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THE LEADING MAGAZINE FOR THE INTERNATIONAL FLAT GLASS INDUSTRY

July/August • Year 30 • No. 4/2019

glass technology



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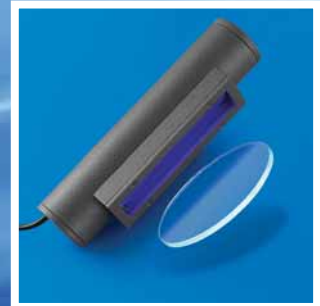
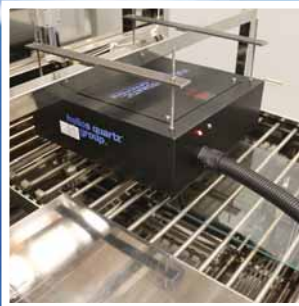
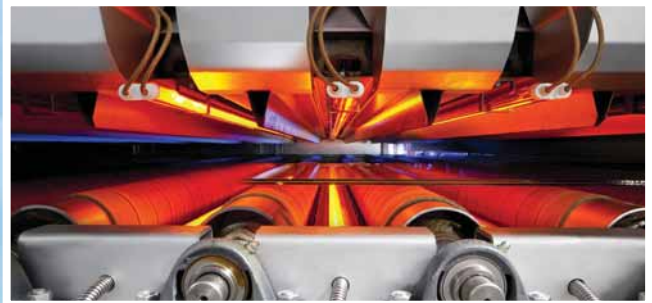
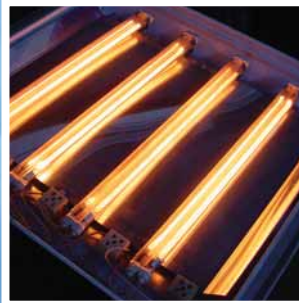
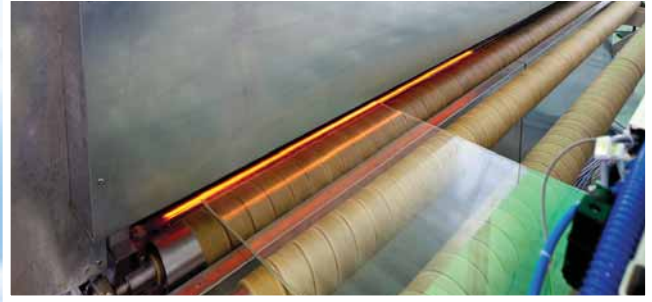
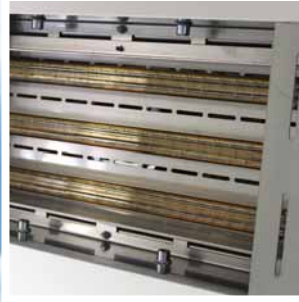


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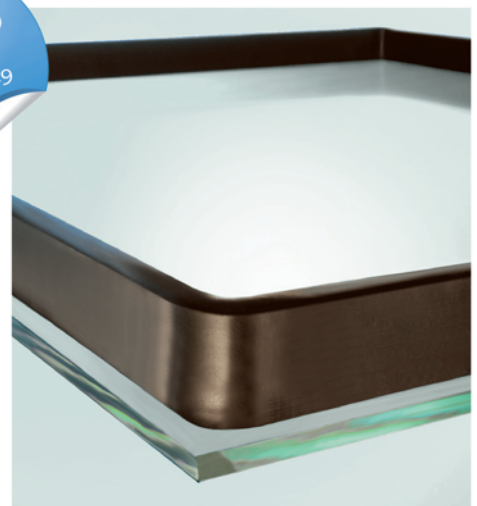
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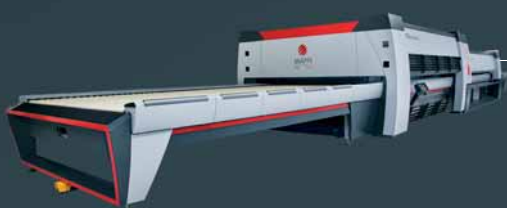
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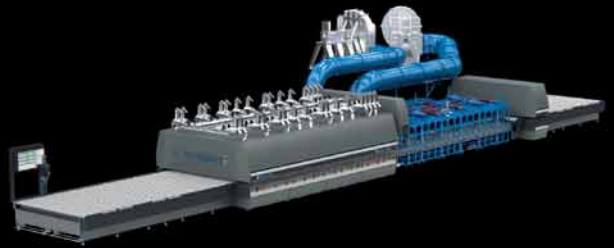
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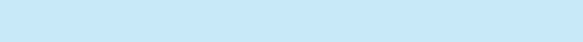
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ENERGY SAVINGS

Glass for Europe

ENERGY SAVINGS AND CO₂ EMISSION REDUCTION

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In this article you take a look at a new study carried out by the European Commission, which shows how sustainable and targeted policy measures on glazing can already make a large difference in 10 years, if implemented soon.

GLASS FOR EUROPE

The European Commission has published a study on the energy savings and CO₂ emission reduction potential of high-performance glazing in buildings. The study shows that high-performance glazing can already make a large difference in 10 years, if implemented soon.

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CONTINUOUS GROWTH AND IMPROVEMENTS LOOKING FOR THE 'NEXT BREAKTHROUGH'

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Goldglass is a leading manufacturer of high-performance glass products. The company is continuously growing and improving its products, looking for the 'next breakthrough'.

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GLASS INDUSTRY INNOVATORS - COMBINING TECHNOLOGY, INNOVATION, AND SUSTAINABILITY

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Working with the times - an expression that we all hear often and know very well - is becoming more and more an everyday situation for glass manufacturers. This article shows us how most of Italy's glass manufacturers are contributing to growing the technology, providing high-tech solutions for zero-emission glass.

Giardina Group

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GPD 2019

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GPD 2019 was a successful event for the glass industry. The event was held in Milan and attracted many visitors from around the world. The event was a great opportunity for the glass industry to showcase its products and services.

South Africa's flat glass industry

South Africa's flat glass industry is growing rapidly. The industry is expected to reach a value of \$1.5 billion by 2025. The growth is driven by the increasing demand for flat glass in the construction and automotive sectors.

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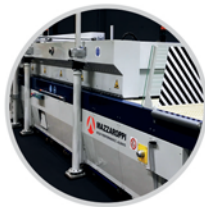
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issue	exhibition/conference	date	venue	deadlines
2019 1	EURASIA GLASS	6-9 March	ISTANBUL Turkey	Editorial files: 25-01-2019
	MIR STEKLA	2-5 April	MOSCOW Russia	Deadline Adv files: 01-02-2019
2019 2				Editorial files: 01-03-2019 Deadline Adv files: 15-03-2019
	CONSTRUMAT	14-17 May	BARCELONA Spain	Editorial files: 05-04-2019
2019 3	CHINA GLASS	22-25 May	BEIJING China	Deadline Adv files: 16-04-2018
	GLASSTECH MEXICO	11-13 June	MEXICO CITY Mexico	Editorial files: 03-05-2019
2019 4	GPD - GLASS PERFORMANCE DAYS	26-28 June	TAMPERE Finland	Deadline Adv files: 10-05-2019
	GLASSBUILD AMERICA	17-19 September	ATLANTA (GA) USA	Editorial files: 19-07-2019
2019 5	GULF GLASS	24-26 September	DUBAI UAE	Deadline Adv files: 26-07-2019
	VITRUM	1-4 October	MILAN Italy	
2019 6	ALL VITRUM EXHIBITORS ADVERTISING IN THIS ISSUE ALSO RECEIVE A FREE VITRUM PREVIEW 			Editorial files: 26-08-2019
	GLASSPRO INDIA	10-12 October	MUMBAI India	Deadline Adv files: 06-09-2019
2019 6	GLASSTECH ASIA	12-14 November	JAKARTA Indonesia	
	COLOMBIA GLASS	20-21 November	BOGOTÀ Colombia	
	ZAK GLASS TECHNOLOGY	12-15 December	NEW DELHI India	
				Editorial files: 10-10-2019 Deadline Adv files: 18-10-2019

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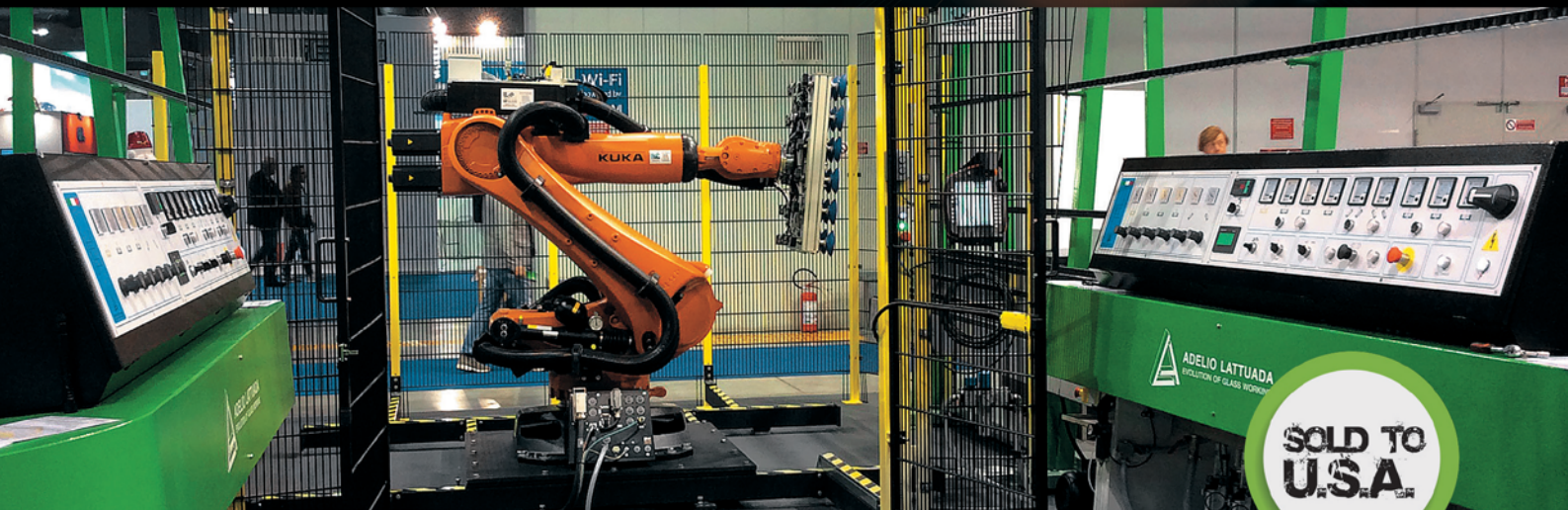


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PILKINGTON UK

Increase in structural glazing capacity

Pilkington United Kingdom Ltd., part of the NSG Group, has invested more than GBP 3 million in new technology to increase its capacity to manufacture Pilkington Planar™, and meet growing market demand for its internationally sold structural glazing system.

The glass manufacturer has invested in a new state of the art toughening furnace, an increased capability heat soak oven, and a glass measuring device. Each will be used as part of the manufacturing process for its Pilkington Planar™ structural glazing system and associated products.

The new toughening furnace, due to be operational by August, will be located at the Pilkington Architectural site in St Helens, and is expected to help the company manufacture increased volumes of the Pilkington Planar™ System.

The investment also increases the size capability of the toughening furnace and heat soak oven to 6,000 x 3,000mm. Meanwhile, the newly developed glass measuring device will enhance the manufacturer's quality control systems and processes for the benefit of customers and end-clients.

Structural glazing systems are used in a variety of applications including glass atriums, facades and other specialist uses. The company has developed, designed and manufactured structural glazing systems and products in the UK for more than 60

years, serving both domestic clients and a growing number of export customers across the globe.

Phil Savage, head of sales – UK processing at Pilkington United Kingdom Limited, said: "We're at the forefront of providing innovative products into the commercial construction sector, especially in the area of structural glazing, where this type of glass and glazing system is increasingly specified and incorporated in high-performance buildings.

"The challenge of delivering projects that achieve both high functionality and excellent aesthetical appeal has been more ubiquitous in building design over the last five years. This is where structural glazing systems are an established solution, helping specifiers to meet both requirements.

"This investment helps us to serve this growing demand with enhanced efficiency and superior quality products, helping our customers to create a built environment fit for the future." UK-manufactured Pilkington Planar™ glass has been recently installed in international projects including the Al-farwania Court Complex and Hawally Courts Complex both in Kuwait; the 601 Massachusetts Avenue development in Washington DC; the American Dream Mall in New Jersey; and the Valley Fair Mall, California.

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AGC GLASS

Relying on ZIPPE technology

AGC Glass Europe produces, processes, and distributes flat glass for the building industry, the automotive industry, and various other sectors (transport, solar power, and high-tech applications).

ZIPPE Industrieanlagen GmbH received the order for the turnkey supply of a new second float line for AGC. Apart from the batch plant, the scope of supply also included the cullet return as well as the steelwork. The concrete works were customer sided respon-

sibilities. Furthermore, ZIPPE was granted to supply the charging technology, which is float charger type with a charging capacity of 280t/day per machine. In total, four machines are installed at the furnace, with a total charging capacity of 1,120 t/day.

The plant control system is carried out by modern automation technology with a highly reliable architecture. A redundant SPS control system and two SCADA-server guarantee a safe plant operation.

The furnace capacity is 850t/day. The plant has been in operation since 23 April 2019.



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TYROLIT

Strengthening presence in the Americas



Several years have passed since Tyrolit Vincent set up its new facility Tyrolit North America (TNA) with marketing, sales and logistics organization in Oswego, IL. "The creation of this new hub in the US has led to several advantages for US-based customers: on-site technical assistance, a fast re-profiling centre and consistent stock ready to be shipped," said Jeff White, Sales Manager TNA.

Tyrolit's dedication to the Americas is also confirmed by its direct presence in Brazil (Tyrolit do Brazil), with a local warehouse and service centre, the latter also being present in Mexico.

Tyrolit is well-known as a leading manufacturer of innovative solutions for grinding and drilling for both architectural and automotive glass. All glass processing tools are 100% designed in Italy by the R&D department and carefully developed by the technical department to meet specific customers' needs worldwide.

Over the last decades, Tyrolit has expanded its range of products for the architectural and furniture glass industry. This comprehensive range includes a wide assortment of tools for edge processing, milling cutters and core drills for both float and laminated glass. The applications range from double edging to vertical and horizontal CNC machines – just to mention a few. Moreover, Tyrolit is able to produce tailor-made and special products for specific needs.

Tyrolit will be at booth 3049 during *GlassBuild America* in Atlanta, 17-19 September 2019.

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GIMAV

Italian industry of machinery for glass processing – 2018

At its 27 June 2019 meeting, Gimav – the Association that represents Italian manufacturers of glass processing machinery, systems, special products and accessories – reported 2018 FY data analysed by its Study Center, which showed an overall 3.75% increase in sales compared to the previous fiscal year.

Breaking out the data for the two macro-specializations, there was a 2.08% increase in flat glass sales, confirming robust growth in the domestic market (+8.54%) and a 1.04% rise in exports. Hollow glass tallied a 5.57% upswing in overall sales, thanks to the driving influence of exports (+6.69%), which compensated for the slight drop in domestic sales (-0.6%), partly influenced by uncertainties about the continuation of the Industry 4.0 Plan.

The sector's trade balance experienced a 1.2% gain, and topped the billion-euro marked last year. The latest accounting periods also demonstrated modest but steady growth in employment numbers (+2.82%), an improvement that, in light of Italy's current economic situation, reaffirms the sector's positive state of health.

International customers continued to prefer Italian-made products, which led to a 3.04% increase in exports in 2018, with a 1.04% growth figure for flat glass and an impressive +6.69% for hollow glass.



Michele Gusti,
Gimav President

"Once again, the sizeable share of exports confirms that the quality and reputation for excellence of Italian technological solutions are sought-after qualities valued around the world – stated Gimav President, Michele Gusti – The proof is in exports' 78.13% share of the

industry's overall sales, which peaked at 85% in the hollow glass sector".

The European continent continued to be ranked as the number-one market for Italy's production, claiming 45% of the sales. Of this share, 37.44% was exported to EU countries. The United States was the leading country-client for Italian-made industry products – with an 11% share of global sales – followed by Poland, Mexico, Germany and China.

Taking a detailed look at the data, the European continent was the most significant market for flat glass, with a more than 50% share of the total, though there was a decrease in exports to the non-EU markets. Again, geographically, the United States stands out as the top customer, with a 15.98% share, followed by Poland, Germany, Brazil and France.

For hollow glass as well, EU-Europe was still the main destination; there was also a significant increase in purchases from African countries.

Thanks to the incentives provided for by the Industry 4.0 Plan, sales in the domestic market grew by 8.49%. Flat glass experienced the biggest increase in growth, up 9.57%, while hollow glass held steady at +6.83%.

This edition of the Report again looked beyond 2018 to the Gimav Study Center analysis of manufacturers' perspectives on performance in 2019. There were widespread expectations that the economic situation would improve, with 83% of the respondents projecting an increase in overall sales.

Specifically, more than 80% of the companies expressed optimism in the performance of exports; but, due to uncertainties about the Industry 4.0 Plan, only 50% had the same feeling about Italy's domestic market.

"In light of these forecasts, it becomes even more clear just how strategically important a well-structured and long-standing Industry 4.0 Plan can be for Italian businesses. Process innovation requires lots of time and certainty if businesses are to plan for sustainable, effective investments. It is crucial that a strong message be sent regarding Industry 4.0 Plan's long-term continuity that takes into account not only tangible and intangible goods, but also the ongoing training of human resources," concluded Gusti.

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AGC

New coatings

Large glass facades require highly selective glazing that allows as much daylight as possible into the building while minimising the impact on indoor climate through effective solar control. Stopray Vision-52 and Stopray Vision-62, and their toughenable counterparts Stopray Vision-52T and Stopray Vision-62T, are two new AGC products featuring enhanced technology.

Their double silver coating makes them highly selective, delivering outstanding protection from heat and solar radiation thanks to a solar factor of 33% (Stopray Vision-62) and 27% (Stopray Vision-52). They also let in 62% and 52% respectively of visible light, effectively exploiting daylight to ensure light-filled rooms all year round. With a Ug value of just 1.0 W/(m²K), this glazing provides excellent protection from cold temperatures, which saves on heating costs and is good for the environment.

The toughenable versions can be curved and further enhanced using silk screen printing or other techniques. However, the biggest benefit for applications in high-end architecture is that the products are matchable, meaning they can easily be installed alongside each other in a facade, for example in a combination of flat and curved glass. This is possible because they have the same colour-neutral appearance and colour stability, even when viewed from an acute angle.



WWW.AGC-GLASS.EU



FENZI AND REGENCY GLASS

New plant up and running

There is a family success story behind the expanding partnership between Regency Glass and the Fenzi Group. A partnership grown, above all, in recent years, thanks to the manufacture of high-quality IG units with a highly automated and efficient production system.

Established in 1983 in Leigh (UK) by father and son, Harold and Darren Beazant, along with friends Terry Bates and Roy Hilton, Regency Glass immediately recognized the potential of the British insulating glass market and developed a product able to leverage the latest market innovations to ensure maximum seal and durability. Their foresight and strategy paid off. The company grew exponentially over the next 15 years, thanks in part to the daily efforts of many members of the Beazant family. With the return of Darren Beazant, alongside Wayne Fitzmartin, to head up the company in 2016 (after 10 years of CorpAcq management), along with Simon Orange, Regency implemented plans for a new plant that is already actively manufacturing.



Located in the vicinity of Leigh, to minimize impact on the work team and strengthen its ties with the community that has long been its home, the new manufacturing site occupies a surface area of nearly 10,000

square metres, making it one of the largest in the UK.

Maximum production efficiency and automation, use of latest-generation software, know-how garnered in more than 35-years of experience in the industry, state-of-the-art machinery and high-quality raw materials made it possible to reach a production capacity of more than 25,000 IG units per week.

It is precisely this focus on the quality of its products, with the most extensive range of sealants and warm edge products on the market, its ongoing quest for technologies capable of ensuring the utmost durability over time and superlative energy savings, while optimizing production times and costs, that has made the Fenzi Group a sound partner for Regency Glass in the manufacture of high-performance insulating glass.

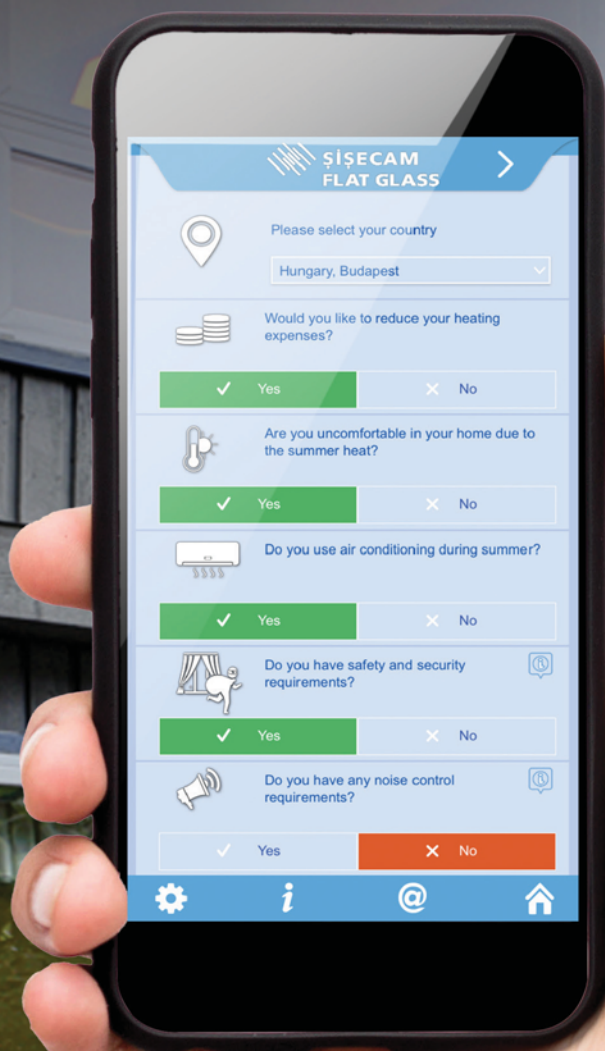


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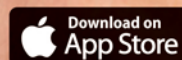
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MOLE MORESCHI

Standard and special tools for the glass industry

With more than 90 years of know-how and direct experience in the production of diamond wheels and tools for glass processing, **Mole Moreschi** now supplies the glass industry with a complete range of very high quality standard and special tools.

