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MIDDLE EAST glass MAGAZINE

WINDOOREX
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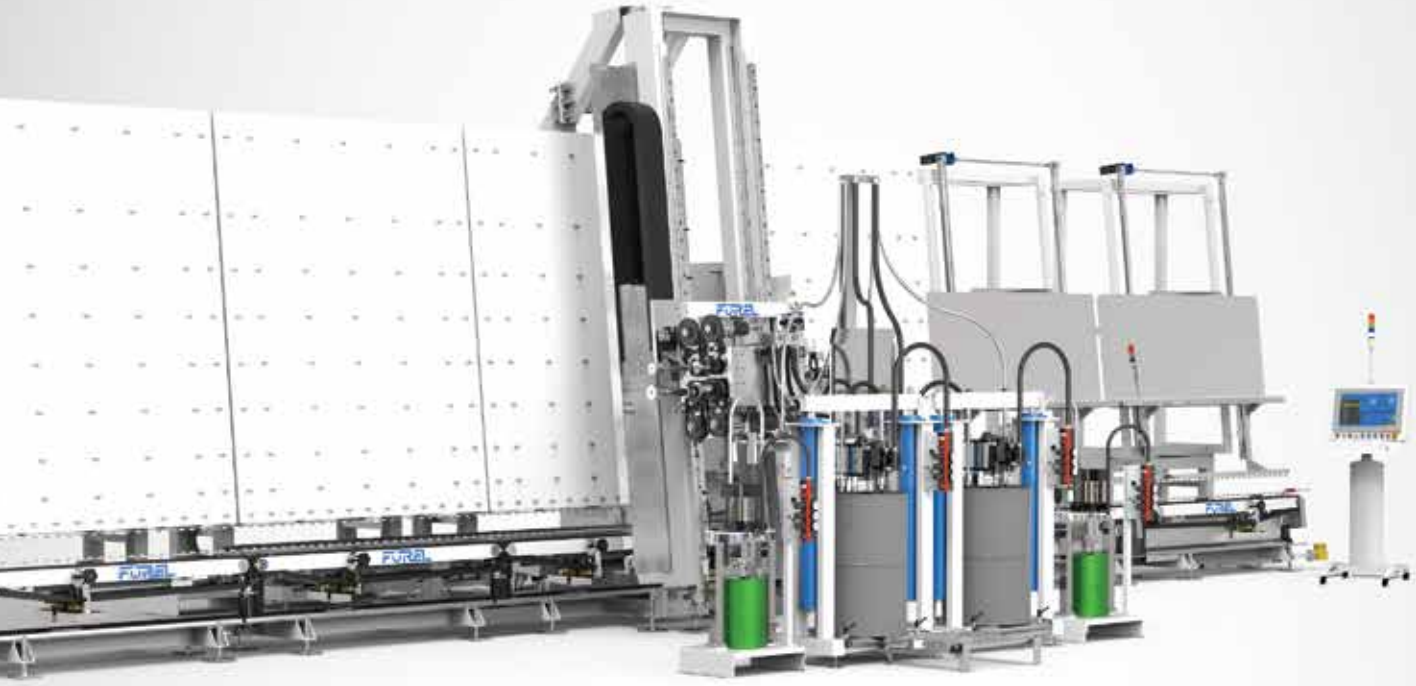

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Innovative glazing solutions for museums and art galleries

Super Spacer® makes "glazing art" possible

Ranging from the "most complex building in the world", the Museum of the Future in Dubai, to the spiral glass pavilion of the Audemars Piguet Museum in Le Brassus – Super Spacer® can lay claim to some very spectacular world premieres in facade technology in its list of references. The main reasons for this are the flexibility of the material during the production of free-form insulating glass and the high mechanical load-bearing capacity of structural glazing.

“Architecture is the canvas for the stories of our lives “, Bjarke Ingels once said. He is not only one of the most famous contemporary architects, but also a very gifted storyteller. And he feels the real task of his profession involves turning dreams into reality. Whether it’s with the aid of Lego bricks or the digital version of "Minecraft", people wish to transform their fantasies into reality. In the real world, architecture is often, by its very nature, subject to limitations.

This is why prestigious objects such as museums as well as concert halls and art galleries are so coveted in the architectural scene, since clients rarely impose limits on their designs. "Spectacular cultural buildings are tourist attractions and can become modern landmarks," says Joachim Stoss, Vice President International Sales at Edgetech Europe/Quanex. Via the curved insulating glass of the Berlin-based company Döring Glas, which has been operating as vandaglas since 2021, the flexible Super Spacer® is displayed in various museums; among other things, in sensational projects designed by the BIG Bjarke Ingels Group office such as the world's first refugee museum FLUGT in Denmark and the art museum "The Twist" not far from Oslo.

The supreme discipline of glass bending: Three-dimensionally free-formed insulating glass

A short distance from Oslo, masterpieces by Yayoi Kusama, Fernando Botero or Olafur Eliasson await you on the grounds of the Kistefos Art Museum in the middle of the Norwegian forest landscape. “The Twist” closes the circular path through the sculpture park above the Randselva

River. The spectacular 90-degree rotation transforms the gallery itself into a sculpture.

Döring supplied ten quadruple-glazed insulating glass elements with a glass package that is 55.04 mm thick for the structural glazing facade. The free-form units are manufactured using SGG Climaplus Contour with Super Spacer® TriSeal™. A PVB film blocks the UV radiation to shield the artwork from sunlight. The IG elements cover a total area of 98 square metres, the largest element covers an area of 5.2 × 2.5 metres and weighs an incredible 1.2 tonnes.

One of the largest floating art installations in the world, the "Salmon Eye", which opened in Hardangerford in September 2022, is also located in Norway. Initiated by Eide Fjordbruk, the world's

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first salmon producer to be certified for its CO2-neutral production, exhibitions and events covering an area of 1,000 square metres and extending across four floors are designed to inspire and inform us about the topic of the "improved supply of our planet with sustainable seafood".

The double-curved, ellipsoidal shape is modelled on a salmon's eye, the outer skin made of 9,250 stainless steel plates imitates the shimmering silvery fish skin. Despite its weight of 1,256 tonnes, the floating pavilion designed by Kvorning Design

has an elegant and light appearance. vandaglas supplied seven curved double-glazed insulating glass elements for the exterior panes. These result in a total arch length of around 16.6 metres. The laminated safety glass "CurvePerformProtect" with Super Spacer® TriSeal™ Flex, a spacer specially developed for curved glass, was used. As with the Kistefos facade, the panes are shaped three-dimensionally.

The number of glass benders actually capable of producing such insulating glazing in Europe is small. Carsten Kunert, Döring vandaglas' Site Production Manager, describes the challenges: "The difficulty with parametric 3D freeforms is to break down the 3D file from the BIM modelling to the neutral chamfer of the glass. Before actually bending it, the dimensions of the individual glass blanks must be determined for each individual bending plane, while taking into account the glass structure. Moreover, we require individual steel bending moulds for these multi-axis bends for each glass, which support the glass packages that weigh several tonnes at temperatures of up to 650 °C throughout the entire process. It was only through the use of state-of-the-art 3D drawing programs, direct data transfer to precision machines for mould making in addition to digital 3D measuring instruments that such complex shapes became possible in the glass construction sector. But despite highly intelligent simulation tools, the physical behaviour of the glass cannot always be precisely calculated. Spherical freeforms often require the use of trial-and-error bending tests as well as a large amount of experience."

Facade technology at the outer edges of what is possible

The Musée Atelier Audemars Piguet in Brassus, a small town more than 1,000 metres above sea level in the Swiss Jura Mountains, aims to tell "the story of talented watchmakers who, for generations, have continually pushed the boundaries of their craft". A glass double helix, that nestles in the landscape like a giant watch spring and is connected to the historic building where Audemars Piguet was founded in 1875, forms the heart of the new museum. Viewed from the outside, the curved all-glass facade, the 470-tonne greened steel roof, and the striking sunshade louvre fashioned from untreated brass determine its appearance. The pavilion takes the concept of structural glazing to the technological extreme in an unprecedented manner. In the absence of additional supports or stiffeners, the 101 curved, trapezoidal elements of the glass facade bear the loads. To achieve this,

the insulating glass units are bonded at the top and bottom in specially manufactured steel shoes using a high-modulus silicone sealant. Injection mortar prevents the glass edge and steel from touching.

The realisation of this vision was preceded by an intensive, technologically challenging collaboration between the BIG design team, the structural engineers from Lüchinger+Meyer Bauingenieure, the facade specialists FRENER + REIFER and the glass manufacturer SFL Glastechnik as the main protagonists, as well as countless load tests – involving loads of up to a maximum of 80 tonnes - and ageing tests.

In view of the harsh microclimate in the Vallée de Joux, snow loads of more than 5 kN/m2 and minimum temperatures of well below minus 20 °C had to be taken into account in the construction. In addition, the facade had to meet the Swiss Minergie standard for energy efficiency. The triple glazed insulating glass was produced to achieve a Ug value of 0.5 W/(m²K).

The sizes of the insulating glass units range from 2.4 m x 1.5 m to 2.4 m x 5.5 m. Although only four different bending radii were required, each unit is unique due to the fact that the top and bottom edges followed the natural course of the terrain.

The thickness of the laminated glass structure of the interior walls increases from the outside to the centre of the spiral up to 66 mm, consisting of up to 5 x 12 mm layers plus SGP film. The glass packages of the exterior facade are each 96.5 mm thick. The inner, load-bearing pane consists of triple laminated 12 mm solar control glass SunGuard® SNX 60/28 float glass with a SGP film, the middle 8 mm pane is unlaminated and the outer pane is 2x 8 mm laminated glass. SFL Glastechnik chose the Super Spacer® TriSeal FlexTM in black as the spacer.

"While it's true that thick glass packages only slowly heat up in the summer, it is intensive nevertheless. The partial shading of the glass by trees and other obstacles can lead to high temperature differences in the glass and thus to different degrees of expansion," explains Christoph Rubel, European Technical Manager at Edgetech, and continues: "Due the fact the thick glass structure is very stiff, the edge sealant must absorb any change in pressure in the space between the panes using spacers and silicone sealant." What's more, curved glass is in itself stiffer than flat glass and thus even higher climatic loads act on the edge seal in the space between the panes. Joachim Stoss explains the key advantage of the main material of a Super Spacer®: "The structural foam made of silicone is flexible, offers 100 percent resilience and can absorb even the highest mechanical loads. This ensures the tightness of the edge seal, which is of course a necessary property of every IGU. But due to the enormous value of the glasses made for this project it was especially important to prevent moisture from penetrating into the space between the glass panes and impairing their transparency."

Whether in the Swiss mountains, in Norway's arctic climate, or in a hot desert climate, the edge seal of structural insulating glass units must withstand all mechanical forces caused by temperature changes, wind and gravity without exception. The fact that Super Spacer® TriSeal™ withstand even the greatest loads without any problems has been proven in a hurricane simulator at a wind speed of 350 kilometres per hour subject to positive pressure and at a wind speed of 395 kilometres per hour under suction. Christoph Rubel explains: "Rigid spacers form a sharp edge in the edge seal when a certain pressure load has been exceeded, at which the glass can break. A flexible spacer also makes the edge seal flexible and dramatically reduces the risk of breakage here."

DORAGLASS chose Glaston HTBS & RC automotive tempering solutions to enhance its capabilities

Glaston has received an order for a Heat Treatment equipment, a HTBS line for bending and tempering and a RC Series line with the Turkish OEM customer DORAGLASS. The ordered lines were booked in Glaston's Q4/2022 order book and the lines will be delivered in Q4/2023.

DORA Automotive Glass Industry and Trade Inc. has manufactured qualified auto glasses for all brands and types of vehicles since 1983, now serving customers in 50 countries. The company has used Glaston's technology in glass processing since the beginning and is now strengthening its capabilities in the automotive tempering field with the latest technology to meet customer needs.

Commercial vehicle manufacturers are looking for high-performance and lightweight automotive glazing that has a positive impact on fuel economy, passenger safety and driving comfort. In addition, optical quality, functionality, as well as accurate positioning of labels and holes in ever-bigger window shapes, are essential.

With its flexibility and high-end product quality, the HTBS line enables glass processors like DORAGLASS to meet these market requirements. The new line enables the processing of even more challenging glass types.

In addition, the convection heating technology of HTBS and RC Series offers a solution to optimize energy consumption in glass tempering. Convection follows the glass through the heating cycle, only releasing as much heat as is needed for any specific load. This means even with low bed utilization rates, savings are high.

"Glaston has been a trusted solution partner for us for over three decades, responding to ever-changing market needs. Thanks to the entire Glaston team, especially sales, technical and after sales," says Mustafa Akkoç, Vice President of DORAGLASS.

