklike.com](http://www.sparklike.com)



# Carey Glass installed second Picasso V2 line from **GCV GLASS MACHINERY**



Picasso V2 line in Chester

In this article, GCV Glass Machinery speaks about the recent installation of a second Picasso V2 260 line at CareyGlass. This installation, along with a further 11 Picasso lines installed since the beginning of Covid, is a clear sign of the validity of the Picasso V2 line.

## THE PICASSO V2

The importance of the installation in Ireland lies in the fact that it is the second Picasso V2 line. The first one was installed in the middle of the health crisis in Chester (UK). Since then, everything has worked perfectly and CareyGlass was sure that they would repeat the purchase.

## INTERVIEW WITH RICHARD CAREY, MANAGER OF CAREYGLASS

"Carey Glass was founded in Ireland in 1965 by my father and his two brothers, who started out fabricating furniture glass and mirrors, moving into manufacturing insulated glass units. Over

the years, the business has grown, and today CareyGlass is one of the leaders in the Structural and Architectural glass market, exporting to the UK, Europe and North America.

*How many factories do you have?*

Richard Carey (RC), Manager of CareyGlass: We have three factories, our headquarters and main factory is in Co. Tipperary, (The Republic of Ireland),

while we opened our second factory in Northern Ireland (UK) in 2006 and the third one in Chester, Wales (UK) in 2015. Regarding size, we are at about 660,000 sq.ft. right now and are currently building a new bay onto our factory in Ireland which will add a further 80,000 sq.ft.

*What kind of machinery do you have here in Nenagh?*

RC: While our factories in Northern Ireland and the UK specialise in offering different product offerings, all our capabilities are under one roof in Nenagh. We have seven tempering furnaces, multiple cutting tables, lamination lines, arripping robots, double glazing, drilling, milling, CNC, digital printer, roller coater, screen printing, heat soaking, curving, and, of course, Picasso V2 260.



Painted glass in Nenagh



Alvaro Crespo, Richard Carey and his father



*Why did you need Picasso V2?*

RC: Picasso V2 is the only paint system in Chester, however here in Nenagh we have all the applications for painted glass. We use Picasso for fully painted glass and partial painting such as frames, due to its speed. When it comes to smaller jobs where multiple colours are used, we must be very flexible and with Picasso we can change the paint colour within two minutes. Obviously quality is key for us and the consistent coat that Picasso applies means we avoid

problems during toughening, with perfect opacity.

*Why did you choose Picasso against other options in the market?*

RC: In order to guarantee that our products are of the highest quality, all machinery is sourced from the most reputable manufacturers. When we visited the GCV factory in Spain, our chief engineer was very impressed with the Picasso. We purchased a Picasso for our plant in the UK in 2020 and we are very happy with its performance. It



Painted glass in Chester



Factory in Nenagh (Ireland)

was therefore the obvious choice when we needed a new line for Nenagh. The key advantage with the Picasso V2 is application quality, as well as the range allowing us to paint up to 2,600mm in width.

We all need to be responsible as regards environmental protection, and the Picasso V2 has a very good paint circuit, which ensures less paint waste, while the dryers only turn on when there is glass coming in; no preheating, no energy wastage and fast drying.

*What do you think about the new V2?*

RC: With this new version, all those advantages are bigger allowing more efficiency and even better production quality. Also the cooling module with brushing allows us to save time cleaning and avoid using gloves. The frame module is very useful and allows us to quickly spray a ceramic frame on the glass.

*Tell us a little about your experience with the Picasso V2 in Chester after more than a year.*

RC: We are very happy with the Picasso V2, it has been a positive addition to our production facility in Chester. The machine is in use daily and is performing extremely well for us.

*What can you tell us about the future of your company?*

RC: CareyGlass is very optimistic about the future. The use of glass in architecture has never been more popular; the Company has come along way over the past 56 years growing from strength to strength by continually pushing the boundaries of what's possible with glass. We will continue to innovate and expand into new product areas and markets in the future through our ethos of investing in the best people, technology and equipment needed to help clients complete projects that both impress and perform. There is no question that, due to the success of this collaboration, it will not be the last one.



**GCV - Grupo  
Crespo Vidrio**

**GCV**  
glassmachinery

C/ Merindad de Sotoscueva,  
13 Nave 9  
09001 Burgos - Spain  
Tel.: 0034-947-297357  
E-mail: info@gcv.glass  
[www.gcv.glass](http://www.gcv.glass)



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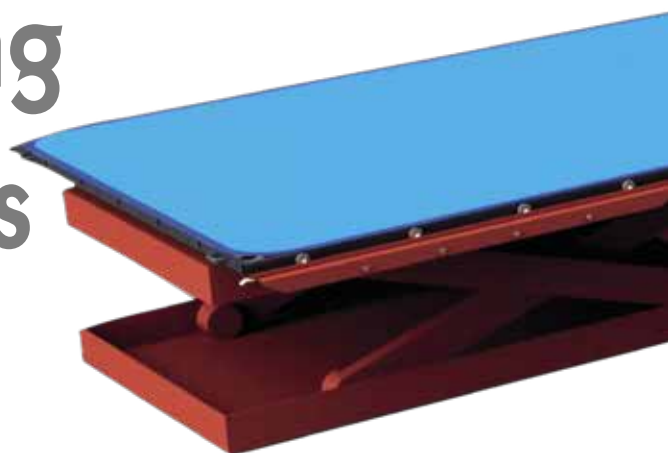
**Company videos**



**glassOnline**

The World's Leading Glass Industry Website

# PUJOL: Responding and meeting changing market demands regarding glass of the future



Founded in 1911, Hornos Industriales Pujol is a fourth generation company that is part of the Pujol Group. Located in Barcelona, with an international scope, the company is now building on its skills and experience regarding EVA lamination carried out with its vacuum processing machines.

All the companies of the Pujol Group enjoy strong international presence. They are represented in more than 100 countries thanks

to the high quality of their products, but also due to the highly qualified experts and specialists who make up the different teams of the group. It is

also the company's extensive network of partners and collaborators, who have helped their products reach every corner of the globe.

In recent years Pujol has developed cutting-edge technological solutions for the laminated glass sector. Pujol's engineering team has created sophisticated laminating furnaces that include the Pujol 100 CO, Pujol 100 PVB +, and Chemical Tempering Furnace.

We met with Joaquin Pujol at Vitrum to speak about its most recent product developments, and also get an idea of the company's future plans.

**Glass-Technology International (GTI):** What is your view on international

fairs and will you participate to any other fairs in the coming months?

*Joaquin Pujol:* We have high expectations that the market will react positively and that owners and customers will participate to the fairs, we are now having a look at the results after Vitrum to make decisions regarding future fairs.