This has enabled the company to become not only a supplier, but also a partner for many Italian and international glass machinery manufacturers, thanks to the highest reliability and constant quality of its wheels.

Mole Moreschi uses the most advanced technologies in tool production and the research and development activities of the company are dedicated



to improving tool quality and guarantee production level.

The company's sales and distribution network guarantees both quality and prompt service, as well as technical knowledge to provide assistance and suggest the best tools.

Mole Moreschi will be exhibiting at stand 2745 at this year's GlassBuild America in Atlanta (GA) USA, 17-19 September.



WWW.MOLEMORESCHI.COM

Increased productivity with Quickline

NEPTUN



Matodi cofounder Jack Van Meerbeeck and Neptun founder Stefano Bavelloni, along with Matodi's Canadian sales representative Stef Piccinin, recently travelled to Quebec for an onsite visit with Industries Vanier. Industries Vanier was founded in 2012 by Daniel Vanier and has quickly become an important supplier to the architectural glass market in Quebec. Part of Vanier's success is directly attributed to his ongoing commitment to processing glass with the

use of high-quality integrated equipment – constantly innovating to provide superior products and services to their customers.

The tilt function at the exit of the Wave Vertical Washing machine improves safety when removing larger pieces of fabricated glass.

Vanier initially invested in a ROCK 14-45 – a popular straight-line edger from Neptun. More recently, Vanier has added to the Neptun line to include the Quickline series.

Matodi is grateful for the opportunity to partner with Industries Vanier and looks forward to bringing to Industries Vanier and other companies new products that will help integrate and automate the glass fabrication process.

Daniel Vanier's goal was to reach a higher level of productivity and flexibility. Neptun's solution for hole drilling and milling/notching, Quickline, offers maximum productivity with a minimum investment. With the Quickdrill T8 it is possible to drill and mill/notch at the same time, increasing output.



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Filtraglass and JordonGlass

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Finalized a representation agreement

Jordon
Glass Machinery

On 28 June, **Filtraglass** finalized an agreement with **JordonGlass**, which will represent the company in the United States, opening the door to a market that is especially important due to its size and business volume.

JordonGlass is a company headquartered in Miami, Florida, founded almost 40 years ago and specialising in the international distribution of machinery and tools for the glass industry. It also offers consultancy services for the sector.

To set this new collaboration in motion, JordonGlass will be representing Filtraglass at the GlassBuild America fair in Atlanta this coming September. At stand 1343, in hall B2, JordonGlass will introduce Filtraglass' water recycling systems to

a market that is new for the company.

The American market, across all its sectors, is characterised by resolute determination to achieve improved and more sustainable production at better prices, which is precisely what Filtraglass offers: water recycling systems to lower costs, increase productivity and reduce the amount of waste that is generated by the industry.

Through this collaboration Filtraglass hopes to continue scaling up its international expansion and to reach out to a market brimming with opportunities, in which it can greatly contribute and make a difference.

FILTRAGLASS.COM



ALU PRO and ENSINGER

Exclusive negotiations

Alu Pro and **Ensinger** have announced that they have entered into exclusive negotiations for the transfer of Thermix® insulating glass spacers business to Alu Pro. Closing of the transaction is expected to complete as soon as possible, subject to customary closing conditions and regulatory approvals.

Alessandro Fenzi, CEO of Fenzi Group, declared: "We are very excited of enlarging our product range with a further high performance spacer. We have been impressed with Ensinger technological expertise and the Thermix know how will be a great addition to our company".

Roland Reber, Managing Director of Ensinger, commented: "We are happy to have found a partner who is very committed to the future and the growth of Thermix. The sale of this division will enable us to concentrate more on Ensinger's core business areas."

Ensinger has been manufacturing Thermix spacers at its production site in Cham (Bavaria) since 1994. Warm edge insulating glass spacers break the thermal bridge effect at windows and reduce the energy required for air conditioning in rooms.



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Project	Completion
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2 Villas in Weifang	<input checked="" type="checkbox"/>
3 Beijing Institute of Architectural Design	<input checked="" type="checkbox"/>
4 Luoyang Innovation Tower	<input checked="" type="checkbox"/>
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ADI

New headquarters with major expansion in production and office areas

ADI has recently inaugurated its new headquarters after a major expansion that involved both the production facilities and corporate offices. This allows ADI to respond to the ever increasing demand of its customers more promptly. Both space and the resources have been increased, also in the R&D departments, with the most updated instruments. This enables ADI to continue to increase the performance of its *UHS*® (Ultra High Speed) range of bonds.

ADI produces both peripheral wheels for automotive glass, and for architectural glass, as well as a new generation of cup

wheel which belong to this range of tools. In addition, thanks to a consolidated worldwide exclusivity agreement, ADI will present the patented *GLASS RENU* scratch removal system at its booth at *GlassBuild America*. This system is the only system in the world that removes scratches from the glass surface utilizing a dry system. As a consequence, the system is much easier to use both indoor and outdoor. The applications of this system are endless: from the architectural industry, to automotive, marine, and maintenance of public transportation.

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ŞİŞECAM FLAT GLASS

Furnace firing ceremony in Bulgaria

Şişecam Group continues its investments in Bulgaria where it operates in flat glass, automotive glass, glassware and chemicals business lines. The Group, which has accomplished a total of EUR 600 million investment in Bulgaria so far, fired the furnace, renewed with an investment of about EUR 42 million at Şişecam Flat Glass Plant in Targovishte, at a ceremony held on 2 July 2019.

Şişecam Group Vice Chairman and CEO Prof. Ahmet Kirman hosted the ceremony attended by the Minister of Economy of Bulgaria Emil Karanikolov, the Member of Parliament Venka Stoyanova, Targovishte Governor Mitko Staikov and Targovishte Mayor Dr. Darin Dimitrov.

Giving a speech at the ceremony held with the participation of over 300 invitees including the customers of Şişecam Flat Glass in Europe, architects and sector professionals as well as the Şişecam Group executives and employees, Prof. Ahmet Kirman drew attention to the fact that Şişecam was a global actor in all main areas of glass industry such as flat glass, glassware, glass packaging and glass fiber as well as soda and chrome compounds, and added, "We are the third largest glassware manufacturer and the fifth largest flat glass manufacturer in the world. We rank seventh in synthetic soda production, and are the leader in chrome chemicals in the world. We are a Group on an international scale with our 22,000 employees, production activities spreading across 13 countries in three continents and sales to over 150 countries. With our new soda investment in the US, we will increase the number of countries of operation to 14."

Stating that the Group had made its first investment in Bulgaria under Şişecam Chemicals in 1997, Kirman continued, "During the privatization, the Group became the shareholder of the Bulgarian soda producer with the Belgian Solvay, and continued its investments in Bulgaria by increasing its shareholding interest to 25% in the company in the following years. We took our first step for the greenfield, i.e. new investments in Bulgaria in 2004. Our Group laid the foundation for the



flat glass, automotive glass and glassware production facilities in 2004. With this investment, we were bestowed with the title of the 'Largest

Greenfield Investor in Bulgaria.' After the glassware plant commenced production in 2005, our Group commissioned the first float line in flat glass followed by the mirror, laminated glass and tempered glass lines in 2006, and put the automotive glass plant into operation in 2010. In 2013, the energy-saving coated glass production started. As Şişecam Group, we continue our operations with *Trakya Glass Bulgaria EAD*, *Şişecam Automotive Bulgaria EAD* and *Paşabahçe Bulgaria EAD* as well as Solvay Sodi in which we have ownership interest." Pointing out the fact that the operations and capacities of Şişecam Group in Bulgaria have an important role in the Group being the largest flat glass manufacturer in Europe as well as one of the two largest glassware manufacturer, Kirman added as follows: "Today, our Group has an annual production capacity of 470,000 tons of flat glass, 7.5 million square metre coated glass, 3.5 million square metre mirror, 1 million square metre laminated glass at the flat glass plant with two furnaces, of 2.8 million square metre at the home appliance glass plant, 2.2 million square metre automotive glass at the automotive glass plant, and of 100,000 tons at the glassware plant with two furnaces in Bulgaria. A major part of our flat glass, glassware and automotive glass production is exported to Europe. Our Group's investments in Bulgaria have reached EUR 600 million in total so far. Like the flat glass furnace we have renewed and fired with an investment of EUR 42 million, we will continue our investments in modernization and capacity increases in our Bulgarian manufacturing facilities. In addition to all these investments, we contribute to the Bulgarian economy with the employment of about 3,250 people as a result of our operations and aim to increase the labour force participation in the country with new employment projects."



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BOVONE DIAMOND TOOLS

New
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WHEELS FOR
ARRIS

Positive results; important product developments

2019 is looking to be another positive year for **Bovone Diamond Tools**. In fact, already in the first four months of this year, the company registered an increase of 4% compared to 2018, with the aim of continuing this trend. Moreover, the number of machines has increased, along with the number of employee - now almost 30. European markets, always rather stable, have been confirmed, as well as the Middle East, the United States and the Far East, undergoing minor growth.

Click-Fit

Click-Fit (patent pending) is the company's revolutionary innovation presented in 2018, launched on the markets at the beginning of 2019. This innovative fixing system is for diamond cup metal and resinoid wheels.



The aluminium plate remains fixed on the machine while the diamond part is replaced, valid for all brands of machinery on the market. Savings are therefore guaranteed in terms of storage and time, and - last but not least - costs.

Moreover, the system is completely ecological, minimizing the disposal of materials (further saving of time and money ...), while safeguarding our environment too.

Considering that resinoid wheels are the true core business of BDT, an upgrade of the resin plate has already been developed with this aim of maximizing resources and time.

New resinoid plate

This new resinoid plate results in lighter grinding wheels and less stress on the spindle. This is made possible thanks to the new design of the slats on the plate, which allow the water to be atomized, reaching between the grinding wheel and the glass contact point in a uniform and optimal manner.

The material of the plate ensures greater rigidity and therefore a more direct transmission of the pressure set by the operator, while the plate guarantees a perfect balance of the wheel itself.

New AV wheels for CNC machines

BDT has tested new peripheral wheels for glass and Dekton processing, with high-performance features in terms of speed and performance. The name of these wheels is - in fact - AV (Alta Velocità - High-Speed), to immediately highlight their intrinsic feature - processing speed.

The market is continuously demanding high-quality, high-performance and high-speed tools, which provide advantages that must not be limited to results alone, but also the time





taken to carry out processes and ease of use.

Bearing these factors in mind, BDT staff has been working for some months with the aim of designing a new range that meets the increasingly demanding requirements of end customers and distributors – a challenge faced immediately by BDT and won with the new range, with three types of wheels: flat profile wheels, trapezoidal profile wheels and grinding wheels.

The flat profile wheels have a new design of sectors, smaller and closer together, which allow to reach a speed of 10 meters per minute at 7,500 RPM.

The trapezoidal profile wheels have a different composition compared to traditional wheels, as well as a different granulometry, allowing to reach a speed of 8 meters per minute, always at 7,500 RPM.

The same new design of the sector has also been applied to the grinding wheels, which reach 50% more speed than traditional wheels, now estimated at 10 meters per minute at around 12,000 RPM.

All wheels have been tested on a new work centre purchased to be able to test wheels in-house, and are therefore the result of this fundamental investment.

The excellent results obtained on glass were also seen on Dekton, reflecting the close relationship between the traditional hard and transparent material and the very new and ever-evolving stone type synthetic materials.



WWW.BOVONEDIAMOND.COM

GLASSTEC 2020

Exhibitor registration is open

The world's biggest get-together of all protagonists in the glass industry will once again be held in Düsseldorf from 20 to 23 October 2020. At the 26th **glasstec** – International Trade Fair for Glass Production, Processing and Products – over 40,000 visitors are expected to come from some 120 countries and in excess of 1,200 exhibitors from over 50 nations. The development of **glasstec**, the world's No. 1 trade fair for glass, reflects the positive global trend in the glass sector. The latest figures from the European and the German market serve as an example for the positive development in this industry.

According to preliminary data furnished by the *European Glass Alliance*, total sales of this industry stood at EUR 13.3 billion in Europe (+3.9% against 2017) in 2018. Imports into the European Union reached EUR 6.4 billion (2017: +5.8%) and exports totalled EUR 6.9 billion (2017: +2%).

The German glass industry also concluded the 2018 financial year with a positive balance over all. According to figures from the Federal Statistical Office and the *Federal Association of the Glass Industry* (Bundesverband Glasindustrie e.V.), sales totalled EUR 10.1 billion and were up 4.0% on the previous

year. The headcount in the glass industry rose by 4.7% to a total of 56,288 employees. Total glass output rose by 2.4% to 7.6 million tons. Sales abroad saw a particularly marked rise increasing by 10.2% and a total of EUR 4.5 billion.

As of now companies from the areas of mechanical engineering, industry and skilled crafts can register for **glasstec 2020** online.

Exhibitors can register for **glasstec** using the direct link www.glasstec-online.com/2330. Companies that already participated in 2018 can use already pre-completed and editable forms. The allocation of stand space will start after the registration deadline on 1 December 2019.



WWW.GLASSTEC-ONLINE.COM

Building the digital factory of the future

With Movetro, Intermac (the glass division of Biesse Group) intends to further add to its range of 4.0 ready solutions for the glass industry in the era of digital manufacturing and, through this partnership, presents itself as the ideal partner for the design and creation of fully automatic and integrated turnkey systems and special lines.

Based in the province of Padua, Movetro has represented a point of reference in the sector for more than 15 years, both in terms of expertise and quality and with regard to its design skills, and has gained recognition internationally for the excellence of the high value solutions it offers. Movetro and Intermac have been working together for a number of years, and this partnership represents the consolidation of the significant ongoing investment the Group is making in development and growth in view of the 4.0 revolution.

These two manufacturing companies are both reaping the benefits of this synergistic union, achieved by sharing their innovative values and principles: indeed, on the one hand Intermac has succeeded in expanding its product range, entering the sector dedicated to the storage and handling of flat glass sheets, while on the other, Movetro can now enjoy the advantages of working with a major industrial Group, including the international visibility and widespread distribution network that characterise Intermac and can position the company at a global level among the key players in the sector. Within Biesse Group, Movetro has in fact become synonymous with the product range which consists of sorters, shuttle warehouses, automatic loading devices, loaders and tilting machines.

"We have integrated the Movetro range into our product offering due to the fact that the company represents excellence in the design and installation of automatic systems for the storage and handling of flat glass sheets: we share the same goals of total quality and maximum reliability. Thanks to our



Intermac and Movetro, working together to build the digital factory of the future.

strategic union with Movetro, since 2017 we have been able to rely on a superb and extensive range of products that complete Intermac's offering, with a focus on 4.0 solutions," said Gianluigi Casadio, Director of the Glass and Stone Division at Intermac.

"This partnership enables us to take full advantage of the benefits offered by the extensive network that characterises Intermac," confirmed Giorgio Mistrello, Chairman of the Board of Directors of Movetro, "and allows us to access interesting high-level 4.0 technological projects, which can effectively implement the best solutions in industrial automation and robotics alongside the most advanced production processes, such as TAV-Tout l'art du verre and Central Glass," concluded Mistrello.

Intermac and Movetro will be taking part in the Vitrum 2019 trade fair, which is due to run from 1 to 4 October in Milan, where they will showcase a host of technological innovations that can be used to create new business models on the basis of automated and interconnected digital production.

WWW.MOVETRO.EU




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YALOS BAVELLONI

Flat glass washing and drying solutions



Yalos Bavelloni, the majority of which belongs to *Bavelloni SpA*, was created in partnership with Claudio Cigoli and Paolo Pezzoli in order to develop the widest range of solutions for flat glass washing and drying. The Company product range

includes both standard models, such as horizontal and vertical washing machines, available in all sizes and configurations as well as customized solutions and special applications to meet any market need.

Danilo Cigoli, Managing Director, will lead Yalos Bavelloni with the aim of developing the company internationally thanks to the synergies with Bavelloni and with its sales network.

Danilo Cigoli and Yalos Bavelloni shareholders have extensive know-how and experience in flat glass processing and in particular in the washing and drying processes; their skills integrate in a complementary way into the organization of Bavelloni SpA.

Yalos Bavelloni and the machinery for glass washing and drying represent a milestone in the strategic plan of Bavelloni SpA towards the completion of the product offering.



WWW.BAVELLONI.COM

PILKINGTON UK

Inspection Systems optimises warehouse layout

First the Stockport-based company needed to gather the dynamic data they needed to run tests in order to know how to best move and store different sized glass products as well as ensure Pilkington has the best use of their warehouse and new fleet of forklift trucks.

Using Industry 4.0 technology, specialist simulation engineers from Inspection Systems created before and after 'digital twin' warehouse simulations using software developed by Siemens.

This then allowed the existing layout of production at the warehouse to be tested alongside multiple alternatives to see which worked best and to find the optimal layout all while not interrupting day to day operations of the warehouse.

Pilkington UK's Operations Manager Mike Sharples was delighted with the work undertaken by Inspection Systems. He said: "Thanks to their expertise in simulation, there's no need to risk downtime when we can now test any elements in the layout and quantify the impact from multiple perspectives.

"This marks a new chapter for our operations and we're ex-



Glass Warehouse Simulation with Pilkington

cited to see what further efficiencies can be made with the digital twin."

As a result of the work, Pilkington's were able to ensure they have the best organisation of their warehouse while also obtaining the capability to test future ideas that could improve their operations in a no risk environment.



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KURARAY

Expansion of SentryGlas® ionoplast interlayer production



Sýkora proudly.

Thanks to the new production line, the number of employees at the Holešov site is rising by almost 50%. Some of the new operators will come from ex-

isting teams in Holešov combined with new hiring.

“With the geographic extension of SentryGlas® interlayer production to Europe we can better serve our customers. As the supplier of SentryGlas® ionoplast films we are now the manufacturer with the widest range of glass laminating interlayers worldwide and have become an essential partner for architects, planners and engineers as a source of products, innovation and support,” said Reisuke Nakada, Global Marketing Director of the PVB Division.

Production is still in a trial period, but the interlayers already produced meet all current quality requirements. Indeed, in April, the first customers successfully qualified the new SentryGlas® rolls, commenting very favourably on the quality and flatness of the product.

The production capacity of the new line is sufficient to handle current sales volumes and allow for expected growth in demand in the coming years. At the end of 2019 a new cutting table will be installed that will allow the material to be supplied in sheet form. The expansion also offers the future capability to add an additional line. Full commercial production is anticipated to begin in July, initially for the EMEA region, but extending in 2020 to customers worldwide.



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On 23 January this year the first SentryGlas® rolls came off the newly constructed line at Kuraray’s production site in the Czech Republic. Built in just one year, the new facility passed factory acceptance testing in October 2018.

Since the purchase of DuPont’s GLS, PVB and SentryGlas® interlayer business in 2014, this site has belonged to Kuraray and until recently specialized exclusively in the production of recycled PVB film. “The new project represents a special opportunity for the site. This expansion also supports the total business growth strategy in the laminated glass market, especially “in the structural glazing segment,” said Steve Cox, General Manager of Kuraray’s worldwide PVB Division.

“The new SentryGlas® line 2 (SG-2) project is a chance for us to grow with a unique product” explained Holešov site manager, Jakub Sýkora. The project was supported by Vladimír Babayan, process engineer, and experienced teams from Kuraray’s sites in Fayetteville, US, and Troisdorf, Germany. Sýkora added, “The dedicated project team is committed to meeting the high standards that apply to every Kuraray investment from the start – safety, quality, schedule and cost.”

“This will not only expand the product portfolio available from the Holešov plant but will also create new jobs.” reported

A+W and SEMCO-GROUP

Close to glass customers in the digital age

Alongside globalization and urbanization, digital transformation is one of the determining success factors for businesses of the future. It shapes both the economy and the global society. For medium sized companies, adapting to this change is a real cultural change. In many cases it means, that old ways of thinking and doing business have to be thrown overboard.

Semco is tackling digital transformation with a series of projects, ensuring that the group’s core values remain intact. Teams from different areas deliver solutions, which are practical, relevant to the customer and future-proof.

The partner for the **Semco Group** on this way forward is the software house **A+W**. By 2023, all 18 Semco locations will be equipped





A+W CEO Peter Dixen and Semco CIO Michel Schüller signing the agreement

with A+W's industry solutions. In the future, this will result in a significantly higher degree of automation, even more process stability and increased efficiency through an intelligent networking of the assets of the whole Semco-Group.

First joint workshops for the implementation of the software have taken place successfully. It has been shown that digitization creates

added value for the customer. Leaner and more agile internal interfaces optimize processes such as internal orders, distribution of orders between different Semco sites or logistics planning. Using A+W's suite of digital tools everything will then be designed in such a way that the capacities within the entire Semco-Group are optimally utilized. This means that customers will benefit even more from the combined strength of the Semco competence network.

When it comes to direct customer communication, many things will change for the better: Orders can be entered 24/7. Individualized or complex products can be ordered online via a simple and intuitive interface. Customers can call up the status of their orders at any time in real time. Optimized and automated processes save time and money in error detection, sorting and shipping preparation.

In accordance with the principle of growth by our own efforts, we rely above all on the knowledge available in our own company. In the respective project groups, the Semco-Group of the future is created behind the scenes with the help of external experts. Digitalization and automation will serve one singular purpose above all:

everything Semco changes needs to make the customer experience even more personal and individual.

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GLASTON

Deal for large IG line for Maxividro

Glaston Group has closed a deal for a large *Bystronic glass* B'JUMBO Insulating Glass line with Portuguese **Maxividro**, a glass processor serving the construction and architectural market. The total length of the B'JUMBO is over 100 metres and it is one of the largest IG lines Bystronic glass has ever built. The order is booked in Glaston's Q2/2019 order intake. The line will be delivered during the last quarter of 2019.