"Our long co-operation is based on Glaston's broad technological expertise in convection heating technology, and with this latest product generation energy efficiency of production is also improved. We're happy to enable DORAGLASS to expand its capacity and capabilities in serving customers in an increasing urban transportation field," says Robert Prange, SVP Automotive and Display Technologies at Glaston Corporation.

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Glaston in brief
Glaston is the glass processing industry's innovative technology leader supplying equipment, services and solutions to the architectural, automotive, solar and display industries. The company also supports the development of new technologies integrating intelligence into glass.

Glaston is committed to providing its clients with both the best know-how and the latest technologies in glass processing, with the purpose of building a better tomorrow through safer, smarter, and more energy-efficient glass solutions. Glaston operates globally with manufacturing, services and sales offices in nine countries and its shares (GLA1V) are listed on NASDAQ Helsinki Ltd.


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Four advantages of laser diode heating in LSG cutting | Hegla

Equipped with the patented laser diode heating system, the ProLam LSR increases productivity by twenty percent in terms of pane throughput while also offering improved edge quality | Photo: Hegla

The new technology, which has been part of the ProLam LSR series equipment for just under three years, promises four advantages.

The ongoing rise in the proportions of laminated safety glass used in glazed products is placing glass processors under increasingly tight constraints. More stringent safety regulations have increased international demand and led to more widespread use of LSG, both as a stylistic architectural element and for functional purposes.

At Vitrum 2019, HEGLA presented their laser diode heating system, a new process that makes the cutting process twenty per cent faster and can therefore deliver higher cutting capacity on the same footprint. The new technology, which has been part of the ProLam LSR series equipment for just under three years, promises four advantages.

Focussed heat application shortens the cutting process by 20 per cent

The centrepiece of the process is a new, patented laser diode heating system that replaces conventional heating tubes. The added technical value is generated by the physical properties of the laser. The laser diodes consolidate the thermal energy of the laser, focus it on the scoring contour and apply it precisely to the film. Without any of the otherwise typical radiation losses into the air and the surrounding glass, the film reaches the required transformation temperature much faster than when using conventional techniques. Having already been incised and broken out, the glass is pulled apart during the heating process and then cut as a knife passes through it. The diode strip is mounted in a fixed position above the cutting area so it remains cool and does not have to be folded away, which saves time. This position also means that the timing of the individual processing steps can overlap, accelerating the overall process. “A lot of our customers are already using the ProLam LSR, and are impressed with how much shorter their cutting steps have become. In terms of cuts per hour, the system achieves 20 to 30 per cent higher productivity,” reports HEGLA Managing Director Bernhard Hötger.

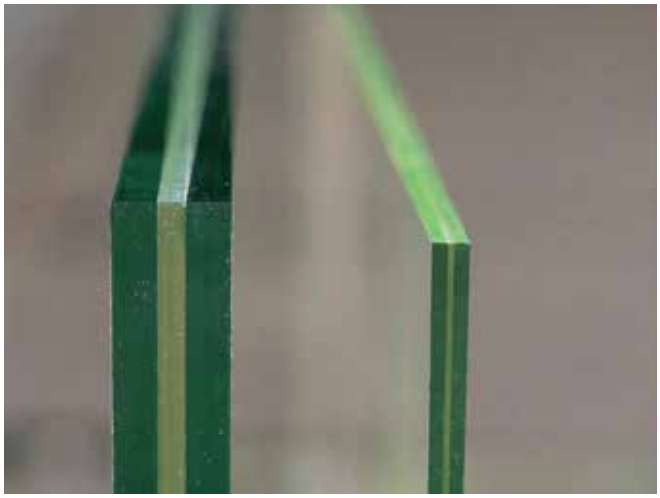
The ProLam LSR is equipped with the laser diode heating system as standard, and features a high level of automation with flexibility and cutting results that offer maximum edge quality.The ProLam LSR is equipped with the laser diode heating system as standard, and features a high level of automation with flexibility and cutting results that offer maximum edge quality.

No waiting for the next cuts

The thicker the LSG and the film, the more time the laser can save for HEGLA's customers. The consolidation of the energy and the very low radiation losses allow the heat to be focussed and applied along precise lines. When penetrating the glass, the laser retains more of its strength than conventional heaters, enabling the glass to be heated in a shorter time. "LSR technology features considerably lower heat loss into the surrounding pane and the air, resulting in two more advantages that are even greater than we expected when we first started developing the product," says Bernhard Hötger. "Even when cutting thicker units, the glass only becomes warm to the touch at the edges. That means customers can move straight on to their next cut without waiting for the glass to cool down first."

High-quality glass edges

Consolidating the laser's thermal energy also offers another benefit in terms of edge quality. "When the glass is pulled apart, only the heated film in the cut is stretched. Tests at the Fraunhofer Institute have shown that the remaining laminate remains unchanged by the local application of heat, reducing the previous causes of subsequent delamination to a minimum.



The precise application of heat energy and zero-offset dual cutting heads yield high edge quality without delamination.The precise application of heat energy and zero-offset dual cutting heads yield high edge quality without delamination.

Shorter boot-up time saves energy

The laser diode strip is divided in half and, to save energy, each side is activated completely or partially depending on the length of the cut. The much shorter boot-up time also improves the system's carbon footprint. When the system reaches 20,000 operating hours or more, the diode strip has proven to require less maintenance and be more durable than the conventional technology.

The ProLam LSR can also be used as a component of a highly automated cutting line together with the AdvaLam, for example, to achieve even higher productivity.The ProLam LSR can also be used as a component of a highly automated cutting line together with the AdvaLam, for example, to achieve even higher productivity.

Adjustable to suit specific needs

The ProLam LSR comes equipped with the laser diode heating system as standard, and some existing systems in the ProLam series can also be retrofitted. Other features, such as the Kombi variant with automatic edge deletion, a float cutting head and built-in breakout bars add to the range of functions on offer. HEGLA boraident also continue to offer non-destructive laser printing to give your glass a bespoke, machine-readable marking. If the marking is applied before cutting takes place, the glass production process can be fully digitalized by scanning the code. This technology can be used for purposes such as triggering process steps during production, tracking workflows across the entire product life cycle, and reading the glass data using a scanner – even many years down the line. If required, additional information such as fire protection certificates can also be saved in the marking.

AUS architecture graduate turns to landscape design with award-winning Results

Only a few months since her graduation from the College of Architecture, Art and Design (CAAD) at American University of Sharjah (AUS), Maitha Al Hammadi is being recognized for forging her own path as she applies her Bachelor of Architecture degree to the field of sustainable landscape design.

Launching her career as a landscape designer with global infrastructure developer Parsons, Al Hammadi said she realized before graduation that she wanted to do something beyond working in traditional architecture practice.

“The architecture program at CAAD had a focus on how to design buildings formally and materially, however some instructors’ design methods came from a respect for the landscape. Being exposed to this, I found my personal interests growing towards landscape architecture and decided to give it a try,” she said.

AUS is number one in the UAE and among the top 200 universities globally for architecture and the built environment (QS World University Subject Rankings, 2023). A recent symposium celebrating CAAD’s first 25 years highlighted the flexibility of graduates who, like Al Hammadi, have gone on to make contributions in areas beyond their undergraduate major, applying their CAAD education across many fields.

Earlier this month, Al Hammadi won the 2022 TotalEnergies Sustainability Award, which recognizes young Emiratis in the fields of sustainable design and architecture.

Her work, “Agro-Industrial Tourism”, which she produced under the supervision of Associate Professor Jason Carlow during her final year of studies in the CAAD, imagines a sustainable destination between Etihad Rail and the UAE’s agricultural setting, merging agriculture, tourism, soil and aquifer treatment, and utilizing waste from the UAE’s dates industry.

Al Hammadi reflected that during her five years on campus, sustainability was a common thread throughout her university experience. In 2021, she and fellow CAAD student Afra AlFalasi won first place for their original design for a sustainable floating school in a flood-impacted area of Bangladesh, as part of the Climate Change Challenge initiated by the Fatima bint Hazza Foundation.

“I would say that sustainable thinking was something I got out of my educational experience at AUS. We had sustainability-themed initiatives taking place on campus all the time and sustainable approaches in design were always part of the discussion and conversation in architecture studios,” she said.

“This equipped me for my current job, where sustainable design is definitely taken into consideration and is encouraged wherever relevant and applicable, given that the construction industry makes up a large portion of pollution in the atmosphere,” she said.

Jason Carlow said CAAD is the ideal choice for students who aspire to a career in design and also want to be part of an institution that prioritizes

sustainability.

"Maitha's project was sophisticated in thinking about how economic and cultural ideas for sustainability are combined with respect for the UAE's landscape and agricultural ecology," said Carlow.

"As part of the university's sustainability agenda, all AUS students are equipped to do this—to think critically about sustainability in both academic and extracurricular activities, regardless of their major. For architecture students like Maitha, AUS offers incredible opportunities to apply sustainable thinking to the future of design and planning," he said.

For more information about American University of Sharjah, its programs and sustainability priorities, visit www.aus.edu.

Tiama HOT mass 2: the new generation of sensor for gob monitoring

The Tiama HOT mass 2 provides glass manufacturers real 3D views of gobs and accurate measurements for gob shape such as length and diameters.

The Tiama HOT mass 2 is the new generation of hot end sensor dedicated to gob monitoring.

Today, gob monitoring systems have become a must have for glass plants and monitoring the gob is a key step in improving process control as glassmakers usually say that 80% of the defects created come from the gob.

Thanks to its unique configuration, the Tiama HOT mass 2 provides real 3D views of gobs and accurate measurements for gob shape such as length and diameters.

The control of the gob shape is essential to limit the creation of defects.

The system also provides temperatures, falling angles and speed measurements in real time.

The Tiama HOT mass 2 keeps the gob weight stable through two closed loops: the system regulates automatically the tube height and the needles positions.

Performance achieved by the system is promising. For example, for a production with a weight setpoint at 955g, the Tiama HOT mass 2 regulates the gob weight within +/- 1g.

Thus, weight limits can be set to a minimum and the weight setpoint reduced. A reduction of only 1g means significant savings for a glass factory.

This automatic gob weight control frees up time for operators who can concentrate on more added-value tasks around the IS machine.

The limitation of carbon impact is a priority for glass factories. Better weight stabilisation also helps to support plants in the production of lighter containers.

The Tiama HOT mass 2 is universal and can be connected to any kind of IS machine and process.

The technology used by the system makes it possible to have a compact solution that can be easily installed and requires only very little maintenance.

Tiama was the first supplier to offer gob monitoring sensors with the GIA and then the Tiama HOT mass.

Many years of experience and installations around the world have made Tiama HOT mass 2 an efficient and ergonomic system that meets customers' needs.

Fully integrated in the YOUniverse concept, Tiama HOT mass 2 is compatible with the different information systems used by glass plants.

Glass for Europe: The net-zero industry act needs to be beefed up rapidly

Energy-efficient buildings products such as high-performance glazing must be considered as 'strategic net-zero technology'.

During the last week, the European Commission unveiled a series of proposals for regulation and initiatives[1] aiming at reducing the instability in energy prices, boosting the competitiveness of European-based industries and accelerating Europe's transition toward a low-carbon economy. Despite the laudable objectives and numbers of initiatives, Glass for Europe expresses its doubts about the ambition and effectiveness of the overall package of measures.

Commenting specifically on the 'net-zero industry act', which provides the overall policy direction, Bertrand Cazes, Secretary General of Glass for Europe, declared: "What was presented today is a very minimal step to encourage industrial investments in the EU". The proposed measures to boost investments in 'net-zero technologies' are relatively limited, and financial support put forward in the new Temporary State Aid and Transition Framework remains heavily constrained. Measures put forward are not fundamentally improving the business case for long-term industrial investments as they lack decisive actions to address Europe's high production costs.

"It is unclear if this is going to be enough to counter-balance the higher and instable energy costs that are likely to remain a reality for the European industry", continued B. Cazes. It is difficult to foresee if the proposed reform of the electricity market design will be efficient at substantially lowering electricity costs for European industries, while the availability of green hydrogen and alternative fuels remains a point of interrogation.

Glass for Europe welcomes that solar PV and solar thermal are among the 'net-zero technologies' available for some support and that the production of their major components such as solar glass is covered. This confirms the relevance of the work of the "Solar PV Industry Alliance" launched by the European Commission, where Glass for Europe attempts to create a new framework conducive to solar glass manufacturing capacities in Europe.

B. Cazes nevertheless regrets that "the limited support put forward is restricted to happy-few net-zero technologies. It is incomprehensible that materials and products for energy-efficient buildings are not included as a strategic net-zero technology. This is at odd with the Commission's own analysis about the importance of building renovation", for instance the EU renovation wave or the Save gas for a safe winter plan, which emphasize the importance of building renovation to save energy and succeed in the carbon transition.

