

Year 14 – No.40 / 2023  
Jan./Feb./March/April

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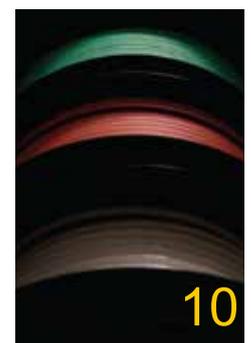
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Published every 4 months by



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Subscription rates

For one year : (3 issues)

\*African & Arab Countries 56 Euro

\*All other Countries 150 Euro

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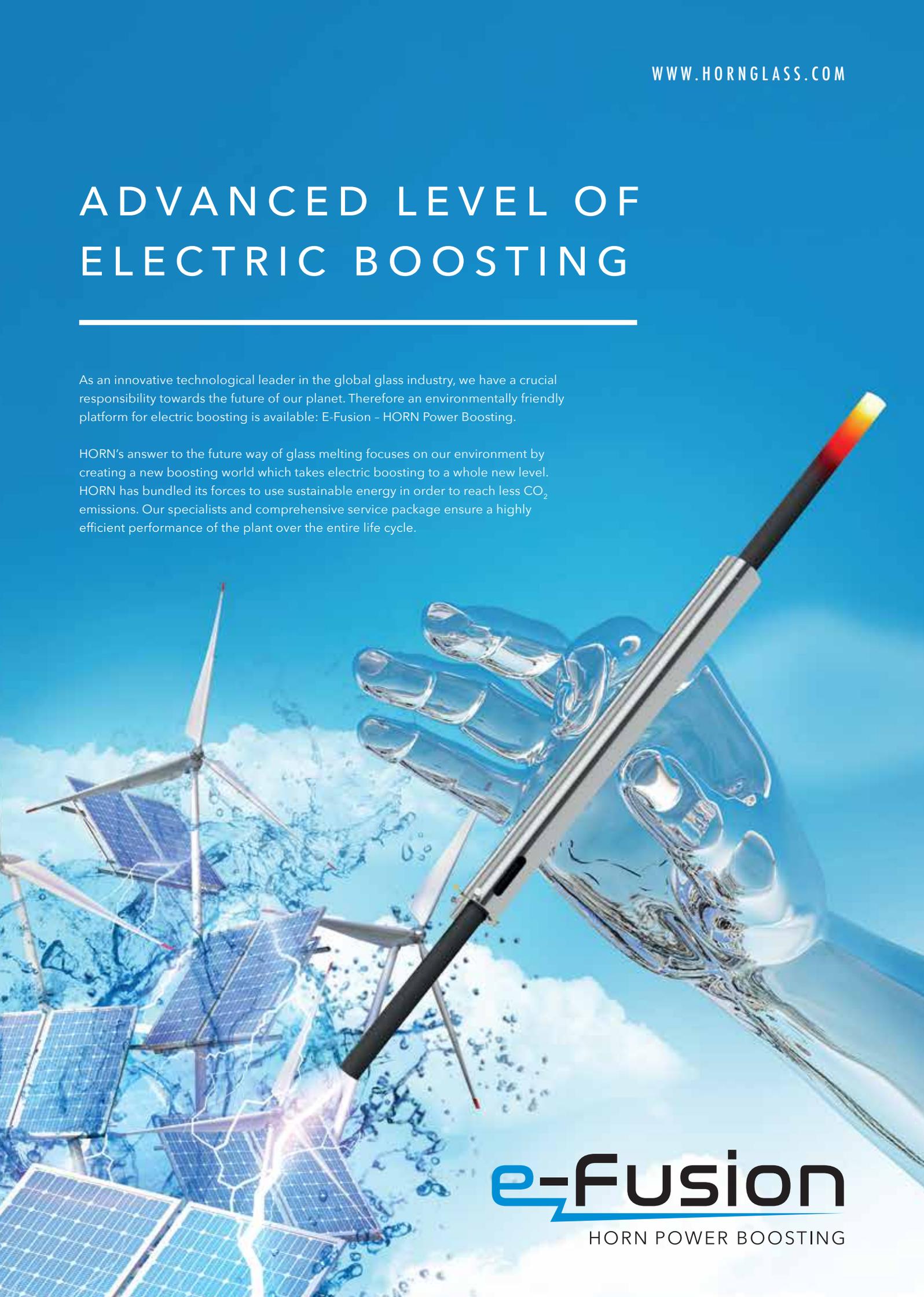
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# 3 ways to reduce energy consumption in glass tempering



*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

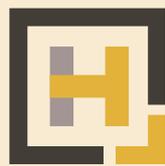
### Summary

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  
*glstory.net*



# HFT

## at Glassman Europe 2023

Glassman Europe 2023 is nearly here, and HFT – a global leader in engineering, procurement, and construction of state-of-the-art glass factories and solutions – is excited to be an exhibitor at the show's long anticipated return.

HFT focuses on providing comprehensive, reliable project solutions for all sectors of the glass market. The company's expertise includes design-build of new greenfield facilities, redevelopment and modernization/upgrades of existing sites, cold repairs, as well as other project solutions. HFT supports all stages of a project – from project feasibility reviews, initial concept-development, and securing of financing options, to

preconstruction, equipment and materials procurement, and design-build general contracting, to project management and project execution.

HFT will be represented by several senior executives, each of whom is a recognized leader in the glass industry. They will be available to discuss HFT's range of services and how they can support your projects.

Attendees are encouraged to stop by booth E13 or to schedule a meeting in advance by contacting Sam Leaper at [sleaper@hft.com](mailto:sleaper@hft.com).

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# Edgetech Super Spacer® show themselves colourful



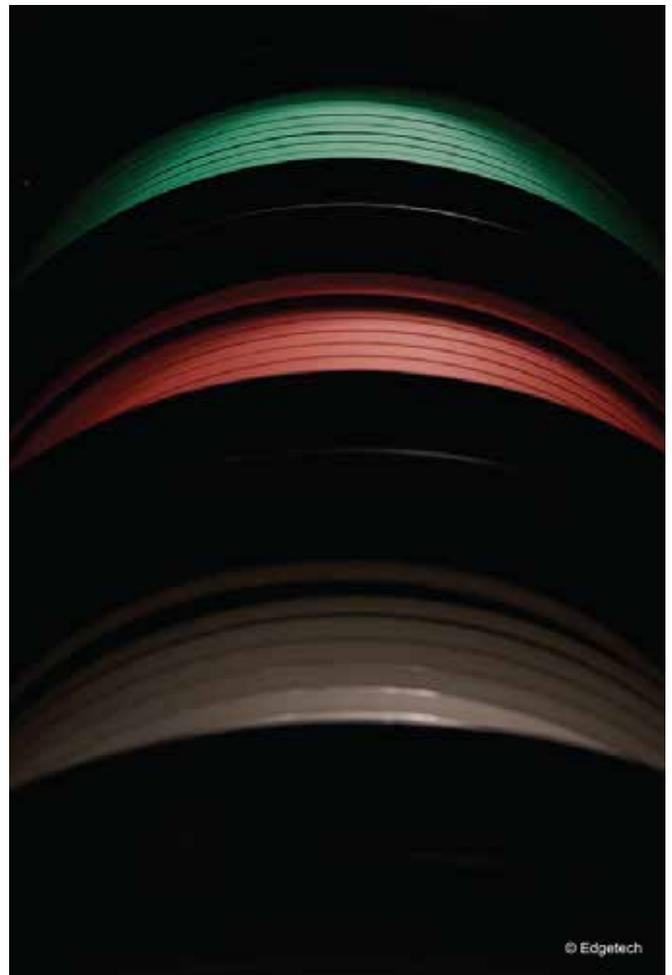
**The flexible spacer takes the window megatrend of colour into account and offers more freedom of design.**

Even Le Corbusier celebrated polychromy as an architectural stylistic element in the 1930s. Thanks to modern machine technology, accent, contrast and special colours will soon be the new normal in window and facade design, Edgetech, the manufacturer of the flexible Super Spacer®, is convinced. "In this context, coloured spacers can give the edge bond the perfect finish," explains Vice President International Sales Joachim Stoss. Grey, in all shades from light grey to anthracite, is one of the most important trend colours in architecture and interior design, but bold colours are also becoming more and more popular. At BAU in Munich, Edgetech will be showing a selection of new colour variants and exemplary glass sample panes in ruby or green. They complement the standard colours Light Grey, Grey, White and Black of the warm-edge pioneer.