Founded in 1994, Maxividro has always been in the forefront of innovation with regular monitoring of equipment and technology playing an important role. In addition to its home market, Maxividro has, since the beginning, actively approached export markets, which nowadays represent over 50% of its sales to destinations such as Spain, Switzerland, UK, US and Canada.

Bystronic glass' B'JUMBO FLEX 330 I.G. manufacturing line has a maximum dimension for insulating glass units with a height of 3.30 metres and length of 9.0 metres. The total length of the line is 101.6 metres. In addition to its maximum size, another customized feature is the synchronized spacer application that



enables Maxividro to manufacture high quality both rectangular and shaped IG units in continuous production. Special glass to minimal frame panoramah!® windows, the most challenging client from Maxividro, will be produced on the new IG line.

"Today glass plays an important part in architectural projects. In addition to aesthetic values, the use of glass enables energy savings, noise reduction and increased safety, adding up to heightened comfort of the buildings," said Pekka Hytti, Senior Vice President, Region EMEA, Glaston Group.

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ŞİŞECAM GROUP

Co-investment in the US with Ciner Group

Şişecam Group, a global actor in business fields including all main areas of glass industry -flat glass, glassware, glass packaging and glass fiber- as well as soda ash and chromium chemicals, is going to make a new investment in the US with Ciner Group having significant know-how in natural soda production. For the investment in question, Soda Sanayii A.Ş., operating within Şişecam Chemicals, entered into an equal production partnership contract with Ciner Group for the natural soda production in the US.

Today, Şişecam Group is amongst the top seven synthetic producers of the world with its total annual soda ash production capacity of 2.4 million tons that is the sum of 1.4 million tons at its Mersin Soda Plant, 585,000 tons at its Şişecam Soda Lukavac Plant in Bosnia and Herzegovina, and 375,000 tons at its Solvay Sodi Plant in Bulgaria, where the Group has production partnership with the world's largest synthetic soda producer Solvay.

Ciner Group that Şişecam Group has entered into a production partnership contract for its new investment in the US is the world's largest natural soda producer thanks to its total natural soda production capacity of 7 million tons per year that is made up of 2.7 million tons in Kazan and 1.8 million tons at Eti Soda with solution mining operations in Turkey and 2.5 million tons in the US with conventional mining.

Prof. Ahmet Kirman, Şişecam Group Vice Chairman and CEO, said, "Şişecam Group is carrying out production its operations in the four main business lines of flat glass, glassware, glass packaging, and chemicals in 13 countries on three continents. Especially the different investments that we have made in recent years in our current business lines indicate the opportunities that we are using also in connection with the inorganic growth opportunities besides the organic growth to achieve our global strategic objectives. In consequence of our efforts to use all of the potential opportunities that will create value for our company including acquisitions, joint-ventures and other cooperation possibilities in line with our sustainable growth and high performance based investment policies, we have made a decision to make a green-field investment in Green River, Wyoming, US, with Ciner Group that has significant know-how in natural soda production and



Prof. Ahmet Kirman,
Vice Chairman and CEO
at Şişecam Group

the largest natural soda production capacity globally. Thus, we are aiming at increasing our share in the global soda market from its current level of 3.4% and in the global sodium and bicarbonate market from 6.5% owing to our

40 years of experience that we have gained from our synthetic soda sales in the world market spanning.

"Moreover, access to the low-cost natural soda in the soda market with a solid competition offers a competitive advantage, while financially contributing to Şişecam Group that will further reinforce its strength in the global soda market. We have been implementing the same production partnership structure in Bulgaria for many years with Solvay, the world's largest synthetic soda manufacturer."

"The new investment in question would offer the possibility for a natural soda production by employing one of the most advanced techniques of the low-cost solution mining. Depending on the timing of obtaining the required investment and operating licenses and permits for this investment, which, in our opinion, will take an important part in increasing our global market share by reinforcing our existence in the Asian and American markets, we are expecting to commence the production operations by the year 2024."

"We are planning to finance this investment, which has an annual natural soda production capacity of 2.5 million tons besides 200,000 tons of sodium bicarbonate production capacity, with a long-term project financing loan by 80% and the balance with an equity capital to be invested equally. In the wake of this investment, we will become one of the world's top five players in soda ash line and have taken another giant step towards our goal to be among the top three," Kirman noted.



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Forel

Forel IG lines at Vidraria Mortagua

VIDRARIA MORTAGUA REACHES INNOVATION WITH FOREL



Being a partner for clients is one of the most important features for a steady and mutually profitable relationship between glassworks and glass machinery manufacturers. And if this special relationship lasts for over 20 years then it is sure to lead to development and innovation too. This article gives us a perfect example of how the continuous collaboration between Forel and Vidraria Mortagua has done this.

THE COMPANY AND ITS VISION

"The important thing is having a clear goal. It isn't always necessary to know how to reach this goal already when you start: first you choose the destination, and then you plot the route. Nonetheless, ambitious plans often come with hurdles that can't always be overcome alone. And this is where you need a partner, not just a supplier, that can put the initial vision into focus and transform the idea into a project."

These are the words of José Pires, Chief Financial Officer of Vidraria Mortagua, one of the leading glass-processing companies in the Iberian peninsula. Founded 30 or so years ago by Nuno Morais, the current CEO of the company, and José Pires, Vidraria Mortagua has grown from a small artisanal business with around a dozen employees to become a structured industrial company with an 18,000 square

metre production site, a workforce of over 100 and an annual turnover in excess of EUR 10 million. The company produces laminated and insulating glass for both residential and commercial applications, in pane sizes up to and even beyond Jumbo format. While the company distributes its products directly within Portugal only, its clients supply a market extending throughout Europe. For over 20 years, Vidraria Mortagua has been using Forel machinery for the production of insulating glass, edge processing and, more recently, laminated glass cutting.

THE FIRST FOREL MACHINE

"We purchased our first Forel double glass production line in the late 1990s, and it is still in operation today," says Pires. "About ten years later, we added a second Forel line to cater for the growing number of

orders. Our company then continued to grow steadily, and so we transferred to a larger new plant and increased the size of our workforce. But when the recession came in around 2010, we experienced a drop in business like everyone else at the time. We had only two paths ahead of use: we could either close down to save us from financial loss or risk new investments. We asked ourselves what we could do to stand apart from our competitors, and the answer was a project for a third double glass production line: a line capable of



José Pires, CFO
of Vidraria Mortagua



Forel Flexible Profile Applicator

processing pane sizes up to 7 x 3.21 metres, using the Super Spacer flexible spacer. In addition to our third line's ability to produce impressive formats,

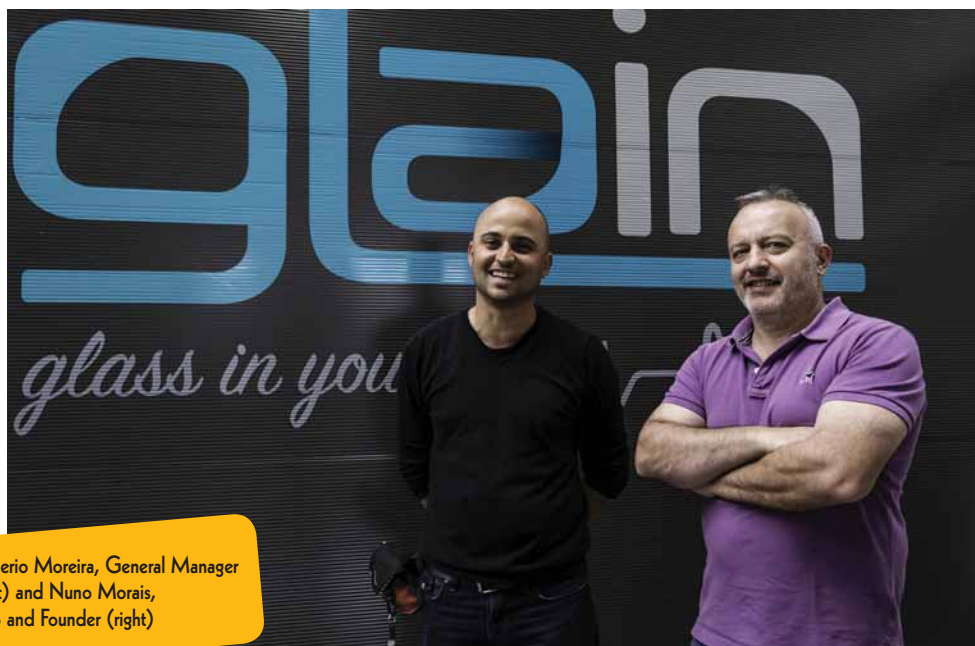
it is also the first anywhere in the Iberian peninsula to use flexible spacer technology. The new plant became operational two years ago, and the response from the

market has already been very positive: in 2019, we saw a substantial increase in the number of orders for insulating glass with the Super Spacer."

IMPRESSIVE GROWTH

One of the leading players in the impressive growth of Vidraria Mortagua has been Rogerio Moreira, who





Rogerio Moreira, General Manager (left) and Nuno Morais, Ceo and Founder (right)



joined the company in the late 1990s and is now General Manager.

“When we decided to invest in the new flexible spacer,” explains Moreira, “we knew that we were trying something totally new in our field. We weighed up a number of different options, but in the end we chose the Forel TBB applicator, which offered the best performance with the Super Spacer product. Now that the necessary setting up stage is complete, the line is operating at full capacity. Adding this new line let us achieve the degree of flexibility we were looking for, and Vidraria Mortagua can now respond easily to both standard orders and more complex requests.”

The latest purchase by Mortagua was a Forel VC02 vertical laminated glass cutting line (the model exhibited at glasstec 2018).

“We have just finished a major project to optimise and rationalise our production plant,” continues Moreira. “After we extended our production area (increasing it to its present size of 18,000 square metres), in 2017 we created specific, distinct areas for lamination, insulating glass production and laminated glass cutting. We needed to speed up process times in the cutting department in particular, where we had only performed horizontal cuts: and this was made possible by the installation of the Forel vertical cutting line. This line’s precision and reliability, and its ability to process Jumbo format panes rapidly, gave our production capabilities a significant boost. In addition to this, Forel also built a made-to-measure automated magazine system for us, which feeds both the vertical and the horizontal cutting lines.”

IG LINE - Washing Machine





CONTINUOUS INNOVATION - AUTOMATION

“The future is automation,” concludes José Pires. “We have to continue to set increasingly higher standards for quality using ever more advanced glass processing solutions,

and this will only be possible through automation. To react to a market that is already very aggressive and changeable, Mortágua has set itself the goal of being flexible, of being organised amidst the disorganised nature of the world we operate in. This is why we base our choice of From



from left: Marcio Marquez (Logistics Manager), Humberto Muniz Não (Financial Administrator), Rogério Moreira (General Manager)





IG LINE - Sealing Robot

not only on the quality of the product they offer, but also on how easily we can create a working relationship with their management. Companies with our vision and aspirations cannot make do with picking systems and machines out of a catalogue, but need a supplier that develops bespoke solutions. To be up to the task, the constructor must have a streamlined organisational structure that can react rapidly to

our feedback and requests both before and after sale. A working group involving both the glass processor and the constructor must be created to work towards the common goal of creating a system that operates at its full potential, always. This is why Vidraria Mortagua does not have its own R&D department. Our innovation is in the machines we use." There's an unmistakable atmosphere of con-

tinuous innovation within Mortagua. As well as a well-stocked machine fleet, the company has also installed a state of the art photovoltaic generation system and a process water recycling system. There are also many new projects in the pipeline.

"By the end of 2019," reveals Rogerio, "we will have completed a new extension project to increase the size of our production site. In the meanwhile, we

are finalising the purchase of a new 'High Speed' double glass production line. And, of course, it will be a Forel line."

Forel SpA

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Edgetech

AUTOMATED APPLICATION OF SUPER SPACER® AT AGC INTERPANE

© René Müller

Absolute parallelism of both spacers
in triple glazing using Super Spacer®

XXL insulating glass units represent a demanding growth market which requires top class performances extending from the manufacturing to the logistics. AGC Interpane has been able to significantly increase the productivity and precision of an existing insulating glass line for the manufacture of oversized glazing through the automation of the spacer application.


The magic triangle of economically manufacturing insulating glazing, i.e. the trade-off between time, quality and costs, is frequently dominated in the industry by a high proportion of manual processing steps. "This is where you will find the most important lever for manufacturers of insulating glass to produce more quickly, economically and with consistent top quality", according to Joachim Stoss, Managing Director of the Edgetech Europe GmbH company that is based in Heinsberg. The wholly-owned subsidiary of the Quanex Building Products Corporation celebrates the 30 years anniversary of its Super Spacer® product this year, and is thus the pioneer of metal-free, warm edge

spacer systems. Initially the development work mainly focused on the heat insulation properties and the durability of the edge seal. Flexible spacers retain the elasticity of the edge seal of insulating glass units and reduce mechanical stress on the glass edge caused by pumping movements and wind loads.

"Due to the growing importance of automation, other benefits of flexible spacers, which can be applied endlessly from the roll, become apparent," Joachim Stoss adds. The automated application of spacer systems such as Super Spacer® replaces work tasks that are frequently still performed manually, such as bending, filling of desiccant, butyl application, connecting rigid hollow profiles and placement of the frames.

© René Müller





Endless Super Spacer®
application from the roll

AUTOMATION COMBATS SHORTAGE OF SKILLED WORKERS

Demographic change in workforce is also having a marked influence upon the glass industry. According to the 2018 Labour Market Report of the Association of German Chambers of Industry and Commerce, 86 per cent of the processing companies in the glass, ceramic and stone sectors are very frequently in search of skilled workers due to the fact that older employees are retiring. 60 per cent of the companies feel the shortage of skilled employees constitutes a risk for the development of their business. None of these things are new phenomena but the need to solve them is becoming increasingly urgent. The filling of new positions has also been a permanent issue in the region of Lower Bavaria, which is a hotspot of the European glass industry, for a number of years. If orders can no longer be completed, and the existing workforce is subject to ever greater

strains, then more efficient production becomes a must. The manufacturing processes do not have to be completely turned upside down. Sometimes existing areas of potential can be opened up by applying relatively simple means, as AGC Interpane demonstrates at its Plattling site in Lower Bavaria. There they upgraded an existing insulating glass line through the addition of an applicator for the automated application of silicone-based spacers in 2017. This resulted in productivity increases of up to 50 per cent.

EASY WORKABILITY IS A HUGE ADVANTAGE

AGC Interpane based in Plattling describes itself as a specialist for logistically complex cut-size and insulating glass orders. At first glance it sounds very basic, but in reality, it involves the constant showcasing of major global projects. The company in Plattling ranks among the illustrious circle of flat glass processors that

are able to supply coated XXL insulating glass units of the highest quality. London's Embassy Gardens, featuring the spectacular Sky Pool, the extension of the Columbia Business School in New York, and Google's "Landscape" in London, with a rooftop landscaped park and running track, are just three of the flagship projects that are now pending for which the company is producing giant panes of glass. Dimensions up to a size of 3,210 mm x 18,000 mm are possible.

The production is tailored to ensure the greatest possible levels of flexibility. The fully-automated production line, which has been upgraded using the Super Spacer® application robot, produces the entire range of double and triple-glazing units. The dimensions are varying from 200 mm x 300 mm extending to the so-called "Giga Lites", i.e. oversized glazing, measuring 3,210 mm x 9,000 mm. However, Interpane can coat glazing units that are even greater in size, up to a length of 18 meters. Float glass, laminated glass, laminated safety glass or toughened glass are processed up to a maximum thickness of the insulating glass unit of 115 mm. Super Spacer® T-Spacer™ Premium Plus with widths of between 10 mm and 20 mm is used as the spacer. The silicone-based spacers are set in parallel down to

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The benefits of Super Spacer® warm edge:

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- 100 per cent resilience after compression

the last millimetre in a matter of seconds, thus guaranteeing a flawless and durable edge seal.

“We also process rigid spacer bars in some applications, but the advantages of automated Super Spacer® application are making a major impact, especially in the case of the large-format insulating glass units,” explains Daniel Bruckelt, head of insulating glass production in Plattling. In addition to the time savings involved, this particularly applies to

Robot-controlled Super Spacer® application for XXL insulating glass units

the minimal tolerances involved in the position and the precise manufacture of the corners. Also, desiccant debris, in the intracavity space can be ruled out because the desiccant is already integrated in Super Spacer® and does not need to be filled separately as would be the case with hollow box sections.

“Especially where our “Giga Lites” are concerned, the automated processability of the spacers and thus the quality and appearance of the finished products are very closely linked”, adds Michael Elstner, Head of

the IBC Consulting Centre. “Where demanding architecture projects are concerned the aesthetics of the edge seal is increasingly becoming an important evaluation criterion. Super Spacer® is virtually invisible due to its matte surface and low height.”

And what will the future bring? No-one is yet able to predict the extent to which digitisation and Industry 4.0 will continue to have an impact upon such a highly specialised form of manufacture as employed by AGC Interpane in Plattling. “However, we are ex-

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Automation facilitates, precise, crimp-free and rectangular corners

cellently prepared for this due to our state-of-the-art automation and high levels of flexibility”, Michael Elstner reassures us.

EDGETECH EUROPE GMBH

Edgetech's Super Spacer® flexible foam-based spacer systems acts as energy-efficient warm edge spacers in

insulating glass windows. They significantly reduce energy loss to the outside, largely prevent condensation and also contribute to the lifetime of a window. On average, worldwide, more than 300 million metres are sold annually in over 90 countries. Edgetech Europe GmbH, located in Heinsberg Ger-

many, is a fully-owned subsidiary of Quanex Building Products Corporation, an industry-leading manufacturer of components sold to Original Equipment Manufacturers (OEMs) in the building products industry. Quanex designs and produces energy-efficient fenestration products in addition to kitchen and bath

cabinet components, with its head offices in Houston, Texas. Based on turnover Edgetech/Quanex is the world's largest manufacturer of spacers. Edgetech Europe GmbH is a sales location for the markets in continental Europe and one of the three worldwide Edgetech production plants, with a total of 450 employees and 16 extruders. You can obtain additional information about the Super Spacer® systems and the Warm Edge Technology of Edgetech here: www.superspacer.com.

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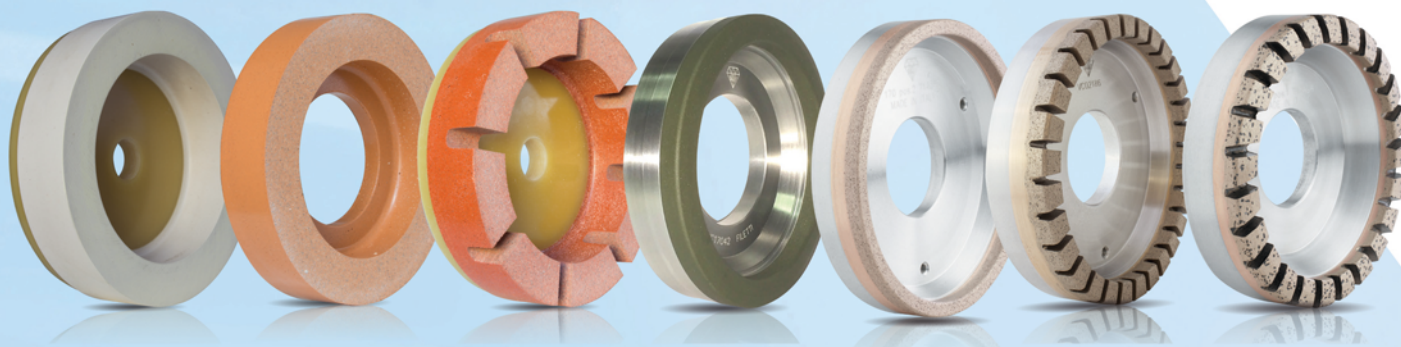
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Mappi



DIGITAL PRINTING WITH CERAMIC INK – CHALLENGES FOR FURNACE MANUFACTURERS

Digital glass printing using ceramic inks is an important business opportunity, but also a technical challenge for furnace manufacturers. In this article we speak to Mappi about these challenges and how the company is working not only to face them, but also to overcome them.

DIGITAL GLASS PRINTING - READY FOR THE NEXT CHALLENGE?

Digital printing on glass using ceramic ink is an significant business opportunity that has been giving glassworks a series of important possibilities concerning both aesthetics and technical aspects. The glass sector is always looking for innovations to attract architects and designers in using glass more and more and now this important material can do exactly this. Thanks to digital printing, this also become a great business opportunity. This, in turn, leads to highly customizable products with technical and aesthetical features that were not even thought of until just a few years ago.

NEW CHALLENGES, NEW TECHNOLOGIES, NEW LEVELS OF QUALITY

In this sector, new technologies often lead to new challenges which then lead to a new way of defining colour and quality of glass in all its forms.

Every slight imperfection, every stain, burn, smudge, error in colouring will remain etched forever in the glass due to the crystallization of the ceramic ink on hardening, an essential phase regarding printing with ceramic inks. These are defects that cannot be tolerated in products with high added value. Taking

for granted that printing takes place correctly, that grinding operations on the glass have been carried out correctly, and that colour is completely dry, this means that tempering (i.e. the moment in which the 'destiny' of coloured glass is fixed with ceramic inks) presents important risks from a technical point of view.

SPEAKING TO A LEADER IN ITS SECTOR

We spoke to Sergio Cosano, Sales Manager at Mappi, one of the global leaders for tempering furnaces, to find out which are these technological challenges and how to deal with them.

The 'burning' of ink or changes in colour tone are due to incorrect temperature management during tempering, when variations of just a few degrees can cause permanent damages. So how can we avoid these risks?

The use of quality inks and technologically advanced printers are certainly the fundamental basis of the process, guaranteeing constant technical/chemical characteristics. New products with furnace reheating chamber and very small metal masses inside certainly have enabled us here at Mappi to have punctual control of the temperatures with truly direct irradiation, strengthened by an evolved system of heating resistances such as the



Santa Monica parking



Mappi MHS, Multizone Heating System, allows us to adapt to different situations in the most flexible way possible, maintaining an operating temperature of the chamber below market average and also avoiding the overheating of the rollers, and therefore improving their planarity.

