

# Glass-Technology International

May/June • Year 34 • No. 3/2023

THE LEADING MAGAZINE FOR THE INTERNATIONAL FLAT GLASS INDUSTRY

## GLASS INDUSTRY

INFRARED AND UV SOLUTIONS FOR EVERY APPLICATION



IR medium wave twin tubes emitters for:

- laminating lines
- mirroring lines
- dry screen printing lines

IR medium wave single tube emitters for:

- bending furnaces
- fusion furnaces

IR fast medium wave twin tube emitters for:

- laminated glass cutting machines

Helios Quartz also produces cutting edge equipment for the glass industry such as manual and automatic tin side detectors and UV polymerization units.

**helios quartz**

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



Your partner, not a simple supplier

TOWARDS NET ZERO CARBON: **AGC** EYES AMMONIA COMBUSTION

PROLINER DISTINGUISHES **PRODIM** FOR PIONEERING GLASS PACKAGING

AUTOMOTIVE GLASS TECHNOLOGY: **IOCCO** EXPLAINS TODAY'S INDUSTRY DEVELOPMENTS

**FOREL** BOOSTS **RAVENSBY GLASS'** GUARANTEE OF SIGNATURE PRODUCT EXCELLENCE

THE **GLASS COMPANY** REVOLUTION



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

glassOnline

# bestmakina

**Customise Your Machines!**

**2 Years  
Warranty!**

// INSULATED GLASS PRODUCTION LINES  
// GLASS WASHING MACHINES  
// GLASS PROCESSING MACHINES  
// GLASS LAMINATION LINE  
// EXTRUDERS  
// SPACER BAR PROCESS MACHINES  
// AUXILIARY EQUIPMENTS



- Start-up level for IG-SG production
- $\approx$  800 sqm/shift capacity
- Short recovery time of investment



- Professional level for IG-SG production
- Appropriate for mass production
- Low labour cost via automated machines



- Continuous line for multi processes
- Compatible for product tracking via ERP
- $\approx$ 1000 sqm/shift capacity



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

ALL INFORMATION  
AT HERE!



# Added Value Storage

**Broad Product Range    Customer-Specific**



## Greater Flexibility and Extended Product Range

Increase your flexibility and extend the product range in your glass storage with Rapidstore. Glass and packages find their optimal place in the movable rack frames. Benefit from direct access to additional types of products in your gantry or floor loading system for customer-specific products with faster availability.

- Optimal for custom-tailored extension of your glass storage
- One or more cutting lines have direct access to more types of products
- Ideal for flat halls without craneways



**Seeing the customer with Bando's eyes  
Feel the customer with Bando's heart**

# **YOUR DREAM REALIZED BANDO TECHNOLOGIES**



**ADVANCED EDGE QUALITY**



**INDUSTRY 4.0**



**SATELLITE NON-TEMPLATE BREAKOUT**



**AUTOMATIC GRINDING VACUUM CUP CHANGE**



**IoT**

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



ISO9001:2015 認証取得  
ISO14001:2015 認証取得  
ISO45001:2018 認証取得



CE • ISO 9001, ISO 14001, ISO 45001 certified

Tel: +81-88-664-5280

Fax: +81-88-664-5282

2-4-60 Kanazawa, Tokushima 770-0871-Japan

E-mail: [global@bandoj.com](mailto:global@bandoj.com)

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



We see a world designed with smarter, safer and more energy-efficient glass.

We're innovating the technology for you to make this a reality.

All about glass processing:

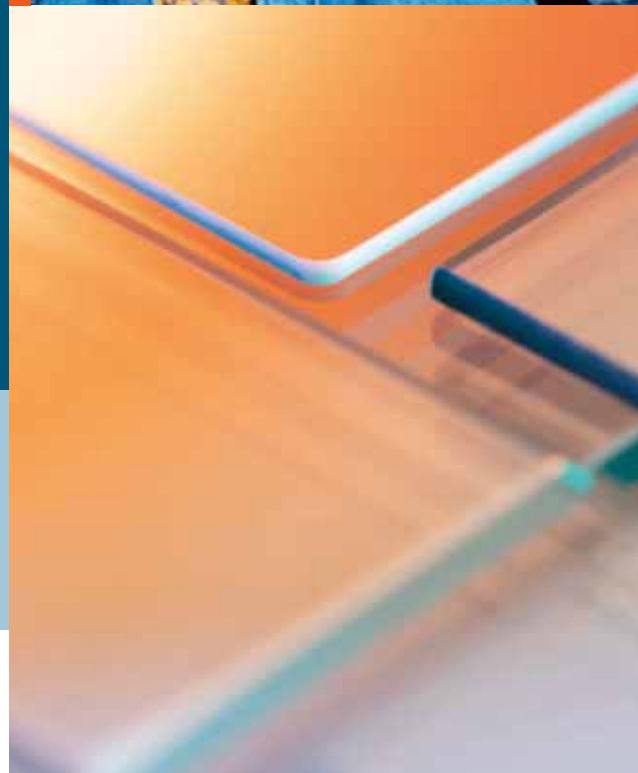
> [www.glastory.net](http://www.glastory.net)

Meet us at  
**GPD FINLAND 2023**  
Tampere, Finland  
Jun 14-16

**glaston**  
seeing it through®

Machinery, services and solutions designed with the future in mind for the architectural, automotive, solar and appliance industries.

[info@glaston.net](mailto:info@glaston.net) | [www.glaston.net](http://www.glaston.net) | [www.glastory.net](http://www.glastory.net) | [www.gpd.fi](http://www.gpd.fi)



LOADING SAFETY SOLUTION

# K180

## AUTOMATIC LOADER

FOR LARGE GLASS  
SHEETS 2000X3000  
UP TO 180 KG

1. Handling of large glass sheets up to 180 kg. in total safety without operator actions
2. Automate the glass loading when sheet size creates handling problems
3. Fully automatic loading cycle in coordination with the entire line process
4. Programmable operation through a simple touch screen interface
5. Automatic glass size recognition
6. Perfectly integration with existing lines
7. Increase of line productivity
8. Better line supervision
9. Reduction of accidents and related costs
10. Reduction of glass breakage and damage
11. Optimization of internal resources employed in more complex processes
12. Constancy in the production process





## The 4th Generation Advanced Series (A Series) Tempering Furnace



- Professional version of NorthGlass Heating & Temperature Control system with global adaptive overheating function<sup>1</sup>: With global restriction of total installed power, call idle power for local overload heating, to improve the efficiency of installed power use and the heating speed with the same installed power.
- New chiller design for higher quenching & cooling efficiency, more power saving, more even stress and lighter anisotropy.
- "NorthGlass Tempering Cloud", which is convenient for customers to get remote technical support and recommended recipes from NorthGlass experts at any time. If allowed by the customer, supply the remote diagnosis of used processing parameters as well (optional).
- New partition of heaters, 50% more finer than that of 3G A(Advanced)-series furnace<sup>2</sup>, for more accurate heating temperature control and better quality of finished glass.
- Quenching fans using three dimensional flow technology improve fan efficiency and life, and reduce energy consumption and noise as well.
- New HMI and more powerful operation software loaded with complete set of processing recipes, significantly reduce the difficulty of furnace operation.



FACEBOOK



TWITTER



LINKIN

Luoyang North Glass Technology Co., Ltd.

No.20, Binghe Road, High-tech Development Zone, Luoyang City, Henan

Tel: +86-21-57858658 Fax: +86-21-57858667

Mail: sales@northglass.com Web: www.northglass.global

## NEW PRODUCTS: NORTHGLASS LIGHTWEIGHT MICROCRYSTALLINE STONE UNIT CURTAIN WALL

- Lightweight Microcrystalline Stone Unit Curtain Wall, Factory Processing, Convenient Installation.
- The structural member prefabricated from various light steel can adapt to various complex curtain wall surfaces.
- Various material and texture choices, which can make the building appearance diverse.
- Recyclable materials, green and environmental protection.





***Water filtration systems for all types of glass industries***

At Filtraglass we manufacture water filtration systems for all types of glass industries, thus covering a wide sector including the solar panel and automotive industries and the transformation of flat glass in general. The function of our machines is to filter and extract the particles of glass that are found in the water used in glass treatment processes, thus obtaining clean, reusable water on one hand and dry, recyclable solid waste on the other.

**[www.filtraglass.com](http://www.filtraglass.com)**



**JUNE 14-16, 2023**



**STAND  
25**





# MAZZAROPPI

HIGH PERFORMANCE. ALWAYS

We use the most advanced technology to offer the best quality on the market and to optimize the performance and energy consumption of our machines.

LOWER INITIAL COST

ZERO UNPRODUCTIVE COSTS

CONSUMPTION IN PRODUCTION  
ONLY 100 kWh

LOWER COSTS FOR kW  
SUPPLY

ENERGY SAVING  
UP TO 70%

*Why choose us?*

After ten years, Mazzaroppi guarantees a market value of their machinery equal to 40% of the purchase price.

**#GLASSINDUSTRYFUTURE**

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



- 28** **TOWARDS NET ZERO CARBON: AGC EYES AMMONIA COMBUSTION**
- 32** **ALL EYES ON TUROMAS AT CHINA GLASS 2023**
- 34** **ECO-FRIENDLY PRODUCTION OF STRATO® TAKES CARBON-FREE TO ANOTHER LEVEL**
- 38** **How EUROTECH-WAY'S AUTOMATIC ROLLER CLEANER/POLISHER IS WOWING CUSTOMERS**
- 44** **PROLINER DISTINGUISHES PRODIM FOR PIONEERING GLASS PACKAGING**
- 46** **AUTOMOTIVE GLASS TECHNOLOGY: IOCCO EXPLAINS TODAY'S INDUSTRY DEVELOPMENTS**
- 50** **FOREL BOOSTS RAVENSBY GLASS' GUARANTEE OF SIGNATURE PRODUCT EXCELLENCE**
- 54** **HELP DESK AT CUGHER GLASS A BEACON OF SERVICE EXCELLENCE**
- 56** **GREAT SUCCESS FOR PUJOL AT LANDMARK INDUSTRY EVENT**
- 58** **THE GLASS COMPANY REVOLUTION**
- 62** **REGAL GLOSS FROM sedak ALL IN PRINTED PRECIOUS METALS**
- 66** **ARCHITECTURAL GLASS 101 - COMPLIMENTS OF SYNERGX**

**EMISSIONS**

## Towards net zero carbon: AGC eyes ammonia combustion

**28**

AGC has been commissioned by M&G to develop ammonia combustion as an innovative glass melting technology - all in support of the mill's goal to arrive at net zero by 2024.

**AGC SUSTAINABILITY**

AGC is committed to reducing its carbon footprint and achieving net zero by 2024. The company is currently exploring ammonia combustion as a viable alternative to traditional fossil fuel-based glass melting technology.




**INTERNATIONAL EVENTS**

## All eyes on TUROMAS at China Glass 2023

**32**

Taking its worthy place among top players within the glass industry, TUROMAS was recently at the Non Shanghai International Exhibition Centre to attend the most important of international trade shows for the production and processing of flat glass in the East continent.

**TUROMAS**

TUROMAS is a key international show for the glass industry in the East continent. It is held in Shanghai, China, and is the largest glass trade show in the region. TUROMAS 2023 was held from October 10-12, 2023, at the Non Shanghai International Exhibition Centre.




**SUSTAINABILITY**



## Eco-friendly production of STRATO® takes carbon-free to another level

**34**

Recently introduced as the first ever sustainable flat tempered range to date, STRATO® is 100 percent Made in Italy. Its low range of cutting edge flatware is manufactured through an entirely sustainable raw material supply chain.

**STRATO®**

STRATO® is a sustainable flatware range that is 100% Made in Italy. It is manufactured using an entirely sustainable raw material supply chain. The range includes a variety of flatware items, including plates, bowls, and glasses.

**SCREEN PRINTING**

## How EUROTECH-WAY'S automatic roller cleaner/polisher is wowing customers

**38**

After a 100% increase in sales, the automatic roller cleaner/polisher is wowing customers. The machine is designed to clean and polish glass rollers, ensuring optimal performance and longevity.

**EUROTECH-WAY**

EUROTECH-WAY's automatic roller cleaner/polisher is a highly efficient and reliable machine. It is designed to clean and polish glass rollers, ensuring optimal performance and longevity. The machine is easy to use and maintain, making it a popular choice for glass manufacturers.




**DIGITAL TEMPLATING**



## Proliner distinguishes PRODIM for pioneering glass packaging

**44**

As a supplier of complete digital templating package solutions to glass templating and fabricators for over 20 years, PRODIM's Prodim templating device has always been at the cutting edge of digital templating solutions for the industry.

**PRODIM**

PRODIM's Prodim templating device is a highly accurate and efficient digital templating solution. It is designed to create precise templates for glass packaging, ensuring optimal fit and performance. The device is easy to use and maintain, making it a popular choice for glass templating and fabricators.

# Automotive Glass Technology: IOCCO explains today's industry developments



Identifying changes over time in the windshield, developing it to where it is now. IOCCO recently explained to E-News Europe's readers how manufacturing is an essential step in respecting developments in car safety. The company's new generation of the trade show on existing production machinery and its impact upon product production.

**NEWS COVERED THIS YEAR**  
 The IOCCO Group, an Italian company, has been a pioneer in the development of automotive glass technology. The company's new generation of the trade show on existing production machinery and its impact upon product production.



**NEWS COVERED THIS YEAR**  
 The IOCCO Group, an Italian company, has been a pioneer in the development of automotive glass technology. The company's new generation of the trade show on existing production machinery and its impact upon product production.

# 46

# FOREL boosts RAVENSBY GLASS' guarantee of signature product excellence

Against the backdrop of a distinguished quality in its stable and triple glazed units, FOREL and Ravensby Glass have signed a partnership agreement to guarantee the highest quality of their products, based on the company's ISO 9001 certification.



**NEWS COVERED THIS YEAR**  
 The IOCCO Group, an Italian company, has been a pioneer in the development of automotive glass technology. The company's new generation of the trade show on existing production machinery and its impact upon product production.

**NEWS COVERED THIS YEAR**  
 The IOCCO Group, an Italian company, has been a pioneer in the development of automotive glass technology. The company's new generation of the trade show on existing production machinery and its impact upon product production.

# 50

# Help desk at CUGHER GLASS a beacon of service excellence



Ever since its launching in 2020, CUGHER GLASS help desk has come to rank among the company's most valued services - all thanks to its core values, which typically result in a project ever ending simply upon the completion of a project. Customer assistance, too, remains no less essential in defining the ongoing success of any customer-relationship over time.

**NEWS COVERED THIS YEAR**  
 The IOCCO Group, an Italian company, has been a pioneer in the development of automotive glass technology. The company's new generation of the trade show on existing production machinery and its impact upon product production.

# 54

# The GLASS COMPANY revolution



Small but not less smart, the GLASS COMPANY revolution is a reality. The company, founded in 2008, has managed to be led by an entrepreneur who's pleasantly convinced that market niches represent a key asset to be explored and turned into challenges.



**NEWS COVERED THIS YEAR**  
 The IOCCO Group, an Italian company, has been a pioneer in the development of automotive glass technology. The company's new generation of the trade show on existing production machinery and its impact upon product production.

# 58

# Architectural glass 101 - compliments of SYNERGX



For almost two centuries glass has witnessed a wealth of stunning architectural feats. With SYNERGX continues to keep its cutting-edge history in contemporary research in glass combined to push the limits - whether in terms of performance or respecting the levels of technology being developed.

**NEWS COVERED THIS YEAR**  
 The IOCCO Group, an Italian company, has been a pioneer in the development of automotive glass technology. The company's new generation of the trade show on existing production machinery and its impact upon product production.

**NEWS COVERED THIS YEAR**  
 The IOCCO Group, an Italian company, has been a pioneer in the development of automotive glass technology. The company's new generation of the trade show on existing production machinery and its impact upon product production.

# 66



**PUBLISHING DIRECTOR:** Arcangelo Altamura

**EDITOR-IN-CHIEF:** Marco Pinetti

**ASSOCIATE EDITOR**

Nicolaas François Fouché | nick.fouche@glassonline.com

**CONTRIBUTORS**

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

**ADVERTISING**

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

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

**GRAPHIC DESIGN**

Sonia Previato | sonia.previato@glassonline.com

Cristiano Guenzi

**PRINTED BY:** BICIDI ARTI GRAFICHE - Via San Felice N° 37d  
16138 Genoa (Molassana) - Italy

**BACK COPIES:** € 29 air mail included | Italy: € 15

Entire contents © 2023 by A151 S.r.l. All rights reserved. Reproduction even partially in any form is strictly prohibited unless written permission has first been obtained from the Publisher. The magazine is open to collaboration with all, but no manuscripts or photographs will be returned. The editor's office accepts no responsibility for opinions expressed in signed articles. The Court responsible is Milan. Publication registered at no. 208 of the Milan Court Records Office on 24.3.1990 - ROC no. 34927 - **ISSN 1126-8573**

GLASS-TECHNOLOGY INTERNATIONAL, N.193, ANNO 34, 2023 - PERIODICO BIMESTRALE.

## regular features | regular

- 10** ADVERTISERS INDEX & COMPANIES MENTIONED
- 12** OUR 2023 TRADE FAIR CALENDAR
- 14** BUSINESS NEWS
- 72** SUPPLIERS GUIDE - Yellow Pages
- 82** SUBSCRIPTION SERVICE

**GLASS INDUSTRY**  
INFRARED AND UV SOLUTIONS FOR EVERY APPLICATION

- IR medium wave twin tubes emitters for:**
  - laminating lines
  - mirroring lines
  - dry screen printing lines
- IR medium wave single tube emitters for:**
  - bending furnaces
  - fusion furnaces
- IR fast medium wave twin tube emitters for:**
  - laminated glass cutting machines

Helios Quartz also produces cutting edge equipment for the glass industry such as manual and automatic tin side detectors and UV polymerization units.

**helios quartz**  
www.heliosquartz.com  
Your partner, not a simple supplier

cover advertiser

**HELIOS QUARTZ**

Via delle Industrie 103/A  
20040 Cambiago - MI - Italy  
Tel.: +39-02-95349318

E-mail: italy@heliosquartz.com  
**www.heliosquartz.com**

...in this issue of *Glass-Technology International* Advertisers are indicated in bold.

COMPANY NAME PAGE No.

**A**  
**A+W** ..... **15, 72-80**  
 AGC Glass ..... 21, 28-29  
**Ayrox** ..... **21, 72-80**

**B**  
**B Solution** ..... **4, 72-80**  
**Bando Kiko**..... **2, 72-80**  
**Best Makina** ..... **Front Inside Cover, 72-80**  
 Borosil Renewables ..... 19

**C**  
 Canadian Premium Sans ..... 16  
 China Glass ..... 32-33, 56-57  
 Consolidated Glass Corporation ..... 24  
 Cugher Glass ..... 54-55

**E**  
**E-TECH 2024** ..... **42**  
**Evalam** ..... **17, 56-57**  
**Eurasia Glass**..... **71**  
 Eurotech Way..... 38-40

**F**  
 FeneVision ..... 22  
**Filtraglass** ..... **6, 72-80**  
 First Solar ..... 18  
**Flat Glass Directory** ..... **30**  
**Forel** ..... **Back Cover, 50-53, 72-80**

**G**  
**GlassBuild America** ..... **49**  
**Glass Company**..... **11, 13, 58-60, 72-80**  
**GlassPro**..... **61**  
**Glasstech Canada** ..... **81**  
**Glasstech Mexico**..... **70**  
**Glaston** ..... **3, 24, 72-80**  
 Glas Trösch ..... 24  
**Global Glass Show** ..... **65**  
 GMB-Glasmanufaktur Brandenburg ..... 19  
**GPD - Glass Processing Days**..... **41**

**H**  
**Hegla** ..... **First Page, 44-46, 72-80**  
**Helios Quartz** ..... **Front Cover, 15, 72-80**  
 Hueck ..... 20

COMPANY NAME PAGE No.

Hydro Building Systems ..... 20

**I**  
 Iocco ..... 46-48

**L**  
 LiSEC ..... 22  
 Litesentry ..... 19, 26

**M**  
**Mazzaroppi Engineering**..... **7, 72-80**

**N**  
**NorthGlass** ..... **5, 14-15, 72-80**

**P**  
 Pilkington Norge ..... 14-15  
**Prodim International** ..... **23, 44-45, 72-80**  
**Pujol Hornos Industriales**..... **17, 56-57, 72-80**

**R**  
 Ravensby Glass ..... 50-53  
**RCN Solutions**..... **25, 72-80**  
**Refrigera Glass**..... **43**  
**Rollmac - Gemata** ..... **27, 72-80**

**S**  
 Saint-Gobain ..... 16, 20  
**Satinal - TK - Strato**..... **34-36, 37, 72-80**  
 Schott..... 26  
 sedak..... 62-64  
 Synergx Technologies..... 66-69

**T**  
**Texpack**..... **31, 72-80**  
 Turkish Glass..... 27  
 Tuomas ..... 32-33

**V**  
 Viitro Architectural Glass ..... 18  
**Vitrum**..... **Back Inside Cover**

**W**  
 WHBT Glass ..... 19

**Z**  
**Zak Glass**..... **84**

Glass Company Srl  
Via Brigata Garibaldi, 33/35  
61122 Pesaro (PU) - (Italy)  
Tel: +39 0721 283519  
www.glasscompany.com  
info@glasscompany.com