Naturally, the general advantages for architects, specifiers and IG manufacturers will also be given a lot of space on the Edgetech stand. In demanding architectural projects, the aesthetics of the edge seal is an important evaluation criteria. Especially with large-format insulating glass units, parallelism and precision are decisive for the quality and appearance of the end products. Thanks to the matt surface and low height,

Edgetech spacers made of structural silicone foam are practically invisible.

The automatic application of the flexible Super Spacer® from the roll also supports the goal of maximum flexibility and speed in semi-automatic or fully automatic insulating glass processing. With the help of spacer application robots, the foam-based spacers are placed parallel in the insulating glass line with millimetre precision in seconds and guarantee a flawless, tight edge seal as well as precisely finished corners. Widths between 3.2 and 32mm are available. Furthermore, desiccant residues in the space between the panes are excluded, as the desiccant is already integrated in the Super Spacer® material and does not have to be filled separately, as is the case with hollow rigid spacer bars. Edgetech at BAU 2023: Hall C3/Stand 109



# Verallia to construct two furnaces in Europe



Verallia will construct two additional furnaces by 2025 and 2026 to increase its capacity production and respond to the market's needs.

The two furnaces will be located in Spain and Italy, by 2025 and 2026.

In the framework of its 2022-2024 strategic plan, the group aims to build three furnaces, one per year, to increase production capacity by around 400 kilotonnes/year by 2024.

In line with this strategy, the first furnace was commissioned at the Jacutinga plant (Brazil) at the end of 2022.

Two others – which are already under construction – will be fully operational during 2024, in Campo Bom (Brazil) and Pescia (Italy).

They will both be powered by oxy-combustion, reducing CO2 emissions by 18% compared to traditional technology.

Patrice Lucas, CEO of Verallia, said: “We are walking the talk. As committed with our strategic plan, we are building additional capacity: Jacutinga has been launched, Campo Bom and Pescia projects are progressing as planned.

“With this announcement of two additional furnaces in Europe by 2026, we are pursuing our ambition to follow customers’ and market’s needs, to sustain our sustainable profitable growth.”



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# Hrastnik1860 joins hydrogen glassmaking project



Slovenian glass manufacturer Hrastnik1860 has joined the international H2GLASS hydrogen project.

The aim of the project is to create technology for the glass industry to achieve 100% hydrogen combustion in production facilities.

The project, which is the largest of its kind in Europe and is supported by European funds through the International Horizon project, includes 23 partners from various glass sectors, including manufacturers of packaging, flat glass, and glass fibre.

The project is coordinated by the Norwegian company, Sintef Energy, and the activities will be conducted over a four-year period, starting in January 2023 in Slovenia.

The energy efficiency of glass furnaces, the largest source of greenhouse gas emissions in the glass industry, reached a plateau of thermodynamic efficiency a decade ago.

In order to successfully decarbonise, glass melting technology must be completely changed.

After the successful pilot use of hydrogen in Hrastnik1860, as part of the international H2GLASS project, the company is working on further steps for the use of hydrogen in industrial glass melting furnaces.

It wants to demonstrate the use of 100% hydrogen in two of its business units by 2024.

Hrastnik1860 CEO Peter Cas said: “This way, we will combine the use of hydrogen with the help of electrically assisted glass melting and completely reduce greenhouse gas emissions from fuel combustion, without significant impacts on the flexibility of production and the lifespan of the glass furnace.

“If the industrial demonstration is successful, combining these technologies will be a key to the decarbonisation of glass production.

“Innovation, especially in sustainable development, enhances the visibility of Hrastnik1860 with existing and potential customers, brand owners, and potential future employees.

“It therefore provides us with an advantage over the competition in the market, enabling an easier transition to carbon neutrality, better utilization of new technologies, and faster digitization.

“Sustainability is intertwined at all levels – from producing exceptional glass products to improving processes and the working environment.”

The H2GLASS project officially began with a meeting this week in Slovenia, where all partners gathered to formulate an action plan.

A Part of Something Bigger<sup>SM</sup>

## AGC and Saint-Gobain partner for decarbonised flat glass line



AGC and Saint-Gobain will collaborate on the design of a pilot flat glass line that is expected to reduce the companies' direct CO2 emissions.

AGC's patterned glass production line in Brevka, Czech Republic, will be entirely refurbished into a high performing and modernised line.

The line aims to be 50% electrified and 50% fired by a combination of oxygen and gas.

This is a technical breakthrough compared to current technology used in flat glass furnaces fired by natural gas.

It will be the most sustainable flat glass line design contributing to both companies' paths towards carbon neutrality and to the necessary acceleration of the flat glass industry decarbonisation.

This development could pave the way for the conversion of industrial flat glass lines that are mainly powered by low carbon electricity, more efficient than any gas solution, and have reduced carbon emissions for the customers' benefit.

The technology is expected to be implemented on the patterned glass line for operational success by the second half of 2024.

Davide Cappellino, President Architectural Glass Europe & Americas of AGC, said: "This hybrid design melter is another important milestone in our Net Zero Trajectory to become carbon neutral as a company by 2050.

"The breakthrough design will be done jointly with Saint-Gobain, combining the best technology knowledge of both companies."

Joana Arreguy, Industrial Director Glass, Saint-Gobain, said: "We are delighted to co-develop with AGC [the] new, most advanced technology for flat glass production in the world."

The news comes a few months after Saint-Gobain became the first company in the world to achieve zero carbon production of flat glass last May.

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## SUPERSPACER.COM

# 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.

A Part of Something Bigger<sup>SM</sup>

# 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.

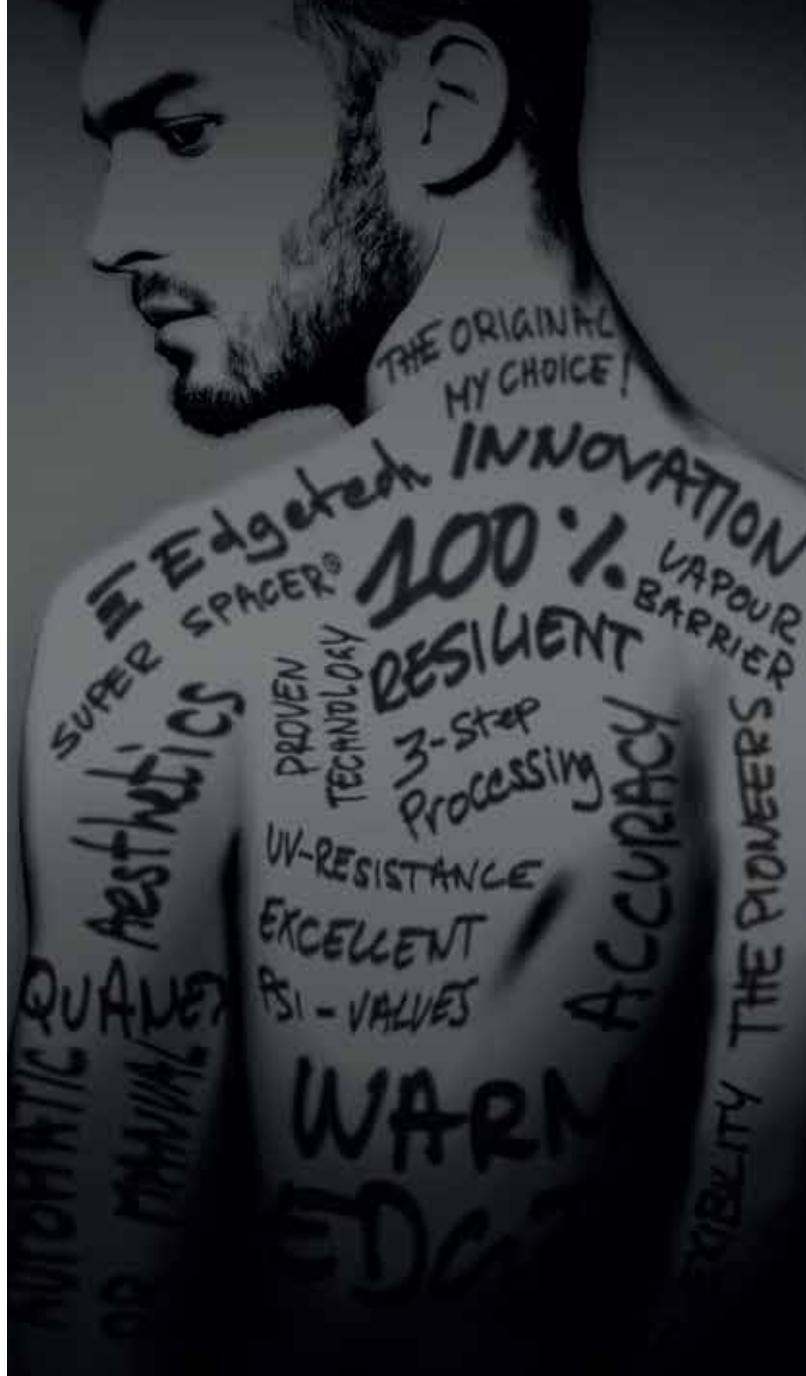
On these basis, RCN has understood customers' need to practise chemical tempering in small before deciding to star production and buying bigger production lines.