How does MHS work?

The main advantage of the MHS is its 'multi-zone' heating, in reverse to traditional tempering furnaces where the heating of the quenching chamber is carried out by elements arranged horizontally or vertically. MHS creates a lattice of independent cells (about

100, and, proportional to the size of the furnace) each of which is equipped with sensors that measure the temperature in their specific area of the furnace. This is combined with the Intelligent Heating System, which guarantees heating only in areas where the glass to be tempered is present, and

the Energy Saving System, which controls consumption and energy peaks by managing and balancing them in a coordinated manner. In this way an ideal ecosystem is created: the furnace has all the strength it needs and only where it is needed. These technological innovations and construction skills





therefore lead to ideal and flexible glass temperature for tempering, which eliminates the risk of 'burns' and colour variations in digitally printed glass with ceramic inks.

What are the other most frequent areas of attention?

Certainly the smudges of

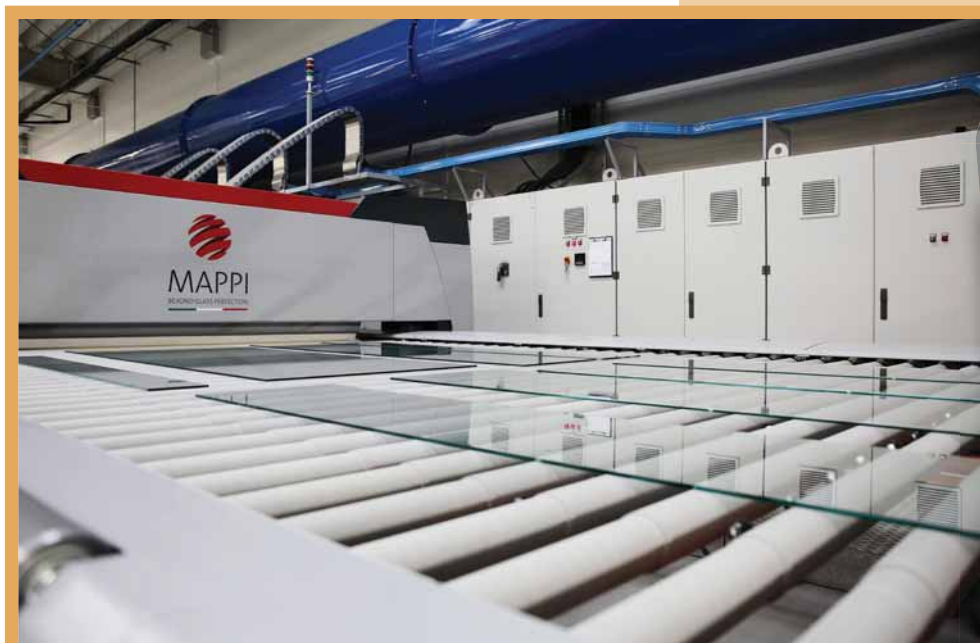
colour and the chromatic variations between the different areas. Mappi's solution is an 'air convection system' capable of modulating the heat distribution and air pressure inside the heating chamber with great precision without affecting the colour distribution on the glass surface.

Modern tempering furnaces have two glass heating systems: radiation and convection. If irradiation in our case is direct, and I think we are the only company doing this, given the high technological level necessary for its management, our GHBS convection is also unique for flexibility and precision. These combined technologies minimize optical distortions and glass surface defects. Furthermore, larger glass sheets can be tempered, reducing production times and cycles, thus ensuring better plant productivity.

Does this guarantee high quality digitally-printed glass?

Nearly. Innovations in Mappi furnaces based on technology and software go hand in hand with the best constructive skills, such as

Transmission Technology, which uses the best ceramic rollers to transport the glass sheets, using brushless motors. The entire system works to avoid defects on the tempered glass. The technology that we have seen can be found in all Mappi furnaces, such as from the Fox series right up to the Ats 4.0, which guarantee the best results not only with regards to tempering of digitally coloured glass, but also for all other types of glass with particular needs in terms of processing quality and complexity. In short, using a Mappi furnace in complex operations such as the tempering of digitally coloured glass, or printed using ceramic inks, results in having the best results both in terms of quantity and quality. And this is why we have been working for over 25 years.



Mappi International Srl



MAPPPI

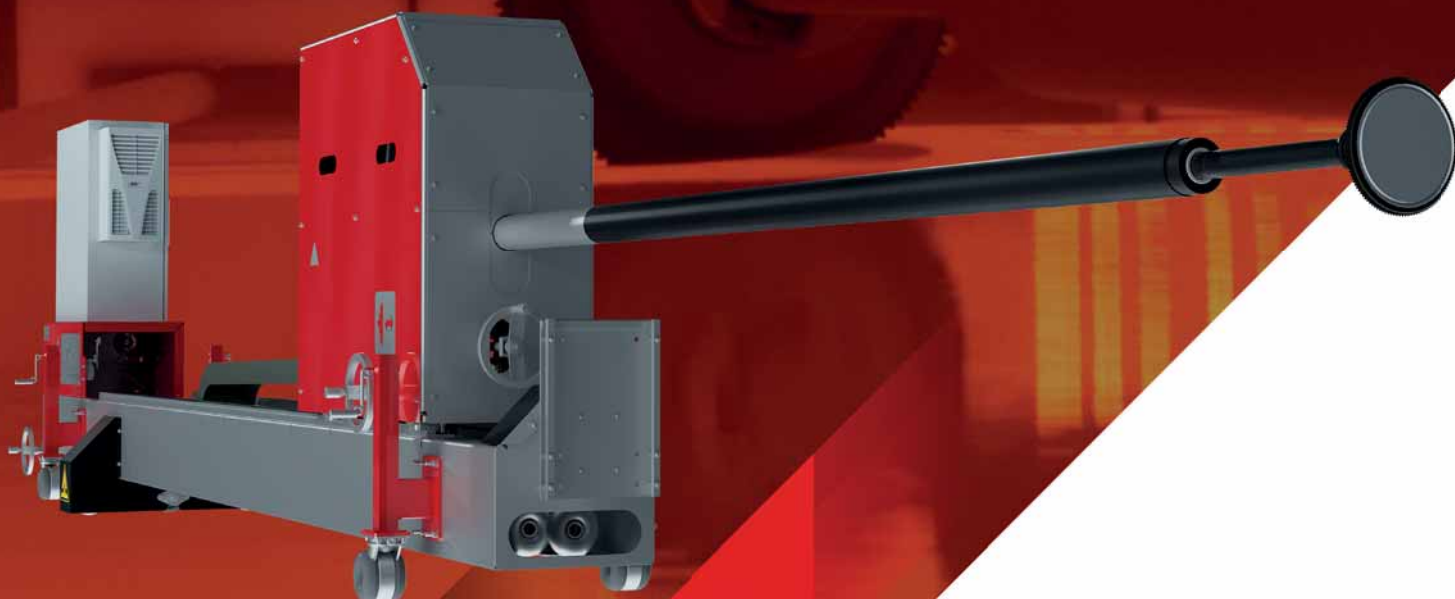
BEYOND GLASS PERFECTION

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TOP ROLLER

TOP STANDS FOR QUALITY - OF COURSE

Top rollers are among the most important parts of a tin bath. These machines are used in pairs in the forming section. Each pair, consisting of master and slave, works synchronously and has to create optimal conditions for a smooth production process. That requires nothing but the highest quality standards!



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Forvet

EXCELLENCE AND AUTOMATION FOR A FUTURE THAT WORKS



Industry 4.0 is the 'buzz word' of today's industry and the glass sector is moving fast to adapt to and apply this new level of automation. Forvet gives us an idea of how, thanks to new company reorganization and investments, it provides glassmakers with machines and systems for a total management concept.

In the past, the simple implementation of automation technology in a company put it a step ahead of the competition. These days, business leaders everywhere understand the need to know not if we automate, but how we do it.

Automation is the future. Automation accelerates progress on projects that increase revenue, serve customers more effectively, and save on costs. Automation might sound like something that belongs in a large enterprise, but businesses of all sizes benefit

from it. More automated processes limit the impact of labour costs and improve efficiency.

NOT JUST A SIMPLE OFFER OF DRILLING AND EDGING

As confirmation of this trend, Forvet has carried out company reorganization, where new managers, new engineers and new technicians have been hired to cope with company expansion, along with new buildings to double production capability.

Important investments have also been made toward new conceptual research and development, where the specific Forvet machine supply is only a part of the elaboration of projects.

The approach the com-

pany is proposing goes far beyond the simple offer of drilling or edging technology, even if unique. It analyses the entire series of glass company needs and generates proposals that include glass flow optimization, implementation of sorting systems with new concepts, ideas and high technology.

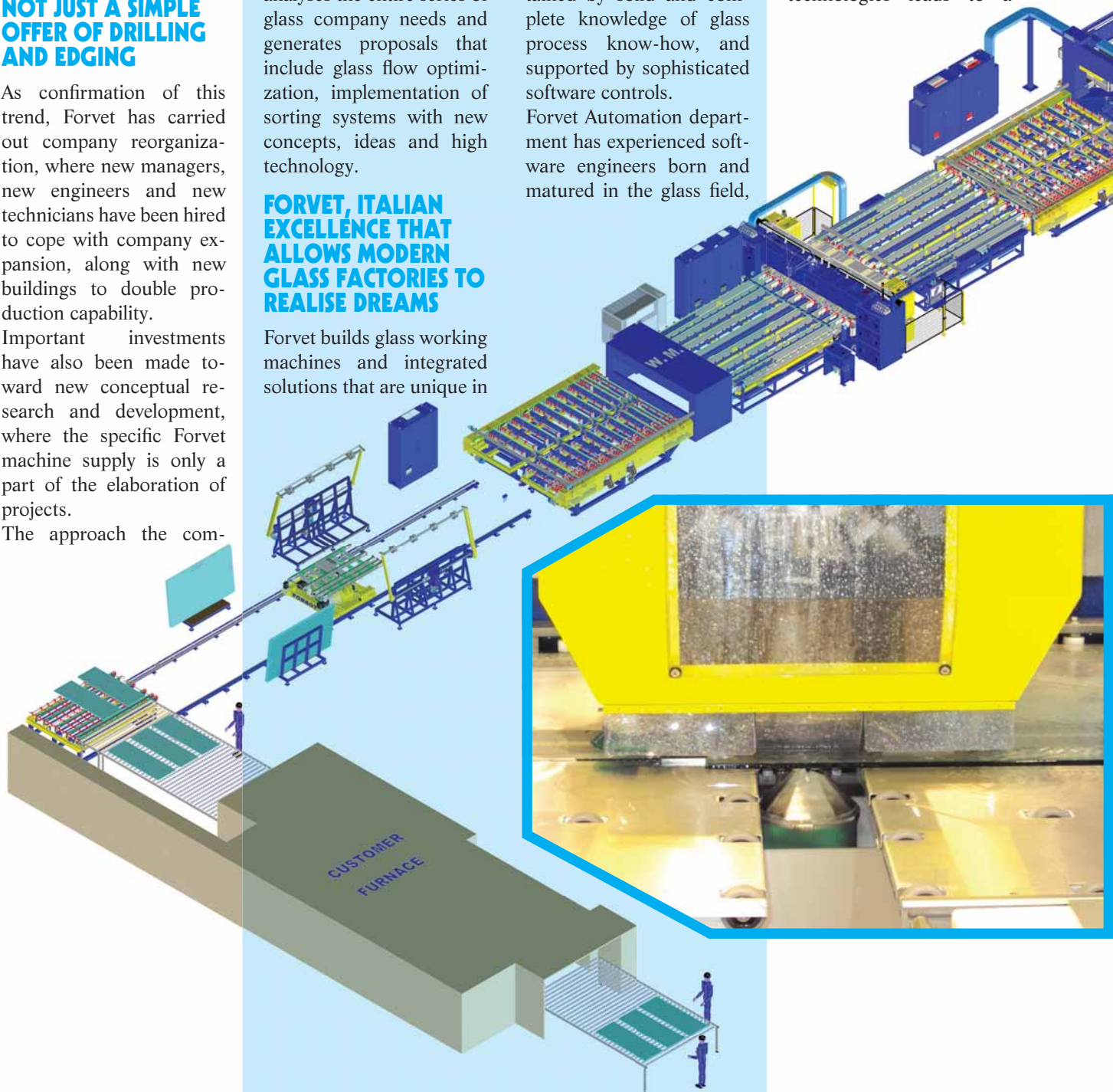
FORVET, ITALIAN EXCELLENCE THAT ALLOWS MODERN GLASS FACTORIES TO REALISE DREAMS

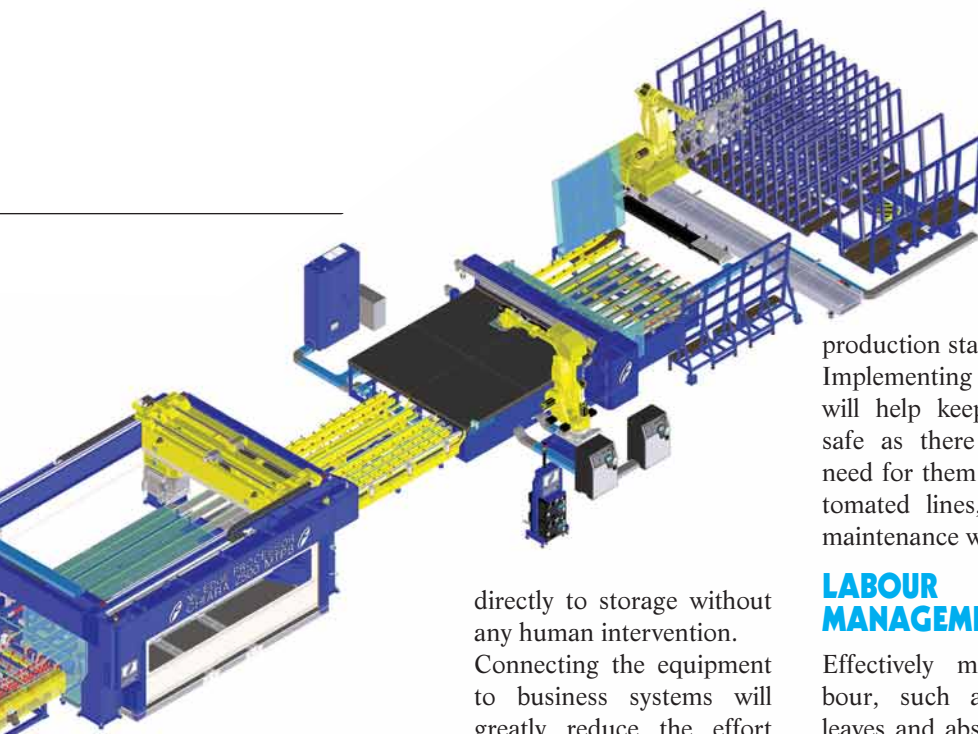
Forvet builds glass working machines and integrated solutions that are unique in

terms of their performance innovation, technology, driving passion and benefit. All this has to be sustained by solid and complete knowledge of glass process know-how, and supported by sophisticated software controls.

Forvet Automation department has experienced software engineers born and matured in the glass field,

granting the achievement of any project size, regardless of its complexity. The deployment of automation technologies leads to a





range of performance benefits for glass companies. These benefits are varied, depending on individual cases, and potentially very substantial – in some cases, considerably larger than cost reductions associated with labour replacement. They include, but are not limited to, greater throughput, higher quality, improved safety, reduced variability, a reduction of waste, and higher customer satisfaction

AUTOMATION ALSO MEANS CAPABILITY OF GLASS HANDLING AMONG PROCESSES

The integration between Forvet edging equipment Chiara and CNC drilling centres Francesca is well known: Forvet today is also providing all previous and subsequent integrations. Forvet automated and integrated machines are designed to perform a number of operations at the same time, which means there is no need to move the glass after each stage of production, as the finished products can be delivered

directly to storage without any human intervention. Connecting the equipment to business systems will greatly reduce the effort which is required to create

production status/reports. Implementing automation will help keep employees safe as there will be no need for them to enter automated lines, except for maintenance work.

LABOUR MANAGEMENT

Effectively managing labour, such as employee leaves and absences, has a significant impact on over-

all employee productivity. Accurate staffing, along with the support of temporary workers, ensures that workflow and production levels remain consistent when some employees are absent for extended periods of time. Automated equipment enables to manufacture quality glass in the most efficient way possible. Automations enable companies to





improve performance, by reducing errors and improving quality and speed - where productivity ac-

celeration is sorely needed, especially as the share of the working age population declines in many countries.

At a microeconomic level, businesses everywhere will have an opportunity to capture benefits and achieve competitive advantages from automation technologies, not just from labour cost reductions, but also from performance benefits such as increased throughput, higher quality, and decreased downtime.

GETTING READY FOR TOMORROW - TODAY

The world is changing all around us. We must look

ahead, understand the trends and forces that will shape our business in the future and move swiftly to prepare for what's to come. We must get ready for tomorrow, today.

However, when it comes to inventing new equipment and unique solutions, it's not only excellence that greases the wheels of innovation: it's risk, audacity, and singularity that make the difference!



Forvet SpA



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FORVET REVOLUTION X.O

COMPLETE AUTOMATIC PRODUCTION LINE

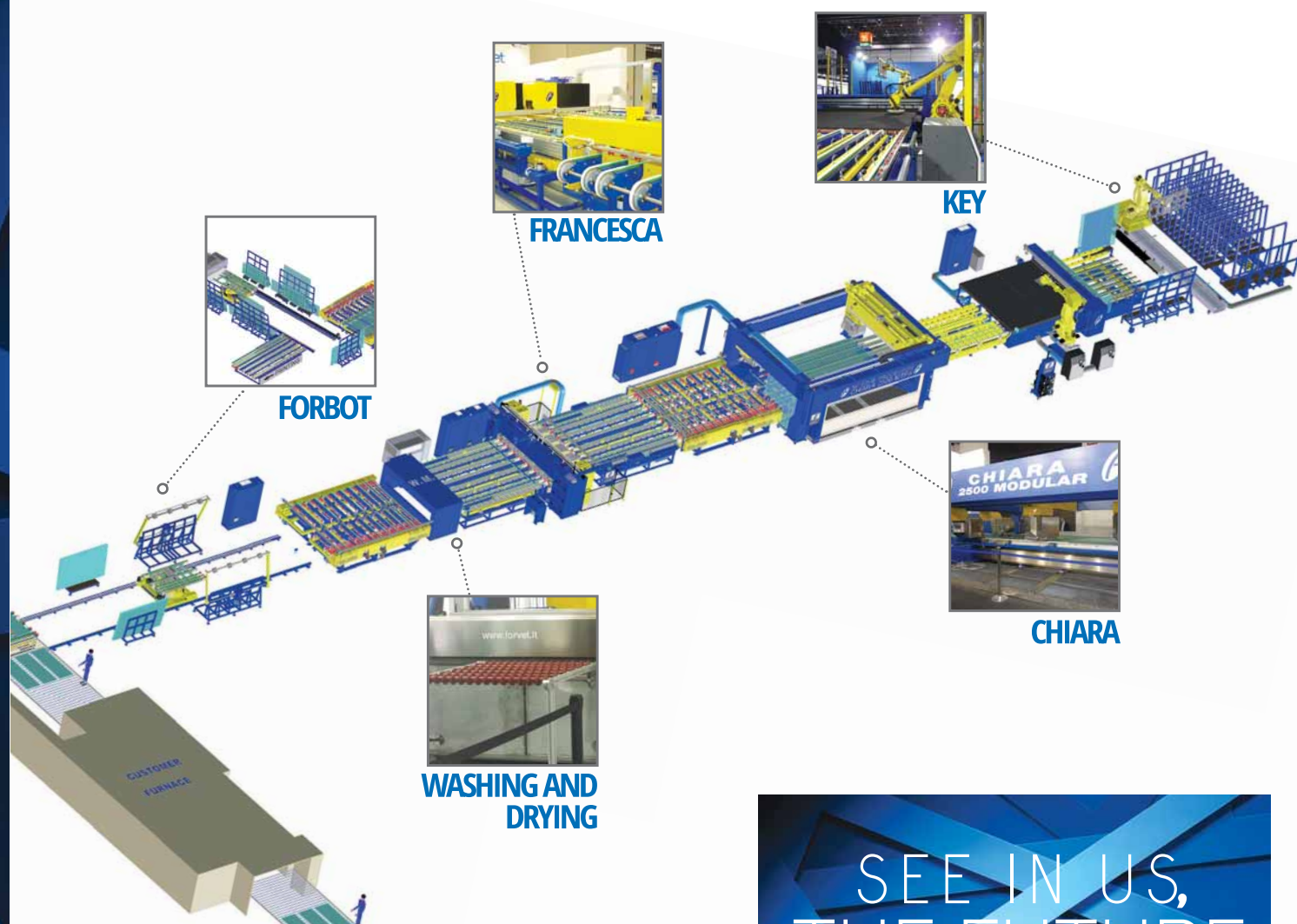
KEY cutting system

CHIARA grinding all glass sides simultaneously

FRANCESCA FC drilling, milling, water jet two glass at the same time

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Turomas

RUBI 403VAC-3

MONOLITHIC AND LAMINATED GLASS CUTTING TECHNOLOGY FOR KRYSZTAL

STARTING SMALL; GROWING IN TECHNOLOGY AND PERSONNEL

Kryształ is a glass manufacturer located in Nowy Sącz, a city in the south-east of Poland. At its helm are Janek Plata and his wife, along with their three children. Plata, the head of

the family, began making windows out of his own house in 1984.

Aware of the need to improve quality and reduce the time clients had to wait, he began investing in new machinery. Afterwards, the enterprise began to diversify its services and gain new customers, both

individuals and wholesalers. Thirty-five years later, it has about 50 employees.

In addition to producing jumbo and laminated glass, their offerings include the creation of edges, panel cutting, and even the manufacturing of windows with decorative resins or sand-matted glass. One of

the most detailed and interesting projects they have done was a stained-glass piece for Baku, the capital of Azerbaijan, for the Olympic Games.

