

glass WORLDWIDE

Latest technology + hollow, flat & speciality glass market reports & exclusive Arglass, O-I & Vidrala interviews. Hot Topics & Virtual Marketplace: glassworldwide.co.uk



THE POWER OF
THREE³

Discover three market-leading names behind one powerful force for innovation, delivering greater sustainability across the entire supply chain.

COUNTLESS IMPROVEMENTS FOR ONE THING THAT REALLY COUNTS.

ULRICH IMHOF (EXECUTIVE DIRECTOR)

25 % CO₂ REDUCTION

HORN
GLASS INDUSTRIES

With our experience we are constantly improving the efficiency of our Container and Special Glass furnaces. Today, we are up to 25 % CO₂ and 35 % NO_x reduction (compared to previous furnace campaigns).

Besides these environmental advantages, our technologies help our customers to reach a more efficient production process saving up to 20 % energy.

New Hybrid Furnace Technologies will satisfy the future's requirements.

innovation
ENGINEERED IN GERMANY

WWW.HORNGLOSS.COM

Welcome



Welcome to *Glass Worldwide's* first issue of 2021, at the start of what we hope will be a significantly more positive and less uncertain year than the last. The issue is packed with specially written features, highlighting some of the industry's latest investment priorities and market analyses from around the world.

Despite the significant challenges facing the float glass sector, much of the North American glass industry recorded a strong performance in 2020, as this year's Focus USA feature confirms. Scott DeFife, President of the Glass Packaging Institute reflects on glass packaging trends from 2020 and examines challenges moving forward, prior to the implementation of the incoming Biden administration's approach to trade and tariffs in 2021.

Elsewhere, the USA's first greenfield glass packaging plant in over a generation, Arglass Yamamura, commenced operations in December 2020 in southern Georgia, with the ambitious goal of revolutionising the North American glass container industry. Jose Arozamena, Chairman and CEO, exclusively updates *Glass Worldwide* on the project's progress.

Randolph (Randy) Burns, O-I's Chief Sustainability and Corporate Affairs Officer, speaks exclusively about the enormity of the company's challenge to implement a cohesive sustainability agenda across 79 plants in 23 countries, with joint ventures in China, Italy, Malaysia, Mexico, the USA and Vietnam and how O-I intends to deliver sustainable glass packaging to a growing global marketplace.

The creation of detailed sustainability strategies by the world's leading glassmakers is a consistent thread running through recent issues of *Glass Worldwide*. As well as O-I's detailed thoughts on the subject, readers of this issue can also discover the Vidrala Group's approach to sustainability throughout its European operations. Fiacre O'Donnell, Director of Sustainability, speaks exclusively about how the glass packaging specialist plans to achieve its targets. Further contributions on this important subject from leading international glassmakers have been lined up for future issues, including interviews with senior management personalities from Saint-Gobain, Stoelzle Group and Verescence.

We hope you enjoy reading the latest issue of *Glass Worldwide*, which also includes a specially compiled Buyers Guide devoted to process control and inspection, as well as a series of Technology contributions and Supplier Focus interviews. We look forward to receiving your feedback, as well as any recommendations for future editorial coverage.

John Wallis, Editorial Consultant
johnwallis@glassworldwide.co.uk



virtualmarketplace
See page 26

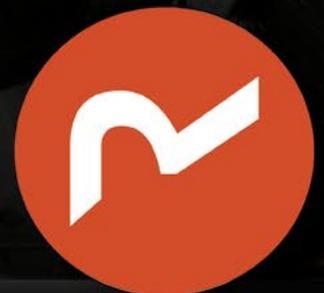
See pages
48 & S23



smartmelter
Furnace Life Optimization Solution
www.smartmelter.com



EXCELSIUS
YOUR HOT SERVICES SPECIALIST



Excelsius Global Services GmbH
Bgm.-Dr.-Nebel-Straße 14
D-97816 Lohr am Main
Germany

Telefon +49 (0)9352 6044-0
Telefax +49 (0)9352 6044-19

Contents

- 1 Welcome
- 6 News

Spotlight

- 20 Single sustainability vision for European glass packaging specialist

Focus CIS

- 28 Russian automotive glass market braced for localisation
- 32 A future with a hollow ring to it
- 36 Ready for a breakthrough

Focus Australia

- 40 On the Spot... Greg Savage, General Manager, Orora Glass
- 46 Australian glass industry looks to the future

Supplier Focus

- 48 Doubling up on furnace inspection measures

Focus USA

- S3 From home brew to drinking at home
- S8 Glass packaging giant shares global sustainability strategy
- S14 North American year in review
- S16 On the Spot... José de Diego Arozamena, Chairman and CEO, Arglass Yamamura
- S18 Overview of the USA glass industry

Supplier Focus

- 49 30 years of press and blow machines
- 52 Delivering excellence as standard

Technology

- 54 Melting – Boosting glass quality with electrically optimised heating
- 56 Plant Maintenance – Air, gas, steam and vacuum leak detection
- 60 Decoration – Creating bird-safe beauty with glass
- 62 Modelling – Simulation theory becomes reality
- 64 Handling – Refining the ride for float glass transportation

Buyers Guide - Process Control & Inspection

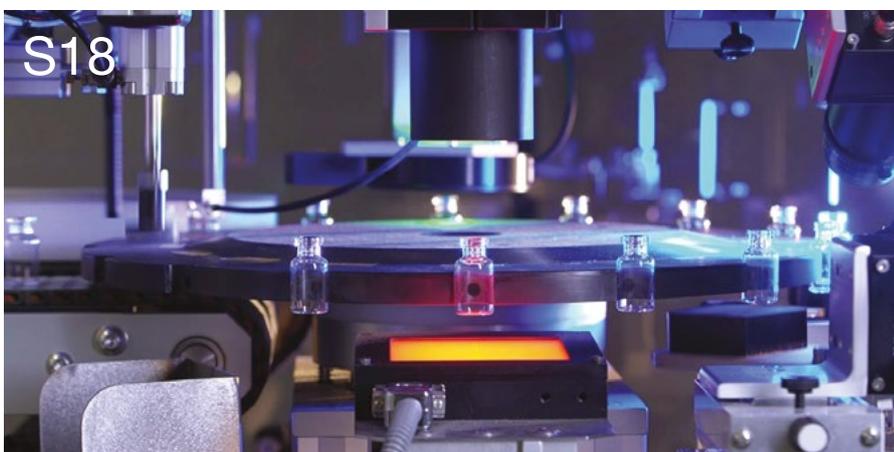
- 66 Letting the customer take control
- 68 Thermal imaging hot's up
- 76 Using smart sensors to deliver powerful results
- 78 A question of balance: Sustainability and profitability
- 80 Inspection takes a starring role
- 82 Supporting pharmaceutical glassware investment in Thailand
- 84 Every second counts
- 88 Family business goes global
- 90 Taking glass testing to the limit

Events

- 92 Zooming in on decarbonisation and post-Covid strategies
- 93 Forthcoming Events

Associations

- 100 Glass packaging industry launches sustainability hallmark





To make glass better, put us in the mix.

Improving combustion can enable you to increase glass production, reduce fuel consumption, enhance glass quality, and reduce emissions, such as NO_x, SO_x, CO₂, and particulates. Let Air Products' in-house modeling and melting experts help you get there.

For more than 70 years, we've delivered safe oxygen solutions, from our very first oxygen enrichment applications to our continuously evolving portfolio of low-emissions Cleanfire® oxy-fuel burners. You can count on Air Products for reliable gas supply and to help optimize your production—just like we have done for hundreds of furnaces all over the world.

Contact us to put the skills and experience of our global team to work for you. Optimal melting takes one key ingredient: Us.

tell me more
airproducts.com/furnace



Glass Worldwide is published bi-monthly by Chameleon Business Media Ltd 22 Hartfield Rd, Forest Row, East Sussex RH18 5DY, UK.

www.glassworldwide.co.uk



JOHN WALLIS
Editorial Consultant
Email: johnwallis@glassworldwide.co.uk



ALISON SMITH
Designer for Blue Daze Design Ltd
Email: copy@glassworldwide.co.uk



GRAHAM LOVELL
Senior Sales & Marketing Manager
Tel: +44 (0) 1342 321198
Email: grahamlovell@glassworldwide.co.uk



FRAZER CAMPBELL
Publisher
Tel: +44 (0) 1342 322278
Email: frazercampbell@glassworldwide.co.uk



DEBBIE FORDHAM
Publisher
Tel: +44 (0) 1342 322392
Email: debbiefordham@glassworldwide.co.uk



DAVE FORDHAM
Publisher
Tel: +44 (0) 1342 315032
Email: davefordham@glassworldwide.co.uk



SAM DUNMORE
Administration and Subscriptions Manager
Tel: +44 (0) 1342 322133
Email: samdunmore@glassworldwide.co.uk

Annual subscription

To receive the next six paper and digital copies + a free copy of the Who's Who / Annual Review Yearbook, subscribe now for a total of only €184 / \$231 / £126 at www.glassworldwide.co.uk

Glass Worldwide (ISSN No: 1748-6661, USPS No: 023-676) is published bi-monthly by Chameleon Business Media Ltd, GBR and distributed in the USA by Asendia USA, 17B S Middlesex Ave, Monroe NJ 08831. Periodicals postage paid New Brunswick NJ and additional mailing offices. POSTMASTER: send address changes to Glass Worldwide, 701c Ashland Ave, Folcroft PA 19032

All content, including covers is copyright ©Chameleon Business Media 2021. The reproduction, publication or storage of any material in this publication is expressly forbidden anywhere in the world without the publisher's written consent. Printed by Gemini Press Ltd, UK (www.gemini-press.co.uk). Material published in Glass Worldwide does not necessarily reflect the views or opinions of Chameleon Business Media Ltd, any of its staff, contributing consultants or sponsors of the magazine.

GLASS WORLDWIDE DIGITAL ARCHIVE

Sponsored by **F.I.C. (UK) LIMITED**

The Digital Archive of past and current issues is presently available *free of charge* at www.glassworldwide.co.uk alongside Hot Topics news, highlights from this issue and the Virtual Marketplace.