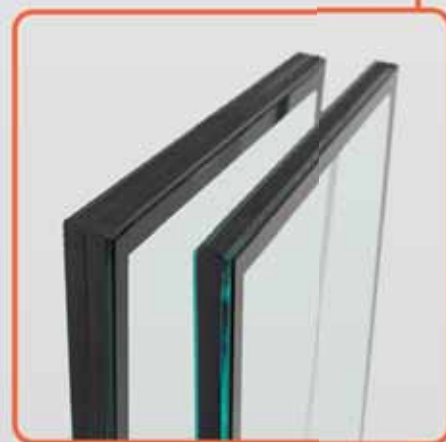
GLASSCOMPANY

F  
I  
R  
E  
M  
E  
K




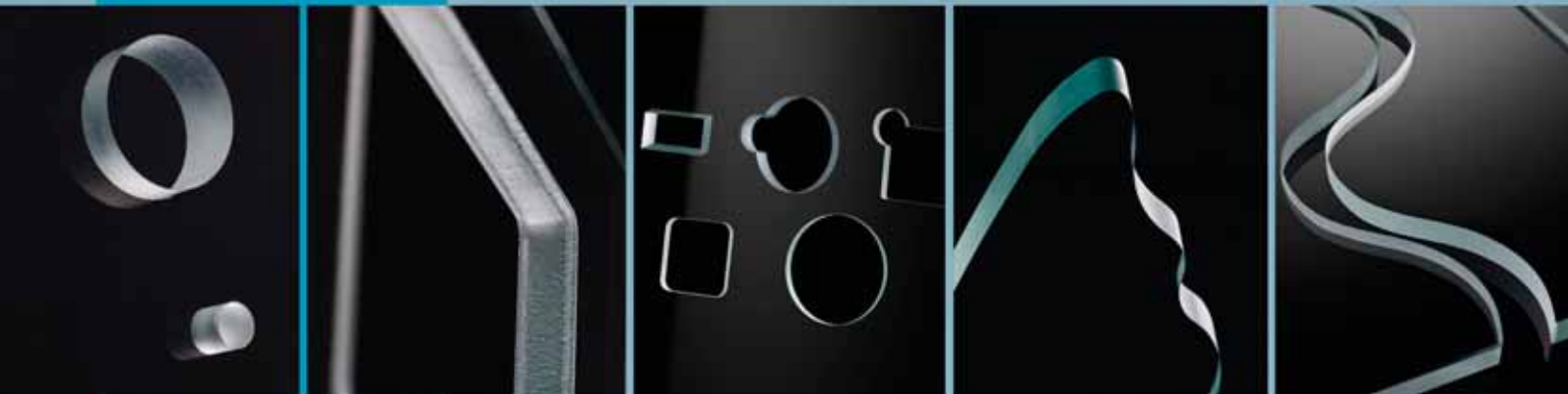
**FIRE RESISTANT GLASS  
PRODUCTION EQUIPMENT  
EI 30, EI 60, EI 90, EI 120**

FOR SMALL, MEDIUM AND LARGE GLASS SIZE



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

issue	exhibition/conference	date	venue	deadlines	
2023				<b>Editorial files:</b> <b>30-01-2023</b> <b>Deadline Adv files:</b> <b>10-02-2023</b>	
2023	<b>1</b>	<b>BAU</b>	17-22 April	<b>MUNICH</b> Germany	<b>Editorial files:</b> <b>03-03-2023</b> <b>Deadline Adv files:</b> <b>13-03-2023</b>
		<b>GLASSPRINT</b>	25-26 April	<b>DÜSSELDORF</b> Germany	
		<b>CHINA GLASS</b>	6-9 May	<b>SHANGHAI</b> China	
2023	<b>2</b>	<b>GLASS TEXPO</b>	11-12 May	<b>SAN ANTONIO (TX)</b> USA	<b>Editorial files:</b> <b>03-04-2023</b> <b>Deadline Adv files:</b> <b>11-04-2023</b>
		<b>FIT SHOW</b>	23-25 May	<b>BIRMINGHAM</b> UK	
		<b>CONSTRUMAT</b>	23-25 May	<b>BARCELONA</b> Spain	
2023	<b>3</b>	<b>GPD - GLASS PERFORMANCE DAYS</b>	14-16 June	<b>TAMPERE</b> Finland	<b>Editorial files:</b> <b>12-05-2023</b> <b>Deadline Adv files:</b> <b>19-05-2023</b>
		<b>GLASSTECH MEXICO</b>	19-21 July	<b>MEXICO CITY</b> Mexico	
2023	<b>4</b>	<b>VITRUM</b>	5-8 September	<b>MILAN</b> Italy	<b>Editorial files:</b> <b>14-07-2023</b> <b>Deadline Adv files:</b> <b>24-07-2023</b>
		ALL VITRUM EXHIBITORS ADVERTISING IN THIS ISSUE ALSO RECEIVE A FREE VITRUM PREVIEW ▶▶▶			
		<b>GLOBAL GLASS SHOW</b>	6-7 September	<b>ABU DHABI</b> UAE	
2023	<b>5</b>	<b>GLASSBUILD AMERICA</b>	31 October 2 November	<b>ATLANTA (GA)</b> USA	<b>Editorial files:</b> <b>15-09-2023</b> <b>Deadline Adv files:</b> <b>22-09-2023</b>
		<b>GLASSTECH CANADA</b>	6-7 November	<b>TORONTO</b> Canada	
		<b>REFRIGERA GLASS</b>	7-9 November	<b>BOLOGNA</b> Italy	
		<b>EURASIA GLASS</b>	11-14 November	<b>ISTANBUL</b> Turkey	
2023	<b>6</b>	<b>ZAK GLASS TECHNOLOGY</b>	23-26 November	<b>MUMBAI</b> India	<b>Editorial files:</b> <b>13-10-2023</b> <b>Deadline Adv files:</b> <b>20-10-2023</b>
		<b>GLASSTECH ASIA</b>	29 November 1 December	<b>BANGKOK</b> Thailand	
		<b>GULF GLASS</b>	4-7 December	<b>DUBAI</b> UAE	



DRILLING

CUTTING

## LASERMEK

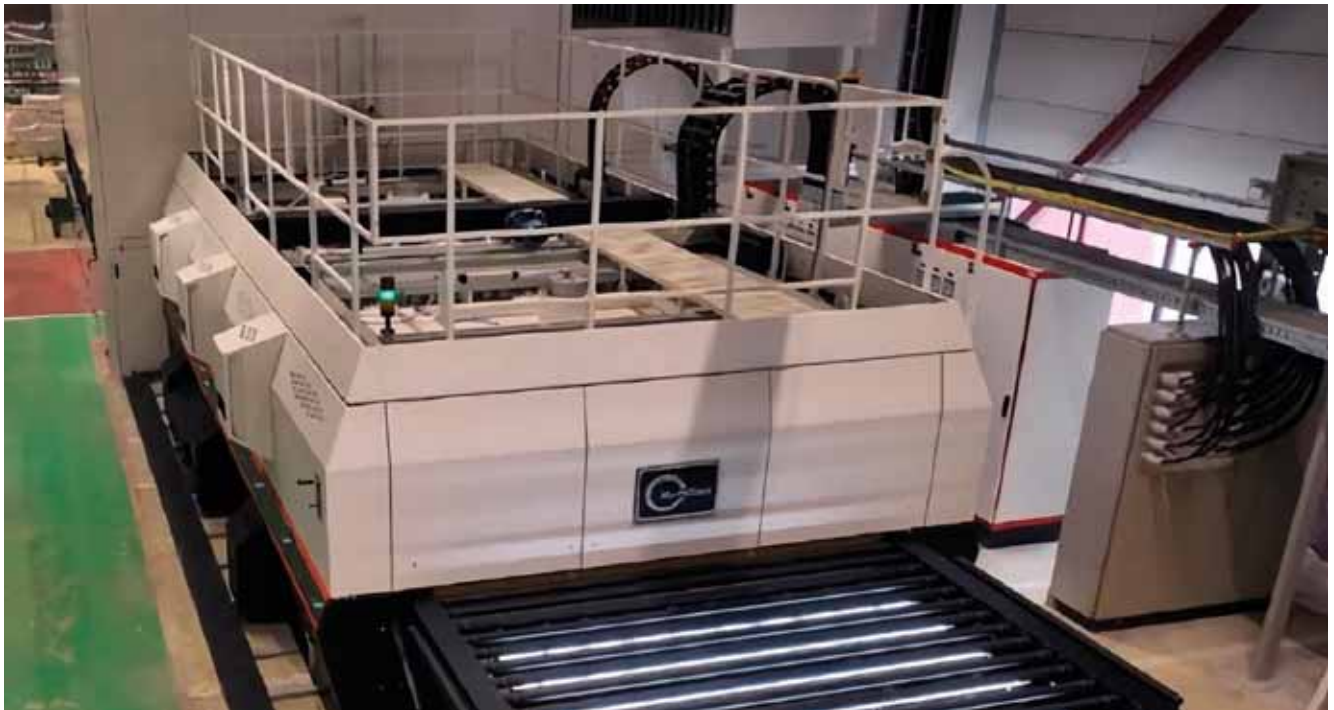
Innovative Laser  
Technology  
for **Glass Drilling**



Innovative Laser  
Technology  
for **Glass Cutting**

NORTHGLASS

## Toughening furnace for Pilkington Norge AS Elverum plant



On May 2, the Pilkington Norge AS plant in Elverum, Norway, held the official opening ceremony for the new toughening furnace of **NORTHGLASS**. A bit of history: Østlandske Isolerglas is the old name of Pilkington Norge AS factory in Elverum which was established in the mid-70s. Industrial production of insulating glass units sealed with butyl started early in 1982. It was the main product right up until 1984 and the first construction stage of a new factory was under way. In this connection, one of Norway's first horizontal toughening furnaces for flat glass was installed. During the 80s and 90s, the factory in Elverum was a major supplier of front panels and internal glass for ovens for Elektrolux, Grepa, and white goods for customers such as Derby, and various furniture manufacturers who made cabinets with glass shelves of various designs. During these years, the factory also became a major supplier of IGUs with screen-printed toughened glass panels for buses in Sweden and Norway. In 1986, the factory was once more expanded to make room for grinding, screen printing and enamelled glass production (toughened spandrel glass with colour). Eventually there was a need for even more space and in 1998 the factory was expanded with a new glass hall and grinding hall. Since the turn of the century, the factory changed its name →







← from Østlandske Glassindustri to Pilkington Norge AS and since 2006 it has become part of the NSG Group. In connection with the first construction stage in 1984, a used toughening furnace was installed which was replaced with a new used one in August 1992. This has now been working steadily until today and has now been replaced with a fifth generation fully digitally controlled toughening furnace from NorthGlass with a length of 25 metres. The new furnace toughens glass horizontally and can toughen glass sizes from 100 by 300 millimetres to 2,440 by 5,000 millimetres. The oven is fully digitally controlled, which simplifies production work. Digital control means that the toughening process is controlled by the machine, which has been set in advance with information about glass type, thickness and size. The machine controls itself over and under heating and cooling. Sensor systems control the toughening process and ensure flat toughened glass of high optical quality. The way to optimal toughening has consisted of countless hours of fine-tuning, but in the end the result is perfect.

#### Characteristics

Full digital control that simplifies production work. The toughening processes are controlled by the machine based on glass types/glass thicknesses/sizes:

- 4-19 millimetre float, 4-10 millimetre coated glass and maximum size 2,440 by 5,000 millimetres;
- Intelligent control of over/under heating and cooling;
- Toughens glass with high optical quality;
- Improved and stable glass quality.

This will improve efficiency of Elverum plant, increasing its capacity with opportunities to process more products.

Detailed tests have been carried out to ensure that the glass is toughened in accordance with the expected quality.

#### Noise-reducing cabin

A noise-reducing cabin has been set up on the furnace to meet standards for noise transmission in the workplace.

At the top of the "hut" there is a hot air outlet which releases the heat over the roof in the summer. The hatch can be opened in the cold seasons to use the heat produced by the oven to heat the hall in the winter.

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



## MY NETWORKING WITH THE FUTURE!

My glass processing software for the intelligent overall organization of my production and all commercial processes, on through to delivery.

[www.a-w.com](http://www.a-w.com)



SAINT-GOBAIN

## Renewable electricity supply agreement signed in India



Saint-Gobain recently signed a Power Purchase Agreement (PPA) in India with Vibrant Energy -a portfolio company of Macquarie Asset Management’s Green Investment Group (MAM-GIG)- to provide wind and solar energy to six local SAINT-GOBAIN sites. The 20-year PPA will begin delivery in 2024 and bring the renewable electricity share in India to 65 percent in 2025. Under the agreement, Vibrant Energy will provide Saint-Gobain with 189 GWh of renewable energy (solar and wind) per year, thus reducing Saint-Gobain’s CO2 emissions in India by around 120,000 tonnes per year. Through wide-ranging initiatives such as the replacement of fossil fuels with biomass, waste heat recovery and reuse, and circularity actions, Saint-Gobain is well on its way to achieving 100 percent renewable electricity in India by 2030. This agreement,

in addition to those previously signed by the Group in North America, Spain and Poland, is part of the Group’s overall trajectory to achieve carbon neutrality by 2050.

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

CANADIAN PREMIUM SAND

## Achievement of several major milestones announced

The achievement of several major milestones has been announced by CANADIAN PREMIUM SAND as the Company works towards building North America’s first integrated patterned solar glass manufacturing facility.

- Three binding commercial off-take agreements have been signed, as well as multiple MOUs;
- Pre-construction engineering and design is complete and a turn-key EPC agreement has been signed;
- Environmental Act License issued by the province of Manitoba to CPS to construct and operate a patterned solar glass manufacturing facility;
- Vice President, Glass Operations appointed and board of directors enhanced with solar energy industry expertise;

- Formal financing process initiated with Fort Capital Partners and Peters & Co. Limited engaged as co-financial advisors. “We are excited to have reached this important stage in the development of our integrated solar glass manufacturing project,” said CPS President and CEO, Glenn Leroux. “With strong revenue visibility through binding commercial off-take agreements and a high degree of certainty with capital costs and operational performance through our EPC agreement we are confident of our ability to commercialize this high return Project, supporting the global energy transition. With our recent additions of industry expertise to the team, we look forward to a successful financing process that capitalizes our project and enables the delivery of our exciting business plan.”

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





# Pujol 100 PVB+ & full automatic lines

Total precision, maximum reliability and greater savings

- It allows the lamination of PVB / EVA / ionoplastics
- Humidity and temperature control are not required for either storage or treatment.
- Fixed energy costs independent of production volume.
- Cost reduction owing to greater energy efficiency, when compared to traditional autoclave systems.
- Maximum precision and reliability.
- Reduction of raw material costs, requires fewer layers of film than PVB tempered glasses.
- It does not require a pre-laminate line.
- Requires less plant space.
- Minimal operator effort.
- High production rates.
- Ready for industry 4.0.

VITRO

## Agreement to manufacture glass for American-made solar panels

Vitro S.A.B. de C.V., through its VITRO Architectural Glass business headquartered in Cheswick, PA, USA, has announced that it has entered into an agreement with America's largest fully vertically integrated solar manufacturer, First Solar, to manufacture glass for the company's advanced thin film photovoltaic (PV) solar panels. Vitro will invest a total of USD 93.6M to rebuild and modernize a production line at its Meadville Plant located in Cochran, PA, to support First Solar's growing manufacturing footprint in the United States. The investment will also include the construction of offline production capabilities. "This agreement is a true manifestation of Vitro's purpose of enabling the full potential of glass to shape how we move, build, and live today and in the future. It also reflects our continued commitment to the North American Trade Region and is proof that we have a sound strategy for growth as a global player. We are thrilled by how, through this partnership, we will serve the U.S. market with new and better sustainable products while advancing our strategy to drive growth in the renewable energy sector," said Vitro CEO, Adrian Sada. "While much of the focus has been the role of clean energy manufacturing tax credits in catalyzing solar manufacturing, it's important to understand that the true value being created for America goes well beyond the direct investment and creation of jobs in factories that produce solar panels," said Mike Koralewski, chief supply chain officer, First Solar. "Our fully vertically integrated factories must be served by robust, domestic supply chains that produce vital components such as glass and steel and even wooden crates, while supporting thousands of American jobs. We are pleased to welcome the Vitro Meadville Plant to the First Solar network of suppliers. Once the facility is commissioned, its workers will join thousands of American solar workers in enabling our country's energy transition." Vitro's investment in the Meadville Plant is expected to provide First Solar with a vital domestic source of float glass, which is a significant component of the company's advanced thin film solar panels. Since August 2022, First Solar, the



largest solar manufacturer in the Western Hemisphere, has embarked on an expansion plan that is expected to grow its existing annual nameplate capacity from approximately 6 gigawatts (GW) DC currently to over 10 GWDC by 2025, by expanding its capacity in Ohio and adding a new manufacturing facility in Alabama.

"We are committed to being a valued supplier to First Solar and a partner in their efforts to bring more clean, renewable energy capacity to the U.S and more broadly, North America," said Ricardo Maiz, President of Vitro Architectural Glass. "This represents a pivotal moment in Vitro's history, and we're proud to play a role in helping to bring our technical expertise in glass manufacturing to the solar PV industry. In 2020, Vitro Meadville's Line 2 was at the end of its useful life when it was also impacted by the automotive industry supply chain disruptions due to the COVID-19 pandemic. We're very pleased to have the opportunity to bring this line back into production and contribute to the revitalization of manufacturing in the U.S. and Western PA," said Maiz.

Vitro's Meadville plant is strategically located to serve First Solar's production and already has the necessary raw materials required to support their production. Production is expected to begin in the second quarter of 2025, resulting in the creation of approximately 130 full-time jobs.

U.S. Congressman Mike Kelly said, "I'm incredibly excited to hear Vitro Architectural Glass will be expanding their footprint right here in the Meadville area, and they are bringing 130 new full-time manufacturing jobs with them. In recent years, I've led the fight here in Washington to cut the red tape and create fair trade laws that have allowed companies like Vitro to grow and create new jobs here in Western Pennsylvania. This upcoming expansion builds upon Crawford County's rich history in the manufacturing industry. I look forward to working alongside the hard-working team at Vitro Architectural Glass in the years to come."

PA Chamber President and CEO Luke Bernstein said, "Congratulations to Vitro on this future-focused investment that is creating direct and downstream jobs in Pennsylvania. Under the leadership of President and PA Chamber Board Director Ricardo Maiz, Vitro is leading the way toward a sustainable economic future and driving the future of manufacturing right here in the commonwealth."

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

GMB

## Update and rebuild of Tschertitz plant furnace completed

**G**lasmanufaktur Brandenburg (GMB) recently completed the update and rebuild of Borosil Renewables' solar glass furnace at its site in Tschertitz, Brandenburg, Germany. GMB is a subsidiary of Borosil Renewables. The highly energy-efficient furnace is now up and running, with an enhanced capacity of 350 tonnes per day. Borosil's investment in the furnace modification as well as more upcoming investments in the tempering and coating areas of GMB are a testimony to the company faith in the European market and a bright solar future in the EU. The goal at GMB is to be the European champion for solar glass production.

[WWW.GMB-GLAS.DE](http://WWW.GMB-GLAS.DE)



LITSENTRY

## WHTB Glass invests in Osprey 10 Complete

**W**HTB Glass was founded in early 2002 and is a leading provider of processed glass products. With a 20-year track record of investing in the most modern, state-of-the-art fabricating equipment and a culture dedicated to quality assurance, WHTB's investment in the Osprey 10 Complete comes as no surprise. "With

real-time 100 percent inspection of distortion and anisotropy, we can provide the highest quality glass consistently to our customers," stated Alan Tan, Operations Manager of WHTB Glass. The production facility in Shirley, New York, specializes in oversized and technically complex products such as double silver and triple silver soft coated glass fabricating capabilities. WHTB Glass is ideally set up to produce both high-volume and specialty glass products cost-effectively, quickly and with the highest quality control. "The training provided to our team by the engineer at commissioning was second to none," added Tan. "We chose the Customer Care Agreement with an annual site visit to ensure the Osprey always has the latest software and our people are training how best to use the system to meet our customers' changing needs." The Osprey 10 Complete measures anisotropy, centre haze, and all types of distortion, not just roller wave or edge kink. The Customer Care Agreement offers plans that provide software updates, remote technical support and training, as well as an annual site visit. Since 1999, LITSENTRY has been developing technologies to solve the difficult problems of inspection and measurement for glass fabricators. LiteSentry's tools enable automated, accurate, 100 percent in-line inspection of flat glass and plastic sheets for manufacturers around the world in glass inspection, process control and quality.

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



SAINT-GOBAIN GLASS AND HYDRO BUILDING SYSTEMS

## Joint promotion of low carbon façades

Saint-Gobain Glass and Hydro Building Systems are joining forces to drive decarbonisation by helping the building industry design sustainable façades that have circularity built in. The two companies are leading the way through the use of low embodied carbon products thanks to a high percentage of recycled materials: specifically, the **SAINT-GOBAIN GLASS ORAÉ®** glass substrate and **HYDRO BUILDING SYSTEMS** aluminium façade products manufactured from Hydro CIRCAL® 75R. ORAÉ® is a new glass substrate with the world's lowest carbon footprint. According to its EPD, ORAÉ® has a verified carbon footprint value of 6.64kg CO<sub>2</sub> eq./m<sup>2</sup> (for a 4 millimetre substrate), a reduction of 42 percent compared to the Saint-Gobain Glass European baseline clear glass. This has been achieved through the use of renewable electricity and a recycled content of 64 percent. Hydro CIRCAL® 75R, first launched in 2019, is a prime quality aluminium made with a minimum of 75 percent recycled post-consumer scrap aluminium. Hydro CIRCAL® 75R has a carbon footprint among the lowest in the world: 2.3 kilograms of CO<sub>2</sub> per kilogram of aluminium. With a shared dedication to sustainable development, Saint-Gobain Glass and Hydro Building Systems, which includes the TECHNAL, WICONA, SAPA, and DOMAL brands, as well as recently acquired HUECK, are committed to helping developers and specifiers create more sustainable, lower embodied carbon buildings. Marion Portenseigne, BU Glass Façade Specification Director at Saint-Gobain Glass, said: "We share with Hydro Building Systems the same ambition to accelerate decarbonisation in the construction sector. This partnership will enable us to increase the awareness of low carbon solutions for façades. This means common specification training for our specifiers to get to know the counterpart offer, then joint communication actions that started with BAU fair in Germany last April, and shared initiatives on specific projects to promote both solutions." Bruno Mauvernay, Managing Director Business Unit Glass Façades at Saint-Gobain, added: "Together, thanks to the combination of our low carbon materials, ORAÉ® and CIRCAL® 75R, we are now able to promote a low carbon façade which contains around 50 percent less embodied CO<sub>2</sub> compared to a standard façade, bringing developers and architects along with us into our commitment towards carbon neutrality." Lucile Souyri, Sustainability Manager at Hydro

Building Systems, commented, "For many years, sustainability has been a core part of our strategy as a business and the driving force behind our commitment to low carbon innovation. We are delighted to be able to work alongside Saint-Gobain Glass in setting a new standard and leading the way towards a more sustainable construction environment. Thus, our partnership includes the elements presented by Marion earlier, and moreover working together to ensure that glass and aluminium from end-of life façades will be recycled. However, this will only be achieved through closer collaboration with teams of both companies involved, from the initial design stages to the completion of the building."

Henri Gomez, Vice President at Hydro Building Systems, continued: "Ten years ago, we started our journey towards decar-

bonylation of the buildings with CIRCAL® 75R, and we continue to lead the way with CIRCAL® 100R. And now by partnering with Saint-Gobain Glass, a strong player from the building and construction sector, we go beyond regulations."

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

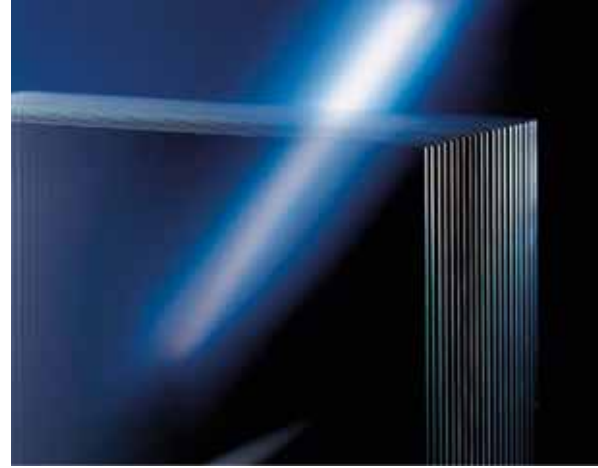


AGC

## Discontinued production of LCD glass at Kansai plant

**A**GC has decided to discontinue the production of LCD glass substrate products at the Kansai plant (Takasago Factory), located in Hyogo prefecture, Japan, by the end of this year. The revenues of LCD glass substrate products have been deteriorating since 2022 due to sluggish TV sales as a result of the disappearance of the stay-at-home demand brought about by the Covid pandemic, soaring raw materials and fuel costs and rising manufacturing costs due to the appreciation of Asian currencies. As part of measures to improve the profitability of this business, the company is undertaking fundamental structural reform measures, including withdrawal from low-profit size glass substrates and consolidation of production lines, and this decision is part of those measures. Production of other products at the Takasago Factory will continue. Following this termination of the production, Other Expenses are expected to be incurred at the consolidated financial results for the fiscal year ending December 31, 2023, but the forecast announced on February 8, 2023 remains unchanged.

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



**AYROX**

Please visit us on our stand at GPD

AYROX SRL IS AN ISO 17025 ACCREDITED CALIBRATION AND TESTING LABORATORY FOR GLASS QUALITY CONTROL INSTRUMENTS.