The company sells both domestically and internationally, above to all to other European countries: Germany, Austria, the UK,

After 35 years of activity and a continuous aim to improve the quality of its products, Krysztal focuses on satisfy its clients' needs and demands with the right machinery that provides fast and quality results, while ensuring worker safety. And this is why they contacted Tuomas when investing in glass cutting machinery.

Ireland and Sweden are its largest export markets. Krysztal's biggest clients are glass, furniture and window manufacturers.

QUALIFIED, FAST, AND SAFE MACHINERY

Piotr Plata, Janek's son and current Head of Sales and Exports, has not lost sight of business traditions, however he is also aware of

the need to modernize and adapt to the here and now. "These days, glass is very much in fashion and demand is very high," said Piotr. "That's why we need qualified, quick, and safe machinery in order to meet our customers' needs by offering them high-quality glass." The Polish company has completely renovated its glass-cutting machinery,

choosing Tuomas for this change after having gotten to know the virtues of Tuomas products and concluding that their innovation would improve its ability to serve its customers.

In Piotr's words: "If somebody wants to be a leader, they have to be among leaders. We believe Tuomas is a leader in the market of glass-cutting machinery."

The monolithic-glass cutting table chosen by Krysztal is the RUBI 403VAC-3, while the model used for cutting laminated glass including laminated safety glass (VSG), is the LAM 304.

The incorporation of



Tuomas cutting tables has lowered production times thanks to the automatic loading of glass sheets, the ability to strip the protective plastic cover at the table itself and the automatic labelling system.

"These machines are the most important ones we have in our factory," explained Piotr. "We've been able to improve our productivity, handling a higher volume of orders in less time. This is essential for us because our clients expect very high quality when it comes to what we manufacture."

Tuomas

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iocco

CONTINUOUS R&D AND
GOOD TEAM ORGANIZATION
ARE KEY TO REACHING SUCCESS



In this article, Iocco speaks about the most recent developments in the company and its products, as well as company strategy and philosophy, with R&D and giving value to each and every member of the company as strong points to meet its goals.

Glass-Technology International (GTI):

Let's speak first of all about the company and its structure. How many production units does Iocco have?

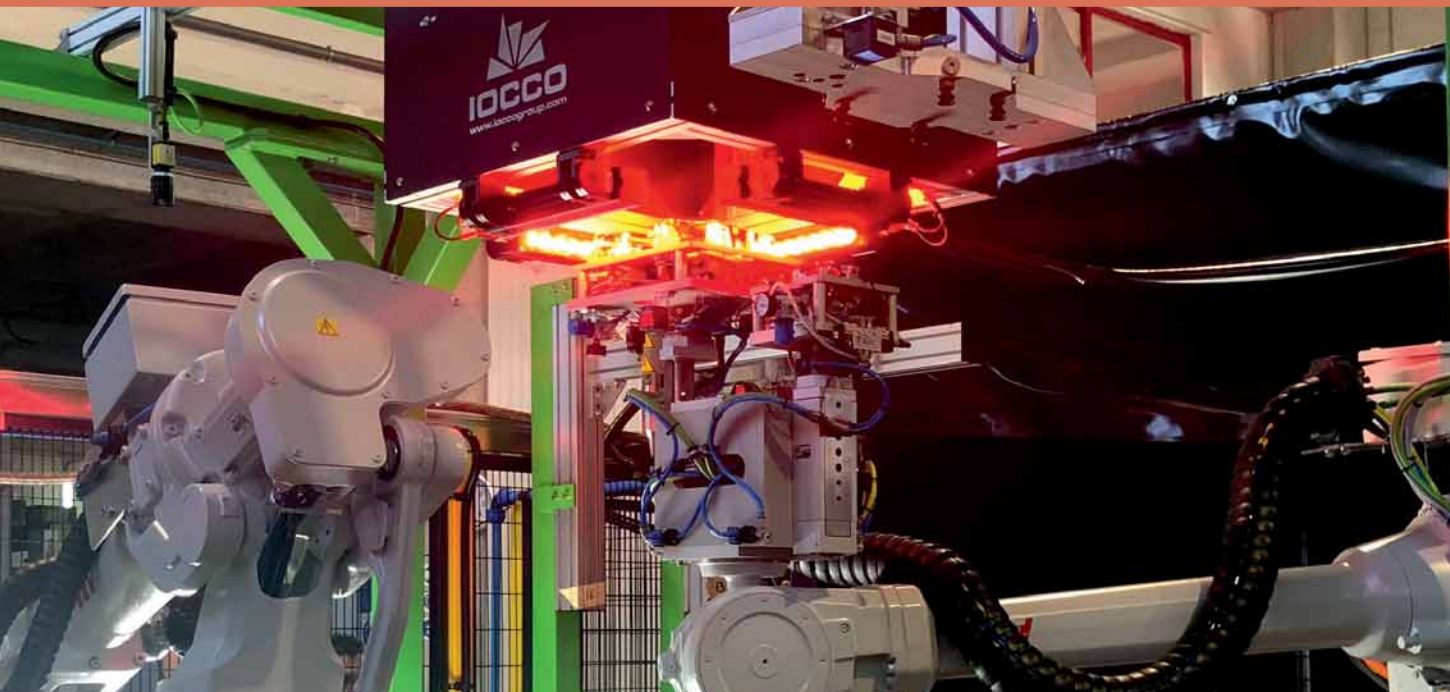
Iocco: The company has three units all in the same area, which facilitates company logistics activities and, at the same time, enables to guarantee adequate confidentiality to all our customers even during the construction phase of the plants commissioned. All together, these three units cover an area of 5,200 square me-

tres taken up by production and workshops, and 1,050 square metres of offices.

GTI: Which technologies are used during design phases and what is the percentage of turnover dedicated to R&D?

Iocco: We use Catia, the best programme on today's global market for our mechanical designs. Iocco dedicates about 30 per cent to R&D, pushed by our core business which is aimed at supplying cutting edge production plants and systems.





Our products are aimed at large-sized glassworks, and our solutions are for industries looking for technical innovation that can guarantee their products for clients.

A must to be able to guarantee the precision, control and speed requested (above all for auto glass), is continuous investment in R&D together with the

long experience we gained in the glass sector.

GTI: What is the percentage of sales for exports? What are Iocco's strong points in international sales?

Iocco: The percentage of sales for exports is nearly 100 per cent. We work in a global market environment without territorial boundaries. The market demands

the same level of automation and precision in processes in each and every corner of the planet. For this reason our supplies are generally installed internationally.

The quality and reliability of products and engineering are applied to the solutions provided, together with a customer care system that facilitates customers not only during each

phase of the project but also after installation and start-up of the plants, are IOCCO's strong points in international sales.

GTI: Has the company developed any particularly interesting and technologically innovative products recently?

Iocco: Our de-airing systems for manufacture of laminated auto glass (thin





and ultra-thin) with pressure control for each single pair of glass sheets, can certainly be considered among the most important processes we have developed thanks to our experience. However, our products are almost always technologically innovative, whether they are

auto glass processing lines (extrusion, bonding accessories, control, encapsulation, etc.) or lines for flat glass (transport of DLF packages, automatic palletizing, etc.)

GTI: What is Iocco's company philosophy?

Iocco: Giving value to individuals through emotional

involvement and professional growth by transforming their experience into market value.

GTI: What is behind Iocco's success?

Iocco: One of the characteristics of success is being dynamic in adapting solutions to respond to customers' needs. Our team of engineers has the preparation and experience to be able to customize machines and plants while maintaining the objective of process functionality. Moreover, relationships maintained over the years with our historical customers confirm

our quality standard and our ability to adapt to new technological needs.

Iocco Group

IOCCO
glass technologies

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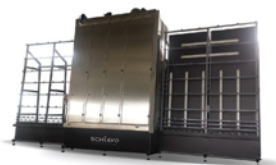
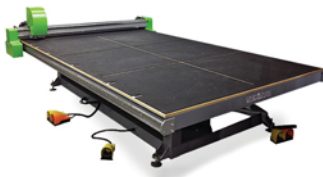
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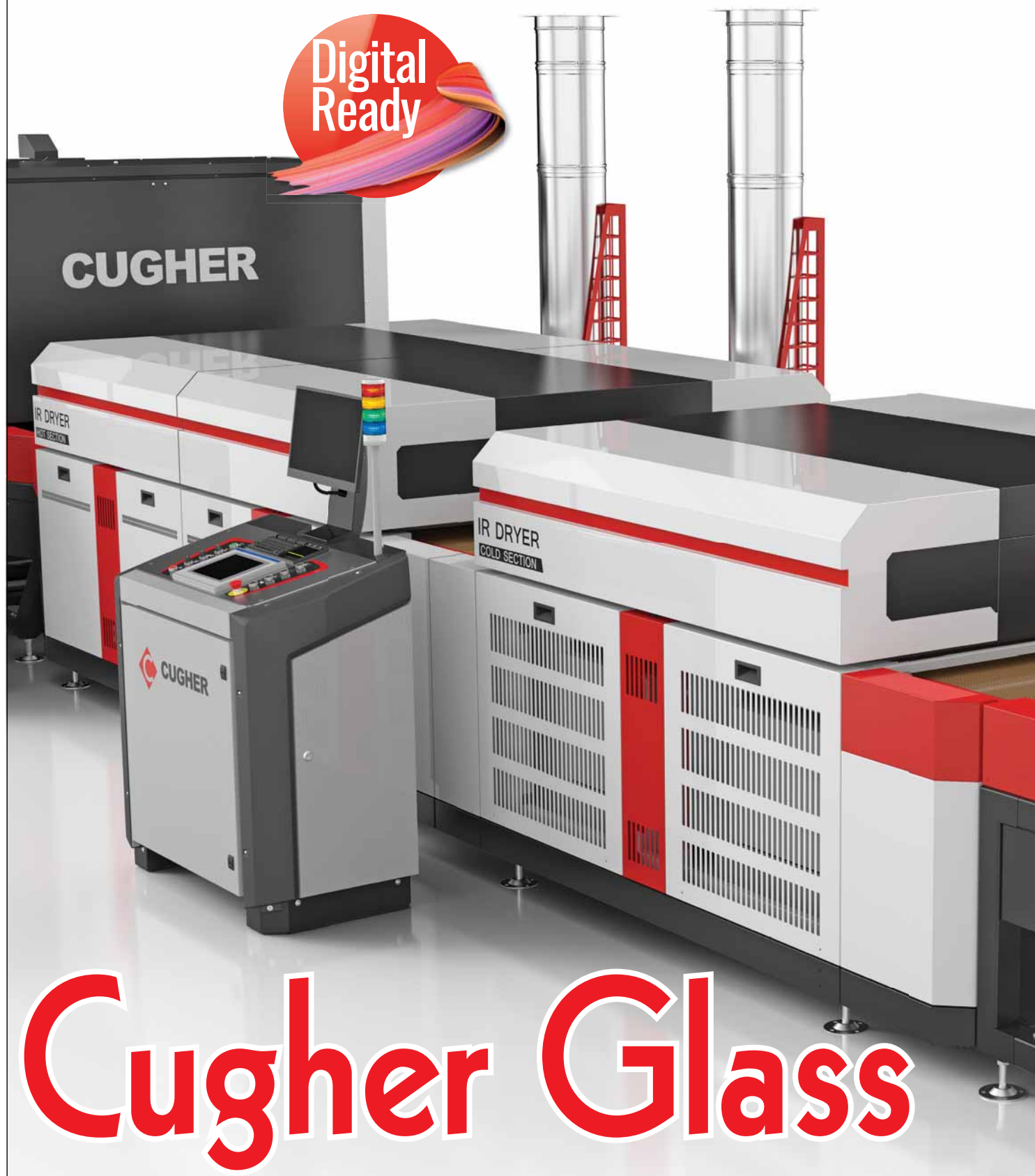
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Digital
Ready



Cugher Glass

CUGHER DRYERS: THE "WINNING CHOICE" FOR SILK SCREEN AND DIGITAL PRINTING

Dryers with all the features and the flexibility for silk screen printing or digital printing on glass, are what today's glass processors need and are what Cugher presents to our readers in this article.

SPEEDING UP THE DRYING PROCESS

In every printing process there is the need to dry the paint and anchor it onto the printed surface as soon as possible. The reason for this is to enable the printed surface to be handled without damaging the printed image, and, moreover, to avoid the contamination of the ink/enamel due to dust in the production area.

Two main goals must be achieved to speed-up the drying process: the first is to transfer energy to the ink/enamel, and the second is to evacuate the vapours generated by the solvents during the curing process.

According to ink specifications, hot air, infrared radiation or UV radiation are the most known and widely available technologies to transfer the energy required for the curing process.

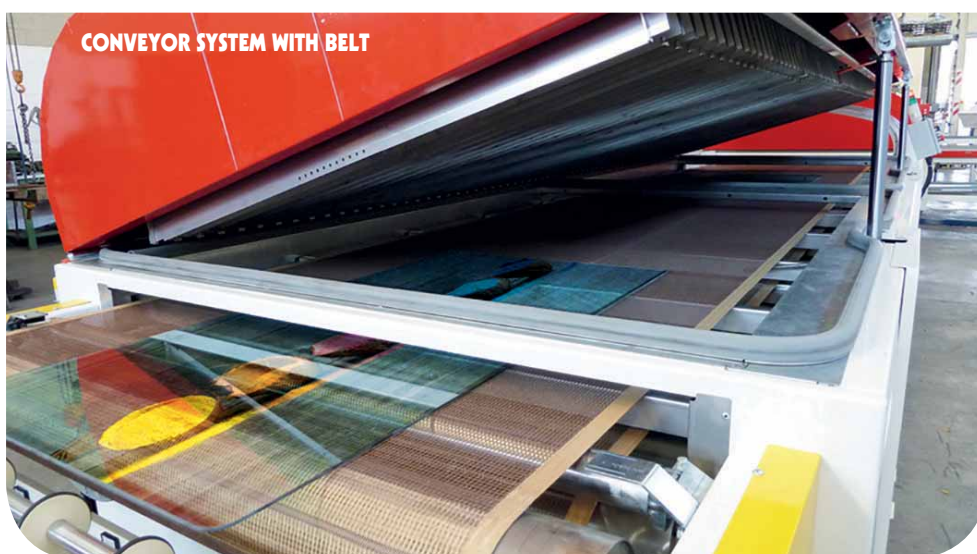
To evacuate vapours, on the contrary, the only way is to have air flowing on the printed surface and an efficient exhaust system. This also removes the vapours from the printed surface, accelerating the drying process.

In the glass industry infrared curable inks are the preferred in terms of quality and stability.

Digital Ready



HOODS PNEUMATIC LIFTING SYSTEM



CONVEYOR SYSTEM WITH BELT

INFRARED DRYERS – STANDARD WIDTHS AND MODULAR LENGTH

Cugher Glass has, in the last decade, developed a family of infrared dryers, with standard widths (1 metre, 1.3 metres, 1.6 metres, 2 metres, 2.3 metres, 2.5 metres) and modular length. Cugher can, in fact,

arrange hot sections with up to five modules, each 1.4 metres long, resulting in IR tunnels from 1.4 to 7 meters, meeting all the most common requirements in terms of temperature and cycle time. Downstream from the hot modules there are also cold modules of course, which are part of the supply. The number of cold modules

is determined by the temperature on the glass that clients need to achieve.

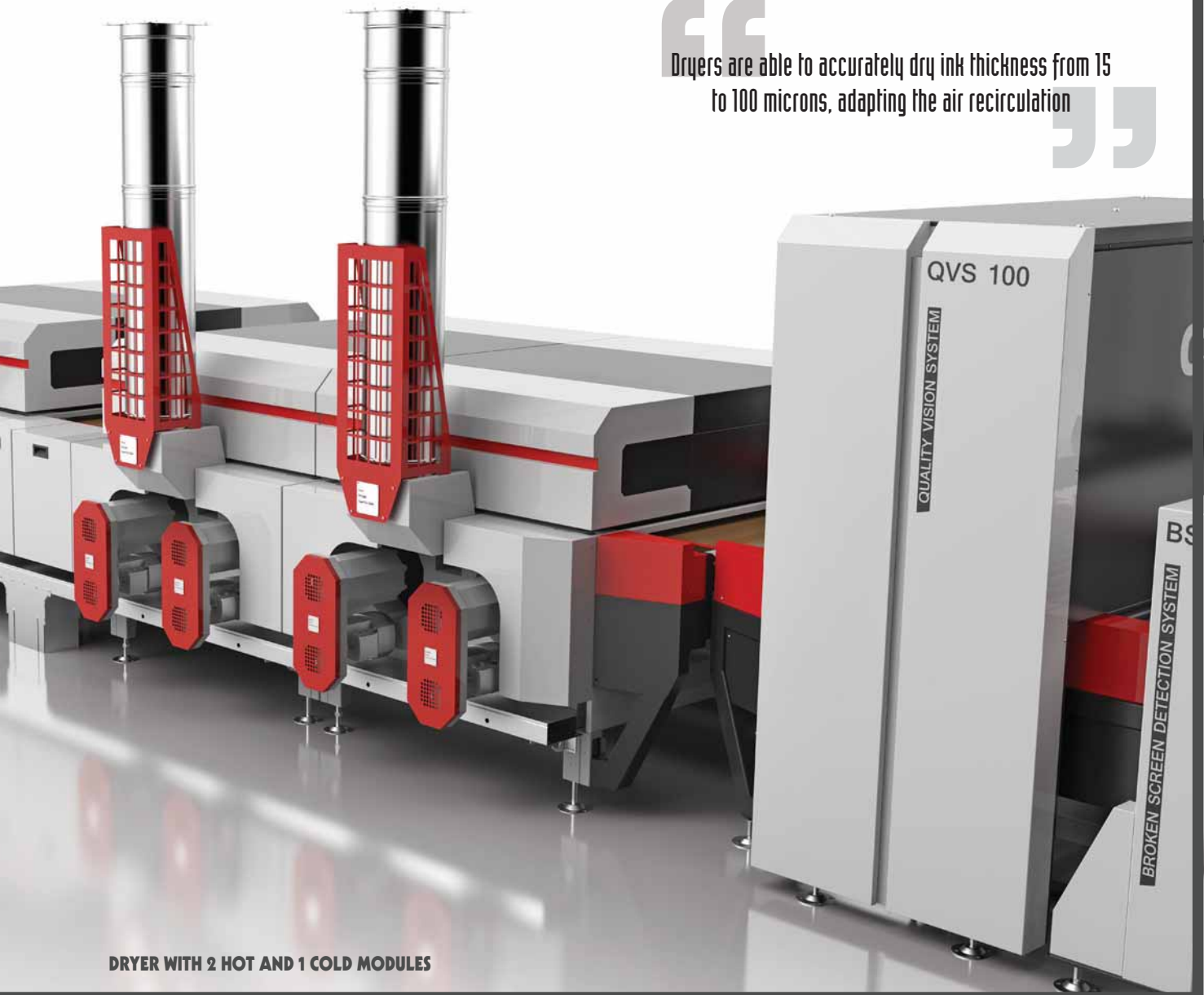
UV AND HOT SOLUTIONS TOO

Of course, Cugher can also provide UV and the hot air solutions, as well as totally integrated solution with hot air, infrared and UV lamps in one single machine. Each curing system

can be activated separately. The IR dryer is, in fact, always provided with recirculation and an exhaust system. Considering that the IR lamps (with a specific power of 20-24 w/cm each according to the size of the dryer) also generate a consistent amount of heat, with the hot air directed on the printed surface by the recircula-

“Cugher speeds-up the drying process through the efficient transfer of energy to the ink/enamel and the capability of evacuating vapours generated by solvents during the curing process”

“Dryers are able to accurately dry ink thickness from 15 to 100 microns, adapting the air recirculation”



DRYER WITH 2 HOT AND 1 COLD MODULES

tion fan, adding energy to the curing process. Cugher IR dryers actually combine hot air and IR effect.

As an option, heating elements can be installed to heat the air, enabling to switch off the IR effect and use the Cugher dryer as a simple hot air unit.

All the recirculation fans of Cugher dryers are controlled by inverter. This is

an important feature, because the speed of the air needs to be adjusted according to the characteristics of the ink.

SETTING THE SPEED OF THE RECIRCULATION FANS

If the thickness of the wet surface is in the range of 20-30 microns, such as in silk screen printing pro-

cesses, and viscosity is quite high, it is possible to have an important amount of air. On the contrary, if the thickness of the wet surface is in the range of 60-100 microns, such as in ink jet printing, and the viscosity is quite low, it is necessary to reduce the amount of air. According to these requirements, the speed of the recirculation fans can be set

together with the set-point in the dryer recipes. Moreover, each single fan can be adjusted independently with regards to speed, creating a speed table where the fans are running low where the paint is totally wet (first module), and are running fast where the paint has already started drying and the wet film is already stable. Of course, the temperature can



Easy maintenance thanks to particular mechanical solutions

be set accordingly module by module. Since we are talking about a tunnel, the glass needs to be driven through the dryer with a conveying system.

BELT SYSTEMS ON CUGHER IR DRYERS

The conveying system can be a fibre-glass PTFE coated belt with a width slightly wider than the maximum glass size, or it can be a roller conveyor (donuts or full roller), where the rollers need to be in steel covered with some sort of protection, typically fibre-glass or ceramic material.

From the mechanical point of view, the belt system is preferred due to the fact that the motor and tracking are totally outside the hot chamber, facilitating the work of maintenance personnel. Operations such as greasing and tuning are carried out in safety outside the IR tunnel – even if the dryer is hot – while the belt can be cleaned when the dryer is at set-point simply brushing the belt while running with brushes and rags. On the contrary, in the case of UV dryers, a roller system is preferred because modern inks require radiation also

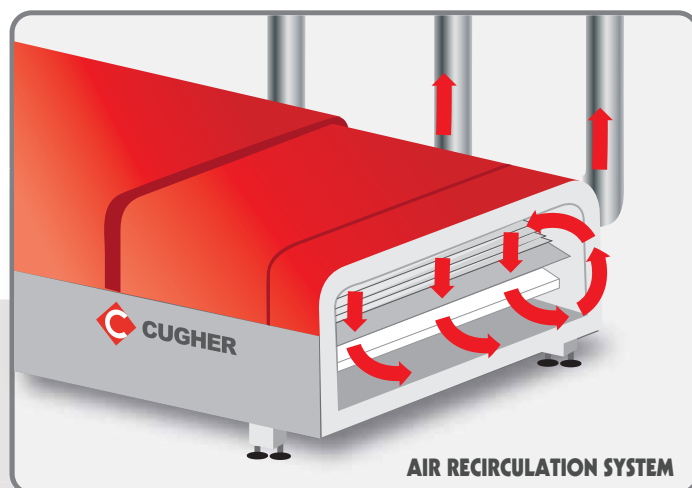
from the bottom, which requires a lamp or mirrors on the bottom of the conveying system. A belt would mask and interfere with the radiation, while a roller system grants the proper space without interference.