"The net-zero industry act needs to be beefed up rapidly!" concludes Bertrand Cazes.

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[1] Net-Zero Industry Act - Temporary State Aid and Transition Framework - Global Block Exemption Regulation – Electricity Market Design Reform – Critical Raw Materials Act.

CHINA GLASS 2023

32nd China International Glass Industrial Technical Exhibition

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Decarbonisation in glass machinery manufacturing

How do I reduce my CO2 footprint as a manufacturing company? The industry working group Research & Technology conveyed various approaches that can also be implemented in glass machinery manufacturing.

The European Green Deal - climate neutrality by 2050 - has a massive impact on society and industry. European regulation, financial and capital markets, market perspectives as well as product branding and the handling of resources and nature are topics that companies have to deal with when it comes to their future competitiveness. There is no way around measures that serve to improve one's own environmental balance. This is primarily a matter of reducing and avoiding carbon dioxide, not so much of compensating for it.

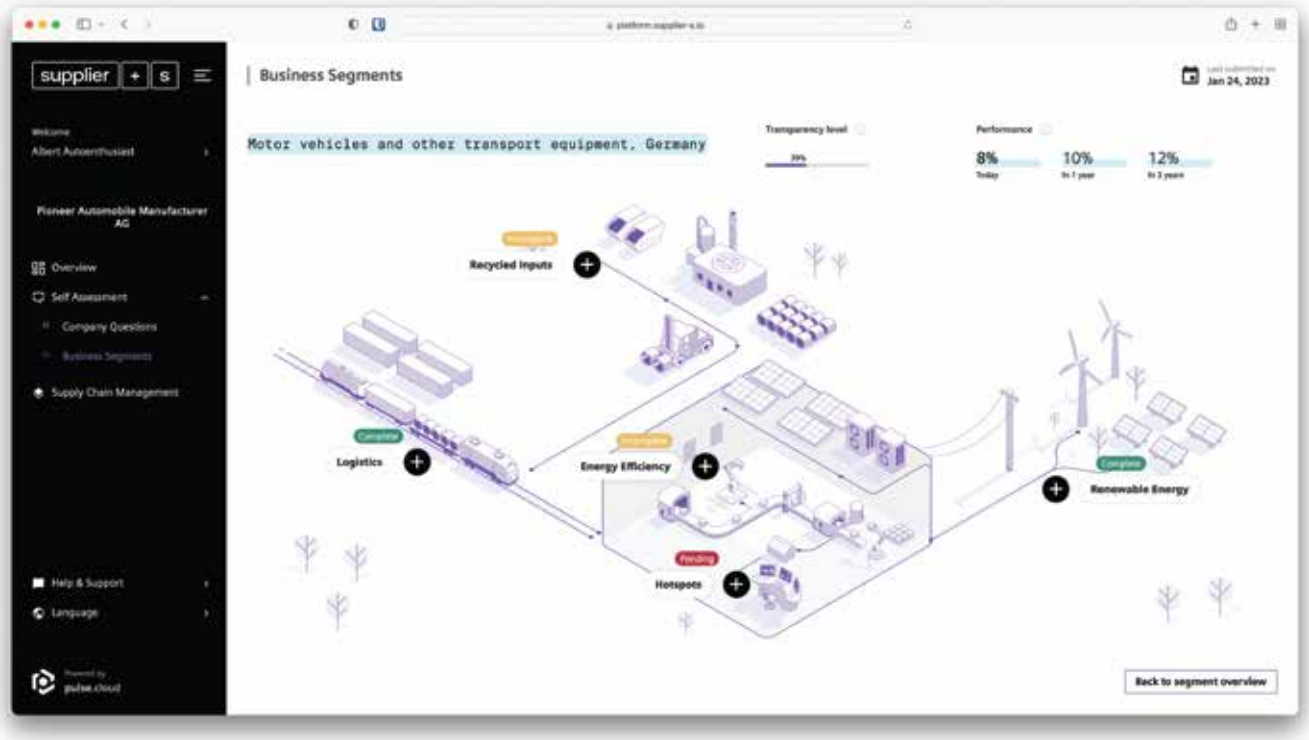
According to the Greenhouse Gas Protocol - a recognised international standard for accounting and reporting greenhouse gas emissions - reporting for companies distinguishes between direct emissions from own combustion (Scope 1), indirect emissions from the purchase of grid-bound energy (Scope2) and other indirect emissions from processes and products caused directly or indirectly by the company (Scope 3).

More transparency via software

Not only the company's own production, but also the climate footprint of its suppliers plays a decisive role (Scope 3) - especially with regard to the European Supply Chain Act. Siemens AG, a global corporation with 66,000 suppliers in 145 countries, is mastering this challenge with a software tool that Siemens developed together with the company ctrl+s. Suppliers go through an assessment that influences the company's purchasing decision. By 2030, Siemens wants to reduce its upstream CO2 footprint (Scope 3) by 20 per cent and be climate neutral by 2050. The aim is not only to evaluate primary data supplied by suppliers, but also to make suggestions to the supplying business partners as to what steps they can take to improve their own CO2 footprint.

Two years ago, Siemens launched the carbon-reduction@suppliers programme. With the help of the Carbon Web Assessment Tool - now renamed "supplier+s" - Siemens asks its suppliers about categories ranging from energy efficiency, green electricity, economic options for low-carbon electricity and low-carbon heating and cooling, energy-efficient processes, logistics and the use of recycled products to business travel. Suppliers can enter both current values and target values for subsequent years. The system calculates an overall rating in percent from the individual entries and shows the deviation from the industry average. Since not every supplier already knows his processes so well that he could provide detailed information on them, the tool allows adjustments and updates at any time. The system uses model graphics, for example, to illustrate where further optimisation possibilities exist are and provides suggestions. In this way, it helps companies to continuously improve their carbon footprint and develop a Net Zero strategy. Siemens makes the assessment tool available to its suppliers free of charge.
To enable other companies to manage emissions in their own supply chain, Siemens transferred the rights to the company ctrl+s at the beginning of 2023, which now offers "supplier+s" on the market.

Reduce the power consumption of machine tools
In the production of parts with machine tools - also in glass machine manufacturing - the focus is increasingly on electrical energy consumption according to Siemens Digital Industries. Not only because the associated CO2 emissions have a negative impact on the manufactured components. The rising costs of electrical energy are also making the production process more expensive. Reason enough to take a closer look at the savings potential here. The focus here is on the auxiliary units of the machines. According to a study by the Technical University of Darmstadt, these account for 80 per cent of the energy consumption over the life cycle of the machine. Therefore, the automatic shutdown of the auxiliary units during breaks already brings noticeable energy savings. Adjusting the speed of the auxiliary units to the respective machining situation by means of a frequency converter is another important lever. Finally, all measures to avoid "non-cutting" times of the machines - in addition to maximising



productivity - also automatically lead to minimising the consumption of electrical energy. Digital twins for the "offline" creation of CNC programmes or features for quick machine set-up are thus further adjusting screws. The decisive prerequisite for taking concrete measures is not least the visualisation of energy consumption.

With direct current to climate neutrality

Making production plants more energy-efficient and CO2-neutral is another building block for a successful energy transition. DC grids enable a technological leap towards climate neutrality, resource conservation and grid stability. The latter is essential to ensure a reliable energy supply, even when using renewable energies. Factory-internal DC grids can compensate for their fluctuations, absorb peak loads and make energy generated in-house from renewable sources available with a time delay.

Weidmüller Interface GmbH & Co. KG was a partner in a cooperation project with 35 companies that looked at the possibilities of using DC technologies. The company offers system specifications as well as components and solutions for the construction and operation of DC networks.

So, what does it mean to set up such a grid? The energy supplier continues to supply the company with energy in AC technology, which is converted into DC at the transfer point in the production plant. Adjustments are necessary for feeding in the energy, for switchgear technologies and protection concepts as well as some other components. Then an energy bus routes the transformed energy on to the consumers such as machines, vehicles or the technical equipment in the building. For years, some machines, for example injection moulding machines, have already been operating internally with DC technology. Furthermore, in-house systems for energy generation and storage can be integrated more easily (for example photovoltaic systems or battery storage). This automatically reduces the power that has to be fed into the grid from the energy supply company for production. Other advantages are that valuable copper is saved, and the cross-section of the cables is reduced. Since the company can decouple itself from the disposal company, the internal network is much more robust and stable, storage systems provide the balance and dealing with EMC becomes easier.

VDMA guideline as a practical guide

The VDMA supports companies on their way to climate neutrality. The practical guide "Climate-neutral production - recommendations for action for mechanical and plant engineering" is available from the association (available in German language). It describes in eight steps how companies can basically achieve climate neutrality. The starting point is first the Corporate Carbon Footprint (CCF), which illuminates the current situation.

Based on this, planning and adjustment of future emissions takes place by investing in more energy-efficient production facilities. At the same time, a switch in supply from renewable energy sources can take place. In the long term, it is important to map the transparency of the CO2 footprint in the entire supply and value chain (Scope3 - emissions). In the future, the digital product passport will store all information on the life cycle of a product so that customers and end consumers can retrieve and understand the production conditions. The VDMA has developed a guideline for determining the PCF, which is currently in the consultation phase.

For more information, visit www.vdma.org.

Important links:
https://vdma.org/glass-technology

Do you have any questions? Gesine Bergmann, Glass Technology Forum,
Phone +49 69 6603 1259,
gesine.bergmann@vdma.org, will be happy to answer them.

Press contact: Martina Scherbel,
martina.scherbel@vdma.org, +49 69 6603 1257

The VDMA represents more than 3,600 German and European mechanical and plant engineering companies. The industry stands for innovation, export orientation and SMEs. The companies employ around 3 million people in the EU-27, more than 1.2 million of them in Germany alone. This makes mechanical and plant engineering the largest employer among the capital goods industries, both in the EU-27 and in Germany. In the European Union, it represents a turnover volume of an estimated 860 billion euros. Around 80 percent of the machinery sold in the EU comes from a manufacturing plant in the domestic market.

R.C.N. Solutions: CNV, the conveyor making lamination logistics easier

Maximize production and reduce manual operations with RCN Solutions' semi-automatic conveyor for glass loading

Efficient logistics allows customers to maximize production and machines manufacturers should be proactive and contribute to facilitate the organization by enhancing automation.

In glass lamination, some jobs like loading and positioning of glass into laminating bags are usually manual demanding time and strength, and in case of heavy glass combinations should be handled.

In this view, RCN SOLUTIONS has developed a semi-automatic conveyor for glass loading prior to lamination. This system, recently and successfully installed in Japan, grants the automatic loading and positioning of the glass directly into the laminating bag. The conveyor, equipped with rollers, first slides over the lifting platform, lifts and releases glass directly into the laminating bag while moving back to the original position.

Ideal for big size machines and production volumes, particularly when jumbo and oversize laminations are becoming part of normal production for most glazier shops, CNV can be manufactured according to customers' requirements.

RCN SOLUTIONS offers devices and machines to maximize customers' manufacturing time and reduce the number of manual operations.

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New features of Sparklike Laser Portable 2.1

Measuring gas concentration of IGUs – How to make it more cost-effective and easier?

In the beginning of 2023 Sparklike launched renewed Laser Portable 2.1. To clarify what has changed, this article gives a detailed information what and why the changes were made and why those improvements ease the use of Laser Portable and enhances the measuring of IGUs. The answers to these questions are given by R&D Engineer at Sparklike, Kai Niiranen, to provide understanding to the topic.

Why and how IGUs should be measured?

One of IGUs purpose is to provide better temperature control hence it impacts the energy efficiency of buildings. When the insulating gas concentration is sufficient it prevents heat loss. Therefore, measuring IGUs is much related to product quality assurance. Operators within the insulating glass industry are looking to achieve good quality, but also compete with that, while maintaining quality related costs under control (Link: https://blog.sparklike.com/7-ways-to-reduce-quality-costs). That is why different ways to increase the certainty of sufficient gas fill within IGU's is one major reason to measure insulating gas concentration. Furthermore, since a gas escape can occur from improper sealing of the IGU, the unit's gas fill level needs to be tested prior to shipping the IG to customers.

Additionally, the need for quality control stretches throughout the product life cycle since product liability for the IGU manufacturers and suppliers can last several years after the initial delivery of the product. Eventually, the IG manufacturers, window and door manufacturers, testing laboratories, building quality inspectors and construction consultants started to require insulating glass gas fill analyzers that could comfortable be moved around, not only within the factory, but could also be easily taken to building sites. For this, Sparklike Laser Portable 2.1 is an excellent device.