Glass Worldwide's Industry Partners

ESMA
Driving Print Excellence
Preferred journal of ESMA
www.esma.com

Glass Futures
Preferred Media Partner of Glass Futures
www.glass-futures.org

AIGMF
THE ALL INDIA GLASS MANUFACTURERS' FEDERATION
Preferred international journal of AIGMF in association with KANCH
www.aigmf.com



Preferred journal of Glass Packaging Institute
www.gpi.org



Official journal of the Worshipful Company of Glass Sellers of London
www.glass-sellers.co.uk

SGIA
Specialty Graphic Imaging Association
An active member of SGIA
www.sgia.org



Preferred journal of GMIC
www.gmic.org

GlassTrend
Preferred journal of GlassTrend
www.glasstrend.nl

Glass Alliance Europe
Preferred journal of Glass Alliance Europe
www.glassallianceeurope.eu



Preferred journal of Assovetro
www.assovetro.it



Preferred journal of Bundesverband Glasindustrie e.V. (BV Glas)
www.bvglas.de

GLASS FOR EUROPE
Preferred journal of Glass for Europe
www.glassforeurope.com



Preferred journal of IPGR
www.ipgr.com



Preferred journal of Glass Global
www.glassglobal.com



Official journal of ATIV
www.ativ.eu



Preferred journal of Union of Architects of Russia
www.mirstekla.ru



British Glass
An active member of British Glass
www.britglass.org.uk



Official journal of GlassPrint
www.glassprint.org



Official journal of AFGM
www.aseanglass.org



Preferred journal of Japan Glass Bottle Association
www.glassbottle.org

FEVE
The European Container Glass Federation
Preferred journal of FEVE
www.feve.org



Partner journal of DGG
www.hvg-dgg.de



Official journal of GPC
www.glassproblemsconference.org



Official partner of Friends of Glass
www.friendsofglass.org

KOENIG & BAUER

We print your world

Uniting inks and substrates
to create a uniqueness,
which is incomparable.

Koenig & Bauer Kammann GmbH
Weidehorst 80
32584 Löhne

kammann.de



we're on it.

News

For the latest news, visit the Hot Topics section at www.glassworldwide.co.uk

Specialty glass manufacturer looks to be climate neutral by 2030

Specialty glass group Schott is preparing to face up to the challenges of climate change. With its 'Zero Carbon' strategy project, Schott is heralding the next era in its environmental and climate management. "Pioneering spirit, long-term thinking and responsible action have been deeply rooted in our DNA since the days of our founding" explains Dr Frank Heinrich, Chairman of the Board of Management. "We are guided by these principles when it comes to this great challenge as well."

As a specialty glass manufacturer, the company operates in an energy-intensive industrial sector. Specialty glasses and glass-ceramics are melted in large melting tanks at temperatures of up to 1700°C. In the past, these melting tanks have been heated with the fossil fuels natural gas, heating oil or electricity. A lot of energy is also required for the further processing of the glasses. Due to this energy requirement, the climate-relevant footprint is around one million tons of CO₂e per year.

"We see three steps in our commitment to climate protection" Dr Heinrich confirms. "First, we want to avoid as many climate-damaging emissions as possible, significantly reduce unavoidable emissions in the next step and if nothing else is possible, finally compensate for the remaining emissions."

The action plan on achieving climate neutrality at Schott comprises four fields of action: Improvement of energy efficiency; switching to green electricity; technological change; and compensation for technologically unavoidable emissions.

The glassmaker has been striving constantly to improve its energy efficiency

for decades. The introduction of oxy-fuel melting technology and the increasing use of electricity to heat the melting tanks since the 1990s has already made it possible to reduce specific energy consumption by more than 30%. As part of the company's proven energy management system, experts are working intensively to identify and exploit further savings potential.

When it comes to electrical power, Schott will be relying solely on green electricity in the future. The company intends to cover 100% of its electricity needs with renewable energy sources such as hydroelectric power, wind power, solar energy and biomass by 2021.

In the long-term, the company intends to completely dispense with the use of fossil fuels, as far as this is technologically feasible. "This transformation process will take time and require high development and investment costs, however" says Dr Heinrich. The company views hydrogen technology as a promising solution. In addition, researchers and melting technologists are assessing the feasibility of other technological approaches. "We believe that as an innovation driver in our industry, we can provide important impulses in this area in the coming years and decades."

Until CO₂-free solutions for heating large glass melting tanks become available, Schott intends to compensate for technologically unavoidable emissions by investing in climate protection projects. The group is currently creating a compensation portfolio that meets high standards for the sustainability of the projects. These could include reforestation projects in various countries that are certified according to strict standards, for example.

www.schott.com ●



With its 'Zero Carbon' strategy project, Schott is heralding the next era in its environmental and climate management.

Cleanfire® ThruPort_e™ Burner

A prescription for aging regenerators

Undergoing regenerator repairs or having difficulty maintaining full production in an aging furnace? Turn to Air Products' Cleanfire ThruPort_e oxy-fuel burner for an on-the-fly heating solution to avoid downtime or extend your furnace campaign. This patented and commercially-proven technology, installed from the underside of your port, allows you to add heat where and when its needed.

Key features:

- Tandem water-cooled oxy-fuel burner and oxygen staging lance assembly
- Proven durable design; easily installed in an existing port while furnace is running
- Adjustable flame length and angle for optimal heat distribution and surface coverage
- Remote, wireless and continuous online monitoring of burner performance
- Available for rapid deployment

To make glass better, put Air Products in the mix.

tell me more
airproducts.com/thruport
800-654-4567, code 9091

**AIR
PRODUCTS** 

Need to produce glass containers that will leave consumers amazed?

With us you can do it

We are the only company in the world to operate successfully in the field of technology for the production and processing of both flat and hollow glass. A company with more than 50,000 installations in over 100 countries. An independent and reliable company that can accompany its customers in their growth. A company that makes innovation its mission and invests in research to continue to lead the market. A company that knows how to evolve to keep up with the times.

Sometimes you think it's impossible to go beyond that and then...

www.bottero.com



we • glass

GLASS / SHEARING SERVICES

We make shear blades.



A division of:

PENNINE



**INDUSTRIAL
EQUIPMENT**

So you can make hollow glass.

www.pennine.org sales@pennine.org +44 (0)1484 864733

VIDROMECHANICA®

GLASS MACHINERY TECHNOLOGY



E-learning benefits introduced

Training and education are highly important for the beneficial use of equipment supplied by Netherlands-based XPAR Vision. Traditionally, the company follows up equipment sales with technical and user training on-site, with field service engineers and consultants travelling internationally to bring this educational service, normally in the form of a two or three days training programmes.

Since the beginning of 2020 due to Covid-19 related travel restrictions, however, XPAR Vision has been reviewing and changing its traditional ways of working. In this context, enforced by realising that in the glass container industry, employee turnover rates are increasing and internal organisational changes are taking place regularly, with the aim to service customers better, XPAR Vision is introducing an on-line training and instruction platform.

The E-learning format is basically a set of courses

organised around defined profiles that in turn, are connected to trainees. The E-learning format distinguishes between profiles for operators, specialists, quality assurance, maintenance, job change and management. Each course in any profile is short and practical, has a clear purpose and during the course some questions appear and need to be answered, for the purpose of immediate feedback and to check if the training material has been well understood by trainees. These courses are offered at an online platform that is accessible through any web browser from every working station in the world, either from home or office, at any moment in time, fully at the convenience of the trainee.

In comparison to traditional 'in class' formats, E-learning has many advantages. This includes centrally stored content, allowing for up-to-date knowledge offering; monitoring training progress, allowing for trainees and their managers to review progress easily; low costs in comparison to

traditional in class formats; and unlimited accessibility in time and place, allowing users to reach full coverage easily.

Directly connected to E-learning is a set of pre-defined services, which can be extended by XPAR Vision in consultation with specific customer demand. Pre-defined services for example provide the possibility to raise questions (and get answers) from experienced field service engineers and consultants.

E-learning was rolled out in January. Starting with a focus on IR (V7 and higher) and the English language, it will be used as a platform for all XPAR Vision sensors and robot systems, for both system use and system maintenance and at least for operator level, it will be become available in all languages.

www.xparvision.com ●



International glass packaging business sale nears completion

Widespread reports in the international financial media indicate that private equity giant Blackstone has agreed to acquire Piralma Glass, the glass packaging business

of the diversified Piralma Group, at an enterprise value of \$1 billion.

It is anticipated that Blackstone will execute the deal in two tranches, as part of the agreement signed between

the two parties. The New York-based PE firm will first pay \$850 million and assume ownership and management control of Piralma Glass. The remaining \$150 million will be paid after Piralma Glass achieves certain business milestones. ●

Pharma glass inner surface treatment innovation

In line with its pharma approach and to better serve client needs, Stoelzle Pharma – Health and Safety has broadened its pharma primary packaging portfolio from type III soda-lime glass to type II glass containers with a surface inner treatment for higher hydrolytic resistance for acidic and neutral aqueous parenteral or non-parenteral preparations. Via this technical breakthrough, Stoelzle aims to overcome such disadvantages as imprecise dosing or handling with toxic components and difficulties encountered with smaller size containers.

After extensive research, laboratory analysis and inline sample testing in the past year, Stoelzle reports to have developed a process with good stability over a wide range of filling volumes from 6ml to 250ml and

adherence to all requirements of US and European Pharmacopoeias for type II glass.

The main components of the innovative liquid treatment process for Stoelzle type II glass are exclusively non-harmful substances: Air, water and ammonium sulphate. Potentially harmful SO_2/SO_3 is only formed in minute quantities directly in the bottles and the used water further improves the hydrolytic resistance.

In accordance with Stoelzle's environmental and social standards, which have been recognised with the Ecovadis gold rating, focus was placed on minimising the environmental impact through optimal dosing of ammonium sulphate adjusted to each bottle size, leading to raw material savings.

Series production of Stoelzle type

II flint injection and infusion bottles of 6ml to 250ml volume is set to start in June 2021 at the Köflach plant in Austria. The site has two furnaces with a daily capacity of some 270 tons of glass. Currently, approximately 1.5 billion pieces of clear, amber and green glass packaging are produced annually on 11 fully automated production lines.

www.stoelzle.com ●



Stoelzle has broadened its pharma primary packaging portfolio from type III soda-lime glass to type II glass containers with a surface inner treatment.