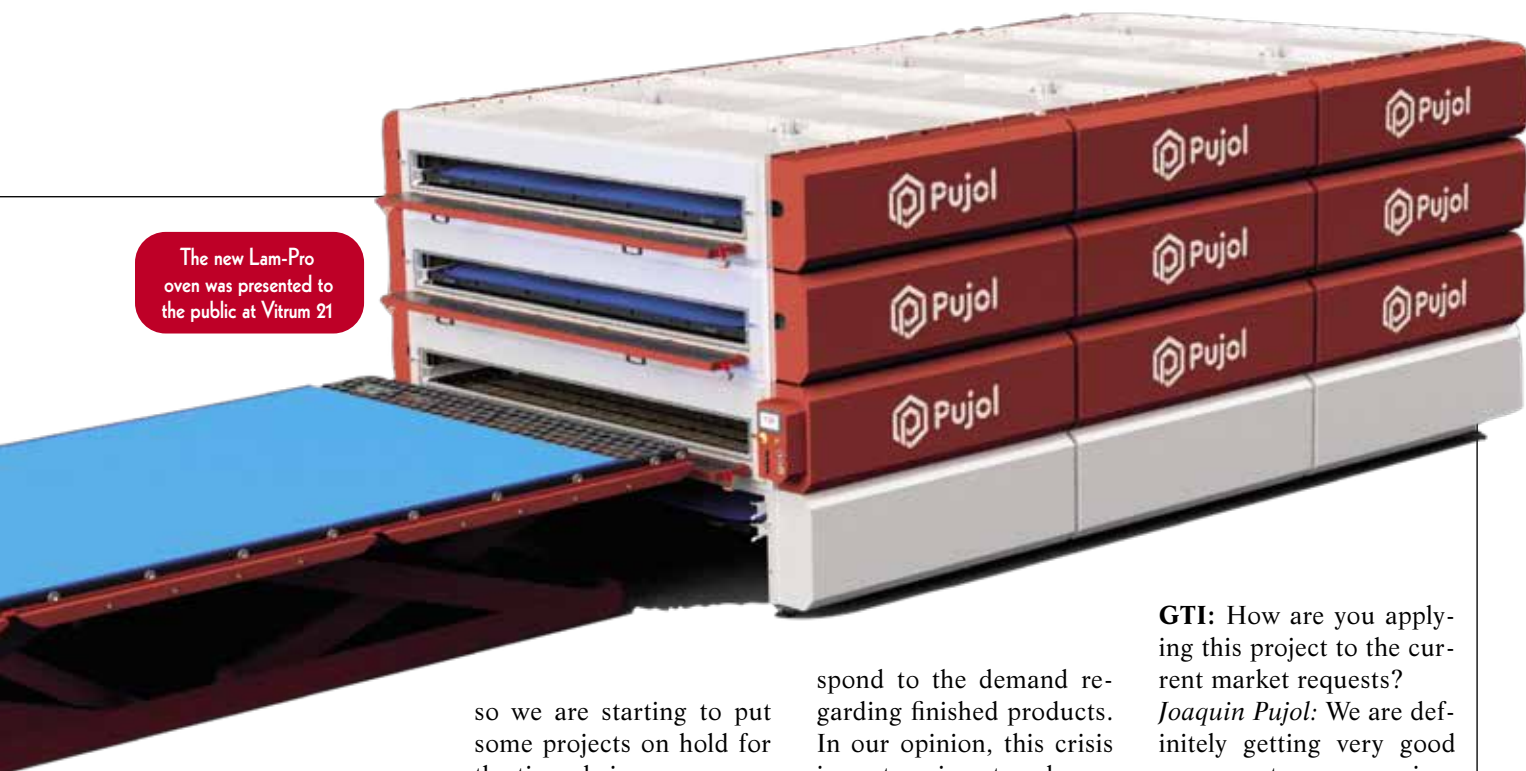
**GTI:** So for you, this edition of Vitrum is like a starting point?

*Joaquin Pujol:* Yes. We also participated in Glass-Build America in Atlanta in September with our US distributor, and the results coming from the show are very positive. Feedback from our customers in the US was also very positive so that's why we are also here at Vitrum.

**GTI:** What are you expecting from this event?



The new Lam-Pro oven was presented to the public at Vitrum 21



*Joaquin Pujol:* I think everything will depend on the market situation in general. We are a bit concerned about what could happen in the coming months regarding raw materials and inflation, just like everybody in the market. Prices are going up and there are shortages of materials,

so we are starting to put some projects on hold for the timer being.

This situation is very strange, because it's not a crisis of demand but a crisis of offer, which means that material prices are going up dramatically and this, in turn, has a direct effect on the market. In Europe, there are no raw materials, and with prices going up, we cannot re-

spond to the demand regarding finished products. In our opinion, this crisis is not going to change in the coming year and, therefore, our move is now to focus on value rather than volume in the next year, providing our customers with quality rather than quantity. This is our challenge and focus for the coming years, achieving the best processing of glass to get the best value.

**GTI:** How are you applying this project to the current market requests?

*Joaquin Pujol:* We are definitely getting very good response to our premium product right now. We have been working very well during the past two years and, during the pandemic, Pujol sold more than 20 premium lines thanks to being a great green solution.

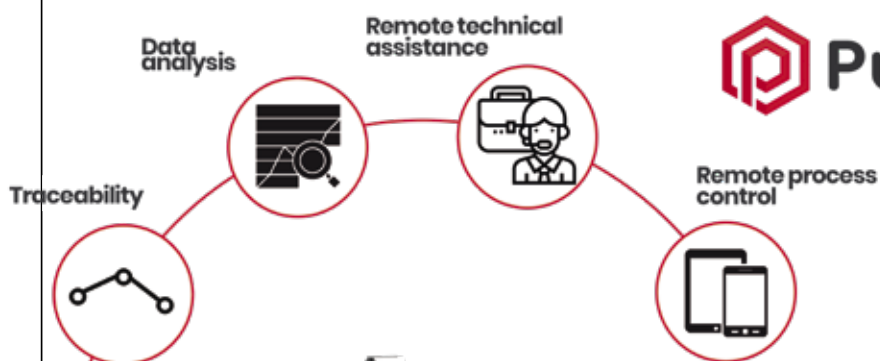
We have also decreased production costs in terms of energy by 80 per cent,

Pujol Group Team at Vitrum'21





## Pujol e-Connect



Pujol e-Connect is the Pujol industry 4.0 solution, integrated as standard in all ovens

which is going to be the key for profitable processing. So firstly, reducing costs and flexibility are a must, we want to be able to have flexible production, which allows to adapt costs to the demand. Flexibility and cost efficiency are going to make the difference. Secondly, we aim to have no limits in products. We must be able to adapt to the market demand.

**GTI:** What could the next market demand be in your opinion?

**Joaquín Pujol:** I think the next market trend will be to integrate connectivity in glass. Interactivity at home will require de-

vices to be connected to the buildings. To integrate electronics to buildings we need to connect to a substrate, which can be steel, aluminium, brick or glass. Glass has the most potential here and this is what we want to work with at Pujol.

So, how can we have connectivity in glass? Through EVA lamination which allows to connect to many different types of electronics. However, because this product is very delicate, it cannot be processed with just any type of machine and this is where Pujol come in with its vacuum processing machines.

When PVB is laminated,

it goes through a roll that applies high pressure, so it is laminated by means of high pressure, which would break any electronics in the laminated area. However, if you add vacuum between the interlayers, this protects the electronics. This is our next step and challenge for the coming years.

**GTI:** When will be your next fair? Are you going to glasstec next year?

**Joaquín Pujol:** Absolutely, if everything goes as it should, we will be attending. We have sensed that the market is ready to meet again and to be present in person and that is also why we are here at

Vitrum. Trade shows are important and even essential meeting points for our industry.

Hornos Industriales  
Pujol S.A.

 **Pujol**

AC. Del Pla, N° 108-110  
Pol. Ind. "El Pla"  
08980 Sant Feliu de Llobregat  
(Barcelona) - Spain  
Tel.: +34-93-6855672  
Fax: +34-93-6855392  
E-mail: hipujol@hornospujol.com  
[www.hornospujol.com](http://www.hornospujol.com)



# Continuous growth with SCHIAVO

With over 30 years of experience in the field of machinery for the glass industry, Schiavo is a leading manufacturer of machinery for washing, lifting and processing flat glass. Over the years the company has constantly invested in research and development, constantly improving the quality, performance and technology of the machinery offered.