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.

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# 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%.

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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](http://www.chinaglass-expo.com) for more information.



# 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.





# CHINA GLASS 2023

## 32<sup>nd</sup> China International Glass Industrial Technical Exhibition

Shanghai New International Expo Centre

May 6<sup>th</sup>-9<sup>th</sup>, 2023

**Organizer:** The Chinese Ceramic Society

**Sponsor:** China Architectural & Industrial Glass Association

China National Association For Glass Industry

Shanghai Ceramic Society

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# Experience Spectacular Curved Glass Designs with evguard®

## Unique Curved Glass and Intricate Timber-Clad Ceilings Enhance Beauty of Building



Beautiful, spectacular curved glass designs made with evguard®. One of the absolutely gorgeous designs accomplished by Inhouse Brand Architects for GAIA Group Offices. It is made up of concrete and exposed brickwork and has got curved walls and timber beams.

Curved glass windows and intricate timber-clad ceilings enhanced the beauty of the building. Glass Benders have been manufacturing and supplying quality curved glass since 1998. They make unique glass products for a wide range of applications.

## New Zippe Batch & Cullet Plant for PT Culletprima Indonesia successfully commissioned



Recently, a new batch plant with a batch and cullet conveying system to the new furnace was installed at PT Culletprima Setia, Indonesia.

The project was realized at the peak of the Corona

pandemic. Nevertheless, together with the customer, all challenges were solved in a very flexible and collaborative partnership leading to project success.

The new plant was built next to the existing production and feeds the new furnace for tableware with a capacity of 130 t/day and a cullet ratio of 30%.

In addition to the batch plant, Zippe also supplied a new scraping conveyor as well as a crusher for the cullet plant.

Commissioning was completed recently, and the plant has been operating flawlessly since.

# 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.

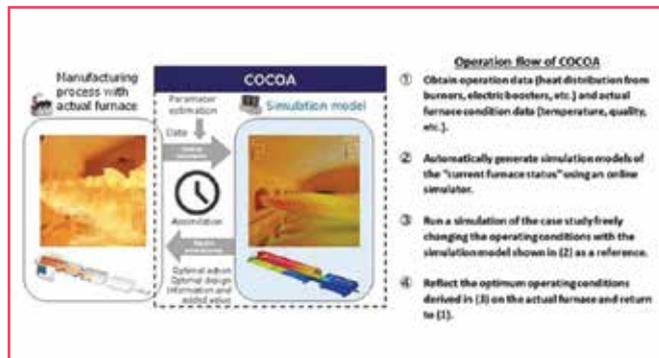
In order to reach the goal, Glaston made investments in energy efficiency and increased the use of renewable electricity last year. As a result of these measures, greenhouse gas emissions (Scope 1 and 2) decreased by 43% compared to 2021, totaling 1,491 tonnes. Greenhouse gas emissions in relation to 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 Futures welcomes first ever apprentices



Three students will be among those at the heart of the £54 million glass melting facility in St Helens after being enlisted as Glass Futures' first ever apprentices

This month, Glass Futures completed the main building work for the 165,000 sq. ft. Global Centre of Excellence for Glass.

The centre will research decarbonising glass and other industries, and have an experimental furnace capable of producing up to 30 tonnes of glass per day.

It is set to be handed over by the developer in the spring, and will be formally unveiled at an opening ceremony after the final touches and internal fit out are carried out.

Glass Futures has now formally added three apprentices from Waterside Training to its workforce.

The new recruits will spend four days a week on site from July 2023 and the remaining day at college.

Zane Brown (24) and Liam Hannon (19) – both from St Helens – and Josh Riley (18) from

Litherland will be able to gain practical skills on site through a wide range of work at Global Centre of Excellence for Glass.

Glass Futures aims to offer training and development opportunities for the next generation of the glass industry.

Specifically to train in sustainable, low carbon processes to reach Net Zero by 2030.

The apprentices, who enrolled on a four-year multi-skilled engineering apprenticeship at Waterside Training in 2022, will be involved in the planned and preventative maintenance of the 30 tonne per day glass furnace and other machinery.

Their responsibilities will include burner changes, refractory repair, and electrical/mechanical repair.

They will be involved in various projects at Glass Futures ranging from learning about hydrogen and alternative fuels to liaising with external partners, who will be undertaking projects on site – giving them an appreciation of the business as well as enabling them to become qualified multi-skilled engineers.

Jo Watts, Glass Futures' Resourcing Specialist said: "This is a fantastic opportunity in an incredible and unique environment allowing them to harness their knowledge and apply it into a practical engineering role. I know they are all excited and have had a few site visits and attended our Christmas social – they are part of our workforce and will play an important role on our journey."

# 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."

# SSRC to expand glass refractory services



Special Shapes Refractory Company (SSRC) is to expand its international presence to offer services to glass manufacturers in Mexico, South America, and Europe.

After attending Glasstec and listening to feedback from customers and partners, SSRC has responded by expanding its international presence.

The company plans to offer consistent pricing, rapid turnaround, and innovative solutions to glass manufacturers in Europe, South America, Mexico, Central America and beyond.

To meet the demand for these services, SSRC has restructured the Sales Team and promoted Andrew Pea to the role of Director of International Sales and Business Development.

Mr Pea said: "SSRC will be successful in its efforts due to the stable fuel prices in the United States, nimbleness of the company, competitiveness of the USD versus other currencies, and increased demand within the glass industry."

SSRC has created a partnership with Refmon to

provide more cohesive refractory solutions for the glass market.

Refmon is dedicated to producing feeder-expendables and fulfil customised demands. It has provided solutions to over 50 countries and are dedicated to produce wear-protection linings to batch-houses, cullet transportations, and gob chutes.

Additionally, SSRC has expanded its international team with local sales agents in Mexico/Central America with ONTAL and in South America with Fábio Bernardo.

These partnerships will provide glassmakers with domestic stock supplies, quicker response time, and more solutions for refractories.

With the increased demand for pre-cast shapes, SSRC has also made internal changes to increase output, improve quality, create solutions, and decrease lead times.

In 2021, a monolithic plant was built to allow SSRC to control its incoming raw materials.

The plant has led to higher quality finished goods, reduced costs for customers, and decreased lead times for pre-cast shapes.

Over the next year, SSRC will add an additional furnace to its Bessemer, AL, USA, facility to increase its production capacity.

The additional furnace will allow the company to increase the number of channels, forehearth superstructures, and monolithic materials for the European, Mexican, and South American regions.

# Saflex® and Vanceva® receive Silver C2C Certified Material Health Certificate™



**Further supporting the sustainable movement in building and construction, these advanced PVB interlayers for laminated glass have received a Silver C2C Certified Material Health Certificate™.**

To help support its customers in their sustainability journey, Eastman has announced that most of its portfolio of Saflex® and Vanceva® advanced PVB interlayers have received the Cradle to Cradle Certified Material Health Certificate™ at the Silver level from the Cradle to Cradle Products Innovation Institute — the global standard for products that are safe, circular and made responsibly.

The products included in the certificate are Saflex Clear, Saflex Crystal Clear, Saflex Acoustic, Saflex Solar, Saflex Structural, and Vanceva Color PVB interlayers for laminated glass.

Cradle to Cradle Certified® is a voluntary product certification that verifies that products are safe, circular and responsibly made. It is recognized and sought by specifiers in the building and construction market to guarantee the sustainability of selected materials. In addition, this certification helps architects get points towards green-building credentials such as LEED, WELL and GreenStar.