BDF Industries (all season) Collection

Our best experience for your Glass Industry

More than 100 years of tradition and more than 60 years of experience in Glass Industry, always in continuous research in new technologies and innovations to improve your production performances. The enthusiasm makes us truly unique because it is a passion that never fails. BDF Industries has everything you need to “dress” your Glass Plant: from Furnaces to Forehearths, from IS Machines to Variable Equipment, from Automation to Controls, to Energy management and recovery.

BDF Industries. The perfect Partner who always knows how to put itself in your shoes.



Excellence. Your Industrial Partner **in Glass**
 FURNACES | FOREHEARTHES | IS MACHINES

THE LANDMARK
IN THE
PRESS & BLOW MACHINES

0.90

For stemware and tumblers



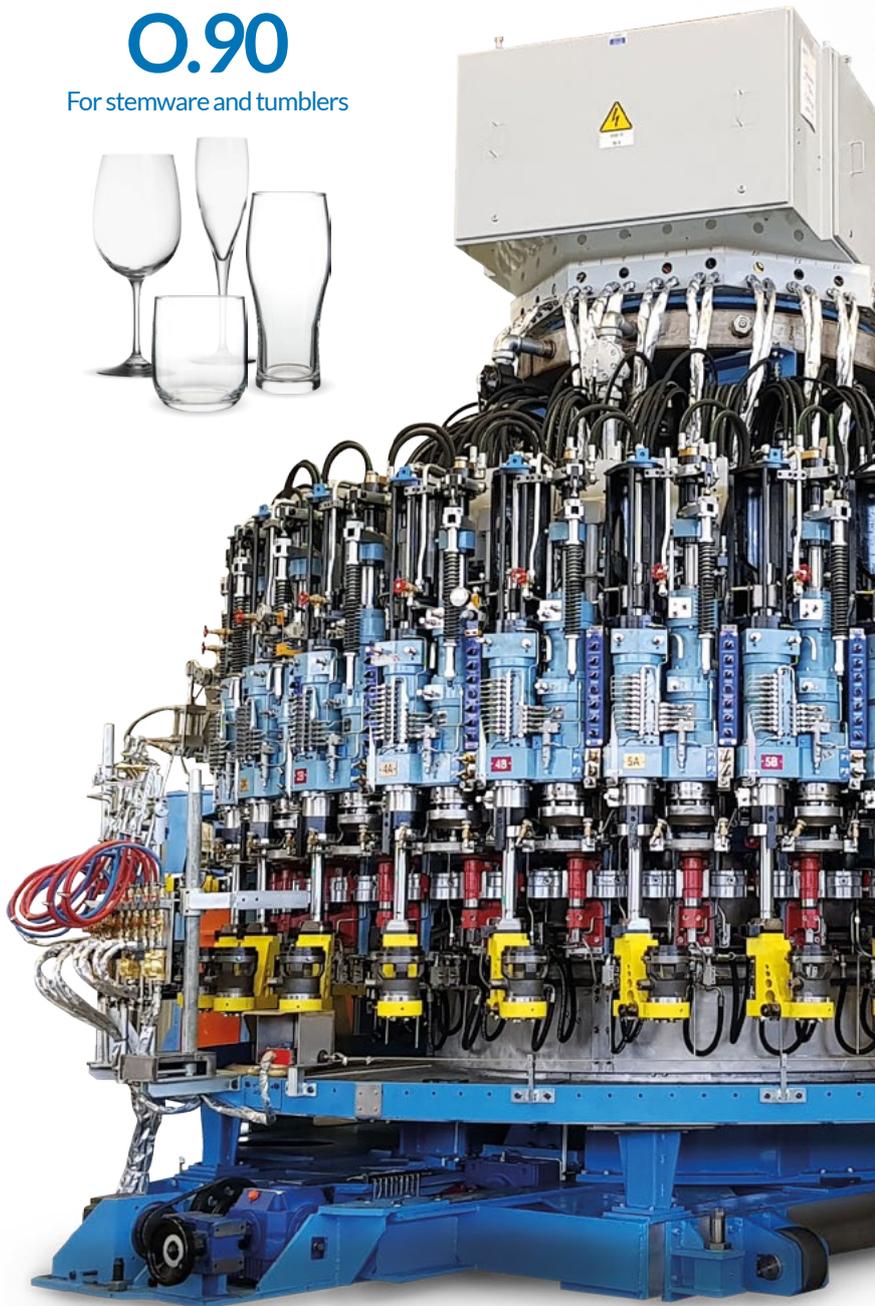
30

YEARS OF
PRESS & BLOW
MACHINES

OGT

OLIVOTTO GLASS TECHNOLOGIES

104 INSTALLATIONS
IN THE WORLD



R&D facility accelerates collaboration potential

AGC has completed an R&D building at the Yokohama Technical Center (Tsurumi-ku, Yokohama) at a total cost of approximately 20 billion yen. The facility houses a collaborative creation space called 'AO (AO/AGC OPEN SQUARE)', established to accelerate internal and external collaboration.

The project is based on a concept of being a place for seamless internal and external integration, response and collaboration. It is expected to significantly improve the speed of R&D through the consolidation and integration of the R&D functions related to basic technology, new products, processes and facility technology, which had previously been dispersed in two locations. In addition, it creates new business fields and new value by establishing a collaboration place to work with other companies and research institutions.

www.agc.com



AGC's recently completed R&D building at the Yokohama Technical Center.

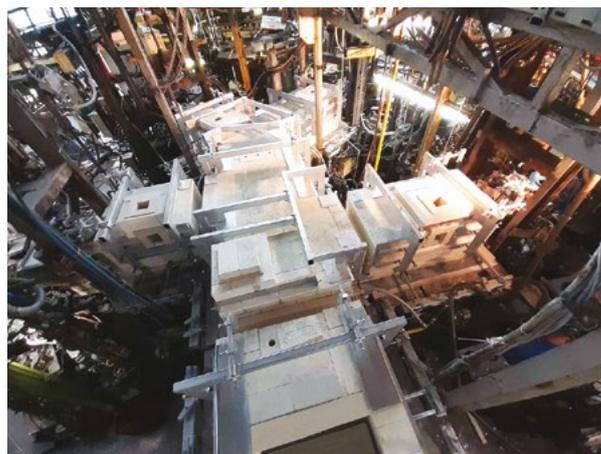
All-electric furnace rebuilt for German crystal specialist

F X Nachtmann has been producing hand- and machine-made goblets and gift articles since 1834. The company, which now has over 1200 employees and a turnover of around €80 million in 2018, offers the finest crystal glass from Bavaria, with all kinds of drinking glasses, vases, plates etc being part of the extravagant range.

In October 2019, HORN received an order to construct furnace two for the plant in Weiden, an all-electric furnace with seven production lines, which produces up to 25 tonnes of tableware per day. The melting furnace represents a special feature, as the heating is carried out electrically by means of tin oxide electrodes, as well as by means of an oxygen gas mixture. The distributor and the forehearth were previously electrically-heated and have now been converted to the pure HORN CORA gas mixture heating.

HORN's scope of supply included the planning of the refractory requirement for the distributor and forehearth and the refractory structure of the melting furnace, distributor and forehearth. Furthermore, the steel superstructure bracing and accessible platforms were planned, manufactured and erected. For the distributor as well as forehearth, the HORN gas-air-mixture heating system CORA was planned, manufactured and installed, as well as a combustion air supply. Furthermore, the whole plant was equipped with a measuring and control station and to simplify the control, the SCADA process control system developed by HORN including hardware and software was integrated.

www.hornglass.com



Built for F X Nachtmann, this HORN all-electric furnace at Wieden features seven production lines and produces up to 25 tonnes of tableware per day.

Optimized Glass Manufacturing Through Temperature Controlled Processes



SCR power controllers and non-contact temperature sensors by Advanced Energy for improved process control and energy efficiency in every step of glass manufacturing



advancedenergy.com
info@aei.com

Hungarian pharmaceutical packaging investment

Schott Hungary is launching an investment project at its Lukácsháza site, with 16 items set to be put in service at the pharmaceutical glass and packaging material manufacturing unit.

The company started operation in Lukácsháza 25 years ago and has been producing high quality packaging materials for the pharmaceutical industry ever since. In the pharmaceutical sector, the Hungarian unit is considered the largest manufacturing plant of the Mainz-based Schott group, which is owned by the Carl Zeiss Foundation.

This investment will involve the purchase of 16 highly automated production lines, which will be equipped with high speed and highly automated latest generation measuring and IT devices. An appropriate hall will also be built to accommodate the technology.

Source: hipa.hu

Taxonomy risks undermining renovation wave

Glass for Europe has joined the call of Renovate Europe for an increase of the energy performance standards for the renovation of buildings in the taxonomy delegated act.

In a letter sent to EU Vice Executive Vice-President Timmermans and Commissioner Simson, Renovate Europe highlights the contradiction between the objectives of the Renovation Wave Strategy and the ongoing work on the EU taxonomy screening criteria.

The draft EU taxonomy screening criteria indicate that building renovations only need to deliver a 30% reduction of primary energy demand, while Glass for Europe reports that at least 60% energy savings are necessary to meet the EU's climate goals. In addition, the 30% criteria could lead to improper energy renovations, which would hamper the energy saving potential of the building sector and prevent the EU from becoming the first climate-neutral continent by 2050.
www.glassforeurope.com ●

Moldovan glassworks acquisition finalised

Vetropack has completed its acquisition of the Moldovan glassworks in Chişinău, after the necessary approvals were obtained from competition authorities. The Vetropack Group is one of the leading manufacturers of glass packaging for the food and beverage industry in Europe. The group has state-of-the-art production facilities as well as sales and distribution offices in Switzerland, Austria, the Czech Republic, Croatia, Slovakia, Ukraine and Italy.

www.vetropack.com ●

Glass fibre plant expansion completed in Ohio

Phase one of the Johns Manville glass fibre pipe plant expansion in Defiance, Ohio is now complete. The US expansion added the first of two production lines, improving JM's ability to meet demand for Micro-Lok HP and Micro-Lok HP Ultra glass fibre pipe insulation, which is used primarily in commercial buildings.

"The JM team has done an outstanding job growing the business to the point where a capacity expansion was necessary" said Jim Swift, Director of Operations in JM's Insulation Systems business and leader of the expansion project. "The dedication of the entire team made this project possible, with the common goal of supplying our customers with quality pipe insulation and the service they are accustomed to."