IN ADDITION, WE OFFER A COMPLETE RANGE OF QC EQUIPMENT THAT WILL MEET THE NEEDS OF THE MOST DEMANDING LAMINATED, TEMPERED AND IGU GLASS MANUFACTURERS AND PROCESSORS.

WE ALSO SPECIALIZE IN PVB TREATMENT : FROM ROLL HANDLING, PVB SHAPING AND CUTTING, TO READY-TO-LAMINATE SHEETS. AS WELL AS ELECTRICAL WIRING ON PVB, PC AND TPU FOR HEATABLE GLASS AND PLASTIC LAMINATES.

[www.ayrox.com](http://www.ayrox.com)      [deals@ayrox.com](mailto:deals@ayrox.com)      +32-(0)2-375 61 98



FENEVISION CRM

## Improved customer order visibility among sales groups

FeneTech's FENEVISION CRM is a centralized system for scheduling interactions with customers or prospects and recording the details of all related tasks, phone calls, notes and appointments. Users can also track lead sources and report customers' activities. FeneVision CRM already has many capabilities designed to help companies manage both customers and prospects. Convenient too is that the module will also work on smart-phones and tablets via a standard web browser. This means users can see real-time data available anywhere, anytime.

Now, in the latest version of FeneVision, a new tab in CRM allows users to see all the customers in their sales group. They can also filter results only to show orders for customers that belong to them.

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



LISEC

## DSC-A: State of the art technology

The LiSEC DSC-A cutting system for glass stands out due to the use of LiTEC direct cutting technology. The automatic glass cutting machine of the DSC-A series combines the latest drive technology with decades of LiSEC know-how in processing flat glass for every requirement. A completely newly developed structure of the table as well as a new cutting bridge and a new cutting head improve the stability and precision of the cutting process. A powerful low-e deletion system with a grinding wheel in combination with a strong vacuum system for all common types of special coatings ensures a residue-free, fast and homogeneous low-e deletion result. This specially devel-

oped technology ensures that the cutting wheel is always in the cutting direction and the unique construction guarantees the stability of the cutting wheel even at high speeds. This results in a high cutting quality and saves time, making it the ideal solution for flat glass processors.

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





PRODIM

# THE STRENGTH IS IN THE DETAIL



CHECK! ✓

CHECK! ✓

ACCURACY

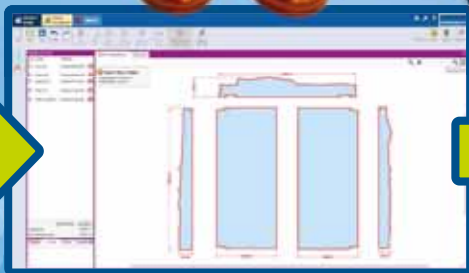
EASE OF USE

SPEED

FLEXIBILITY

DURABILITY

CHECK! ✓



 **GO TO [PRODIM-SYSTEMS.COM](http://PRODIM-SYSTEMS.COM)**  
**AND WATCH THE COMPLETE VIDEO**

**PROLINER**

Prodim International BV Lagedijk 26, 5705 BZ Helmond, The Netherlands - Phone: +31 492 579050

Prodim USA 7454 Commercial Cir. Fort Pierce, FL 3495, USA - Phone: +1 772 465 4000

[WWW.PRODIM-SYSTEMS.COM](http://WWW.PRODIM-SYSTEMS.COM)



**FACTORY**

GLASTON

## Opening up new opportunities with laminated glass



Consolidated Glass Corporation is no newcomer to diamond-standard interior glass nor making larger transitions to stay ahead of the game. Now being led by the founding family's fifth-generation president, the company started in 1967 in New Castle, Pennsylvania, fabricating the then fashionable jalousie doors and windows formed with multiple parallel panes of glass. It made a significant expansion in 1994 with its first tempering furnace to supply store fixtures, high-end shower doors and enclosures. In 2015, Consolidated Glass purchased its second tempering line, a **GLASTON RC Series**, to be able to keep up its outstanding five to ten day lead times and push into the lucrative office partition market. The same spirit of growth and expansion into new glass processing areas led the company to venture into laminated glass in 2021. This meant a new 15,000 square foot building and automated lamination line. "We saw the move into laminating glass as an exciting opportunity to explore. It gives us an open door to many new areas, such as security, acoustic and decorative glass. After thoroughly reviewing six lines, we chose Glaston's ProL lamination thanks to its convection heating and simplicity," said Consolidated Glass Corporation's Brad Bartley, General Manager, and Lindsey Merryman, Lamination Line Program Manager. "We reviewed six different lines, comparing price and performance," Brad said. "We were familiar with Glaston's background and knew the technology they bring to the tempering world. That was important to us." But what caught his attention most was the convection heating system used on the ProL line as opposed to the infrared (IR) heating systems that most competitors use. "For me, just the simplicity was impressive. And when you're investing that much in new technology, you want to know that the supplier is highly experienced in that area. I also spoke with close friends in the industry who praised Glaston's lamination technology," he said. "Our entire team is very excited about the quality of laminated glass we have produced. It's beautiful!" Lindsey said. "We've got a lot of great people working with us who are definitely up for the challenge. They're willing to learn and work hard. So, we're getting used to the lamination line and are continuing to add to our knowledge each day."

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

GLAS TROESCH

## Zig-zag glass solution for Brunel University London

After Sheppard Robson developed the master plan for the campus of Brunel University in London in the 1960s, he returned again and again for more minor planning services. Most recently, for the conversion of the Wilfred Brown Building as the new home for the College of Engineering, Design and Physical Sciences. Stripped down to its concrete frame, the London architects gave the building on the western boundary of the university a new, welcoming identity with a glass sawtooth fa-

çade. An alternation of transparent glazing to the Northwest and using **GLAS TROESCH OKATECH Wire Mesh** to the west and Southwest results in an architecturally exciting façade interplay. During the day, it gives the building shell a special glow and the façade has a metallic shimmer in the sunlight. The metal fabric is not only an attractive element of design but it also fulfills high requirements on sun and glare-protection.

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





# THE UNIQUE EXPERIENCE OF REVA BF

THE INTERLAYER  
THAT COUPLES WITH  
GLASSES GENERATING  
A CLEAR, PERFECT AND  
LONG-LASTING UNION

THE JOY  
OF A SUCCESSFUL  
LAMINATION



[rcnsolutions.it](http://rcnsolutions.it)



L  
V  
I  
N  
G  
  
B  
E  
T  
W  
E  
E  
N  
  
T  
W  
O  
  
G  
L  
A  
S  
S  
E  
S



SCHOTT

## Vivo X Fold 2 and vivo X Flip feature specialty glass

Vivo's new flagship phones vivo X Flip and vivo X Fold 2 are fully packed with glass innovations from SCHOTT, whose founder Otto Schott invented specialty glass. The vivo X Flip is the first foldable phone to be certified by TÜV Rheinland to withstand over 500,000 folds, and this model features SCHOTT UTG®, a flexible glass that's thinner than a human hair with an outstanding bending strength after processing. In addition, both models feature external displays that are protected by SCHOTT's most drop-resistant cover glass Xensation® α (Alpha). The imaging system vivo co-engineered with Zeiss are protected by high-performance Xensation® Up cover glass tailored for camera modules.

### A fruitful, long-term partnership

This launch continues the long-term partnership between the leading Chinese smartphone manufacturer and the German sister companies under the Carl Zeiss Foundation – ZEISS and SCHOTT. vivo has been the first smartphone manufacturer to feature SCHOTT's latest high-performance cover glass Xensation® α. vivo's first foldable model, vivo X Fold, also came loaded with SCHOTT specialty glass innovations, including foldable ultra-thin glass from SCHOTT UTG® series and high-performance cover glass from the SCHOTT Xensation® series.

"We are very pleased to be a trusted partner for our customer," says Dr. Feng He, Head of Global Product Management and Application of UTG Cover at SCHOTT. "As a pioneer in UTG and cover glass, SCHOTT has a wealth of knowledge gained over the past decades. We are excited to take part in shaping the future of foldable devices."

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

LITSENTRY

## Owl® 5 Furnace Optimization System

A world leader in tempered glass inspection systems, LITSENTRY recently announced the release of its latest innovation, the Owl® 5 tempering furnace optimization system. The Owl® 5 is a patented, fully automated system that can discern glass types, coatings, thickness and location of parts. This information is used to automatically select the optimal recipe which is then transmitted to the furnace control system for implementation.

Correct recipe selection optimizes the performance of the tempering line, increases throughput and improves quality. This all happens automatically which allows redeploying valuable labour resources. Further, when an Owl® 5 is used in conjunction with an Osprey distortion scanner, the combined systems will provide the Missing Part Notifier to alert the unload team of a missing part. This enables the quick initiation of a needed remake and avoids costly downtime at downstream processes.

The Owl® 5 also comes with all of the features of the Load Validator™ geometry and fault detection system. The Load Validator™ detects issues such as overlapping pieces, broken corners, wide loads, etc. If any non-conforming conditions exist, the system will stop the conveyor to prevent breakage in the furnace and quench which can cause expensive delays (typically 5-20 hours) to clean the breakage and recover the line.

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



# GLASSDRIER



*Come to visit us*

VITRUM

## Drier for float glass sheets

- > High efficiency drying
- > Energy saving

Rollmac is a division of Gemata S.p.A.  
rollmac.it

 **Rollmac**®

# Towards net zero carbon: **AGC** eyes ammonia combustion

AGC has been commissioned by NEDO to develop ammonia combustion as an innovative glass melting technology - all in support of the ambition to arrive at net zero by 2050.

of achieving Japan's goal of 'Net Zero Carbon by 2050' - essentially by reducing CO2 emissions in manufacturing processes of the materials industry. At present, such fossil fuels as natural gas and heavy oil are typically used in the melting pro-

**A** world-leader in glass, chemicals and high-tech materials manufacturing, AGC has been selected by the New Energy and Industrial Technology Development Organization (NEDO) as a contractor for the 'Development of Fuel Ammonia Combustion Technology for Industrial Furnaces' project. The group is currently developing the project jointly with Taiyo Nippon Sanso Corporation, National Institute of Advanced Industrial Science and Technology (AIST), as well as with Tohoku University.

## **AN ENVIRONMENTAL FOCUS**

Included among the project's challenges is that



cess of raw materials for glass production - representing an urgent need to develop combustion methods that use fuels of low environmental impact instead.

### WHY AMMONIA?

The project focuses on ammonia, which produces no CO2 when burned, is already widely-distributed as both fertiliser and industrial raw material and has the same storability and transportability as propane. Indeed the ammonia-oxygen combustion burner under installation within the architectural glass production facil-

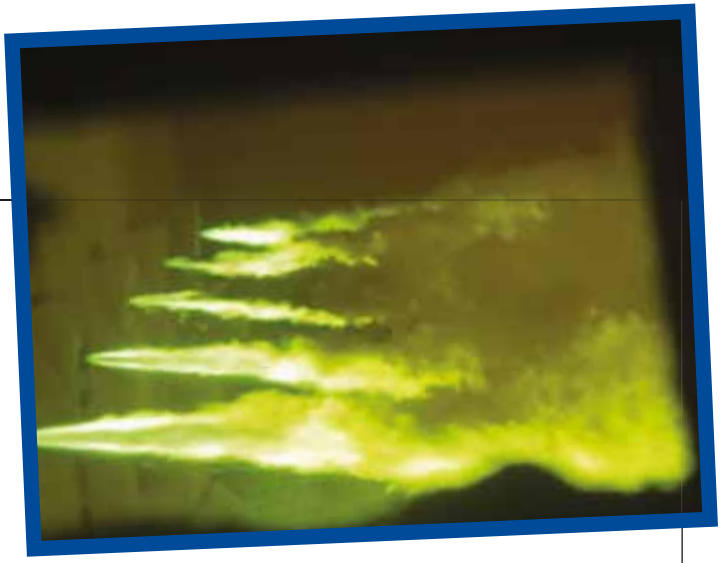
the effects of ammonia combustion on glass and the materials that comprise the melting furnace, AGC and its partners will be developing a burner that can meet environmental standards, thereupon aiming to deploy it in glass melting furnaces at full scale. In fact, going forwards the project will be considering expanding the applications beyond glass to other materials manufacturing processes - steel and aluminium for instance.

### AGC AND SUSTAINABILITY

The Group has identified the promotion of sustainable management among its priorities in its AGC plus-2023 medium-term

management plan and has set a target of net zero GHG emissions for its business activities in 2050. To date, AGC has implemented a variety of measures to reduce GHG emissions from the glass manufacturing process - including the introduction of an oxygen combustion system with high melting efficiency, fuel conversion from heavy oil to natural gas and the introduction of electric boosters for melting. To-

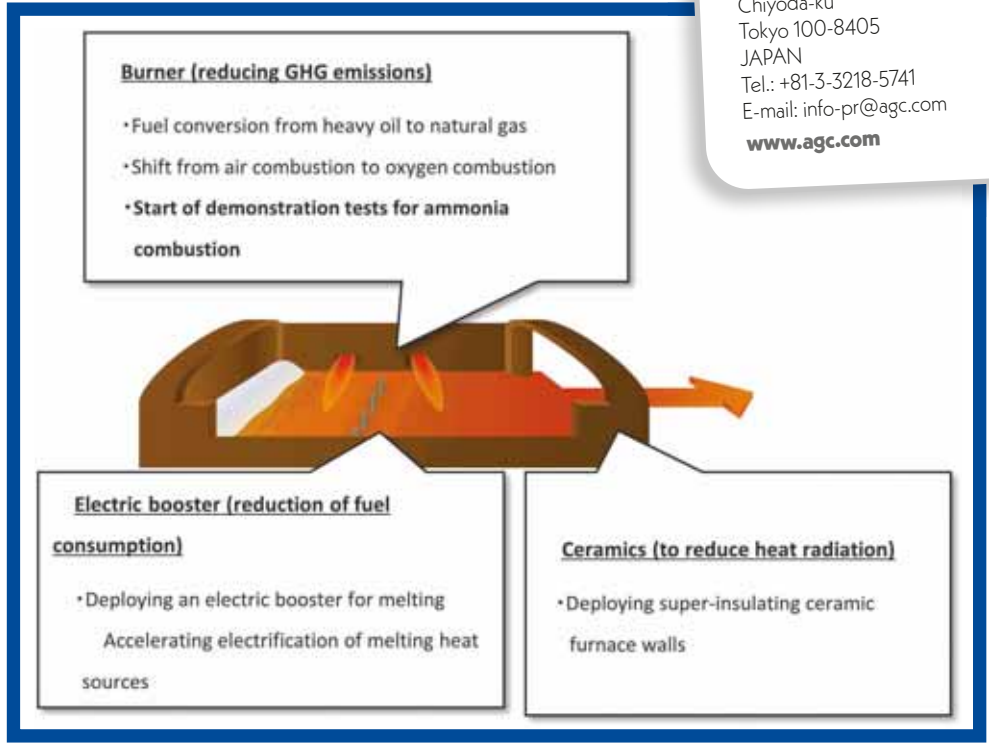
day the group continues its contribution towards a sustainable global environment by supplying products and technologies that can participate in the reduction of GHG emissions, energy saving and energy creation.



AGC Inc.

# AGC

1-5-1, Marunouchi  
Chiyoda-ku  
Tokyo 100-8405  
JAPAN  
Tel.: +81-3-3218-5741  
E-mail: info-pr@agc.com  
[www.agc.com](http://www.agc.com)





# FLATGLASS

**2023**

**world directory**

**FOREL**  
SEALING ROBOT ART. SR

WATCH THE NEW VIDEO!



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



**DOWNLOAD THE 2023 EDITION**

> **Supplier Profiles**

> **Supplier Facts & Yellow Pages**

> **Suppliers Guide - Data Sheets**

> **Supplier Sales Networks**

> **Review A year of News**

Result of Forel's decades of experience in IG processing solutions, the "High Tech" IG line was conceived to offer an unrivalled choice of options for the production of insulating glass, for both the residential and the commercial destination, and also for production of IG façade. The "High Tech" IG line is equipped by exclusive devices and systems for processing offset panes, shaped panes and manufacturing double, triple and quadruple IG units, up to 6,000 x 3,300 mm in size weighing up to 400 kg per linear meter (assembled panel), and up to 100 mm in thickness. The automatic sealing robot Art. SR "High Tech" is designed to maximize productivity and reduce waste and downtime, thanks to features such as the no-stop mode and the automatic dosing unit change.



**DESKTOP & PDF**



**MOBILE & TABLET**

**Suppliers • Yellow Pages • Sales Network • Data Sheets**



# Textiles for the glass industry

Textiles for the glass industry used to cover and line rollers and ovens for tempering flat glass and for covering bending moulds and pliers for transferring hot glass.



## 1210N Aramtex® continuous filament tapes

Aramtex® tapes are produced using 100% pure paraaramidic yarns with continuous filaments, that are usually woven in several layers, using particularly fine yarns that render the positioning surface extremely homogeneous and smooth and thus preventing the still hot sheets of glass from being scratched. Aramtex® tapes have excellent mechanical characteristics (excellent resistance to cutting, abrasion, tearing and compression) while their heat resistance characteristics remain unaltered.



## 1203N PBI Tapes

PBI tapes are fire-retardant textile products made of PBI yarns, which are particularly suitable for high temperatures. To improve the use of this tape, a double-sided adhesive has been added that helps to ensure correct positioning.

Ask for GENERAL CATALOGUE  
to our customer service

**TEXPACK®**



**ESA** European Sealing Association e.V.



Texpack® srl - unipersonale - Via Galileo Galilei, 24 - 25030 Adro (BS) Italia  
Tel. +39 030 7480168 - Fax +39 030 7480201 - info@texpack.it - www.texpack.it



# All eyes on **TUROMAS** at China Glass 2023

Taking its worthy place among key players within the glass industry, TUROMAS was recently at the New Shanghai International Exhibition Centre to attend this most important of international trade shows for the production and processing of flat glass on the Asian continent.

This year in Shanghai, from May 6-9, China Glass saw an impressive 842 exhibitors from 23 parts of the world. Together with the host country, these

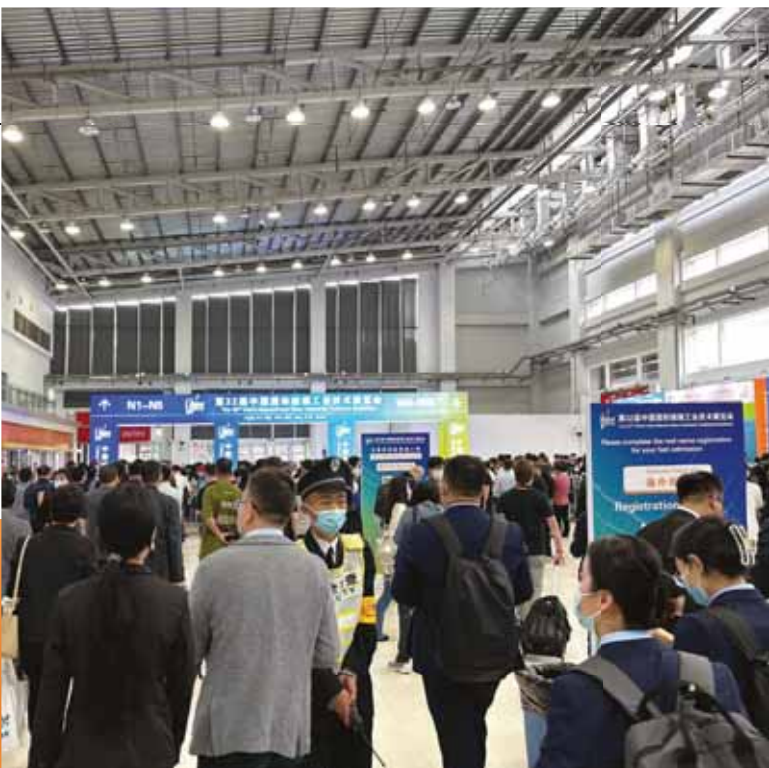
included Spain, Italy, France, Austria, Australia, Finland and Germany, among others. All put new products on display whilst showcasing their latest developments and innova-



“We’re very excited to have participated at China Glass, which saw us working side-by-side with our distributors IGE and APT. We’ve met some very interesting customers here, especially from India and Dubai - all while also reinforcing our collaboration links.”

*Antonio Ortega, Turomas CEO*





EE

“China Glass is a key international show for us. Potential customers have visited us mainly from India, but also from Spain, the United States, the Emirates, Saudi Arabia, Vietnam and Egypt. Over these few days we’ve connected with our current and future customers and also shared with them both our innovations and our know-how within the sector.”

*Álvaro Tomás, Turomas Vice President*

”

tive solutions in both glass production and processing technologies.

### MAKING A SPLASH

Turomas was jointly represented at the show by CEO Antonio Ortega and Vice President Alvaro Tomás. With more than 35 years of experience, and well-established now as a benchmark within the sector, the company seized the opportunity to exhibit its range of advanced and customised

technological solutions for flat glass while sharing its knowledge and experience both with professionals within the glass industry as well as other attendees. As for its presence at China Glass, Turomas strongly reinforced its commitment to the Asian market - especially that of India.

### INTERNATIONAL FOOTPRINT

Participating at China Glass signalled a great

opportunity for the Spanish brand to demonstrate its ability to offer cutting-edge technological solutions worldwide - so reaffirming the process of internationalisation that’s been developed at Turomas over the past 20 years.

Turomas

**TUROMAS**  
OUR PASSION, YOUR PROGRESS

Carretera Estación Km. 15, 8  
44415 Rubielos De Mora  
Teruel - Spain  
Tel.: +34-978-804158  
Fax: +34-978-804380  
E-mail: info@turomas.com

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

# Eco-friendly production of STRATO<sup>®</sup> takes carbon-free to another level

Recently introduced as the first ever sustainable EVA interlayer range to date, STRATO<sup>®</sup> is 100 percent Made in Italy. This new range of cutting-edge interlayers is manufactured through an entirely sustainable raw material supply chain.

Thanks to its highly innovative and sustainable new interlayer range, in 2022 STRATO<sup>®</sup> achieved its ISCC+ certification (International Sustainability & Carbon Certification) - proving the brand to be both highly innovative and ever-growing in its daily commitment to guaranteeing premium quality standards. The ambitious sustainability target of working with a low carbon footprint has been achieved through an uncompromising commitment to quality as well as continuous collaboration with high profile researchers. Here, for applications



that are always more specific, cooperation with customers has been improving both technical process parameters and product suitability.

### CARBON-FREE GOALS

According to recent studies, the chemical industry contributes 8 percent to global industrial greenhouse gas emissions. The challenge at STRATO® is to drive innovation in the industry whilst increasing both the sustainability and the circularity of its processes and products. Playing a role in the transition means finding the right balance between renewables and secondary raw materials. It's equally important to monitor and demonstrate product sustainability throughout the supply chain. Here's why, in order to ensure traceability and feedstock identity along the complex supply chains, Satinal has

opted for STRATO® ISCC PLUS Certification for its brand.

### ABOUT ISCC PLUS CERTIFICATION

The certification is a trusted standard that's designed for the Circular Economy. It's also a voluntary add-on for industries not addressed by specific regulations but nonetheless willing to certify their GHG Reduction efforts and results.

ISCC PLUS Certification meets both carbon-free goals:

- It verifies that companies meet environmental standards
  - It provides traceability along the supply chain
- Satinal obtained ISCC PLUS certification as an important step towards launching its certified sustainable range of products in the market while converting STRATO® EVA Interlayers range onto the carbon free pathway.



