

# Glass-Technology International

THE LEADING MAGAZINE FOR THE INTERNATIONAL FLAT GLASS INDUSTRY

November/December • Year 33 • No. 6/2022

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ITS XTREMFLOW  
AT GLASSTEC

**FOREL** CONTINUES  
TO AMAZE WITH  
ITS LAMINATION LINE

ADDING VALUE:  
THE NEW FACE  
OF **LATTUADA**

THE SENSATIONAL  
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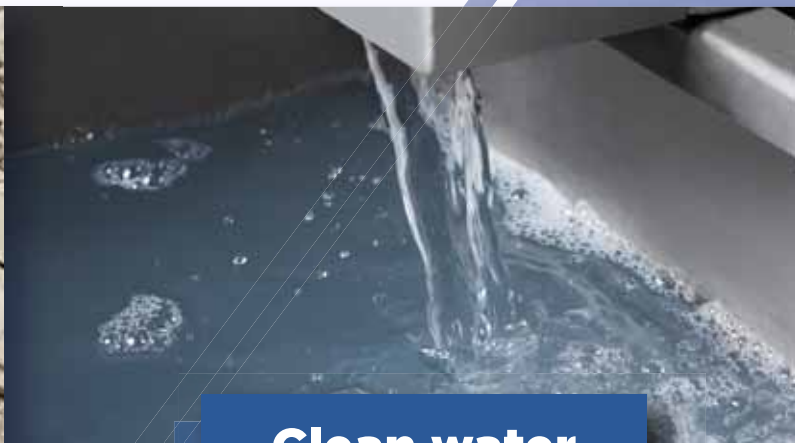




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A large industrial machine, the LiSEC TPA, is shown in a factory setting. It has a white and red body with a black safety cage. The machine is used for producing insulating glass units with thermoplastic spacers. The brand name 'LiSEC' is visible on the red part of the machine.

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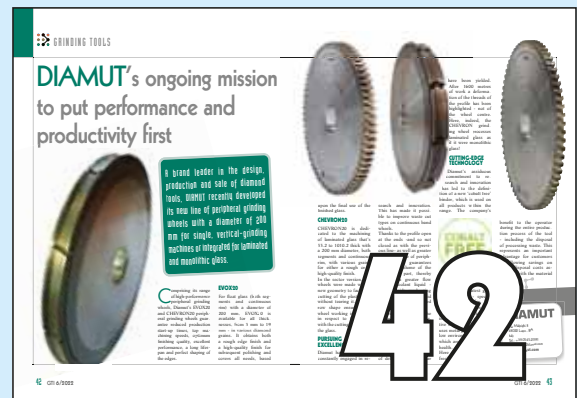


- Continuous line for oversize panes
- Extendable panel press length via tandem press
- Heavy duty design for an overweight application

ALL INFORMATION  
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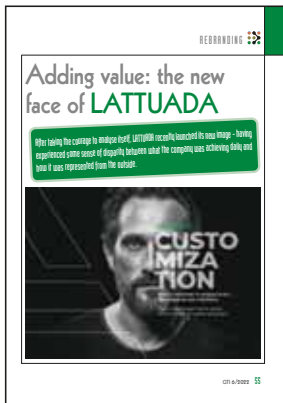
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issue	exhibition/conference	date	venue	deadlines
2023				Editorial files: <b>30-01-2023</b> Deadline Adv files: <b>10-02-2023</b>
2023	<b>1</b> <b>CHINA GLASS</b> <b>BAU</b> <b>GLASSPRINT</b>	Date to be announced 17-22 April 25-26 April	<b>SHANGHAI</b> China <b>MÜNCHEN</b> Germany <b>DÜSSELDORF</b> Germany	Editorial files: <b>03-03-2023</b> Deadline Adv files: <b>13-03-2023</b>
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2023	<b>3</b> <b>GPD - GLASS PERFORMANCE</b> <b>GLASSTECH MEXICO</b>	14-16 June 19-21 July	<b>TAMPERE</b> Finland <b>MEXICO CITY</b> Mexico	Editorial files: <b>12-05-2023</b> Deadline Adv files: <b>19-05-2023</b>
2023	<b>4</b> <b>VITRUM</b> ALL VITRUM EXHIBITORS ADVERTISING IN THIS ISSUE ALSO RECEIVE A FREE GLASSTEC PREVIEW <b>GLASSPRO INDIA</b>	5-8 September 14-16 September	<b>MILAN</b> Italy <b>MUMBAI</b> India	Editorial files: <b>14-07-2023</b> Deadline Adv files: <b>24-07-2023</b>
2023	<b>5</b> <b>EURASIA GLASS</b> <b>GLASSBUILD AMERICA</b> <b>REFRIGERA GLASS</b>	Date to be announced 31 October - 2 November 7-9 November	<b>ISTANBUL</b> Turkey <b>ATLANTA</b> (GA) USA <b>BOLOGNA</b> Italy	Editorial files: <b>15-09-2023</b> Deadline Adv files: <b>22-09-2023</b>
2023	<b>6</b> <b>GLASSTECH ASIA</b> <b>GULF GLASS</b> <b>ZAK GLASS TECHNOLOGY</b>	29 November - 1 December 4-7 December Date to be announced	<b>BANGKOK</b> Thailand <b>DUBAI</b> UAE <b>MUMBAI</b> India	Editorial files: <b>13-10-2023</b> Deadline Adv files: <b>20-10-2023</b>



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SPARKLIKE & INAGAS

## New distributor in the UK and Ireland

**A**fter **SPARKLIKE** and **INAGAS** Ltd recently signed a distributor agreement, Inagas is now Sparklike's new distributor in the UK and Ireland.

Inagas has shown an active approach towards sharing the mission of giving importance to IGU measuring - as well as how it affects the energy efficiency of buildings and safety.

Chris Kemp, Inagas director, said: "Sparklike's mission is to improve quality and competitiveness in the IGU market, which is perfectly aligned with our own objectives. With the global



focus on decarbonisation and the industry under pressure to deliver lower U-Values and better performing window and door products, energy efficiency is a hot topic.

"The gas content in an IGU makes a significant contribution to the energy performance of a window, so the conduction of tests which ensure that manufacturing processes are effective, product quality is good and IG units are performing as they should has never been more in demand."

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

GLASTON GROUP

## Fresh orders for automotive pre-processing machines

**G**laston has received four orders for new automotive pre-processing CHAMP EVO lines from a customer in China. The orders, totaling nearly EUR 3M, are booked in Glaston's Q3/2022 and Q4/2022 order books and the equipment will be delivered in H1/2023.

In June **GLASTON GROUP** announced its plan to establish the production of automotive pre-processing equipment for standard products at Glaston's factory in Tianjin, China. The plan is in line with Glaston's strategic focus to grow its business in China and improve operational efficiency. The aim is to serve customers in the largest automotive market in the world with locally produced machines.

Products sold are Glaston automotive Technology's standard CHAMP EVO pre-processing lines to cut, grind and in some cases drill automotive glass such as wind-shields, sidelites, backlites and (increasingly) sunroofs - for which Glaston's grinding quality is especially appreciated by customers.

Since the announcement in June, activities for ramping up production, enhancing product-specific production skills and setting up a local automotive supply chain network have proceeded as planned.

Upon completion, Glaston's factory in Tianjin will be the company's only location with production ranging from heat treatment to insulating glass to automotive technologies. These received orders will be the first to be delivered from Tianjin in 2023.

"We aim to provide locally-fitted products that have a proximity to customers in China," said Anders Dahlblom, President and CEO of Glaston Corporation. "These orders demonstrate the viability of our strategic initiative, also indicating how well customers perceive locally-produced machines."

Production of automotive machines in Bützberg, Switzerland will continue to serve Glaston customers outside of China. The Swiss factory will also deliver customized machines to China. Heat treatment machines for the automotive segment continue to be produced in Tampere, Finland.

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NATIONAL GLASS ASSOCIATION

## New paper published on Energy Conservation Codes



**T**he NATIONAL GLASS ASSOCIATION (NGA) announces the publication of a new Glass Technical Paper (GTP), Alignment in US Energy Conservation Codes: ASHRAE 90.1 and the IECC. This provides information on the codes' use as a national model, as well as compliance pathways for commercial and residential buildings - whether new or already in existence.

"In representing the interests of the glazing industry on these various energy code committees, we are always looking into the future. In fact, we are already working on the development of codes for 2024 and 2025," said Tom Culp, Birch Point Consulting and NGA energy code consultant. "At the same time, it is equally important that we help educate the industry about the results of such efforts as energy codes and standards are implemented in the real world today. Here NGA's new Glass Technical Paper will be a good industry resource." The GTP further expands upon prescriptive versus performance path requirements, and how these relate to increased demands placed upon glazing systems to achieve certain stringencies that are based on evolving climate zone maps. U-factors and Solar Heat Gain Coefficients (SHGC), as well as an estimation of the glazing required, are also charted according to climate zone for both commercial and residential vertical fenestration paths.

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

AGC GLASS

## Float units in France: cold hold project

**M**anagement at AGC GLASS France recently informed staff at the Boussois Industrial Unit of its intention to close the B2 float line, which has been in operation for over 21 years, while providing assurance of its will to maintain the site within the Group. The line closure is a direct consequence of the current energy crisis.

The plant specializes in the production of flat glass for the building industry and employs 135 people. It operates in a market affected by overcapacity in Europe and, for some months now, by the very strong pressure on prices that result from the inevitable impact of the energy surcharge. The intention to close the B2 line corresponds with the aim of preserving AGC's flat glass activities in Europe.

Located in the North of France, the site includes two Float Line Units. Shut down in 2020 as a result of the Covid-19 crisis, the B1 line -known as oxy-combustion- will potentially afford it a chance to contribute to AGC's production process decarbonisation objectives by 2030 should the market re-

quire it.

For this reason, it will be proposed to the Trade Unions and so to part of the Staff to implement - along with the Employment Safeguard Plan, various social measures that, besides maintaining industrial installations, allow for the preservation of an adequate skill set.

As far as the social aspect is concerned, AGC will propose and discuss a support plan with the company's staff representatives while complying with the legal and contractual provisions that apply to line closure of this kind.

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



GLASTON

## FC Series glass tempering line - improved, built-in technology

**G**LASTON develops, designs, manufactures and delivers glass processing machinery, equipment and services worldwide. The company's technological leadership is based upon its own research and development, with Glaston holding patents for all its significant innovations.

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What makes the difference is the high air volume convection



systems that produce world-renowned glass thanks to their optimum heating accuracy. Chinook convection allows it to run at the highest yield, helping to minimize energy consumption, while Vortex Pro convection gives high flexibility with an elevated quality.

The tempering process autopilot reduces the need for operator input and offers process control without parameters. It automatically sets all necessary parameters based on the glass sheet placement on the line, thereby enabling the operator to simply monitor the process.

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BAVELLONI & TECHNI WATERJET

## Glasstec 22: quality visitors and a great meeting

**G**lasstec marked an opportunity to re-engage with customers in person after the pandemic, but especially to re-establish personal relationships and reconnect with the people who are essential parts of every company.

The meetings and discussions generated during the event were interesting. Considering the current scenario, the attendance was very good and, certainly, of a high standard: visitors were really interested in investing, with clear ideas about the products to focus on and,

for some of them, also willing to place their order at the show.

"We registered a high attendance, especially in the central days of the event," reported Federico Bassi, Sales Director at **BAVELLONI** Spa. "As usual, there was significant participation from Central Europe and the Mediterranean basin - even though there were also visitors from overseas; Asian operators and visitors were almost absent. Besides many handshakes and conviviality -which we really needed- some deals were also signed at the show.

"We felt a positive mood at our booth, although the pandemic is not yet completely over and there are some economic and political uncertainties in the global scenario. Customer confidence in Bavelloni products and in our organization was no-

ticeable. There was also strong commitment and involvement from our partners and distributors."

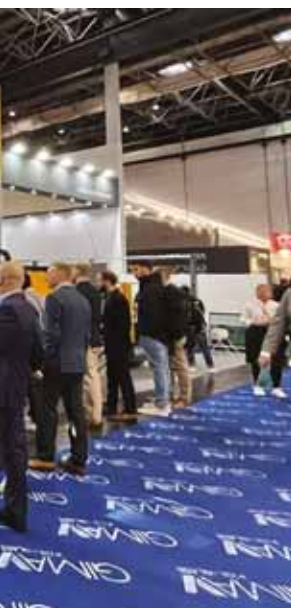
Visitors were able to attend live demonstrations of the machines on display and take advantage of the combined presence of Bavelloni and **TECHNI WATERJET** specialists - all together at the same stand for the first time.

Bavelloni straight-line edgers and cutting tables were the hot topic of several company negotiations. Techni's waterjet system was also much appreciated.

"Thanks to the interesting group synergies and complementarity of our respective portfolios we are able to propose targeted solutions to the market for each specific requirement," concluded Federico Bassi.

Stanislaw Jakubiec, General Manager EMEA at Techni Waterjet, also expressed his satisfaction: "Techni's waterjet solutions are suitable for cutting any material, including glass. We are confident that our attendance at Glasstec, together with Bavelloni, will certainly drive the development of our business in the glass segment as well."

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**FENZI GROUP**

## Huge success at Glasstec 2022



**T**he recently-concluded edition of Glasstec proved a big win for the entire glass industry - and the **FENZI GROUP** was among the headliners, with new technologies and products at the cutting edge of technical performance and production.

Visitors from around the world applauded the many innovations on display in the unique-concept stand over the four days of the show - reaffirming the Group's leadership position as a primary global provider of chemicals for secondary glass processing for the entire industry. All the Group's business units were on display- Fenzi, Alu Pro, Rolltech, Fenzi AGT and Tecglass- with the most extensive and complete range of sealants and spacers for high-performance IG units, mirror-backing paints and silvering solutions, cold-process decorative paints and ceramic inks for all kinds of applications, special glass enamels and precious-metal pastes used in the automotive, electronics, tableware, ceramics and technical glass sectors, as well as the finest technology for digital printing on glass - all featuring live demonstrations of a complete line.

With more than 80 years' experience in the glass industry, backed by outstanding expertise and specialization, Fenzi again offered proof of its innovative prowess, drawing companies, buyers and the industry's top players to its stand.

"We are living in notoriously complicated times. However, in the pavilions and, above all, at our stand, the desire to meet one another again, after such a long time, was very clear," said Alessandro Fenzi, CEO of the Group. "The excitement we felt during the show reaffirms the industry's vitality and strength. Indeed for us, Glasstec consistently produces extremely encouraging results. Given our focus on optimizing product performance, we succeed in offering highly technological solutions that coincide perfectly with the market demand for quality. That was a commitment acknowledged, to our great satisfaction, by visitors to the Group's stand - all confirming the validity of our strategic vision, which is to focus upon the flat and hollow glass industry while offering diversified, targeted products."

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

**GLAS DREISBUSCH & GLASTON**

## U-shaped VARIO TPS® line

**W**ith a history spanning nearly 100 years, **GLAS DREISBUSCH** of Goldbach, Germany, located 50 kilometres east of Frankfurt/Main, started as a furniture joinery and flat glass trading company. Over the years it evolved from a pure handicraft glass grinding business to a medium-sized industrial company producing insulating glass. Managing Director Thomas Dreibusch took the helm from his father in 1995 and represents the family's third generation. In the meantime, the fourth generation is already working in the family business with his son Maximilian, who has become very familiar - particularly with the technology.

Today Glas Dreibusch provides the entire range of insulating glass - including double and triple insulating glass units,

safety glass and ready-to-use products such as printed glass, all-glass door systems and showers. Some of the company's special products are blinds in insulating glass as well as alarm insulating glass for burglary protection.

In 1970, the company started producing insulating glass and purchased its first Lenhardt insulating glass line. In the early 2000s, it purchased a Bystronic glass line with an automatic butyl coating robot for glass production with conventional spacers. Both Lenhardt and Bystronic glass brands are now part of **GLASTON**.