The project began in March 2019, with an anticipated completion date of early 2020. However, setbacks such as travel limitations due to the Covid-19 pandemic caused a six month delay. To get it back on track, the JM team in Defiance employed a wearable computer called a HoloLens that rests on the head and acts as a see-through screen, where images may be displayed for the wearer to reference, while still being able to see through the screen into the real world. The helmet takes high definition footage of the objects in front of the wearer and displays that footage through Microsoft Teams at a remote location.

In JM's case, the footage was displayed in real-time in Germany, where many of the engineers who worked on the project are based. This technology helped bridge the distance between the engineers in Germany and the team in Defiance, so the expansion could be finished.

www.jm.com ●

glasstec

INTERNATIONAL TRADE FAIR FOR GLASS
PRODUCTION • PROCESSING • PRODUCTS

15 – 18 JUNE 2021
DÜSSELDORF | GERMANY

MORE TO YOU THAN MEETS THE EYE

New technologies for curved façades and glazing as if from a single mould. Considerable CO₂ and energy saving potential for increasing urbanization. Unique design possibilities with light and space. Glass: the transparent high-tech material for sustainable, resource-saving construction. All visionary innovations and developments – at glasstec, the world's leading trade fair.

glasstec-online.com



Expert control for furnaces and forehearths

The Glass Service Expert System III (ES III) has emerged as a leading supervisory model-based predictive control for furnaces and forehearths, helping to bring Industry 4.0 to life.

Many major float, container and fibre glass producers have implemented ES III as their standard for improved furnace control. It provides stability and improved quality, aiming for 2-3% energy cost savings, plus CO₂ and NO_x emission reduction, with a return on investment of about six months.

During the current Covid-19 pandemic especially, with low operator and engineering personnel in attendance, the ES III has contributed to keeping all systems running in optimal automatic mode, without risk of exposure to the virus.

The GS-ASENS NIR furnace camera can monitor a glass furnace with specialised artificial intelligent software analysing what is going on in a furnace and advise the system to take actions if needed. Even with current travel restrictions, GS has been able to realise some 40 installations worldwide, reaching a total of 290 installations.

www.gsl.cz



Glass Service Expert System III (ES III) supervisory model-based predictive control for furnaces and forehearths.

Keeping molten glass flowing smoothly



With the SORG Group's remote assistance, ISANTI Glass in South Africa has implemented vital furnace repair work.

In order to overcome the challenges faced by the glass industry during the Covid-19 pandemic, the SORG Group has been required to learn and adapt quickly to a different way of operating. Recently, one of the group's customers – ISANTI Glass in South Africa – had to instigate a strict lockdown and dramatically reduce tonnage from its furnace in the short-term. This led to a frozen glass melt in the throat area, which can cause a blockage and other critical defects. Therefore, the furnace had to be stopped as a precautionary measure and started again as quickly as possible, to ensure minimal loss of revenue.

Unable to visit and tackle this emergency situation on-site, SORG engineers had to communicate with many different ISANTI employees across the globe through video conferencing. Led by Holger Mayer, SORG's expert team offered remote support and training to the operators, managing to implement complex measures and instruct vital repair work over the course of three weeks. By rising to this challenge, the issue was successfully removed.

www.sorg.de

Penico Gauges supplies a complete range of Gauges & Reamers for mould production, inspection & repair

Penico's range of Mould Gauge Equipment provides the glass container industry with gauge solutions. Proven gauge design - Application know-how and fast delivery to all parts of the glass container industry.

- IS Blankmould - Blowmould - Neckring and Bottomplate Gauges - Fitter Gauges to inspect Dovetail Profiles.
- Non Standard Gauges manufactured to customer's own requirements.
- Blankmould & Mould Reamers manufactured in either HSS or Carbide Tipped to simplify the repair of mould dovetails.



Penico Gauges Limited

Albion Works • Keighley Road • Bingley • BD16 2RD • United Kingdom
 Tel: +44 (0) 1274 511044 • Fax: +44 (0) 1274 510770
 E-mail: info@penico.com • Web Site: www.penico.com

Chinese production line commissioned remotely

Germany's WALTEC has completed its first fully remote-controlled and monitored commissioning and start-up of a glass manufacturing production line for a customer in China.

"The Covid-19 crisis forced us to think and act out of the box and use technology to eliminate traditional boundaries" explained Herman Green, WALTEC's Global Sales Director.

The latest digital solutions were applied, underlining the company's innovation-driven footprint to realise process optimisation. Communication was supported via video-capable end devices such as body cams, smartphones and laptops with headsets.

www.waltec.de

Remote commissioning of float batch plant in Mexico

Guardian Industries has completed an upgrade of a batch plant and cullet return system in Mexico in association with Lahti Glass Technology, including a control equipment upgrade for both systems during a cold repair.

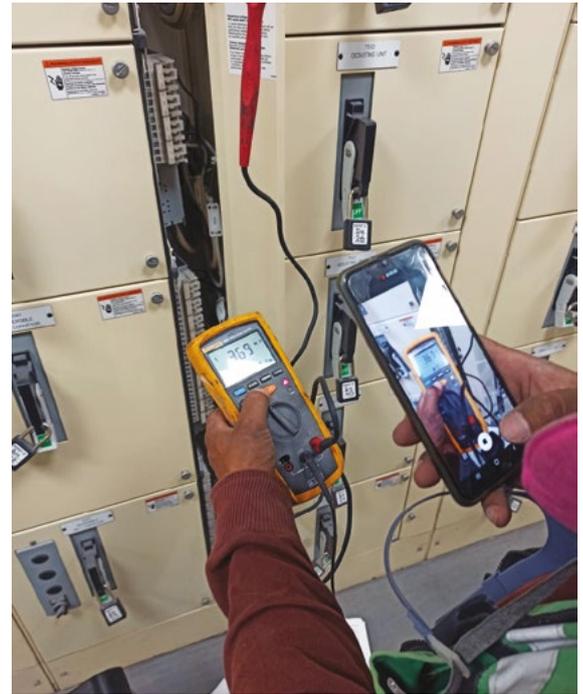
The Covid-19 pandemic situation in Mexico was getting worse around the demolition phase. Some equipment was installed during the first half of the cold repair period and testing of inputs and outputs were supposed to start soon after, before it was necessary for Lahti supervisors to return from the site due to the regulation of the government of Finland. Work on the project did not stop due to Covid-19, however, the rest of supervision being undertaken remotely.

The local Mexican team stayed at site, performing the actual hands-on work. The team was committed to continue testing through the use of processes that had not been used before; group text messaging applications and daily web meetings between on-site and off-site personnel. Installation of each equipment element was checked by mirroring the smartphone screen to the PC screen

at the office. By using this technique, it was possible to view small details and finetune mechanical installations, like the load cell assemblies, limit switches and similar precise instruments. Via the use of pictures, videos and constant communication, equipment was installed in an accurate manner.

The key question, however, was how to test the programmes prior to start-up. The client was prepared well for the challenge, headsets with video camera, microphone and online network access were ready for use for the site personnel. Access to the control system was organised via the customer's network, which allowed remote access only to authorised sections of the plant controls. The secured connection allowed remote access to the PLC and to the human machine interface in the PC by using the customer's trusted secure programmes. These programmes allow the user to run any program in the engineering and HMI PC like sitting in the control room on site in Mexico.

Testing was time-consuming and working hours were very long and complex due to time difference involved.



Remote start-up of a Guardian Industries batch plant and cullet return system in Mexico in association with Lahti Glass Technology.

Guardian site personnel worked efficiently and in seamless collaboration with Lahti's experts. Safety was the top priority, with no room for compromise in the safety protocols.

www.lahti-glass.fi

Air Products is blazing a new trail for oxy-fuel burner technology . . .

Boost your performance and productivity for better glass with the Cleanfire® HR_x™ burner!

Upgrading your oxy-fuel burners, adding burners to boost production, or converting your air-fuel furnace to oxy-fuel?

The patent pending Cleanfire HR_x burner offers you expanded functionality and flexibility with unmatched performance. It can deliver:

- Increased flame radiation for high fuel efficiency
- Ultra-low NO_x emissions
- Foam reduction capability for higher-quality glass
- Enhanced productivity
- Optional remote performance monitoring feature

This burner is the latest innovation in the long line of industry-leading Cleanfire® burners for the glass industry. To learn more or to schedule a demonstration in our state-of-the-art lab, call **800-654-4567** (code 10868) or visit airproducts.com/HRx.

To make glass better, put Air Products in the mix.

tell me more
airproducts.com/HRx

**AIR
PRODUCTS** 

People & posts

Do you have a company appointment to tell the world about? Email us at news@glassworldwide.co.uk

Key changes at glass melting consultancy



René Meuleman.

Leading Netherlands-based glass melting expert consultant CelSian has announced a series of key personnel changes.

Adriaan Lankhorst, one of the organisation's leading simulation experts retired in October 2020 and after a career of more than 33 years in the glass industry starting at TNO's Glass Group, Anne-Jans Faber leaves CelSian in January 2021. He will continue to be available as a glass consultant to CelSian and also his work as lecturer at RWTH will be prolonged. Oscar Verheijen takes over as Chairman of GlassTrend.



Ankith John Santosh.

CelSian's modelling team has been strengthened by the arrival of Ankith John Santosh and Dmitry Goryntsev. Ankith John Santosh graduated as

an aerospace engineer from the Delft University of Technology in the Netherlands, with a focus on various numerical assessments based on computational fluid dynamics. Dmitry Goryntsev is an experienced modeller and programmer, who has joined CelSian from the automotive industry with multiple years of experience in combustion simulation. He holds a PhD in mechanical engineering from the Technical University of Darmstadt in Germany.

René Meuleman will join CelSian in March 2021 as Business Development (and Customer Support) Director. Mr Meuleman has more than 40 years' experience in the glass industry, starting at Vereenigde Glasfabrieken, BSN, later O-I and most recently as business leader global glass at Eurotherm by Schneider-Electric. Following the first integrated advanced control system installations, René Meuleman will further roll out the advanced control strategy specifically based on CFD models, the entire CelSian glass comprehensive skillset, as well as the available and future CelSian product portfolio for glass manufacturers worldwide and strengthen commercial operations at the Eindhoven-based organisation.

"There are exciting, challenging and prosperous times ahead for the entire global glass industry" commented Harmen Kielstra, Managing Director at CelSian. "With the specialised capabilities of the CelSian team, services and products, now together with René and the new modellers, CelSian will keep supporting the glass industry to secure their social license to operate for future decades."

www.celsian.nl

Senior management changes at global power and control specialist



Mikael Le Guern.