### APPLICATION OF STRATO® EVA CARBON FREE RANGE

STRATO® EVA Interlayers is an optimum partner for various purposes, as it responds to multiple needs - both for indoor and outdoor applications. The interlayers allow for the achievement of decorative effects as well as innovative and safety results in line with architectural needs.

- **STRATO® Clear** can be applied safely within buildings as well as in outdoor areas - even exposed to weather conditions. It increases the stability of laminated glass and gives a sense of lightness and transparency to commercial and residential architecture. Moreover, it provides a completely natural and neutral-looking glass thanks to its high degree of transparency and UV protection;
- **STRATO® Frost** allows daylight to cross naturally through the interiors of residential and commercial buildings while at the same time safeguarding privacy. It's practical and suitable for any type of indoor and external application;
- **STRATO® Solar Control** is a new generation of high-performance EVA film that uses nanopar-

## STRATO® EVA INTERLAYER FEATURES

- Excellent thermomechanical properties, durability and stability beyond any thermoplastic interlayer (e.g.PVB)
- Resistant to moisture for external or internal application
- Excellent adhesion to glass and inserts – no reduction of adhesion both glass and interlayer
- Premium acoustic insulation properties, improvement of sound reduction property of the laminated glass
- Resistance to high temperatures, high humidity and UV damaging rays
- Optical properties and a low light reflection effect
- Solar control properties for energy saving solutions



ticle technology. It has been formulated to give efficient solar control properties to laminated safety glass compared to clear monolithic glass and conventional clear EVA films. It is specifically formulated to provide exceptional durability when exposed to weather conditions. STRATO® Solar Control is suited for curved glass, shelters, curtain walls, storefronts, sloped/overhead glazing as well as residential and commercial façades;

● **STRATO® Bird Friendly.** A first for bird-friendly

EVA interlayer lines. It allows for a combination of the benefits of laminated safety glass with those of bird-friendly design. Different types of patterns can be achieved, including lines, dots and gradients which are customizable - depending upon the desired coverage level;

● **STRATO® Colour** is the right way to personalize buildings or design interiors with a touch of colour and without compromising the natural light of living rooms. It's great for creating interesting atmospheres without los-

ing visibility of either the outside or the inside.

Historically, Satinal SpA was the first EVA film production site in Italy - a reference point in Europe for the supply of 100 percent made in Italy STRATO® EVA interlayers. The application of STRATO® EVA film is a process that requires great precision in terms of applied temperatures and cycle times. Quality controls, which are carried out in Satinal's R&D Lab, aim to guarantee perfect adhesion of the material to the glass surface. The rich experience acquired by Satinal in the treatment of EVA-based

materials has proved essential to master the potential of the company's applications while fully exploiting their characteristics.

Satinal Spa  
TK - Strato

SATINAL



Via del Lavoro, 1  
22036 Erba (CO) - Italy  
Tel.: +39-031-870573  
E-mail: info@satinal.it

[www.satinal.it](http://www.satinal.it)



**STRATO**

## The First Low Carbon Footprint Glass Interlayers

**STRATO® a wide range of innovative, ductile and versatile products.**

STRATO® EVA film is also available in CARBON FREE

THE QUALITY OF MADE IN ITALY

SEE YOU AT



June 14\_16\_2023 | Nokia Arena | Tampere\_Finland

satinal.it



**SATINAL**  
Group



# How EUROTECH-WAY's automatic roller cleaner/polisher is wowing customers

## **A**UTOMATIC SCREEN PRINTING

With its bridge technology, Eurotech Way's new screen printing series has been developed to put more flexible, faster machines out there that have extensive, free space for the operator - mak-

ing production changeover both easier and faster with very low maintenance, and all while using high quality materials confirmed by the customer. When changing production the operator has only to position both spatulas and screen by hand. The positions of all other parts of

the machine are stored within the recipe. So by simply recalling the recipe all the machine parts will automatically position themselves correctly.

### **DRYERS**

Eurotech Way's new dryer series was developed to produce

high-performing, low consumption dryers that require little maintenance - in sync with all the company's production machinery. Its heating elements are IR lamps positioned within the upper and lower part of the heating chamber. Here the conveyor system is equipped with





After a fast and simple setup -and with the right accompanying kits- EUROTECH-WAY's RoboClean will clean multiple roller furnaces of all types. It'll save manpower, reduce stop time productions - even avoid any glass defects that are typically traced to dirty rollers. But there's more. The machine's also equipped with different disc types that can remove dirty materials from roller surfaces.



ground and polished ceramic rollers that have quick release. All motors and fans are controlled by PLC and touch-screen inverters. Temperature is controlled separately be-

tween the upper and lower parts of the rollers by a special thermocouple, together with related self-regulators. A capillary suction system placed on the entire perimeter of the heating elements will prevent

any leakage of drying fumes generated by the paints - all thanks to separate regulations at each suction point. The cooling system consists of a set of separate, high-pressure electro fans for the

system both above and below the glass.

### EDGE ROLLER COATING

This machine can be equipped with an applicator





roller for different enamels and processes.

The head is fitted with devices for manual or automatic enamel feeding, with a closed protective case for operator safety. A new installed system, developed by Eurotech Way, will deal with problems of overlapping enamel during intersection of the edges - solving it almost completely. The roller conveyor is equipped with a lifting bench that guarantees free movement of the glass panels by way of supporting free spheres. Close attention has been paid to the applicator and dosing rollers, as well as to the enamel containment system that will keep the rollers inside perfectly clean without damaging them.

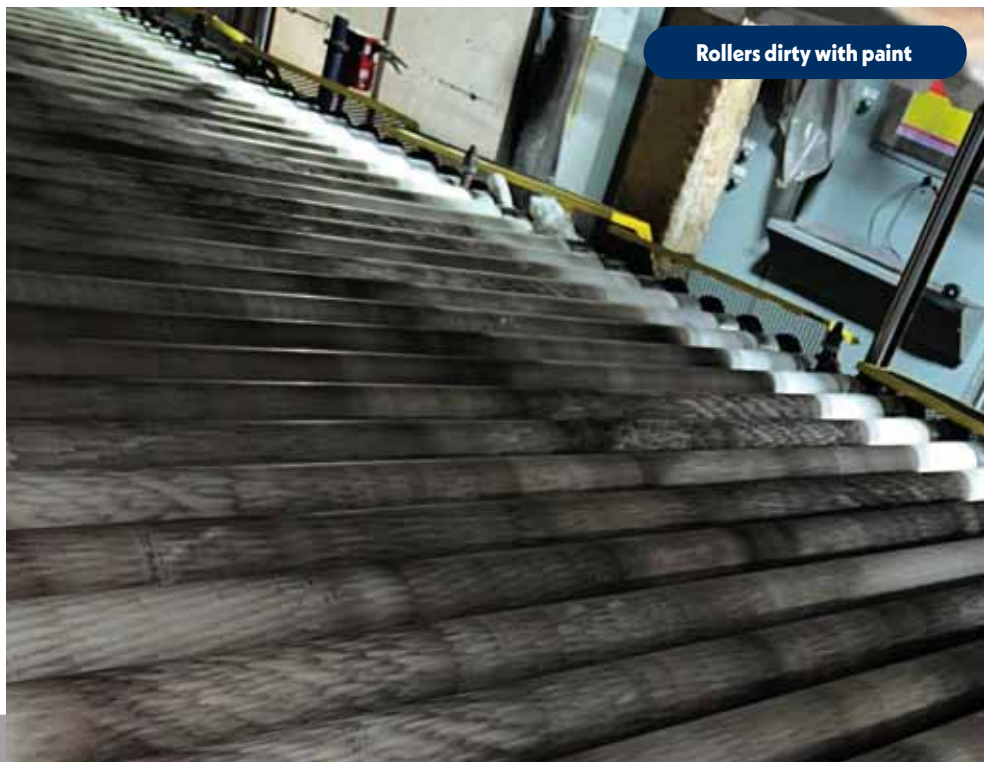
**EUROTECH-WAY Srl**



Via Benedetto Croce, 14  
42014 Castellarano RE - ITALY  
Tel. +39 0536 823563 E-mail  
E-mail: info@eurotech-way.com  
[www.eurotech-way.com](http://www.eurotech-way.com)

## MAIN ROBOCLEAN PERFORMANCE

- With the same RoboClean, and proper kits, you can clean multiple roller furnaces and of any type !!
- With this kits you can change the RoboClean set-up in a very fast and simple way.
- Using the RoboClean you save manpower, reduction productions stop time, and avoid any defect on the glass, coming from dirty rollers.
- The RoboClean could be equipped with different type of discs able to remove any kind of dirty materials from rollers surface.



Rollers dirty with paint



Cleaned with RoboClean



WAY TO  
GROW

Glass  
Performance  
Days 2023  
Finland

# GPD Finland 2023

June 14–16 Tampere Finland

## We are calling for

Abstracts

Sponsors

Exhibitors

Deadline for submitting abstracts is 20 November, 2022.

More info at [www.gpd.fi](http://www.gpd.fi)  
#GPD2023



# E-TECH EUROPE 2024

**THE AUTOMOTIVE ELECTRIFICATION INDUSTRY**  
European Exhibition and Conference on Advanced Batteries  
and Technologies for Electric Vehicles and E-Mobility

3<sup>RD</sup> EDITION

**7-8 MAY 2024**

**BOLOGNA EXHIBITION CENTRE - ITALY**

IN COLLABORATION WITH



© MERCEDES

ORGANIZED BY



CO-LOCATED WITH

**RE-BATTERY 2023**

**INTERIORS**

GLOBAL • 2024

**WWW.E-TECH.SHOW**

# REFRIGERA

# 2023

3<sup>RD</sup>  
EDITION

THE INTERNATIONAL  
EVENT DEDICATED  
TO THE ENTIRE  
INDUSTRIAL,  
COMMERCIAL  
AND LOGISTICS  
REFRIGERATION  
INDUSTRY

7-9  
NOVEMBER  
2023

BOLOGNA  
EXHIBITION  
CENTRE  
ITALY



ORGANIZED BY:



Via Antonio Gramsci 57  
20032 Cormano, Milan (Italy)  
Tel.: +39-02-66306866

INTERNATIONAL TRADE FAIR  
CERTIFIED BY:



162/2019  
RFGX19E

IN COOPERATION WITH:



WWW.REFRIGERA.SHOW



# Proliner distinguishes **PRODIM** for pioneering glass packaging

As a leading specialist within its sector, Prodim invests heavily in the continuous development of its Proliner glass packages - ever striving to make the best even better.

## **PROLINER ARCHITECTURAL GLASS PACKAGE: EASY TO USE, ACCURATE AND MEASURABLE IN MULTIPLE PLANES**

### **The package includes:**

- Measurement of multiple planes
- Leap function
- Edit all drawings onsite
- Motion detection raises an alarm if the Proliner is accidentally moved - thus preventing incorrect measurements
- Textured grip on the measuring pen for easier handling
- Good visibility of the measuring wire
- Excellent battery management
- Large storage capacity
- Smartphone connection

As supplier of complete digital templating package solutions to glass templators and fabricators for over two decades now, PRODIM's Proliner measuring device has always been at the centre of each package - completed by dedicated digital templating software for the industry.

(Android) to the Proliner

- Transfer of all files from Proliner to phone, so directly to the office via Bluetooth

### **PRODIM FACTORY 5.0 - INTEGRATED PHOTOGRAMMETRY**

Prodim's latest software release 'Prodim Factory 5.0' sets a new bar for today's fabricator. The seamless integration of Proliner on site measurements with real life pictures provides insight and project control never achieved before in the industry-effectively enhanc-

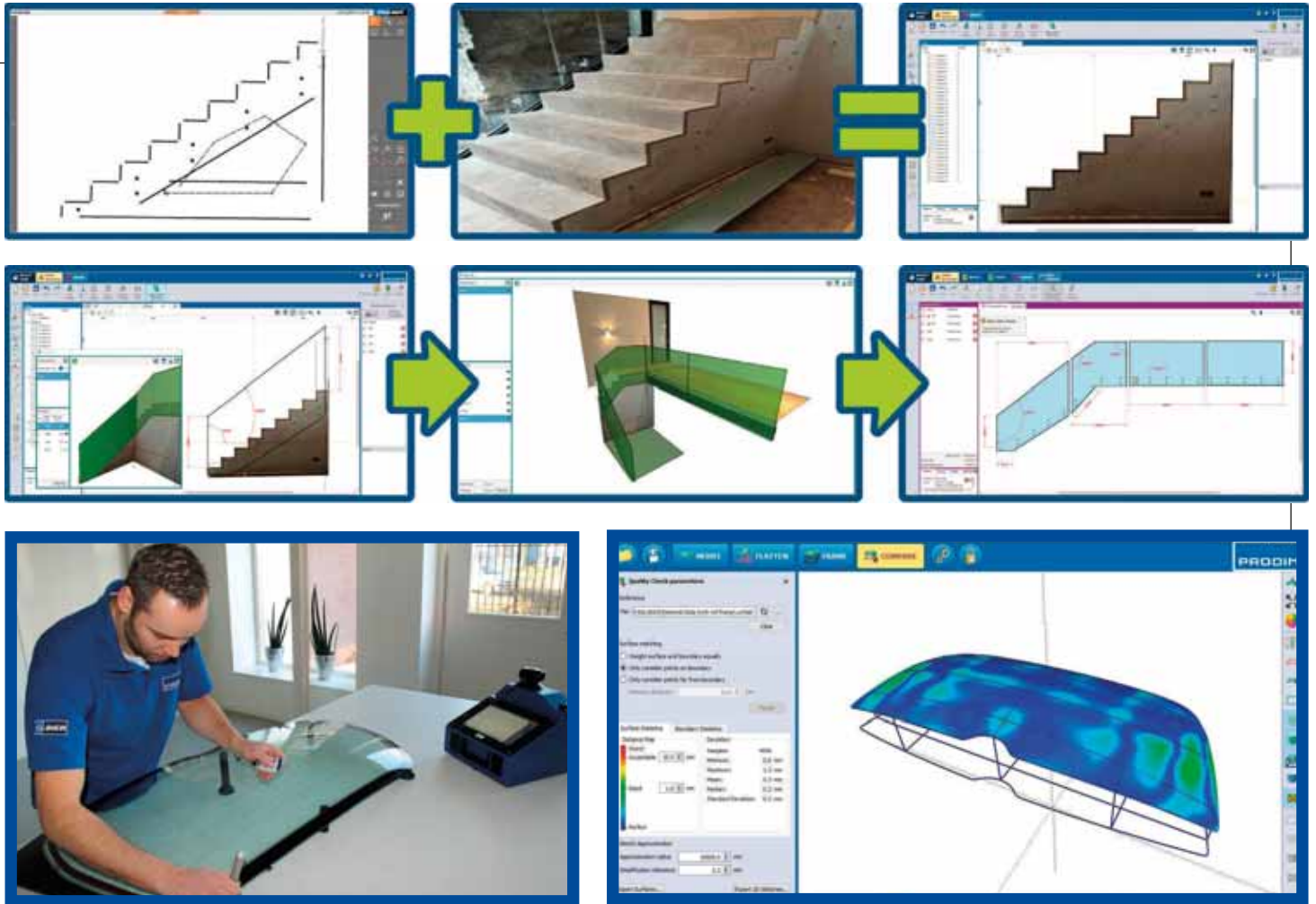
ing digital templates with photos.

The Proliner can be used to accurately record rel-

evant data points while reviewing and editing measurements as necessary with the integrated CAD software on the device's 10-inch touchscreen.

Site pictures can be inserted behind measure-





ments or drawings within the factory software to ensure that no measuring is forgotten. Not only pictures can be displayed in either drawing or editing view - even in the rotating

2D/3D view. This increases awareness and guidance during editing whilst reducing the risk of mistakes. Thicknesses can be assigned to digital templates to simulate installation

for a comprehensive understanding of the final product. Also, views can be shared with clients to allow them to assess such design features as height and provide informed feedback.

duction shapes

- Create digital support frames to construct templates
- 3D match surface models for IST and SOLL quality control.



### PROLINER BENT GLASS PACKAGE

By measuring and processing digital templates of double curved glass constructions, Prodim's Bent Glass functionalities allow glass manufacturers to:

- Create 3D Glass surfaces based on Proliner measurements
- Transform 3D surfaces to 2D unfolded pro-

**Prodim International Bv**

**PRODIM**

Lage Dijk 26, 5705 BZ  
 Helmond - The Netherlands  
 Tel.: +31-492-57-9050  
 E-mail: info@prodim-systems.com  
[www.prodim-systems.com](http://www.prodim-systems.com)



# Automotive Glass Technology: IOCCO explains today's industry developments

1970 with the presentation of the acoustic windscreen: a solution that's capable of drastically reducing noise inside the passenger compartment - all to ensure greater driving comfort thanks to the absence of hissing and other noises which can be unpleasant whilst travelling. Indeed automotive glass has improved much over the years - becoming ever more technological and connected.

## MILEAGE COVERED THUS FAR

Typically known as industry 3.0 and industry 4.0 respectively, the third and fourth industrial revolutions proved fundamental in making the production and installation of such innovative automotive glass possible according to increasingly restrictive specifications. The use of high-performance network protocols (BUS), robots combined with artificial vision systems, as well as innovative machinery for assembly and pre-lamination (de-airing), all made it possible to associate precision and reliability with high production ranges (flow rates). Now modern windshields have integrated radar and cameras that can detect



**O**n today's car windows, the simple piece of protective glass for a wind shelter takes up progressively more space over an expanded vehicle surface. Now it guarantees up to 30 percent of the torsional rigidity of the car - which also significantly raises the structural task value. The revolution took place in





Identifying changes over time to the windshield - bringing it to where it is now- IOCCO recently explained to E-Tech Europe attendees how automotive is in constant flux respecting developments in car safety. The company was speaking at the trade show on evolving production machinery and its impact upon product evolution.

the presence of pedestrians, cyclists or animals, together with the head-up display which shows vehicle gear parameters on the windshield - thereby ensuring drivers keep their eyes trained on the road.

### POLYMER DISPERSED LIQUID CRYSTAL TECHNOLOGY

Car makers have paid ever more attention to developing laminated car roofs in recent years. To date, cars with roofs made entirely of laminated glass are increasingly visible on the market. The electrochromic roof is among the most innovative features of the latest car models. A dynamic glass type, it's capable of modifying optical characteristics on command - thereby varying the shielding level

from solar and visible radiation. Here the automotive sector leveraged PDLC (Polymer Dispersed Liquid Crystal) technology. The latter is based upon a thin film containing polymers and liquid crystals on which a slight electric current is applied. As electricity passes through the central film the liquid crystals line up in an orderly manner to allow the passage of sunlight - making the glass transparent. While in their normal state, i.e. without electricity, the crystals arrange themselves randomly and give the crystal an opaque appearance.

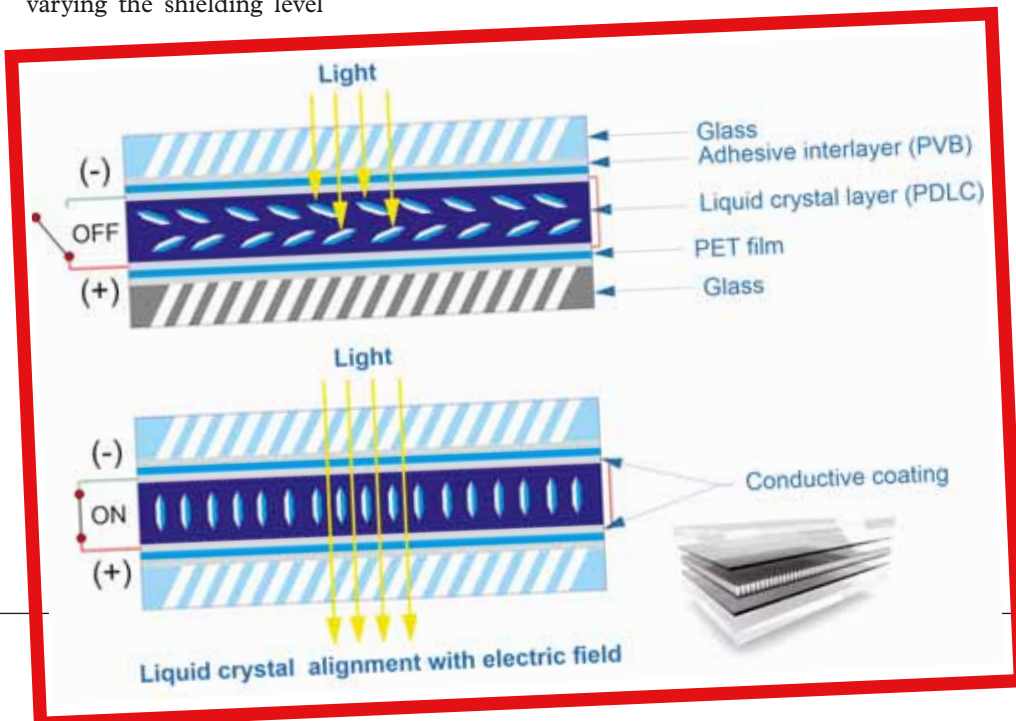
### CONTRIBUTION TO THE INDUSTRY

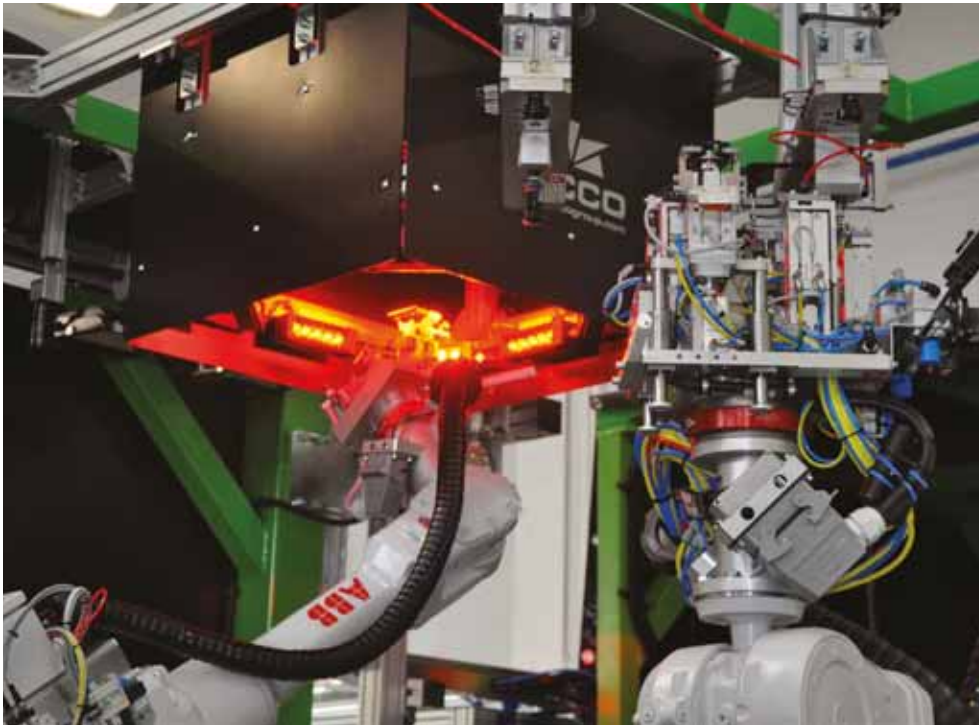
To assemble this inter-layer type IOCCO de-



veloped complex, robot-based systems combined with artificial vision systems. The production process phases most relevant in respect of tech-

nological production innovation are those of assembly and pre-lamination (namely, the de-airing process). Here's why the R&D team at IOCCO has continuously developed solutions in line with these trends since 2012 - placing highly productive assembly and pre-lamination systems on the market which are unique worldwide. These allow for precise assembly phases and the subsequent phase of air extraction inside the laminate as well as the fusion and encapsulation of these technological interlayers. To date this system can produce windshields, side windows and sun-roofs with production rates of up to 18 sec-





coated glass use with high solar radiation shielding parameters. Added value operations is another production phase that's constantly evolving - continuously generating engineering solutions. This production phase is linked to every ADAS innovation regarding the assembly of all brackets, supports and such devices as Rain Sensors, cameras, antennas, GPS as well as the installation of those gaskets necessary for assembly on the car. In sum, automotive glass is in a continuous evolution - and here engineering solutions are the key to opening new ways to process it.