With a product range covering vertical and horizontal washing machines, vertical drilling/milling CNC machines, vacuum lifters, manipulators and storage systems, Schiavo's production is 100 per cent Made in northern Italy,

in the province of Milan.

## VERTICAL AND HORIZONTAL WASHING MACHINES

Washing machines represent one

of the main products that the company sells. Vertical washing machines are divided into four series: EASY, TOP, HYDRO and FIRE. Horizontal washing machines are characterized by only one mod-

el, HTL, which assures very high quality and performance.

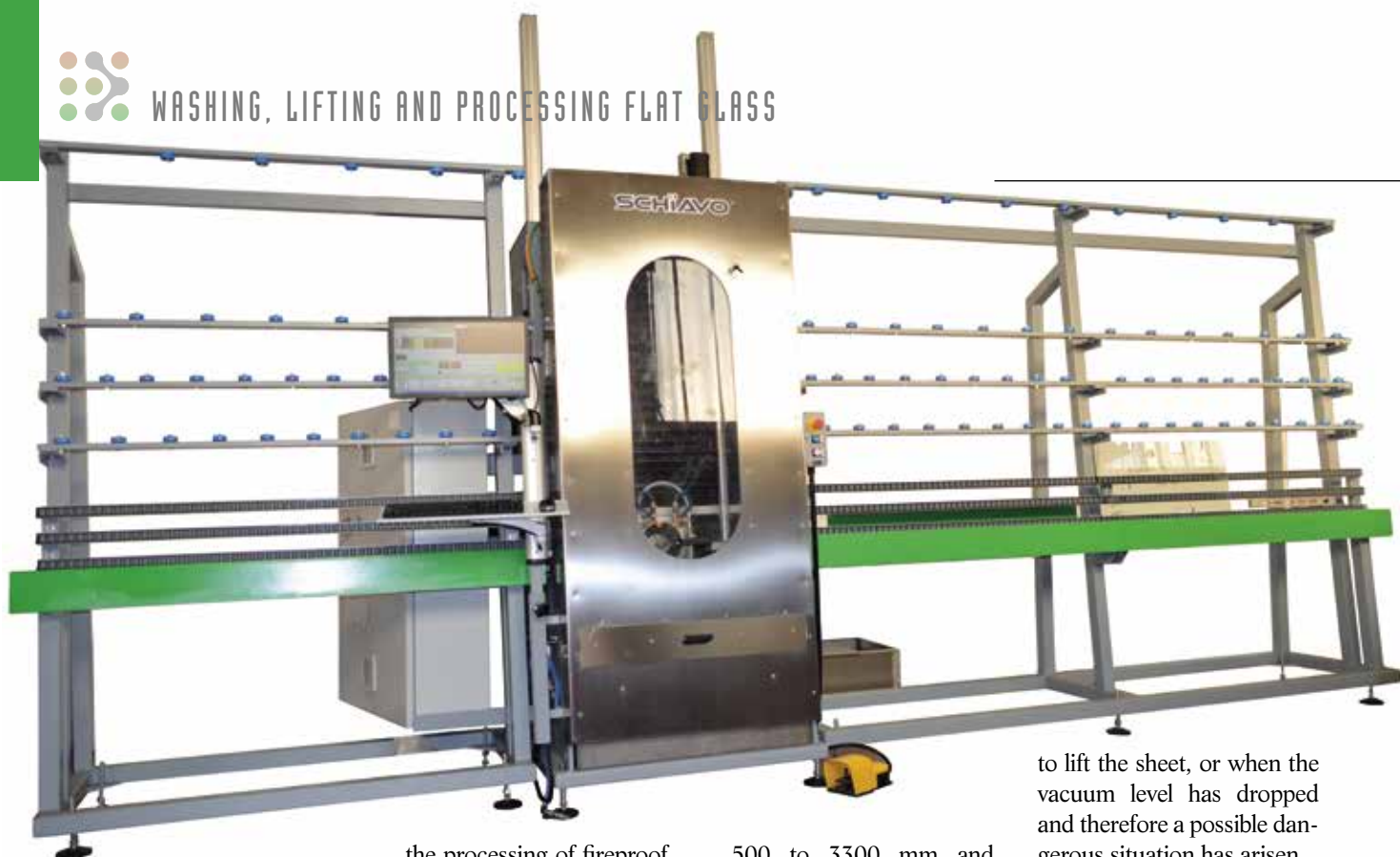
- EASY is the simplest and most cost-effective machine. Available for glass with 1600 and 2000



TOP2600



## WASHING, LIFTING AND PROCESSING FLAT GLASS



mm height. This series represents the solution with the most convenient quality/price ratio.

- TOP is available for glass with 1600 to 3300 mm height and thickness up to 20 mm. The machine is characterized by a sturdy structure, made entirely of stainless steel. The quality of the product is very high.
- HYDRO is the top series of vertical washing machines. It is a robust machine with uncompromising quality. This series was created to be connected in line with other machines and is an Industry 4.0 classified machine. The HYDRO is therefore equipped with remote assistance and machine data exchange. Available for glass with 1600 to 3300 mm height and thickness up to 40 mm.
- FIRE is a specific washing machine made for fireproof glass. During

the processing of fireproof glass, the gel used in the machine must be removed quickly and with a particular washing technology. Schiavo boasts numerous installations of this type of washing machine.

- HTL series washing machines are designed to guarantee high quality and high performance. Extremely reliable, with a robust construction, HTL series washing machines offer superior wash quality with the best technology available. The machine is made to last longer than many other similar machines on the market, thanks to a careful consideration of its features and the particular attention dedicated to detail. Designed to provide the best wash quality either in-line, connected to other machines as double sided grinders or as a stand-alone machine. Available for glass with width from

500 to 3300 mm and thickness up to 40 mm. The HTL model is also classified in Industry 4.0.

### VACUUM LIFTERS DEVICES

Vacuum lifters devices represent the product in which Schiavo has invested the most, in terms of product research and development. Particular attention has been paid to safety, especially when these devices are used on construction sites. Numerous models and optional equipment are available to meet any requirement in the field of lifting glass sheets. Each device is characterized by a strong steel structure, double safety circuit and a double vacuum tank that guarantees the grip of the sheet even in the case of power failure. Moreover, there are acoustic and luminous alarms that warn the operator when a suitable vacuum level has been reached in order to be able

to lift the sheet, or when the vacuum level has dropped and therefore a possible dangerous situation has arisen. Vacuum lifters devices are divided into fixed, manual and motorized devices. The available models have a capacity ranging from 180 to 2000 kg and more on request.

Vacuum lifters devices have been designed specifically for lifting triple jumbo 6000x3300 mm structural glass panels.

### VERTICAL CNC DRILLING / MILLING

The vertical drilling-milling machine model FV1000 is a 4-axis CNC machine. This machine allows each glass factory to perform any type of carving, hole and shapes necessary to install hinges, locks and any type of accessory on glass and glass doors for furniture.