For the past 13 years, René Meuleman has successfully led the global glass vertical market for Eurotherm by Schneider Electric. Mr Meuleman has made many significant and lasting contributions

working to promote Eurotherm as a key supplier of power and control technologies to the global glass market. Continuing his professional journey, René Meuleman recently decided to join CelSian as Business Development and Customer Support Director. He will be leaving Eurotherm by Schneider Electric on 28 February 2021.

For a smooth transition, Mikael Le Guern will take on the responsibility of leading the glass vertical market for Eurotherm as Business Development Manager – Glass. Mr Le Guern has a master's degree in electrical engineering from ENSEEIHT and started at Eurotherm Automation in Lyon, France in 2000 as a power application engineer. He later moved to the power product marketing position where working with R&D, he was instrumental in developing the product specification and business plan for the EPower Advanced SCR Controller range.

In 2007, Mikael Le Guern transferred to the Eurotherm office in Leesburg, VA to become the NA power product manager, where he led the power control systems business in North America. He joined the global business development team in 2018, with a focus on glass, power and process control, forming strong relationships while supporting world leading glass manufacturers. In his new role, he will continue Eurotherm's focus on solutions to support the electrification of the glass industry, including integrated predictive control solutions in collaboration with CelSian and AVEVA. A seasoned world traveler, he divides his time between Reston, Virginia and Geneva, Switzerland.

www.eurotherm.com/glass

Italian technology firm management



Valerio Percoco.

Valerio Percoco has been appointed Managing Director at Italian melting technology specialist Stara Glass SpA. His experience in global business development and strategic

thinking will support the company to achieve sustainable and long-term growth, dedicated to key customers in Italy and internationally.

"These are challenging times, there is no doubt about that, however I strongly believe that with the assistance of the whole team in Stara Glass, we will be able to take care of our customers by satisfying their needs and by working for an increasingly sustainable glass industry" said Mr Percoco commented.

www.staraglass.it

Glass Sellers appointments



Bill Chesshyre.



Richard Katz.



Maria Chanmugam.



Barbara Beadman.



David Wilkinson.

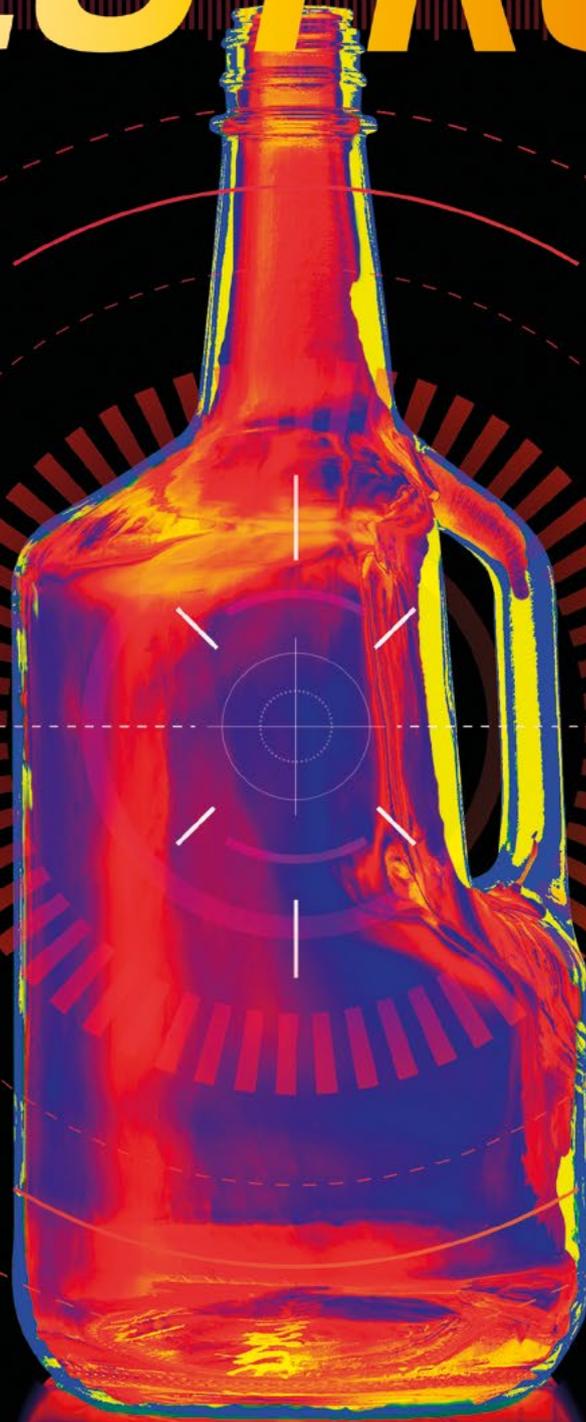
Colonel Bill Chesshyre has been installed as Master of the Worshipful Company of Glass Sellers of London. Other appointments include Barbara Beadman as Prime Warden, Maria Chanmugam (Chair of the Glass Committee) as Renter Warden and David Wilkinson as Master's Assistant.

"Despite Covid-19, I have thoroughly enjoyed my year" commented immediate past Master Richard Katz, who shared the role with overseeing significant progress in 2020 for Glass Futures' proposed global centre of glass excellence in R&D, training and innovation.

"It's been a great honour to represent the Glass Sellers" Mr Katz added, also expressing gratitude for the support received from the Clerk, Paul Wenham.

www.glass-sellers.co.uk

NEUTRON[®]



Our sights are set.

Neutron[®] targets thin and thick areas by mapping glass distribution inside your entire container—no matter the shape—with no contact at full production speed.



AppliedGlass.com

Single sustainability vision for European glass packaging specialist

When it bought UK-based Encirc in January 2015, leading Spanish glass packaging producer Vidrala acquired a business with a record of conscious sustainability. Now with a strong collective strategy across the entire group throughout Europe, Vidrala is focused on reducing environmental impact and determining the fuel of the future. Fiacre O'Donnell, Director of Sustainability spoke exclusively to *Glass Worldwide* about how the firm plans to achieve its targets.



Fiacre O'Donnell is Director of Sustainability at Vidrala.

Vidrala's Director of Sustainability, Fiacre O'Donnell is responsible for integrating a uniformed approach to sustainability throughout the entire Vidrala Group, which acquired Encirc (formerly Quinn Glass) in January 2015.

"My role is as an invigorator, an agitator, a reminder or something like that" Mr O'Donnell clarifies. "I can pose questions to our technical department, focusing on energy and carbon emissions – not to the exclusion of everything else but from a glass

industry perspective – they are things that really need to be tackled now."

As Encirc's Head of Strategic Development (November 2015 – May 2020), Mr O'Donnell identified what the newly consolidated group wanted to achieve in the future, with a serious look at its impact on sustainability and how it could be integrated into a much stronger role moving forward.

"It's no good if one factory is doing it, we need to get the whole sustainability initiative throughout the group" he stresses. "There are different cultural perceptions [within Vidrala]; the focus has always been there but now has a collective strategy around it. Every stakeholder that we have in the business is now aware that we have opened the sustainability box and everybody is contributing."

A programme that works in the background called Vidrala Operating System (VOS) provides uniformity across the entire group and a platform to share developments and drive continuous improvement and innovation. This harmony and cohesion is essential to progress: "One of the big things about sustainability is that you need to share developments!" Mr O'Donnell emphasises.

The four Ps

Vidrala's sustainability strategy is structured about the Four Ps, each attached to relevant sustainability goals: People (development, health and wellbeing, equality, diversity and inclusion); Place (community liaison, customer and supplier partners and biodiversity); Planet (energy, transportation and resource efficiency); and Prosperity (marketplace responsibility, stakeholder engagement and responsible leadership).

"To keep the cycle going, we have to create profitability in our business so that we can focus on our people, planet responsibilities and the work we can do in the place" summarises Mr O'Donnell. "As a group, we are really starting to see real benefits of that."

"We have normal targets you'd expect in terms of water usage, resource usage and so on" he continues "but we are currently working very closely with a business partner to review our emissions data from all levels in gas, electricity and supply chain."

"To see what we could do for the Science Based Targets initiative, we knew, for example, that to meet the 1.5 degree target, it's something like a 50% reduction in carbon emissions and we are now months away from deciding exactly how we will commit to that" he reveals.

Mr O'Donnell has a multi-layered vision for the group's approach to sustainability in the future.

"In a short-term perspective, one of the things we need to understand is materiality – what do our stakeholders really want to know and are we focusing on those? So while I'm suggesting we have the Four Ps programme containing the main factors, we can extend beyond those and develop them."

"Medium-term from a group perspective again, we will complete the furnace rebuild programme over the next couple of years, meaning plants across the whole group will have new furnaces, which from a glass manufacturing perspective is unrivalled."

"Long-term, while we can work on customer and supplier relationships, biodiversity, resource efficiency and so on, it really has to be what is the fuel of the future for glass container manufacture and how do we positive-impact our carbon emissions? It's our most important challenge."

Supporting sustainability

Vidrala is a founder member of several initiatives addressing the fundamentals of glass manufacturing that will be important in shaping the group's future sustainability. One of these is Glass Futures – the not-for-profit research technology organisation intent on revolutionising glass manufacture and increasing its use throughout society. "We need an organisation to develop all these initiatives for us ▶



The Vidrala Group is one of the world's most sustainable packaging manufacturers.



...works for you

Release Agents
Coatings
Shear Blade Lubricants



www.acmos.com

How do you clean your Hot End?



- The unique Hot-End Cleaning System ME 1700 was developed especially for the requirements of container-glass production.
- Requires no chemicals or detergents.
- Savings of up to 80% of manual cleaning time in the IS-Maintenance Workshop.
- Excellent cleaning-results, even the worst backed on carbon, grease and oil deposits are easily and quickly removed.
- Cleaning of all IS machine-parts such as mould holders and inserts, take out tongs, shear-mechanism parts, neck-ring arms, funnel arms etc., with perfect results in the shortest time.
- Conveyor-belts cleaned in minutes during a job-change, belt is rendered completely free of baked on carbon, grease, oil and hot-end coating deposits. Under belt cooling is improved, contamination of container bottoms eliminated.
- Cleaning IS-machines, feeder platforms and area around the productions lines.
- Appreciated worldwide by International Glass Container manufacturers.