Verified by an independent third party, the Cradle to Cradle Certified® Product Standard guides manufacturers through a continual improvement process that looks at a product through five quality categories: material health, material reutilization, renewable energy and carbon management, water stewardship, and social fairness.

To obtain the Cradle to Cradle Certified Material Health Certificate™, products must meet stringent health and environmental protection standards.

As the name suggests, the Cradle to Cradle Products Innovation Institute evaluates products throughout their entire value chains to ensure that they are not harmful to people or the environment during their lifetimes.

PVB interlayers in laminated glass can offer a few sustainable advantages for a building and construction industry that continues to adopt more environmentally friendly practices. For example, Saflex interlayers can contribute to comfort and optimize energy efficiency brought by glazing in architectural projects through superior acoustic and solar control performance.

To further support sustainability claims, Eastman conducted a cradle-to-gate life cycle assessment (LCA) for Saflex interlayers that has been reviewed and certified by an external third party, Quantis. This cradle-to-gate environmental performance enables the company to identify opportunities for further improvement on embodied carbon and other impact indicators. It also serves as a reference for developing a road map toward the company's zero-carbon aspirations for 2050.

Furthermore, because the LCA has been third-party verified, glass processors can now reflect with more accuracy the Saflex interlayer's specific environmental impact indicators in their laminated glass environmental product declarations (EPDs) and scope 3 emission targets.

An LCA assessment report for Saflex® Clear PVB

interlayer can be downloaded on the Saflex website.

What's more, Saflex and Vanceva interlayers are manufactured by Eastman, a company with sustainability at its core. The company is advancing the circular economy through breakthrough molecular recycling technology that diverts hard-to-recycle waste materials from landfills, incinerators or the environment. Compared to fossil-based manufacturing, these

technologies produce fewer greenhouse gas emissions.

"Getting this Cradle to Cradle Certified Material Health Certificate™ is vital to architects, facade engineers and glass specifiers who are under increasing pressure to demonstrate and comply with sustainable industry standards," says Oliver Osborne, commercial director of AMI architecture with Eastman.

# Karas & Karas Turns to FuseCube™ Express to Streamline Glass Coating Process



Karas & Karas implements DFI's FuseCube™ Express to offer superior glass coating and easy-clean features

Karas & Karas, a Boston-based leader in the glazing industry, announced today that it has implemented DFI's FuseCube™ Express high-speed glass coating machine. Adding the FuseCube™ Express to their machinery line enables Karas & Karas to offer easy-clean, low-maintenance features to their glass products, with faster shipping times and a uniform coating application.

With companies looking to add more value to their glass products, the FuseCube™ Express

streamlines Diamon-Fusion® protective coating on both sides of the glass through a proprietary chemical vapor deposition (CVD) process, which comes with a wide range of advantages:

- Superior two-step glass coating process
- Stain-resistant and easy-to-clean
- Lifetime warranty on residential surfaces
- Consistent coverage every time
- Protection against hard water and environmental pollutants

"We currently use a protective coating spray application on shower doors and glass railings, which takes a lot of time. We have been looking at the FuseCube™ Express for quite some time now to reduce labor costs while streamlining the application process. The transition made sense and we look forward to promoting this new offering to all our customers." – Jan Wyatt, General Manager, Karas & Karas

"As Diamon-Fusion® has grown in demand for application on shower doors and glass railings, we are thrilled to provide the team at Karas & Karas with a more efficient way to treat their glass. The FuseCube™ Express will improve their bottom line, while providing additional value to their customers." – Carl Christ, VP of Technical Services and Business Development, Diamon-Fusion International.

# BirdSecure® Pro

## Now available



### New Designs for Trosifol® and SentryGlas® Bird-friendly solutions

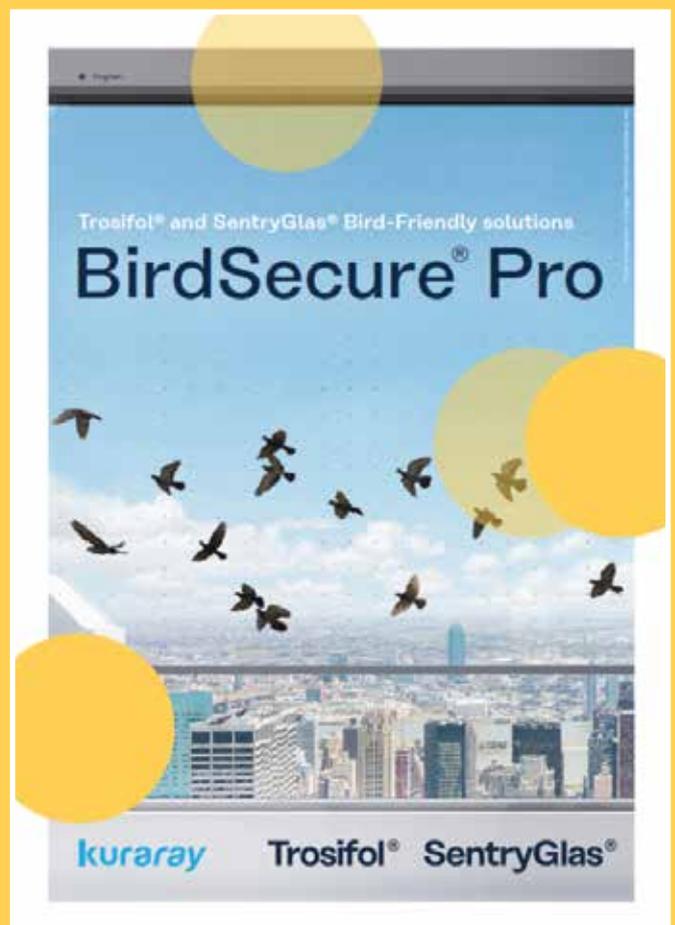
Introducing the BirdSecure® Pro, designed to keep our feathered friends safe while they fly by urban areas.

It is becoming increasingly clear that birds safety and well-being must be considered anytime glass structures are created, particularly as regulations are adapting it to benefit of the environment.

The effective dot pattern applied directly to the BirdSecure® Pro interlayer has been optimized and now shows even better results. Not only the color composition of the dot pattern has been revised, but also the dot size and spacing have been significantly changed.

Both Trosifol® and SentryGlas® BirdSecure® Pro were developed according to the specifications of the American Bird Conservancy (ABC), fully tested according to the standards and meet the LEED SSpc55 building standard. In addition, the new interlayer acts as a UV blocker. As with its predecessor is easy to laminate and the new solution can be used alone or with solar control coatings. Although the dot pattern is highly effective against bird strikes, it cannot be seen by humans from a distance of more than two meters, so it does not obstruct or obscure views.

The relevant safety features of Trosifol® PVB and SentryGlas® ionoplast interlayers, well-known on the market for many years, remain unchanged: glass fragments will remain attached to the interlayer in the event of glass breakage and will not cause injury to people or animals.



# NorthGlass Triturbo-fan enters into energy saving transformation fan market

## BirdSecure® Pro – Now available



### NorthGlass Triturbo-fan Technology Co., Ltd. and Xi'an Xuanwa Group Sign Strategic Cooperation Agreement to Promote Energy Saving Transformation

On February 3rd, NorthGlass Triturbo-fan Technology Co., Ltd. and Xi'an Xuanwa Group held a signing ceremony of strategic cooperation agreement. Li Jiansen, general manager of NorthGlass Triturbo-fan Technology Co., Ltd., and Zhang Jiaqi, chairman of Xi'an Xuanwa Group signed the strategic cooperation agreement on behalf of both sides.

NorthGlass Triturbo-fan Technology Co., Ltd. is a collection of innovation, research and development, production, sales in one of the fan manufacturing high-tech enterprise, it committed to research and development of high energy efficiency Triturbo-fan for many years; Xi'an Xuanwa is a group company to provide power energy saving overall solutions for major industrial enterprises and large customers. In line with the principle of "resource sharing and common development", both sides have reached consensus on cooperation through friendly exchanges and consultation.

At the signing ceremony, Zhang Jiaqi said, products of NorthGlass Triturbo-fan Technology Co., Ltd were successfully selected into the National Recommended Catalogue of Energy Saving Technology and Equipment in the field of Industry and Information Technology, which is a high affirmation of NorthGlass Triturbo-fan Technology,

also is the official certification of its high energy efficiency products, Xi'an Xuanwa Group is also full of confidence in the energy saving level of high energy efficiency fan products, and such good products should also be widely promoted and used in industrial enterprises.