# ecovadis

Business Sustainability Ratings

onds per glass. Thanks to advanced sensors and intelligent software the plant is able to calculate the correct production parameters while tracing the technological process for each particular product and changing set-up

in the event of unforeseen anomalies. Conformant with current European Commission directives regarding Industry 5.0 that's an important step usability-wise. The software here has been designed and developed to

make it easily usable, to set up the machinery and maintain it as well as to evaluate and adapt electrical absorption when it exceeds the production requirement.

## LIGHTWEIGHTING

Another step forward for automotive laminated glass has been that of substituting standard glass with ultrathin glass - thus reducing car weight and, by extension, CO2 emissions. The use of laminated glass for cars also affords the advantage of

locco Srl



**IOCCO**<sup>®</sup>  
www.ioccogroup.com

Viale Unione Europea, 36  
Vasto 66054 - Italy  
Tel.: +39-0873-318330  
E-mail: info@ioccogroup.com  
www.ioccogroup.com



welcome Collaborative Industry 5.0  
we are ready to go!

2023

OCT 31 - NOV 2

Georgia World  
Congress Center  
ATLANTA, GA

20 YEARS  
OF GLASSBUILD

# GlassBuild

## AMERICA



THE GLASS, WINDOW & DOOR EXPO

BIGGER BUSINESS HAPPENS AT GLASSBUILD.

STAY AHEAD OF THE INDUSTRY, CODES, TRENDS,  
AND YOUR COMPETITION AT GLASSBUILD AMERICA.



## THE TRADITION CONTINUES

Join the rest of the industry and see why more glaziers, fabricators, window & door manufacturers, dealers and suppliers reunite at GlassBuild America—more than any other conference, trade show or expo in the Western Hemisphere—for the buying/selling, education, networking, and supply chain solutions they need to grow and thrive.

## THE BIGGEST GLASS & FENESTRATION EVENT OF THE YEAR

MORE EXHIBITORS  
MORE ATTENDEES  
MORE OPPORTUNITIES

PRESENTED BY



WITH ASSOCIATION SPONSOR



GLASSBUILD.COM



# FOREL boosts RAVENSBY GLASS' guarantee of signature product excellence

Against the backdrop of a distinguished quality in its double and triple glazed units, interior glass and façades, distributed throughout the UK, RAVENSBY GLASS' specialized products come typically accompanied by premium service and customer care - all thanks to glass processing that's also helped on by the company's IGU lines from FOREL.

The history of Ravensby Glass has roots in the 19th century and the foundation of the Malcolm, Ogilvie & Co. Ltd group in 1847 - at that time dedicated to textile manufacturing. Over the years -decades rather- the group diversified its activities, investing in various businesses. It reached the glass sector in 1986 with the foundation of Ravensby Glass. Its long history exhibits one constant and unusual element, namely that company ownership has remained intact for over





Nicholas Cunningham - Hamish Ogilvie



Harru Ogilvie

160 years. Over five generations the founding families Ogilvie and Cunningham have run the group with passion and foresight - investing and evolving as the markets and opportunities dictated. It now has over 150 employees and 7000 square metres of production space. The editorial team at Glass Technology International met up recently with current owners Hamish Ogilvie (CEO) and Nicholas Cunningham (CFO) - both great-grandsons of the founders.

### A HISTORY OF AIMING HIGH

Says Ogilvie: “After diversifying into different sec-

tors, we have been in the glass business as processors since the 1980s. Over the years we have always invested in increasing the quality of our glass and the efficiency of our service. At our Tom Johnston Road site in Dundee where we have consolidated our activity for greater efficiency, we have created a hybrid plant dedicated to residential glass, which we distribute extensively in Scotland, and commercial glass, which we supply throughout the UK. We have put a lot of effort into having efficient logistics across such a large territory. In this latter regard, we have established a reputation as a reliable supplier, which

is one of the company’s assets.” Ravensby Glass presents itself as a structured company. There are two warehouses of large panes within the production plant, from which two horizontal cutting lines are fed. The panes are then processed and tempered where needed before being directed to one of three existing lines for the production of insulating glass.

### RETRACING A TRAJECTORY OF GROWTH

“In 2019 we decided to enhance our production with a new insulating glass line,” explains Ogilvie “and we accepted an invitation to visit the Forel plant in Italy. On that occasion we were very impressed by the technology and solutions developed, so we decided to purchase our first Forel IGU Line along with a

Vertical Processing Line, for the production of processed glass pre-tempering. After overcoming the initial bedding in period of the new equipment (every machine of every brand has its own peculiarities) we were suitably satisfied with both lines’ performance, and as part of our growth strategy, we decided to order a second IGU line, to process projects related to both our residential and commercial sectors. Today these two Forel IGU Lines represent the core of our production and the Vertical Edging Line processes the bulk of our glass production, an investment we are particularly satisfied with.” The Forel machinery in operation at Ravensby Glass are; the ‘Residential’ IG line, capable of processing double glazing units up to 4000 x 2500 mm, with





rigid or flexible spacer bar, and a 'High Tech' IG line with a wide range of options such as triple/quadruple glazing, all sides stepped and large piece processing of up to 5000 x 2800 mm. The edging machine is Forel Art. EM, appreciated worldwide and renowned for its precision and output performance in arissing, grinding and polishing.

### LOOKING FORWARD WITH COURAGE

Like all manufacturing companies, Ravensby Glass faces the challenges of a competitive market in

which new variables, such as rising energy costs and enhanced requirements for thermal performance have recently appeared. "We are managing the complexities of this economic phase in different ways," explains Cunningham. "On the one hand, we have turned up the heat on our energy suppliers, particularly when our supply contract is expiring. On the other we're rationalizing our production flow, for example by using only one toughening plant instead of two. This particular situation, however, does not change one basic reality: if glass produc-

tion is already highly automated today then it will have to be even more so in the future. Forel's system brings clear advantages in terms of productivity - allowing for constant digital control over the work in progress while facilitating the operator's task. This allows us to guarantee our customer the conformity of our product." Given its position in the UK market, Ravensby Glass has its finger on the pulse of both commercial and residential glass trends: two different realities that are reacting in different ways in this first half of 2023.

### AN UPBEAT FORECAST

"Contrary to what might have been assumed a year ago, the demand for commercial glass shows no sign of contracting, quite the contrary," continues Ogilvie. "The construction-architectural sector in the UK is in full swing and the need for façades, shopfronts and other installations will remain constant well into 2024. Despite a dampening effect anticipated by the rising cost of raw materials, the current willingness to significantly invest in commercial glass can't be denied - particularly for triple glaz-





ing. In fact, in 2022, our orders for triple glazing were only at 10 percent, whereas today they're already at 35 percent. As for the residential market, it's stable at the moment. However, I believe that the demand for triple glazing will also increase here before long in the wake of what's happening in other sectors. From this point

of view, Ravensby Glass is well-prepared: when it comes to triple glazing, the Forel line has already demonstrated really great performance.”



**HAMISH OGILVIE**  
**CEO RAVENSBY GLASS**

**FOREL SpA**

**FOREL**

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

**R Ravensby Glass**

**RAVENSBY GLASS Ltd**  
8 Tom Johnston Road West  
Pitkerro Ind. Est - Dundee  
DD4 8XD - UNITED KINGDOM  
Tel.: +44-1382-480842  
Fax: +44-1382-480323  
E-mail: info@ravensbyglass.co.uk  
[www.ravensbyglass.co.uk](http://www.ravensbyglass.co.uk)





# Help desk at **CUGHER GLASS** a beacon of service excellence

In 2020 the help desk department at Cugher Glass hit the ground running. Over the intervening years till now it's gained ever more traction - raising a diffused consciousness throughout the company of renewing its assistance service to customers as a key priority that's strengthened year after year.

The service itself is composed by a dedicated team of experts - all of whom are seasoned workers within the glass industry and can assist customers at any time in the event of some machine or line problem. This is achieved thanks to well-structured organization which also leverages customized technologies. Here each client can benefit from:

- a dedicated number and email
- a hot line that's available from Monday to Saturday (from 07h00 to 00h00)
- a ticketing system by which requests are all tracked
- on site assistance, if needed





Ever since its launching in 2020, CUGHER GLASS' help desk has come to rank among the company's most coveted services - all thanks to its core values, which typically insist that no project ever ends simply upon the commissioning of a plant. Continuous assistance, too, remains no less essential to defining the ongoing success of any customer relationship over time.



**Yes,  
we help!**



### **IN SYNC WITH THE CLIENT**

A ticketing system maintains continuous dialogue between customers and the Cugher help desk team over time. Each client has clear credentials to access the portal and the system collects all requests - however detailed and exhaustive - thereby creating a history of every form of assistance offered, such that no information can get lost. Issues of any kind can be solved via remote connection, or even very swiftly on-site as needed, so as to not to lose production time. During on-site interventions, Cugher operators can also take advantage of smart glasses by which to work freely whilst sharing a remote view with some other technician in real-time - so ensuring the collaboration of all Cugher experts if necessitated.

### **CONTRACTUAL FEATURES**

With a customization that fully characterizes the company's client-centricity and in order to best satisfy individual preferences, the Cugher commercial department has elaborated different proposals to ensure help desk service access. Indeed, included among the options is the chance to have a mainte-

nance contract that's defined according to specific features of the customer's line - a service designed to ensure continuous production that's free of interruptions attributed to lengthy downtime machine faults. Besides the aforementioned benefits, the contract includes scheduled visits for preventive maintenance - all from expert technicians who will also provide suggestions to ensure machine capability can be best exploited to meet the latest requirements. In relation to spare parts management as well, the help desk works closely in sync with Cugher's most consolidated service system. In this way Cugher Glass has established its approach to customers via the format of a consultancy relationship - always from the company's solid commitment towards reinforcing its assistance service to pursue a key goal of the company, i.e. to build trust over time.

**Cugher Glass Srl**



Via G. di Vittorio, 70  
20026 Novate Milanese (MI)  
Italy  
Tel.: +39-02-66207762  
Fax.: +39-02-662-02917  
E-mail: info@cugher.com  
[www.cugher.com](http://www.cugher.com)

# Great success for **PUJOL** at landmark industry event

The recent 2023 edition of China Glass turned out to be an excellent opportunity for Pujol as it sought to both strengthen its ties and enlarge its brand footprint

in Asia. Over the four days of the event, interesting contacts were maintained with current clients as well as potential clients from Asia, Oceania, Middle East and Africa.

## FURNACES

At the company's booth in Shanghai visitors were attended by the team as they got wowed by the extensive range of furnaces

for the treatment of glass, including the successful PUJOL 100 PBV+, an oven developed and designed to help customers



Again this year, following the lengthy shutdown brought on by the COVID pandemic, PUJOL showed the very best of its range at Asia's most important trade show for companies operating within the glass industry.

work with PVB/EVA/ionoplast interlayers (SGP) layers without the need for a climate-controlled room, additional fixed operating costs, expensive calendaring processes, or inefficient heating/air conditioning systems for humidity and temperature control.

### TEMPER FLEX

Pujol also showcased its new TEMPER FLEX tempering glass oven which - result of the company's recent acquisition of the glass division of Teknokilns, an Italian company which has allowed Pujol to expand its portfolio and enter the tempered glass sector with force. Indeed the new TEMPER FLEX oven range offers superb performance. Equipped with several innovative technological solutions, it is excellently-suited for layer and selective glass tempering low emissivity. Pujol was able to demonstrate the low energy consumption of its models (kw/m<sup>2</sup>), including all processed products, as well as the high optical quality due to low planimetry distortion - all accompanied by great flexibility and operational adaptability, with low

maintenance and, above all, a very modest amount of installed power that's needed for its commissioning.

### EVALAM

Pujol also exhibited its EVALAM product range - a world leader in EVA manufacturing for such architectural use as:

- **EVALAM VISUAL:** a film developed for lamination experts who're after a product with a high added value. Its excellent transparency, high adhesive strength, superb acoustic insulation performance and impressive crosslinking index all yield a truly great product - characteristics that make Evalam Visual an optimum lamination solution for areas where optics and durability are essential requirements.
- **EVALAM N-FLUENT:** a product that was designed to minimize the overall costs of the post-lamination process. Its innovative formula prevents product fluidity and saves both time and costs in edge-cleaning. This in turn translates into direct benefits for the processor.
- **EVALAM COLOR:** a product that was devel-



oped for temperatures in the 120°C range without causing colour changes near the edges, thereby ensuring greater colour durability over time. It has a range of 5 colours (white, super white, matte, acid white and black) which meets European 12543-4:2011 standards for outdoor installation. Evalam's colour range is complemented by ten colours when, when combined, offer a wide variety of tones to meet the requirements of decorators.

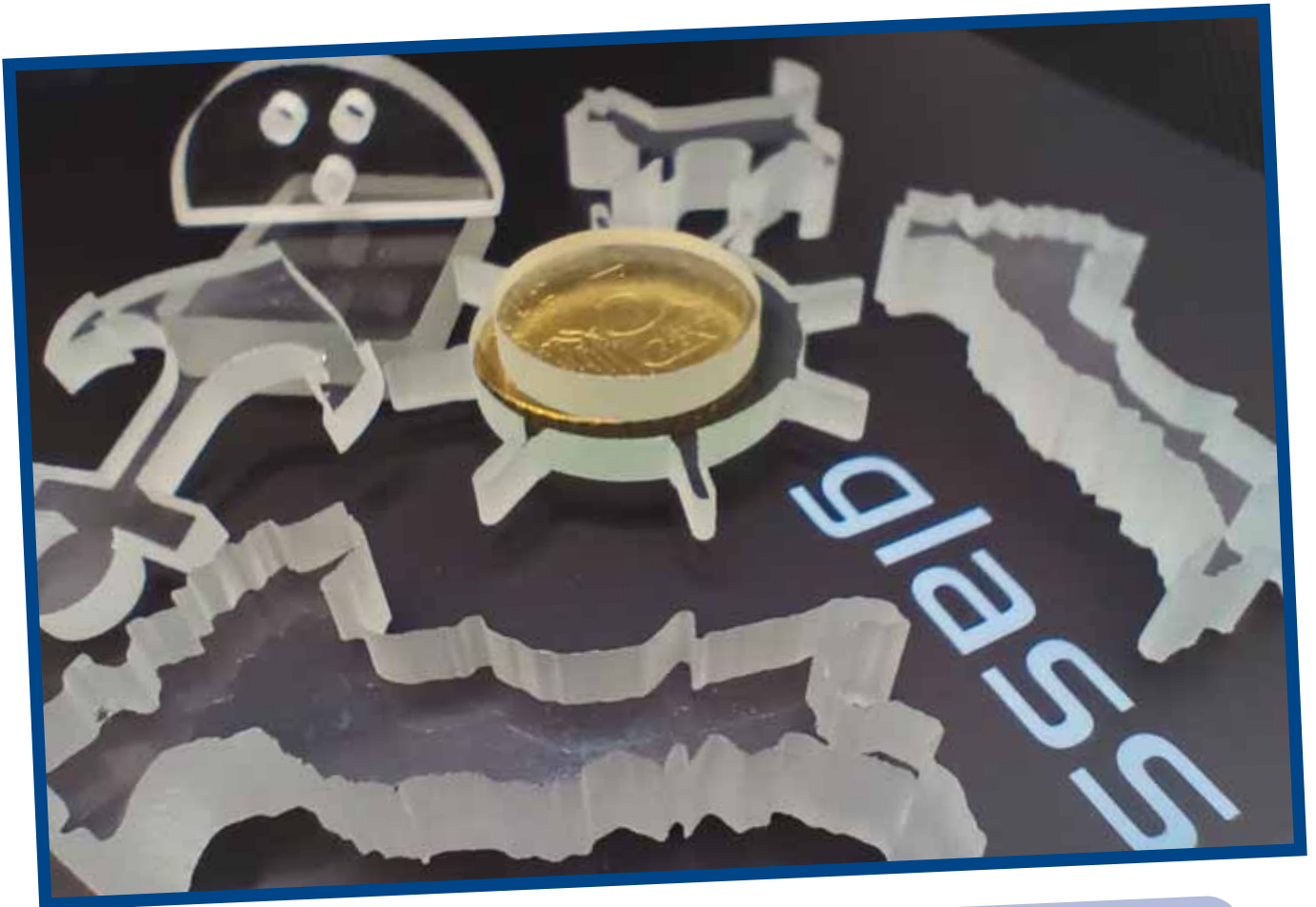
- **AB-AR:** a structural interlayer that provides post-breakage security when tempered glass is used. AB-AR is an interlayer that has high

mechanical resistance performance. It's especially stable after breakage in environments exceeding 50°C. As such, AB-AR is an innovative solution for geographical areas that have high temperatures for much of the year.

**PUJOL GROUP**

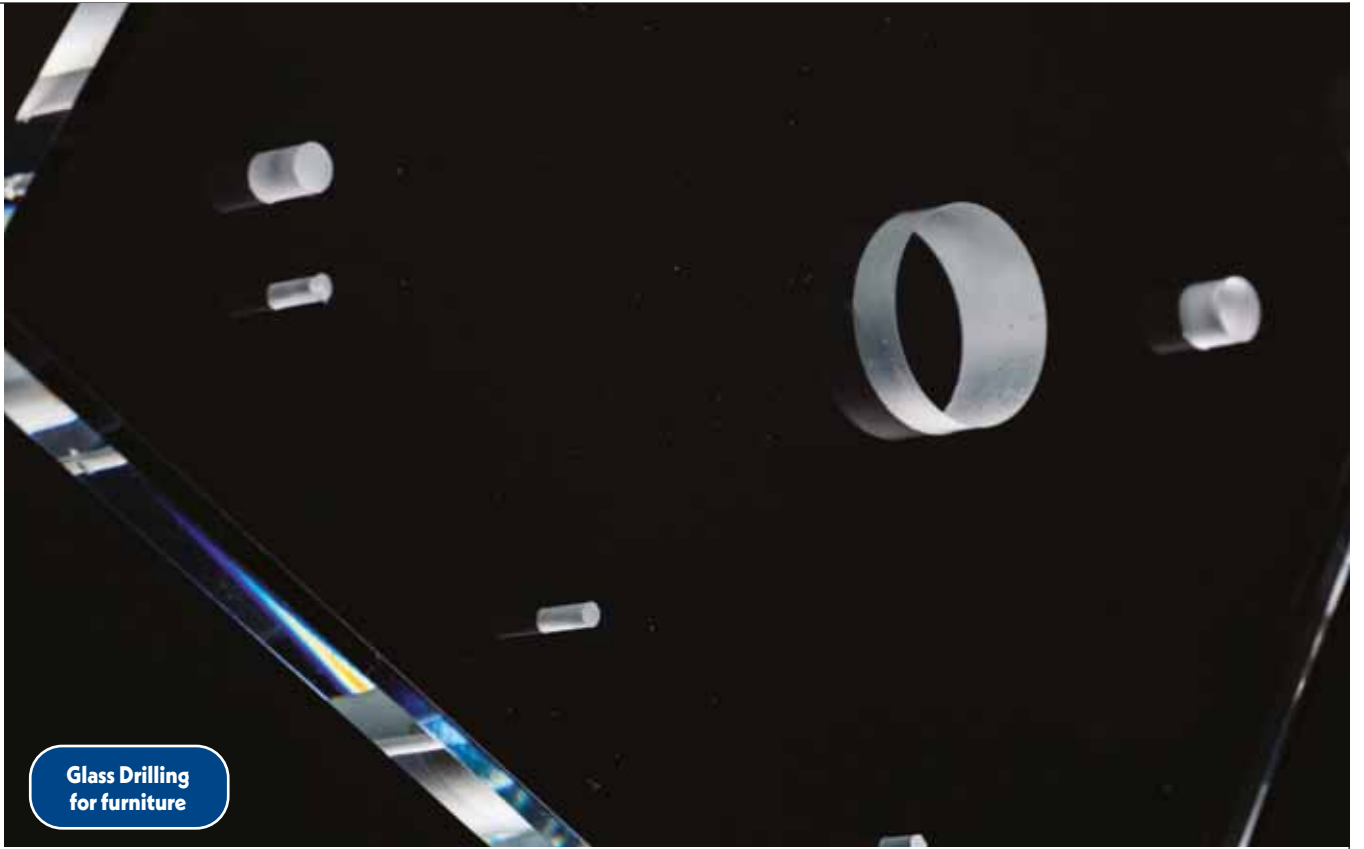
**PUJOL GROUP**  
 C/ del Pla  
 108-110 Sant Feliu del Llobregat  
 08980 Barcelona - SPAIN  
 Tel.: +34-936 855-672  
 Fax: +34-936-855-392  
[www.pujolgroup.net](http://www.pujolgroup.net)

# The **GLASS COMPANY** revolution

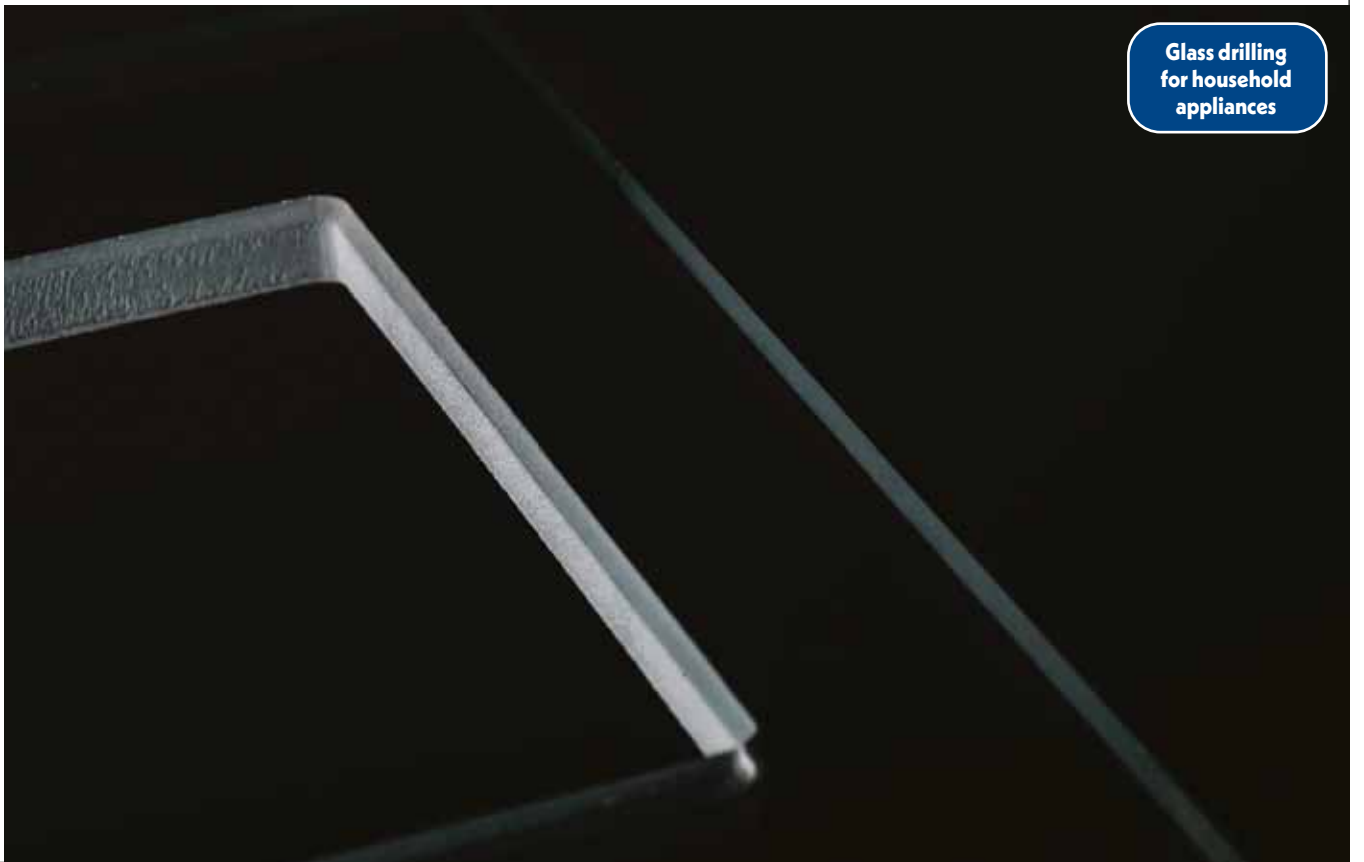


**G**lass Company produces and markets glass processing machines - especially systems for safety glass production, as well as related machines and equipment. Not only. Innovation, economy and versatility all mark its distinguishing characteristics. But it doesn't end there. Add the attention that

**Small but not too small. Big but not too big. Such is the 'right balance' to which Pesaro-based GLASS COMPANY aspires. Founded in 2001, the company is headed by an entrepreneur who's adamantly convinced that market niches represent a key asset to be explored and faced as challenges.**



**Glass Drilling  
for furniture**



**Glass drilling  
for household  
appliances**

company founder Claudio Bernabucci pays to his surroundings. After taking inspiration from what his customers need, there are no limits to what can be invented.