D. Widmann GmbH
Daimlerstraße 34, D-89079 Ulm

Tel. +49 (0) 731 483 73 0
Fax +49 (0) 731 483 73 2

info@widmann-systems.com
www.widmann-systems.com

WIDMANN
CLEANING SYSTEMS



GLASS FUTURES OPENS A VIRTUAL DOOR TO ITS GLOBAL CENTRE OF EXCELLENCE

With funding now secured for a world's first collaborative 30 tonnes per day research and development platform, to test and develop viable alternative low carbon energy sources enabling net zero in accordance with the Paris Accord, Glass Futures and its members are co-designing this world's first facility and reaching out to the global glass supply chain for best knowledge.

You can learn our plans, understand the current direction and provide steer to ensure we build the world's best ground-breaking R&D and training platform to help transform the global glass sector into a modern powerhouse of innovation and sustainability.

The events will take place on:

- Wednesday 27th January 2021
2.00 pm - 3.30 pm
Materials, Melting & Refractories / Q&A
- Wednesday 24th February 2021
2.00 pm - 3.30 pm
Digitisation, Forming and Quality / Q&A
- Wednesday 31st March 2021
2.00 pm - 3.30 pm
People, Skills and Collaboration / Q&A

Get your free tickets here, or email us.

<https://www.eventbrite.co.uk/e/glass-futures-op-en-design-events-tickets-132538350775>

TESTIMONIALS:

"The design sessions have been great with open and informative discussions. It is a great pleasure being part of the group".

Noel McGovern - Key Projects Manager, Encirc

"The knowledge, thought leadership and ingenuity that has been demonstrated and shared during the open design sessions is a credit to the glass industry and clearly highlights the sector's altruistic motives".

Stephen Haigh - Head of the Glass Sector, Siemens UK & Ireland

"The open design sessions we have had to date have been very interesting, with good input and ideas from a number of world leading suppliers to the glass industry. Listening to experts in their field respond to questions on the future of glass making indicates to me that Glass Futures is heading in the right direction".

Peter Liggett - Capital Projects Manager, Glass Futures

Email: info@glass-futures.org
www.glass-futures.org



'Women in Manufacturing' is an important initiative for the group.

such as fuels of the future and raw materials etc and that's where Glass Futures kicks in" Mr O'Donnell attests. "The glass industry has to find solutions collectively and Glass Futures is a great conjunct for this. Alternative packaging materials that gain a march on us could be devastating for the glass industry."

Similarly, Vidrala supports FEVE's 'Furnace of the Future' project to reduce the carbon footprint of glass packaging production by developing a hybrid oxy-fuel furnace to run on 80% renewable electricity. "Ideally the fuel of the future could be, for example, electricity generated from wind or sea with no impact on the atmosphere at all" theorises Mr O'Donnell. "But it has to be feasible and if it can't necessarily be all-electricity, there needs to be another option. So it's important to get the Furnace of the Future initiative up and running and further evaluate what the challenges are going to be."

Fiacre O'Donnell is also on the committee of FEVE's 'Close the Glass Loop' platform to increase the quantity and quality of available recycled glass. "The aspirations behind 'Close the Glass Loop' are very important for sustainability and the future prosperity of the industry" he notes. "The more cullet we can get back, the less carbon-intensive we will be."

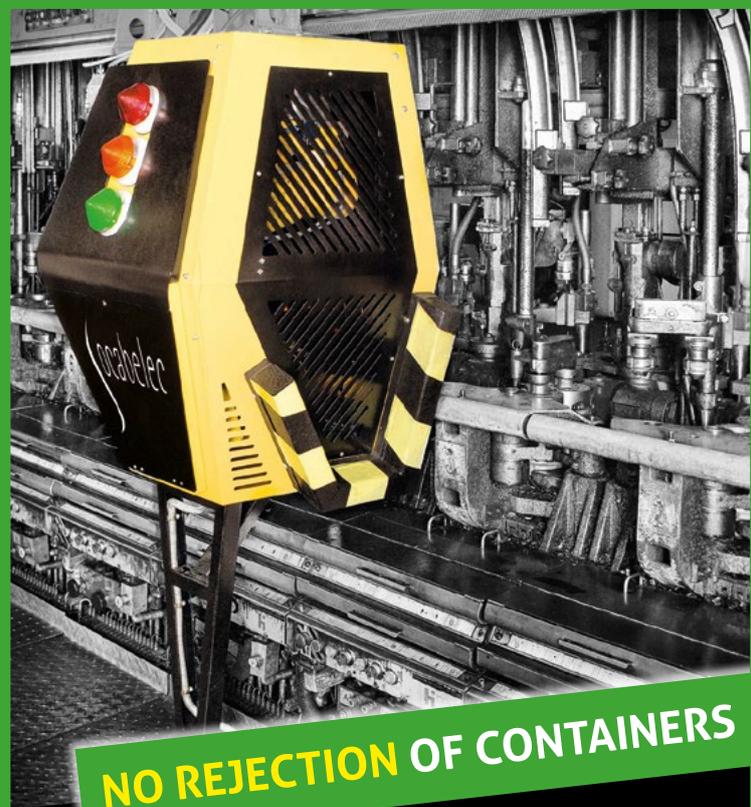
Bio-fuel trial

In 2021, Encirc's Derrylin plant in Northern Ireland will trial the use of bio-fuel in one of its own furnaces, partnering with Glass Futures to create the world's most sustainable glass bottle and reduce the impact of glass manufacturing in the UK.

"We were used to using liquid fuels in Derrylin until last year when we switched to gas, so our team is in a good position to handle this" Mr O'Donnell explains. "Bio-fuel is of course a potential fuel for the future with a less carbon-intensive footprint but for it to replace natural gas in glass manufacturing, we have to understand how it will work in our furnace and this is exactly what Glass Futures is all about – trying out an alternative and seeing if it works. And bio-▶



Fiacre O'Donnell: "You really have to focus on your people and then you can reap the benefits".



NO REJECTION OF CONTAINERS



FIRST SWABBING-ROBOT ON THE RUN

NO SECTION STOP NECESSARY

75 % SAVINGS ON LUBRICATION



socabelec
www.socabelec.com
info@socabelec.com

We customize our swabbing-robot to your IS machine.

fuels could also potentially address criticism of how glass is transported.”

Vidrala will complete its second furnace rebuild in Derrylin to change from fuel oil to gas next year.

Progressive partnerships

Developing glass manufacturing practices can hinge on technological advances from suppliers, particularly if there is an educated link the whole way through the supplier chain. Vidrala is very good at adopting technology, believes Fiacre O'Donnell. “At some point, you have to step on the ladder and go for it to see what the technology can offer. For example, we didn't know whether 12-section quad gob production was possible but we did it with Bucher Emhart Glass. We didn't know whether the type of huge furnaces we wanted in Elton could be done but we put faith in SORG and it was possible.

We also have the world's first intelligent glass lines at our Elton and Crisnova factories with Emhart's End to end concept. Another advantage for Elton is its proximity to the north west's HyNet project producing hydrogen from natural gas. The plant also benefits from

a strong supply chain comprising glass, beverages, storage and distribution network.

To support sustainability efforts moving forward, suppliers need to be thinking about the challenges of the future and how technology will play a part, Mr O'Donnell stresses. “We know already that the future will be decarbonised, so how do we get to that point? Partnerships with suppliers will be totally crucial.”

Prioritising people

Nurturing its employees is a strong part of Vidrala's business' development and the Health and Wellbeing framework that it operates in the background. “You really have to focus on your people and then you can reap the benefits” says Mr O'Donnell. Frustratingly, Covid-19 has impeded his ability to visit sites and discover and share learnings with the group. However, “the pandemic has made us focus really on the people that we have” he says. “With the challenges of currently being in the workplace and at home, we are providing activities and support including mindfulness sessions.”

Looking to shape and develop the workforce of the future, Vidrala has



The Elton plant featured heavily in an investment programme of approximately €275 million across Encirc's three production sites in 2020.

diversity initiatives that extend right back to primary schools, according to Fiacre O'Donnell. “Our Social Responsibility Programme is very important too” he maintains “and we have liaison committees and lots of activity right through the group. For example, at Vidrala's Castellar [Barcelona] plant, we did a programme with the local school on waste and in Derrylin, we did a programme on bio-fuels with local school children contributing. At Elton, we have links back into universities and schools and such engagement feeds back into current employees because kids talk to their parents that work in our factories.”

As part of Vidrala's diversity drive, the company launched an initiative called Women in Manufacturing, using a charter to work with females in the business on paths they can take for development. “Three of our five shift managers ▶



We believe in Sustainability

To us, sustainability is striking a balance between development and environmental, social, economic and regulatory forces and is the foundation of our commitment to increase growth only if this matches a shared increase of the quality of life.

Glass is a legendary material that has changed our way of living bringing light where there was darkness and has been manufactured for thousands of years. Glass is clean and is the ideal container for food, beverages and medicines, because it is chemically inert like no other material. Glass is infinitely recyclable. Glass production however requires a great amount of energy due to a process that demands extremely high working temperatures.

Stara Glass is proud to help its customers to transition towards a Net Zero carbon future and to manufacture sustainable glass.

Stara Glass, your partner in sustainability and innovations.

www.staraglass.com





Bright ideas. Better glass. Better world.

We are world leader in the field of sensor and robot solutions for hot end inspection, quality assurance and closed loop automation. With our solutions we actively work together with glass producers on making containers and table ware products lighter and stronger, produced with (almost) zero defects at higher speed and with minimum human dependency. The result is that the container and table ware industries are more competitive with other materials and more sustainable. Consequently together we create a better world!



virtualmarketplace

Visit the glass sector's digital showcase of the latest innovation from glassmakers and suppliers across the world. Complementing the industry acclaimed content of *Glass Worldwide*, 150 presentations are available free of charge.

To find out how your company can be present, email Dave Fordham at davefordham@glassworldwide.co.uk

www.glassworldwide.co.uk



Check back regularly for new entries and additional content!

In addition to the news pages in this issue, visit www.glassworldwide.co.uk for the latest developments covering the hollow, flat and speciality glass sectors.