In spring 2021, the company purchased its Glaston VARIO TPS® 2735 line, which started up in December that year. "The special feature of this particular TPS® line is its U-shaped design," said Thomas Dreibusch, Managing Director of Glas Dreibusch. "It's unique in the world!"

"The idea of a special U-shaped design to fit our confined space was created over lunch by my son Maximilian Dreibusch and two Glaston service engineers. I think this says →

← everything about our close and collaborative partnership with Glaston.”

The line features two special turning stations between the inspection station and the automatic assembly, gas filling and press robot. The turning stations move the glass from one side of the line to the other, thereby creating the line's U-shape.

“TPS® is the most flexible insulating glass production system for us. It produces both standard and special formats on one line, eliminating the need to split orders. This gives our customers unlimited design possibilities for shapes and sizes. Also, the line differs from conventional systems in that the Thermo Plastic Spacer TPS® is applied directly to the glass plate.”

[WWW.GLASTON.NET](http://WWW.GLASTON.NET) - [WWW.GLAS-DREISBUSCH.DE](http://WWW.GLAS-DREISBUSCH.DE)



NSG GROUP & PILKINGTON

## Suncool™ Q: a new glass solution for the architectural market

**N**SG GROUP has launched Pilkington Suncool™ Q – its latest offering in a range of **PILKINGTON** glass products that provides the most advanced solutions in new high performance solar control.

Uniquely, this innovative new product allows the individual glass types within the range to seamlessly match each other from the external viewers' perspective – an advantage that was previously not possible with other Pilkington Suncool™ products.

With effective sun protection becoming more and more important, the right glazing not only protects against solar radiation in summer but can also help to reduce heating costs in winter. In the long term, this protects both the climate and the customer's purse.

The solutions offered by Pilkington Suncool™ Q provide architects with a host of aesthetic and practical possibilities. A superior solar control glass range with high colour-stability, low reflection, low angle dependence, excellent neutrality and superb selectivity, the range includes Pilkington Suncool™ Q 50, Pilkington Suncool™ Q 60 and Pilkington Suncool™ Q 70 – all offering various levels of light transmission and solar heat gain.

Crucially, the three different products can be used seamlessly in the same project. In this way, a façade with a uniform colour can meet a variety of different technical

challenges. A building that is oriented in different directions can be equipped with various types of solar control glass products displaying a uniform appearance. For architects and planners, these properties result in very special design options.

The Pilkington Suncool™ Q range can also be combined with other Pilkington glass products and thus offer extended functionalities. Builders and architects can choose from a wide range of products to find individual solutions for modern buildings. In this way, structural requirements can be addressed flexibly and the comfort for occupants can be maximized.

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





## RCN SOLUTIONS

## This year's Glasstec - instructive and inspiring

**A**fter closing its doors the 2022 edition of Glasstec proved an extraordinary experience for **RCN SOLUTIONS**. Of international appeal, the show has always been the best voice for the glass industry, having also reconfirmed that status at this edition upon re-opening its doors to a market that had lost its focus owing to the global health crisis.

Having placed great confidence in the show, RCN worked hard to present its innovations while showing its systems and construction ideas. Moreover, being part of the GIMAV area showed itself to be a winning choice that kept the attention focused on the Made in Italy.

Though it was difficult to predict the quantity and quality of the attendance after these years of traveling restrictions and an unsteady market, the appointment requests RCN received before the show were most inspiring. The company arrived optimistic at the exhibition, driven by the desire to explain its projects in face-to-face conversations with visitors to ensure the audience understood the potential of all RCN proposals.

Indeed the company was especially appreciated for its clarity of information as well as its instruction on the use of different inter-

layers in its autoclave-free laminating machines.

Lead players at the RCN stand were its RD CLEAN CONCEPT, a revolutionary patent-pending system to clean edges post-lamination, as well as the company's chemical tempering plants.

Of these the former got rave reviews from worldwide visitors who didn't hesitate to order it during the show, mindful that it can be installed in laminating kilns other than those of RCN. Glazier attendees all sought a definitive solu-

tion to post lamination manual edge cleaning, which means labour and cost saving as well as operator safety of operators, given that no handling of sharp tools is required.

As for chemical tempering, the RCN team was pleasantly surprised by visitors who, though in the know about technical matters, needed RCN assistance to verify whether chemical tempering could suit specific projects they had planned for the future.

Such recurrent terms as 'projects', 'ideas', 'new production plans' and 'developments' were all heard by visitors as RCN learnt and explored new perspectives in the hopes of promising business prospects in the near future.

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



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Surfaces Group Glass is still growing, thanks to the strong synergies between ADI, RBM and the historical "Vincent" brand. As a partner to our customers, we'll provide best solutions for the production process management worldwide.

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more brands one group



PROMAT

## SYSTEMGLAS: a complete, fire-rated glazing solution

A multi-million pound redevelopment project to convert a Victorian church into six luxury apartments has been completed using assured fire resistant glazing solutions from PROMAT.

The scheme to convert the Christ Church in Teddington, Middlesex, UK, by Renaissance Design & Build, has secured the future of the 150-year-old building after it had fallen into disrepair over recent years. Given the decline in congregation numbers, income and an ever growing demand for maintenance and repair, the church's future as a place of worship had become unviable.

However the building's local significance and historic features meant that any proposals to convert Christ Church would have to be approached sympathetically and with a high standard of craftsmanship. It was here that the developer, in conjunction with the architects Robert Davies and John West, saw the opportunity to create high-specification new homes within the existing structure in a spectacular and unique setting.

The extensive conversion project involved complete modernization of the building, retaining many original features while also redesigning the internal space to incorporate the six housing areas. This included installing a spiral staircase, roof garden as well as extending the original tower to provide a lift to the third floor. Inside the apartments, the contemporary design includes sleek grey-painted kitchens, limestone flooring and an air exchange system.

One of the key challenges for the architects was to ensure the building could be redeveloped in a way that ensured compliance with current building regulations, including Document B approval in relation to fire safety. The passive fire protection strategy meant introducing compartmentation into what was originally a large open space used by the congregation - thus



providing a superb technical and aesthetic solution.

Meeting the architect and developer's brief was the Promat SYSTEMGLAS range of fire resistant glazing systems. Two versions of this system were specified to provide a dependable level of fire protection to both property occupiers and the building itself, both of which were installed by long-standing Promat SYSTEMGLAS approved installer, Folkestone-based Rated Solutions.

SYSTEMGLAS Celare EI30, which is a butt-jointed glazing system offering fire protection of 30 minutes with integrity and insulation, was chosen due to its suitability for the modern internal décor of the apartments, and effectiveness in providing compartmentation between the different living areas. It was specified with a feature anthracite trim, but otherwise SYSTEMGLAS Celare appears virtually frameless thanks to its PROMATECT® H frame which is concealed within the surrounding walls, floors and ceilings.

The Christ Church's centerpiece gothic and trapezoidal windows required a different approach which involved SYSTEMGLAS Ligna, a timber framed fire rated glazing system. An EI60 rating was provided to ensure the original stained glass windows and stonework will be protected in the event of a fire, without compromising the aesthetics of these attractive original Victorian elements.

Cliff Hamilton, Managing Director at Renaissance Design & Build, said: "The building is absolutely amazing. The devil is in the detail, and we made sure that every aspect of the building →



← was finished to the highest possible standards. The Promat glazing systems were ideal with bespoke frames, slim sight lines and clear butt joints, meaning that we never had to compromise on our ambition for the internal appearance of the building.”

Commenting on how fire resistant glazing solutions were delivered for the Christ Church project, Keith Crouchman, Project Director at Renaissance, added: “I was really impressed by the professionalism and expertise of Promat and Rated Solutions. They worked extremely hard through the pandemic to ensure we kept to our original build schedule.”

In addition to third party accreditation, the company supports all SYSTEMGLAS specifications. Promat provides building owners with 360 degree assurance that their fire resistant glazing has

been designed, manufactured and installed to deliver the performance specified. This includes a project-specific Certificate of Conformity, which is provided after a check of the finished installation, giving additional peace of mind to building occupants.

Promat SYSTEMGLAS is a complete range of fire resistant glazing systems, which includes steel and timber frame options, plus PROMATECT® H framing, which can be overclad, painted or concealed. Suitable for internal screens, partitions, atriums and external glazing elements, these high quality systems are complemented by steel and timber doors, plus a walk-on load-bearing glass floor - all designed to protect lives and assets in the event of a fire.

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

HFT

## Rolled glass facility for photovoltaic solar panels set for construction

In a major development for the global glass and solar industry and hot on the heels of recent announcements, Calgary-based Canadian Premium Sand (CPS) has contracted McMurray, a PA-based HFT, as EPC contractor to conduct pre-construction design and engineering for North America's first-ever integrated glass manufacturing facility to produce glass for photovoltaic solar panels. The plant is to be built on a 121-acre greenfield site in Selkirk, Manitoba, Canada.

HFT will also design the related, sand-processing facility - roughly 160 kilometres north, near Seymourville, Manitoba. The sand facility will process the low iron silica sand to support the production of low-iron premium clarity glass at the Selkirk site.

Under the agreement with CPS, HFT will serve as the engineering, procurement, and construction contractor, delivering all aspects of the Selkirk and Seymourville projects, beginning with design and pre-construction activities. Following final investment decision expected in Q1 2023, HFT will continue with equipment and material sourcing, though the construction execution of on-site works, including not only the process line but also the full complement of site development, buildings, utilities, infrastructure, and roadways - concluding with commissioning, start up, and training. This will be a true turnkey package that will deliver CPS with a fully integrated operational facility.

Within the Selkirk plant, HFT will be responsible for all aspects of the glass process line, and will work with experienced global partners, including PCL, Zippe, Fives, and Bottero - all to deliver everything from raw material reception, batch plant, furnace, rolling machines, lehrs, and cutting line as well as the post-manufacturing fabrication of glass (grinding, drilling, heat strengthening/tempering, and coating).

“HFT is delighted to be entrusted by CPS to provide a first-of-its-kind project in North America,” said Sam Leaper, HFT's Director of Glass Business Development. “HFT's experience, as well as that of our global partners, for concise planning, commitment to engineering excellence and diligent coordinated project execution will all deliver a high-quality manufacturing facility with the long-term reliability, sustainability and efficiency that CPS requires. Pre-construction activities have already begun to meet CPS' production time-line and operational goals.”

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



NORTHGLASS

# Enhancement of New Zealand's Wellington Convention Centre

**W**ellington Convention Centre is located at the heart of New Zealand's capital, covering an area of 18,000 square metres - a large-scale infrastructure construction in Wellington of the past 20 years. Tianjin NORTHGLASS has created a super-thick curtain wall glass with polymer material net for the whole project.

The centre is named Takina, meaning 'call', and implying a place to communicate and think. Known as 'the wind capital,' Wellington is renowned for its diverse winds. Wellington Bay has a strange undulating landscape from which designers draw inspiration to imitate the

city's unique terrain to depict organic and dynamic architectural features. In order to fit this form, Tianjin NorthGlass has created an innovative glass process, presenting an attractive form for the new landmark.

The building side comprises 1,300 square metres of curved glass with a size ranging from 0.5 to 5 metres. Due to the varying size and special requirements for the edge, especially the arc glass edge, it presents a great challenge for polymer network cutting and positioning. Here Tianjin NorthGlass needed to test different sizes of polymer network expansion in order to accurately control the network edge in relation to the glass edge - with an accuracy within 1.5 millimetres.

The whole building is covered with a soft-flowing glass skin, with the bronzed metal layer on the polymer network making the Centre shine. Indeed the entire curtained wall displays beautiful visual changes according to different lighting conditions.

With over 10,000 square metres of flexible conference and exhibition space

the Wellington Convention Centre uses new technologies to show the region's amazing contemporary design and cultural culture while creating a space for the comprehensive exchange of professional knowledge and thought leadership.

The Wellington Convention Centre is located at the centre of the capital, covering an area of 18,000 square metres. It is the largest-scale infrastructure construction in Wellington of the past 20 years.

As a typical example of sustainable buildings in New Zealand, the Wellington Convention Centre has been awarded a five-star score from New Zealand's Greenstar rating. The building's curtained wall system includes sustainable functions and adaptive systems, with a 60-70 percent reduction in carbon emissions and energy use compared to similar buildings.

Tianjin NorthGlass as a global professional manufacturer of high-end building glass. Understanding sustainable development concepts, it cooperates with architects - experts both at home and abroad, in order to explore new sustainable building possibilities and improve the quality of building glass.

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





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### NEW PRODUCTS:NORTHGLASS LIGHT-STONE

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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.





SATINAL

## TK Glass Machinery - a reference point for technology and support

**H**igh technology and constant technical assistance are two of the major features of **SATINAL's** Italian brand TK Glass Machinery, which specializes in designing and manufacturing high-quality, innovative glass machinery that's made in Italy and appreciated

worldwide. Ovens for glass lamination, chemical tempering and Heat Soak are designed by an experienced team of technicians that relies on superior Italian technology and European components to meet quality standards and requirements.

The sales network has an ever-increasing global presence, with more than 260 plants installed in over 60 countries around the world. This is made possible by the careful work of the sales network and technical team. The latter works in close collaboration with customers - fully understanding their needs in order to provide the most appropriate, customized solutions by applying TK's proven methodology which includes the following steps: alignment with customer requirements, defining bespoke solutions, equipment design and development, machine manufacture, delivery and installation, staff training and after-sales support either on-site or remotely (thanks to the



technology of the new TKonnect 4.0 and TKare systems).

A practical example of all this work is the latest TK installation, carried out a few weeks ago. Here a Lamijet Convection oven assembled and installed by TK technicians in Nardo Vetro glassworks in Camponogara, Veneto, Italy. Much research and attention to detail led to the realization of this furnace according to specific customer needs and supported by the TK team throughout the development of the machine. The Italian customer went through a careful and detailed analysis of all the competitors and solutions on the market - finally recognizing and choosing the particular value of the Satinal ecosystem. The only fully made-in-Italy solution to produce safety glass - from the STRATO® Glass Interlayer to the TK Glass Machinery, as well as complete technical service.

This has been another important milestone for TK which, once again, demonstrates its careful commitment towards being a technology and innovation leader.

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



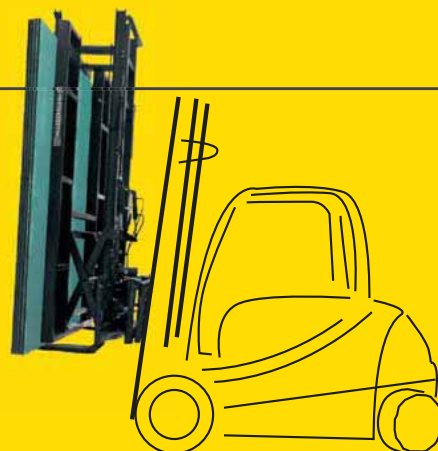
# ABV GLASS HANDLING

MADE IN ITALY

Italcarrelli® has developed a new glass handling device called ABV. This new solution allows the handling of packed/unpacked glass by standard forklift trucks for virtually all aspects of glass handling including the loading of trucks.



**PACKED GLASS**



**UNPACKED GLASS**



## **EASY TO INSTALL**

The ABV can be easily installed on a wide variety of standard forklift trucks enabling the operator to handle and transport glass packs quickly and safely.



## **EVERYTHING UNDER CONTROL**

The ABV is made up of a frame where the glass is positioned, two overhead clamps with video camera and two forks. The operator can easily adjust the thickness and the height of the packs of glass from his seat without needing assistance from other operators. To enhance productivity, the ABV is equipped with a system to enable +/- 2.5° horizontal positioning to lift the glass without having to be perfectly aligned with the glass pack.



## **SAFETY CONTROL SYSTEMS**

As per all Italcarrelli® products, the ABV is produced to exceptional quality and safety standards.



## **AFFORDABLE, ADVANCED TECHNOLOGY SOLUTION**

With the ABV, Italcarrelli® provides an affordable solution to handle glass quickly and safely. The first step to improving productivity in glass handling operations.