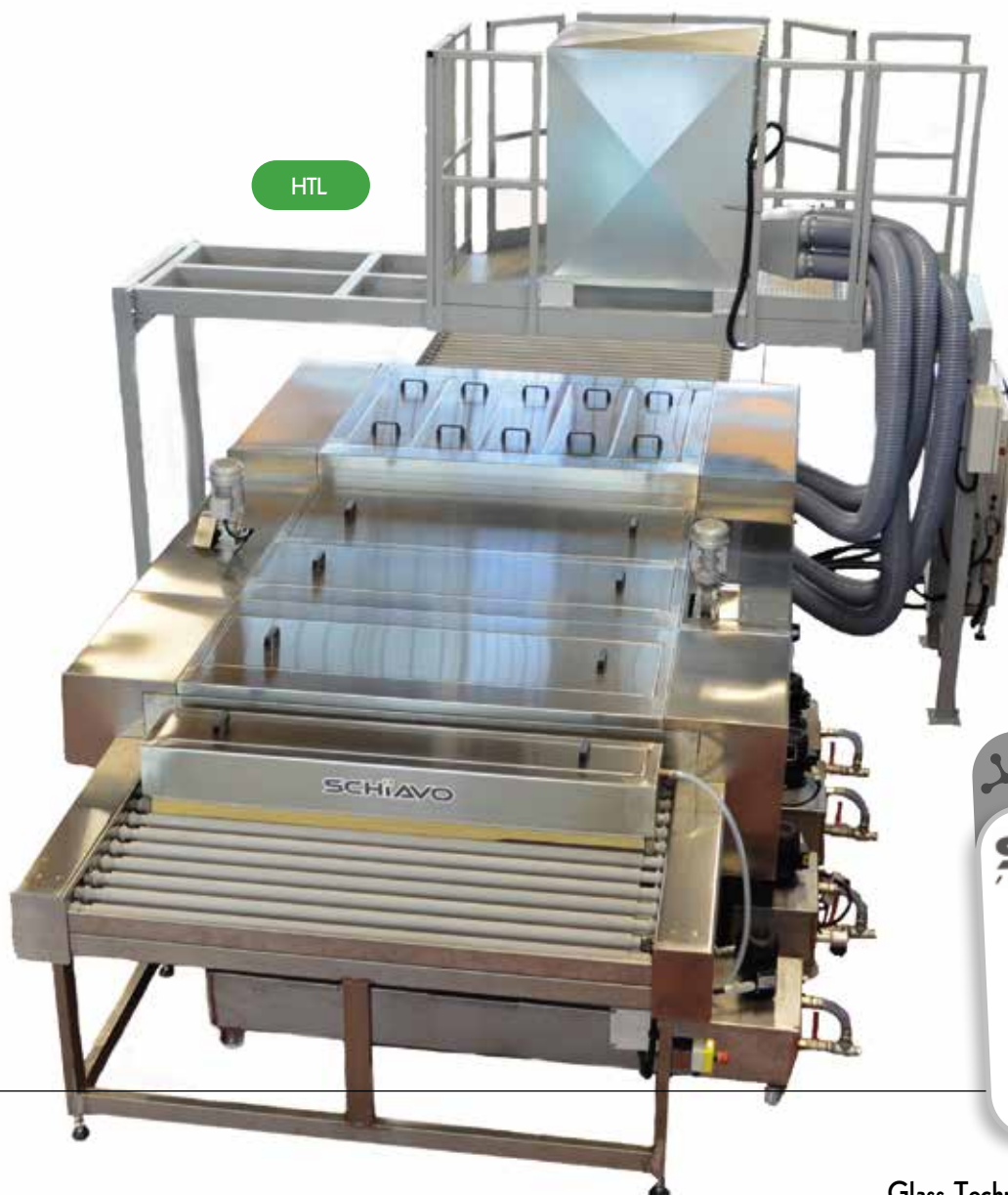
Other possibilities include squares, circles, rounded corners, corner cut-outs, Mickey Mouse silhouettes, "U" shapes and much more. The possibilities are almost endless with the FV series. It has



GEBI VACUUM LIFTER



HTL



a rich built-in shape library and all shapes can be edited and saved as new. Additionally, ISO or DXF files can be imported into the machine from any computer via LAN or Wi-Fi, or via the USB port with a pen drive. The “direct drawing” procedure uses internally stored shapes that can be easily modified by the operator by entering the relative parameters. This operating mode is extremely simple and fast and can be carried out by operators who are not specifically trained.

The FV1000 is equipped with a pneumatic gripper for automatic positioning of the glass. With this accessory, the operator only has to deal with the loading and unloading of the glass. All other operations are managed automatically by the machine making the process much faster. The FV1000 is a machine classified in industry 4.0

Schiavo uses high quality components to ensure long-lasting and energy-efficient machinery and the company aims to produce machines that are simple and reliable.

Schiavo Srl

**SCHIAVO**  
italian technology

Via Cave Ticino, 10  
20020 Robecchetto con  
Induno (MI) - Italy  
Tel.: +39-0331-897904  
Fax: +39-0331-890645  
E-mail: info@schiavotech.it  
[www.schiavotech.it](http://www.schiavotech.it)

# New investments and inauguration of a second furnace in Ankara for ŞİŞECAM

Sisecam, a global player in business lines covering all basic areas of glass is, today, one of the two largest glassware producers and among the five largest glass packaging and flat glass producers in the world. This article takes a look at the recent inauguration of its second furnace at the Ankara Factory, now making it one of Europe's flat glass production bases.



## THE OFFICIAL INAUGURATION OF THE SECOND FURNACE

Şişecam, one of Turkey's most rooted companies with its 86-year history, officially opened its second furnace at the Ankara Factory, which it has turned into one of Europe's flat glass production bases,







with the presence of President Recep Tayyip Erdoğan, Vice President Fuat Oktay, Industry and Technology Minister Mustafa Varank, Agriculture and Forestry Minister Bekir Pakdemirli, National Defense Minister Hulusi Akar, Culture and Tourism Minister Mehmet Nuri Ersoy, Şişecam Chairman of the Board Prof. Dr. Ahmet Kırman.

During the ceremony held with the participation of Ahmet Kırman, Şişecam General Manager Görkem Elverici, Şişecam executives and Şişecam Ankara Factory employees, Prof. Dr. Ahmet Kırman announced that Şişecam will make two new investments in Turkey with a total value of more than TL 4 billion and said, "In line with our goal of meeting the rapidly rising glass demand in our country and creating sustainable value for all our stakeholders, two new floats for architectural and automotive glass. We press the button for line investment. By establishing a brand new facility for the line with a daily capacity of 1200 tons in the field of

architectural glass, we will realize one of the five flat glass investments with the highest capacity in terms of ongoing investments in the world. Our autoglass float line investment with a daily capacity of 750 tons will be the symbol of Şişecam's vision and technological competencies with its special design and high capacity. As a company whose roots were laid to serve the mission of establishing the glass industry in Turkey, we operate in 14 countries and proudly represent our country in the global trade arena. We are proud of the fact that we have been contributing to our country for 86 years with the investments we have made, the locomotive sectors we support the growth of and the employment we provide."

**ONE OF THE  
FIVE FLAT GLASS  
INVESTMENTS  
WITH THE HIGHEST  
CAPACITY AMONG  
ONGOING  
INVESTMENTS IN THE  
WORLD**

In his speech, Ahmet

Kırman gave the following information about the investment plan for architectural glass: "Today, operating on four continents with 43 facilities in 14 countries, and delivering its value-added products to more than 150 countries with its 22 thousand employees, Şişecam aims to add value to our country and its stakeholders with its investments and products. continues unabated. We decided to invest in an architectural glass float line with a daily capacity of 1200 tons in order to meet the rapidly increasing demand for flat glass in our country. For this, we will not only invest in lines. At the same time, we will add a new one to our existing facilities and establish a brand new factory.