Li Jiansen said that Xi'an Xuanwa Group's mission of "reducing the burden for enterprises, saving energy for the country, and reducing emission for the earth" is in the same direction as the development concept of NorthGlass Triturbo-fan Technology Co., Ltd. Its good customer resources and product promotion channels have laid a solid foundation for achieving mutual benefit and win-win results. It is hoped that both sides will take this opportunity to give full play to their advantages in their respective fields, actively seek more cooperation ways and promote bilateral cooperation to a wider range and a deeper level.

This strategic cooperation will make both sides complement each other and jointly carry out energy saving transformation fan business for industrial enterprises. NorthGlass Triturbo-fan Technology Co., Ltd. will work with Xi'an Xuanwa Group to use its advantages in market, "contract energy management" and other service advantages and financial advantages, so that more enterprises can use NorthGlass high energy efficiency Triturbo-fan to achieve energy saving and efficiency, and at the same time to make more contributions to the national energy saving and consumption reduction, green and low carbon goals.



# Ardagh Glass Packaging focuses on sustainable technology in Poland



Ardagh Glass Packaging - Europe has designed its latest glass furnace in Poland with the latest-available suite of sustainable technology to reduce emissions and improve energy efficiency.

Ceramic Candle Filter technology and a Continuous Emission Monitoring System have been installed at the Wyszków, Poland, glassworks.

The glass manufacturer said this would help to achieve and maintain low emission levels while gas, electricity and water consumption will be reduced through a combination of heat recovery, turbo compressors, water recovery and a closed loop cooling system.

Reducing emissions and improving the impact on the environment is a key target for the glass industry.

Ceramic Candle Filter technology is an effective method of controlling particulates and acid gases and is also efficient in reducing Sulphur Oxides during the glass

manufacturing process.

Installation of a Continuous Emission Monitoring System provides ongoing information and allows immediate corrective and preventive action to be taken if necessary.

The new furnace will be energy efficient thanks to the conversion to a regenerative furnace, which will reduce gas usage and CO2 emissions.

Turbo compressors will replace screw compressors, which is expected to reduce the electricity requirement by up to 25% for production of low pressure compressed air.

Reduced water consumption will be achieved through a new closed-loop cooling system for the compressors and for boosting electrodes in the furnace.

Together this is expected to reduce water usage by up to 10% compared with traditional cooling solutions.

In addition, recovered water from a new demineralisation system will be used in the sanitary facilities, and is expected to save up to a further 2-3% of water on-site.

Jerzy Żołyński, Plant Director at the Wyszków, site said: "We are incredibly proud of the work that has been put into implementing this new sustainable technology which will improve the environmental impact of our operation and will help AGP - Europe to achieve its sustainability targets."

# Hydrogen partnership receives US boost



A glass industry-backed hydrogen coalition has received US government backing to proceed with its application.

The Great Lakes Clean Hydrogen coalition (GLCH) today has received encouragement from the U.S. Department of Energy (DOE) to proceed with the development and submittal of their full hydrogen hub application.

The coalition, which is led by Linde, Energy Harbor, Cleveland-Cliffs, GE Aerospace and the University of Toledo, along with the Glass Manufacturing Industry Council (GMIC), was among 79 organisations which submitted concept papers to the DOE for development consideration.

The proposal, by GLCH, was selected as one of 33 projects encouraged to proceed to the full application process.

GLCH has proposed to develop low-carbon hydrogen via electrolysis based in Oak Harbor, Ohio at Davis-Besse Nuclear Power Station.

The facility proposes to distribute the hydrogen across the Great Lakes region by pipeline and road transportation.

The GLCH project is built on the foundation of

ongoing, preliminary work supported by the DOE and the Idaho National Laboratory.

The proposed approach will supplement hydrogen from nuclear power, as needed, with clean hydrogen produced through solar energy projects under development in the region.

The coalition is working with the states of Ohio and Michigan, technology suppliers, hydrogen consumers, state and regional academic institutions, national laboratories, and non-profit organisations to develop a clean energy hydrogen hub to serve Ohio, Michigan and portions of Pennsylvania and Indiana.

Total project investment is expected to exceed \$2 billion, with 50% requested from federal infrastructure funding managed by the DOE's regional clean hydrogen hub initiative.

Initially, this proposal addresses decarbonisation in the glass, steel and aviation industries while supporting the transition to hydrogen transit in buses and other vehicles.

Through the full scope of the application, GLCH intends to grow to serve additional companies operating in the Great Lakes region, interested in decarbonising their products, manufacturing facilities, power generation plants, and mobility networks with low-carbon hydrogen.

GLCH intends that investments in the project benefit the communities involved and advance environmental justice, diversity, equity and inclusion as well as create opportunity for high value jobs.

# Technology for Good Design | Viprottron

**Experience the wonder of glass architecture with ESD Systemwanden and quality assured by Viprottron ECO Scanner.**

When we talk about architecture, we are mostly talking about the design of buildings. Even if this definition is correct, it falls short. Architecture creates space and, in an aesthetic sense, emotion. Depending on the purpose, this space can take on a wide variety of shapes and colours – it can even be transparent.

ESD Systemwanden from the Netherlands is fully specialised in the construction and installation of glass system walls. With 16 years of experience and continuous innovation, they create special designs and spectacular room atmospheres. Floor-to-ceiling, refined glass surfaces create rooms within rooms without losing daylight.

Such spatial concepts can be created through the refinement of flat glass and intelligent interior design:

Technology for Good Design | ViprottronCredits:

esdsysteemwanden.nlTechnology for Good Design | ViprottronCredits: esdsysteemwanden.nl

During the pandemic, business boomed. However, as the number of orders increased, the number of defective glass panes at the end customers increased. At that time, replacing individual panes was not a big problem because the employees were in their home offices and there was no disruption. Now the situation is different. During the ongoing operation of an office, hotel or conference centre, faults are difficult to rectify.

ESD Systemwanden therefore started a quality offensive to avoid complaints in the future. In collaboration with GS Technics BV and Ralph Smeets, Viprottron has committed itself to this quality control. For a year now, the Viprottron ECO scanner has been successfully inspecting the panes in question. Glass defects are detected and eliminated already within the production process.

The ECO scanner checks every single pane for possible defects:



Technology for Good Design | ViprotronCredits:  
Viprotron GmbHTechnology for Good Design |  
ViprotronCredits: Viprotron GmbH

Viprotron is currently checking which further scanner measures could be useful at the end of the production process to check the final product again.

Viprotron thanks ESD Systemwanden for their confidence and GS Technics BV for the excellent cooperation.

Be inspired by this spectacular use of flat glass.  
And always pay attention to quality control!

# British Glass statement on Energy Bill Relief Scheme



British Glass welcomes the announcement from the UK Government to extend the Energy Bill Relief Scheme for energy intensive industries to March 2024.

The scheme will provide clarity and security to glass manufacturers who have been amongst the most exposed to spiralling costs during the current tough economic climate.

It will allow a higher discount on the current wholesale price of gas and electricity for energy intensive industries such as glass.

While the glass industry is classified as vulnerable and will be eligible for extended support, the package offered by government still falls short of that being received by many international competitors.

The resulting increased production costs will continue to put UK glass manufacturers at a competitive disadvantage.

The glass manufacturing sector remains vital to the UK economy generating £1.6bn annually and directly employing around 20,000 people with an estimated 150,000 more jobs across the supply chain.

Therefore, it is essential that the government delivers on its Energy Security Strategy to allow the glass industry to remain internationally competitive.

On the announcement, British Glass CEO Dave Dalton said: "While we appreciate that the changes to the Energy Bill Relief Scheme will impact many other sectors and businesses, the renewed support for the energy intensive businesses will allow glass manufacturers to navigate the current climate with some degree of certainty.

"For over a year now glass manufacturers have been facing the brunt of increased gas and electricity costs and the continued support from government will be met with relief from our members.

"However, the package put together relies on stable energy markets for the foreseeable future and still leaves our manufacturers at a competitive disadvantage to our direct competitors due to the increased support they are receiving from their respective governments. This is something that should not be taken lightly during the coming months as the current economic crisis continues."