## BEGINNING FROM THE CUSTOMER

At a time when companies display catalogues and vast product ranges as their business cards, Bernabucci says: "We're small. We don't do everything. Neither do we have a catalogue of machines. Why? Because we build them only when the customer asks us for something particular that isn't out there on the market. Above all, we're official distributors for some important multinationals - all supported by consultancy and the development of niche technologies." Indeed not only processing companies rely upon Glass Company to develop new glass processing technologies. Manufacturing companies do too.

## LASER AS THE NEW FRONTIER

A laser solely for drilling and making notches and grooves upon glass edges - as well as recesses and slots- LaserMek Drill truly signals the future, given that drilling can be of any shape. These start from the classic round hole to holes of any geometry, whether oval, rectangular or trapezoidal, among others. Maximum hole

size is 80x80mm, which can be increased up to 100x100mm. Here working times are similar to those for classic water jet cutting systems, albeit with a great advantage: besides working water-free, and so without abrasion, they generate no waste necessitating disposal and, above all, they operate at a power of circa 3Kw.

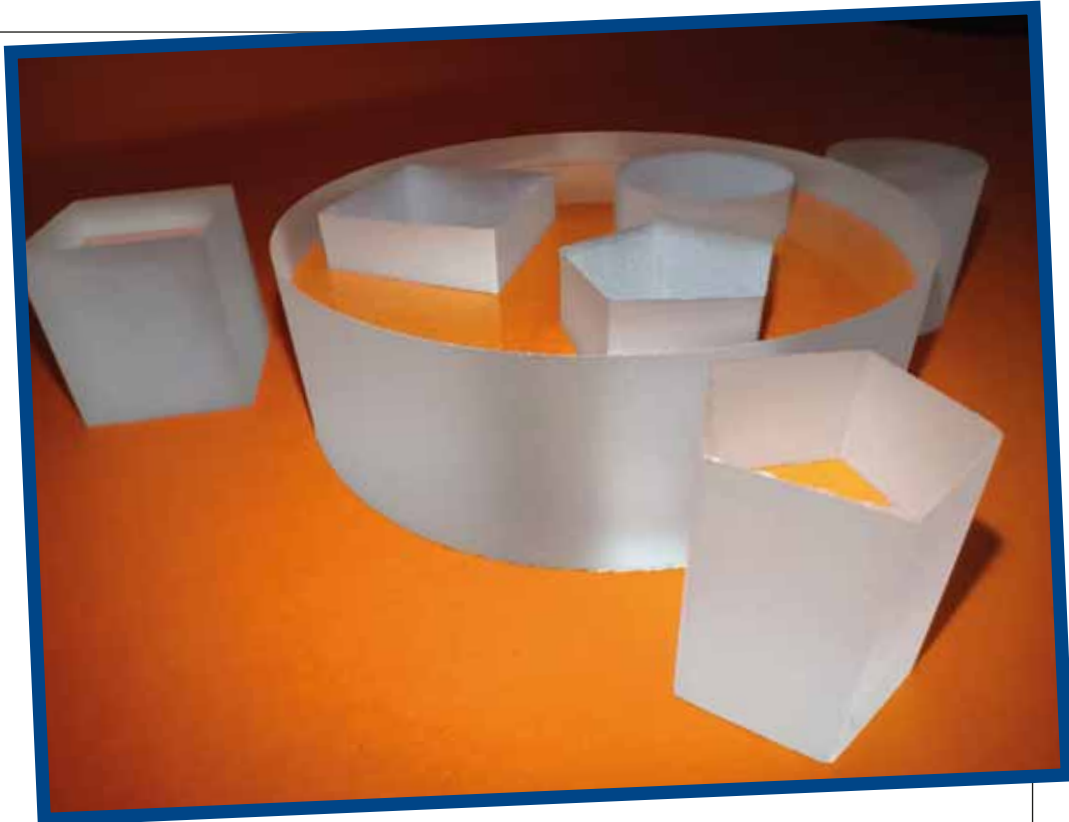
## LASERMEK DRILL AND THE ENVIRONMENT

The attention the company pays to the environment gains ever greater importance - not only in financial terms but also ethically. "There are various reasons why I think laser is the future," explains Bernabucci. "It operates with low energy consumption and has only modest envi-

ronmental impact given that it doesn't use water, oils, diamonds or abrasive tools. Moreover, it works almost completely soundlessly and, since there are no mechanical tools, it can guarantee extreme drilling precision. The laser beam doesn't wear out like common tools, so infinite repetition of the drilling tolerances is guaranteed."

LaserMek Drill allows for significant energy savings at a time when energy costs weigh heavily upon the entire industrial sector. There is also a great economy of water use - hence greater respect for the environment. Duration of the laser source exceeds thousands of working hours, making this technology a genuine alternative to traditional drilling systems. The laser is situated within that techni-

cal segment of the market which caters to naval medical and mechanical, among others, which requires maximum precision, together with minimally-invasive cuts on the glass plate. Such glasses have become increasingly advanced over time and require special precautions - both in cutting and grinding. The non-contact laser performs these operations without risking the glass plate.



**Glass Company Srl**

**GLASSCOMPANY**

Via Brigata Garibaldi, 33/35  
 61122 Pesaro (PU) - Italy  
 Tel.: +39-0721-283519  
 Fax: +39-0721-283310  
 E-mail: info@glasscompany.com  
[www.glasscompany.com](http://www.glasscompany.com)



The 4<sup>th</sup> Edition

TRENDS AND INNOVATIONS IN GLASS

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

INDIA'S PREMIER EXHIBITION FOR THE GLASS PRODUCTION

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

**14 | 15 | 16** **SEPTEMBER 2023**

HALL NO. 2, BOMBAY EXHIBITION CENTER, GOREGAON (EAST), MUMBAI, INDIA

For more details please contact: **Vivek Bohra**, Project Head

Tel.: +91 (0) 124 4544 510 | Mob.: +91 96543 93213 | Email: [BohraV@md-india.com](mailto:BohraV@md-india.com)

Powered by



Supporting Associations

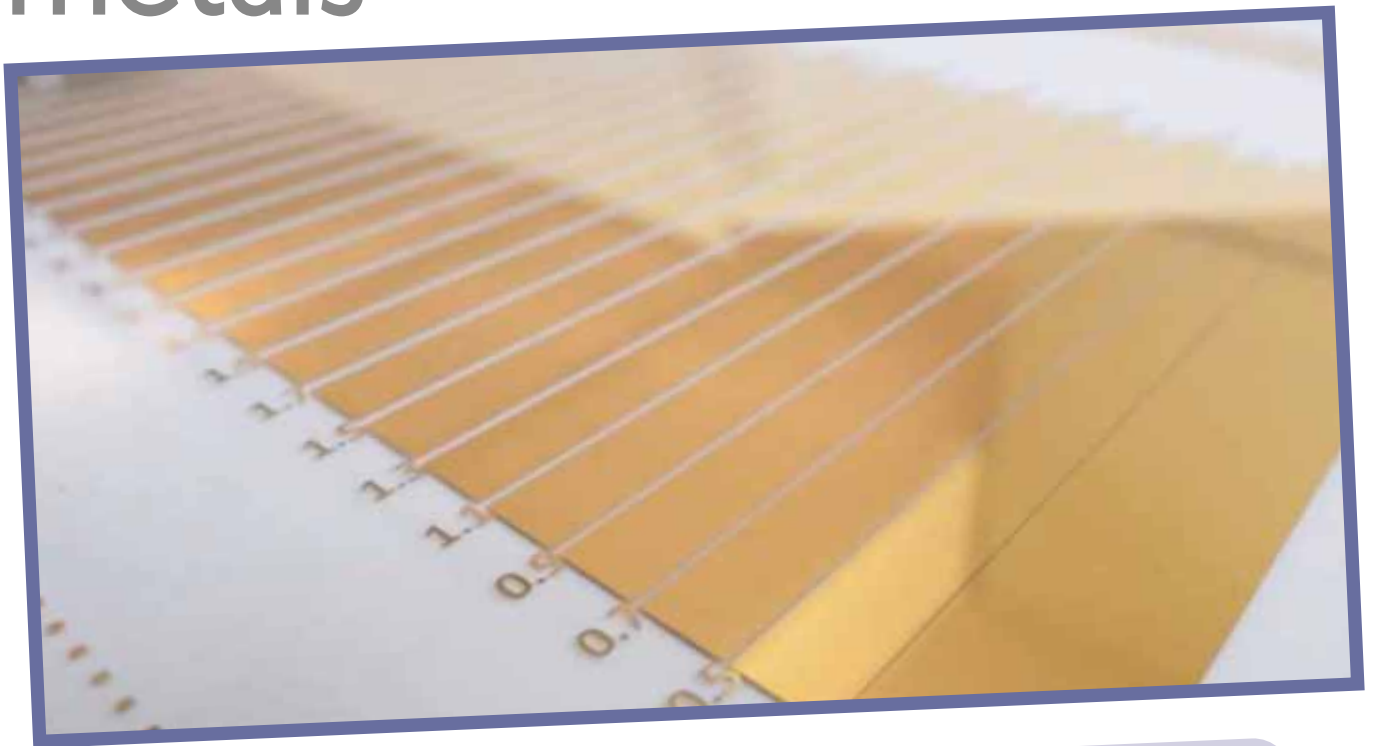


Organised by





# Regal gloss from sedak all in printed precious metals



Whether it's insulating glass, safety glass or even curved panes, the interplay between glass and precious metals creates a spectacle that will never fail to display captivating optical effects. Here the printing process, too, is particularly impressive - allowing for the finest details and filigree structures. Even complex design ideas can be realised with high precision.

Using two materials that have fascinated humankind for centuries, gold onto glass exhibits the elegant radiance of a high-value precious metal while combining the bright transparency of glass. With sedak's new digital printing technology these can now cohabit in a fascinating interaction - yielding a unique and unusual effect that leaves observers enthralled.



## CAPABILITIES OF DIGITAL PRINTING

- Prints based on six basic colours
- Resolution up to 1024 dpi
- Colour transitions possible

- Thin lines, concentric circles, dots at different levels of intensity and opaqueness
- Complex, multi-colour grid designs
- Frameless prints

In order to protect the printed design from environmental influences and mechanical damage -such as scratches- the printed side is placed on the inside of the laminate towards the film interlayer and is thus protected by the glass. From panes with real metal printing, sedak manufactures insulating and safety glass up to 3.3m x 18m. Curved glass too.

## POSSIBLE APPLICATIONS

Decorative:

- Interior design
- Photorealistic designs

Functional:

- Sight protection
- Sun protection
- Printing of serial numbers and barcodes
- Black and white colours are 'Side One' suitable, e.g. for slip prevention on steps



The printing itself takes place upon float glass as yellow or white gold particles are bound together in a special solution before being applied very finely to the glass by a digital procedure. In the tempering process that follows the valuable metal then bonds permanently with the glass.

## ADVANTAGES OF DIGITAL PRINTING

- Variable thickness of colour application
- Transparent, opaque as well as multi-layer printing
- Higher saturation due to counter print
- Flexibility thanks to digital technology
- Design easily and cost-efficiently
- reproducible (≠ screen printing)





### GLASS WITH AMAZING FORMS

Being just one of the company's many success stories, this achievement follows many years of experience, coupled with its supreme technical skills and passion

for glass. Add modern production methods using the latest machinery and the outcome is dependable processing of custom solutions in almost any shape and size - whether as safety glass or insulating glass. sedak works

in partnership with architects and builders, as well as facade and metal fabricators. With its innovative products the company is already making a contribution today to the architecture of tomorrow.

### IMAGINATION IS THE ONLY LIMIT

sedak's many years of experience in the processing and treatment of curved and flat glass enables the company to offer full-service glass solutions. Maximum commitment to customer needs, a high degree of flexibility and close cooperation with project partners are the guiding principles for the whole corporate group - guaranteeing market-oriented solutions for apparently impossible requests. All true to the driving concept: 'imagination is the only limit'.

## ABOUT SEDAK

Since its founding in 2007, Germany-based sedak has used its pioneering spirit to establish itself as a premium manufacturer of large-format insulated and safety glass. The company has evolved its glass as a construction material for all-glass facades and roofs. iconic facades and buildings are created with an unprecedented degree of transparency thanks to the superior quality of innovative products.

In 2018, sedak further extended its leadership both in competence and technology by acquiring Italian-based sunglass industry - specialist in curved glass. Indeed the two glass specialists stand for uncompromising passion within the group of companies in terms of processing flat and curved glass of optimum quality.

Raw glass is treated, strengthened, laminated, printed, bent and assembled into safety and insulating glass with a unique machinery set spread over a production area that spans 47,000 sqm. With a degree of automation in production, sedak guarantees great reliability, calculability and adherence to delivery dates. A spirit of research, the expertise of 300 employees and the ideas and visions of the company's customers are the driving force behind its continuous further development in glass finishing. Here customers can benefit from all aspects of glass expertise from a single source



**sedak**  
 Einsteinring 1  
 86368 Gersthofen - GERMANY  
 Tel.: +49-821-2494-784  
 Fax: +49-821-2494-777  
 E-mail: marketing@sedak.com  
[www.sedak.com](http://www.sedak.com)

*An International Exhibition for GLASS MANUFACTURING,  
PROCESSING & FINISHING – TECHNOLOGY, MACHINERY  
AND EQUIPMENT in the Middle East*

## Global Glass Show 2023

“ The Most Dynamic & Comprehensive  
Glass Event in the Middle East ”

 6<sup>th</sup> - 7<sup>th</sup> September 2023

 ABU DHABI, UAE



**Global Glass Show**

6<sup>th</sup> - 7<sup>th</sup> September 2023 | Abu Dhabi



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



**For Sponsorship & Exhibition**

Zarreen Akhtar | Project Manager GGS 2023


zarreen.akhtar@tab-global.com | +91 96390 85912

# Architectural glass 101 - compliments of **SYNERGX**

**H**eat transfer prevention is just one of many new techniques employed in architectural glass manufacturing today. That's no small matter when one considers how cooling expenses will typically soar in summer. Put simply, glass is made by mixing very pure sand or quartz with soda ash, dolomite and limestone - then heating the mix at a very high temperature until it melts and turns into a liquid. During this heating process, the sand undergoes a complete chemical transformation to become the transparent amorphous solid material known as glass. Adding dyes to the basic mix allows producers to have coloured glass. Glass can be composed of other basic ingredients too. Borosilicate is more popular now and is already ubiquitous in both electronic displays and devices.

## **THE ADVANTAGES OF GLASS IN ARCHITECTURE**

Glass is probably the best-known construction material that perfectly blends



For almost two millennia glass has pioneered a wealth of stunning architectural feats. Here SYNERGX explains how, despite their enduring history in construction, innovations in glass continue to push the limits - whether in terms of performance or respecting the levels of technology being leveraged.

aesthetics and function. Used extensively in both residential and commercial buildings, it offers a wide range of advantages for building designers. These follow here in more detail.

### **AESTHETICS**

Glass' clean and sleek lines offer a contemporary and impressive aesthetic. Glass

transmits, refracts and absorbs light which, in turn, elevates the beauty of a building's outdoor design as well as its indoor ambience. In addition, glass provides natural and relaxing lighting - all while making interiors look more spacious. It's also been well-documented as improving the mood of occu-

pants of buildings as well as their productivity levels.

### **MAINTENANCE**

Thanks to their smooth and glossy surface, most glass types can be very easily cleaned. Some are even self-cleaning (hydrophobic and hydrophilic), meaning that the surfaces keep themselves free of grime and dirt.

### **DURABILITY AND PERFORMANCE**

As a dimensionally stable building material, glass is highly resistant to corrosion, extreme weather conditions, breaches and other sources of potential damage. The physical properties of glass make it very resistant to abrasion, high temperatures, rust and vermin. Glass is also a fantastic sound insulator. Furthermore, glass experiences no yellowing, weathering or clouding as it can transmit 80 percent or more daylight. As a material, glass maintains its structural integrity and appearance for a very long time. Finally, it's the only cladding material that allows energy to be harvested within a building - either as light or heat.

### **VERSATILITY**

Glass can be cut and manufactured into almost any shape or form, enabling architects to create stunning glass buildings or interiors without compromising on design. It can be used for

a myriad of applications - such as unique fenestration, facades, doors, partitions, storefronts, floors, roofs, elevators, balconies, ceilings, skylights, design elements and more.

### **SUSTAINABILITY**

Glass is the only material that actually offers energy gains. It enables building designers to apply both active and passive daylighting techniques, helping to reduce artificial lighting requirements. Energy efficient glass, including low-emissivity glass (low-e) can contribute to lowering energy consumption and earning LEED points. Finally, glass is infinitely recyclable, which lowers greenhouse gas emissions and avoids the extraction of new raw materials.

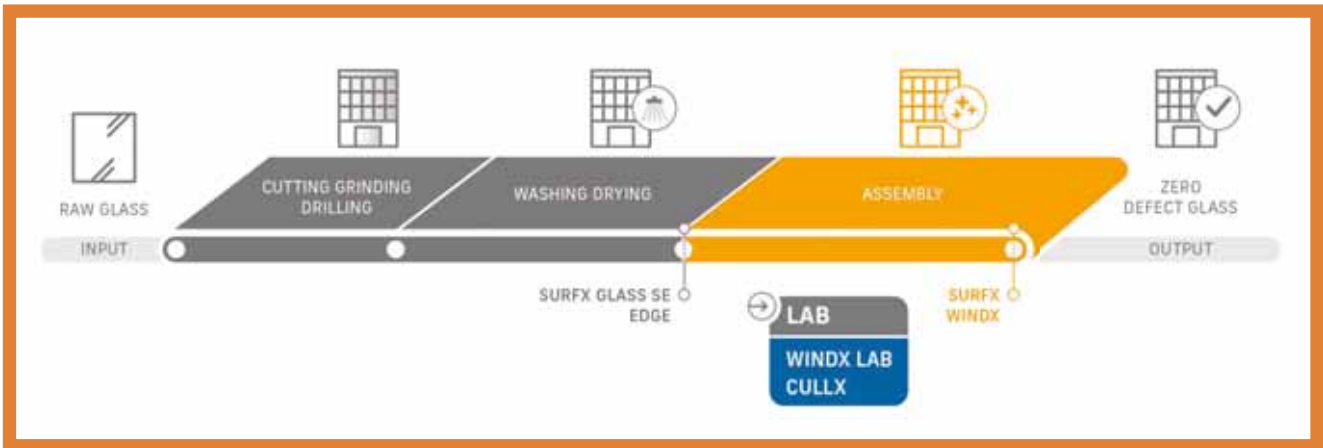
### **COST**

Architectural glass products can be very cost-effective cladding and design materials that can boost energy savings and lower utility bills. It's an excellent material for thermal insulation and waterproofing as well. Due to the sheer range of glass products on the market, as well as its many features and performance levels, architects commonly turn to it as the perfect building material to keep their budgets in check.

### **ARCHITECTURAL GLASS TYPES**

The aesthetic and technical properties of archi-





tectural glass allow for an almost limitless array of applications for both indoor and outdoor applications. The most popular architectural glass products include the following:

### BASIC PRODUCTS

The most common architectural glass products are categorised as clear, extra-clear and coloured. Clear glass is produced in a float line without additives in order to be completely transparent. However, iron contained in the raw materials causes

a slightly green tint. Extra-clear glass, also known as low-iron glass, contains very little iron to eliminate the greenish tint found in clear glass. Coloured glass, as the name implies, is a type of glass that's coloured. This is made by adding mineral or purified metal salts to the raw materials. Coloured glass was popular from the 1950 to the 1980 because it allowed for a lowering of the solar heat gain. It lost the favour of architects when transparent coatings were developed.

### SAFETY GLASS

This glass has additional features that render it harmless to people and the surrounding environment if it is struck, breaks or falls to the ground. Safety glass is renowned for its strength and even fire resistance. There are two types of safety glass, namely laminated glass and tempered glass. Laminated glass is manufactured by binding two or more panes of glass with a layer of plastic. If the laminated glass does break, the fragments will adhere to the middle

layer rather than fall to the ground. Laminated glass is ideal for architectural products that require screening UV rays, soundproofing, and buildings subject to high risks, such as banks, museums, and storefronts - or subject to extreme weather conditions, like hurricanes and high winds. Tempered glass is a safety glass that's produced by using heat to strengthen the glass. If tempered glass breaks, it shatters into tiny round pieces rather than sharp shards. Tempered glass is typically used for interior applications: partitions, offices, conference rooms, decorative panels, doors and windows, etc.

### COATED GLASS

Coated glass is a broad term for any architectural glass product that features a metallic coating or paint. It can be transparent, translucent or opaque. In Louis XIV's time, the mirror was the most coveted luxury item. That led to the creation of the Manufacture Royale des

## ABOUT SYNERGX

Founded in 2004, SYNERGX Technologies is a high-tech company and a world leader in optics photonics applications dedicated to the manufacturing sector. The company is also a provider of non-contact inspection and metrology solutions that are designed to optimise glass manufacturing processes. As such it offers a complete and integrated platform for architectural glass inspections. Since 2008, SYNERGX has continued to expand its product line and customer base of OEM automotive glass manufacturers. In order to better serve its global customers, the company has set up permanent offices in China (2013), Europe (France 2019), Michigan (USA 2020) and South Korea (2021). It is now focused on greater growth through new market expansions and M&A opportunities. SYNERGX counts on its expert team to develop even more innovative solutions that can carry its customers into the future and beyond.