FG TRADING & COOLTEMPER

## Supply of advanced glass tempering line in SA

Following its presence at Glasstec 2022, **FG TRADING** procured a supply contract for long-term customer PG Building Glass for the latest-generation **COOLTEMPER**'s flat glass tempering line Jetstream RT.

The company recently concluded the lengthy and critical tempering furnace selection process with the order of a Cooltemper Jetstream RT. The latest-generation flat glass tempering line, which will be installed at the Western Cape processing plant, is set to be conspicuously advanced nationwide in terms of its productivity and energy-efficiency.



### Next-level tempering productivity

The decision to replace existing tempering equipment supports PG Building Glass' continued commitment to deliver high quality products with fast turnaround times. With advanced heating, convection and quench systems, the Jetstream RT offers toughened glass processors superior glass quality, high output and low operating costs. Manufactured to high quality standards, it is extremely reliable and requires minimal maintenance.

Like its predecessors, the new Jetstream RT is to be fitted with Cooltemper's 'block matrix' heating elements in the furnace section. Due to its proximity to the glass, the heating system enables faster cycle times, more consistent product quality and

lower energy consumption. Another advantage of the unique heating system is that it requires little to no recovery time between each load. The Jetstream RT line will be capable of tempering a wide range of high-performance architectural glasses, including soft-coated to 0.01 emissivity, in thicknesses from 4 to 19 millimetres. PG Building Glass has opted for the addition of CycleGUARD technology to maximize productivity without compromising on quality. The technology provides glass processors with the flexibility to switch between glass types and thicknesses without slowing down production.

### Unmatched energy efficiency

Cooltemper custom designs and manufactures solutions to suit glass processors' specific requirements. The company prides itself in its continuous research and development. One of the features which will set the new Jetstream RT tempering line apart is the company's latest innovation, namely the Dynamic Quench Cooling System.

Ordinarily, the quench section would use the same amount of energy regardless of bed loading. The automatic Dynamic Quench Cooling System can be used to increase quench air pressure or reduce the quench fan speed when the bed is not fully loaded for energy savings of up to 30 percent. Apart from offering a significant improvement in profitability and reduction in carbon emissions, the patented technology results in less wear on the fan components and lower noise levels from the fan and the quench.

### Local technical support

As the Cooltemper agent for Southern Africa, FG Trading facilitates the supply, installation and commissioning of glass tempering equipment and offers furnace servicing as well as technical reconditioning. In addition to tempering lines, FG Trading supplies a wide range of products and machinery - specifically for the glass and aluminium industries.

FG Trading remains committed to providing the industry with an excellent level of service.

[WWW.COOLTEMPER.COM](http://WWW.COOLTEMPER.COM) - [WWW.FGTRADINGSRL.COM](http://WWW.FGTRADINGSRL.COM)





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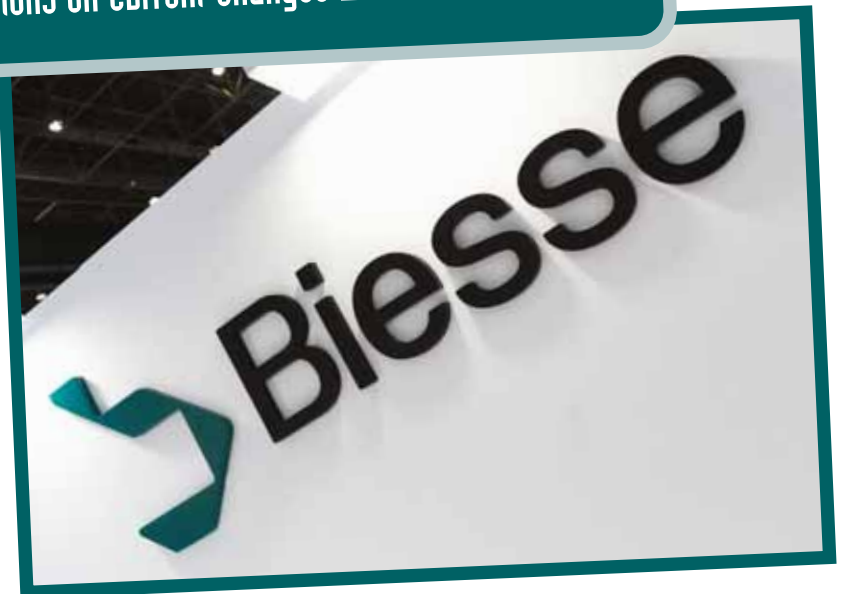
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# Raphaël Prati of BIESSE reflects on the Group's recent makeover

At Glasstec 2022 last September our editorial team took the occasion to talk to BIESSE's Raphaël Prati who, as a senior member of his company's leadership team, shared some considerations on current changes within the Group.



## **G** LASS- TECHNOLOGY INTERNATIONAL:

Raphaël, you're Chief Marketing & Communications Officer at Biesse. What can you tell us about

today's transformation in Biesse?

*RP:* Biesse Group formerly comprised various companies: Intermac, Forvet, Movetro. We thought this was actually a limitation for our customers. Here

the concern was that, rather than sharing experiences, there was more a kind of 'silo' approach. In order to be beneficial to the customer we realised we needed to bring everything under one brand. And that's exactly what we did. What you see here

isn't really a rebranding per se. Instead it's a new brand of a fresh company.

**GTI:** How are customers reacting to this change?

*RP:* In the main, customers are positively curious. Here the objective was to invite them to embrace the



this it's not only a matter of selling abroad. It's also a matter of merging cultures and experiences from all over the world in order to meet the expectations of our customers - which, even amongst themselves, are very different from one place to another.

**GTI:** Raphaël, Biesse recently expanded into Brazil. Any comments there?

**RP:** Yes, another of our current challenges. It's an example of how internationally native we strive to be at Biesse. As you mention we opened a new subsidiary in Brazil, where we also have a showroom. We really want to serve customers in the glass industry there - but

change. Needless to say, transformation is clearly necessitated by the existing context. Everything is changing rapidly and, of course, we need to adapt. I think that's what customers need to do as well. Indeed the first thing they did when they came here to Glasstec was to ask questions, which is really great. It means that you can actually give them an answer that has them realising that things are going to be easier with Biesse in the future.

**GTI:** How does it feel being back at Glasstec after these years of pause?

**RP:** We're really delighted to be here, particularly because it's important to demonstrate our new approach to stand visitors. Glasstec is an internation-

al trade show and by the same token we're trying to aim at becoming not only an Italian company that sells machinery worldwide

but to actually become an international company. That's the big advantage of being here. To achieve





also those who work in stone and in the world of advanced materials.

**GTI:** Can you tell us anything about the challenges you faced in 2022?

**RP:** Besides the evolution within the company, we're of course also enacting that evolution within a very complex environment - which must take full stock of energy costs and customer expectations, among other variables. We really need

to reassure customers that we're there for them. Working with our suppliers made that possible, too because -to be very honest with you- we're managing the shortage of raw materials in the best possible way (even if that doesn't really impact us). What's particularly important now is to continue in this direction to support the

creativity of our customers - not only in terms of affording them possibilities to design masterpieces like the extraordinary 'ghost chair' we have here at our stand at Glasstec. We're also here to support the industrial creativity of our customers by really simplifying their manufacturing processes.

**GTI:** Finally Raphaël, any thoughts on what 2023 holds in store for you?

**RP:** Certainly next year is a further challenge beyond the ones we've already cited. I'm sure that, thanks to the new company we're building together with our employees and customers, we'll be able to face those

challenges in the best way possible whilst still maintaining our role of simplifying our customers' manufacturing process going forward.



## ABOUT BIESSE S.P.A.

BIESSE S.p.A. - Biesse is a global leader in technology for processing wood, glass, stone, plastic and metal. It designs, manufactures and distributes machines, integrated systems and software for manufacturers of furniture, door/window frames and components for the construction, ship-building and aerospace industries. Biesse S.p.A. invests an average of EUR14 M per year in R&D, boasting over 200 registered patents. The company operates through 12 industrial sites, 39 branches, and 300 agents and selected dealers, exporting 90 percent of its production. Its customers include some of the most prestigious names in Italian and international design. Founded in Pesaro in 1969 by Giancarlo Selci, Biesse S.p.A. has been listed in the STAR segment of the Italian Stock Exchange since June 2001 and is currently included in the FTSE IT Mid Cap index. It currently has 4.300 employees worldwide.

Biesse SpA



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# SYSTRON's single-sourced vertical glass processing and robot automation

A leader in today's trends towards versatile, automated solutions, SYSTRON offers advanced vertical high-level glass processing machines that will reduce cycle times, minimise handling and mitigate any operational delays associated with the current shortage of skilled workers.

More and more customers in the glass industry are relying on robot automation to reduce cycle times and optimise quality.





It's no secret. Among the most popular automation options out there, the robot ranks high. It's hardly surprising. Robots require only modest space and they increase quality - all thanks to minimised handling, a reduction of rejects and optimised planning. Here's why robot cells, specially-tailored to the requirements of the flat glass industry, were developed for the automatic loading of Systron's processing machines.

Three robot types comprise this selection:

- The individual solution, with 2 pick-up stations for L-racks - resulting in minimal cycle times for high-speed seaming systems and glass dimensions of up to 3.5 x 2.5 m.
- The unit integrated within other automated Systron solutions, such as L-rack, storage or the harp rack options.
- Autonomous operation - for the removal of waterjet cut-outs.

## KUKA ROBOTS

Given that KUKA robots can be integrated within the Systron control unit with no added interface, the glass machine manufacturer works only with these products. Reinhard Gruber, person-in-charge for software development at Systron explains: "Thanks to the KUKA. PLC mx automation 3.3

option, we can control the KUKA robot just like any of our conventional axes. This way we achieve maximum flexibility and performance." Due to mass movements caused by inertia, robot size strongly depends upon the size of the glass to be manipulated. "We mainly use robot sizes between the KUKA KR60 and KR500. As such, 3.5 x 2.5 m glass panes reaching up to 12 mm in thickness, as well as those of 3 x 2 m that reach up to 19 mm, can be manipulated." Here Gruber adds that "moving larger glass is feasible - only it's disproportionate, since the robot would then need to be enormous."



## WHEN IS A ROBOT COST-EFFECTIVE?

Thomas Haan, Head of Sales at Systron, is in close contact with many customers who are already using robotic solutions. In his experience, "Even with a one-shift operation one sees a significant increase in robot efficiency. In conjunction with a completely automated solution that includes storage or harp racks, the degree of automation is noticeably increased. Moreover, it enables completely autonomous production, among other winning traits. The system can be run without an operator, from a few hours up to an entire eight-hour shift - a

solution that brings a positive return on investment within a very short period of time."



## ROBOTS FOR WATERJET CUT-OUTS IN USE AT GLASPROFI SINCE 2018

Already in 2001, Glashandelsgesellschaft Profi mbH (Glasprofi) in Luhe-Wildenau, Bavaria, began using robots for glass handling in their production. In 2018, Systron installed a proHD glass processing centre with waterjet - all in line with in- and outlet glass storage conveyors that have 20 glass slots, a washing machine and a robot to remove the waterjet cut-outs. Martin Klier, site manager at Glasprofi, said about the experience with this systron solution: "We already had confidence in robot technology. Indeed the ProHD, the 5th robot,



was already being used in our factory. Our target was to make the work process even smoother, as the pro-



A robot for removal of waterjet cut-outs improves operator safety and increases the level of automation significantly.

cessing centre should be able to work completely independently of a machine operator." Glasprofi only processes complex glass with openings or cut-outs on the proHD - mostly with a glass thickness ranging from 6-12 mm. "We mainly supply our customers with interior glass, such as kitchen splashbacks, kitchen worktops or shower doors. Everything needs to be fitted with precision. Our tolerances are within the fifteenth range," explains Klier, before adding: "The machine is running 24 hours a day, between 01h00 and 06h00, then between 14h30 and 19h00 - even completely independently. Thanks to the buffer for 20 glasses, in combina-

tion with the robot that removes any cut-outs and places them in the container, we can produce highly complex panes without the presence of an employee. Another important aspect is the increased occupational safety. Some of the water jet cut-outs are located high up or are very heavy, so the robot facilitates our daily work tremendously."



Martin Klier, Glasprofi site manager, is extremely satisfied with the systron solution, including the robot, and the quality of the glass produced.

## LOADING WITH AND WITHOUT A ROBOT

Glaseksperten AS from Hjørring in Denmark invested in a Systron es1 seaming and grinding machine at the beginning of this year before upgrading the machine with a robot in the middle of the year. As production manager Jacob Østergaard explains: "The monotonous and heavy loading work is stressful for the operator and with the high quantities of up to 10.000 pieces of seamed glasses per week e.g. for Velux, a robotic solution was indispensable. Opera-

tor safety is also increased by light curtains and laser scanners." Thanks to robot loading, the Danish specialists can now process an average of 180 pieces of 1x1 m of a 4 mm thickness within an hour, which equals a single seamed glass every 20 seconds. "Compared to loading without a robot, we were able to increase our output by 40

percent thanks to automation. We will achieve our return on investment within a year," says a satisfied Østergaard.



Glaseksperten's Jacob Østergaard: "Thanks to robot loading, the output of our systron es1 seamer could be increased by 40 percent."

## ARE THERE ALSO ROBOT UNLOADING SOLUTIONS?

Compared to loading, robot unloading is subject to still more ambitious requirements due to the spacers typically required for stacking. These are mainly made of cork, paper, cardboard, powder or rope. Systron Managing Director Franz Schachner explains the challenges: "There are certainly solutions that can be developed for all these spacers, but you also have to consider machine cycle time. With the proHD and a typical shower door production, the spacer is not a big issue as the cycle time is usually between five and seven minutes. With the es1 and a cycle time of less than 17 seconds, it's not easy to place a spacer with the same robot. Here a separate unit would be necessary." Not only. There are quality controls during glass unloading - usually still carried out by the machine operator. However, there are potential solutions with automated scanners that check final quality.

SYSTRON GmbH

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GLASS TECHNOLOGIES

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# Glasstec 2022: A great Success for PUJOL

With its exhibition area of 300 square metres, PUJOL did it again at Glasstec this year with ovens like Eva and PDLC. True to form, the 360° market manufacturer wowed attendees anew with parts of its extensive product range - putting all its ample space to excellent use.

## AM-PRO

At Glasstec 2022 last month, Pujol presented Lam-Pro - a series of laminating ovens designed for companies seeking to achieve high performance

with low investment. It doesn't compromise the excellent quality of the final product which, thanks to its design, provides -among its main advantages-

flexibility of work insofar as the furnace has independent work chambers. This has heat distribution and energy efficiency at maximum

- resulting in ultra-fast work cycles and a very low specific energy cost per m<sup>2</sup> of laminated glass. In addition, the oven offers high productivity due to an automatic rapid cooling system. Reinforced with an air homogenization convection unit by 'Pujol Impeller Convection System®' impulsion fans, the double-layer distributed radiation system helps to achieve temperature uniformity in the chamber at  $\pm 3^{\circ}\text{C}$ .

Lam-Pro is designed to offer the professional great help in terms of productivity and comfort. For this it has a programmer and HMI with every personalized function, allowing monitoring and optimizing of all the variables. Also, the oven can be controlled remotely through Pujol e-Connect.

As a variable, Pujol Lam-Pro a chamber with its internal 500 mm height is also available - allowing for the production of curved, laminated glass.

## ARQTK

For large-sized curved glass for architectural use, Pujol presented the Talgo bending ARQTK oven at Glasstec. It is a







complete high-convection solution with excellent homogeneity which, together with its inner lining, allows the manufacture of curved low-emissivity glass with measurements of up to 5 x 3 m that have an excellent finish and distortion-free optics. The oven is equipped with two trolleys that give greater productivity and flexibility to the entire process. Talgo bending ARQTK has a complete, efficient external cooling system that helps improve productivity.