With the completion of this green field investment, our float production capacity in our country will increase by 30 per cent and reach 2.6 million tons. Our investment will play an important role in meeting the domestic demand and support the exports of the sectors we

provide inputs, while also reinforcing the strong position of Şişecam, the European leader in flat glass."

**SPECIALLY DESIGNED  
AUTOGLASS FLOAT  
LINE WITH HIGH  
EFFICIENCY AND  
CAPACITY**

Pointing out that the autoglass float line with a daily capacity of 750 tons to be built in Kırklareli is one of the few examples in the world with its high capacity, Ahmet Kırman also spoke about the investment as follows: meters have a net width above the standard. Thanks to this line width, once it is activated, the amount of glass that can be taken from the line will increase without changing the glass drawing speed. The line, which has been specially designed to produce thin glass, will also provide high efficiency in production with this feature. Such an investment is the result of the pioneering vision and technological competencies of Şişecam, the playmaker of its fields of activity. Thanks to the transfer of most of the pro-





duction for automotive raw glass to the new wide float line, our Kırklareli TR1 Float line, which currently produces for auto glass, will be able to produce focused on architectural glasses with higher efficiency. We are planning to carry out and renew the cold repair of our TR1 Float line by increasing its capacity to 1000 tons per day. The fact that the autoglass business line has a float line with a technical

production infrastructure specific to autoglass will directly support the growth of our autoglass business and our automotive refurbishment glass export breakthroughs.”

prof. Dr. Ahmet Kirman stated that Şişecam demonstrated its claim on high capacity, efficiency and competencies while making these two big investments, in terms of the completion time of the investments, and

said, “The average time from the design of a flat glass line to the commissioning is 25-30 months. However, Şişecam aims to complete the automotive raw glass float line in 18 months and the architectural glass float line in 24 months. This is a very ambitious goal. In any case, the realization of such strong goals and challenging projects is only possible within Şişecam’s capabilities.

### MOVING TOWARDS THE GOAL OF BECOMING ONE OF THE THREE LARGEST GLOBAL GLASSMAKERS

Prof. dr. Ahmet Kirman drew attention to Şişecam’s strong position in the world glass and chemicals leagues and said: “Today, we are the second largest glassware producer in the world in terms of our production capacities. We are one of the five largest manufacturers in the fields of flat glass and glass packaging. In addition to being the eighth largest soda producer in the world, we are also the world leader in chromium chemicals. As Şişecam progresses in line with its goal of becoming one of the world’s top three manufacturers in its main fields of activity, we are proud to represent our country in a wide geography. We operate in many different business lines in our country, from flat

## ŞİŞECAM

Şişecam, one of the most established companies in Turkey, is a global player in business lines covering all basic areas of glass such as flat glass, glassware, glass packaging and glass fiber, as well as soda and chromium compounds. Today, Şişecam is among the two largest glassware producers and among the five largest glass packaging and flat glass producers in the world, as well as being the world’s eighth largest soda producer, as well as the world leader in chromium chemicals.

Taking a leading role in flat glass, glassware, glass packaging, chemicals, automotive, glass fiber, mining, energy and recycling business lines, Şişecam operates in Germany, Italy, Bulgaria, Romania, Slovakia, Hungary, Bosnia-Herzegovina, It carries out its production activities in the Russian Federation, Georgia, Ukraine, Egypt, India and the USA.

Şişecam continues on its way with the goal of becoming one of the three largest manufacturers in the world in its main fields of activity, as an international company with its 85 years of experience, 22 thousand employees, production activities spanning 14 countries on four continents and sales in more than 150 countries.



glass to glassware, from automotive glass to glass packaging, from glass fiber to glass recycling, from mining to soda and chrome chemicals production.”

### FIVE YEARS OF CONTINUOUS INVESTMENTS

Stating that Şişecam, the founder of the Turkish glass industry, will continue uninterrupted with investments that will create sustainable value for all its

stakeholders and support the growth and exports of the industries to which it provides input. Dr. Ahmet Kirman said: “Despite the uncertainty and extraordinary conditions created by the global epidemic in the last period, we continued our investments without interruption, within the scope of our priority to meet the glass demand of our country and to create value for its economy. By prioritizing the demand in the domestic market, we significantly reduced our exports and offered 90 per cent of our flat glass production to the domestic market. We completed the cold repair of our 240 thousand-ton capacity furnace in Yeni ehir, renewed and fired it with an investment of TL 400 million. Adopting the same approach in the coming period, We will continue to invest in our country and create sustainable value for our stakeholders, while expand-

ing our company’s global footprint with moves in the right areas. The amount of cold repair, adaptation with technology and new investments we have made in our country in the last five years is close to TL 10 billion. In the coming years, we will have new investments in our country, as well as regular investments of at least TL 1 billion per year for the adaptation of our existing facilities with the developing technology and cold repair processes. I would like to express that we are continuing our efforts to give good news of billions of lira new investments to our country in the next two years.”

### POLATLI BECOMES ONE OF THE LARGEST FLAT GLASS BASES IN EUROPE

With regards to the second furnace investment of the Ankara Factory, which was officially opened, prof. Dr. Ahmet Kirman said: “The second furnace with an annual capacity of 240 thousand tons, which we made in our Ankara Factory, which we can officially open today due to the global epidemic, is our most up-to-date and new investment that we have realized in our country. Şişecam has made Polatlı one of the largest flat glass bases in Europe with the commissioning of its second furnace investment. Our Ankara factory, whose annual production capacity

has reached 540 thousand tons, has enabled the number of flat glass furnaces in our country to reach eight, and our global flat glass production capacity to reach 3.5 million tons per year. With our new investment, the total number of employees we employ in Polatlı has exceeded 300. Glass environment, climate, It is a strategically important material that produces solutions to the most critical global issues such as energy and health and shapes the future. The world is preparing to celebrate the World Year of Glass in 2022, with the purpose of emphasizing the strategic importance of glass, which has entered every aspect of our lives today, with the decision of the United Nations. We believe in the future of glass, which has a history of 5,000 years, and we are constantly working to strengthen our leading role in this development journey.”



Şişecam / Türkiye  
Sise ve Cam Fabrikaları



İcmeler Mah. D-100  
Karayolu Cad. No. 44a  
34947 Tuzla - İstanbul - Turkey  
Tel.: 0090-850-2065050  
Fax: 0090-850-2084040  
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# FILTRAGLASS AND CLIMADRAGO:

## A successful partnership

### THE FILTRAGLASS DG.356 SYSTEM INSTALLED AT CLIMADRAGO

One of the most recent systems installed by Filtraglass was a DG.365 water purification machine at Climadrago, a company with over two generations of experience in its sector, specialising in the treatment of flat glass. Filtraglass spoke to Climadrago's director, Juan Felix, who explained just how important Filtraglass systems are to his company and the benefits they bring them.



**Why did you choose Filtraglass systems over others?**  
For Climadrago, treating the water we use for the glass is essential, which is why we conducted a study on the different systems available on the market.

Filtraglass has more than 15 years of experience in the glass sector, specialising in the manufacture of water filtration systems for all types of glass industries. Throughout its long history, the company has become an international market leader, breaking new ground and exporting its systems to several different countries. Today, its water filtration systems can be found in the Americas, Europe and Asia.







Although other very comprehensive equipment is available, we believed that Filtraglass systems best suited our needs and offered the most guarantees to achieve optimal results.

#### **Why did you decide to buy a purification machine?**

We bought a water filtration machine to improve the quality of our products, something that is very important to us. Also we wanted to improve our efficiency, because having a filtration system reduces waiting times and therefore makes daily processes more efficient.