HOT TOPICS
(SPONSORED BY SIEMENS)

Suppliers in the News

Digital Archive (SPONSORED BY FIC)

To increase accessibility and visibility of all our content in the current environment, the Digital Archive of past and current issues is presently available free of charge at www.glassworldwide.co.uk



People is one of the Four Ps in Vidrala's sustainability strategy, the others being Place, Planet and Prosperity.

in Derrylin are female" says Mr O'Donnell. "Not because we have set targets but because they were the best people for the job.

"We were a part of the graduate programme at The Cheshire Energy Hub, an energy sector support organisation and the quality of the people coming in was phenomenal" he continues. "Lara Edison was one of those and as a 27-year-old female, she is now the Batch and Furnace Supervisor for the world's two biggest glass container furnaces and just won Rising Star at this year's Glass Focus Awards. We are approaching people diversity in the overall context of sustainability and have a strong foundation to develop it."

Biodiversity

Aligning with the aspirations of its customers – and their customers – biodiversity is an important issue to Vidrala.

"As we are in the food and beverage industry with a reliance on natural products being available to us, we need to promote and protect biodiversity" Mr O'Donnell confirms. Accordingly, the site in Derrylin has been accredited to platinum level in the Business & Biodiversity Charter by Business in the Community. Vidrala's Crisnova plant in Spain has taken on a large area of ground from the City Council of Caudete to plant and maintain. The group has also signed up to the ForestNation initiative, which has many links to sustainability goals.

Joining green initiatives scheme

As part of Vidrala's commitment to support the fight against climate change, the group has invested £5 million in HSBC UK's Green Deposits scheme, which uses deposits to finance green initiatives and environment-friendly projects. Interest accrued will be directed to environmentally progressive projects such as those focused on renewable energy, energy efficiency, pollution control and biodiversity conservation. The project will be set up by HSBC

UK to use funds from Encirc, which will receive a quarterly, portfolio-level review of how its funds have been distributed across different sustainable projects.

"Our investments in HSBC's Green Deposits scheme will allow us to support environmental projects that aren't directly related to our industry, while we continue to throw our support behind boosting sustainability in our own sector" Mr O'Donnell explains. "We pride ourselves on placing sustainability at the heart of our operations. As a business, we understand that we have a responsibility to invest in a greener future, which is why we are always looking to go the extra mile and find new ways to have a positive impact on the planet." ●

Further information:

Encirc, Elton, Cheshire, UK
tel: +44 1928 725 300
email: info@encirc360.com
web: www.encirc360.com

Vidrala, Llodio, Spain
tel: + 34 946 71 97 00
web: www.vidrala.com

UP TO 7 YEAR WARRANTY

NON-CONSUMABLE PARTS

SYSTEM ENGINEERING

OEM INDEPENDENCY

NO OVERHAULING

visit PNEUMOFORE.COM



MASTERS IN THE

LOWEST
LIFE CYCLE COST

YES. THERE REALLY ARE

TAILORED SOLUTIONS FOR COMPRESSORS AND VACUUM SYSTEMS

Leading glassmakers have chosen Pneumofore Rotary Vane machines with cristal clear results: high energy savings, trouble-free operation and the lowest Total Cost of Ownership.

10 year maintenance plan ■
with clear costs

trouble-free 24/7 operation ■
for decades

-50% in maintenance than other ■
competitors' technologies

Pneumofore 

SINCE
1923

SWISS ENGINEERING
ITALIAN DESIGN
GLOBAL PRESENCE

ISO 9001
ISO 14001
CERTIFIED

Russian automotive glass market braced for localisation

Pedalling an import replacement campaign in the automotive components sector has continued to be an aim for the Russian government, despite the hiatus caused by the Covid-19 pandemic. Vladislav Vorotnikov explains how these efforts are expected to expunge automotive glass imports from the Russian domestic market in the foreseeable future.

Demand for automotive glass in Russia has been following ups and downs in the finished vehicle market, where one storm has come after another during recent years.

Russian car sales reached a peak of 2.85 million units in 2012 on the back of the local population's soaring purchasing power. In monetary terms, Russia's car market increased to 2.33 trillion rubles (US\$77 billion). In 2013, the Russian Industry and Trade Ministry forecast that sales could climb to four million cars per year in the next decade, turning Russia into Europe's biggest car market.

However, a slump in global oil prices and international sanctions imposed on the country's economy over Russia's Crimea annexation in 2014 proved to be a major blow for the domestic car market. According to Russian state statistical service Rosstat, sales range between 1.4 and 1.7 million cars per year now and [final] 2020 figures are unlikely to be any better.

The Covid effect

Market participants are confident that the Covid-19 pandemic so far has had only a limited impact on demand for automotive glass in Russia.

"In the past three months, we feel that our clients have tried to compensate sales lost during the lockdown and since the beginning of September, carmakers have been significantly increasing the volume of ordered automotive glass" said the Russian Commercial Management of AGC Automotive Europe towards the end of the year.

The leading supplier of automotive glass in the Russian market, AGC Automotive operates AGC Bor Glassworks, which has production capacity for 1.5 million automotive glass kits per year. According to its own estimates, the company currently accounts for 50% of automotive glass production in Russia.

"By the end of September, carmakers are trying to overcome a shortage for key car models, which has a positive effect on components supplies, including AGC Automotive Russia" the company added.

The Russian automotive industry is doing well thanks to a large-scale state aid programme embarked on by the government. After the spring (2020) lockdown imposed by the Russian government due to pandemic in April and May, the Russian automotive market started an impressive recovery, comparable to what had happened in China, according to AGC Automotive's representative. "In July, car sales were higher than in the same period of 2019. Thanks to significant support from the Russian government and the rise of car prices during the last two months, potential buyers have been urged to buy a car in order to preserve their savings. The market by the end of 2020 may sink by only 10%" the company added.

The Russian government is set to spend Rub20 billion (US\$240 million) to support demand in the

domestic finished vehicle market in 2020, a decree posted on the Russian Government website on 4 May stipulated. The bailout package focuses on providing soft loans from state-owned banks for Russian citizens willing to purchase finished vehicles by the end of the year. Russian government officials promised that the state aid would be extended for 2021, when it is expected to amount to Rub17.5 billion (US\$220 million).

Localisation

Over the past few years the Russian government has been encouraging a so-called industrial assembly policy, providing state support (in the form of lowered import duties and logistics subsidies) to OEMs meeting particular localisation requirements on components for their manufacturing operations in Russia. The authorities let carmakers decide what components to localise, resulting in automotive glass remaining a largely overlooked sector.

In 2019, the rules were updated but again, automotive glass was not mentioned. On 25 May 2019, "the Russian government signed a decree, specifying requirements to automotive production, introducing a so-called point-based system" explained Alexey Belyaev, Chairman of the Association of European Businesses' automotive components. "The points [collected through components' localisation] pave the way to state support programmes. This decree is crucial for the entire Russian automotive industry. However, the decree has not stipulated gaining points for the automotive glass localisation" Mr Belyaev noted. ▶



AGC is the leading supplier of automotive glass in Russia.



Let us be *your guide*
through the world of glass

|| Worldwide there are more than 300 flat glass production lines with cold end equipment from Grenzebach combined with tin baths and annealing lehrs from CNUD EFCO GFT. More than half of the flat glass products for windows, facades and vehicles are produced on Grenzebach and CNUD EFCO GFT equipment. And that really motivates us as a team to break the mold and make the technology even better for our customers. ||

Egbert Wenninger
Chief Commercial Officer

 **GRENZEBACH**

www.grenzebach.com



CNUD EFCO GFT

www.cnudefco.com

Getting rid of import

Automotive glass came into the spotlight in the Special Investment Contracts (SPICs). The government signed the SPICs on individual terms with all carmakers and some automotive components producers. Each of these contracts details what components OEMs have to localise in order to be eligible for state aid.

Commenting on import substitution, AGC Automotive confirmed that “the Russian government is strongly encouraging the automotive industry, both carmakers and components suppliers, to invest and localise automotive components by introducing a system of grants and updating SPICs for automakers.”

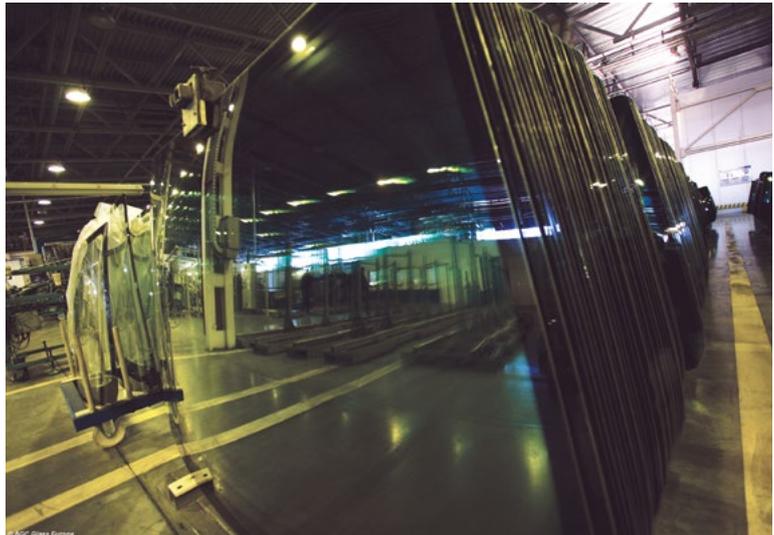
Product localisation offers clear economic benefits. Since the beginning of the Covid-19 pandemic, the Russian ruble’s exchange rate has slumped by 30% against hard currency, which has put a heavy burden on all companies with strong import dependence.

“Localisation reduces dependence on fluctuations in the exchange rate and increases the stability share in the cost price and thus, we can make a forecast for a longer period of time, build contractual relationships and improve competitiveness” noted AGC Automotive.

Russian firm Avtotor is the last carmaker to date to switch to purchasing glass on the local market, from the Kaluga-based plant of Fuyao Glass Rus.

“Automotive glass import in Russia is likely to dwindle due to the Covid-19 pandemic” commented a source in the Russian automotive industry who wished not to be named. “Many companies experienced supply disruptions in April and had to source automotive components on the domestic market. Automotive glass is not an exception.

“Often, Russian carmakers are reluctant to source automotive components from the domestic market



According to the company’s own estimates, AGC Bor Glassworks currently accounts for 50% of automotive glass production in Russia.

because they have poor quality. However, Fuyao Glass Rus and AGC Automotive produce the highest quality of automotive glass – there is no doubt in that. It feels like the global companies that decided to stick to import and not localise their production in Russia, have become less competitive price-wise and already have seen a result of this in their sales dynamics” the source added.