## EVALAM

For its part, Evalam, the world's leading Spanish brand in the production of architectural Eva (belonging to the Pujol Group) set space aside to display another of its interlayers that's in high demand within the architectural sector, namely Evalam VISUAL - an Eva developed for expert laminators after a high-quality solution. For added value it has excellent and incomparable transparency, high adhesion, great acoustic insulation and a crosslink index that's unique on the market. These characteristics make Evalam Visual the ideal lamination solution in all those places where optics and durability are an essential requirement.

Evalam Color developed to work in the tempera-



ture range of 120°C without loss of tone at the extremes and, in addition, providing greater color durability over time and post-break structural.

### AB-AR

An Interlayer designed with applications that require a plus of safety in public spaces or with a high linear load, AB-AR also provides post-breakage passive safety when tempered glass is used. AB-AR is a structural solution that remains stable in the entire architectural application range of structural glass from -20°C to +50°C. This makes it the perfect solution in applications that require extra safety, such as public spaces, glazed facades, structural wind-



breaks, walkable floors, stairs, ceilings, railings, as well as in anti-vandalism security situations.

### I-ON

A company that also belongs to the Pujol Group, I-ON was presented at

Glasstec to showcase its laminated PDLC solution - an application that allows spaces with transparent glass to be converted into spaces with total privacy. As such it allows for total integration into home automation systems and has been suitable for a multitude of applications within both the domestic and service sectors.



PUJOL GROUP

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# DIAMUT's ongoing mission to put performance and productivity first



A brand leader in the design, production and sale of diamond tools, DIAMUT recently developed its new line of peripheral grinding wheels with a diameter of 200 mm for single, vertical-grinding machines or integrated for laminated and monolithic glass.

Comprising its range of high-performance peripheral grinding wheels, Diamut's EVOX20 and CHEVRON20 peripheral grinding wheels guarantee reduced production start-up times, top machining speeds, optimum finishing quality, excellent performance, a long lifespan and perfect shaping of the edges.

## **EVOX20**

For float glass (both segments and continuous rim) with a diameter of 200 mm, EVOX20 is available for all thicknesses, from 3 mm to 19 mm - in various diamond grains. It obtains both a rough edge finish and a high-quality finish for subsequent polishing and covers all needs, based





upon the final use of the finished glass.

### CHEVRON20

CHEVRON20 is dedicated to the machining of laminated glass that's 33.2 to 1010.2 thick with a 200 mm diameter, both segments and continuous rim, with various grains for either a rough or a high-quality finish.

In the sector version, the wheels were made with a new geometry to facilitate cutting of the plastic film without tearing it. Its arrow shape ensures that wheel working is centred in respect to the glass, with the cutting tip against the glass.

### PURSuing EXCELLENCE

Diamut has always been constantly engaged in re-

search and innovation. This has made it possible to improve waste cut types on continuous band wheels.

Thanks to the profile open at the ends -and so not closed as with the previous line- as well as greater width, this line of peripheral wheels guarantees a greater volume of the discharged part, thereby allowing a greater flow of the coolant liquid - which avoids overheating of the wheel and a rapid discharge of the removed material.

Indeed it's thanks to the optimization of cooling, type of binder and geometry of the sectors to avoid deformation of the grinding wheel in correspondence with the plastic layer that excellent results of deformation and wear

have been yielded. After 1600 metres of work a deformation of the threads of the profile has been highlighted - not of the wheel centre. Here, indeed, the CHEVRON grinding wheel processes laminated glass as if it were monolithic glass!

### CUTTING-EDGE TECHNOLOGY

Diamut's assiduous commitment to research and innovation has led to the definition of a new 'cobalt free' binder, which is used on all products within the range. The company's



two lines, namely EVOX20 and CHEVRON20, are made using a latest generation binder - specifically designed for this type of application and tested during development in extremely competitive markets. This binder uses metal powders with a low environmental impact which are not harmful to health.

Here the use of 'cobalt free' powders guarantees

benefit to the operator during the entire production process of the tool - including the disposal of processing waste. This represents an important advantage for customers by allowing savings on waste disposal costs associated with the material processing.

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# FILTRAGLASS

## presents its XtremFlow at Glasstec



Exhibiting at Düsseldorf earlier this year for the glass industry's most important international trade fair, FILTRAGLASS showcased XtremFlow at Glasstec 22 for the very first time - the company's range of water filtration systems for large volumes of water.

### **X**TREMFLOW XF-420

Doing the company proud at Glasstec last September, Filtraglass put a model of its XtremFlow XF-420 on display, which is characterized by a dry waste extraction of 150 to 260 kg per discharge. The system has a water flow rate of 24 m<sup>3</sup>/hour and a water tank capacity of 6750/9000 litres. This was not the only machine the company took to Glasstec, as it also exhibited one of its standard systems: namely the DG.365.F.

### **THE ART OF WATER RECYCLING**

Participation at the inter-

national Glasstec exhibition was a whopping success for Filtraglass as the Girona-based company saw its stand replete with professionals, customers, sales representatives and friends - all focused on their interest in its filtration systems.

### **SAVE THE DATE: VETECO**

Glasstec was not the last stop for Filtraglass this year. The company has yet another appointment at the Veteco trade fair from 15 to 18 November in Madrid, at stand 10E22, together with its Spanish distributor, Vitrum S.A.





Filtraglass SL

**FILTRAGLASS**  
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## ABOUT FILTRAGLASS

Filtraglass manufactures water filtration systems for all types of glass industries. In this way it covers many sectors, including the optical and automotive industries, as well as the transformation of flat glass in general. The function of the company's machines is that of filtering and extracting glass particles that are found in the water used in glass treatment processes, thereby obtaining clean, reusable water on the one hand and dry, recyclable solid waste on the other.



# CUGHER solutions extend to every sector of the industry

For each of its projects, Cugher's product range -which includes printing machines and dryers as well as handling and vision systems- is configured either 'in-line' or 'stand-alone' to reach the high potential of the company's customization - finding application both in mechanical/electrical hardware and in software.



Fully mindful that different glass typologies call for tailored solutions that can meet changing parameters according to sector-specific production needs, CUGHER seeks always to guarantee the best results for plants or machinery - many of which will have different requirements.

### PRODUCT RANGE

- Silk-screen printing
- Handling
- IR and UV dryer
- Vision systems
- Complete automated lines
- Order manager 4.0

### AUTOMOTIVE

Cugher's silk-screen printing lines for automotive glassmakers -windshields, back-lites, sidelites and sun-

roofs- have always been the company's core business. Whether for laminated or tempered glasses, rich experience now allows it to identify proposals that can ensure the management of large production batches. Results here include the elaboration of complex plants that are highly-automated and synchronized with

other line components.

### HOME APPLIANCES

Whether it's processing rigid surfaces, flat glass for household appliances (hobs and ovens), flat screens or special applications - all require performing solutions within a sector for which speed is essential. Cugher knows these needs well, having

designed a machinery series that can guarantee quick, simple format changes via a self-learning system that memorizes formats - thus allowing all operations to be performed by a single operator for both small and large formats.

### BUILDING & INTERIOR DESIGN

Backed by the experience and knowledge of experts at Architectural LAB -a genuine research





ciency is increased.

Within all its plants, Cugher's strengths include:

- High productivity
- Excellent image definition
- +/- 0,08 mm print repeatability
- Fast, easy machine tooling and format changes
- A self-learning system of formats
- Consistent thickness of the deposited ink at +/- 5 to 10 percent - depending upon the frame used
- 98 percent good pieces guaranteed
- System active 7/7

Cugher has been working in glass for over 50 years - always with a cutting-edge, customer-oriented approach - the same that's seen the company conquering its lead role as international producer of highly-customized glazing technologies within various production sectors.

centre within the building and interior design industry- Cugher provides tailor-made solutions, both for screen printing and for handling float, tempered and laminated glass. These provide civil and industrial applications

which range from windows and balconies to furniture accessories and shower enclosures - reaching formats of up to 3x6 m.

### **SOLAR**

Through its production line, Cugher designs

and produces machinery for handling solar panels within a growing sector for which energy issues are ever more relevant - also with its conductive backsheet printing, by which solar energy dispersion is reduced and panel effi-

**Cugher Glass Srl**



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# FOREL continues to amaze with its lamination line



As 2022 sees the completion of an ambitious upgrade of its Art. LL lamination line, all kitted out with fresh operating functions for glass coupling and unit heating, FOREL's new version brings significant improvements both in terms of precision and automation - making it among the best-performers on the market today.



Capable of flexible production with its PVB and SentryGlas® interlayer, Forel's latest Art. LL lamination line for producing laminated glass comes as an optimum solution for the processing of different sizes, shapes and types of glass.

#### LINE DESCRIPTION

Much like the entire Forel range, the Art. LL

lamination line follows the company's product philosophy - offering automation, innovation and quality. Whether for rectangular, stepped or shaped units, the line can process multi-layer panels that reach 80 mm in maximum thickness, sizing up further to Jumbo (6.000 mm x 3.300 mm). Not only. The automatic unloader can manage a

finished panel weight of up to 1.500 kg.

#### OPERATIONAL PROCESS

The glass sheet is loaded onto the tilting table, which carries the sheet horizontally. From here, it proceeds to the horizontal washing machine. This solution is equipped with 6 brushes - all 200 mm in diameter. Thanks to

a system of self-learning sensors, the washing machine detects size, thickness and the presence of Low-E coating on all incoming glass. Sensors can be installed upon request - also on both the upper and lower sides. The machine automatically adjusts the action of the brushes, avoiding any use of hard bristles on the Low-E coating. The washing machine can be





bly area where the PVB roll storage is located. The entire process is fully-automated and allows for a perfect positioning of the sheets.

### HIGH PRECISION

The Art. LL is equipped with a significant storage capacity that can hold up to 10 PVB rolls, from which the product is automatically unwound onto a special anti-static bar that will prevent any dust particle deposits. PVB positioning over the glass is fully-automatic, taking advantage of the movement of the suction cup upon its return to pick up the second glass. Thanks to the automatic pane centering system, the positioning of the two panes is then optimal.

The lamination oven consists of two zones - namely pre-heating and reheating, which operate with progressive temperatures.

The oven can be equipped with a triple heating system that consists of:

- Irradiation with infrared lamps
- A convection system for heated air (optional)
- Heating resistors within the convection system (optional)

Two sets of pressing rollers are in operation, both inside and at the exit of the oven. These are conical-shaped to facilitate air expulsion to the outside.

**FOREL SpA**

**FOREL**

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completed with an anti-static bar to prevent any dust deposits on the outgoing glass.

The glass sheet then proceeds down the line where a system of belts and rollers brings it into proper alignment before positioning it at the centre of the line.

Once aligned and centered, the glass sheet is picked up by a system of suction cups which then transports it to the assem-





# Company restyling at **IMMMES** - no mere cosmetic facelift

With its recent participation at Glasstec 2022, IMMMES' influx of stand attendees exceeded all expectations, drawing entrepreneurs and visitors from all over the world who showed great interest - high participation indeed for a trade show that had suffered two years of pandemic-related setbacks.





Being such a prominent industry event, Glasstec this year marked an important opportunity for Immes to showcase its latest innovations, not least the restyling of its logo. Such changes symbolise the company's go-to approach to leading its industry into the future - expressed in all aspects and including a continuous search for improvement and desire for renewal.

### A FRESH LOOK

Here restyling helps to boost the company whilst preserving its traditions and core values - all of which have left their mark, remaining ever true to Immes through thick and thin. It has grown consistently over time - adapting faithfully to the increasing demands of customers while expanding its business areas from industrial water purification plants to architecture and

carpentry as the company pursued continuous technological development to ensure maximum customer satisfaction.

### RECENT INSTALLATIONS

IMMES experienced significant growth over 2022 with the installation of numerous plants worldwide in the grinding water purification market, which is currently raising increased global awareness. Here the expansion of company goals is accompanied by growth of the company's team to ensure a real-time professional support capacity that can have international scope. Each phase of business development is closely linked to an ecological consciousness that's seeing ever greater traction. On that score, Immes is especially conspicuous as an eco-friendly company that takes care of environmental issues - being

totally powered by renewable energy.

### THE DTP

As IMMES' flagship product, the DTP too is characterised by unique technology that makes it a truly efficient integral purification system for any modern, sustainable factory - leveraging total recirculation technology while supplying machines with a water that's totally pure and suitable for sourcing such highly sophisticated equipment as CNC spindles.

The DTP System can purify the grinding water perfectly, from 12 to 250 m<sup>3</sup> per hour, even working 24/7 - all the while ensuring great electricity savings. But that's not all. It also meets the requirements of modern Industry 4.0 plants and IE4 Efficiency Class classification and will offer large tax incentives in countries where such fiscal regimes are applied.

### OTHER SYSTEMS ON OFFER

- DTPs that operate according to the same principles and performances as those dedicated to small to medium-sized factories;
- Resins REVERSE OSMOSIS AND DEMINERALIZERS, which are systems dedicated to those washing machines that see to the removal of dissolved minerals - available in sizes ranging from small to big;
- ANTEAONE, a closed circuit that regenerates dirty water contaminated by paints.

IMMES

**IMMES**  
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The background is a vibrant purple with abstract teal and white geometric shapes. Several circular icons are scattered throughout: a gear, a leaf, a globe, and a screen. A central white tag with a teal ribbon is attached to the top. The tag has the text 'WAY TO GROW' in a stylized font, with 'Glass Performance Days 2023 Finland' written below it. Arrows point from the tag towards the main title.

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# Adding value: the new face of **LATTUADA**

After taking the courage to analyse itself, LATTUADA recently launched its new image - having experienced some sense of disparity between what the company was achieving daily and how it was represented from the outside.



The recent rebranding of Lattuada all started from a need, felt loud and clear, to bring out the evolution -even at the level of communication- that had already been taking place within the company over years - externalising a desire for innovation that had been pursued daily. The objective was therefore unambiguous: to achieve such communication as fully reflected what Lattuada is today - after almost 45 years in business.

## THE PATHWAY TO IDENTITY

But how to achieve this? Through a rebranding process. Such is the technically correct name for what was undertaken. A pathway that didn't only

concern pure aesthetics but brought out also the most intimate aspects of the company - redefining its deepest contents whilst sufficiently conveying each detail of communication to yield some true expression of itself. Reliability, experience, professionalism, passion, concreteness, customised answers, continuous research and development - all values and wills by which the company felt represented and which it sought to strongly emphasise in its new image - such that everyone could grasp its essence at first glance.

## LOGO

The first step of rebranding concerned the company's logo, from which

-following some analysis- the term 'Adelio' was eliminated and 'Lattuada' exclusively maintained. It was not a decision taken to cut bridges with the past but, au contraire, upon the strength of experience gained over years, to offer even more essentiality and immediacy. One word alone, unequivocal, impossible to confuse: Lattuada. Not only. In 'Lattuada' there is the exact expression of its very essence as a Family Company. Indeed the term is the union between the family and ownership of the company - a factual reality that will remain unchanged as a guarantee of security and stability for customers.

Having defined this aspect, a true restyling of the logo was then performed: a new font and pictogram - respectful of the past but also promoting renewal. The institutional colour remained the same, only flanked by an anthracite grey and with a high visual impact - a chromatic combination of strong contrasts that doesn't leave one indifferent and immediately catches the eye.

## CORE VALUES

A wide range of values emerged from the brand study - a result of the personal relationship with customers and constant attention paid to them. Values that came thus together in the pay-off - entrusted here with the task of conveying, in two words, what the company is, what it does and what it will always continue to do. 'Adding Value'. Indeed the company seeks to add value. Its machines, its automation solutions, its innovations - all these add value to the workings of glassmakers throughout the world. Such value then turns into whatever the customer may want. Here the company adds customisation, experience, innovation, performance, timely service, proximity and results. It seeks to convey the sense that whoever may choose a Lattuada should know they're 'adding some-





thing' to their reality. Something positive and unique. The objective, through the pay-off, is to make it clear that Lattuada always offers a solution - for this it seeks to be an added value.