Last but not least, in the case of broken glass, since we are mainly talking about non tempered or laminated glass, with the roller system the pieces are small enough to fall in between the rollers, while in case of belts the pieces will be transported on the mesh out of the dryer.

Cugher IR dryers are therefore equipped with a belt system, which runs on a stainless-steel bars bed. This system originally used a grid, but with some inks the longitudinal supports reflected the radiation and overheated the glass, which were visible after tempering or bending processes. For this reason, Cugher removed the longitudinal supports many years ago, and nowadays the belt runs on transversal bars only.

Stainless steel rollers

If the glass is thicker than 8 millimetres, the friction of the belt on the bars'



AIR RECIRCULATION SYSTEM

bed may lead to undesired wearing of the belt and may also result in issues on the tracking of the belt. Cugher dryers are designed to be installed with stainless-

steel free rollers instead of bars. With this simple kit, glass up to 19 millimetres thick can be cured in the dryer running smoothly on the belt.

IR DRYERS FEATURES

In a decade of installations, Cugher has improved its IR dryers with a number of interesting features:

- Internal parts of the dryer in stainless steel;
- Hot swappable recirculation fans;
- Rotation feedback of the fans;
- Adjustable speed of the fans;
- Heating and cooling sections of the dryer with independent belts;
- Tracking of the belts with optical sensors and mechanical over-run;
- Rotation feedback to check if the belt is broken or not running;
- Shell opening of the hoods on the operator side, with LOTO ready lockable device;
- Recipe system;
- Temperature trend recording;
- Possibility to bypass one single module in the case of failure, enabling to continue production, even though at lower rate;
- Energy saving mode;
- Bypass mode.

In addition, on request it is possible to integrate the following:

- Heating elements in parallel to the IR lamps;
- Shell opening at the back for easier maintenance, with LOTO ready lockable device;
- Pyrometer kit out of the hot section;
- Pyrometer kit out of the cold section;
- Kit for small glasses;
- Remote assistance device.

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FIERA MILANO

Glass for Europe



ENERGY SAVINGS AND CO₂ EMISSION REDUCTION

POTENTIAL IMPACT OF HIGH-PERFORMANCE GLAZING ON ENERGY AND CO₂ SAVINGS IN EUROPE

Glass for Europe commissioned a study on energy savings and CO₂ emission avoidance of high performing glazing to the independent research institute

TNO Built Environment and Geoscience (TNO). This study is a quantification of both energy and CO₂ savings that can be realised thanks to high-

performance glazing across the 28 EU Member States in both 2030 and 2050 horizons. In addition to full potentials, whereby all windows are equipped with



high-performance glazing across all EU buildings, it also simulates the impacts of several window replacement rates, all compared to a baseline scenario.

The study draws on recent scientific sources to define input parameters such as today's Europe building stock and performance, the evolution in the energy mix,

In this article we take a look at a new study carried out by TNO for Glass for Europe, which shows how actionable and targeted policy measures on glazing can already make a huge difference in 10 years, if implemented soon.

the penetration of high-performance heating and cooling equipment, etc.

The study is based on five different scenarios and for each of them provides output data for the 28 countries of the EU:

- 1.A 1 per cent window replacement rate in 2020
- 2.A 10-year scenario applying a 1 per cent window replacement rate annually between 2020 and 2030
- 3.A maximum saving potential by 2030
- 4.A 1 per cent window replacement rate in 2030

5.A maximum saving potential by 2050

THE STUDY FROM TNO

The new study by the Dutch scientific institute TNO, finds that nearly 30 per cent of Europe's building energy consumption for heating and cooling could be saved in 2030 if all Europe's buildings were equipped with high-performance glazing. To Glass for Europe, it is striking to note that almost half of these savings could be realised in as little as 10 years should the renovation rate of windows be doubled, i.e. from 2 per cent to 4 per cent annually, and that newly installed windows be equipped with high-performance glazing.

The study by TNO is a quantification of both energy and CO₂ savings that can be realised for heating and cooling of buildings thanks to high-performance glazing across the 28 EU Member States in both horizons 2030 and 2050. In addition to full potentials, whereby all windows are equipped with high-performance glazing across all EU buildings, it also simulates the impacts of several window replacement rates, all compared to a baseline scenario.

Leo Bakker, author of the study and Façade expert at TNO, explains: "This study is an update of studies realised by TNO on the same topic a decade ago.



It incorporates fresh data, for example on Europe's building stock and its performance and on the decarbonisation of the energy mix, but its main innovation is that it quantifies savings induced by increased window replacement rates. This allows to identify the potential in window retrofitting, when equipped with high-performance glazing, whose properties were provided by Glass for Europe's experts."

Christian Quenett, Chairman of Glass for Europe and Head of Architectural Glass Europe at the NSG Group, declares: "This study demonstrates once more the massive energy savings and induced CO₂ emission reduction that is made possible thanks to high-performance glazing, which are readily available in Europe. Most interestingly, it highlights that these long-lasting savings could be realised rapidly if building and energy-efficiency policies across Europe were effective at supporting a doubling of the building renovation rate and the uptake of high-performance glass products."

Bertrand Cazes, Secretary General of Glass for Europe, adds: "When Member States are busy looking for effective climate mitigation measures and designing long-term plans for the renovation of buildings, it arises from this study that Member



States can already go a long way with actionable and targeted policy measures on glazing. Support mechanisms to window retrofitting, reviewed performance requirements and incentives to adopt high-performance glazing will make a big difference. The sooner the better!”

CONCLUSIONS

- High-performance glazing in windows offer a massive energy reduction potential: 75 Mtoe representing 29 per cent of building energy consumption for heating and cooling and 94 Mtoe of CO₂ could be saved in 2030 in the EU, should all buildings be equipped with high-performance glazing.

- As much as 36 Mtoe, i.e. nearly half of the full potential, could be realised in 2030 by doubling the window renovation rate from 2 per cent to 4 per cent annually with readily available high-performance glazing. This shows that effective measures to support window replacement and installation of high-performance glazing would be enough to already make substantial building efficiency and decarbonisation progress.
- Cumulated savings between 2020 and 2030, would reach as much 200 Mtoe and above 240 Million tonnes of CO₂ thanks to a doubling of the window reno-

vation rate with high-performance glazing. Considering windows offer long-lasting savings, it is in the interest of both citizens and the climate to act rapidly.

- As cooling equipment is expected to boom all across Europe, substantial savings in cooling buildings are to be realised from adequately using high-performance solar-control glass. Energy consumption from cooling could be reduced by 27.6 per cent all across Europe in 2050. In the South of Europe, savings from cooling could reach as much as 36 per cent. It is essential to use the ‘energy balance’ approach to as-

sess performance and to choose glazing that maximise savings from both heating and cooling, without recourse to extra shading equipment.

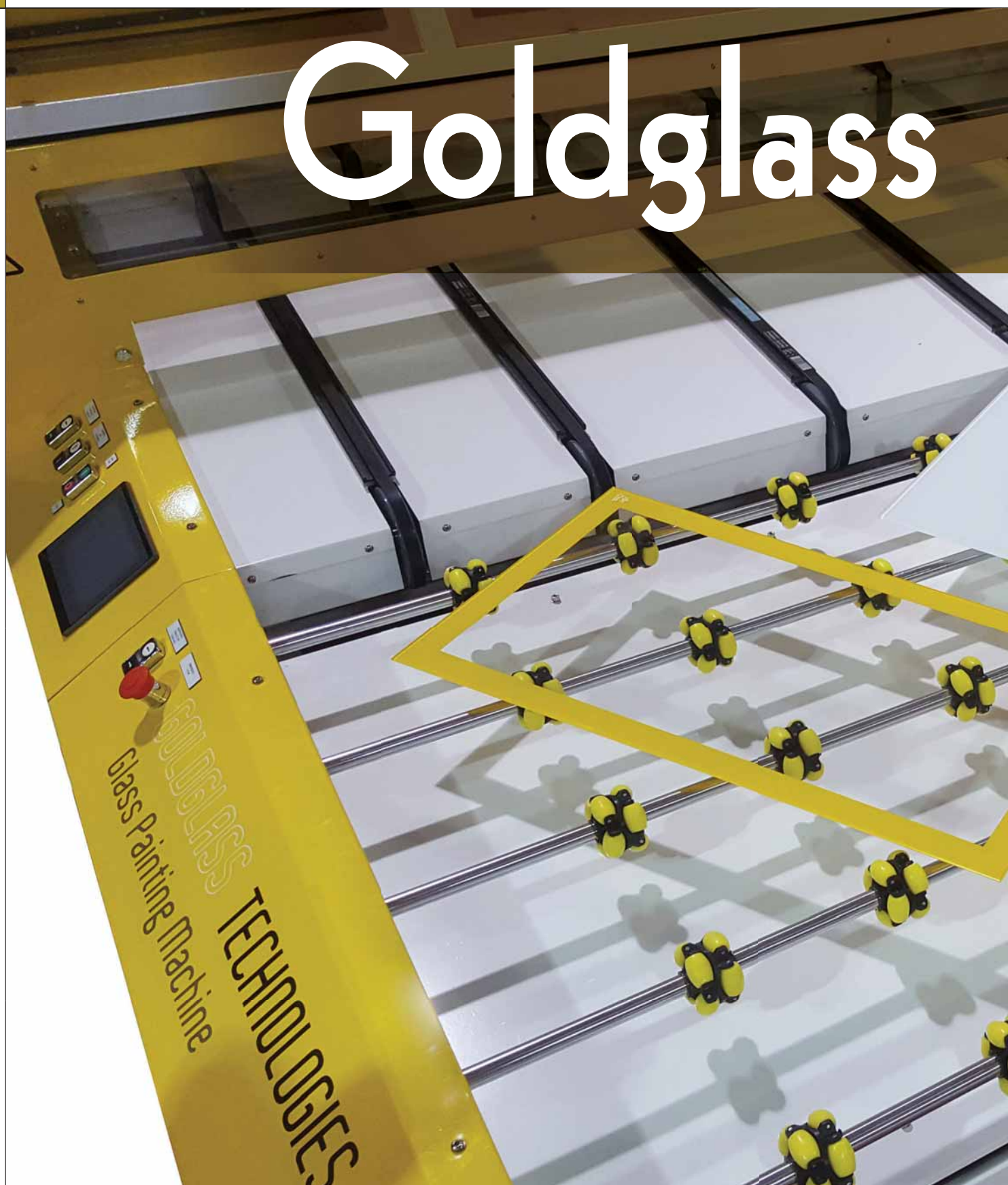
- Upgrading glazing in buildings enables Europe’s decarbonisation and makes sense in a 2050 perspective when buildings become carbon neutral. Even when Europe’s energy mix is being largely decarbonised, 37.4 per cent of CO₂ emissions from buildings could be saved in 2050 thanks to advance glazing. In fact, the contribution of glazing to decarbonisation could turn out to be much higher, as this figure does not encompass savings which will be generated by the uptake of switchable/electrochromic glazing, glazing-integrated photovoltaics or other novel glazing technologies.

Glass for Europe

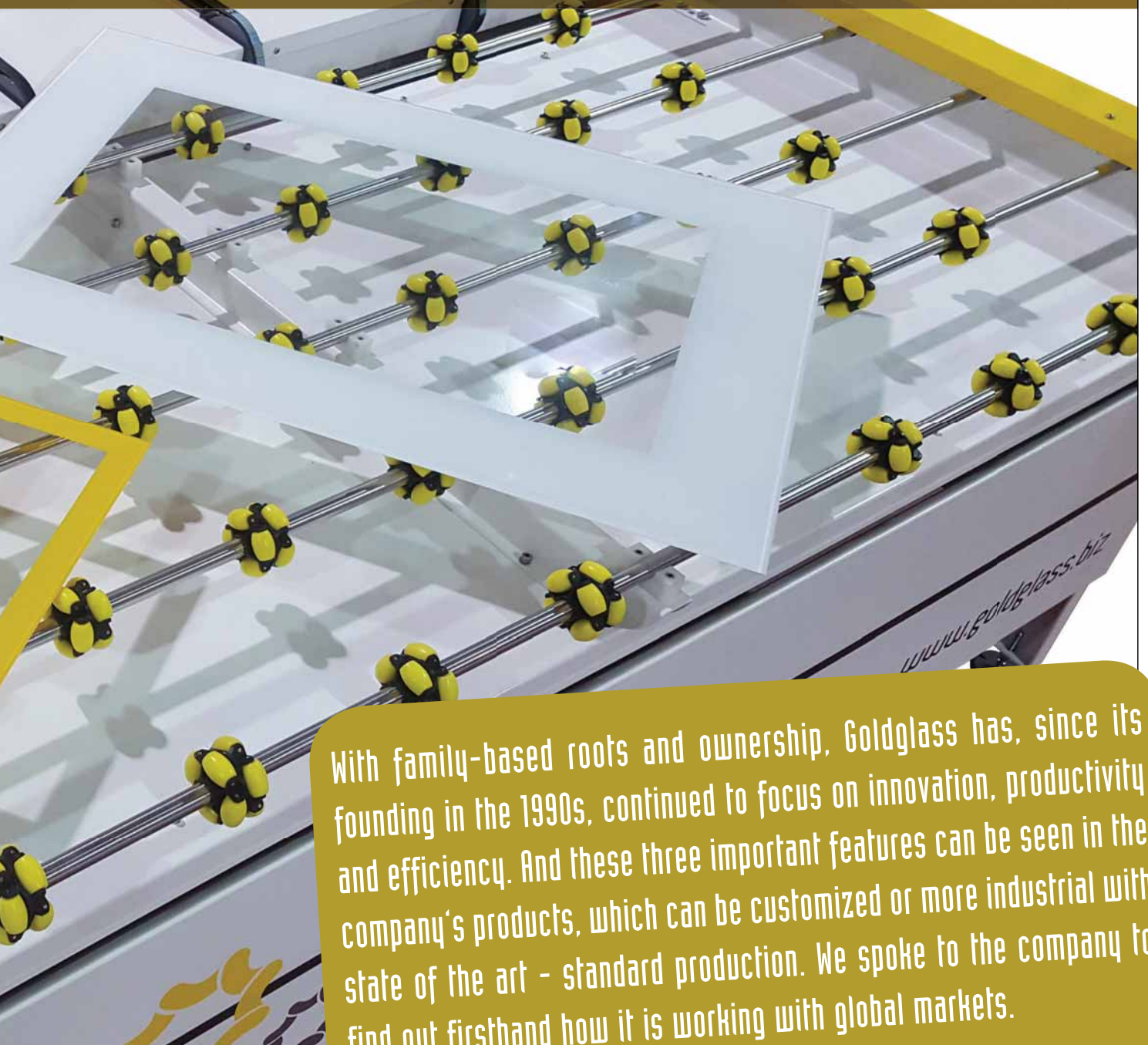
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Goldglass



CONTINUOUS GROWTH AND IMPROVEMENTS LOOKING FOR THE 'NEXT BREAKTHROUGH'



With family-based roots and ownership, Goldglass has, since its founding in the 1990s, continued to focus on innovation, productivity and efficiency. And these three important features can be seen in the company's products, which can be customized or more industrial with state of the art - standard production. We spoke to the company to find out firsthand how it is working with global markets.

Glass-Technology International (GTI):

First of all, a little bit about the company. From your company profile, we can see that the founder of the company started in the glass sector as an artist and electrical engineer - what pushed him to make the move to glass on a more industrial scale?

Goldglass: Zami Goldstein, the founder of Goldglass, is an inspiring entrepreneur and a brilliant inventor and machine builder. But first and foremost, his story is a story of love for glass and glass products. Coming from the sphere of electric machinery and automation services, Zami first encountered the world of glass at the end of the 1990s. Out of sheer love for glass he opened what later became the largest glass art studio in Israel.

His first machines were built for special orders received in the studio, and from there it was a short step to the development of industrial mechanics. Years of professional experience in the trade have taught him everything anyone can possibly learn about glass finishing. This profound understanding of the process, combined with original thinking and technical ingenuity have led him to the creation of revolutionary equipment, fit for glass finishing at any volume and quantity and for every use. Goldglass is his dream come true: a proven working solution for turning a once complex, expensive and unwieldy routine into a clean, easy to use, affordable and economical process.

GTI: Starting as a small family business and becoming a globally-known company -

how did this take place? What are the reasons behind this steady and continuous growth?

Goldglass: Despite the immediate success, we have not rested on our laurels - we keep enhancing and improving our machines, adding new innovative features almost yearly.

This means new products, advanced models, improved functions and every little detail that would make glass finishing smooth, user friendly, eco-friendly and budget friendly!

We live glass, and just like everything else in our lives, we're always growing, al-

ways improving ourselves, always looking for the next breakthrough.

GTI: How is the company run and owned right now?

Goldglass: We started out and have remained as a privately-owned and run company.

FROM FAMILY VENTURE TO WORLDWIDE PRESENCE

From a relatively anonymous family venture, Goldglass has grown into a worldwide success, with sales of millions in just few years since the debut of the first painting machine, the



Paint line: M.R.C 2850 M and Lift Master and GD7000

M.R.C-2150.

Goldglass, turning glass into gold – in a way of creating the most advanced and efficient glass finishing machines, that will save you heaps of time and money without making any compromises on the issue of quality.

GTI: You are based in Israel with sales at global level – how are these sales

carried out – with agents and dealers or do you/are you thinking about opening branches in the more intense markets?

Goldglass: We operate our Sales & Distribution Network through agents and distributors in many markets worldwide, and we also maintain direct contacts with many of our customers. We are exhibiting at the major Glass Industry Ex-

hibitions and this year in September we will exhibit at GlassBuild America once again.

GTI: Your first machines were custom-made, which is always the best way to start, but what about now? Are you still making custom machinery or do you also work on a more industrial scale with standard production machines?

Goldglass: We are working on a more industrial scale with state of the art - standard production machines. We are fully aware of the specific market needs and therefore 'thinking out of the box' is one of our unique strengths and enables us to formulate such unique finishing solutions. This is the way that we develop and produce new products, advanced models, improved functions and every little detail that can make the glass finishing process as smooth, user friendly, ecological and affordable.

Moran Goldstein, Co-CEO





M.R.C- 2350 CI

of Goldglass Technologies adds: "Innovation is our passion, engineering and design are at the heart of our company. When developing our products, we look for critical needs which are unmet and we bring ideas to life that address those needs."

M.R.C-2350-CI /M.R.C-2850-M

A revolutionary glass painting machine

M.R.C-2350-CI is a revolutionary painting machine that is literally changing the world of glass finishing. While former generations of glass painting machines evolved out of painting equipment that was originally designed for other materials, such as wood, and had to be sufficiently – or insufficiently – adjusted to the special characteristics of glass, M.R.C-2350-CI, our golden flagship, was built from the start with the sole purpose of creating the perfect glass painting machine.

As a result, it is the most

advanced, affordable and efficient product in the market today. The M.R.C-2850-M is the modular version, gold painting for larger, heavier and wider projects. Just as affordable, with the same easy to use interface, as the M.R.C-2350-CI. Made up of three separate, integrating units, this modular machine makes work easier, enabling to stay ahead of the challenges coming from today's increasingly competitive glass processing world.

- These machines are designed especially for glass producers/processors. Goldglass Technologies have a vast experience in glass finishing and decorated glass.
- Goldglass are **the pioneers and inventors of edge to edge painting technology**. The company's machines paint only from edge to edge, without creating massive overspray, therefore saving a lot of paint.
- Full compatibility with all paint types (organic

or ceramic). **No need to use any specific paints, as the machine works with any sprayable paint from the operator's preferable supplier of paint.**

- Easy to operate.
- Quick installation: can be fully utilized and running within a few days only!
- An automatic cleaning system which allows for optimized performance – **colours can be switched within minutes** – and protects workers from exposure to hazardous materials.
- Easy to maintain.
- **Dimensions and mobility:** unlike other "monsters" in the market, these compact machines can be fitted wherever needed, and easily mobilized according to changing requirements.

GD7000 - GLASS DRYER - ECONOMIC ENERGY CONSUMPTION AND HIGH EFFICIENCY

The cutting edge GD7000 dryer is characterized by

simple operations, affordable energy consumption and high efficiency – **works with IR System, with total power in use 18kW/hr compared to 80 – 120 kW/hr of other available dryers in the market.** Moreover, thanks to its compact dimensions of 6.8 meters long and smart design it will also use up as little floor space as possible with the possibility of installation anywhere in the factory.

- Quality IR (infrared) elements specifically tailored to fit various painting materials.
- **IR layout matching actual glass width**, providing for accurate heat application with no energy loss.
- Separate temperature controls for each heating zone – simple to use and adjust.
- **Advanced cooling module**, facilitating further procedures without delay.
- Low energy consumption.
- Compatible with Goldglass **Lift Master** vertical glass accumulator and **M.R.C-2350-CI/ M.R.C-2850-M** glass painting machine.

FRAME COATING - CHANGING THE WORLD OF GLASS

Goldglass Technologies is introducing the latest in frame coating technology. This revolutionary add-on is available with our state-of-the-art MRC 2350-CI and MRC 2850-M glass painting machines.

Glass frame coating has never been easier or more efficient:

- Numerous operations, one machine: The frame coating feature is integrated into the Goldglass glass painting machines you know and love, saving you valuable floor space.
- Fully automatic: Sensors detect glass edges and corners, guaranteeing a fully automated spray coating process and no wasted paint.
- Cost-effective: Reduced paint consumptions and consistent paint flow means more frames coated per litre of paint.