#### **Have you experienced an increase in productivity since installing the machine?**

Definitely. Installing the system has given us peace of

mind, knowing that we are doing the right thing; in fact, we know that the water that touches our glass is properly filtered and free from potentially damaging impurities. On the other hand, the guarantee of obtaining an optimum level of product quality is very important for us, as it means our final customers are satisfied.

#### **How often do you change the water?**

We never change the water completely. We carry out daily checks of the water levels in the tank and add water from time to time to replace the water that evaporates or is lost while the machine is in operation. We replenish more or less, according to how long it has been operative. We no longer face issues

related to a lack of water or overheating, since the water is always kept at room temperature.

#### **Did you notice a big change in water consumption?**

At Climadrago we are aware that water is our main asset both at a business level and in terms of society as a whole. For many years, we believed that water was unlimited, but we realised that nothing could be further from the truth. Since we installed the Filtraglass system, we have reduced our consumption; our DG.365 has given us significant savings in water consumption and the most important thing is that it works with a simple filtration process, which we appreciate greatly.

#### **Which machines do you use Filtraglass systems for?**

At Climadrago we work with the DG.365, which we have connected to four machines: two straight-line edging machines, a beveling machine and a vertical panel saw. Not all our machines work at the same time, instead they take over from one another. For this reason, when installing the water recycling system, Filtraglass customised and optimised it for our specific glass-handling machine set up.

Climadrago is one of the many companies in the world that already rely on Filtraglass systems, appreciating all their benefits,



such as savings in water consumption, reductions in production line stoppages, extended service life for machinery and components, higher productivity, less environmental pollution, no clogging of pipes, reductions in coolant consumption and, finally, and very importantly, an improved final product.

**Filtraglass SL**

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WATER TREATMENT FOR GRINDING TECHNOLOGY

Carrer Riu Fluvià, 19, 17469,  
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Tel.: 0034-972-505815  
Mobile: 0034-623-269878  
E-mail: info@filtraglass.com  
[www.filtraglass.com](http://www.filtraglass.com)

# BOVONE provides processors with important advantages with new, fully automatic grinding machines





At this year's Vitrum, Bovone had on show the new ELB Fully Automatic grinding machine, which, thanks to its high level of automation, provides the glass industry with important advantages.

Over the past two years, Bovone's R&D department has continued to develop the automation content of its straight-line edging machines. The company is always very careful to tune its technological offer to the real needs of the various reference markets. The new Fully Automatic series of Bovone grinders meets the needs of the glass industry that requires high productivity rates while maintaining constant the quality of the finished product.

### SIGNIFICANT IMPROVEMENTS

At Vitrum 2021, Bovone previewed the new ELB 11/45 FA, with this model representing the important achievements in terms of process automation achieved by the company. Bovone FA edgers provide significant improvements with regards to three main aspects.

### AUTOMATIC COMPENSATION OF WHEEL WEAR

No manual management of the grinding wheel increase necessary to compensate

for wear during processing. The machine spindles are positioned on motorized slides managed by the automatic system that compensates for the reduction in height thanks to powerful software equipped with an intuitive and easy-to-use HMI. The automatic adjustment of grinding wheel position can take place through three distinct modes based on the linear meters of glass processed, on the absorption level of the spindles, or on the combination of these two parameters.

### WHEEL CHANGE ALERT

Changing the wheels at the appropriate time is essential to make the most of the tool, obtaining and maintaining the high quality level of finishing. When the wheel reaches the end of its life cycle, an acoustic and visual system warns the operator that the wheel needs replacing. This innovation allows to continue production without interruptions to verify any advanced state of wear of the grinding wheel that could affect the quality level of processing. This operation no longer



depends on the experience and skills of the operator, and is now determined by the machine which signals to the operator the exact moment in which the tool is approaching the end of its life and therefore needs to be replaced.

### HIGH-SPEED WHEEL SET-UP

Machine wheel change is easier and faster. Alerted by the machine signaling system, the operator starts wheel change operations from the screen: the spindle lowers automatically, leaving the operator the space to replace the wheel with ease. Once the operation is complete, the grinding wheel positions itself at the correct quota in a completely automatic way, allowing the operator to start production again in drastically shorter times than with the same procedure previously carried out manually.

Always with a view to improving machine set-up procedures, Bovone has in-

tegrated the supplied software with recipes that can be recalled by the operator in a simple and intuitive way, in order to quickly start the production of the various batches while maintaining the production parameters constant. In this way, the quality outcome of production is independent from the skills and experience of the individual operator.

The whole FA series of ELB edging machines can be integrated into Bovone fully automated Robotic Systems, specifically designed for processing large glass sheets.

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GLASS CUTTING AND SMART STORAGE

# Specialization in glass cutting and storage with **TUROMAS** at Vitrum

Glass-Technology International spoke to Turomas during Vitrum to get more information about the company's 'extra-large' cutting tables — such as the most recent one for Crisursa. Turomas' CEO Antonio Ortega also gave us some background information about the company's products, history and, of course, future.

**G** **LASS-TECHNOLOGY INTERNATIONAL (GTI):**

Tell us a little about Turomas, its background and future mission.

*Antonio Ortega, CEO at Turomas:* Turomas is a Spanish company that manufactures machinery for the

flat glass industry — especially with regards to glass cutting and smart storage.

We are present in over 100 countries with our distribution network, and we are based in a small town with just over 600 inhabitants, where we are developing our technology and products.

The company was founded about 40 years ago when the President of the company Miguel Tomas realized that the glass cutting sector, with activities carried out entirely manually at that time, needed to develop machines to cut the glass sheets. The machines and their development at that time was

not an easy task, but, as we say: practice makes perfect, and thanks to our continuous R&D and hard work, here we are!

Right now Turomas has 90 employees, and what's more, we are actually in a better situation as far as growth and development are concerned compared to the period before the pandemic — with increases in our business.

**GTI:** Which market areas are you working with right now?

*Ortega, Turomas:* Spain, of course, and Portugal, and our main markets are Latin American markets such as Chile, Brazil, Mexico, as





well as the United States. We are now starting to work with some Middle East countries, Europe and even Australia.

An area which is quite a difficult market is Asia and China. The reasons behind this are mainly the language, distance and the costs involved to import our machines. This does not, however, mean that we will never work in this area. We are open to collaboration with all countries and areas of the world!

We have also started working with the UK, but it's quite a difficult market, especially now after Brexit too.

**GTI:** What has Tuomas been working on in these past two years?

*Ortega, Tuomas:* These past two years have been a great challenge for us at Tuomas, just as for other companies of all sectors. The main difficulties in carrying out our work was installation of our machines, as well as collaboration at our customers' sites.

We have been working remotely as much as we

could, and our main focus has been on new developments. So R&D has been the key aspect of our strategy in this period.

The top-notch development in this period is the brand new RUBI 406 VA, which is a float glass cutting machine, and the only one in the market capable of loading and cutting jumbo glass sheets without any need for other machines.

Another important development is our improved low-E deletion system, with highly improved results compared to the previous system.

These are the two main innovations that we have been

working on in this period.

We also developed some important projects, such as the first 18-metre glass cutting line in the world, which is now up and running at Cricursa. We had already developed an 12-meter line for this same customer four years ago.

**GTI:** What about software? Do you also provide the software for these machines?

*Ortega, Tuomas:* Yes, of course, our IT team has developed a new suite and we are now offering this more advanced software with value-added data. This development completes our whole range of products.

**GTI:** How do we now proceed and move forward – what are your future plans?

*Ortega, Tuomas:* Well, I think that here at Tuomas we are used to dealing with different and fast evolving technology,

innovations and changes.