## COMMUNICATION

Once the logo, pay-off and colours had been defined, everything was directed to each aspect of online and offline communication: a new coordinated image (business cards, notepads, email signatures, etc.), new ADV campaigns within trade magazines, a review of the catalogues that followed the redefinition of the identified offer (simplified into four clear and identifiable lines: glass solutions, stone solutions,

special solutions and automation solutions) and a new website, equipped with an advanced search function to render it easier and more intuitive to find the most suitable machine for one's needs. All this was presented at Glasstec 2022, the recently-concluded trade fair in Düsseldorf, during which the world was first shown the company's new image via a set-up which expressed the values that emerged whilst achieving the identified communication goals.

## CUSTOMER RECOGNITION

One strong desire the company had from the outset was to give both to the customer and to the glass industry a message

of corporate dynamism and continuous quality upgrade - exactly what it daily pursued and also had to emerge through communication. The company wanted its objective to be clear: to be recognised as excellence. Indeed the new image sought to do just that: to transmit its soul whilst conveying desire, aspiration, ambition. Exactly what Lattuada is and what it wishes to continue to be in the coming years: confirming and strengthening its leadership in the grinding and glass processing sector, i.e. expanding its range of robotic and automation solutions, strengthening its brand at international level, offering solutions that add value to glass-makers the world over. The message here is to in-

vite customers to consider how choosing Lattuada today can mean making a conscious, strong and reliable choice of a company that offers concrete answers to everyday needs whilst never abandoning its customers. It is to invite customers to consider that choosing Lattuada today means relying on a company that's aware of both its potential and its values while being innovative and avant-garde. Always the same company, only with a new face: Lattuada, Adding Value!

ADELIO LATTUADA S.r.l.

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+ADDING VALUE

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# The sensational comeback of **TUROMAS** at Glasstec



Exhibiting at Glasstec 2022, TUROMAS returned this year under the slogan 'Let's go live' - only to end with record figures that signify the great esteem in which it's held by the glass industry. This saw the storing, loading and cutting glass machine manufacturer participating at the show after a full four years.

Attesting to the innovative power of today's glass industry, more than 30.000 visitors from over 120 countries descended upon Düsseldorf at

Glasstec last September. Here, in keeping with the trade fair's motto, Turomas wanted stand attendees to truly 'experience glass' - even as they 'experienced the Turomas product'. Here's why the com-

pany opened its booth, its rooms and its machines over the four fair days to ensure visitors could enjoy, first-hand, the latest developments - all of them demonstrating its new, exciting opportunities.

#### STAND TRAFFIC

Besides the presence of Turomas' President Miguel Tomás, it was also represented this year by its General Manager, Antonio Ortega as well as both the R&D team and the com-



# TUROMAS

OUR PASSION, YOUR PROGRESS



Antonio Ortega  
Alvaro Tomás

pany's sales and distribution network - all there to offer a more personalised customer service. This had the business team especially satisfied with the attendance and reception as commercial relationships got strengthened and visitors were briefed on various advances, innovations and trends.

Indeed the image of a reliable, high-tier company (already in place for many years), was consolidated once again - reflected by the sheer number of former customers who came to say hello and the many potential customers who were interested in fully automated solutions. Most visitors were from Europe, although some also

represented Morocco, Tunisia, Libya, Egypt, South Africa, Saudi Arabia and the United Arab Emirates, among others.

## SOME COMMENTS:

*"A consistent customer profile at the show was one who focuses upon higher volume processors which require a higher degree of automation. As such, Turomas has established itself not only as a machinery manufacturer but also as a benchmark in both engineering solutions and integrated automation projects. In addition, customers who visited our stand showed loyalty and appreciation for the brand - with a special mention made in regard to the*

*after-sales service received."*

**Antonio Ortega, Turomas General Manager**

*"Several projects were closed in Argentina, Mexico, Cyprus and South Africa - including the largest in our history, which is in Ireland. There was also a large presence of our Latin American customers, especially from Mexico, with a significant number of companies and projects. Moreover, the main Australian companies attended our stand - all thanks to collaboration with our official distributor Innovync. We held very important meetings with some of the main companies in India, United Arab Emirates, Saudi Arabia and*

*Egypt. Indeed the fair was undoubtedly the best in our history in terms of results and the quality of visits."*

**Álvaro Tomás, Turomas Vice-President**

*"The large number of visits we had from our national customers and from Portugal is certainly noteworthy - as were those from currently-active projects, many of which should materialise in the coming weeks and over the medium term. The number of Canary Islands and Portuguese customers was significant too. Here we'd like to thank our national sales network for consistently attending to the rest of our customers.*

*They all displayed a genuine sense of accessibility and satisfaction (including, of course, our other 'export' customers) - which is all the result of work carried out over almost 40 years of the company's history.*

*Glasstec 2022 was a most important fair for Turomas, at a good time, with challenges that will now materialise to reap the rewards of everyone's hard work and efforts while offering us something of a 'breather' to face the uncertainty that's stalking us."*

**Statement by Álvaro Doñate, Sales Representative for Spain and Portugal**

*"Businesses in countries where we were not present until recently are now familiar with Turomas as*





a company with reliable, high quality machines.

For example, there were live demonstrations of 8+8 glass-cutting with our compact laminated cutting machine, which has a cutting time of less than 50 seconds in 8+8, as well as exceptional cutting quality. This was noticed by many of the small glass processors who thanked us for bringing a machine to the fair for such a large group of glassmakers.

Special mention must also be made of the shuttle as well as the loading and cutting table solution for jumbo glass. Its reduced space and the performance it offers in terms of time certainly over-

whelmed many.

The software shown at the show, together with the live EasyPro glass stripping demonstrations, were the icing on the cake - delighting every glass processor who knows the current limits on the market and can see how Tuomas has far exceeded them.

In short, the constant presence at our stand of customers and new people from all over the world, interested in becoming part of the great Tuomas family, made it a fair at which the company was able to emanate an image of growth and great success."

**Oriol Llorens, European Sales Manager**

## PRODUCTS EXHIBITED

At the show Tuomas presented its main technologies for smart storage, loading and automatic glass cutting, as well as its new software suite. All were exhibited in live demonstrations, personalised for each customer, to create a unique and intimate experience with each one.

### SR-06 RACK SHUTTLE SYSTEM FOR JUMBO GLASS

A storage and loading system for glass that's up to six metres long, the SR-06 Rack Shuttle System can work with any type of coating and thicknesses - from 1.8 to 25 mm. The shuttle transports the fully-loaded trestles without stopping be-

tween two positions, significantly reducing cycle time.

These systems are particularly noteworthy for their modular construction. This means they can grow as a company grows while adapting, thanks to their nigh unlimited capacity, to both area size and shape. Here they can cross columns and even work between different warehouses.

### RUBI 406VA. MORE AUTOMATION, MORE FLEXIBILITY, MORE SPACE

Alongside the SR-06 system, RUBI 406VA, the first standalone cutting table incorporating a six-metre cutting bridge, was on display. Its innovative design provides automatic load-



ing, cutting and removal of jumbo glass, thus ensuring maximum productivity and automation in the smallest possible areas.

The automatic loader is integrated into the structure of the cutting table itself, which allows loading directly from the SR-06 trestle. It optimises processes in areas of just 35 m<sup>2</sup>, providing great financial and logistics benefits for the customer.

#### **RUBI 406VA**

The RUBI 406VA features fresh, stronger, more reliable and faster loading

arms that incorporate an instant, new separation system which will eliminate problems associated with the glass sheet separation process.

By this new design, speed and loading time are both significantly improved, thereby reducing loading time to a minimum without compromising safety in any way.

The cutting bridge has been specially designed by the Tuomas engineering team. It's made of extruded aluminium - a lightweight material that allows for greater speed and acceleration.

#### **ACR- ADVANCED COATING REMOVAL FOR EASYPRO GLASS**

The ACR (Advanced Coating Removal) was also on show: a new generation stripping system that's capable of meeting the needs of today's market - with maximum quality within a wide range of coatings.

It incorporates patented innovations that improve the glass stripping process, such as the Advanced Cooling System and the two-stage strip-

ping system that prevents the protective layer edges from peeling off.

The equipment also includes a high-flow, three-phase vacuum for the collection of waste - entirely removing it from the surface.

#### **LAM 304 LAMINATED GLASS CUTTING TABLE**

In combination with the RUBI 406VA, a cutting table for laminated glass, namely model LAM 304, was exhibited - so forming a mixed line that's capable of processing both glass types.



The LAM 304 is a laminated glass cutting solution for companies that are after a versatile machine which provides both high quality and performance. Its compact design means the line can cut glass of dimensions reaching to 3700 mm and thicknesses of up to 10+10 mm.

Tuomas also presented its suite of Industry 4.0 programmes. These applications 'understand' and 'analyse' equipment operations based upon data provided by the machines

themselves.

- **StockGlass:** monitors and controls the stock of multiple automated warehouses in real time.
- **StoreGlass:** manages the stock of material in a non-automated warehouse.
- **TuomasLink:** integrates Tuomas' smart warehouse data with the main ERP solutions on the market.
- **LinkGlass:** fully automates the production sequence, preventing operator intervention in the work order selection and loading sequence processes.
- **Cutting TV:** an application that allows the automatic display of optimisations. At a glance, the operator has all the information needed for the cutting process.
- **TuomasSplitter:** optimises laminate cutting time by balancing the work between two cutting bridges.
- **SmartGlass:** allows for an overview of statistics on productivity, avail-

ability and efficiency as well as effectiveness, working hours, processes, materials and produce reports.

**Tuomas**

**TUOMAS**  
OUR PASSION, YOUR PROGRESS

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# MAZZAROPPI ENGINEERING makes gains at Glasstec 2022

Following various postponements prompted by the pandemic, the most important international event of the glass industry finally took place in September - ensuring that exhibitors and visitors from all over the world could marvel at the latest innovations of the glass industry as both advanced technologies and revolutionary machinery provoked attendee interest.

## GLASS TOUGHENING SOLUTIONS

As for Mazzaroppi Engineering, its focus remained squarely upon revolutionising the classic concept of hardening furnaces - especially concerning energy costs. This enabled the company to demonstrate to visitors its new energy-saving approach, which is always what drives the company's design solutions.



Having been on the Glasstec exhibitors' roll for many years now while consistently maintaining its longstanding tradition as a company showcasing its working glass tempering machine, namely the Tp compact, MAZZAROPPI ENGINEERING was delighted to return to Düsseldorf for this year's trade show.



Mazzaroppi technicians toughened the glass throughout the event, showing the product's very high quality while garnering no small amount of amazement and disbelief in visitor reactions. This drew much attention from many potential customers, who hardly believed the system was even up and running. Here the public's astonishment is understandable, considering that the Tp Compact truly is a plant which revolutionises the 'legacy' concept of energy-intensive hardening furnaces. Indeed a classic hardening machine would have needed significantly more energy to be switched on and kept at temperature - with really

long waiting times for the thickness change in production.

### A CAN-DO APPROACH TO INNOVATION

Here Mazzaroppi Engineering sought to challenge even the most sceptical visitors - demonstrating how it's possible within the field to harden with very little available energy. This proves that the Tp compact (like all Mazzaroppi machines) can be switched on and off daily - also zeroing in on the very long waiting times for thickness changes.

The product is designed for a specific business owner segment and was created

with their day-to-day needs in mind. Maintenance costs, too, are very low compared to the market average. To that end, Mazzaroppi chooses to invest in both material and design quality to ensure that only machines that require next to no maintenance get put on the market - an aspect that's particularly well-appreciated by the company's numerous German, Austrian and Swiss customers. Here the brand's safety and reliability translate into continuous production - with no surprises for the customer, who is thus limited to dealing with quality and production management alone.

### GLASSTEC TAKEAWAYS

As to the event itself, Mazzaroppi Engineering enjoyed considerable success throughout, which proved to be a springboard not only for sales but also for networking with possible new agents, as well as establishing new business relationships with various employees and customers. Such was the Mazzaroppi team's approach to all stand visitors at Glasstec - articulated in the philosophy: 'Quality is about meeting the customer's needs and exceeding their expectations while continuing to improve.'



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Engineering srl



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# RBM ITALIA anticipates its 60th anniversary jointly with SURFACES GROUP

**R**BM Italia, a company that made history with its glass polishing tools, will be celebrating its 60th anniversary in 2025. From its earliest beginnings in Piedmont and now as a large International Group, RBM has always known how to merge its innovation spirit with the same start-up capacity that saw it hit the latest edition of Glasstec in joint collaboration with ADI and Vincent for the very first time.

## MAKING HISTORY

RBM's story rings similar to that of many companies which contributed to making Italian entrepreneurship so famous during the 60s - driving a memorable economic boom over that historic decade. Initially a small family business, it grew steadily and, beginning from the province of Asti, has since risen in the markets to progressively sell its products all around

the world. *'Even today, in China, glass polishing wheels are generally called 9R and 10S - which makes our product the defining one of an entire category. That's much like aspirin for anti-inflammatory medicine,'* noted Stefano Macalli, Chief Operating Officer of RBM Italia.

From 1963 till today, RBM Italia has remained state-of-

the-art for float glass polishing wheels - ever maintaining its ability to develop in both ideas and applied innovation. Indeed, from the wheel that first made its appearance on the market to the company's most recent, innovative developments with hybrid bond wheels, RBM continues to make headway. As such, the





Back in 1963, Romano Reynaud conceived of, and developed, the first glass polishing tool - an invention that soon proved a big win on the market. A momentous event, it coincided with the founding of RBM ITALIA and saw the production and sale of both the company's 9R and 10S wheels. No less appreciated today, these still remain very much in demand.

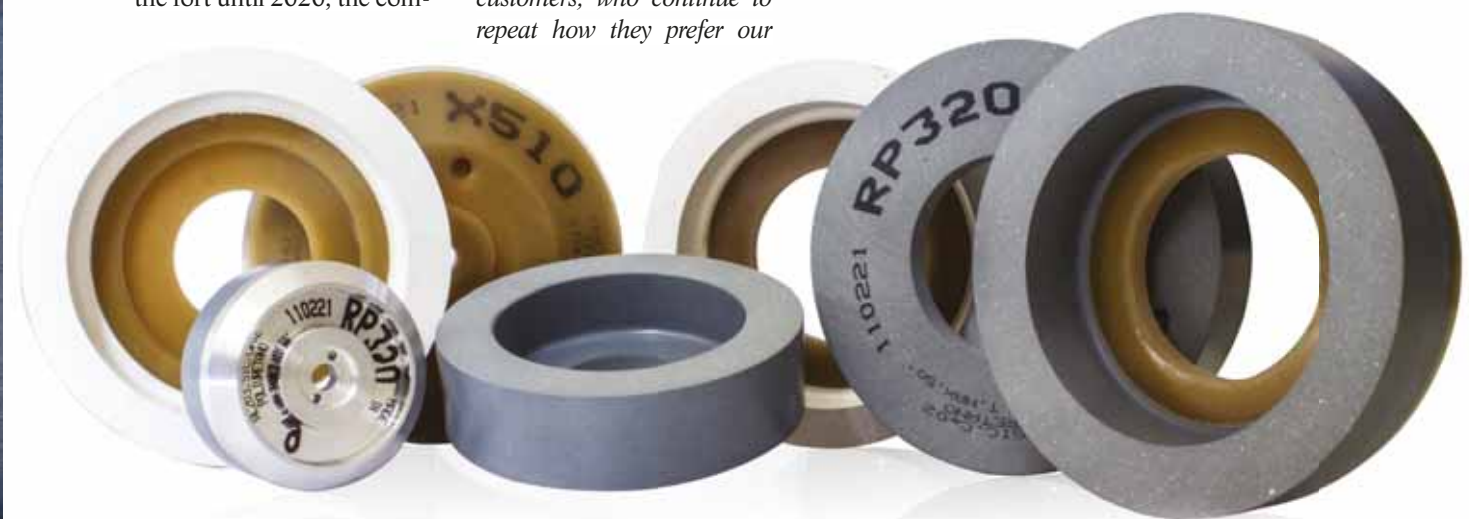
drive to innovate has never waned - leaving a whopping 45 items in today's catalogue. A truly prolific production, that success has consolidated over the years - still supporting machinery manufacturers as they meet their production needs while proposing winning solutions for glass polishing. Not only. The same advances have seen RBM exporting to 55 countries, where its wheels have made significant inroads into international glass processing markets.