New features of Sparklike Laser Portable 2.1

What has changed in Laser Portable 2.1?

Sparklike Laser™ product line was developed to correspond to the changes in the insulating glass industry, where an ever-increasing number of insulating glass units are manufactured with coating on both sides. Mr. Niiranen first developed the Sparklike Laser Standard™ device which is an offline solution for test laboratories and desktop use. This device was later integrated into a robust case with wheels and a battery for mobility in factories and building sites, and labelled Sparklike Laser Portable™. In 2023, the newest version of the device was launched with new features.

“The main look has remained the same to keep the “LP” signature appearance but when you look at the details there are changes” says Mr. Niiranen. Compared to the previous model, Laser Portable 2.1 has doubled its operational time by adding a twin battery. Also, the previously optional accessory barcode reader comes now as a default when purchasing the new device. This was made to provide traceability as a basic function which is important in the current business environment.

New features of Laser Portable 2.1:

Twin battery which means the device’s operational time is doubled.
12" capacitive touch screen
New transport box to even guarantee safer transportation *mandatory for Sparklike device transportation insurance*
QR-code reader to trace IGUs
Main power switch with indicator led
Charger status indicator
Gas bottle holder (optional)
Redesigned device protective cover (optional)
New features of Sparklike Laser Portable 2.1

Improving the IGUs measuring experience and quality of Laser Portable
The new features have not been chosen to be improved by accident but there are reasons why Sparklike wanted to focus on those parts. Mr. Niiranen explains “With Laser Portable 2.0 we got feedback regarding the touch screen and its holder, which we naturally wanted to solve as it is quite easy fix. Another simple decision was adding the main switch.”

In the previous model 2.0 there were no main switch but to facilitate the user experience the main switch was added. This feature solves the problem with power switch which many users had difficulty to understand. Now the device cannot execute any be started unless the main switch is turned on. Also, the charger status indicator helps the operator to check the status of the charger while use.

The transportation box was changed to a more protective one to guarantee safer deliveries. Kai explains that sometimes when the devices have been sent to maintenance, the packaging solutions have been hazardous which is why it was important to offer a compact transport box. All Laser Portable 2.1 are delivered in this box, but it can be purchased separately to older devices since it is related to Sparklike CARE™ (Link: https://www.sparklike.com/care-and-maintenance/sparklike-care), automized maintenance & calibration program, which has new addition: full insurance. To be justified to the insurance, the Sparklike device must be delivered in Sparklike official hardcase (for Handheld) or transport box (Laser Portable).

Additional new features are gas bottle holder to which the idea from own experience tells Mr. Niiranen. “The Laser Portable must be flushed before use to guarantee correct readings, so one time when using a smaller gas bottle there were no place to put the bottle and the holder idea arose. We thought that there might be others too who has phased the same.”

Becoming the Global Standard to Measure Insulating Gas
The only thing constant in a R&D Engineer’s life is testing new improvements and ideas, Mr. Niiranen sums up. Sparklike does not stop its development of devices but always wants to innovate to keep its pioneering position in the glass industry. As the only non-invasive gas measurement company in the world, Sparklike continues its mission to revolutionizing energy efficiency in the insulating glass industry by offering the best devices to optimize the use of insulating gas of IGUs. We want to assure that Every Glass Gets Measured by creating global standard for measuring IGUs gas fill.

Window Safety Week Observed April 2-8

Spring is here, which means the Window Safety Task Force, in partnership with the National Safety Council, encourages parents and caregivers to recognize the importance of practicing window safety.

However, open windows any time of year can be dangerous for young children who are not properly supervised.

“Most people look forward to the warmer weather that comes in spring, providing the opportunity to enjoy fresh air through open windows,” said Angela Dickson, Co-Chair of the Window Safety Task Force. “However, to avoid accidental falls, the task force urges those in the industry to share window safety tips to keep children safe – post tips on your website and share via social media to help spread the word. These simple steps could save a life.”

Each year, the Window Safety Task Force takes the first full week in April to educate on the importance of practicing window safety year-round. Annually, about eight children under age five die from falling out a window, and more than 3,300 are injured seriously enough to go to the hospital.*

To protect children, the Window Safety Task Force offers the following tips:

1. When young children are around, keep windows closed and locked.

2. When opening a window for ventilation, use those located out of a child’s reach.

3. Don’t place furniture near windows to prevent young children from climbing and gaining access to an open window.

4. Don’t allow children to jump on beds or other furniture to help reduce potential falls.

5. Don’t rely on insect screens to prevent a window fall. Insect screens are designed to keep bugs out, not to keep children in the home.

6. Supervise children to keep child’s play away from windows, balconies or patio doors.

7. Install ASTM F2090-compliant devices designed to limit how far a window will open to help prevent a fall.

To protect children, the Window Safety Task Force offers the following tips:

Visit the window safety sections of the FGIA and WDMA websites to learn more. Follow the Window Safety Task Force on Twitter, Facebook and Instagram for more tips and updates on this important safety issue. Download an infographic providing window safety tips is available for download and use on social media.

*According to Safe Kids Worldwide’s 2015 Report to the Nation: Protecting Children in Your Home

About the Window Safety Task Force
The Window Safety Task Force was formed in 1997 to promote greater awareness of window safety. The task force is comprised of members representing the Fenestration and Glazing Industry Alliance (FGIA) and the Window & Door Manufacturers Association (WDMA) in partnership with the National Safety Council, as well as manufacturers of windows, doors and screens.

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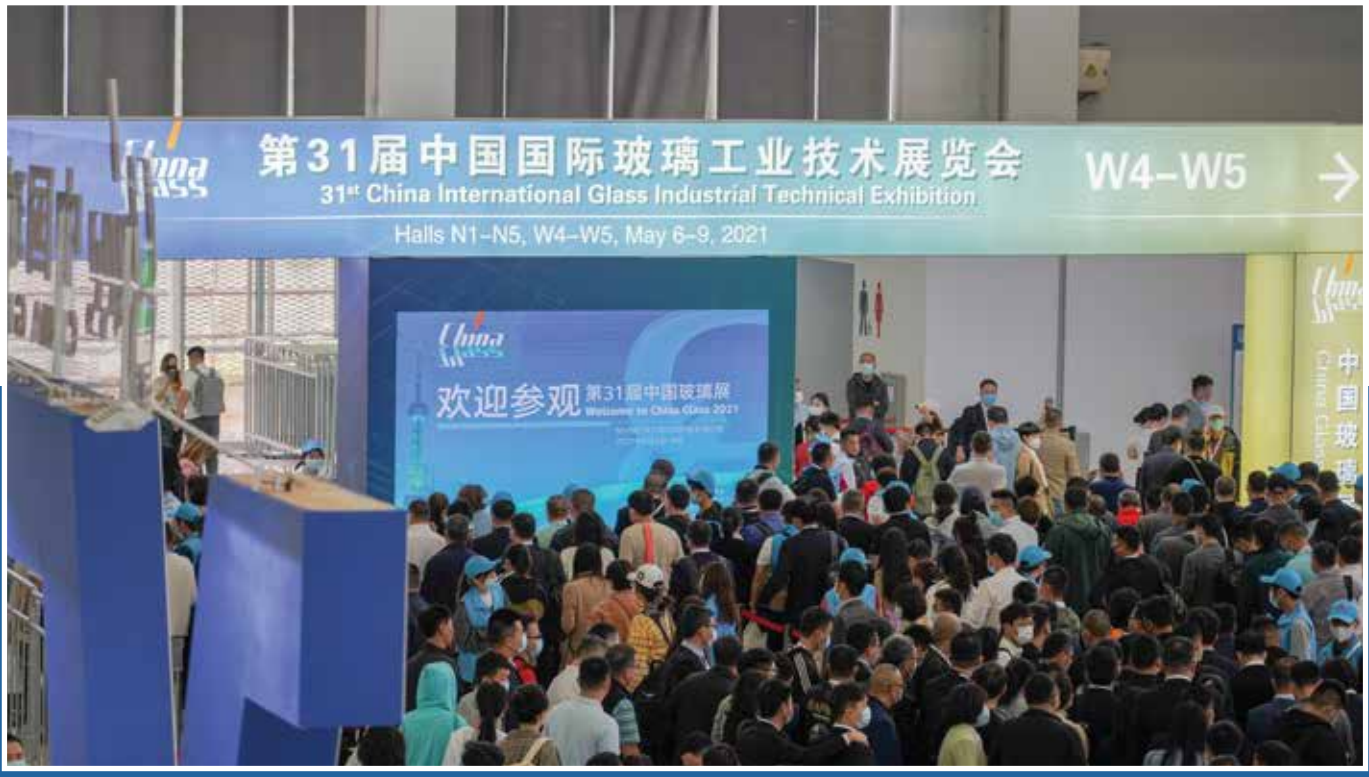
The 32nd China Glass Exhibition will be grandly held in Shanghai in May



Organized by the Chinese Ceramic Society and executive organized by Beijing Zhonggui Exhibition Co., Ltd., the 32nd China International Glass Industry Technical Exhibition will be held from 6 to 9 May 2023 at Shanghai New International Expo Centre. China Glass Exhibition, which integrates hosting and undertaking, and with completely independent intellectual property rights, is the only professional exhibition in the glass industry that is supported by authoritative industry organizations at home and abroad. Since its establishment in 1986, China Glass Exhibition has always been rooted and developed in the industry, and has been forging ahead without fears of various twists and turns for more than 30 years. It offers services to promote China's transformation and upgrade from a glass producing country to a manufacturing power. Nowadays, China Glass Exhibition has become the first platform for the exchange and display of the whole industry chain of the domestic glass industry.

At present, with the implementation of the comprehensive opening entry policy, the domestic economy is stabilizing and rebounding, which will bring more opportunities for domestic and foreign economic and trade, as well as technical exchanges in the glass industry. As a professional and authoritative exhibition platform in the industry, the 32nd China Glass Exhibition will provide more business opportunities for smoothing the domestic circulation of the glass industry, promoting the international and domestic dual circulation, offering a technical exchange platform for the green, low-carbon and high-quality development of the glass industry, energizing confidence into the growth of the global glass industry and contributing to China's strength.

The exhibition will use 7 halls of Shanghai New International Expo Centre: N1 to N5, W4 and W5, with a display scale of nearly 90,000 square meters this year. Among them, Hall N1 is the international exhibition area; Hall N2 is the glass production exhibition area; Hall N3 is the tempering furnace and refractory exhibition area; Hall N4, N5 and W5 are the deep processing

equipment exhibition area, and Hall W4 is the raw materials, main and auxiliary materials, daily glass and art glass exhibition area. At present, more than 800 manufacturers from 24 countries and regions, such as the United States, Germany, Italy, the United Kingdom, France, Japan and other countries and regions have confirmed their participation. At the same time, the German national delegation organized by the German Federal Ministry of Economic Affairs and Energy, and the German Machinery and Equipment Manufacturing Federation, the Italian National Delegation organized by the Italian Foreign Trade Commission, and the Italian Glass Processing Machinery and Accessories Manufacturer Association will appear in the exhibition. It will attract nearly 40,000 glass industry professional visitors to participate in the event.

In the past three years, the ups and downs of the pandemic have tested the resilience of the glass industry chain. Solutions on how to adjust and optimize the supply chain of enterprises and build competitive industrial chain advantages will be found at this exhibition. With its huge scale and brand influence, China Glass Exhibition has attracted mainstream brands in the global glass industry and many leading manufacturers in industry segments, effectively promoting the docking and integration of upstream and downstream enterprises in the industrial chain, as well as the formation of a more stable and coordinated industry supply chain, and achieving a symbiotic and win-win situation of the whole industrial chain.

As the most high-profile professional exhibition in China's glass industry, China Glass Exhibition has always adhered to the concept of "specialization, international and large-scale" fair, providing a new platform of exhibition services for new products and technologies in the industry, focusing on the intelligent, digital, green and low-carbon transformation of the industry, leading the quality and efficiency transformation of the glass industry, and helping the glass industry achieve green, safe and high-quality development.

Warmly welcome domestic and foreign glass industry manufacturers and colleagues to visit the exhibition. Pay attention to the official account of China Glass Exhibition or visit official website: www.chinaglass-expo.com for more information.

Making glass clearer than ever at Guardian

Clarity Neutral - a new generation of advanced anti-reflective coated glass

Developed to meet the growing desire for higher transparency, neutral-looking glass, Guardian Clarity™ Neutral is a new advanced anti-reflective coated glass for a wide range of commercial applications. Liam Williamson, Product Commercialization Manager Europe, and Dr. Jens-Peter Müller, Project Leader Vacuum Coatings at Guardian Glass, explain the aesthetic and performance improvements provided by this new generation of products, as well as the development challenges that were overcome.