Glaces à Mirror in Saint-Gobain, north of Paris in 1665. Of course, the mirror is now a commodity product found in all homes, much like transparent metallic coatings that provide solar control and insulation. While used as early as in ancient Egypt and Mesopotamia to decorate glasses and vases, fritted glass has experienced a renaissance in modern architecture with the advent of ink jet printing. Frit is a ceramic paint similar to that used in pottery which can be laid out into patterns - like lines or dots, or full-colour pictures. Frit glass techniques are often used to control

views of a highly transparent building, make a graphical statement or blur away glass joints. Painted and printed glass can feature imagery, patterns, texts or simply colours to create unique and spectacular environments. Paint and printed glass is even being used for outdoor building fenestration to save the estimated millions of birds killed on impact each year when flying into glass.

### INSULATED GLASS

Typically offered in dual and triple glazing, the insulating glass unit features two or three lites of glass separated by dry air or an inert gas like argon. This gap prevents heat

loss through doors and windows. Again, as the name suggests, dual-pane glass insulates twice as much as single-pane glass. Triple-pane glass offers even better energy efficiency. Architectural glass for commercial and residential buildings offers several advantages: beauty, design flexibility, safety, energy efficiency, durability, electric, sound and thermal insulation, ease of maintenance - the list goes on. There are very few other construction materials on the market that have as many compelling features and last for ages. Here one can be confident that with the lat-

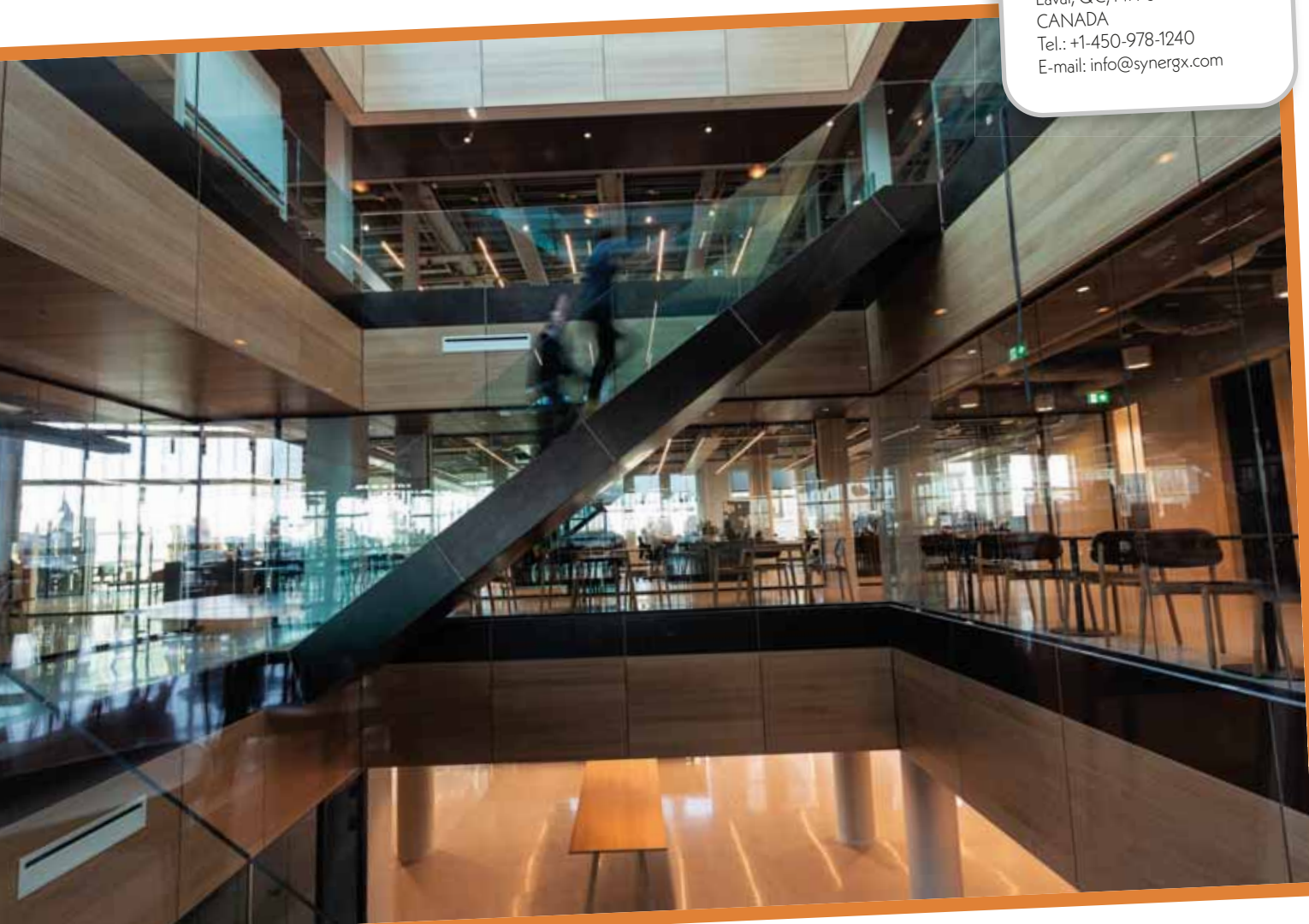
est technological advances in glass production, the popularity of architectural glass is here to stay.



**SYNERGX**



Stephane Lemieux  
2912, Joseph A. Bombardier  
Laval, QC, H7P6E3  
CANADA  
Tel.: +1-450-978-1240  
E-mail: info@synergx.com





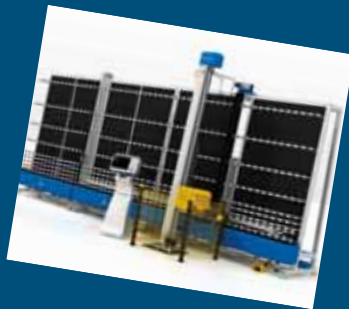
# Glasstech Mexico

Glass Technology Expo Mexico

## JULY 19-21 2023

Centro Citibanamex - Mexico City

Exhibitor registration



### ORGANIZER



### SUPPORTED BY



### MEDIA PARTNERS



contact us: [info@glasstechmexico.com](mailto:info@glasstechmexico.com)

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



Take a glance at details  
enhancing the living spaces!

# WINDOW Eurasia

24<sup>th</sup> International Window, Window Shade, Facade Systems  
& Accessories, Profile, Production Technologies & Machinery,  
Insulation Materials & Auxiliary Products Fair

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



### Special Sections

Aluminium Profile,  
Facade Systems and  
Accessories

### Special Sections

Shading, Protection  
and Closure  
Systems

# GLASS Eurasia

13<sup>th</sup> Glass Products and Applications, Production  
Processing Technologies and Machinery, Auxiliary  
Products and Chemicals Fair

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

# DOOR Eurasia

15<sup>th</sup> International Interior Door and Door  
Systems, Lock, Panel, Board, Partition  
Systems and Accessories Fair

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

Scan the QR code  
for more information!



# November 11 - 14, 2023

Saturday - Tuesday

TÜYAP FAIR CONVENTION | BÜYÜKÇEKMECE  
AND CONGRESS CENTER | İSTANBUL



Window and Glass Fair  
Supported by



# SUPPLIERS GUIDE Yellow Pages

Reserved for advertisers | [www.glassonline.com](http://www.glassonline.com) | Reserved for advertisers | [www.glassonline.com](http://www.glassonline.com)

COMPANY

website

COMPANY

website

**A+W Software**

for Glass, Windows & Doors

**A+W SOFTWARE**

[www.a-w.com](http://www.a-w.com)

**MAZZAROPPI**  
HIGH PERFORMANCE. ALWAYS

**MAZZAROPPI ENGINEERING**

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

**AYROX**

**AYROX**

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

**NorthGlass**

**NORTH GLASS**

[www.northglass.global](http://www.northglass.global)

**B Solution**  
ON THE PLUS SIDE ●●●

**B SOLUTION**

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

**PRODIM**

**PRODIM**

[www.prodim-systems.com](http://www.prodim-systems.com)

**Bando**  
BANDO KIKO CO.,LTD.

**BANDO KIKO**

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

**Pujol**

**HORNOS INDUSTRIALES PUJOL**

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

**bestmakina**

**BEST MAKINA**

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

**RCN**  
solutions

**R.C.N. SOLUTIONS**

[www.rcnsolutions.it](http://www.rcnsolutions.it)

**FILTRAGLASS**  
WATER TREATMENT FOR GRINDING TECHNOLOGY

**FILTRAGLASS**

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

**Rollmac**  
**Gemata**

**ROLLMAC DIVISION OF GEMATA**

[www.rollmac.it](http://www.rollmac.it)

**FOREL**

**FOREL**

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

**SATINAL**

**SATINAL - STRATO - TK**

[www.satinal.it](http://www.satinal.it)

**GLASSCOMPANY**

**GLASS COMPANY**

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

**TEXPACK**

**TEXPACK**

[texpack.it](http://texpack.it)

**glaston**  
seeing it through

**GLASTON**

[www.glaston.net](http://www.glaston.net)

**ŞİŞECAM**  
FLAT GLASS

**TURKIYE SISE VE CAM / SISECAM**

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

**HEGLA**

**HEGLA**

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

**helios quartz**



**HELIOS QUARTZ**

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

Listing in this section is reserved for advertisers.

FOR FURTHER INFORMATION PLEASE CONTACT OUR ADVERTISING DEPARTMENT:

Tel: +39 - 02 - 6630686

E-mail: [publications@glassonline.com](mailto:publications@glassonline.com)

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

Listing in the "Suppliers Guide - Yellow Pages" is free of charge and reserved to advertisers. Advertisers of this issue are listed on the opening pages of this section, along with their logo, and listed in bold on the following pages. The "Suppliers Guide - Yellow Pages" promotes their products and services worldwide.

# SUPPLIERS GUIDE Yellow Pages

Reserved for advertisers | [www.glassonline.com](http://www.glassonline.com) | Reserved for advertisers | [www.glassonline.com](http://www.glassonline.com)

## Glass manufacturing and Processing

### FLOAT GLASS

**Sisecam**

## Stocking, handling and movement

### COMPLETE STOCKING LINES / ENGINEERING

Cugher Glass  
ECOL

**Glaston Group**

**Hegla**

IOCCO Group  
Keraglass

Lisec Group

**North Glass Technology**

Macotec

Biesse Group

Schiavo

Torgauer Maschinenbau

Tuomas

### COMPLETE HANDLING AND MOVEMENT LINES

**Bando Kiko**

Bottero

Cugher Glass

CMS

ECOL

Biesse Group

**Glaston Group**

GPM Automation

**Hegla**

IOCCO Group

Keraglass

Lisec Group

Macotec

**North Glass Technology**

Schiavo

Torgauer Maschinenbau

Tuomas

### MACHINES FOR HANDLING GLASS SHEETS

Ashton Industrial Sales

**Bando Kiko**

Bavelloni

Bottero

CMS

Di Gregorio

ECOL

**Forel**

**Glaston Group**

GPM Automation

**Hegla**

IOCCO Group

Italcarrelli

Keraglass

Lisec Group

Lovati

Macotec

Schiavo

Torgauer Maschinenbau

Tuomas

### HANDLING ROBOTS

Ashton Industrial Sales

Bavelloni

Bottero

CMS

ECOL

GPM Automation

**Hegla**

IOCCO Group

Lisec Group

Neptun

Schiavo

Torgauer Maschinenbau

Tuomas

### HANDLING EQUIPMENT FOR FLOAT GLASS

Bovone Elett.

Bottero

Di Gregorio

ECOL

**Glaston Group**

**Hegla**

IOCCO Group

Italcarrelli

Lisec Group

Schiavo

SGM (division of Vismara)

Torgauer Maschinenbau

Tuomas

Vismara

### TROLLEYS AND CLASSIFIERS

CMS

Di Gregorio

**Forel**

**Hegla**

Lisec Group

Macotec

Biesse Group

Schiavo

Si.Ste

Tecno Glass

Torgauer Maschinenbau

Tuomas

### TRANSPORTATION SYSTEMS/TRUCKS

**Hegla**

Italcarrelli

Lisec Group

Schiavo

### VACUUM LIFTING EQUIPMENT

Bottero

CMS

Di Gregorio

ECOL

Fenzi

**Forel**

**Glaston Group**

**Hegla**

Lisec Group

Schiavo

Si.Ste

Torgauer Maschinenbau

Tuomas

### CRANE SUCTION CUPS FOR LARGE SHEETS

Bottero

Di Gregorio

Fenzi

**Glaston Group**

**Hegla**

Lisec Group

Schiavo

Tuomas

### TRANSPORTATION TONGS

Bottero

Fenzi

IOCCO Group

Schiavo

Tuomas

### SUCTION CUPS

ADI - Surface Group

Bottero

CMS

Fenzi

**Glaston Group**

**Hegla**

Schiavo

Si.Ste

Tuomas

### CONVEYOR BELTS

Ashton Industrial Sales

Cugher Glass

Di Gregorio

ECOL

**Glaston Group**

Schiavo

Tuomas

### PACKAGING MATERIALS AND SYSTEMS

ECOL

**Hegla**

Schiavo

Vismara

### ACCESSORIES

BOST

Bottero

CMS

Fenzi

**Hegla**

**Helios Quartz**

Mole Moreschi

Schiavo

Tuomas

## Straight-edge and shape cutting

### COMPLETE STRAIGHT-EDGE LINES

**Bando Kiko**

Bavelloni

Bottero

CMS

Euromec

Biesse Group

**Glaston Group**

**Hegla**

Lisec Group

Neptun

Schiavo

Schiatti Angelo

Teknik Elmas

Tesir Makine

**North Glass Technology**

### COMPLETE SHAPE CUTTING LINES

**Bando Kiko**

Bavelloni

Bottero

CMS

**Glaston Group**

**Hegla**

Lisec Group

Macotec

Schiavo

**North Glass Technology**

Teknik Elmas

Tesir Makine

Tuomas

### AUTOMATIC CUTTING MACHINES FOR AUTOMOTIVE GLASS

**Bando Kiko**

Bottero

CMS

**Glaston Group**

IOCCO Group

Lisec Group

Macotec

Schiavo

### LOADING AND TILTING MACHINES

**Bando Kiko**

Bavelloni

Bottero

CMS

ECOL

Euromec

**Forel**

**Glass Company**

**Glaston Group**

GPM Automation

**Hegla**

Biesse Group  
IOCCO Group  
Lisec Group  
Macotec  
Neptun  
Schiavo  
SGM (division of Vismara)  
Tuomas  
Vismara

**CUTTING TABLES**

**Bando Kiko**

Bavelloni  
Biesse Group  
Bottero  
CMS  
Euromec  
Fenzi

**Forel**

**Glaston Group**

**Hegla**  
IOCCO Group  
Lisec Group  
Macotec  
Schiavo  
Tekno Kilns  
Triulzi  
Tuomas

**CUTTING OPTIMIZERS**

**Bando Kiko**

Bavelloni  
Biesse Group  
Bottero  
CMS  
Deltamax Automazione  
Euromec

**Forel**

**Glaston Group**

**Hegla**  
IOCCO Group  
Lisec Group  
Macotec  
Optima  
Schiavo  
Tuomas

**CUTTING PATH OPTIMIZERS**

**Bando Kiko**

Bottero  
CMS  
Euromec  
**Glaston Group**  
IOCCO Group  
Lisec Group  
Macotec  
Optima  
Schiavo

**CAD SYSTEMS**

Bavelloni  
CMS

Lisec Group

**Prodim**

Schiavo

**ARMoured AND LAMINATED GLASS CUTTING MACHINES**

**Bando Kiko**

Bavelloni  
Bottero  
CMS

**Glaston Group**

**Hegla**

Lisec Group  
Macotec  
Schiavo  
Tuomas

**ROUND OR SHAPE CUTTING MACHINES**

**Bando Kiko**

Bavelloni  
Bottero  
CMS  
Fenzi

**Glaston Group**

**Hegla**

Lisec Group  
Macotec  
Schiavo  
Tuomas

**CUTTING ACCESSORIES**

ADI - Surface Group

**Ayrox**

**Bando Kiko**

Bottero  
Fenzi  
Lanzetta  
IOCCO Group  
Macotec  
Schiavo  
Softeco  
Talamoni  
Teknik Elmas  
Tesir Makine  
Tuomas  
Vincent - Surface Group

**SAW MACHINES**

Di Gregorio  
Schiavo  
Tecno Glass

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

CMS  
Schiavo

**BREAKING SYSTEMS**

**Bando Kiko**  
Bavelloni

Bottero

CMS

Euromec

**Glaston Group**

**Hegla**

IOCCO Group  
Lisec Group  
Macotec  
Schiavo  
Teknik Elmas  
Tesir Makine  
Tuomas

**CUTTING MACHINES WITH BREAKING AND EDGE DELETING DEVICES**

**Bando Kiko**

Bottero  
CMS

Euromec

**Glaston Group**

**Hegla**

IOCCO Group  
Lisec Group  
Macotec  
Schiavo  
Teknik Elmas  
Tesir Makine  
Tuomas

**GLASS CUTTING FLUIDS**

Schiavo  
Tuomas

**ACCESSORIES**

Schiavo  
Schiatti Angelo  
Talamoni  
Teknik Elmas  
Tesir Makine  
Tuomas

**Edging and bevelling**

**COMPLETE EDGING LINES**

Adelio Lattuada  
Ashton Industrial Sales

**B Solution**

**Bando Kiko**

Bavelloni  
Bottero  
CMS  
**Forel**  
Biesse Group  
Hiseng Glass Machinery  
IOCCO Group  
Lovati  
Neptun  
Schiavo  
Schiatti Angelo

SKG - Skill Glass

Teknik Elmas

Tesir Makine

**COMPLETE BEVELLING LINES**

Adelio Lattuada

**Bando Kiko**

Bottero  
CMS  
Hiseng Glass Machinery  
IOCCO Group  
Lovati  
Schiavo  
SGM (division of Vismara)  
Teknik Elmas  
Tesir Makine  
Vismara

**COMPLETE AUTOMOTIVE GLASS EDGING AND BEVELLING LINES**

Adelio Lattuada

**Bando Kiko**

Bavelloni  
Bottero  
**Glaston Group**  
Hiseng Glass Machinery  
Biesse Group  
IOCCO Group  
SKG - Skill Glass  
Teknik Elmas  
Tesir Makine

**DOUBLE-EDGE GRINDING MACHINES**

Ashton Industrial Sales

**B Solution**

**Bando Kiko**

Bavelloni  
Biesse Group  
Bottero  
CMS  
Hiseng Glass Machinery  
IOCCO Group  
Schiatti Angelo  
Teknik Elmas  
Tesir Makine

**VERTICAL-EDGE GRINDING MACHINES**

Adelio Lattuada

**B Solution**

**Bando Kiko**

Bavelloni  
Bottero  
Di Gregorio  
**Forel**  
**Glass Company**  
**Glaston Group**  
Hiseng Glass Machinery  
Neptun  
Schiavo  
Schiatti Angelo

# SUPPLIERS GUIDE Yellow Pages

Reserved for advertisers | [www.glassonline.com](http://www.glassonline.com) | Reserved for advertisers | [www.glassonline.com](http://www.glassonline.com)

SGM (division of Vismara)  
**North Glass Technology**  
SKG - Skill Glass  
Tesir Makine  
Vismara

## GRINDING SPINDLES

Schiavo  
Tecno Glass  
Teknik Elmas

## BEVELLING MACHINES FOR ROUND AND SHAPED GLASS

Adelio Lattuada  
**Bando Kiko**  
Bavelloni  
CMS  
Hiseng Glass Machinery  
Biesse Group  
Lovati  
Schiavo  
SGM (division of Vismara)  
Teknik Elmas  
Tesir Makine

## STRAIGHT-EDGE BEVELLING MACHINES

Adelio Lattuada  
**Bando Kiko**  
Bavelloni  
Bovone Elett.  
CMS  
**Glass Company**  
Hiseng Glass Machinery  
Schiavo  
Schiatti Angelo  
SGM (division of Vismara)  
Teknik Elmas  
Tesir Makine

## BEVEL POLISHING MACHINES

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

## STRAIGHT-EDGE ENGRAVING MACHINES

Bavelloni  
Bottero  
CMS  
Biesse Group  
SGM (division of Vismara)  
SKG - Skill Glass  
Teknik Elmas  
Vismara

## SHAPED GLASS ENGRAVING MACHINES

Bavelloni

Bottero  
CMS  
Biesse Group  
Lovati  
SGM (division of Vismara)  
Teknik Elmas  
Tesir Makine  
Vismara

## CORNER GRINDING MACHINES

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

## SHAPED GLASS GRINDING MACHINES

Adelio Lattuada  
Ashton Industrial Sales

## **Bando Kiko**

Bavelloni  
Biesse Group  
Bottero  
CMS  
**Forel**  
**Glass Company**  
Hiseng Glass Machinery  
Lovati  
SGM (division of Vismara)  
Teknik Elmas  
Tesir Makine  
Vismara

## BELT GRINDING MACHINES

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

## LATHES - VERTICAL AND HORIZONTAL

CMS  
Fenzi  
Teknik Elmas  
Tesir Makine

## EMBOSSING MACHINES

CMS  
Fenzi

## PORTABLE MACHINES

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

## DIAMOND TOOLS

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

## DIAMOND BELTS

Mole Moreschi

## SEAMING LINES

Ashton Industrial Sales

## MANUAL LINES

Ashton Industrial Sales

## POLISHING WHEELS

Adelio Lattuada  
ADI - Surface Group  
**Bando Kiko**  
Bovone Diamond Tools  
Diamut - Biesse  
Dogo  
Fenzi  
**Glaston Group**  
Italmole  
Marrose Abrasives  
Mole Moreschi  
RBM Italia - Surface Group  
Schiavo  
SGM (division of Vismara)  
Si.Ste  
Teknik Elmas  
Vincent - Surface Group  
Vismara

## POLISHING AGENTS AND OXIDES

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

## POLISHING BELTS

Di Gregorio  
Fenzi  
Schiavo  
Si.Ste  
Vismara

## COOLANTS

Adelio Lattuada

Bovone Diamond Tools  
Fenzi  
Schiavo

## GLASS GRINDING AND BEVELLING COOLANTS

Schiavo  
Teknik Elmas

## SEPARATORS FOR GLASS-SOLIDS

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

## ACCESSORIES

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

## Washing

## HORIZONTAL WASHING MACHINES

Ashton Industrial Sales  
**Bando Kiko**  
Bavelloni  
Bovone Elett.  
Di Gregorio  
ECOL  
**Forel**  
**Glass Company**  
**Glaston Group**  
GPM Automation  
Hiseng Glass Machinery  
IOCCO Group  
Lisec Group  
Neptun  
Schiavo  
SGM (division of Vismara)  
Si.Ste  
Triulzi  
Vismara

## VERTICAL WASHING MACHINES

Adelio Lattuada  
Ashton Industrial Sales  
Bavelloni  
**Best Makina**  
Di Gregorio  
ECOL

**Forel**  
**Glass Company**  
**Glaston Group**  
 GPM Automation  
 Hiseng Glass Machinery  
 IOCCO Group  
 Lisec Group  
 Neptun  
 Schiavo  
 SGM (division of Vismara)  
**North Glass Technology**  
 Si.Ste  
 S.T. Group  
 Stefiglass  
 Teknik Elmas  
 Tesir Makine  
 Triulzi  
 Vismara