### SURFACES GROUP

After its entry into the Surfaces Group in 2017, RBM experienced fresh development once more. A seamless transition overseen by the Reynaud family, which held the fort until 2020, the com-

pany absorbed all previous employees while expanding its workforce yet further. As a new deal, this boosted the company further - considering that, with its seven companies, Surfaces Group is a world leader in the production of tools and treatments for surface finishing - not just for the glass sector but for ceramics, stone and engineered stone as well. Integration into such an important group made it possible to develop an advanced organisational structure - also making material procurement easier whilst finding fertile ground to evolve the catalogue further to consolidate international appeal.

*'We're a 60-year-old start up. We still identify ourselves as an innovative and dynamic company - still amazing our customers, who continue to repeat how they prefer our*



solutions above any others. They also appreciate our very fast delivery times,' continued Stefano Macalli.

## EYEING INNOVATION

Alongside its traditional values of quality and reliability, RBM's fresh progress has accelerated its historic drive towards innovation. Here the company's ongoing investments have afforded it the chance to strengthen its research & development. Characterising true RBM talent, that shared know-how, together with the ability to create synergies among its different brands and the possibility of using modern LABs, all favour this propensity.

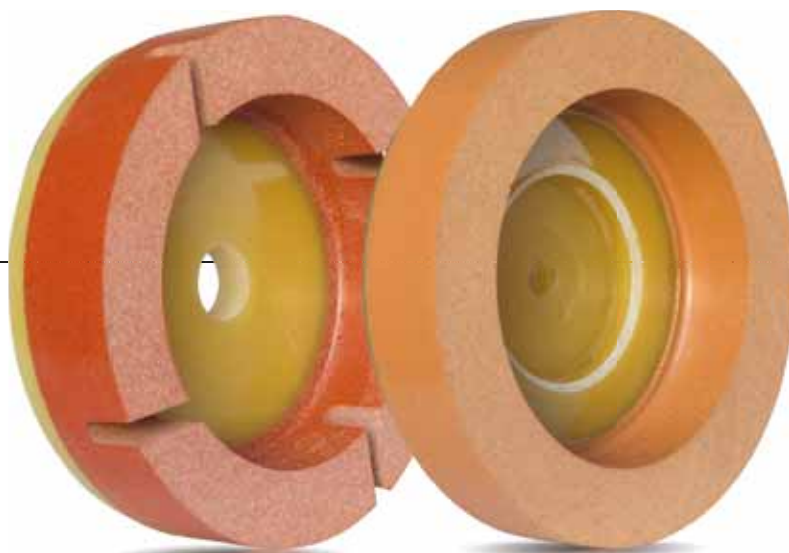
## MAKING GLASSTEC COUNT

'With the entry into Surfaces we've developed our R&D significantly - expanding our product range while opening up to other product types,' said Simona Biamino, Sales Manager of RBM Italia. 'We're

currently studying a series of new materials and bonds -also tested on products other than glass- and we're also improving the durability and performance of our tools.'

'At Glasstec, for example, we brought newly-developed products in addition to our range. We wanted to show our latest products to customers as well as the new bonds and materials we're experimenting with. Our 'hybrid' products, each versatile and suitable for use on different machinery types, attracted a lot of attention. Here we're particularly proud of the success we've achieved with our new CL 600 wheel in semi-rigid polyurethane - which is very good on CNC machines.'

'We've also seen some pressing demand for products dedicated to Low-E Glass. Here our range is available in three different materials - each based on specific needs and different machinery types,' concluded Biamino. At this latest edition of



Glasstec, RBM made its appearance for the first time with its two partners of the Glass Business Unit, namely ADI and Vincent - two historic brands in the production of diamond tools for float and laminated glass processing.

'Finally we returned to Düsseldorf where we noted some significant visitor traffic. Here the strategic choice to attend together was well received. Given the enthusiasm of our customers I can say the event was definitely a success,' said Lorenza Dal Maso, Glass Division and ADI Sales Manager. Dal Maso continued: 'Besides the attention we at ADI gave to such historic products as our UHS routers and the wheels for vertical CNC machines which are 150mm

and 200mm in diameter respectively, we noted considerable interest in the EVO cup wheel for straight edging machines, which was greatly appreciated for its versatility. We also decided to launch PXCare during this event. It's a new kit to remove damage on polymethylmethacrylate components. A scaled abrasion system, it aims to satisfy a growing demand from operators in the naval and furniture sector, where such materials as plexiglass and Corian® are widespread. Here the path taken with GlassRenu has got us successfully answer a precise need hitherto unmet in structured solutions.' PXCare incorporates different abrasive technologies. Although it requires electrical tools other than GlassRenu,







it can work dry and needs no sheets disassembled from the supports.

### A TRADE SHOW OF FIRSTS

For the first time, Vincent was represented together with ADI and RBM Italia after joining the Surfaces group a year ago. That had the catalogues enriched by

its products for processing glass, ceramics, stone, and engineered stone. An historic brand born in 1974, it later returned to being entirely Italian. It also regained its original name after leaving the Tyrolit group. As for Düsseldorf, it saw the complete range for float glass tools, technical glass and the automotive industry all on display - even if the attention remained focused on a new product. As Vincent Sales Manager Carlo Crescini explained:

*'At Glasstec we concentrated on the Starflex cup wheel set. Besides the 175 mm diameter, this year we launched the new 150 mm wheel. A truly universal tool set, it's available in every grit that comprises the machine set which can be mounted on all*

*straight-edging and double-edging machines.'* Crescini went on: *'Given the mix of grits and bonds - coupled with its geometry- the tool is suitable for processing practically any type of glass: from 3 mm ultra-thin panes up to ones of 30 mm thickness - from monolithic to laminated. But that's not all. Thanks to its high flexibility, even amidst the infinite jungle of items, Starflex now shines as a unique and simple solution. As for the 175 diameter, delivery times are really swift. Indeed availability is practically immediate. Here we're also working on optimising delivery times for the new 150 diameter. Demand has exceeded our expectations in terms of large order volume, which is why I'm happy to report that we're improving our production capacity thanks to recent big investments.'*



## Surface Group

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# ROBERT BROWN

## (1929 to 2021)

### giant of the glass industry

From humble beginnings as a self-employed and self-taught display artist, ROBERT BROWN would soon become a global force in the glass industry. A creative and artistic man from a young age, he had the drive and determination to succeed from very early on in his career.



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Telex 587126

It all began in 1958 when Robert Brown had his first experience with screen printing - producing advertising signs, cards and posters. This business grew to be the largest screen printing business in Adelaide (South Australia) by 1962.

#### GLASS PIONEER

In 1963 Robert was approached by a local domestic appliance manufacturer who wanted a glass control panel printed with ceramic colours. They gave Robert a production piece from the USA. Robert had no



## SUSTAINED GROWTH

There was to be a pattern of innovation over Robert's career, and this continued in 1965 when his engineers designed and built a multi-stage toughening furnace. From this point the business grew rapidly. Seraphic quickly grew to supply glass panels to white goods manufacturers Chef, Frigidaire, Vulcan, Everhot, Malleys, Westinghouse, and Whirlpool in Australia. In 1967 he developed a toughened glass warming tray that was printed and fired with a unique silver-ceramic circuit. This technology was to be used years later to produce automotive demister windows, at a much lower cost than his rival using plating technology. After developing an early version of a roller hearth furnace, Robert found it was a little ahead of its time and it was converted to drop-moulding to pro-

experience of printing on glass or of ceramic colours but he set about producing a sample. It was approved for production and Robert only had a few months to tool-up. He had a small box-furnace designed and built and initially had to buy in the glass - pre-cut and drilled. Robert then set about printing and annealing the first ceramic

glass panels ever produced in Australia. From his memoirs, Robert recalls advice given to him many years earlier: 'There are many opportunities that will come your way in life. The trick is to choose the right ones.' From that point on, he was to concentrate on decorative glass manufacture. To do this, he launched a new company

that he named Seraphic. Robert soon needed continuous-furnaces and more production lines to meet public demand for electric stoves. Their popularity was driven by the fact that it was now possible to see inside the cooker through the large decorated glass door. He employed talented people for specific roles and this was always a key to his business successes.





duce glass giftware. His creative mind then perceived a unique way to print architectural glass with fine lines for heat reflection, however domestic appliances remained his primary focus.

### A PASSION FOR DESIGN

Other innovations continued; equipment was designed and built in-house, including automated glass cutting, drilling machines, and improved furnaces. By this time Robert's business had grown to cover several locations and was the market leader in decorative toughened glass in Australia. Part of the business was sold and rebranded Pilkington-Seraphic.

### HITTING THE GLOBAL MARKET

In 1974 a brief period of semi-retirement followed.

However, convinced that Britain and the Common Market could become a global centre for appliance glass, Robert set about planning the establishment of a company in the UK. That bold move would secure his reputation as an international leader in this highly-specialised field. He set up a factory at Bishop Auckland, in north-eastern England, choosing the location because it offered a willing workforce within an economically depressed region- especially after coal mine closures- as well as proximity to Teesside International Airport and Darlington's intercity rail link. Once again, Robert used his ability to recognise talent. He took with him to England a glass toughening furnace plus five skilled men and their families.

### THERMAX

His new company, Thermax, was established in 1974/5 and the knowledgeable-team approach paid off, with a successful foray into the local UK domestic appliance industry. Quality of the product, printing and ceramic colours drove the expansion of the business and increased orders and higher volumes followed. The business also grew to be prominent in the supply of glass for London Cabs, telephone booths, hot-trays, trucks, tractors and glass hob tops. Robert travelled widely, displaying the Thermax brand -and reaping orders- at major trade fairs.

### AUTOMOTIVE

Robert's talent for innovation changed forever the standard features of automobiles. An approach

from Sunbeam-Talbot for one of their models led to the innovation of printed black edges with a graduated pattern of dots on the rear window. Robert exhibited this at the Geneva Motor Show and there was much excitement in the industry. The Japanese car manufacturers and others, made repeated visits to the Thermax stand. This feature was subsequently adopted the world over and now appears on most modern vehicles.

Ever-inventive, Robert extended his product range in the automotive industry, capitalising on the emerging fashion of sunroofs and heated rear windows. The business grew in scale and turnover, adopting a can-do attitude. On one occasion a phone call from Italy resulted in an order for many thousands of black printed sunroofs, for urgent delivery. The answer was an emphatic 'yes - we can supply' and after the phone call, the staff then pulled out all the stops to satisfy the surprise order. Decorated sunroofs were also exported to the USA and Australia.

Robert's simplified process of producing vehicle rear heater-demisters with a single print process, developed years before in Australia, was effectively applied to mass production. He then pioneered





**P**lant No. 1 for the Manufacture of Domestic Appliance Glass.  
Established in November 1974 No. 1 plant covers 36,000 sq ft with land provision for expansion three times.  
Besides the U.K. home market, Thermax is deeply involved in export to E.E.C. and other countries.

Our 'in' factory services:

1. The conversion of customer drawings to film positives.
2. Prototype and pre-production sampling.
3. Constant communication during planning and production.

Our more important products are:

1. Fascia and control panels for cookers.
2. Oven doors—plain and decorated.
3. Heat-reflective oven doors.
4. Shaped and ground oven doors.
5. Food warmers.

USINE No. 1 pour la fabrication de verre pour appareils ménagers.

Établi en novembre 1974, cet ensemble couvre 3.345 m<sup>2</sup> le terrain qui lui permet d'augmenter sa production de triple.

Non seulement Thermax fournit le marché intérieur mais il exporte énormément vers le Marché Commun et d'autres pays.

Nos services 'in' factory sont:

1. Transformation des plans de la clientèle en positifs sur film.
2. Prototypes et échantillons d'essai pré-production.
3. Intercommunication constante pendant l'étape et la production.

Nos produits les plus importants sont:

1. Plaque avant et panneaux de réglage pour fourneaux.
2. Portes de four, simples ou décorées.
3. Portes de four réfléchissant la chaleur.
4. Portes de four, en forme et insulées.
5. Châssis plats.

ANLAGE NR. 1 fuer die Herstellung von Haushaltsgeraetenglas. Grundriss im November 1974 Anlage Nr. 1 erstreckt sich ueber 3.345 Quadratmeter mit Landvorrat fuer dreifache Wueche.

Neben dem Heimmarkt V.K. ist Thermax in Export in die EWG und andere Laender wesentlich betaeuigt.

Unsere Werksdienstleistungen sind:

1. Umsetzung der Kundenzeichnungen auf Filmstrichen.
2. Prototyp- und Vorproduktanfertigung.
3. Ununterbrochene Begaubung zwischen Planen und Produktion.

Unsere wichtigsten Produkte sind:

1. Scherben- und Backofentueren fuer Herde.
2. Klare und emaillierte Backofentueren.
3. Waermerückstrahlende Ofentueren.
4. Profilierter und geschobener Ofentueren.
5. Spisewarmer.



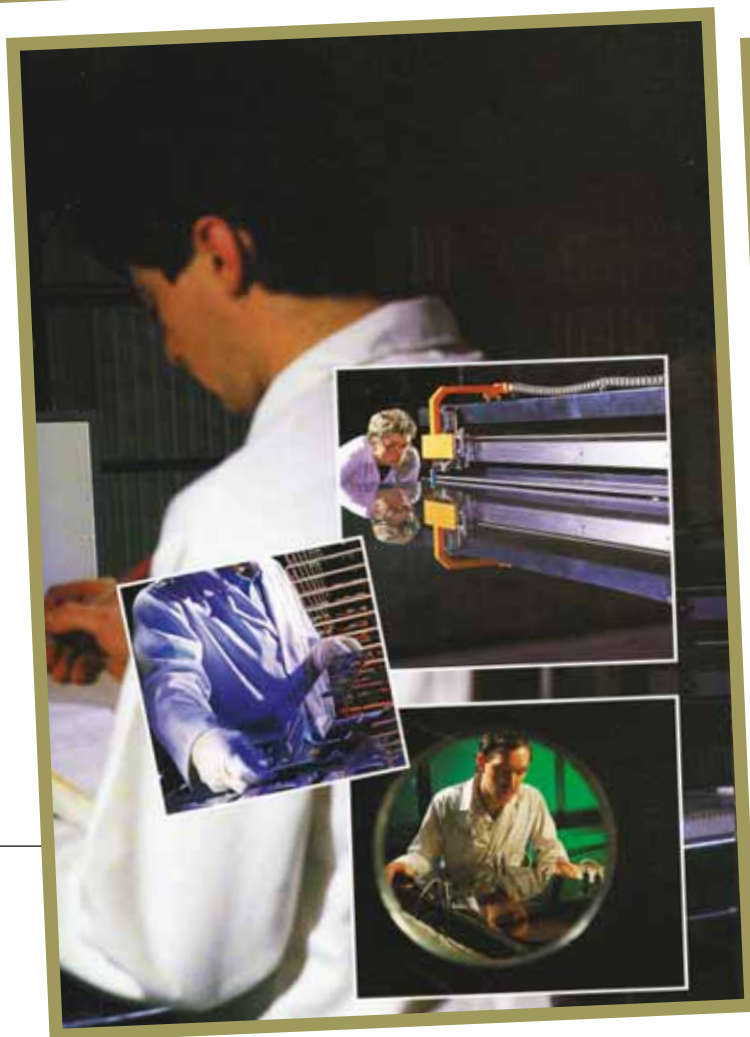
*With  
Compliments*

and sold technology licences for a new printing application with thermoplastic ceramic ink.

Fiat and Peugeot were early customers of automotive products. Thermax grew to be the larg-

est sunroof supplier in Europe, adopting the new name of Inter glass.

Some years later, the business supplied the spectacular glass atrium at King's Cross railway station in London.