GTI: Does this way of working also apply to the development of new machinery? Your most recent machines are the glass painting machine and the glass dryer, but you have also developed a completely new type of machine – the glass accumulator. How does this last development fall into your usual product range especially for glass finishing?

Goldglass: We believe that in order to simplify the work of glass processors, we must develop and design smart and simple products that are easily operated without compromise on quality.

The Lift Master – our latest development is a vertical Accumulator that provides the perfect solution between our painting machine and the dryer. Since there are differences

in work flow and speed between the painting machine and the dryer, the Lift Master enables to work continuously and without any human intervention.

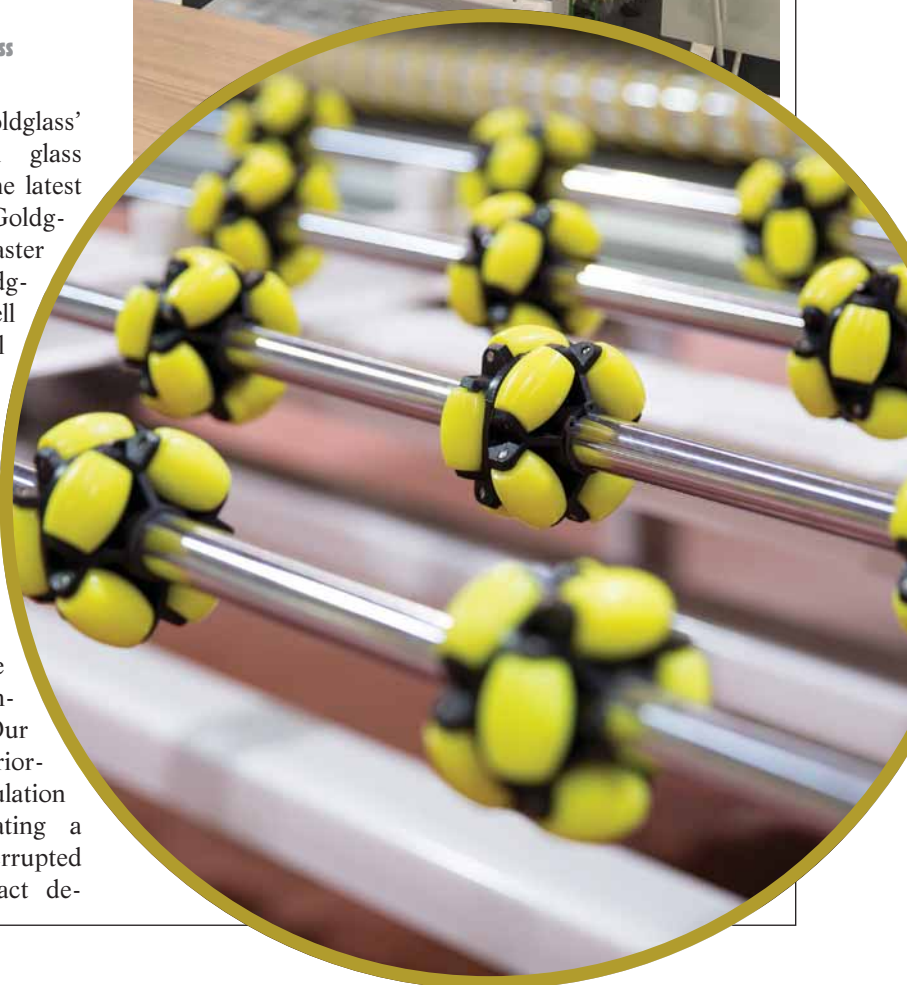
GTI: And what about the software used for this accumulator – is it produced in house?

Goldglass: Our entire production and Software is being developed and produced only in house and by our own R&D Team. This enables us to maintain and guarantee the high-level standard of innovative technologies throughout all our range of products.

LIFT MASTER

Innovative vertical glass accumulator

Lift Master is Goldglass' innovative vertical glass accumulator and the latest addition to the Goldglass family. Lift Master works with all Goldglass machines, as well as any traditional horizontal conveyor machinery in all industries, thanks to its built-in I/O-ready sockets. This modular addition can be placed before the painting machine, between it and the drier, or in any other constellation. Our clever software prioritizes glass accumulation and feeding, creating a flawless and uninterrupted process. Its compact de-





sign allows Lift Master to be moved around and connected to different machines, used as a feeder, storage station or accumulator. Lift Master is fully automatic, reducing human intervention and creating a steadier workflow.

The Lift Master is exceptionally sturdy, and can accumulate up to 16 sheets of glass at a total weight of up to 2 tons.

GTI: All your machines are modular, with the aim of facilitating their use with

other machinery. Does this also mean machinery from other manufacturers?

Goldglass: Yes, indeed the Lift Master is designed to improve industrial lines and standalone machines by controlling item movement, thereby avoiding bottlenecks and increasing production.

It can, for example, be positioned perfectly in a production line, next to a vertical washing machine.

GTI: What will be the future steps for GoldGlass?

Goldglass: We are continuing to fulfil Zami's vision, aiming at making top-level glass finishing machines. We are committed to improving and simplifying the work of glass processors

by introducing innovative products and solutions.

We will be exhibiting at GlassBuild America from 17 to 19 September at booth 3447 (Matodi USA Llc.) to show just what we and our machines can do for the glass industry.

Goldglass Technologies
Shakuf-Matt Ltd.

 **GOLDGLASS TECHNOLOGIES**
Changing the face of glass

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Lift Master





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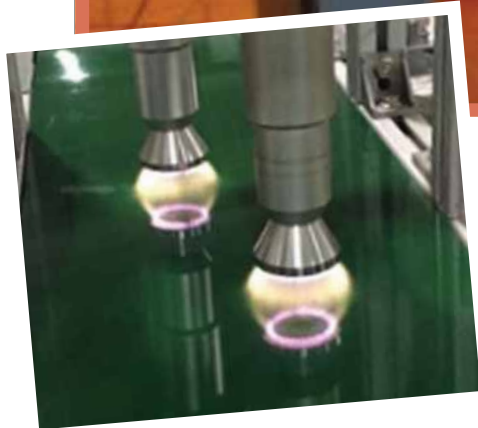
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Moving with the times — an expression that we all hear often and know very well — is becoming more and more an everyday situation for glassmakers and glass processing machinery manufacturers. This article shows us how one of Italy's machinery manufacturers is continuing to develop its technology, providing high-tech solutions for ever-more performing glass.

Glass Company

GLASS INDUSTRY INNOVATORS -
COMBINING TECHNOLOGY,
INNOVATION AND VERSATILITY



In its continuous move to follow and respond to the needs of the market and clients, Glass Company has expanded its headquarters located in Pesaro, Italy, adding a new showroom. The company also has a number of new employees and collabora-

tors to support clients in the management and use of its machines, which continue to be a reference point for glass processing. Over the past few years, in fact, Glass Company has installed its high-tech machines in important European companies.

FROM TEMPERING AND LASERS TO FIRE-RESISTANCE

These machines include glass tempering furnaces for both flat and curved

glass, able to temper thin glass of 2.2mm, as well as curved glass with complex shapes such as spherical or multi-curved, starting from thicknesses of 3mm.

Glass Company has also developed high-performance lasers specifically for the surface processing of glass, removing all types of coating (low-E, paint, silver, etc.) leaving the glass completely transparent; or with satin-etched and sandblasted effects. Last but not least, there is the new laser for the drilling of float glass for the

construction and interior design sectors.

Glass Company's new system for the production of fire-resistant glass (EI30, EI60, EI90, etc.), suitable for medium- and large-sized companies, is also gaining important results. Thanks to a vacuum mixer, this system prepares an intumescent and extremely transparent mixture based on silica which, thanks to a PC-controlled doser, is poured inside two or more sheets of glass, according to the fire resistance level required. Cross-linking in



the furnace with specially designed technology completes the process. Glass Company supplies this system as turnkey – complete with the product to use.

LAMINATED AND MULTIMEDIA GLASS

One of Glass Company's goals is the development of glass PVB laminating systems developed specifically and completely customized as per client requests, to make them suitable for all companies, whether small, medium or large, also taking into consideration

available space and production times required, as well as – above all – the power supply available at the client's premises. All this is made possible thanks to collaboration with Cengiz Ergün, a well-known expert in the field of laminated glass.

The company's most recent developments also includes multimedia glass, which reflects the main characteristic of Glass Company – that of combining technology, innovation and versatility. Thanks to a transparent oled matrix, this glass generates images on the glass allowing to see the image, or a high definition video, while maintaining transparency. These new glass types, also with touch functions, work via WIFI, network connection or USB, and are particularly suitable for the visual communication, food, refrigeration, entertainment, etc. sectors, lending themselves to multiple applications.

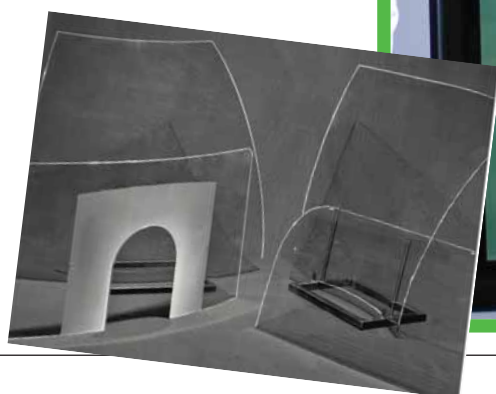
Last but not least, for companies aiming at guaranteeing higher adhesion of inks, glues, paints, etc.. on glass, Glass Company has developed a machine that

uses plasma technology to change the surface tension of the enabling to anchor the applied product.

Glass Company Srl

GLASSCOMPANY

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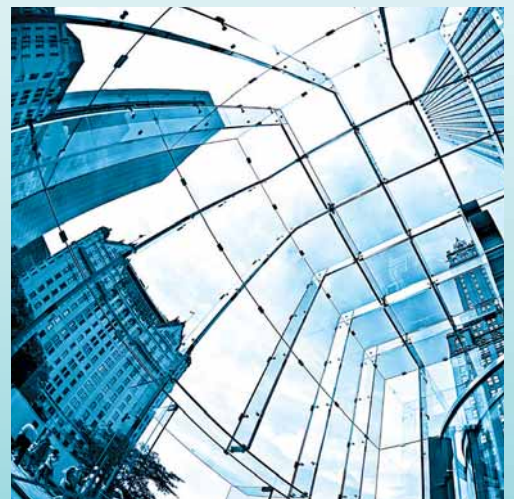


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Giardina Group

The north of Italy has been long known as a technology hub with a series of 'historic' and family-owned companies now in their second- and third generations. Giardina Group became part of this hub more than 50 years ago, working in a number of important sectors, including glass, now offering a series of high-tech solutions for the most demanding market and client requests.

50 YEARS OF SKILLS, EXPERIENCE, RESEARCH AND INNOVATION





“We are ready to respond to the needs and demands in this sector undergoing considerable growth.” These is how Stefano Mauri, co-owner of Giardina Group with his brother Riccardo, speaks about Giardina and its presence at the upcoming edition of Vitrum – the trade show on glass processing technology – taking place in Milan in October.

“The strategies and investments that we have carried out in the past few years have enabled us to further consolidate our presence in a sector where we are now a reference name, above all for technology dedicated to ‘large-sizes’ and jumbo glass sheets, and we have constructed several of these plants for the most important international

groups. We have the technology, skills and solutions for roller or spray applications, able to satisfy each and every demand from the market and clients.”

All this will be confirmed at Vitrum, where Giardina Group will have a stand with TecnoFerrari, leading brand for digital printing.

VITRUM – FLAGSHIP PRODUCTS ON SHOW

At Vitrum, Giardina Group will have on show its products results from its commitment in the glass sector, with machinery for roller and spray applications, as well as for drying. This last process, which has attracted the attention of numerous glassmakers, and which is, without doubt, a flagship product of the Italian group, for use both in the production of glass and mirrors with UV, infrared



and microwave systems.

“For some time now with important reference clients, we have started to experiment ideas developed for other sectors in the glass sector too,” explains Stefano Tibè, Sales and Marketing Manager. “Our ‘MOS’ technology is demonstrating how microwaves can be extremely efficient in the glass sector too when certain finishes are required. Moreover, if we combine top-level quality results with very low energy demand of this technology, it’s clear that MOS

is a particularly interesting technology.”

R&D

Research and development are the two key-words that have that have characterized the entire history of the Giardina Group, and today more than ever they are the leit-motiv of a season of strong growth in all the sectors in which the group is engaged, with machines and complete plants for each and every technological area. These range from roller painting, powdering and spraying, up to auto-

mated and robotized lines with hot air, UV or micro-wave drying systems; from overhead lines to painting booths and special systems, to the most recent and innovative 'Zerogloss' excimer technology.

INNOVATION – A PERMANENT 'OPEN HOUSE'

Since January 2018, production activities have been transferred to the large premises of the Group in Figino Serenza, near Como, northern Italy, which is the 'historic' premises of Giardina Finishing. All production of Giardina's entire product catalogue – for the glass, wood, plastic and metal sectors – as well as for cement and composite materials, are now carried out there.

Another important step will be the opening of the Group's new show-room/laboratory – the Giampi-

ero Mauri Innovation Centre – will be inaugurated during Vitrum, and which is the culmination of a history of skills, experience, research and innovation that started almost 50 years ago. These decades have been marked by the constant commitment to the development and realization of high-tech solutions, machines and systems designed, together with clients, for those who will then have to work every day with those technologies, and offering the best possible solutions, whether more complex lines or the simplest machines.

And the Group's new slogan – 'Painting the future!' – speaks about the group's will to always be one step ahead – in the future – and to continue along the path of innovation.

"This is the idea behind the Giampiero Mauri Innovation Center, which was essential to be able to make sure that innovations are not just on show at trade fairs, but are also available to retailers and customers every day. This is why we decided to invest in a new, 2,000+ square metre building dedicated to testing with all Giardina Group technologies, available to anyone who wants to try out any type of machine with their own paint products, coatings or acid treatments, as well as spaces for meetings, seminars, opportunities for study and training.



A permanent open house that will be a powerful image, communication and sales tool but above all a continuous demonstration of the quality and potential of our group's technologies and skills," concluded Stefano Mauri.

Giardina Finishing Srl

giardinagroup FINISHING SOLUTIONS 1972

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GPD 2019



CREATING A LEGACY IN GLASS

GPD is always a difficult to describe occasion – is it a conference? A networking event? A trade show? The answer is not really difficult as we all know – it is a combination of all this and much more. An occasion to meet up with your peers, but also with top people from some of the most im-

portant industry sectors, all on an easy-going, ultra-friendly level at all times.

This year's event was no different, and with a number of 'regular' attendees – including Glass-Technology International, this year's special event provide the usual mix of knowledge and networking atmosphere during the confer-

ences and meetings, but also with regards to social events.

Held 26–28 June in Tampere, Finland, this year is the 27th year since the conference was established. According to the founding father and mastermind of the event Jorma Vitkala: “knowledge grows when knowledge is shared.” This

is the spirit of GPD that will live on for generations to come.

HIGHLIGHTS FROM GPD 2019

This year, over 1,000 delegates from around the world participated in total, including those who attended the Helsinki High Rise seminar, the Manage-



This year's GPD, with attendees coming from the world over to find out how the glass sector is developing and improving, took place in an atmosphere that was celebrative in all ways possible. But this time, the event was also a spectacular occasion for Chairman Jorma Vitkala to say 'goodbye'.

ment Forum guests and the local Tampere workshops. GPD 2019 set records in many ways. A total of 242 presentations offered by a world-class line-up of 220 speakers both set new records. An all-time high of 280 first-timers attended, marking a transition to next-generation participants. These will be some of the upcoming ambassadors to carry on making GPD a truly one-of-a-kind forum for openly sharing ideas, innovations and inspiration.

During the first-ever Management Forum held in conjunction with GPD, a panel of seven outstanding speakers presented their perspectives on mind-blowing





megatrends and how these can create opportunities for smarter buildings and smarter business.

This is the first time CEOs, architects and other opinion leaders came together to discuss openly hot topics, such as urbanization, digitalization, technological breakthroughs and climate change, and how

these redefine glass as we know it.

The overarching takeaway from the invitation-only Management Forum was that the glass industry already knows how to generate power and save energy with glass. Now by collaborating on new, multi-faceted levels, the industry can make the changes for

a better world to take place even faster.

OPENING CEREMONY LOOKS TOWARD THE FUTURE

With the theme of 'All eyes on smarter glass', a truly global line-up of speakers gave their views on the glass business – and the importance of embracing

and implementing new technologies.

Stefan Blach, from architectural company Studio Libeskind in New York, addressed the challenge of introducing new ultra-modern public spaces without removing the spirit or the heritage of the city. "Innovating and combining the variety of glass types and technologies is what makes it possible," he claimed.

Mike Pilliod, Director of Manufacturing Innovation at Tesla, shared the company's approach to great innovations. He believes that instead of saying "No, it's impossible," every team should question what is needed to make it possible. "Our principal design idea dictates the requirements. This approach expands the toolbox for our designers and has enabled us to have a focus on glass throughout all of our products."



Dr. Sener Oktik, CTO of Sisecam, one of the largest flat glass producers in Europe, gave an extensive overview of the development of flat and coated glass for the construction and automotive segments. “Both industries have a growing need for redefined surfaces: self-dimming, colour-changing, lighter, greener, more flexible, durable and reliable. You can get most of these already today. But at what cost?” he asked.

At the end of the Opening Ceremony, James O’Callaghan was announced as the recipient of the very special Jorma Vitkala Award 2019 in recognition of all the great jobs he has been doing throughout his life, sharing his knowledge around the world and being a true contributor for the entire glass industry.



WORKSHOPS AND SEMINARS; STEP CHANGE FOR STARTUPS

GPD offered 17 different workshops on intriguing glass topics, and seven simultaneous, all-day session lines followed on a variety of subjects: Smart Technology, Glass & Sustainability, R&D, Façade, Market Trends in the Glass Industry and more.

Since many new innovations in the future will come outside the glass industry, the Step Change program was introduced in 2017 as part of the conference for startups or scaleups. This helps the glass industry develop faster and enables startup companies to introduce their own new innovations to the entire group of GPD participants.

A LEGENDARY FAREWELL PARTY TO THE LEGEND HIMSELF

This year’s memorable “Farewell Party” was combined with organizer Jorma Vitkala’s retirement party – and he went out in amazing style.

“This year was literally one of the highest points in my entire life. Although I may have looked utterly horrified when being lifted up by water jets on a flyboard in the lake, I was thoroughly enjoying myself. Thank you all – from the bottom of my heart!”

Jorma, as the founding father of this spectacular event, has also touched



GPD 2019 AT A GLANCE

- 1,000+ participants from over 50 countries – attending the main conference, Helsinki High Rise Seminar and the Management Forum
- 17 different workshops with a total of 565 participants
- 242 various presentations at both the conference and workshops
- Over 350 one-on-one meetings arranged with the Brella app
- 280 first-timers
- Over 700 participants at the Farewell Party

the hearts of the glass industry by creating this special forum to promote higher glass industry performance. He plans to continue for some time as senior advisor to GPD. And with a twinkle in his eye, confesses to aim to spend only 8 hours a day ‘at work’.

THE FUTURE OF GPD

“One of my most important roles will be to keep the GPD network going and help different parties find the best partners. Additionally, I will help transfer the contact network I have created on to the next GPD generation,” he says. Jorma expresses deep-felt

gratitude to everyone involved in making GPD the internationally recognized event that it has become over the past 27 years. Thanks to hours of work, dedication and a belief in such a special event, GPD has reached a superstar level of popularity and become the meeting point for industry change.

According to Jorma, expanding your reach and knowledge, networking with new people and keeping your mind open are key to growth: “By sticking to the well-worn path, you become its slave. To achieve new things, you must wade into the virgin snow.”



PEEK INTO THE FUTURE

Zak returns to New Delhi with the 17th edition of India's leading expo on glass processing and its allied technologies. Be a part of the grand display of latest advancements in the field by industry pioneers.

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South Africa is among the largest flat glass markets on the African continent. Aided by the country's construction and rapidly growing automotive sector, the flat glass industry has made modest progress in the last ten years. Glass-Technology International presents an insight of South Africa's flat glass industry in this article.

South Africa's flat glass industry

South Africa is the leading economic powerhouse in the African continent, and is a leader in almost every sector. It contributes approximately 16 per cent of Africa's GDP and is the 30th largest in the world according to the World Economic Forum's Global Competitiveness Report. Over the last five years, after the important works and construction for the World Cup, economic growth has undergone a slow-down, especially with

regards to the construction sector, which is the main driver of the flat glass sector. Nevertheless, the country's overall economy reported growth of 0.8 per cent in 2018, which was less compared to previous years, when reported growth up to the end of 2013 was 2 per cent or higher.

It is and remains the most industrialized economy in Africa, with a slower period of prolonged growth but the outlook is positive, public debt and inflation

are under control and the reconfirmed political stability are essential factors for a robust recovery.

PFG BUILDING GLASS

PFG Building Glass, a division of the PG Group, is the leading manufacturer of float and patterned glass in South Africa. The company is the only float glass manufacturer in the country. The company's production facility is located at Springs, near Johannesburg, producing 260,000 tons of high quality float



glass and 30,000 tons of high quality patterned glass products a year. PFG also produces value added glass products such as laminated glass, mirrors, and sealant products. These products are supplied to customers in various industries around the world from PFG's head office and through its depot in Springs. PFG's float

glass is branded ClearVue, while Intruderprufe is the company's laminated glass range. The company's mirror products are branded Images. In addition to supplying flat glass to the South African building industry, PG also supplies automotive glass to local motor vehicle assemblers, who are making major inroads in the global market.

PG Group has grown from a glass merchant in Cape Town in 1897, to being the only sub-Saharan African float glass manufacturer operating two float lines and exporting flat glass products worldwide. As part of the PG Group, PFG is a Rand 2.5 billion (USD 300 million) a year organisation which employs 3,000 people at several

factories and has some 200 outlets and warehouses around the world. Exports account for a significant portion of the Group's revenue.