Guardian Glass has introduced a new anti-reflective glass. Is this a new product?

[LW] Yes, it's a new generation of advanced anti-reflective coated glass called Guardian Clarity ™ Neutral. The product offers improved aesthetics and performance compared to the old Clarity product. In fact, it provides the highest transparency of any Guardian Glass product to date. In the visible range the light transmission of the new product is now well above 98%, which was not the case for the old product. In addition, having a higher color rendering index now, for the end customer, this means truer, more natural views through the glass. The product was launched onto the market in October 2022, and we are currently receiving orders and ramping up production.

Where is Guardian Clarity ™ Neutral performing better compared to the old Clarity?

[JPM] This new product has better thermal stability, which means we see less color shift in remaining reflection of the coated glass due to heat treatment. This allows us to define the product in a much smaller color box, i.e. with a more precise and consistent appearance. Compared to the old product, the size of this box has been reduced by around 50%, especially for the bluish color. Clarity ™ Neutral is now less blue and more neutral.

Those advantages have been achieved due to the optical design of the layer stack – a special composition that utilises alternating low index and high index dielectrics.

Better thermal stability also helps to widen the range of applications that the glass can be used in, for example, when printing colors or enamelling onto the glass, which is an emerging market.

Also, due to the product composition, glass fabricators will see much less residues from abrasive processes on the final product. This means the glass is easier to clean after processing.

Heat treatment of coated glass results in partially non-perfect surface structures, where photons will deviate from optical path in transmission and reflection, called haze. With Guardian Clarity™ Neutral we reduced the haze level by a factor of 2 to about 0.5 % only.

Besides higher visible transmission we have also higher solar transmission, which results in 2% higher solar factor for low-e applications. With around 15% less transmission in the ultraviolet range on float glass, Guardian Clarity™ Neutral ensures less product damage due to ultraviolet rays in retail storefront applications.

As Liam mentioned, in terms of true color, this has improved too. Guardian Clarity™ Neutral has a higher color rendering index with 99% now; true color means here 100%, so we are very close to perfection.

In order to "promote" Guardian Clarity™ Neutral a bit more, we also implemented new PVB for laminated glass, which provides more neutral and especially less yellowish transmission. I am sure

our customers will like it.

We also tried to make fabrication a little easier, by providing the new product with only one temporary protective plastic film.

Which applications and markets are Guardian Clarity™ Neutral targeting?

[LW] As with our old Clarity product offering, Guardian Clarity™ Neutral is designed with multiple applications in mind. We are targeting a wide range of commercial projects such as retail storefronts, building facades, curtain walls, decorative glass, balustrades and viewing areas, sports stadiums, as well as special purpose applications such as museum showcases, digital signage and picture frames. Clarity is a globally known and available product with project references across the world.

What were the main challenges to overcome in the development of the new product?

[JPM] In order to achieve a more precise product with a smaller color box, we needed to design a quite advanced layer stack. This does mean the product is more complex or challenging to tune in at the coaters than the old product.

Last but not least we developed this new product during the COVID-19 pandemic. With no travel allowed, developing a new high-performance product such as this brought many challenges. However, the marketing and development teams in the USA and Europe worked remotely but closely together to develop Guardian Clarity™ Neutral. The collective teamwork across the world between local production teams, application engineers, as well as European and global development teams, were critical to the whole process.

Şişecam Will Sustain Its Raw Material Needs by a New Strategic Mining Investment

Şişecam has announced a strategic investment in mining to ensure the raw material supply needs of its ongoing new flat glass investments in Mersin

.

Şişecam will invest in a new sand preparation facility to meet the raw material needs of its new flat glass investment in Tarsus which will begin production in 2025. The company will also increase the capacity of its existing limestone and dolomite processing facility in Mersin.

With this move, Şişecam aims to secure close and sustainable resources for its production processes and proactively manage the risks caused by disruptions in supply chain. The sand preparation facility in Tarsus OIZ will have an annual capacity of 490 thousand tons. The annual capacity of Mersin dolomite limestone preparation plant will reach 655 thousand tons per year with the realization of 165 thousand tons of capacity increase. The total investment for these mining projects is approximately 1.5 Billion TL (82 Million dollars), and both are targeted to be completed by September 2024.

SEA Milan Airport Group Adopts DFI's Nanotechnology at Linate Airport

SEA Milan adopts Diamon-Fusion® nanocoating technology to improve sustainability, enhance hygiene & reduce maintenance costs.

SEA Milano, the Italian Group that manages the Malpensa and Linate airports under a 40-year agreement signed by SEA and the Italian Civil Aviation Authority in 2001, announced the adoption of the Diamon-Fusion® nanocoating technology, with its application underway. SEA Milano has always been committed to offering high-quality environments to its passengers and airport staff. A large part of the Linate terminal has been recently renovated, in particular the security checks area, the passenger boarding area and the catering area, where numerous glass balustrades have been installed which give brilliance and luminosity in the name of modern architectural canons.

SEA Milano has decided to adopt DFI's innovative nanotechnology-based solutions, as the global market leader in glass protection with references throughout the world, in order to optimize the maintenance of all these surfaces and the large exterior windows, which are subject to atmospheric pollution.

With the Diamon-Fusion® treatment, the glass surfaces are easier to clean and maintain and increase transparency and brilliance together with greater hygienic efficiency, as the permanence and diffusion of germs and bacteria that can be easily transmitted by touch. Furthermore, DFI's treatment also contributes to LEED credits.

Mario Grimaldi, Maintenance Director of SEA, stated: "We have gone through a particular and very complex period due to the pandemic, during which we have further improved the internal maintenance processes to achieve an environmental management that can leave its mark on passengers with a feeling of greater security and renewed beauty from an aesthetic point of view. After a careful evaluation and search for innovative solutions, we found a reliable partner in Diamon-Fusion International for a collaboration that is also producing results in terms of sustainability. Various surfaces inside Linate have already been treated, such as the internal glass and balustrades of the new catering area, the internal and external windows of the administrative offices and several mirrors in the recently renovated passenger services. The goal is to protect around 12,000 m2".

Massimiliano Langs, Administrator of Technology & Communication, Milan-based DFI's partner, assisted by Eng. Marco Palazzolo, shared: "Proud to have the opportunity to provide DFI solutions to promote innovation, nanotechnology and environmental sustainability in one of the main airports in Italy. DFI has been a member of the US Green Building Council for years and with us also of Green Building Council Italia, pursuing the best solutions to increase the performance of glass surfaces by enhancing features that allow SEA Milano to significantly save time and maintenance costs while reducing waste".

Guillermo Seta, DFI's Vice President of Business Development, added: "Linate is one of the major City Airport Hubs in Europe and we are honored to partner with SEA Milan Airport Group with our full support in terms of sustainability and savings in maintenance costs, improving the overall traveler's experience, offering a more hygienic environment to the millions of passengers who pass through Milan Linate every year."

SEA Milano is now among nine (9) European airports that have set themselves the goal of achieving Carbon Net Zero by 2030 and is striving to be ready for the first hydrogen-powered aircraft flight by 2035.

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Shanghai North Glass Automation Technology was recognized as a high-tech enterprise

Shanghai North Glass Automation Technology Co. Ltd. achieves national high-tech enterprise certification.

Recently, Shanghai North Glass Automation Technology Co., Ltd. has passed the national high-tech enterprise certification organized by the Department of Science and Technology, the Department of Finance and the national tax authorities, and won the title of "high-tech enterprise".

This time, it has been selected as a national high-tech enterprise, which has become an important symbol of the qualitative determination of the technology level and product technology content of automation companies. This recognition provides favorable policy support for North Glass Automation to enjoy corporate tax incentives, project bidding, talent introduction and government funding.

Shanghai North Glass Automation Technology Co., Ltd., established in 2015, focuses on the R&D and manufacturing of glass deep processing automation technology and equipment. A variety of glass storage systems (shuttle car storage, gantry storage, drawer storage, organ storage, etc.), glass semi-finished product storage systems, glass vertical sorting systems, glass horizontal sorting systems, glass ring sorting systems, laser marking and identification devices, glass measuring devices and significant g-MES glass deep processing plant management and control systems have been developed.

In the era of glass processing 4.0, North Glass Automation Technology Co., Ltd. has continuously carried out technological innovation and product upgrading to improve the intelligent level of products. The company continues to work hard on software research and development technology. The upgraded system can provide the end users with an integrated solution of automation, intelligence, digitalization and informatization faster, more professional and more stable, and effectively reduce the cost of enterprises in the glass industry and improve efficiency.

Shanghai North Glass Automation Technology Co., Ltd. was recognized as a "high-tech enterprise"

With profound industry experience and leading technical strength, North Glass Automation has formed mature technical solutions and application results in many glass deep processing fields, such as touch glass, furniture glass, home appliance glass, bathroom glass, building glass, and has become one of the main forces to promote the transformation of traditional production mode of glass deep processing.

In the next step, North Glass Automation will still adhere to its original intention, be down-to-earth, embrace innovation, constantly break through itself, and wholeheartedly help the development of the enterprise, so as to create better products and provide better services for customers.

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Glass Futures construction nears completion

Richard Katz, (second left) CEO of Glass Futures at a handover ceremony earlier this week. The £54 million research and development building will be open for business later this year.

Construction of the £54 million Glass Futures building in St Helens, UK is also complete.

The main contract works of the 165,000ft2 glass research and development building has been completed.

It has been handed over to Glass Futures ready for the internal fit out works to commence next month.

The building is expected to be operational later this year.

Delivery of the project has been managed by landowner and developer Network Space Developments (NSD), on behalf of a partnership including not-for-profit Glass Futures, St Helens Borough Council, the Liverpool City Region Combined Authority and UKRI (UK Research & Innovation).

The facility was pre let to St Helens Borough Council on a 15-year head lease and sub-let to Glass Futures which will occupy the building to deliver industry and government-backed research and development projects focused on decarbonising the glass and foundation industries.

It will also provide a platform for its members to access an experimental scale furnace for testing and trials of new technology on a line, both collaboratively and individually.

Throughout the construction phase, the scheme has made a significant contribution to the local economy with £11.2m of supply contracts going to businesses within a 20-mile radius of the site, including more than £1m awarded to St Helens' businesses.

Overall, 441 operatives and sub-contractors have been employed on the scheme, including 30 apprentices, with 36% of the labour coming from St Helens, Wigan and Warrington communities.

Glass Futures has also appointed its first three apprentices.

Richard Katz, Chief Executive of Glass Futures said: "Ten years ago the founding members of Glass Futures had the idea of building a Global Centre of Excellence to make glass the low-carbon material of choice.

"We each subscribed to a powerful idea which has since attracted major government innovation funding and industry support leading to the completion of the build phase of the project which will become our new home.

"But for us this handover is just the start. We'll now begin an internal fit out and will install the world's first openly accessible furnace to test commercially viable technology, which should be operational by January 2024.

Capable of producing up to 30 tonnes of glass per day, we'll be able to collaborate with our global membership, academic researchers and industry leaders to continue our ground-breaking trials into alternative energy sources, raw materials and technologies to demonstrate real decarbonisation solutions for the foundation industries."

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Considering its characteristics of strength, weight,flexibility, finish, recyclability, etc., aluminium is increasing its fields of application every day.

Flat Rolled

In Flat Rolled sector, we offer our customers both continuous casting material and direct casting.

Extrusions

Moreover, for the profile branch, our team (with 15 years of experience) offers material from other sources.

After 15 years of experience in the extrusion sector and 6 years in the Flat Rolled sector, we offer our customers the possibility of sourcing semi-finished products from new sources.

With the recent strategic moves by the European Community against Chinese extruders and rolling mills, together with our customers we are evaluating and creating new horizons to meet their own demands.

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Vitro Architectural Glass Champions Landmark Pittsburgh Glass Center Expansion

Pittsburgh Glass Center's expansion will feature Solarban® 72 Starphire® glass, VacuMax™ Vacuum Insulating Glass (VIG) and heavy Starphire® glass by Vitro.

Construction is expected to conclude by summer 2024.

As a longstanding partner of Pittsburgh Glass Center (PGC) – a nonprofit, public-access glass education center and studio in Pittsburgh's East End – Vitro Architectural Glass announced that it will be donating glass for both the interior and exterior for PGC's landmark expansion set to begin on March 23, 2023.

To provide supreme aesthetics, clarity, and solar control and insulating performance for the renovation, Vitro's donation includes Solarban® 72 Starphire® glass, VacuMax™ Vacuum Insulating Glass (VIG) and heavy Starphire® glass. This marks the first Pittsburgh-area project to include VacuMax™ Vacuum Insulating Glass (VIG). Additional partners on this project include glass fabricator, United Plate Glass, and glazier, Southwest Aluminum & Glass Co., Inc., both located in Western Pennsylvania.