**MATERIALS PREPARATION**  
Processing starts in the Cutting Department where the "Jumbo" sheets, 3210 x 6000 mm, are cut accurately into the size required by the customer. Our high technology cutting line accommodates an infinite number of sizes being cut together in small or large quantities.

Edge treatment follows where the finish may be annealed, ground or polished.

Hole drilling is the final material treatment process. The most popular sizes we produce are 6 mm to 250 mm.

From start to finish, as in all Departments, up-to-date, well maintained machinery is essential in order to meet the stringent demands placed on manufacturers by today's toughened glass users. Our existing customers are well aware of our commitment in this area.

**PREPARATION OF MATERIAL**  
Le traitement débute dans l'atelier de découpe, où les feuilles "jumbo" de 3210 x 6000 mm, sont découpées avec précision aux dimensions requises par le client. Notre système "high-tech" nous permet de découper simultanément un nombre infini de dimensions, en petites ou grandes quantités.

Les bords sont ensuite traités: arêtes atténuées, doucissage ou polissage.

Le percage de trous constitue la dernière étape du traitement. Les dimensions les plus demandées pour nos productions sont: 6 mm à 250 mm.

Du début à la fin, et dans tous les services, il est essentiel de disposer de machines de pointe, bien entretenues, pour répondre aux exigences des utilisateurs de verre trempé d'aujourd'hui. Nos clients actuels se déclarent parfaitement satisfaits de notre constante application à cet égard.

**MATERIALVORBEREITUNG**  
In unserer Schneidabteilung fängt der Herstellungsprozess an. Hier werden "Jumbo" Glasplatten von 3210 x 6000 mm genau auf die vom Kunden benötigten Maße zugeschnitten. Unsere hochmoderne Schneidabteilung ist in der Lage eine unbegrenzte Anzahl verschiedener Größen in regionalen bestimmten Mengen zu schneiden. Nach dem Schneiden folgt die Kantenbearbeitung: je nach Spezifikation entweder gerändelt, feingeschliffen oder polierte Kanten.

Der letzte Vorgang beim Materialvorbereiten ist das Bohren von Löchern, wenn benötigt, wobei Größen von 6 mm - 250 mm die Norm sind.

Seit die sehr hoch ausgelegten Vorrichtungen von Verbrauchern und Behörden zu erfüllen, ist unsere Grundbedingung, dass bei uns vom Anfang bis zum Ende der verschiedenen Bearbeitungsstufen nur die allerbesten und besten Maschinen eingesetzt werden.

Unsere einzigartige Spitzenleistung in diesen Bereichen wird uns immer wieder von Kunden bestätigt.

## PUTTING HIS PEOPLE FIRST

Robert proved to be a trend-setter as well, in equality for female employees. He had always ensured equal opportunities for men and women in all roles in the factory and paid them the same wages. The Bishop Auckland

factory had a workforce of more than 300 at one stage - a triumph in an area otherwise known for its significant unemployment. The magnitude of this achievement won Mr and Mrs Robert Brown an invitation to the Royal Garden Party, Buckingham Palace in July 1979.

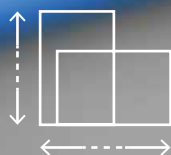
## RETIREMENT

In September 1985 Robert retired from the UK business and the family returned to their home base in Adelaide, Australia. In retirement he enjoyed his small collection of classic cars and joined the Sporting Car Club. Other passions included cruis-

ing, ballroom dancing, cooking, and family. He loved framing in his own studio, and he glazed pictures, artworks and photos for his family. He had a great, sarcastic sense of humour and drew many cartoons and caricatures - leaving a lasting legacy of his comic words for friends and family.



**SAY  
NO  
TO THE  
EVA  
EXCEEDS  
AFTER LAMINATION  
SAY  
YES  
TO THE  
RD  
CLEAN CONCEPT**



ANY  
SIZE



SAVE  
TIME  
AND  
LABOR



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## COMPANY

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## Glass manufacturing and Processing

### FLOAT GLASS

#### Sisecam

Teknik Elmas  
Tesir Makine

## Stocking, handling and movement

### COMPLETE STOCKING LINES / ENGINEERING

Cugher Glass  
ECOL

#### Glaston Group

#### Hegla

IOCCO Group

Keraglass

#### Lisec Group

#### North Glass Technology

Macotec

MOVETRO

Schiavo

Torgauer Maschinenbau

#### Tuomas

### COMPLETE HANDLING AND MOVEMENT LINES

#### Bando Kiko

Bottero

Cugher Glass

CMS

ECOL

#### Forvet

#### Glaston Group

#### GPM Automation

#### Hegla

IOCCO Group

Keraglass

#### Lisec Group

Macotec

#### North Glass Technology

Schiavo

Torgauer Maschinenbau

#### Tuomas

### MACHINES FOR HANDLING GLASS SHEETS

Ashton Industrial Sales

#### Bando Kiko

Bavelloni

Bottero

CMS

Di Gregorio

ECOL

#### Forel

#### Glaston Group

#### GPM Automation

#### Hegla

IOCCO Group

#### Italcarrrelli

Keraglass

#### Lisec Group

Macotec

Schiavo

Torgauer Maschinenbau

#### Tuomas

### HANDLING ROBOTS

Ashton Industrial Sales

Bavelloni

Bottero

CMS

ECOL

#### GPM Automation

#### Hegla

IOCCO Group

#### Lisec Group

Neptun

Schiavo

Torgauer Maschinenbau

#### Tuomas

### HANDLING EQUIPMENT FOR FLOAT GLASS

Bovone Elett.

Bottero

Di Gregorio

ECOL

#### Glaston Group

#### Hegla

IOCCO Group

#### Italcarrrelli

#### Lisec Group

Schiavo

Torgauer Maschinenbau

#### Tuomas

### TROLLEYS AND CLASSIFIERS

CMS

Di Gregorio

#### Forel

#### Hegla

#### Lisec Group

Macotec

MOVETRO

Schiavo

Si.Ste

Tecno Glass

Torgauer Maschinenbau

#### Tuomas

### TRANSPORTATION SYSTEMS/ TRUCKS

#### Hegla

#### Italcarrrelli

#### Lisec Group

Schiavo

### VACUUM LIFTING EQUIPMENT

Bottero

CMS

Di Gregorio

ECOL

Fenzi

#### Forel

#### Glaston Group

#### Hegla

#### Lisec Group

Schiavo

Si.Ste

Torgauer Maschinenbau

#### Tuomas

### CRANE SUCTION CUPS FOR LARGE SHEETS

Bottero

Di Gregorio

Fenzi

#### Glaston Group

#### Hegla

#### Lisec Group

Schiavo

#### Tuomas

### TRANSPORTATION TONGS

Bottero

Fenzi

IOCCO Group

Schiavo

#### Tuomas

### SUCTION CUPS

#### ADI - Surface Group

Bottero

CMS

Fenzi

#### Glaston Group

#### Hegla

Schiavo

Si.Ste

#### Tuomas

### CONVEYOR BELTS

Ashton Industrial Sales

Cugher Glass

Di Gregorio

ECOL

#### Glaston Group

Schiavo

#### Tuomas

### PACKAGING MATERIALS AND SYSTEMS

ECOL

#### Hegla

Schiavo

Vismara

### ACCESSORIES

BOST

Bottero

CMS

Fenzi

#### Hegla

#### Helios Quartz

Mole Moreschi

Schiavo

#### Tuomas

## Straight-edge and shape cutting

### COMPLETE STRAIGHT-EDGE LINES

#### Bando Kiko

Bavelloni

Bottero

CMS

Euromec

#### Forvet

#### Glaston Group

#### Hegla

#### Lisec Group

Neptun

Schiavo

Schiatti Angelo

Teknik Elmas

Tesir Makine

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### COMPLETE SHAPE CUTTING LINES

#### Bando Kiko

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Bottero  
CMS

#### Glaston Group

#### Hegla

#### Lisec Group

Macotec  
Schiavo

#### North Glass Technology

Teknik Elmas  
Tesir Makine

#### Tuomas

### AUTOMATIC CUTTING MACHINES FOR AUTOMOTIVE GLASS

#### Bando Kiko

Bottero  
CMS

#### Glaston Group

IOCCO Group

#### Lisec Group

Macotec  
Schiavo

### LOADING AND TILTING MACHINES

#### Bando Kiko

Bavelloni  
Bottero  
CMS  
ECOL  
Euromec

#### Forel

#### Glass Company

#### Glaston Group

#### GPM Automation

#### Hegla

#### Intermac - Biesse

IOCCO Group

#### Lisec Group

Macotec  
Neptun  
Schiavo

#### Tuomas

### CUTTING TABLES

#### Bando Kiko

Bavelloni  
Bottero  
CMS

Euromec

Fenzi

#### Forel

#### Glaston Group

#### Hegla

IOCCO Group

#### Lisec Group

Macotec  
Schiavo

Tekno Kilns  
Triulzi

#### Tuomas

### CUTTING OPTIMIZERS

#### Bando Kiko

Bavelloni  
Bottero  
CMS  
Deltamax Automazione  
Euromec

#### Forel

#### Glaston Group

#### Hegla

IOCCO Group

#### Lisec Group

Macotec  
Optima  
Schiavo

#### Tuomas

### CUTTING PATH OPTIMIZERS

#### Bando Kiko

Bottero  
CMS

Euromec

#### Glaston Group

IOCCO Group

#### Lisec Group

Macotec  
Optima  
Schiavo

### CAD SYSTEMS

Bavelloni  
CMS

#### Lisec Group

Prodim  
Schiavo

### ARMOURED AND LAMINATED GLASS CUTTING MACHINES

#### Bando Kiko

Bavelloni  
Bottero

CMS

#### Glaston Group

#### Hegla

#### Lisec Group

Macotec  
Schiavo

#### Tuomas

### ROUND OR SHAPE CUTTING MACHINES

#### Bando Kiko

Bavelloni  
Bottero

CMS

Fenzi

#### Glaston Group

#### Hegla

#### Lisec Group

Macotec  
Schiavo

## Tuomas

### CUTTING ACCESSORIES

#### ADI - Surface Group

Ayrox

#### Bando Kiko

Bottero  
Fenzi  
Lanzetta  
IOCCO Group  
Macotec  
Schiavo  
Softeco  
Talamoni  
Teknik Elmas  
Tesir Makine

#### Tuomas

#### Vincent - Surface Group

### SAW MACHINES

Di Gregorio  
Schiavo  
Tecno Glass

### AUTOMATIC SAWS FOR CUTTING LAMINATED AND BULLET-PROOF GLASS

CMS  
Schiavo

### BREAKING SYSTEMS

#### Bando Kiko

Bavelloni  
Bottero  
CMS

Euromec

#### Glaston Group

#### Hegla

IOCCO Group

#### Lisec Group

Macotec  
Schiavo

Teknik Elmas

Tesir Makine

#### Tuomas

### CUTTING MACHINES WITH BREAKING AND EDGE DELETING DEVICES

#### Bando Kiko

Bottero  
CMS  
Euromec

#### Glaston Group

#### Hegla

IOCCO Group

#### Lisec Group

Macotec  
Schiavo

Teknik Elmas

Tesir Makine

#### Tuomas

## GLASS CUTTING FLUIDS

Schiavo

#### Tuomas

### ACCESSORIES

Schiavo  
Schiatti Angelo  
Talamoni  
Teknik Elmas  
Tesir Makine

#### Tuomas

## Edging and bevelling

### COMPLETE EDGING LINES

Adelio Lattuada  
Ashton Industrial Sales  
B Solution

#### Bando Kiko

Bavelloni  
Bottero

CMS

#### Forel

#### Forvet

Hiseng Glass Machinery  
IOCCO Group  
Neptun  
Schiavo  
Schiatti Angelo  
SKG - Skill Glass  
Teknik Elmas  
Tesir Makine

### COMPLETE BEVELLING LINES

Adelio Lattuada

#### Bando Kiko

Bottero  
CMS

Hiseng Glass Machinery

IOCCO Group

Schiavo

Teknik Elmas

Tesir Makine

### COMPLETE AUTOMOTIVE GLASS EDGING AND BEVELLING LINES

Adelio Lattuada

#### Bando Kiko

Bavelloni  
Bottero

#### Glaston Group

Hiseng Glass Machinery

#### Intermac - Biesse

IOCCO Group

SKG - Skill Glass

Teknik Elmas

Tesir Makine



## DOUBLE-EDGE GRINDING MACHINES

Ashton Industrial Sales  
B Solution  
**Bando Kiko**  
Bavelloni  
Bottero  
CMS  
**Forvet**  
Hiseng Glass Machinery  
**Intermac - Biesse**  
IOCCO Group  
Schiatti Angelo  
Teknik Elmas  
Tesir Makine

## VERTICAL-EDGE GRINDING MACHINES

Adelio Lattuada  
B Solution  
**Bando Kiko**  
Bavelloni  
Bottero  
Di Gregorio  
**Forel**  
**Glass Company**  
**Glaston Group**  
Hiseng Glass Machinery  
Neptun  
Schiavo  
Schiatti Angelo  
SGM - Special Glass Machinery  
**North Glass Technology**  
SKG - Skill Glass  
Tesir Makine

## GRINDING SPINDLES

Schiavo  
Tecno Glass  
Teknik Elmas

## BEVELLING MACHINES FOR ROUND AND SHAPED GLASS

Adelio Lattuada  
**Bando Kiko**  
Bavelloni  
CMS  
Hiseng Glass Machinery  
**Intermac - Biesse**  
Schiavo  
Teknik Elmas  
Tesir Makine

## STRAIGHT-EDGE BEVELLING MACHINES

Adelio Lattuada  
**Bando Kiko**  
Bavelloni  
Bovone Elett.  
CMS  
**Glass Company**  
Hiseng Glass Machinery  
Schiavo

Schiatti Angelo  
Teknik Elmas  
Tesir Makine

## BEVEL POLISHING MACHINES

Adelio Lattuada  
**Bando Kiko**  
Bavelloni  
Bovone Elett.  
CMS  
Hiseng Glass Machinery  
**Intermac - Biesse**  
Teknik Elmas  
Tesir Makine

## STRAIGHT-EDGE ENGRAVING MACHINES

Bavelloni  
Bottero  
CMS  
**Intermac - Biesse**  
SKG - Skill Glass  
Teknik Elmas

## SHAPED GLASS ENGRAVING MACHINES

Bavelloni  
Bottero  
CMS  
**Intermac - Biesse**  
Teknik Elmas  
Tesir Makine

## CORNER GRINDING MACHINES

Adelio Lattuada  
Ashton Industrial Sales  
B Solution  
Bavelloni  
CMS  
**Intermac - Biesse**  
SGM - Special Glass Machinery  
SKG - Skill Glass  
Teknik Elmas  
Tesir Makine

## SHAPED GLASS GRINDING MACHINES

Adelio Lattuada  
Ashton Industrial Sales  
**Bando Kiko**  
Bavelloni  
Bottero  
CMS  
**Forel**  
**Glass Company**  
Hiseng Glass Machinery  
**Intermac - Biesse**  
Teknik Elmas  
Tesir Makine

## BELT GRINDING MACHINES

Adelio Lattuada

Ashton Industrial Sales  
Fenzi  
Hiseng Glass Machinery  
IOCCO Group  
Si.Ste

## LATHES - VERTICAL AND HORIZONTAL

CMS  
Fenzi  
Teknik Elmas  
Tesir Makine

## EMBOSSING MACHINES

CMS  
Fenzi

## PORTABLE MACHINES

Fenzi  
**Helios Quartz**  
Si.Ste  
Tecno Glass

## DIAMOND TOOLS

Adelio Lattuada  
**ADI - Surface Group**  
Ashton Industrial Sales  
**Bando Kiko**  
Bovone Diamond Tools  
Bottero  
Diamut - Biesse  
Fenzi  
**Glaston Group**  
Lanzetta  
Marrose Abrasives  
Mole Moreschi  
Neptun  
Schiavo  
Talamoni  
Teknik Elmas  
**Vincent - Surface Group**