# Cradle to Cradle Certified® – demonstrating continuous improvement in glass manufacturing



## An interview with Jonathan Brunette, ESG & Certification Manager at Guardian

Float, coated and laminated glass product ranges manufactured in Europe by Guardian Glass have attained Bronze level Cradle to Cradle re-certification. Jonathan Brunette explains what is required of companies that apply for product certification, the challenges they face, as well as the advantages of using Cradle to Cradle certified products in buildings.

In November 2022, three Guardian Glass product ranges - float, coated and laminated glass -manufactured in Europe were officially Cradle to Cradle Certified® (C2C Certified®) for the second time to Bronze level version 3.1. The recertification involved an independent third party assessing the safety, circularity and responsibility of our materials, products and processes across five categories of sustainability performance: Material Health, Material Re-utilisation, Renewable Energy & Carbon Management, Water Stewardship, and Social Fairness.

Cradle to Cradle Certified® is an advanced science-based, multi-attribute certification program for designing, making and verifying materials that are considered safe, circular and responsibly made. 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 the five categories of performance.

Q - What has changed compared to the previous certification?

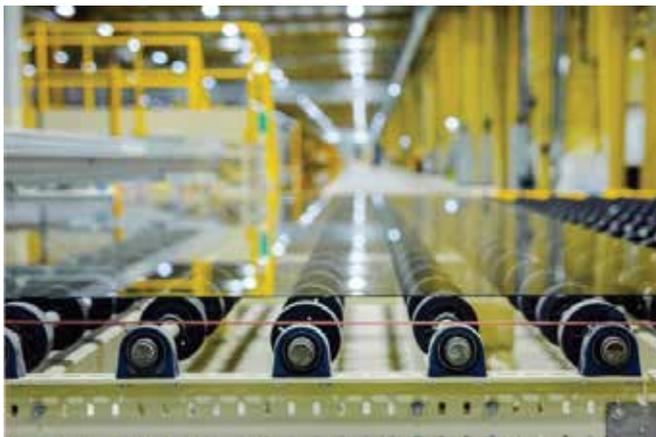
The three product ranges initially attained C2C Certified Bronze level version 3.1 certification in December 2019. These same products are now re-certified overall to Bronze level version 3.1. However, Guardian Glass is now also one of the first float glass companies to meet some of the more stringent requirements of version 4.0. The three product families are at least C2C Certified Bronze level version 4.0 in three out of five performance categories (some of which have changed from version 3.1): Material Health, Product Circularity, and Water & Soil Stewardship. Float glass manufactured in Europe is C2C Certified Gold level version 4.0 in the Material Health performance category, meaning that 100% of substances were assessed. This demonstrates our continuous improvement, transparency and commitment as a company to Environmental Stewardship. We have a transition timeline and we are motivated to meet our target of attaining C2C Bronze level version 4.0 in all five performance categories in the future.

Q - What is the difference between version 3.1 and version 4.0 and why does this matter?

C2C Certified version 4.0 has more stringent requirements than version 3.1. Lots of effort is required from many different areas of our business. There are more detailed assessments, more data collection is required, and the level of scrutiny increases across all of the five performance categories.

For example, version 4.0 has new frameworks for Product Circularity, as well as expanded requirements in Water & Soil Stewardship to ensure Guardian is doing its part to improve the

quantity and quality of clean water and healthy soils available. Version 4.0 Material Health requirements are now better aligned with leading chemical regulations and other standards, including a new Restricted Substances List. Achieving the recertification of products in version 4.0 requires commitment and continuous monitoring in order to improve in many areas: achieving this is another big step forward for Guardian Glass in terms of aligning its manufactured products with the Company Vision of “helping people improve their lives by providing products and services they value more highly than their alternatives, and do so responsibly while consuming fewer resources”. This vision involves producing glass products that minimize environmental impacts while helping to reduce energy usage and increase comfort in buildings. In fact, there’s a lot of similarity already between our own environmental stewardship strategy and C2C philosophy.



Q - What is asked of companies who wish to have their products C2C certified and what challenges need to be overcome?

Companies should not underestimate the amount of time and effort required. A lot of the work required is based on data collection and coordinating with operational and environmental, health and safety (EH&S) teams. In terms of resources, around 60 Guardian Glass employees were involved globally in these activities. For example, in the Water & Soil Stewardship category, a lot of work was required in demonstrating our compliance and ensuring our activities comply with the local laws and regulations for each production plant. A lot of effort was spent demonstrating our compliance with chemical regulations too – which process chemicals are being used at our plants, in which quantity, and ensuring there are no restricted or prohibited substances. How much water we use

and how much do we discharge back into the environment was also assessed, as well as how we properly handle wastewater.

Under the Social Fairness category v3.1 Bronze, the C2C Certified Products Innovation Institute ensures we have the appropriate tools, measures and controls in place to mitigate potential higher risk areas. A streamlined self-audit is conducted to assess the protection of fundamental human rights, management procedures aiming to address any identified issues have been provided, a full social responsibility self-audit is complete, and a positive impact strategy is developed (based on UN Global Compact Tool or B-Corp). This is the level of detail the C2C audit reaches.

There is a lot of discussion taking place in the glass industry today about low carbon content glass products and how some glass manufacturers are increasing the percentage of recycled or broken glass (cullet) going into their products. While this is important, it must be recognised that this represents one aspect of becoming more sustainable as a company. Applying our Stewardship Framework encompasses so much more than just using recycled glass in our production. It involves assessing many different aspects related to environmental, social and governance categories. The Cradle to Cradle certification is a continuous and independently third-party verified process, which if you are not seriously committed, you won't last the distance.

Q - What are the advantages of using C2C Certified Products in a building?

The Cradle to Cradle Building Charter encourages architects and designers to create environmentally responsible buildings that have a positive impact on the communities where they are built. Incorporating a wide range of C2C Certified Products and materials is one of the options to help achieve this. Indeed, a growing number of brands, organisations and green buildings standards such as LEED, BREEAM and WELL recognise the Cradle to Cradle Certified Product Standard as a preferred product designation for making more responsible purchasing decisions. All C2C Certified Products and materials from different manufacturers are stored on a searchable database which can be accessed by architects and designers to help them make more informed decisions.

In the LEED standard, for example, C2C Certified Products can help contribute points under the

LEED version 4 green building rating system. Choosing C2C Certified Products can earn project teams up to two points for Materials & Resources Credit 4, Building Disclosure and Optimization – Material Ingredients.

One point can be earned for Material Ingredient Reporting, which rewards project teams for selecting products whose chemical ingredients are inventoried using an accepted methodology. Understanding a product's chemical composition is a necessary first step in working toward chemical optimisation. This credit encourages manufacturers to engage in the chemical inventory process. However, in order to earn this point, at least 20 permanently installed products must be C2C Certified version 3.1 Bronze level or higher.

An extra point can be earned for Material Ingredient Optimization. This rewards project teams for selecting products that have gone

beyond the inventory stage and have been optimised to exclude priority chemical risks such as carcinogenicity, mutagenicity, and reproductive toxicity. This point encourages the use of products whose chemical composition has been both assessed and optimised. To earn this point, at least 25% (by cost) of permanently installed products must be C2C Certified version 3.1 with a Silver, Gold, or Platinum achievement level in the Material Health category. Products that are Gold and Platinum level in Material Health are valued at 150% of cost, which is the case for Guardian Float glass (v4.0 Gold in Material Health).

For advice and guidance on environmental certification and how the Guardian range of glass products can help make your building more energy efficient and raise your LEED or other building certification program score, we have a team of experts who can help.

## 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.

# Vidrala secures leading environmental rating



Glass container manufacturer and filler, Vidrala, has been declared a leader for its environmental performance.

Non-profit organisation the Carbon Disclosure Project (CDP), awarded the glass company a 'B' in Water Security and an 'A-' in Climate Change in its 2022 CDP scores.

It is the first time Vidrala has been placed in the Leadership band by the CDP.

CDP provides a snapshot of a company's disclosure and environmental performance in line with the Taskforce for Climate-Related Financial Disclosures (TCFD), Science-Based Targets (SBTs) and Sustainable Development Goals (SDGs).

The scores assess each companies' awareness of environmental issues, its governance and management of sustainability strategies and progress towards environmental stewardship.

By partnering with CDP, companies are able to

better understand their journey to operate in line with a 1.5-degree, deforestation-free and water-secure future while offering their stakeholders insight into the road ahead.

CDP also provides the opportunity to compare Vidrala's progress with similar companies across the globe, with businesses in the same sector averaging a 'B' grade globally

for Climate Change and a 'B' for Water Security.