## WASHING MACHINES FOR AUTOMOTIVE GLASS

**Bando Kiko**  
 ECOL  
**Glaston Group**  
 IOCCO Group  
 SGM (division of Vismara)  
 Tesir Makine  
 Triulzi  
 Vismara

## WASHING PURIFICATION SYSTEMS

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

## LIQUID WASHING CONCENTRATES

Schiavo  
 SGM (division of Vismara)  
 Vismara

## ACCESSORIES

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

## Mirror production

## COMPLETE PLANTS & CONVEYORS FOR MIRROR PRODUCTION

Bovone Elett.  
 IOCCO Group  
 Triulzi

## PAINTING EQUIPMENT

Fenzi  
 IOCCO Group  
 Triulzi

## DRYING OVENS

Bovone Elett.  
 CMS

## AUTOMOTIVE MIRROR BENDING FURNACES

Bovone Elett.  
 Tecnosens

## MANUAL SILVER- SPRAYING EQUIPMENT

Fenzi  
**Glass Company**

## PAINTS AND CHEMICAL PRODUCTS

Fenzi

## ACCESSORIES

Fenzi  
**Helios Quartz**

## Insulating glass

## COMPLETE INSULATING GLASS LINES

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

## AUTOMATIC SEALING LINES

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

## AUTOMATIC SPACER BENDING MACHINES

Bavelloni  
**Best Makina**  
 Fenzi

**Forel**  
**Glaston Group**  
 IOCCO Group  
 Lisec Group  
 Marval  
 Schiavo  
 S.T. Group  
 Thermoseal Group

## DESICCANT SALT FILLING MACHINES

Ashton Industrial Sales  
 Bavelloni

## Best Makina

Di Gregorio  
 Fenzi  
**Forel**  
**Glaston Group**

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

## SPACER CUTTING SAWS

Ashton Industrial Sales  
 Bavelloni

## Best Makina

Di Gregorio  
 Fenzi  
**Forel**  
 Lisec Group  
 Marval  
 Neptun  
 Schiavo  
 S.T. Group  
 Tecno Glass  
 Tesir Makine  
 Thermoseal Group

## BUTYL EXTRUDERS

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

## HOT-MELT EXTRUDERS

Bavelloni  
**Best Makina**  
 Di Gregorio  
 Easy Automation

Fenzi  
**Forel**  
 Lisec Group  
 Marval  
 Neptun  
 Schiavo  
 Si.Ste  
 Stefani  
 S.T. Group  
 Tecno Glass  
 Thermoseal Group  
 Triulzi

## POLYURETHANE EXTRUDERS

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

## POLYURETHANE ENCAPSULATION

**Glaston Group**  
 Lisec Group  
 Marval  
 Schiavo

## SILICONE EXTRUDERS

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

## POLYSULPHIDE SEALANT EXTRUDERS

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

## GAS FILLING EQUIPMENT

Di Gregorio  
 Fenzi  
**Forel**  
**Glaston Group**  
 Lisec Group  
 Marval

# SUPPLIERS GUIDE Yellow Pages

Reserved for advertisers | [www.glassonline.com](http://www.glassonline.com) | Reserved for advertisers | [www.glassonline.com](http://www.glassonline.com)

Neptun  
Schiavo  
Si.Ste  
Sparklike  
Stefani  
S.T. Group  
Tecno Glass  
Thermoseal Group

## DESICCANT SALTS

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

## SPACERS/PROFILES

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

## GEORGIAN BARS

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

## BUTYL

Ashton Industrial Sales  
Fenzi  
Stefani  
Thermoseal Group

## POLYSULPHIDE SEALANTS

Fenzi  
Stefani

## HOT MELT

Ashton Industrial Sales  
Fenzi  
Stefani  
Thermoseal Group

## OTHER SEALANTS

Fenzi  
Stefani

## PANTOGRAPHES

Fratelli Pezza

## ACCESSORIES

Ashton Industrial Sales  
Deltamax Automazione  
**Forel**  
**Helios Quartz**  
Schiavo  
Sparklike  
Stefani

S.T. Group  
Tesir Makine  
Triulzi

## Tempering

### TEMPERING FURNACES (ARCHITECTURAL GLASS)

**Glass Company**  
Glasstech Inc.  
**Glaston Group**  
**Hornos Industriales Pujol**  
Jinglass  
Keraglass  
Landglass Technology  
Lema  
Lisec Group  
Mappi International  
**Mazzaroppi Engineering**  
Schiavo  
**North Glass Technology**  
Tecnosens  
Tekno Kilns  
**Texpack**

### TEMPERING FURNACES (AUTOMOTIVE GLASS)

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

### CHEMICAL TEMPERING EQUIPMENT

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

### ROBOT FOR CLEANING SILICA ROLLERS

Eurotech Way

### ACCESSORIES

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

**Satinal**  
SGLASS  
Taifin  
Tekno Kilns  
Torgauer Maschinenbau

## Bending

### BENDING FURNACES (ARCHITECTURAL GLASS)

**Hornos Industriales Pujol**  
Jinglass  
Keraglass  
Mappi International  
**Mazzaroppi Engineering**  
**R.C.N. Solutions**  
SGLASS  
Tecnosens  
Tekno Kilns  
**Texpack**

### BENDING FURNACES (AUTOMOTIVE GLASS)

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

### ACCESSORIES

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

## Laminated glass production

### COMPLETE PLANTS FOR LAMINATED GLASS

Bovone Elett.  
Bottero  
**Forel**  
**Glass Company**  
**Glaston Group**

GPM Automation  
**Hornos Industriales Pujol**  
IOCCO Group  
Italmatic  
Lisec Group  
**Mazzaroppi Engineering**  
**R.C.N. Solutions**  
**Satinal**  
Si.Ste  
**Texpack**  
Triulzi

### LAMINATED WINDSCREEN BENDING FURNACES

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

### AUTOCLAVES

Bürkle  
**Glass Company**  
**Glaston Group**  
GPM Automation  
**Hornos Industriales Pujol**  
Italmatic  
Lisec Group  
Triulzi

### AUTOCLAVE-FREE LAMINATED GLASS PRODUCTION

Bürkle

### CLIMATIC CABINS

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

### INFRARED OVENS

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

### MANGLES

GPM Automation

### PRESSES/BENDING MACHINES

**Forel**  
IOCCO Group

Lisec Group  
Triulzi

## RESIN LAMINATING MATERIALS AND EQUIPMENT

IOCCO Group  
**Satinal**  
Teknik Elmas  
Torgauer Maschinenbau

## EVA (ETHYLENE VINYL ACETATE)

**Satinal**

## PVB

Everlam  
Kuraray - Trosifol  
Tecnosens

## PVB - SHAPING AND CUTTING EQUIPMENT

**Ayrox**

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

## PVB - WIRING TECHNOLOGY FOR HEATABLE LAMINATES

**Ayrox**  
Easy Automation  
ECOL  
Softeco

## EVA (ETHYLENE VINYL ACETATE)

Tecnosens

## ACCESSORIES

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

## Drilling

## AUTOMATIC DRILLING LINES

**B Solution**  
**Bando Kiko**  
Bavelloni

Biesse Group  
**Glaston Group**  
IOCCO Group  
Neptun  
Schiatti Angelo  
SGM (division of Vismara)  
SKG - Skill Glass  
Teknik Elmas  
Tesir Makine  
Vismara

## MULTI-SPINDLE DRILLING MACHINES

**B Solution**

**Bando Kiko**

Bavelloni  
Biesse Group  
CMS

**Glass Company**

**Glaston Group**  
IOCCO Group  
Neptun  
Schiavo  
Schiatti Angelo  
SGM (division of Vismara)  
SKG - Skill Glass  
Teknik Elmas  
Tesir Makine  
Vismara

## DRILLING MACHINES WITH OPPOSITE DRILLING HEADS

**B Solution**

**Bando Kiko**

Bavelloni  
Biesse Group  
Bottero  
CMS

Di Gregorio  
Fenzi

**Glaston Group**

Hiseng Glass Machinery  
IOCCO Group  
Lovati  
Neptun  
Schiavo  
Schiatti Angelo  
SGM (division of Vismara)  
SKG - Skill Glass  
Teknik Elmas  
Tesir Makine  
Vismara

## COLUMN DRILLING MACHINES

**B Solution**

Bottero  
Di Gregorio  
Fenzi  
Neptun  
Schiavo  
SGM (division of Vismara)  
Si.Ste  
Tesir Makine  
Vismara

## PORTABLE DRILLING MACHINES

CMS  
Fenzi  
Schiavo  
Si.Ste  
Teknik Elmas  
Tesir Makine

## DRILLING AND MILLING MACHINES

Bavelloni  
Bottero  
CMS  
Biesse Group  
IOCCO Group  
Lovati  
Neptun  
Schiavo  
SGLASS  
SGM (division of Vismara)  
Teknik Elmas  
Tesir Makine  
Vismara

## DIAMOND DRILLS

ADI - Surface Group  
Bovone Diamond Tools  
Diamut - Biesse  
Fenzi

**Glaston Group**

Lanzetta  
Mole Moreschi  
Neptun  
Schiavo  
Si.Ste  
Teknik Elmas  
Tesir Makine  
Vincent - Surface Group

## ACCESSORIES

CMS  
Fenzi  
Neptun  
Schiavo  
Si.Ste  
Teknik Elmas

## Other equipment and plants

## TURNKEY PLANTS / ENGINEERING - FOR BUILDING GLASS

**Bando Kiko**  
Bottero  
Cugher Glass  
**Glaston Group**  
Horn  
Biesse Group  
IOCCO Group  
Keraglass

Lisec Group  
Torgauer Maschinenbau

## TURNKEY PLANTS / ENGINEERING - FOR AUTOMOTIVE GLASS

**Bando Kiko**  
Bottero  
Cugher Glass  
Easy Automation  
Horn

**Glaston Group**

Biesse Group  
IOCCO Group

## TURNKEY KEY PLANTS / ENGINEERING - FOR DISPLAY GLASS

**Bando Kiko**  
Cugher Glass  
Torgauer Maschinenbau

## EDGES ROLLER COATING MACHINE

Eurotech Way

## WORK CENTRES - CNC CONTROLLED

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

## FLOAT PLANTS / LINES (EQUIPMENT & ACCESSORIES)

Bovone Elett.  
Horn  
IOCCO Group

## CULLET HANDLING SYSTEMS

ECOL

## COMPLETE BATCH PLANTS

Zippe

## VACUUM COATING EQUIPMENT AND PLANTS

Giardina Group Glass  
Division

**Glass Company**

North Glass Technology

## ENAMELLING EQUIPMENT AND PLANTS

Giardina Group Glass  
Division



# SUPPLIERS GUIDE Yellow Pages

Reserved for advertisers | [www.glassonline.com](http://www.glassonline.com) | Reserved for advertisers | [www.glassonline.com](http://www.glassonline.com)

## Glass Company Rollmac division of GeMaTa

### DRYERS AND ENAMELLING FURNACES

Bürkle  
Giardina Group Glass  
Division

### SPRAYING TECHNOLOGY

Bürkle  
Giardina Group Glass  
Division

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

Bürkle  
Giardina Group Glass  
Division

### SANDBLASTING SYSTEMS, EQUIPMENT AND PLANTS - OPTIMIZERS

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

### DIGITAL INKJET PRINTERS

Glass Company  
System Ceramics  
TecnoFerrari

### SCREEN PRINTING EQUIPMENT AND PLANTS

**Ayrox**  
COMSS  
Cugher Glass  
Deltamax Automazione  
ECOL  
Eurotech Way  
Glass Company  
Keraglass

### Rollmac division of GeMaTa

**North Glass Technology**  
Softeco  
TecnoFerrari

### SCREEN PRINTING FRAMES

COMSS

### SCREEN PRINTING DRYING SYSTEMS

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

### EDGES ROLLER COATING MACHINE

Giardina Group Glass  
Division

### ACIDING GLASS EQUIPMENT AND PLANTS

Lisec Group  
**Rollmac division of  
GeMaTa**

### LASER DECORATING MACHINES

Ashton Industrial Sales  
Glass Company

### LASER MARKING

Ashton Industrial Sales

## Artistic glass production

### CERMAMIC INKS

Glass Company

### CHAMBER ELECTRIC KILNS

Glass Company  
Keraglass  
Tekno Kilns

### ACCESSORIES

Deltamax Automazione  
**Helios Quartz**

### CUTTERS

Si.Ste

### CUTTING WHEELS

Si.Ste

### MANUAL GRINDING MACHINES

Di Gregorio

### UV ADHESIVES

Si.Ste

## Miscellaneous

### ADHESIVES FOR GLASS BONDING

Si.Ste

### AUTOMATION

Ashton Industrial Sales  
Easy Automation  
Horn  
IOCCO Group  
Tecnosens  
Torgauer Maschinenbau

Zippe

### AUTOMOTIVE GLASS APPROVAL SERVICES

**Ayrox**  
Softeco  
Tecnosens  
Teknik Elmas

### AUTOMOTIVE GLASS QUALITY CONTROL

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

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

**Ayrox**  
Softeco

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

Bürkle

### COLOURS & ENAMELS - OTHER APPLICATIONS

**Ayrox**

### CUTTERS

Tesir Makine

### CUTTING WHEELS

Talamoni  
Teknik Elmas  
Tesir Makine

### DEIONIZING AND WATER SOFTENING EQUIPMENT

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

### DIAMOND ROUTER EQUIPMENT - PORTABLE

Teknik Elmas  
Tesir Makine

### FLAT GLASS QUALITY CONTROL DEVICES

**Ayrox**  
Deltamax Automazione  
**Forel**

IOCCO Group  
Softeco  
Tecnosens

### FURNACES

Glass Company  
Horn  
**Texpack**

### FURNACES / HYDROGEN GENERATORS (WATER ELECTROLYSERS)

Nel Hydrogen

### GLASS COATING AND TINTING

Bürkle  
Glass Company  
**Rollmac division of  
GeMaTa**

### GLASS TREATMENT FILMS

Glass Company

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

Horn  
Keraglass  
**Texpack**

### HINGES FOR GLASS DOORS

Si.Ste

### INSPECTION INSTRUMENTS & INTENSIMETERS

Tecnosens

### INFRARED TUBES

**Helios Quartz**  
Deltamax Automazione

### KILNS

Glass Company  
Keraglass  
Lisec Group  
Tekno Kilns  
Fenzi

### METAL ACCESSORIES

Si.Ste  
Teknik Elmas  
Tesir Makine

### METALLIC SECTIONS

Fenzi  
Tesir Makine

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

Glass Company

# SUPPLIERS GUIDE Yellow Pages

Reserved for advertisers | [www.glassonline.com](http://www.glassonline.com) | Reserved for advertisers | [www.glassonline.com](http://www.glassonline.com)

IOCCO Group  
**Prodim**

**OPTICAL DISTORTION ANALYSERS FOR AUTOMOTIVE GLASS**

IOCCO Group  
Keraglass  
Tecnosens

**OPTICAL INFRARED THERMOMETERS**

Optris

**POLYMER MACHINE PARTS**

Simtech

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

BOST  
Cugher Glass  
Glass Company

**PUMPING AND APPLICATION SYSTEMS (AUTOMOTIVE GLASS)**

IOCCO Group

**PURIFIERS FOR REFLUENT WATER**

Dieffe Macchine

Immmes

**PUTTIES AND SEALANTS**

Fenzi

**QUARTZ EQUIPMENT**

**Helios Quartz**

**SHAPE CHECKING DEVICES**

Easy Automation  
IOCCO Group

**RAW MATERIALS**

BOST

**SHOWER ENCLOSURES**

SGM (division of Vismara)  
Vismara

**SIC HEATERS**

**Helios Quartz**

**SOFTWARE SYSTEMS FOR PRODUCTION CONTROL**

**A+W Software**

CMS  
Cugher Glass  
Deltamax Automazione  
Edgetech Europe

**Forel**

Lisec Group

Optima

**Prodim**

**SOLDERING EQUIPMENT FOR ELECTRICAL CONNECTORS FOR WINDSCREENS AND BACKLITES**

**Ayrox**

Easy Automation  
Softeco

**SORTING SYSTEMS**

**Forel**

**Glaston Group**  
GPM Automation  
Lisec Group

**SURFACE STRESS MEASUREMENT INSTRUMENT**

**Ayrox**

Glass Company  
Tecnosens

**WINDSCREEN STRESS MEASUREMENT INSTRUMENT**

Tecnosens

**WINDSCREEN AND BACKLITES**

Tecnosens

**TESTING FOR SOLDERINGS**

**Ayrox**

Easy Automation  
Softeco

**TESTING DEVICES OF BACKLITES ELECTRICAL HEATING**

**Ayrox**

Easy Automation  
Softeco

**THERMAL IMAGING SYSTEMS**

Glass Company  
Easy Automation  
Optris

**TIN FLOAT BATH FURNACES**

Horn  
IOCCO Group

**TIN FLOAT BATH SIDE DETECTION DEVICES**

Tecnosens

**TRADE ASSOCIATIONS**

Teknik Elmas  
Tesir Makine

**UV LAMPS**

**Helios Quartz**

**UV PORTABLE MACHINES**

**Helios Quartz**



**DOWNLOAD THE COPY**



**Glasstech Canada**  
Expo for Glass Industry  

**November 6-7, 2023**  
**Toronto Canada**

Exhibitor registration



**ORGANIZED BY**



**SUPPORTED BY**



**MEDIA PARTNERS**



[www.glasstechcanada.ca](http://www.glasstechcanada.ca)  
[info@glasstechmexico.com](mailto:info@glasstechmexico.com)



# SUBSCRIBE NOW TO THE WORLD'S LEADING

Glass Magazines



1988



**GLASS MACHINERY PLANTS & ACCESSORIES** is the leading international magazine for glass manufacturing, and is targeted at glassworks involved in the production and processing of hollowware and special glass (bottles, containers, household, lighting, technical, scientific, industrial and medical glassware).

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



1989



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

Annual Guides



1990



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



2013



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

# 10% DISCOUNT

FOR MULTIPLE SUBSCRIPTIONS

Digital Media

1996



The World's Leading Glass Industry Website

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



PRINT & DIGITAL

VIDEO INTERVIEWS



# SECTOR PUBLICATIONS

Subscription order form

ALL OF OUR PUBLICATIONS ARE ALSO AVAILABLE IN DIGITAL FORMAT FREE-OF-CHARGE

- I wish to subscribe for **ONE YEAR** (6 issues) at € **130,00**, air mail included
- I wish to subscribe for **TWO YEARS** (12 issues) at € **220,00**, air mail included
- Please **SEND ME** no. .... back copy/ies of issue no. .... year ..... (single copy € **29,00** post free)



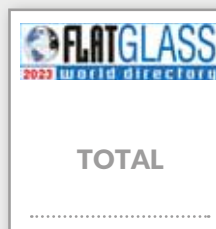
- I wish to subscribe for **ONE YEAR** (6 issues) at € **130,00**, air mail included
- I wish to subscribe for **TWO YEARS** (12 issues) at € **220,00**, air mail included
- Please **SEND ME** no. .... back copy/ies of issue no. .... year ..... (single copy € **29,00** post free)



- Please **SEND ME** no. .... back copy/ies of this year's edition at the price of € **30,00** each, air mail included



- Please **SEND ME** no. .... back copy/ies of this year's edition at the price of € **30,00** each, air mail included



TOTAL € .....

TOTAL PRINTED GLASS PUBLICATIONS € .....

TOTAL, LESS 10% DISCOUNT (FOR MULTIPLE SUBSCRIPTIONS) € .....

## PAYMENT

FOR ORDERS SENT BY EMAIL, PLEASE COMPLETE THE FORM BELOW PAYMENT BY BANK CREDIT TRANSFER ONLY

**BANK CREDIT TRANSFER** payable to  
 A151 srl has been sent to  
 A/c No. 100000067167  
 BANCA INTESA SANPAOLO SPA, Agenzia 353  
 Milano (MI), Italy  
 Bank coordinates:  
 ABI 03069 - CAB 01603 - CIN N  
 Swift code: BCITITMM  
 IBAN code: IT 43 N 03069 01603 100000067167

Name .....

Job Title .....

Company .....

Street .....

Post Code ..... City .....

Country .....

Tel. (int. + ..... / ..... ) .....

Fax .....

E-mail .....

www. ....

**ALL COMPANIES MUST ENTER: VAT OR UST ID / FISCAL ID / TAX ENROL / FEDERAL IDENTIFICATION / COMPANY REGISTRATION NUMBER**

NUMBER: .....

PLEASE TYPE OR PRINT IN CAPITAL LETTERS

N.B. AFTER RECEIPT OF PAYMENT WE WILL SEND YOU AN INVOICE. ALL BANK TRANSFERS MUST INCLUDE YOUR COMPLETE COMPANY ADDRESS AND THE MAGAZINE TITLES OR THE SERVICES REQUESTED. PLEASE ALSO NOTE THAT A151 SRL IS NOT RESPONSIBLE FOR ANY BANK EXPENSES, COMMISSION OR OTHER COSTS.

Date ..... Signature .....

**SEND BY FAX OR EMAIL TO:**  
**+39 - 02 - 66305510**  
**publications@glassonline.com**



### DEM

• Direct E-mail Marketing

### SOCIAL MEDIA



**A151 Srl** - Via Antonio Gramsci, 57  
 20032 Cormano (Milano) - Italy  
 Tel.: +39 - 02 - 66306866  
 E-mail: publications@glassonline.com  
**www.glassonline.com**

# REIMAGINING THE FUTURE THROUGH SMART INNOVATIONS

20<sup>TH</sup> INTERNATIONAL TRADE FAIR ON  
**GLASS PRODUCTION, PROCESSING,  
TECHNOLOGY & PRODUCTS**



**REVOLUTIONIZING THE FUTURE  
WITH INGENIOUS EXCELLENCE  
AND CREATIVITY**

**23-26** | BOMBAY EXHIBITION  
**NOV** | CENTRE (NESCO)  
**2023** | **MUMBAI**

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

   /zakglassexpo | #zakgte

# THE GLASS YOU ARE LOOKING FOR AWAITS YOU IN MILAN

VITRUM | FIERA MILANO RHO | 5-8 Sept 2023

MILAN GLASS WEEK | 4-10 Sept 2023

THE ITALIAN  
GLASS  
WEEKS

VISION  
MILAN GLASS WEEK  
focusing on a sustainable future



[www.vitrumlife.com](http://www.vitrumlife.com)  
[facebook.com/VitrumMilano](https://facebook.com/VitrumMilano)  
[twitter.com/vitrummilano](https://twitter.com/vitrummilano)  
[linkedin.com/company/vitrum-srl](https://linkedin.com/company/vitrum-srl)  
[instagram.com/vitrum2023/](https://instagram.com/vitrum2023/)

Secretariat  
Via C. I. Petitti 16  
20149 Milan Italy  
Ph. +39 02.33006099  
Fax +39 02.33005630



Ministero degli Affari Esteri  
e della Cooperazione Internazionale



ITALIAN TRADE AGENCY  
ICE - Agenzia per la promozione all'estero e  
l'internazionalizzazione delle imprese italiane



# FOREL



Edging Machine Art. EM

## PREDICT

market trends

## PROCESS

new solutions

## PERFORM

the glass of the future

THE NEXT EXHIBITION

VITRUM

VITRUM  
Milan, Italy  
5-8 September



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