PFG Glass's first float glass manufacturing plant was set up in 1977 with an installed capacity of 150,000 tons per annum. In 2005, the company decided to install a second float glass line



to meet the increasing demand of flat glass products in the country. Guardian Engineers were responsible for the construction, which started in October 2005, with Teco as the other major contractor for the plant. PFG inaugurated this float glass line in the year 2007. PG Group initially considered building the second float line in Mozambique because of energy incentives there, but then decided to maximise its investment in Springs, where it has existing infrastructure and which is close to its major market. The company uses natural gas delivered from Mozambique through the Sasol gas line.

“The plant will continue to supply the country’s needs for glass as a strategic item to the country’s development. Without glass manufacture in South Africa, the building and motor industry would not exist as efficiently as they do, and we have spent large sums of money



SOUTH AFRICA - FLOAT GLASS IMPORTS

Import Volumes (in tonnes)	2014	2015	2016	2017
3 mm thickness	9,526	13,682	12,476	13,102
4 mm thickness	8,978	14,608	26,164	29,253
5 mm thickness	1,853	1,624	2,676	3,107
6 mm and more	2,224	3,608	2,169	3,039
Total	22,581	33,522	43,485	48,501

Source: International Trade Administration Commission of South Africa

on capital equipment to ensure that our products meet every international standard,” according to PG Group chairperson Ronnie Lubner.

RIISING IMPORTS OF FLAT GLASS PRODUCTS

Imports of flat glass products has been rising in South Africa during last five years. China, Indonesia, Saudi Arabia and United Arab Emirates are leading exporters of flat glass products in the country. In 2018, PFG Building Glass moved an application

to appropriate authorities to impose anti-dumping duty on flat glass imports from Saudi Arabia and United Arab Emirates.

In January 2018, South Africa re-imposed anti-dumping duties on flat glass imports from Indonesia after a sunset review of existing anti-dumping duties on flat glass imports from Indonesia into South Africa.

Similarly, South Africa had imposed anti-dumping duties on flat glass imports from China and India in the year 2015.

AUTOMOTIVE GLASS

Automotive glass is an important demand driver for flat glass industry in South Africa. The automotive sector in South Africa is the mainstay of the national industrial base and accounts for 6.9 per cent of GDP (4.4 per cent manufacturing and 2.5 per cent retail). South Africa’s vehicle production is expected to expand by 6.2 per cent in 2019, to roughly 648,000 units, compared with 2018, says



the National Association of Automobile Manufacturers of South Africa (Naamsa) in its latest quarterly business review.

South Africa made up 0.64 per cent of global new vehicle production in 2018, up from 0.62 per cent in 2017. With regards to light commercial vehicle production – largely bakkies – South Africa was ranked 15th in the world in 2018, with a market share of 1.24 per cent. Seven motor vehicle companies in South Africa had invested more than R32-billion in production facilities over five years. The automotive sector accounts for 50 per cent of all vehicles sold on the continent. But, despite generous support from the government, the automotive industry has so far undershot its intended target of one million vehicles by 2020.

SHATTER PRUFE

Shatter Prufe, a subsidiary of PG Glass has been producing automotive glass for South African and global automotive glass industry since 1935. The company operates three modern, automated automotive glass production plants. The Struandale plant and Neave factory are located in Port Elizabeth. Another manufacturing plant in Ga-Rankuwa in the north of Pretoria produces laminated and toughened automotive glass for domestic and international automotive manufacturers. Shatterprufe produces 4

million pieces of automotive safety glass a year.

“With four million pieces of glass being manufactured annually, with an almost equal revenue split across the three markets of OEM, local aftermarket and the export aftermarket, Shatterprufe is in a unique position to pursue advanced manufacturing technologies to optimise their product development and manufacturing processes,” according to Dave Coffey, Managing Director of Shatterprufe and President of National Association of Automotive Component and Allied Manufacturers (NAACAM).

NATIONAL GLASS DISTRIBUTION

Compass Glass Pty Ltd

Compass Glass Pty Ltd, a wholly-owned subsidiary of The Mazor Group, was established in early 2008 at Brackenrite Business park in Brackenfell, Cape Town to produce a diverse range of value added glass products for South African market.

My Glass

My Glass is a major automotive glass supplier in South Africa. Set up in 2013 in Nelson Mandela Bay with the aim of introducing cheaper brands of automotive glass which, according to the company, “are as safe and reliable as established players who have so far dominated the industry and dictated prices to consumers.”







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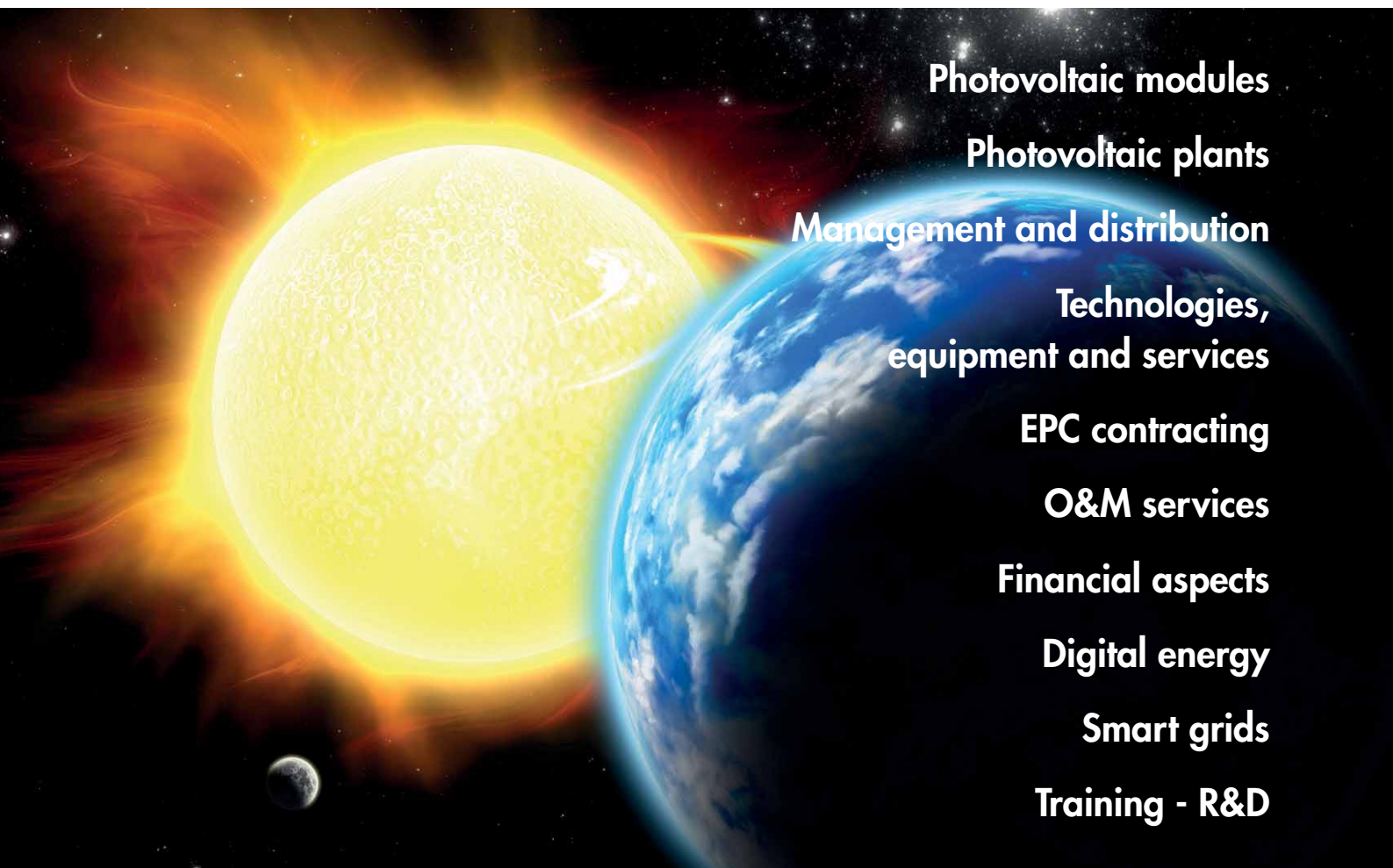
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POLYURETHANE ENCAPSULATION

Bystronic glass Group
Lisec Group
Schiavo

SILICONE EXTRUDERS

Best Makina
Bystronic glass Group
 Fenzi
Forel
Lisec Group
Schiavo
 S.T. Group
 Tecno Glass
 Tenon (Beijing) Equipment
 Triulzi

POLYSULPHIDE SEALANT EXTRUDERS

Best Makina
Bystronic glass Group
 Fenzi
Forel
Lisec Group
Schiavo
 Tecno Glass
 Tenon (Beijing) Equipment
 Triulzi

GAS FILLING EQUIPMENT

Bystronic glass Group
 Fenzi

Forel
Lisec Group
 Neptun
Schiavo
 Sparklike
 S.T. Group
 Tecno Glass
 Tenon (Beijing) Equipment
Thermoseal Group

DESICCANT SALTS

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

SPACERS/PROFILES

Ashton Industrial Sales
 Edgetech Europe
 Fenzi
Schiavo
 S.T. Group
 Tecno Glass
Thermoseal Group

GEORGIAN BARS

Ashton Industrial Sales
Hegla
 Tecno Glass
Thermoseal Group

BUTYL

Ashton Industrial Sales
 Fenzi
Thermoseal Group

POLYSULPHIDE SEALANTS

Fenzi

HOT MELT

Ashton Industrial Sales
 Fenzi
Thermoseal Group

OTHER SEALANTS

Fenzi

PANTOGRAPHS

Fratelli Pezza

ACCESSORIES

Ashton Industrial Sales
 Deltamax Automazione
 Diamant - AR Nunziata
Forel
 Forza G / G. Tech
Helios Quartz
Schiavo
 Sparklike
 S.T. Group

Tenon (Beijing) Equipment
 Triulzi

Tempering

TEMPERING FURNACES (ARCHITECTURAL GLASS)

CNUD-EFCO
 Glaston
Glass Company
 Glasstech Inc.
 Hornos Industriales Pujol
Keraglass
Landglass Technology
 Lema
Lisec Group
Mappi International
Mazzaroppi Engineering
Schiavo
Shanghai North Glass
Technology
 Tekno Kilns
 TK

TEMPERING FURNACES (AUTOMOTIVE GLASS)

Glaston
Glass Company
 Glasstech Inc.
Keraglass
Landglass Technology
Mappi International
Mazzaroppi Engineering
 SGLASS
Shanghai North Glass
Technology

CHEMICALS TEMPERING EQUIPMENT

Glass Company
R.C.N. Solutions

ACCESSORIES

CNUD-EFCO
 Deltamax Automazione
 Fenzi
 Glaston
Glass Company
Helios Quartz
 Hornos Industriales Pujol
Keraglass
Landglass Technology
Mappi International
Mazzaroppi Engineering
R.C.N. Solutions
 SGLASS
 Tekno Kilns
 TK
 Torgauer Maschinenbau

Bending

BENDING FURNACES (ARCHITECTURAL GLASS)

Glaston
Glass Company
Glasstech Inc.
Hornos Industriales Pujol
Keraglass
Mappi International
Mazzaroppi Engineering
R.C.N. Solutions
SGLASS
Tekno Kilns
TK

BENDING FURNACES (AUTOMOTIVE GLASS)

CNUD-EFCO
Glaston
Glass Company
Glasstech Inc.
Keraglass
Mappi International
Mazzaroppi Engineering
R.C.N. Solutions

ACCESSORIES

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

Laminated glass production

COMPLETE PLANTS

Bovone Elett.
Bottero
Bystronic glass Group
Forel
Glaston
Glass Company
Hornos Industriales Pujol
IOCCO Group
Lisec Group
Mazzaroppi Engineering
R.C.N. Solutions
Triulzi

LAMINATED WINDSCREEN BENDING FURNACES

ECOL
Glaston
Glass Company
Glasstech Inc.
Keraglass
Mappi International

AUTOCLAVES

Bystronic glass Group
Glaston
Glass Company
Hornos Industriales Pujol
Lisec Group
Triulzi

CLIMATIC CABINS

Bystronic glass Group
Forel
IOCCO Group
Lisec Group
Triulzi

INFRARED OVENS

Bystronic glass Group
ECOL
Forel
Glass Company
Hornos Industriales Pujol
IOCCO Group
Lisec Group
SGLASS
Triulzi

PRESSES/BENDING MACHINES

Forel
IOCCO Group
Lisec Group
Triulzi

RESIN LAMINATING MATERIALS AND EQUIPMENT

IOCCO Group
Torgauer Maschinenbau

PVB

Everlam
Kuraray - Trosifol

PVB - SHAPING AND CUTTING EQUIPMENT

Ayrox
Bystronic glass Group
ECOL
Forel
IOCCO Group
Lisec Group
Softeco

PVB - WIRING TECHNOLOGY FOR HEATABLE LAMINATES

Ayrox

ECOL
Softeco

ACCESSORIES

Ayrox
Bottero
Deltamax Automazione
Glaston
Helios Quartz
Hornos Industriales Pujol
IOCCO Group
Lisec Group
Optris
Softeco
Triulzi

Drilling

AUTOMATIC DRILLING LINES

B Solution Licensee of BF
Project
Bando Kiko
Bavelloni
Bystronic glass Group
Forvet
Guangdong Northglass
& Juisun Technology
Industrial
Intermac - Biesse
IOCCO Group
Schiatti Angelo
SKG - Skill Glass

MULTI-SPINDLE DRILLING MACHINES

B Solution Licensee of BF
Project
Bando Kiko
Bavelloni
Bystronic glass Group
CMS
Forvet
Glass Company
Intermac - Biesse
IOCCO Group
Schiavo
Schiatti Angelo
SKG - Skill Glass

DRILLING MACHINES WITH OPPOSITE DRILLING HEADS

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Project
Bando Kiko
Bavelloni
Bottero
Bystronic glass Group
CMS
Fenzi
Forvet

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

COLUMN DRILLING MACHINES

B Solution Licensee of BF
Project
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Fenzi
Schiavo

PORTABLE DRILLING MACHINES

CMS
Fenzi
Schiavo

DRILLING AND MILLING MACHINES

Bavelloni
Bottero
CMS
Forvet
IOCCO Group
Schiavo
SGLASS
ADI
Bovone Diamond Tools
Diamut - Biesse
Glaston
Schiavo
SKG - Skill Glass
Tyrolit Vincent

DIAMOND DRILLS

ADI
Bovone Diamond Tools
Diamant - AR Nunziata
Diamut
Fenzi
Glaston
Mole Moreschi
Schiavo
Tyrolit Vincent

ACCESSORIES

CMS
Fenzi
Schiavo

Other equipment and plants

TURNKEY PLANTS / ENGINEERING - FOR BUILDING GLASS

Bando Kiko
Bottero
Bystronic glass Group
Cugher Glass

Intermac - Biesse
IOCCO Group
Keraglass
Lisec Group
Torgauer Maschinenbau

TURNKEY PLANTS / ENGINEERING - FOR AUTOMOTIVE GLASS

Bando Kiko
Bottero
Bystronic glass Group
Cugher Glass
Easy Automation
Intermac - Biesse
IOCCO Group

KEY PLANTS / ENGINEERING - FOR DISPLAY GLASS

Bando Kiko
Cugher Glass
Torgauer Maschinenbau

WORKING CENTRES - CNC CONTROLLED

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

FLOAT PLANTS/LINES (EQUIPMENT & ACCESSORIES)

Bovone Elett.
IOCCO Group
Optris

CONSULTING SERVICES

Horn

CULLET HANDLING SYSTEMS

ECOL

COMPLETE BATCH PLANTS

Zippe

VACUUM COATING EQUIPMENT AND PLANTS

Glass Company
Shanghai North Glass
Technology

ENAMELLING EQUIPMENT AND PLANTS

Giardina Finishing + HS
Glassprinting
Glass Company
Rollmac division of
GeMaTa

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

Giardina Finishing + HS
Glassprinting
Goldglass Technologies
Horn

SANDBLASTING SYSTEMS, EQUIPMENT AND PLANTS - OPTIMIZERS

Fenzi
Fratelli Pezza
Glass Company
Schiavo
SKG - Skill Glass

DIGITAL INKJET PRINTERS

Glass Company

SCREEN PRINTING EQUIPMENT AND PLANTS

Ayrox
COMSS
Cugher Glass
Deltamax Automazione
ECOL
Giardina Finishing + HS
Glassprinting
Glass Company
Guangdong Northglass &
Juisun Technology
Industrial
Keraglass
Rollmac division of
GeMaTa
Shanghai North Glass
Technology
Softeco

SCREEN PRINTING FRAMES

COMSS

SCREEN PRINTING DRYING SYSTEMS

COMSS
Cugher Glass
Glass Company
Guangdong Northglass &
Juisun Technology
Industrial
Rollmac division of
GeMaTa

ACIDING GLASS EQUIPMENT AND PLANTS

Lisec Group
Rollmac division of
GeMaTa

LASER DECORATING MACHINES

Ashton Industrial Sales

Glass Company

LASER MARKING

Ashton Industrial Sales

Artistic glass production

CERAMIC FIBER PANELS

CERAMIC INKS

Glass Company

CHAMBER ELECTRIC KILNS

Glass Company
Keraglass
Tekno Kilns
TK

ACCESSORIES

Deltamax Automazione
Helios Quartz

Miscellaneous

AUTOMATION

Ashton Industrial Sales
Goldglass Technologies
IOCCO Group
Horn
Optris
Torgauer Maschinenbau
Zippe

AUTOMOTIVE GLASS APPROVAL SERVICES

Ayrox
Softeco

AUTOMOTIVE GLASS QUALITY CONTROL

Ayrox
Bando Kiko
Bystronic glass Group
Cugher Glass
Deltamax Automazione
Easy Automation
Glaston
IOCCO Group
Optris
Softeco

CE MARKING - QUALITY CONTROL EQUIPMENT FOR GLASS IN BUILDING

Ayrox
Softeco

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

Goldglass Technologies

COLOURS & ENAMELS - OTHER APPLICATIONS

Ayrox
Goldglass Technologies

DEIONIZING AND WATER SOFTENING EQUIPMENT

Fenzi
Forel
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Idrotecnica
Lisec Group
Triulzi

FLAT GLASS QUALITY CONTROL DEVICES

Ayrox
Deltamax Automazione
Forel
IOCCO Group
Softeco

FURNACES

Glass Company

GLASS COATING AND TINTING

Giardina Finishing + HS
Glassprinting
Glass Company
Goldglass Technologies
Rollmac division of
GeMaTa

GLASS TREATMENT FILMS

Glass Company

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

Horn
Keraglass

INFRARED TUBES

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Deltamax Automazione

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Glass Company

IOCCO Group
Prodim

OPTICAL DISTORTION ANALYSERS FOR AUTOMOTIVE GLASS

IOCCO Group
Keraglass

OPTICAL INFRARED THERMOMETERS

Optris

POWDER OR LIQUID APPLICATION SYSTEMS FOR PROTECTING FLOAT GLASS

Cugher Glass

Giardina Finishing + HS
Glassprinting
Glass Company

PUMPING AND APPLICATION SYSTEMS (AUTOMOTIVE GLASS)

IOCCO Group

PURIFIERS FOR REFLUENT WATER

Forza G / G. Tech

PUTTIES AND SEALANTS

Fenzi

QUARTZ EQUIPMENT

Helios Quartz

SHAPE CHECKING DEVICES

Easy Automation
IOCCO Group

SIC HEATERS

Helios Quartz

SOFTWARE DATABASE, PROPERTY PREDICTOR

Synerglass Soft

SOFTWARE SYSTEMS FOR PRODUCTION CONTROL

A+W Software
CMS

Cugher Glass
Deltamax Automazione
Edgetech Europe

Forel

Lisec Group

Optima

Prodim

Synerglass Soft

SOLDERING EQUIPMENT FOR ELECTRICAL CONNECTORS FOR WINDSCREENS AND BACKLITES

Ayrox
Easy Automation
Softeco

SORTING SYSTEMS

Bystronic glass Group
Lisec Group

SURFACE STRESS MEASUREMENT INSTRUMENT

Ayrox

Glass Company

Jeffoptics

TESTING FOR SOLDERINGS

Ayrox
Easy Automation
Softeco

TESTING DEVICES OF BACKLITES ELECTRICAL HEATING

Ayrox
Softeco

THERMAL IMAGING SYSTEMS

Easy Automation
Glass Company

TIN FLOAT BATH FURNACES

IOCCO Group

UV LAMPS

Helios Quartz

UV PORTABLE MACHINES

Helios Quartz

The collage features three main devices displaying the glassOnline platform: a laptop with the homepage, a tablet with a news article, and a smartphone with a network page. A prominent yellow banner reads 'glassonline web service'.

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



1989

Glass-Technology
International

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

Annual Guides



1990

Glass Industry
Directory 2018

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



2013

FLATGLASS
2019 world directory

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

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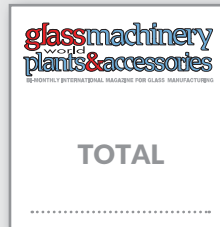


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2019



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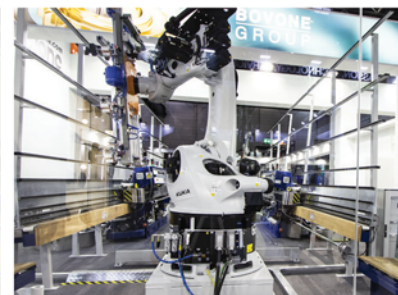
With the opening of the new US branch, which will be 100% operative starting from 2020, Bovone is now ready to guarantee the North American market an even more entrenched and widespread presence in synergy with its longtime partner and distributor: Salem Distributing Company.

As a leading player in machines and systems manufacturing for flat glass and natural/synthetic stone processing, the Company will consolidate its brand presence on a market that confirms a keen interest in Made in Italy technologies.

This new branch, located in North Carolina, will guarantee faster responses, with even more efficient sales and after-sales support, thanks to motivated, trained and competent human resources.

After 45 years of trade relations with the States, this new challenge starts with great excitement. Thanks to all the people who made this project possible, with a due mention to Italian and North Carolina economic development organs who joined and supported Bovone in this complex operation.

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