"Vitro is thrilled to champion this historic renovation of Pittsburgh Glass Center, which has established itself as one of the premier glass facilities in the United States," said Ricardo Maiz, president, Vitro Architectural Glass. "The glass used ensures that everyone who visits PGC will enjoy exploring the beautiful new space in complete comfort. We're honored to be part of this expansion project, one that will allow PGC to enhance its existing programs and create new programs that will have a monumental impact in our community, the Pittsburgh area and entire region."

The Solarban® 72 Starphire® glass combination provides high visible light transmittance (VLT), exceptional clarity and superior solar control performance. In a standard one-inch insulating glass unit (IGU), Solarban® 72 Starphire® glass delivers VLT of 68% and a solar heat gain coefficient (SHGC) of 0.28.

VacuMax™ VIG units consist of two fully tempered lites of glass separated by a non-leaded metal seal and a vacuum air space. The units' slim construction and light weight allow them to be incorporated into virtually any traditional and advanced glazing system to deliver extraordinary R-values and exceptional insulating performance. VIG units can be used alone as a replacement for monolithic glass or as a substitute for the interior lite in a traditional one-inch IGU where it forms a second airspace and creates a hybrid IGU that can achieve an R-value of R16. VacuMax™ VIG units also deliver increased acoustic performance for dramatic noise reduction and eliminate condensation.

Glass artists collaborate inside Pittsburgh Glass Center's "Hot Shop" studio.Glass artists collaborate inside Pittsburgh Glass Center's "Hot Shop" studio.

PGC will also incorporate a small amount of heavy Starphire® glass in its interior renovations. Heavy Starphire® glass provides 16 percent higher VLT than ordinary clear glass in a 1 3/8-inch laminated glass construction. The result is superior clarity that securely conceals the actual thickness of the glass.

Headquartered in Pittsburgh's Friendship Neighborhood, Pittsburgh Glass Center cultivates an inclusive and welcoming environment that encourages everyone, from the casually curious to the master artist, to learn, create, and be inspired by glass. PGC first opened its doors in 2001 and has grown significantly over the past two decades, establishing itself as a go-to destination. The expansion will nearly double its existing space, which will allow PGC to increase its visitors and grow its student base.

The expansion also includes renovating a second building two blocks away from the existing facility to create additional housing for technical apprentices and visiting artists and add a gallery space for emerging artists and community programming. Pittsburgh Glass Center will host a groundbreaking ceremony on March 23, 2023, to kick off the project.

Glassfab Tempering Services Adds Second FuseCube™ Flex 125 to Their Production Facility

Glassfab and DFI team with FuseCube™ Flex 125 glass coating machine that automates application of Diamon-Fusion® glass treatment to shower doors, glass railings, IGUs, and much more I Photo: DFI

Glassfab adds second FuseCube™ Flex 125 to their production facility to streamline the application of Diamon-Fusion® protective coating.

Glassfab Tempering Services announced that as part of their pursuit to deliver the best architectural glass, the Company would be adding a FuseCube ™ Flex 125 at their newest facility to streamline the application of Diamon-Fusion® protective coating.

"We are enhancing our line of fabricated glass and commitment to delivering the highest quality products", explained Rob Gardner Black, President of Glassfab Tempering Services. "We got our 1 st FuseCube™ back in 2014 and the machine has proven to be efficient and effective. We are excited to add another to our production line, so we may continue to offer the low-maintenance features and benefits of Diamon-Fusion® coating to all our customers."

With enough space to fit 125 lites, the FuseCube™ Flex 125 will allow Glassfab Tempering Services to treat a wide range of glass products including shower doors, glass railings, IGUs, and much more.

Ultra-thin and invisible, Diamon-Fusion® chemically bonds to the glass, transforming it into a high-performing, water-repellent surface, protecting it from stains and corrosion. The coating is also UV-resistant and eco-friendly, ensuring long-term performance and stability. The coating can be applied to a wide range of surfaces, including shower doors, and glass railings, and is backed up by a lifetime/15-year warranty on residential and commercial surfaces, respectively.

DFI is excited to announce that when Glassfab Tempering Services adds the new FuseCube™ to their production facility, it will now be the largest FuseCube™ installed in North America.

DFI is proud to have partnered with Glassfab Tempering Services since 2014. Ruby Sigh, Brian Frea, Rob Gardner Black, and their team at Glassfab are a force in the industry. Teaming up with them to help initiate these bold efforts is something we look forward to facilitating." – Syndi Sim, VP of Marketing and Business Development, Diamon-Fusion International.

Glass container production reaches record high

In the first half of 2022, glass packaging production and total sales reached new record levels.

Production increased by 3% in both tonnes and units between the first half of 2021 and that of 2022.

The data was released by FEVE – the European Container Glass Federation.

In the same period, total sales reached a growth of 8.0% in tonnes and 8.5% in units compared to the first half of 2021.

This was the highest growth rate recorded since the first semester of 2016.

From the first half of 2016 to the first half of 2022, total sales in container glass increased by 14.2% in tonnes (1.5 million tonnes) and 13.0% in units (5.3 billion units).

Glass container production in tonnes and units from the first half of 2016 to the first half of 2022.

The industry is facing an unprecedented market demand growth in all segments in Europe and is working at full speed and capacity to meet what FEVE sees as exceptionally high levels of customers' demand.

This shows continued trust in glass as a packaging material.

FEVE members are also investing in increasing production and capacity despite high pressure on energy and costs, which however requires time.

These latest data come on top of the record Year of 2021 when production increased by 5.0% to 23.5 million tons for the food and beverage markets; the highest production levels historically ever reached. Likewise, production of glass flacons for the perfumery, cosmetics and pharmaceutical segments delivered a strong growth of 2.2% to reach 13.6 billion units by the end of 2021.

These results have been achieved despite the situation created by the aftermath of Covid, the subsequent rapid rebound in the economy and the Russia-Ukraine war dramatically impacting energy costs.

Make World Shiny

عملاق صناعة الألمونيوم كلادينج

في مصـــــر

Glaston's first emissions reduction target achieved

In line with the company's strategic focus areas, Glaston focused on reducing its carbon footprint in 2022. The greenhouse gas emissions from Glaston's own operations decreased by 43% year-on-year. The result was mainly achieved by shifting to the use of renewable electricity at Glaston's production facilities in Finland and Germany and by investing in a new heat distribution system in Switzerland.

In order to promote sustainable business, Glaston's strategy for 2021-2025 sets as one of the non-financial targets reducing the direct and indirect emissions from its own operations (Scope 1 and 2 emissions) in relation to net sales by 50% from the level of 2020 by 2025.

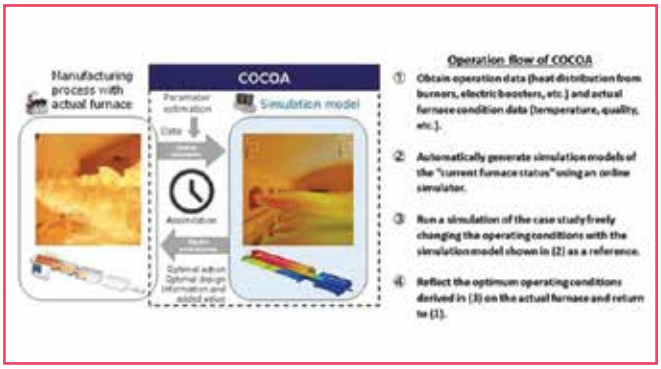
In order to reach the goal, Glaston made investments in energy efficiency and increased the use of renewable electricity last year. As a result of these measures, greenhouse gas emissions (Scope 1 and 2) decreased by 43% compared to 2021, totaling 1,491 tonnes. Greenhouse gas emissions in relation to net sales decreased by 57% compared to the baseline (year 2020) and the strategic objective of 50 per cent was achieved.

The result was achieved by shifting to the use of renewable electricity at the production facilities in Finland and Germany in early 2022. In addition, the heat distribution system of the Switzerland unit was renewed, considerably decreasing gas consumption.

The Switzerland production facility, which has been using renewable electricity for a long time already, invested further in reducing electricity consumption by installing close to 400 solar panels with a total capacity of over 150 kWp on the roof of the production unit. The solar panels have been producing energy for the factory's own use since November 2022, and from the beginning of December some electricity has also been fed into the grid. The number of solar panels will be increased further this year.

"Sustainable business is one of the focus areas of our strategy. We took a significant step forward in 2022 by reaching our emissions reduction target of 50% already early into the strategy period. Even though our emissions have decreased significantly, we will continue our work to reduce our emissions. Moreover, considering the nature of our business, the majority of the emissions relating to our operations are generated in our value chain. We have calculated the upstream and downstream climate impact of our value chains for 2021, and the results will be the foundation of our future work. Our next objective, covering the emissions of the value chain as a whole, is already underway. We want to be a frontrunner in this area and also encourage our customers and suppliers to include emissions reduction in their own agendas," says Glaston's CEO Anders Dahlblom.

AGC develops digital twin technology for glass melting process



Japanese glass manufacturer AGC has developed a digital twin technology for the melting process.

Its CADTANK Online Computation and Optimization Assistant (COCOA) is a digital twin technology*1 for the glass melting process that integrates an online simulator*2 with a digital prototyping tool*3.

Full-scale operational verification at AGC's float furnaces is scheduled to begin in February 2023.

The float glass producer said the technology enables rapid and detailed understanding of the glass melting process and preliminary study of production conditions, which have been difficult to achieve in the past.

The temperature inside a float furnace and the flow of molten glass change daily depending on various factors such as the condition of the raw materials and refractories, which greatly impacts the quality of the glass produced.

As these factors change, it becomes necessary to re-derive optimal operating conditions. Yet this adjustment requires time, and the production volume declines during this period.

The inside of a float furnace is searing at approximately 1,600°C, so it is difficult to obtain a detailed understanding of the internal conditions.

Therefore AGC had been using CADTANK, a glass melting process simulation technology originally developed in the 1970s, but it was difficult to run simulations in a timely manner due to major effort required to collect the necessary data.

To solve these issues, AGC developed the simulation tool COCOA, which can check changes in temperature distribution inside a float furnace, the flow of molten glass, etc. from a simulation model automatically generated using float furnace operation data.

This enables process technicians to easily and directly conduct detailed condition assessments and preliminary studies of production conditions inside the glass melting process, which previously required simulation specialists taking time to implement.

In the future, AGC will build an efficient production system based on simulation forecasts and utilise this system for sustainability to reduce GHG emissions*4.

As the next step in the development of digital twin technology, AGC is working on automatically estimate information that is difficult to measure and necessary to run simulations, using a technique called 'data assimilation'.

Once this is achieved, the real-time forecasting accuracy of digital twin technology will be further improved and its use will be expanded.

By enabling anyone to use simulation technology through the digital twin, AGC will further expand its accumulated strengths in simulation technology and develop it into a differentiation technology.

*1 Digital twin: Reproduction of the environment of a real space within a virtual space based on information from the real space.

*2 Online simulator: A system that automatically updates simulation models in real time

*3 Digital prototyping tool: Simulation execution tool for sensitivity analysis and preliminary study

*4 An abbreviation of greenhouse gas

Glass excluded from England and NI Deposit Return Scheme

The UK Government and Northern Ireland Executive have confirmed that glass beverage bottles will not be in scope of a future Deposit Return Scheme (DRS).

The announcement was part of an official response to the Government's previous consultation on the proposed scheme.

A wide range of UK businesses from across the glass industry, beverage, retail and hospitality sectors have long been calling on all governments across the UK to omit glass bottles from their respective schemes, and instead recycle all glass packaging as part of improved, consistent kerbside collections within a world-leading system of Extended Producer Responsibility.*

British Glass is delighted by this commitment to exclude glass from the future scheme in England and Northern Ireland.

Including glass in the DRS would have increased the carbon emissions in the atmosphere by two million tonnes, increased plastic consumption, and split glass food and beverage packaging into two waste streams – to the detriment of both.

In addition, the public would prefer to see glass recycled at their doorstep; new polling from Savanta shows that two thirds of UK adults (69%) say that recycling glass bottles through household waste collections would be more convenient than returning them to a dedicated return point.

Wales and Scotland

British Glass was disappointed to see that the Welsh Government plan to include glass in its scheme, creating concerns about how the schemes will operate and interact across the UK.

Given the land border between England and Wales, the divergence in the scope of materials raises questions about labelling and logistics for producers and retailers.

Meanwhile, for residents in close proximity to the border, it risks creating more confusion on how to recycle bottles properly, to the detriment of both kerbside collections and a DRS.

Given the complexity of adding glass to a DRS, British Glass is calling on the Welsh and Scottish governments to think again on glass' inclusion within their respective schemes.