Vidrala recently announced the validation of its near-term Science-Based Target (SBT).

The companies' SBTs aim to reduce its Scope 1 and 2 greenhouse gas emissions by 47%, and its Scope 3 emissions by 28% by 2030, propelling it to become the most sustainable glass business in the world by 2030.

Vidrala Director of Sustainability Fiacre O'Donnell, said: "CDP Scores are an extremely important measure when it comes to looking at where we are in our sustainability journey, the plans we have in place to minimise our carbon impact, and the transparency with which we are looking to do so.

"An A- for Climate Change and B for Water Security are two fantastic scores and it is through the hard work that everyone here at Vidrala has put in over the last few years that we have been able to achieve them, and we are immensely proud of this accomplishment."

# French glassmaker makes furnace investment



hours a day. Once we move to an automatic process we will have a continuous flow of glass which means we can work for 24 hours a day.

“This will enable us to expand the process and to touch upon new markets and allow us to propose to clients an in-between service where we can serve medium sized runs.”

French glass manufacturer Waltersperger is to expand production as part of a furnace investment.

The company based in Blangy-sur-Bresle, Normandy is to move to modern, expanded facilities on the outskirts of the town later this year.

Its current production facility is outdated and located in the centre of town, which was caused difficulties with truck movements.

As part of the move it has invested in a new 4 tonne furnace from Italian group Falorni Tech as well as two new production lines.

It currently operates seven 500kg furnaces working in parallel with four production lines.

Waltersperger President, Stephanie Tourres, told Glass International, that the move to the new facility will enable it to make glass continuously in an automatic process.

“The current semi-automatic process we have to load the glass to enable us to work for seven

The company currently serves the perfume and spirits sectors with artisan, premium bottles. The expanded facility will enable it to make larger runs but without impacting upon the mass runs larger companies such as Pochet du Courval or Verescence.

The company works with brands such as Chanel and Dior and is also the last manufacturer of large perfume bottles of 3 or 4kg size which are used in stores for promotional purposes.

The structure of the new building is already in place, with the next move to work on the interior of the building. The aim is to open the building by the end of the year.

The group took over the running of Waltersperger in April 2018 and quickly decided its current building was too old. Work began on the construction in November 2021.

The new building will meet modern regulations and expectations from its clients in terms of energy efficiency.

# THE GLASS YOU ARE LOOKING FOR AWAITS YOU IN MILAN

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# 2022 North American Fenestration Standard Published



**The 2022 edition of AAMA/WDMA/CSA 101/I.S.2/A440, North American Fenestration Standard/Specification for windows, doors, and skylights (NAFS) has been published.**

This standard is the result of a multi-year effort by CSA Group, Fenestration and Glazing Industry Alliance (FGIA) and Window & Door Manufacturers Association (WDMA). The updated 2022 standard replaces the 2017 edition, representing a continued evolution of the standard to improve harmonization across North America.

The 2017 NAFS standard is already referenced in the 2021 editions of the International Building Code and International Residential Code, with the recently released standard proposed to be included in the 2024 editions of these codes. The 2017 NAFS standard is also referenced in the 2020 edition of the National Building Code of Canada, with the recently released standard proposed to be included in the 2025 edition.

The Joint Document Management Group (JDMG), comprised of representatives from all three associations, stresses the importance of NAFS-22.

## Operating Force

“Operating force tables were combined to include all product types and Performance Classes, and a single requirement identifies the maximum ‘force to initiate’ and ‘force in motion.’ This was done to both simplify and to harmonize requirements

between Canada and the United States,” said Brad Fevold, Director of Regulatory Affairs for Marvin, who served as WDMA’s JDMG co-chair.

## Door Requirements

“Another change is that the Limited Water (LW) rating and designations for sliding doors were added to provide consistency for all door products. Finally, folding door assembly qualifications were revised and updated to include an additional sixth configuration to better reflect the breadth of product offerings in the market,” said Fevold.

## Material and Components

“Material and Components’ clauses were partitioned into ‘Requirements without Alternative,’ ‘Requirements with Alternative’ and ‘Design Guidance.’ In addition, prescriptive or redundant auxiliary and component tests were removed,” said Steve Fronek, P.E. and Vice President Preconstruction for Wausau Window and Wall Systems, who served as FGIA’s JDMG co-chair.

## Concise Clauses

To maximize continuous improvement opportunities, every clause in NAFS-22 was subjected to review and enhancement using time-tested, inclusive, consensus-based processes at each of the JDMG associations. “The result is a concise, quality-focused standard, allowing for end-product performance evaluation, as well as meeting secondary goals including product comparison, durability assessment and addressing technical certification issues,” said Fronek.

## Canada/U.S. Harmonization

Several Canadian-specific changes are reflected in NAFS-22. “NAFS-22 is a huge achievement for its impact on products intended for the Canadian market, as it has been harmonized to address both countries’ requirements,” said Robert Jutras, Chair of CSA’s Technical Committee and CSA’s JDMG co-chair. In Canada, the selection of the water penetration resistance test pressure is still defined in accordance with the A440S1 Canadian Supplement to NAFS, and air exfiltration testing will now be required in the U.S.,” he added.

## Mulled Products

Additionally, Jutras pointed out an important change regarding evaluation of mulled products. This change was the transition from AAMA 450-10 to AAMA 450-20, which now includes provisions

for evaluating mullions for composite window products. Finally, Jutras noted that the tables for the Available Performance Grade Requirements have been consolidated. "This was done to provide clarity for specifiers," Jutras said.

# Tiama launches latest version of the HOT move



*Tiama's Hot module is now only a software that can be installed as an option on the Tiama HOT eye module for glass manufacturing.*

In 2014, Tiama introduced the HOT move as a component of its HOT systems range during the Glasstec exhibition.

The Tiama HOT move is the module dedicated to the monitoring and improvement of the ware positioning on the hot end conveyor.

Due to the limited space available on production lines at the hot end, Tiama has decided to launch a new version of its Tiama HOT move sensor with no footprint.

This latest version is now only a software that can be installed as an option on the Tiama HOT eye module.

The old version of the Tiama HOT move was composed of a camera and several mechanical parts.

The new version of the Tiama HOT move retains the same features.

The system rejects stuck and fallen articles to

avoid jams in critical production areas located before entering the annealing lehr, such as the hot end surface treatment or the transfer wheel.

The Tiama HOT move also gives the exact position of containers on the conveyor along two axes: the X axis for the spacing between containers and the Y axis for the offset between them.

To prevent jams, the user can set thresholds to reject articles that are considered too close to each other or too misaligned.

The Tiama HOT move also provides information on the angular corrections that should be applied to pushers to improve the conveying and to avoid transport issues.

The Tiama HOT move helps improving process control by reducing production losses due to jams and allows operators to free up time to concentrate on higher added-value tasks.

Beyond process control, the Tiama HOT move increases the safety of operators working on the production lines.

Operators need to clean the piled-up glass in the lines, which exposes them to a higher risk of burns and other injuries.

The new Tiama HOT move version is an affordable and easy-to-deploy solution to transport issues in glass plants.

It is also part of the Intelligent Glass Solutions provided by Tiama's YOUiverse concept to support the customers towards Smart Factory.

# Glass Futures Announces the Appointment of Two New Board Members

**Two new appointments to Glass Futures Board of Directors further strengthens its ability to address industry's decarbonisation challenges with R&D to accelerate innovation.**



Professor Anthony Hollander is Pro-Vice-Chancellor for Research & Impact and Professor of Stem Cell Biology at the University of Liverpool. Prof. Hollander provides strategic leadership for the development of research policy and for ensuring impact of the University's research programmes in Liverpool and around the world.



Professor Anthony Hollander (Left) and Mark Higham (Right)

He is also responsible for commercialisation of research, for developing partnerships with companies and other external stakeholders and for the training of postgraduate research students. Professor Hollander is also Chair of the N8 Senior Executive Group\*.

Mark Higham has held a variety of leadership positions over the years in Siemens UK and is currently General Manager of Siemens Process Automation business based in Manchester. He has over 30 years' experience delivering innovative solutions to the process industries to help companies increase productivity, flexibility and quality.

Siemens is a leader in global innovation and technology for industrial automation and digitalisation. The company has a depth of expertise in providing cutting edge solutions for the automation of glass manufacturing processes and Mark's experience will be instrumental as Glass Futures trials digital technologies to decarbonise industry.