So I'm pretty sure that we will be able to respond to the market and overcome any challenges that we will have to face. Direct contact with customers and the sector is an essential part of our work, and being present at trade fairs and shows is how we do it. Being here at Vitrum is important to get an idea of what is happening, and we are, in fact, having a lot of contacts and meetings here. So if everything goes according to plan and continues this way, we will all be present at glasstec next year.

**Tuomas**

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OUR PASSION. YOUR PROGRESS

Carretera Estación Km. 15, 8  
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ECOL  
**Forel**  
**Glass Company**  
**Glaston Group**  
Hiseng Glass Machinery  
IOCCO Group  
**Lisec Group**  
Neptun  
Schiavo  
SGM - Special Glass Machinery  
Si.Ste  
Triulzi

## VERTICAL WASHING MACHINES

Adelio Lattuada  
Ashton Industrial Sales  
Bavelloni  
**Best Makina**  
Di Gregorio  
ECOL  
**Forel**  
**Glass Company**  
**Glaston Group**



Hiseng Glass Machinery  
IOCCO Group  
**Lisec Group**  
Neptun  
Schiavo  
SGM - Special Glass Machinery  
**North Glass Technology**  
Si.Ste  
S.T. Group  
Stefiglass  
Triulzi

## WASHING MACHINES FOR AUTOMOTIVE GLASS

**Bando Kiko**  
ECOL  
**Glaston Group**  
IOCCO Group  
Triulzi

## WASHING PURIFICATION SYSTEMS

Dieffe Macchine  
**Forel**  
**Glass Company**  
**Glaston Group**  
IOCCO Group  
Schiavo

## LIQUID WASHING CONCENTRATES

Schiavo

## ACCESSORIES

**Helios Quartz**  
Idrotecnica  
Schiavo  
S.T. Group

## Mirror production

## COMPLETE PLANTS & CONVEYORS FOR MIRROR PRODUCTION

Bovone Elett.  
IOCCO Group  
Triulzi

## PAINTING EQUIPMENT

Fenzi  
IOCCO Group  
Triulzi

## DRYING OVENS

Bovone Elett.  
CMS

## AUTOMOTIVE MIRROR BENDING FURNACES

Bovone Elett.

## MANUAL SILVER- SPRAYING EQUIPMENT

Fenzi  
**Glass Company**

## PAINTS AND CHEMICAL PRODUCTS

Fenzi

## ACCESSORIES

Fenzi  
**Helios Quartz**

## Insulating glass

## COMPLETE INSULATING GLASS LINES

Ashton Industrial Sales  
Bavelloni  
**Best Makina**  
Di Gregorio  
**Forel**  
**Glass Company**  
**Glaston Group**  
Neptun  
Schiavo  
SGM - Special Glass Machinery  
S.T. Group  
Thermoseal Group  
Triulzi

## AUTOMATIC SEALING LINES

Bavelloni  
**Forel**  
**Glaston Group**  
**Lisec Group**  
S.T. Group

## AUTOMATIC SPACER BENDING MACHINES

Bavelloni  
**Best Makina**  
Fenzi  
**Forel**  
**Glaston Group**  
IOCCO Group  
**Lisec Group**  
Schiavo  
S.T. Group  
Thermoseal Group

## DESICCANT SALT FILLING MACHINES

Ashton Industrial Sales  
Bavelloni  
**Best Makina**  
Di Gregorio  
Fenzi

## **Forel** **Glaston Group** **Lisec Group**

Neptun  
Schiavo  
Stefani  
S.T. Group  
Tecno Glass  
Thermoseal Group  
Triulzi

## SPACER CUTTING SAWS

Ashton Industrial Sales  
Bavelloni  
**Best Makina**  
Di Gregorio  
Fenzi  
**Forel**  
**Lisec Group**  
Neptun  
Schiavo  
S.T. Group  
Tecno Glass  
Thermoseal Group

## BUTYL EXTRUDERS

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

## HOT-MELT EXTRUDERS

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

## POLYURETHANE EXTRUDERS

Bavelloni  
**Best Makina**  
Fenzi  
**Forel**

## **Glaston Group** **Lisec Group**

Schiavo  
S.T. Group  
Tecno Glass

## POLYURETHANE ENCAPSULATION

**Glaston Group**  
**Lisec Group**  
Schiavo

## SILICONE EXTRUDERS

**Best Makina**  
Di Gregorio  
Fenzi  
**Forel**  
**Glaston Group**  
**Lisec Group**  
Schiavo  
S.T. Group  
Tecno Glass  
Triulzi

## POLYSULPHIDE SEALANT EXTRUDERS

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

## GAS FILLING EQUIPMENT

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

## DESICCANT SALTS

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

## SPACERS/PROFILES

Ashton Industrial Sales  
Edgetech Europe  
Fenzi  
Schiavo  
S.T. Group  
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  
S.T. Group  
Triulzi

## Tempering

### TEMPERING FURNACES (ARCHITECTURAL GLASS)

**Glass Company**  
Glasstech Inc.  
**Glaston Group**  
**Hornos Industriales Pujol**

## Jinglass

**Keraglass**  
Landglass Technology  
Lema

## Lisec Group

Mappi International  
Schiavo

## North Glass Technology

Tekno Kilns  
Texpack

### TEMPERING FURNACES (AUTOMOTIVE GLASS)

#### Glass Company

Glasstech Inc.

#### Glaston Group

#### Jinglass

#### Keraglass

Landglass Technology  
Mappi International  
Mazzaroppi Engineering  
Satinal Spa  
SGLASS

#### North Glass Technology

Taifin  
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 Spa  
SGLASS  
Taifin  
Tekno Kilns  
Torgauer Maschinenbau

## Bending

### BENDING FURNACES (ARCHITECTURAL GLASS)

**Hornos Industriales Pujol**  
**Jinglass**

## Keraglass

Mappi International  
Mazzaroppi Engineering  
R.C.N. Solutions  
SGLASS  
Tekno Kilns  
Texpack

### BENDING FURNACES (AUTOMOTIVE GLASS)

#### Glass Company

Glasstech Inc.

#### Glaston Group

#### Jinglass

#### Keraglass

Mappi International  
Mazzaroppi Engineering  
R.C.N. Solutions  
Satinal Spa  
Si.Ste  
Taifin  
Texpack

### ACCESSORIES

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

## Laminated glass production

### COMPLETE PLANTS

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

### LAMINATED WINDSCREEN BENDING FURNACES

ECOL

#### Glass Company

Glasstech Inc.