Not only would this help overcome issues around interoperability, but also expedite the implementation date of the schemes across the UK.

Not to mention, Wales currently captures 87.3% of glass bottles and jars through household collections, which implies that the current system works.

British Glass CEO Dave Dalton said: "We already have a convenient solution to improving glass recycling, and it's at our doorsteps.

"By recycling glass through consistent kerbside collections, Extended Producer Responsibility, and campaigns to promote a better culture of recycling, we can meet the glass industry's recycling rate target of 90% by 2030."

*An Extended Producer Responsibility (EPR) scheme will see producers become fully responsible for the full cost of managing packaging once it becomes waste. The scheme will incentivise producers to create packaging that is easy to recycle and is set to come into effect in 2024.

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3 ways to reduce energy consumption in glass tempering

The energy consumption of production equipment has always been an important topic. For glass processors, this topic has become even more urgent over the past year due to rising energy prices.

Next, let's focus on some practical tips to help you save energy in the tempering process. In many cases, you can also do a lot to use your existing equipment more efficiently.

1. Increase loading efficiency

Increasing loading efficiency is an easy way to decrease the needed energy per square meter processed. Mainly the benefit comes from the quenching side. Traditionally as a rule of thumb, quenching a small piece of glass takes roughly the same amount of energy as quenching a full bedload of glass. Therefore, loading more glass in each bed is an efficient way to decrease energy consumption. With recent technological solutions, it is also possible to decrease the needed quenching energy consumption when running smaller than full loadings, but this would of course require hardware changes to the line as well.

Especially with older tempering lines, the tradeoff of increasing loading efficiency can be a possible decline in end product quality. This is because different types of glass need different processing parameters, and older-generation lines provide no way to achieve targeted temperature control.

Modern tempering lines with advanced heating control are the easiest way to increase loading efficiency without sacrificing quality. Alternatively, modernizing an older line can help achieve significant improvements without investing in a completely new tempering line. And with recent technological solutions it is also possible to optimize quenching energy.

And if you're able to optimize your process to

achieve higher loading efficiency, you're gaining extra capacity as an additional benefit.

2. Optimize your tempering level

Making sure your tempering process is optimized is an easy step to more energy- efficient operations.

Check the glass fragmentation level. Typically, the required fragmentation is 40 cullets in a 5 x 5 cm glass area. In practice, many glass processors have more than double this amount. This means the glass is either heated or cooled too much during tempering, which leads to wasted energy during the process.

Note that it is very important to still ensure a sufficient level of tempering. After all, glass stress level – the basis for fragmentation – is the most important safety factor in

tempered glass. But having a 30% buffer instead of a 100% one can save a significant amount of energy.

3. Modernize your existing line – gain many of the benefits of today's technology

If you already have a tempering line that runs well but is not very energy efficient, it may make sense to consider upgrading.

This approach extends the lifetime of your line, reduces energy consumption and increases processing capabilities in general. Some modernizations that help save energy
are:

•**Installing inverters.**
If your quenching blowers don't have inverters, make sure
to have them installed. This investment pays back in a very short time.
•**Blower and quenching technology.**
Latest-generation blower and quenching technology save significant amounts of energy, especially with thin glass
production.
•**Furnace modernization.**
This can help you achieve higher loading efficiency as well as reduce energy losses during the process. Furnace modernizations are available for any tempering line, regardless of the original manufacturer.
•**Automation.**
Process automation upgrades can help achieve better overall efficiency, quality and output. It's also a good way to ensure that your tempering process is as efficient as possible with your current line.

• **Measurement.**
Measuring for example the glass temperature with a thermal scanner and automatic estimation of the achieved glass stress and fragmentation level provides excellent tools for optimizing energy consumption.

4. Invest in a completely new tempering line - ensure that your energy efficiency is on the highest level possible

If you are looking for a completely new tempering line, you are in a great position to ensure that you are taking full advantage of the possibilities enabled by modern technology.
• **Optimized for your needs.**
- Choose the most optimal heating technology for your production needs
- Optimize your cooling technology based on the needs set by your production mix
• **Cutting-edge automation.**
- Leave process control in the hands of automation
- energy consumption, quality and capacity will always be automatically optimized based on the production situation at hand
- A modern line will help you to understand all the factors of your production automatically - for example glass stress levels, fragmentation, energy consumption and quality

Summary
This past year's events have accelerated the need for more rational energy usage and provided a new opportunity to transfer to more eco-responsible production.

Especially when it comes to energy-intensive industrial processes, even a minor improvement can result in considerable energy savings.

We don't know how long the latest energy crisis will be with us. But we know that there are multiple ways to make our operations more efficient – and also sustainable – for years to come.

Author: Taneli Ylinen, Glaston
glastory.net

The European Parliament adopts its position on the EPBD

The European Parliament adopted its position on the Energy Performance of Buildings Directive (EPBD) with 343 votes in favour, 216 against and 78 abstentions.

"Huge step forward for lower energy bills, reducing energy poverty, and tackling 36% of EU emissions." Tweeted C. Cuffe, MEP rapporteur on the EPBD.

Glass for Europe welcomes the adopted text which strikes a balance between the different visions of the European Parliament, allows flexibility to Member States and provides the industry the predictability and market stability needed to deliver on the Renovation Wave.

Saving energy and imported gas in Europe's building stock is an imperative largely recognised yet transforming the building stock takes time and efforts over the long term. Today's vote provides the much-needed impetus to pursue and accelerate building renovation efforts.

In the months to come, co-negotiators must build a constructive dialogue to make sure that the EPBD delivers on its purposes. The European flat glass industry is ready to deliver on the ground by manufacturing the high-performance glazing needed to improve comfort, reduce energy for heating and cooling and contribute to the decarbonisation of EU buildings. Nearly 36,4 Mtoe could be saved in 2023 by doubling the window replacement rate.

Glass to remain excluded from UK Deposit Return Scheme

A poll published by British Glass reveals that the British public wants to continue to recycle glass through their existing household collections.

Polling recently published by British Glass, undertaken by Savanta, has shown the UK public would prefer to continue recycling their glass bottles through existing household collections, rather than through a deposit return scheme.

The new polling also shows that two thirds of UK adults (69%) say that recycling glass bottles through household waste collections would be more convenient than returning them to a dedicated return point, like a supermarket.

This figure increases to 77% for those aged 65+, who are more likely to face difficulties returning their bottles to reverse vending machines.

Headline findings include:

Over half of UK adults (56%) say that they would prefer to continue to recycle all glass products through their existing household recycling collections.

Only a third (37%) would prefer to pay a 20p deposit on glass bottles, and have to take them to a dedicated return location to get their deposit back.

Two thirds of UK adults (69%) say that recycling glass bottles through household waste collections would be more convenient, with just 27% saying recycling glass bottles at a dedicated return point would be more convenient.

Women (73%) and those aged 55+ (75%) are the most likely to say that recycling glass bottles through household waste collections would be more convenient.

British Glass and wider industry have long argued that the best solution for recycling glass is to collect all glass packaging at the kerbside through an improved system of consistent collections and a new extended producer responsibility scheme, and not via a DRS.

This would ensure that everyone in the UK, regardless of their location, can easily and conveniently recycle their glass food and drink packaging at their doorstep.

British Glass CEO Dave Dalton said: “We need to make recycling more, not less, convenient for consumers by keeping glass recycling kerbside. That is the only way we can achieve our industry ambition of reaching a 90% recycling rate* for glass packaging by 2030.”

Currently, the English and Northern Irish governments remain on course to exclude glass packaging from the scope of their deposit return schemes.

The UK Government is due to publish details of plans for the scheme’s rollout in early 2023.

However, Wales and Scotland currently plan to include glass, making the recycling of glass bottles harder for consumers and putting glass recycling rates in jeopardy.

*The UK’s current kerbside collection rate for glass is 74%.

Glaston receives the first order for the new MATRIX EVO from Saint-Gobain Sekurit

Glaston has received an order from one of the world's leading car glazing manufacturers, Saint-Gobain Sekurit, for their new MATRIX EVO line.

The order was booked in Glaston's Q4/2022 order book and the line will be delivered in Q1/2024.

The requirements set for windshields and sunroofs in today's automotive industry are increasingly challenging in terms of various shapes, glass types and sizes and the ever more demanding expectations.

The customer needed technology for producing a short series of more complex-shaped high-quality end products for the aftermarket. Glaston's line with its active convection heating technology and its level of process expertise will meet those needs.

Glaston designed and introduced its fully automated MATRIX EVO bending furnace to specifically meet the automotive industry's requirements of a fast-paced production with high optical quality for applications such as windshields with integrated advanced driver assistance systems (ADAS), head-up displays (HUD) and the use of coated glasses when combined with the most complex shapes. This order is the first since the introduction of this new product in 2022.

"Our customer has nearly a century-long experience and know-how in car glazing manufacturing. Selecting Glaston technology to enable them to reach the combination of the highest required quality, production pace and energy-efficiency needs places trust in our continuous efforts in product development and confirms that our new technology is a major improvement compared to the existing products on the market," says Robert Prange, SVP Automotive & Display Technologies at Glaston Corporation.

TK ovens lands in North America for a new Lamijet 04 installation

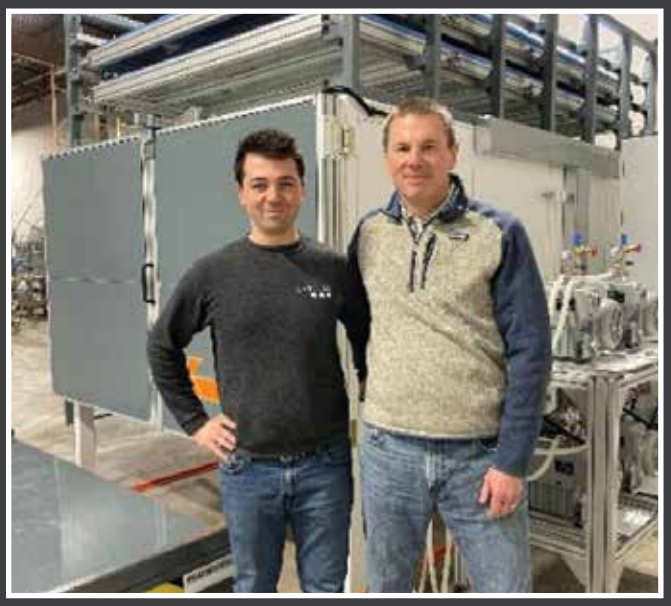
Satinal Group is still on a path of growth, designing and installing a new TK Lamijet oven, projected for security glass lamination.

New step, new Partnership for Satinal Group. This time the Company has faced to a new request coming from North Carolina: designing and installing a Lamijet 04 oven, one of the best technological solutions for glass lamination, with high safety features for a wide range of applications.

Lamijet oven brings important advantages: an intelligent heating system with infrared resistance,

STRATO® EVA lamination, Made in Italy silicone bags supplied, resistors supports with ceramic insulators to ensure electrical efficiency and reduce energy consumption. Moreover: Lamijet technology offers the possibility to regulate the vacuum according to the type of material and specific functions that allow customers to manage a high-performance oven.

This collaboration, together with the previous, means an important stage in the Company growth and its global presence. TK srl has becoming a point of reference in designing and construction of furnaces and ovens for glass lamination, tempering, chemical tempering and, eventually, a reference in design glass lamination if related to STRATO® EVA range, a Made in Italy product.



Şişecam GlassTool with Its New Features Is Now on Air

Şişecam GlassTool, that makes a difference in the flat glass sector, has been published online with its brand-new features.

Şişecam has added brand new features to its innovative and user-friendly application Şişecam GlassTool, further enriching the service it offers to users. Equipped with new features such as the ability to create a performance table with different glass combinations, different language options, and the ability to calculate by adding enamel paints to different sub-category glass products, GlassTool will make glass selection much easier for users. Şişecam Glasstool, validated by the independent accredited institution Inisma according to EN 17871 and NFRC standards, is the first application to receive validation for the American NFRC calculations.

Thanks to the newly added features of Şişecam GlassTool, which can be accessed via the website and mobile application, glass combinations can now be created much faster and easier.

Şişecam GlassTool helps users to:

-Calculate performance on a wider scale with the principle of multi- computing,
-Select the unit of measurement in “mm” or “inch”,
-Calculate with European (EN) and American (NFRC) standards,
-Change angles and calculate performance for facades with different angles,
-Easily access products with the quick search option,
-Quickly access CE documents and BIM Objects,
-Download the performance result page in PDF format,
-Save projects and templates, and retrieve deleted ones from trash,
-Create a performance table with different combinations,
-Bulgarian, Italian, and Russian language options,
-Create 5-layer laminated combinations,
-Drop the selected layer on the desired surface of the combination with interface enhancement,
-Calculate by adding enamel paints to different sub-category glass products.