Professor Hollander said: "I am delighted to join the Glass Futures' Board and to be able to support this pioneering initiative aiming to develop the technologies to revolutionise glass manufacturing and support the sector's transition to Net Zero.

"Collaboration is at the heart of the Glass Futures' mission and I look forward to ensuring that the University plays a major role in supporting this and that our research, facilities and expertise contributes to the success of this exciting initiative."

Mark Higham said: "I'm very interested in Glass Futures' mission to accelerate the decarbonisation of the glass industry. By exploring production methods and technologies we can assess the long term benefits that impact industry as a whole, nationally and internationally.

"I'm comparatively new to glass, but I have a great deal of experience in wider processing and cutting edge automation technologies that have helped other industries transform. At Siemens, we like to say 'Technology with Purpose', and we've collaborated with other sector organisations to make a difference to people and planet. Glass industry processes haven't changed dramatically for some time because they are well proven, but that doesn't mean we

shouldn't continue to innovate."

Glass Futures' Chief Executive, Richard Katz said: "The combined knowledge and expertise of Professor Anthony Hollander and Mark Higham will substantially add to Glass Futures' capability to deliver innovation and technology for the benefit of its members and the global glass and foundation

industries. We sincerely welcome both Professor Holland and Higham to our Board and look forward to benefiting from their expertise in the years to come."

\*The N8 Research Partnership is a not-for-profit organisation funded by its member universities, to promote efficiency, collaboration and innovation in the North of England and beyond.

## Stoelzle invests in heat storage for renewable energy supply



Stoelzle has collaborated with Finnish company Polar Night Energy to store and regain green electricity from a sand-based storage solution.

The glass manufacturer gains green energy via waste heat from furnaces and green electricity from photovoltaic panels, and needed a solution to store its excess energy.

Therefore, in autumn 2022, Stoelzle participated in an innovation pitch, which was organised by the Austrian Chamber of Commerce.

At the pitch, Stoelzle decided to collaborate with Polar Night Energy; a small start-up company from Finland, founded by Markku Ylönen (left) and Tommi Eronen (right).



The Finnish company has developed a patented sand-based thermal energy storage.

It is the world's first commercial solution to store electricity in the sand

as heat to be used in a district heating network.

Mr Ylönen said: "As a material, sand is durable and inexpensive and can store a lot of heat in a small volume at a temperature of about 500–600°C."

The first storage of this kind has successfully been installed in the town of Kankaanpää, Finland.

Heat storages can help to increase intermittent renewables in the electrical grid, and waste heat can be used to heat homes, which is a step towards combustion-free heat production.



Niklas Zwettler (see left), Head of R&D at Stoelzle Glass Group, continues to lead this project and further steps

are being explored to extend the process.

He said: "Glass production is a very energy intensive process. We have set ourselves the target to halve our CO<sub>2</sub> emissions by 2030, and become carbon-neutral by 2050. So far, Polar Night Energy has discovered a way of extracting heat to warm water and feed local heating systems.

"Now, we need to discover how to retrieve electricity from the energy that is stored in the sand, in order to have a reliable source of green electricity to fire our furnaces. We're excited to see how this system will work for us."

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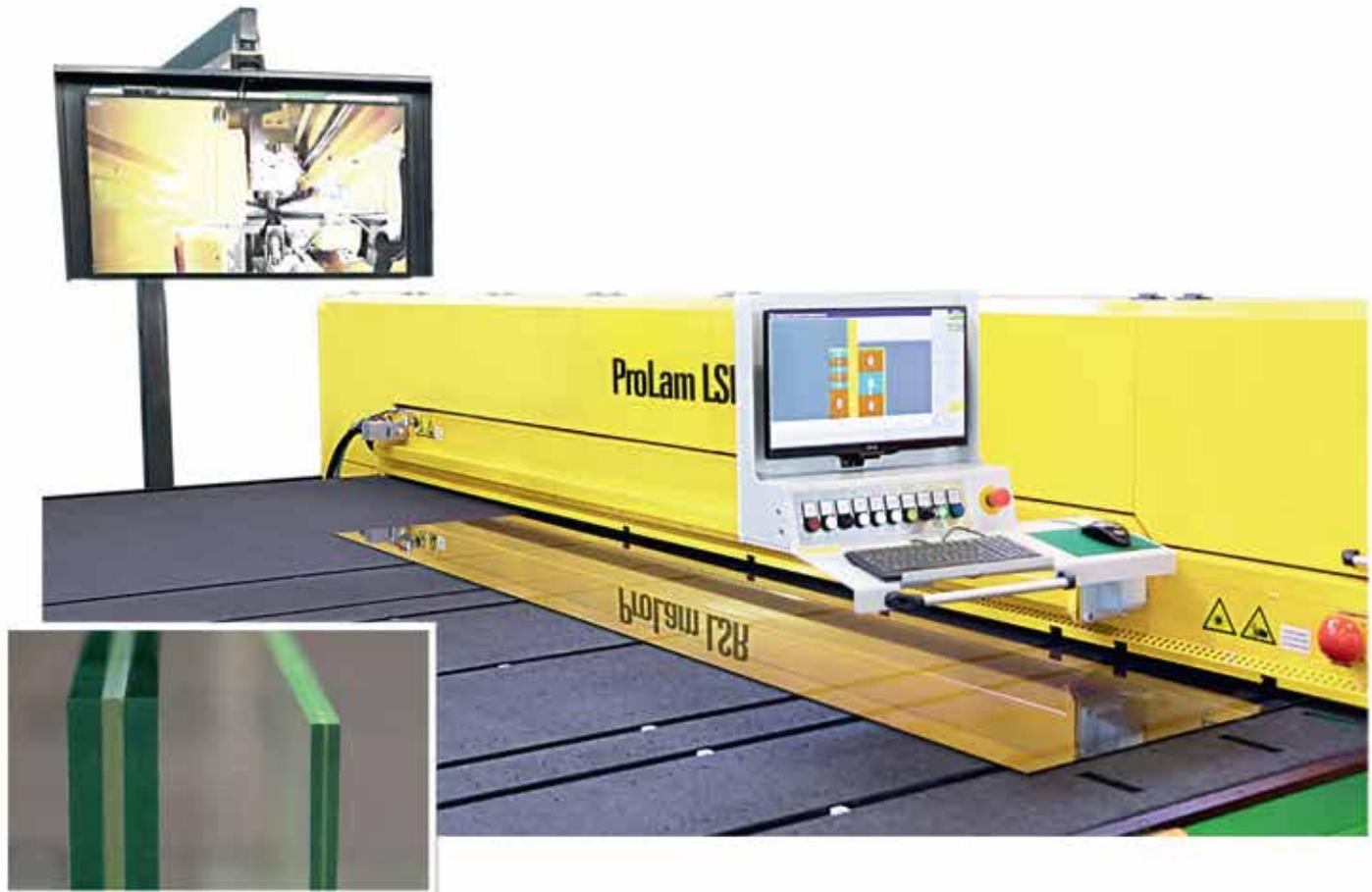
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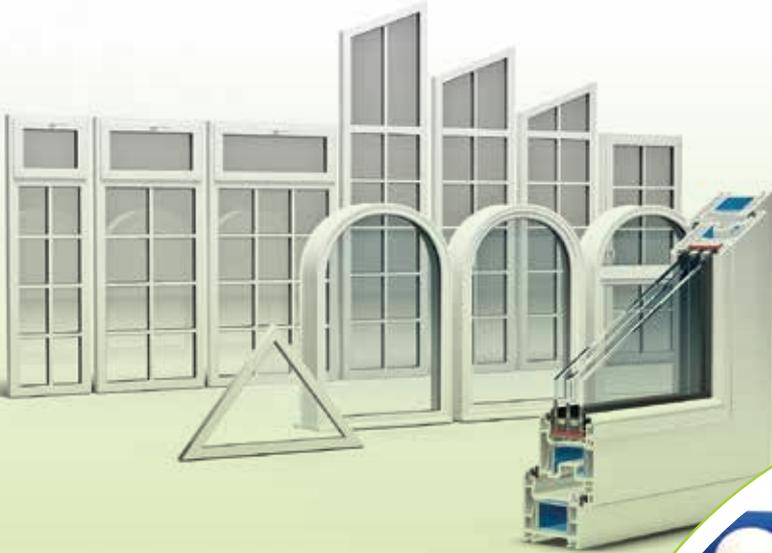


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