## DIAMOND BELTS

Mole Moreschi

## SEAMING LINES

Ashton Industrial Sales

## MANUAL LINES

Ashton Industrial Sales

## POLISHING WHEELS

Adelio Lattuada  
**ADI - Surface Group**  
**Bando Kiko**  
Bovone Diamond Tools  
Diamut - Biesse  
Dogo  
Fenzi  
**Glaston Group**  
Italmole  
Marrose Abrasives  
Mole Moreschi  
**RBM Italia - Surface Group**  
Schiavo  
Si.Ste

Teknik Elmas  
**Vincent - Surface Group**

## POLISHING AGENTS AND OXIDES

**ADI - Surface Group**  
Bovone Diamond Tools  
Fenzi  
Schiavo  
Teknik Elmas  
**Vincent - Surface Group**

## POLISHING BELTS

Di Gregorio  
Fenzi  
Schiavo  
Si.Ste

## COOLANTS

Adelio Lattuada  
Bovone Diamond Tools  
Fenzi  
Schiavo

## GLASS GRINDING AND BEVELLING COOLANTS

Schiavo  
Teknik Elmas

## SEPARATORS FOR GLASS-SOLIDS

Ashton Industrial Sales  
Dieffe Macchine  
**Filtraglass**  
Immies  
Schiavo  
Vitrosep

## ACCESSORIES

**ADI - Surface Group**  
CMS  
Fenzi  
**Helios Quartz**  
IOCCO Group  
Lanzetta  
Mole Moreschi  
Schiavo  
Schiatti Angelo  
Teknik Elmas  
**Vincent - Surface Group**

## Washing

## HORIZONTAL WASHING MACHINES

Ashton Industrial Sales  
**Bando Kiko**  
Bavelloni  
Bovone Elett.  
Di Gregorio  
ECOL  
**Forel**

**Glass Company**  
**Glaston Group**  
**GPM Automation**  
 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**  
**GPM Automation**  
 Hiseng Glass Machinery  
 IOCCO Group  
**Lisec Group**  
 Neptun  
 Schiavo  
 SGM - Special Glass Machinery  
**North Glass Technology**  
 Si.Ste  
 S.T. Group  
 Stefiglass  
 Teknik Elmas  
 Tesir Makine  
 Triulzi

## WASHING MACHINES FOR AUTOMOTIVE GLASS

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

## WASHING PURIFICATION SYSTEMS

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

## LIQUID WASHING CONCENTRATES

Schiavo

## ACCESSORIES

**Helios Quartz**  
 Idrotecnica

Neptun  
 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.  
 Tecnosens

## MANUAL SILVER- SPRAYING EQUIPMENT

Fenzi  
**Glass Company**  
**PAINTS AND CHEMICAL PRODUCTS**

Fenzi

## ACCESSORIES

Fenzi  
**Helios Quartz**

## Insulating glass

## COMPLETE INSULATING GLASS LINES

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

## AUTOMATIC SEALING LINES

Bavelloni  
 Easy Automation  
**Forel**

## Glaston Group Lisec Group

Marval  
 S.T. Group  
 Teknik Elmas  
 Tesir Makine

## AUTOMATIC SPACER BENDING MACHINES

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

## DESICCANT SALT FILLING MACHINES

Ashton Industrial Sales  
 Bavelloni  
**Best Makina**  
 Di Gregorio  
 Fenzi  
**Forel**  
**Glaston Group**  
**Lisec Group**  
 Marval  
 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

Marval  
 Neptun  
 Schiavo  
 S.T. Group  
 Tecno Glass  
 Tesir Makine  
 Thermoseal Group

## BUTYL EXTRUDERS

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

## HOT-MELT EXTRUDERS

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

## POLYURETHANE EXTRUDERS

Bavelloni



**Best Makina**  
Easy Automation  
Fenzi  
**Forel**  
**Glaston Group**  
**Lisec Group**  
Marval  
Schiavo  
S.T. Group  
Tecno Glass

## POLYURETHANE ENCAPSULATION

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

## SILICONE EXTRUDERS

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

## POLYSULPHIDE SEALANT EXTRUDERS

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

## GAS FILLING EQUIPMENT

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

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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  
Tesir Makine  
Triulzi

## Tempering

## TEMPERING FURNACES (ARCHITECTURAL GLASS)

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

Landglass Technology  
Lema

## Lisec Group

Mappi International  
Schiavo  
**North Glass Technology**  
Tecnosens  
Tekno Kilns  
Texpack

## TEMPERING FURNACES (AUTOMOTIVE GLASS)

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

## CHEMICAL TEMPERING EQUIPMENT

**Glass Company**  
R.C.N. Solutions

## ROBOT FOR CLEANING SILICA ROLLERS

Eurotech Way

## ACCESSORIES

Deltamax Automazione  
Fenzi  
**Glass Company**  
**Glaston Group**  
**Helios Quartz**  
**Hornos Industriales Pujol**  
Keraglass  
Landglass Technology  
Mappi International  
Mazzaroppi Engineering  
R.C.N. Solutions  
Satinal 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  
Tecnosens  
Tekno Kilns  
Texpack

## BENDING FURNACES (AUTOMOTIVE GLASS)

**Glass Company**  
Glasstech Inc.  
**Glaston Group**  
Jinglass  
Keraglass  
Mappi International  
Mazzaroppi Engineering  
R.C.N. Solutions  
Satinal Spa  
Si.Ste  
Taifin  
Tecnosens  
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**  
**GPM Automation**  
**Hornos Industriales Pujol**  
IOCCO Group  
Italmatic  
**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**  
**GPM Automation**  
**Hornos Industriales Pujol**  
Italmatic  
**Lisec Group**  
Triulzi

## AUTOCLAVE-FREE LAMINATED GLASS PRODUCTION

Bürkle

## CLIMATIC CABINS

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

## INFRARED OVENS

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

## MANGLES

**GPM Automation**

## PRESSES/BENDING MACHINES

**Forel**  
IOCCO Group  
**Lisec Group**  
Triulzi

## RESIN LAMINATING MATERIALS AND EQUIPMENT

IOCCO Group  
Satinal Spa  
Teknik Elmas  
Torgauer Maschinenbau

## EVA (ETHYLENE VINYL ACETATE)

Satinal Spa

## PVB

Everlam  
Kuraray - Trosifol  
Tecnosens

## PVB - SHAPING AND CUTTING EQUIPMENT

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

## PVB - WIRING TECHNOLOGY FOR HEATABLE LAMINATES

Ayrox  
Easy Automation  
ECOL  
Softeco

## EVA (ETHYLENE VINYL ACETATE)

Tecnosens

## ACCESSORIES

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

## Drilling

## AUTOMATIC DRILLING LINES

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

## MULTI-SPINDLE DRILLING MACHINES

B Solution  
**Bando Kiko**  
Bavelloni  
CMS

## Forvet Glass Company Glaston Group Intermac - Biesse

IOCCO Group  
Neptun  
Schiavo  
Schiatti Angelo  
SKG - Skill Glass  
Teknik Elmas  
Tesir Makine  
Vismara

## DRILLING MACHINES WITH OPPOSITE DRILLING HEADS

B Solution  
**Bando Kiko**  
Bavelloni  
Bottero  
CMS  
Di Gregorio  
Fenzi  
**Forvet**  
**Glaston Group**  
Hiseng Glass Machinery  
**Intermac - Biesse**  
IOCCO Group  
Neptun  
Schiavo  
Schiatti Angelo  
SKG - Skill Glass  
Teknik Elmas  
Tesir Makine  
Vismara

## COLUMN DRILLING MACHINES

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

## PORTABLE DRILLING MACHINES

CMS  
Fenzi  
Schiavo  
Si.Ste  
Teknik Elmas  
Tesir Makine

## DRILLING AND MILLING MACHINES

Bavelloni  
Bottero  
CMS  
**Forvet**  
IOCCO Group  
Neptun  
Schiavo  
SGLASS  
Teknik Elmas

Tesir Makine  
Vismara

## DIAMOND DRILLS

### ADI - Surface Group

Bovone Diamond Tools  
Diamut - Biesse  
Fenzi

### Glaston Group

Lanzetta  
Mole Moreschi  
Neptun  
Schiavo  
Si.Ste  
Teknik Elmas  
Tesir Makine

### Vincent - Surface Group

## ACCESSORIES

CMS  
Fenzi  
Neptun  
Schiavo  
Si.Ste  
Teknik Elmas

## Other equipment and plants

## TURNKEY PLANTS / ENGINEERING - FOR BUILDING GLASS

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

## TURNKEY PLANTS / ENGINEERING - FOR AUTOMOTIVE GLASS

**Bando Kiko**  
Bottero  
Cugher Glass  
Easy Automation  
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

Neptun

SKG - Skill Glass

## FLOAT PLANTS/LINES (EQUIPMENT & ACCESSORIES)

Bovone Elett.

Horn

IOCCO Group

## CULLET HANDLING SYSTEMS

ECOL

## COMPLETE BATCH PLANTS

Zippe

## VACUUM COATING EQUIPMENT AND PLANTS

Giardina Group Glass Division

### Glass Company

North Glass Technology

chnology

## ENAMELLING EQUIPMENT AND PLANTS

Giardina Group Glass Division

### Glass Company

### Rollmac division of GeMaTa

## DRYERS AND ENAMELING FURNACES

Bürkle

Giardina Group Glass Division

## SPRAYING TECHNOLOGY

Bürkle

Giardina Group Glass Division

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

Bürkle

Giardina Group Glass Division

## SANDBLASTING SYSTEMS, EQUIPMENT AND PLANTS - OPTIMIZERS

Di Gregorio

Fenzi

Fratelli Pezza

### Glass Company

Schiavo

SKG - Skill Glass



## DIGITAL INKJET PRINTERS

### Glass Company

System Ceramics

TecnoFerrari

## SCREEN PRINTING EQUIPMENT AND PLANTS

Ayrox

COMSS

Cugher Glass

Deltamax Automazione

ECOL

Eurotech Way

### Glass Company

Keraglass

### Rollmac division of GeMaTa

### North Glass Technology

Softeco

TecnoFerrari

## SCREEN PRINTING FRAMES

COMSS

## SCREEN PRINTING DRYING SYSTEMS

COMSS

Cugher Glass

### Glass Company

### Rollmac division of GeMaTa

## EDGES ROLLER COATING MACHINE

Giardina Group Glass Division

## ACIDING GLASS EQUIPMENT AND PLANTS

### Lisec Group

### Rollmac division of GeMaTa

## LASER DECORATING MACHINES

Ashton Industrial Sales

## Glass Company

### LASER MARKING

Ashton Industrial Sales

.....

## Artistic glass production

.....

### CERMAMIC INKS

### Glass Company

## CHAMBER ELECTRIC KILNS

### Glass Company

Keraglass

Tekno Kilns

## ACCESSORIES

Deltamax Automazione

### Helios Quartz

## CUTTERS

Si.Ste

## CUTTING WHEELS

Si.Ste

## MANUAL GRINDING MACHINES

Di Gregorio

## UV ADHESIVES

Si.Ste

.....

## Miscellaneous

.....

## ADHESIVES FOR GLASS BONDING

Si.Ste

## AUTOMATION

Ashton Industrial Sales

Easy Automation

Horn

IOCCO Group

Tecnosens

Torgauer Maschinenbau

Zippe

## AUTOMOTIVE GLASS APPROVAL SERVICES

Ayrox

Softeco

Tecnosens

Teknik Elmas

## AUTOMOTIVE GLASS QUALITY CONTROL

Ayrox

### Bando Kiko

Cugher Glass

Deltamax Automazione

### Glaston Group

IOCCO Group

Softeco

Tecnosens

## CE MARKING - QUALITY CONTROL EQUIPMENT FOR GLASS IN BUILDING

Ayrox

Softeco

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

Bürkle

## COLOURS & ENAMELS - OTHER APPLICATIONS

Ayrox



## CUTTERS

Tesir Makine

## CUTTING WHEELS

Teknik Elmas

Tesir Makine

## DEIONIZING AND WATER SOFTENING EQUIPMENT

Fenzi

**Forel**

**Glass Company**

Idrotecnica

**Lisec Group**

Triulzi

## DEIONIZING AND WATER SOFTENING EQUIPMENT

Immmes

## DIAMOND ROUTER EQUIPMENT - PORTABLE

Teknik Elmas

Tesir Makine

## FLAT GLASS QUALITY CONTROL DEVICES

Ayrox

Deltamax Automazione

**Forel**

IOCCO Group

Softeco

Tecnosens

## FURNACES

**Glass Company**

Horn

Texpack

## FURNACES / HYDROGEN GENERATORS (WATER ELECTROLYSERS)

**Nel Hydrogen**

## GLASS COATING AND TINTING

Bürkle

**Glass Company**

**Rollmac division of GeMaTa**

## GLASS TREATMENT FILMS

**Glass Company**

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

Horn

Keraglass

Texpack

## HINGES FOR GLASS DOORS

Si.Ste

## INSPECTION INSTRUMENTS & INTENSIMETERS

Tecnosens

## INFRARED TUBES

**Helios Quartz**

Deltamax Automazione

## KILNS

**Glass Company**

Keraglass

**Lisec Group**

Tekno Kilns

Fenzi

## METAL ACCESSORIES

Si.Ste

Teknik Elmas

Tesir Makine

## METALLIC SECTIONS

Fenzi

Tesir Makine

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

**Glass Company**

IOCCO Group

Prodim

## OPTICAL DISTORTION ANALYSERS FOR AUTOMOTIVE GLASS

IOCCO Group

Keraglass

Tecnosens

## OPTICAL INFRARED THERMOMETERS

Optris

## POWDER OR LIQUID APPLICATION SYSTEMS FOR PROTECTING FLOAT GLASS

BOST

Cugher Glass

**Glass Company**

## PUMPING AND APPLICATION SYSTEMS (AUTOMOTIVE GLASS)

IOCCO Group

## PURIFIERS FOR REFLUENT WATER

Dieffe Macchine

Immmes

## PUTTIES AND SEALANTS

Fenzi

## QUARTZ EQUIPMENT

**Helios Quartz**

## SHAPE CHECKING DEVICES

Easy Automation

IOCCO Group

## RAW MATERIALS

BOST

## SHOWER ENCLOSURES

Vismara

## SIC HEATERS

**Helios Quartz**

## SOFTWARE SYSTEMS FOR PRODUCTION CONTROL

A+W Software

CMS

Cugher Glass

Deltamax Automazione

Edgetech Europe

**Forel**

**Lisec Group**

Optima

Prodim

## SOLDERING EQUIPMENT FOR ELECTRICAL CONNECTORS FOR WINDSCREENS AND BACKLITES

Ayrox

Easy Automation

Softeco

## SORTING SYSTEMS

**Glaston Group**

**GPM Automation**

**Lisec Group**

## SURFACE STRESS MEASUREMENT INSTRUMENT

Ayrox

**Glass Company**

Tecnosens

## WINDSCREEN STRESS MEASUREMENT INSTRUMENT

Tecnosens

## WINDSCREEN AND BACKLITES

Tecnosens

## TESTING FOR SOLDERINGS

Ayrox

Easy Automation

Softeco

## TESTING DEVICES OF BACKLITES ELECTRICAL HEATING

Ayrox

Easy Automation

Softeco

## THERMAL IMAGING SYSTEMS

**Glass Company**

Easy Automation

Optris

## TIN FLOAT BATH FURNACES

Horn

IOCCO Group

## TIN FLOAT BATH SIDE DETECTION DEVICES

Tecnosens

## TRADE ASSOCIATIONS

Teknik Elmas

Tesir Makine

## UV LAMPS

**Helios Quartz**

## UV PORTABLE MACHINES

**Helios Quartz**



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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**  
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2013

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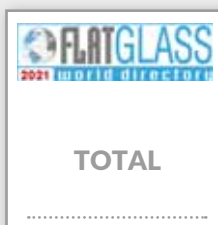
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