Guardian Glass Achieves Bronze C2C Re-Certification in Europe

Guardian Glass is pleased to announce that it has attained Bronze level Cradle to Cradle re-certification for its float, coated and laminated glass product ranges.

The initial Cradle to Cradle (C2C) Bronze level Certification version 3.1 for the three European product ranges was attained in December 2019. Not only are these products now re-certified overall to C2C Bronze level version 3.1, but Guardian Glass is also one of the first float glass companies to meet some of the more stringent requirements of C2C Bronze level version 4.0. The three product ranges achieved at least a C2C Bronze level version 4.0 in three out of five performance categories (Material Health, Product Circularity and Water & Soil Stewardship). For Guardian float glass manufactured in Europe, C2C Gold level version 4.0 was achieved in the Material Health category.

Cradle to Cradle Certified® is a global standard for products that are considered safe, circular and responsibly made. For more than a decade, Cradle to Cradle Certified has been helping companies to innovate and optimize materials and products according to advanced science-based measures. The standard encourages continuous improvement over time by awarding certification on the basis of ascending levels of achievement. Each certification level (Basic, Bronze, Silver, Gold and Platinum) represents increasingly rigorous achievement across five categories of performance:

- Material Health

- Product Circularity

- Renewable Energy & Carbon Management

- Social Fairness

- Water & Soil Stewardship

Benefits of building with C2C products

The Cradle to Cradle Building Charter encourages architects and designers to create, from the very beginning of the project, environmentally responsible buildings and have a positive impact on the communities where they are built. A growing number of brands, organizations and building sustainability standards such as LEED, BREEAM and WELL recognize the Cradle to Cradle Certified ™ Product Standard as a preferred product designation for making more responsible purchasing decisions.

Jonathan Brunette, ESG & Certification Manager at Guardian Industries, comments: "This is a great achievement by Guardian Glass teams. We are particularly pleased to attain Bronze level version

4.0 in three performance categories for our European float, coated and laminated glass products. Compared to version 3.1, version 4.0 features new enhanced requirements, including new frameworks for Product Circularity, expanded requirements in Water and Soil Stewardship and improved alignment of Material Health requirements with leading chemical regulations and other standards. The re-certification demonstrates Guardian Glass' commitment and investment in continuous improvement of its processes, producing more sustainable glass products for the European market."

Dow Expands Portfolio of Silicone-Based Products for Photovoltaic Assembly

Additional product offering advances company's support of renewable energy solutions

Dow announced the expansion of its silicone sealant products to offer photovoltaic (PV) module assembly materials, furthering the global movement toward renewable energy. The newly launched DOWSIL™ PV Product Line with six silicone-based sealants and adhesives solutions can be used to deliver durability and proven performance for frame sealing, rail bonding, junction box bonding and potting, and building integrated photovoltaics (BIPV) installation materials.

The global transition to carbon neutrality and the desire for new and local energy sources to ensure reliable supply are creating a demand surge for high-performing, affordable, and renewable energy solutions throughout the supply chain. As the market for PV module assembly evolves to meet the rising demand for integrated building and infrastructure solar solutions, as well as large-scale solar power plants, the launch of the DOWSIL™ PV Product Line will provide customers reliable solutions with proven performance.

"As needs in the building and infrastructure industries evolve, our solutions must evolve with them," said Jean-Paul Hautekeer, global strategic market director for building and infrastructure solutions at Dow. "Our DOWSIL™ PV Product Line will allow us to deliver innovative, next-generation, silicone materials that support our customers' needs while helping to advance a more sustainable world."

With multiple global production sites and backward integrated supply chains close to customer manufacturing sites, Dow is uniquely positioned to offer demonstrated solutions locally to this growing and evolving market.

"There are many benefits to using these Dow technologies," said Hautekeer. "In addition to being both locally sourced and high performing, these products are meeting customers' needs for sustainability and innovation. Silicones are critical materials in the PV assembly and we are continuously working on more innovations within this product category, such as backsheet cracking repair solutions and solar cell encapsulation through silicone technology."

Aligned with Dow's continued commitment to its 2025 sustainability goal of delivering breakthrough climate innovations, the new solutions from the DOWSIL™ PV product line will help create a more sustainable world as a result of their increased net positive impact. Dow will continue to offer solutions for power electronics applications, inverter encapsulants, and the leading polyolefin elastomer (POE) ENGAGE™ PV Encapsulant product line. The full offering of Dow's entire portfolio for PV assembly, including its legacy ENGAGE™ Portfolio can be found at www.dow.com/solar

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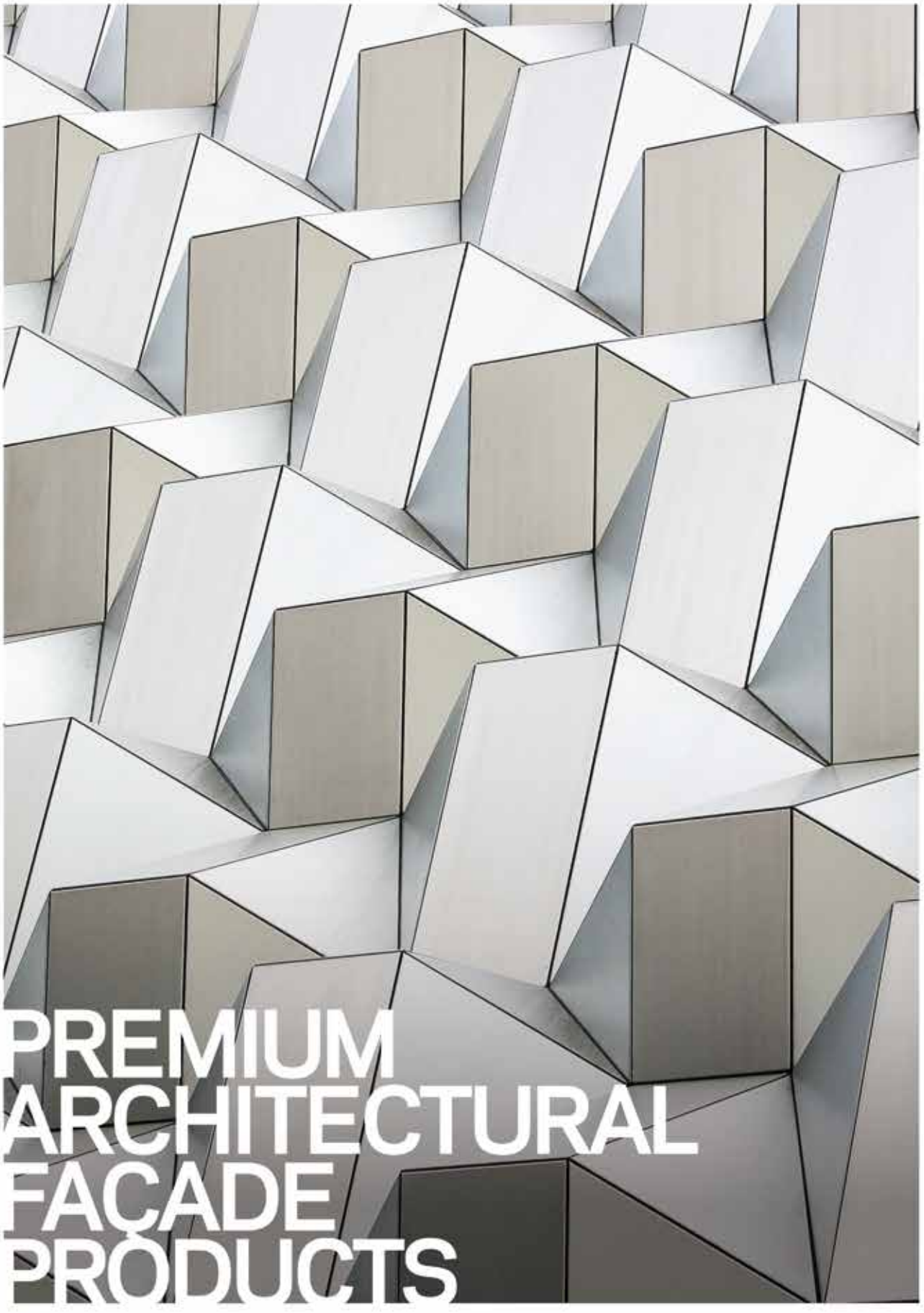

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RCN Solutions proposes CT80S: small but essential

Discover the benefits of chemical glass tempering with RCN's CT80S oven.

Chemical glass tempering still remains a niche job and also sounds like a complicated matter whose benefits are difficult to focus on. However, the potentialities of the glass chemically tempered are much more than expected.

In this context, testing is revealed an important instrument to know more, become familiar with the process, discover the features, and check results.

On these basis, RCN has understood customers' need to practise chemical tempering in small before deciding to star production and buying bigger production lines.

For this reason, RCN proposes CT80S, a small oven, suitable for glass size 120 by 120 millimetres.

Disegned for laboratory tests, the company noticed CT80S is also suitable for practising chemical tempering in small scale and understand all the benefits.

In this way, customers can temper and experiment drilling and cutting after the process, cold bending of glass and consider the importance to use chemically tempered thin glass to lighten some important jobs, such as flooring for boats or roofing.

Canadian Premium Sand completes solar glass sand test

Canadian Premium Sand (CPS) has completed a test simulation of the industrial-scale processes required to refine specific sand for solar glass manufacturing.

The test, conducted by Hazen Research, simulated the industrial scale processes required to produce solar glass specification sand as the primary feedstock for the company's patterned solar glass manufacturing facility being developed in Selkirk, Manitoba.

The testing verified that the requirement for simple mechanical treatment processes including only basic attrition scrubbing and gravity and magnetic separation.

It confirmed a low-cost and environmentally responsible process methodology can be employed to produce solar glass grade silica sand without the use of iron reducing chemicals.

It finalises the pre-construction engineering and design of the company's sand processing facility.

CEO and President Glenn Leroux said: "With these sand testing results in hand, we have completed an important milestone in the development of our integrated solar glass manufacturing project.

"We have now confirmed the industrial scale processes required to refine our silica sand to solar glass grade enabling us to finalise details of our sand processing design and equipment selection.
"We remain on track to bring our solar glass manufacturing project to shovel-ready status by the end of Q1 2023."

CPS had previously announced glass technology group HFT as its EPC contractor to conduct pre-construction design and engineering for its new production facility.

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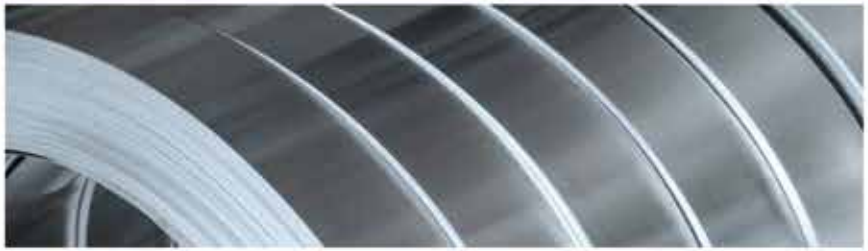

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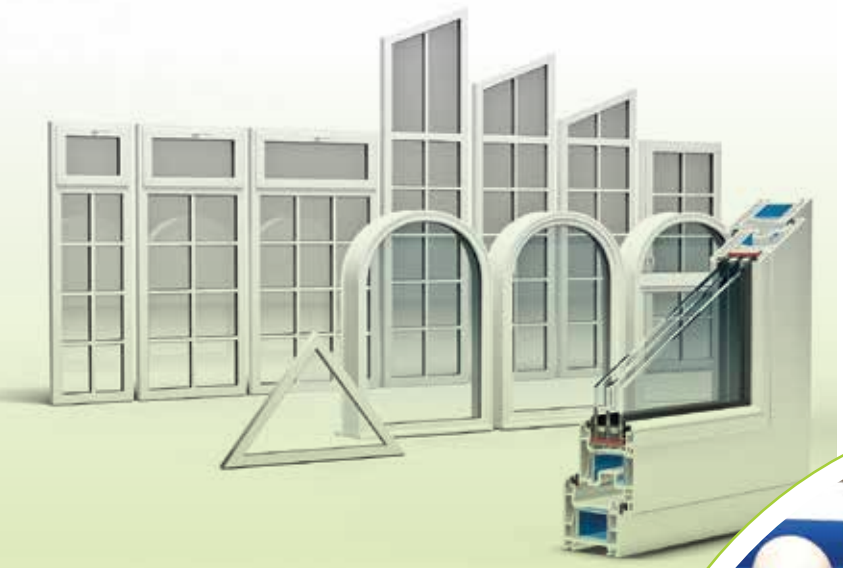

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