#### Glaston Group

#### Keraglass

Mappi International

Taifin

Texpack

## AUTOCLAVES

**Bürkle**  
**Glass Company**  
**Glaston Group**  
**Hornos Industriales Pujol**  
**Lisec Group**  
Triulzi

### AUTOCLAVE-FREE LAMINATED GLASS PRODUCTION

#### Bürkle

#### CLIMATIC CABINS

#### Forel

#### Glaston Group

IOCCO Group

#### Lisec Group

Triulzi

### INFRARED OVENS

ECOL

#### Forel

#### Glass Company

#### Glaston Group

#### Hornos Industriales Pujol

IOCCO Group

#### Lisec Group

Satinal Spa

SGLASS

Triulzi

### PRESSES/BENDING MACHINES

#### Forel

IOCCO Group

#### Lisec Group

Triulzi

### RESIN LAMINATING MATERIALS AND EQUIPMENT

IOCCO Group

Satinal Spa

Torgauer Maschinenbau

### EVA (ETHYLENE VINYL ACETATE)

Satinal Spa

### PVB

Everlam

Kuraray - Trosifol

### PVB - SHAPING AND CUTTING EQUIPMENT

Ayrox

ECOL

#### Forel

#### Glaston Group

IOCCO Group

#### Lisec Group

Softeco

## PVB - WIRING TECHNOLOGY FOR HEATABLE LAMINATES

Ayrox  
ECOL  
Softeco

## ACCESSORIES

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

## Drilling

## AUTOMATIC DRILLING LINES

B Solution  
**Bando Kiko**  
Bavelloni  
Forvet  
**Glaston Group**  
Intermac - Biesse  
IOCCO Group  
Schiatti Angelo  
SKG - Skill Glass  
Vismara

## MULTI-SPINDLE DRILLING MACHINES

B Solution  
**Bando Kiko**  
Bavelloni  
CMS  
Forvet  
**Glass Company**  
**Glaston Group**  
Intermac - Biesse  
IOCCO Group  
Schiavo  
Schiatti Angelo  
SKG - Skill Glass  
Vismara

## DRILLING MACHINES WITH OPPOSITE DRILLING HEADS

B Solution  
**Bando Kiko**  
Bavelloni  
Bottero  
CMS  
Di Gregorio  
Fenzi  
Forvet

## Glaston Group

Hiseng Glass Machinery  
Intermac - Biesse  
IOCCO Group  
Schiavo  
Schiatti Angelo  
SKG - Skill Glass  
Vismara

## COLUMN DRILLING MACHINES

B Solution  
Bottero  
Di Gregorio  
Fenzi  
Schiavo  
Si.Ste  
Vismara

## PORTABLE DRILLING MACHINES

CMS  
Fenzi  
Schiavo  
Si.Ste

## DRILLING AND MILLING MACHINES

Bavelloni  
Bottero  
CMS  
Forvet  
IOCCO Group  
Schiavo  
SGLASS  
Vismara

## DIAMOND DRILLS

ADI  
Bovone Diamond Tools  
Diamut - Biesse  
Fenzi  
**Glaston Group**  
Lanzetta  
Mole Moreschi  
Schiavo  
Si.Ste  
**Vincent**

## ACCESSORIES

CMS  
Fenzi  
Schiavo  
Si.Ste

## Other equipment and plants

## TURNKEY PLANTS / ENGINEERING - FOR BUILDING GLASS

**Bando Kiko**

Bottero  
Cugher Glass  
**Glaston Group**  
Horn  
Intermac - Biesse  
IOCCO Group  
**Keraglass**  
**Lisec Group**  
Torgauer Maschinenbau

## TURNKEY PLANTS / ENGINEERING - FOR AUTOMOTIVE GLASS

**Bando Kiko**  
Bottero  
Cugher Glass  
Horn  
**Glaston Group**  
Intermac - Biesse  
IOCCO Group

## KEY PLANTS / ENGINEERING - FOR DISPLAY GLASS

**Bando Kiko**  
Cugher Glass  
Torgauer Maschinenbau

## EDGES ROLLER COATING MACHINE

Eurotech Way

## WORK CENTRES - CNC CONTROLLED

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

## FLOAT PLANTS/LINES (EQUIPMENT & ACCESSORIES)

Bovone Elett.  
Horn  
IOCCO Group

## CULLET HANDLING SYSTEMS

ECOL

## COMPLETE BATCH PLANTS

Zippe

## VACUUM COATING EQUIPMENT AND PLANTS

**Glass Company**  
**North Glass Technology**

## ENAMELLING EQUIPMENT AND PLANTS

**Glass Company**  
**Rollmac division of GeMaTa**

## DRYERS AND ENAMELING FURNACES

**Bürkle**

## SPRAYING TECHNOLOGY

**Bürkle**

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

**Bürkle**

## SANDBLASTING SYSTEMS, EQUIPMENT AND PLANTS - OPTIMIZERS

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

## DIGITAL INKJET PRINTERS

**Glass Company**  
System Ceramics

## SCREEN PRINTING EQUIPMENT AND PLANTS

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

## SCREEN PRINTING FRAMES

COMSS

## SCREEN PRINTING DRYING SYSTEMS

COMSS  
Cugher Glass  
**Glass Company**  
**Rollmac division of GeMaTa**

## 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

### CERAMIC 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  
Horn  
IOCCO Group  
Torgauer Maschinenbau  
Zippe

### AUTOMOTIVE GLASS APPROVAL SERVICES

Ayrox

Softeco

### AUTOMOTIVE GLASS QUALITY CONTROL

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

### 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

### DEIONIZING AND WATER SOFTENING EQUIPMENT

Fenzi  
**Forel**  
**Glass Company**  
Idrotecnica  
**Lisec Group**  
Triulzi

### FLAT GLASS QUALITY CONTROL DEVICES

Ayrox  
Deltamax Automazione  
**Forel**  
IOCCO Group  
Softeco

### 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

### METAL ACCESSORIES

Si.Ste

### INFRARED TUBES

**Helios Quartz**  
Deltamax Automazione

### KILNS

**Glass Company**  
**Keraglass**  
**Lisec Group**  
Tekno Kilns  
Fenzi

### METALLIC SECTIONS

Fenzi

### NUMERICAL CONTROL SYSTEM (CNC) FOR ALL GLASS PROCESSING MACHINES

**Glass Company**  
IOCCO Group  
Prodim

### OPTICAL DISTORTION ANALYSERS FOR AUTOMOTIVE GLASS

IOCCO Group  
**Keraglass**

### OPTICAL INFRARED THERMOMETERS

Optris

### POWDER OR LIQUID APPLICATION SYSTEMS FOR PROTECTING FLOAT GLASS

Cugher Glass  
**Glass Company**

### PUMPING AND APPLICATION SYSTEMS (AUTOMOTIVE GLASS)

IOCCO Group

### PURIFIERS FOR REFLUENT WATER

Dieffe Macchine

### PUTTIES AND SEALANTS

Fenzi

## QUARTZ EQUIPMENT

**Helios Quartz**

### SHAPE CHECKING DEVICES

IOCCO Group

### 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  
Softeco

### SORTING SYSTEMS

**Glaston Group**  
**Lisec Group**

### SURFACE STRESS MEASUREMENT INSTRUMENT

Ayrox  
**Glass Company**

### TESTING FOR SOLDERINGS

Ayrox  
Softeco  
TESTING DEVICES OF BACKLITES  
ELECTRICAL HEATING

Ayrox  
Softeco

### THERMAL IMAGING SYSTEMS

**Glass Company**  
Optris

### TIN FLOAT BATH FURNACES

Horn  
IOCCO Group

### UV LAMPS

**Helios Quartz**

### UV PORTABLE MACHINES

**Helios Quartz**

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



1989

Glass-Technology  
International

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

## Annual Guides



1990

Glass Industry  
Directory 2021

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

FLATGLASS  
2021 world directory

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

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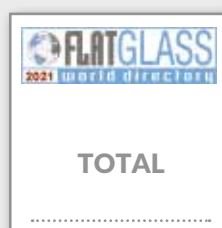
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Shanghai New International Expo Centre

13-16th April, 2022

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Forel's Art. EM vertical edging machine is one of the best sellers of its glass edge processing range, for both monolithic and laminated glass.

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These include the exclusive localized holding system, which guarantees perfect positioning of tools, precision and the absence of vibrations, and the feeler which, during processing, controls the position of the tool on the glass edge, "guiding" the operating head in self-learning mode.

The Art. EM edging machine can also process a wide range of shapes.



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