Rising export

Several years ago, Russia was importing 100% of automotive glass. All supplies were coming either from China or from Europe, estimated Andreas Klar, former Director of the Kaluga automotive plant of the Volkswagen Group Rus.

However in 2013, Russia began exporting automotive glass after the launch of the Fuyao Glass Rus in Kaluga Oblast for Rub10 billion (US\$200 million). Production was initially one million automotive glass sets per year, then the company declared plans to triple automotive glass production to export nearly two million sets per year, primarily to Europe.

In 2019, Fuyao Glass Rus invested Rub300 million (US\$4 million) into the Kaluga plant and performance climbed by 20%, reaching 5.5 million units of automotive glass.

“The additional volumes are expected to land both in Russia and in foreign markets” according to the press service of the Agency for Regional Development of the Kaluga Oblast.

In Russia, Fuyao Glass Rus sells glass to major carmakers, including Volkswagen, Volvo, Nissan, Hyundai,

Renault, Peugeot and Ford. The company is exporting nearly half of all production, primarily to Spain, Belgium, France and Italy.

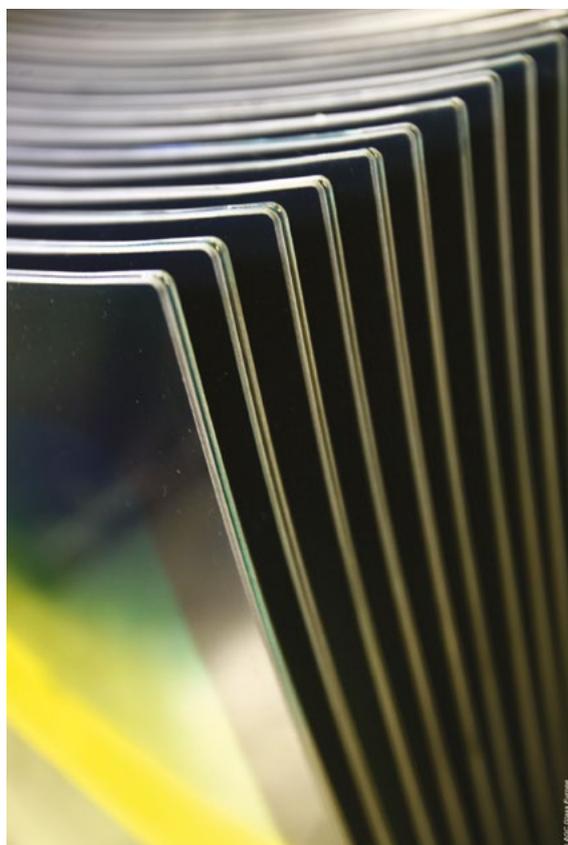
During the past few years, Russian automotive component exports have been steadily growing to some extent, thanks to the logistics subsidies. In 2019, Russia allocated Rub4.5 billion (US\$80 million) to support automotive exports from the country, which was the highest level ever. The 2020 figure was projected to be even higher. State aid is allocated in the form not only of logistics subsidies but also payments for homologation and promotion of Russian products in foreign countries.

Exports are expected to grow further since Russia offers producers a cheap raw material base, relatively low electricity prices and a skilled labour force, Russian analysts believe. On the other hand, the Russian ruble’s devaluation makes Russian products more competitive in all markets outside the CIS region.

Some Russian government officials still believe the country could one day become the biggest European car market. Currently, Russia has only 284 cars per thousand citizens, compared to 799 in the USA, 612 in Italy and 554 in Germany, estimates the Russian consulting agency Avtostat. This figure is projected to grow in the coming decade, if no major crises emerge and the country continues to need more automotive glass. ●

About the author:

Vladislav Vorotnikov is an independent international journalist



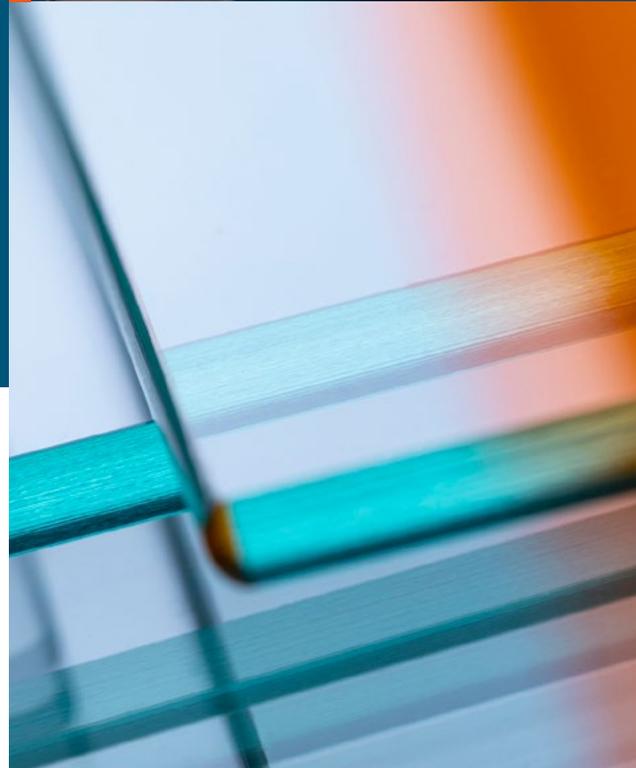
Bor Glassworks has a production capacity for 1.5 million automotive glass sets per year.



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

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

All about glass processing:
> www.glastory.net



glaston
seeing it through®

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

info@glaston.net | www.glaston.net | www.glastory.net | www.gpd.fi

A future with a hollow ring to it

Corporate conflict and bankruptcy, a plan to cut alcohol consumption and an as-yet wistful attitude to environmental reform... Vladislav Vorotnikov explains why the future of the Russian hollow glass industry is up in the air.

At the time of writing, the Russian government is currently mulling over a package of draft regulations that could become a game-changer for the Russian hollow glass industry, where the average profitability leaves a lot to be desired, recovery plans are delayed and numerous plants have gone bankrupt over recent years. Several hollow plants in Russia are currently in trouble, with some plants facing greater problems than others.

In September 2020 the Omsk Glass Plant was sold to Russian businessman Kirill Minovarov for Rub1.9 billion (US\$30 million) following its bankruptcy over a Rub3 billion (\$40 million) loan to the Russian Avangard Bank, in which Kirill Minovarov holds a president's office.

In 2019, the Omsk Glass Plant generated a net loss of Rub1.9 billion (\$30 million), so the bankruptcy was not a surprise to anyone. The plant's designed production capacity is estimated at 390 million glass containers but it is unknown how many units it has been selling. During the past few years, the Russian hollow glass market has been experiencing severe oversupply.

"Unfortunately, the market



The hollow glass market is in oversupply since glass plants are producing bottles for which there is limited demand.

conditions and a slump in demand for glass containers have made the loan repayment impossible" a spokesman for Avangard Bank said.

The unfavourable market conditions could also be the reason why no bidders have participated in the subsequent public sale of the Omsk Glass Plant, the spokesman noted. In this context, selling the plant to an affiliated company was the only way for Avangard Bank to get rid of the non-core asset, he added.

Some Russian analysts, however, pointed out that the Omsk Glass Plant has some development opportunities, otherwise this deal would have never happened.

"Maintaining the plant operation while officially transferring it under the former creditor's management is, basically, a widespread practice if the asset has development prospects" commented Alexei Antonov, chief analyst of the Moscow-based think tank Alor.

The Omsk Glass Plant is not the only company in the Russian hollow glass industry currently in disarray. For instance, one of the biggest Russian hollow glass plants, Actis, reportedly could stop operation in the coming years. In 2020, the Russian press reported on the illegal seizure of the plant. On 26 August, the plant's bankruptcy trustee Alexey Botviniev claimed he had not even been allowed to enter the plant.

"Against the background of information [that] appeared in the press about the seizure of the Actis property complex by an organisation that did not have any legal grounds on behalf of the pledged creditors, I attempted to put up security to ensure the safety of Actis but I failed" Mr Botviniev said in a statement.



Some Russian plants are in trouble.



The Actis plant has three operational furnaces, designed to produce 1.1 billion units of glass containers per year. Since 2016, the factory has experienced a complicated corporative conflict, accompanied by repeated reports on illegal seizures and multiple court cases.

In this context, there are chances that the plant could stop operation for good in the near future, Russian magazine *Delovoi Journal* reported, citing sources close to the plant.

“In 2020, the conflict surrounding the factory will end naturally. Due to bankruptcy and uncertainty with the new owner or investor, expensive maintenance of furnaces has not been carried out and there is no money for new furnaces” the *Delovoi Journal* wrote.

The conflict around the Actis plant is typical for the crisis-ridden Russian hollow glass industry.

“Bankruptcies of glass plants are going on all over the country and all proceed on a similar scenario: Raiders or shareholders try to control production for as long as possible in order to pull the maximum profit from the collateralised property and when the furnaces are depleted, they leave the creditors with worn-out and explosive equipment” the *Journal* added.

Plants need higher demand

Overall sales of glass containers in Russia were close to 10.2 billion units in 2019, compared to 11.3 billion units in the previous year, estimated Moscow-based think tank BusinessStat. Sales were expected to start growing again in 2020 and stay on the recovery track for at least several more years, reaching 11.4 billion units in 2023, BusinessStat projected.

In the light of the bright forecasts, several Russian hollow plants announced capacity expansion projects. According to Elena Emelyanova, Executive Director of the Russian hollow glass industry production association, Russian hollow glass producers embarked on plans to put back into operation capacities for 1000 tonnes of glass containers production per day.

However, the Covid-19 pandemic turned the tables and now the growth in demand is looking no more than a wild dream. In general, the Covid-19 pandemic has impacted Russian hollow glass production to a lesser extent than some other industries, said Anton Mor, Acting General Director of Siberian Glass Plant. And yet, beer production has shrunk by 2% since the beginning of the pandemic, undermining demand for hollow glass.

“In the context of uncertainty, including that associated with a second wave of the pandemic, which affects the retail buyers’ attitude, it can be rather risky to increase production capacity not having confirmation from customers that the technological line would be loaded with orders” Mr Mor said.

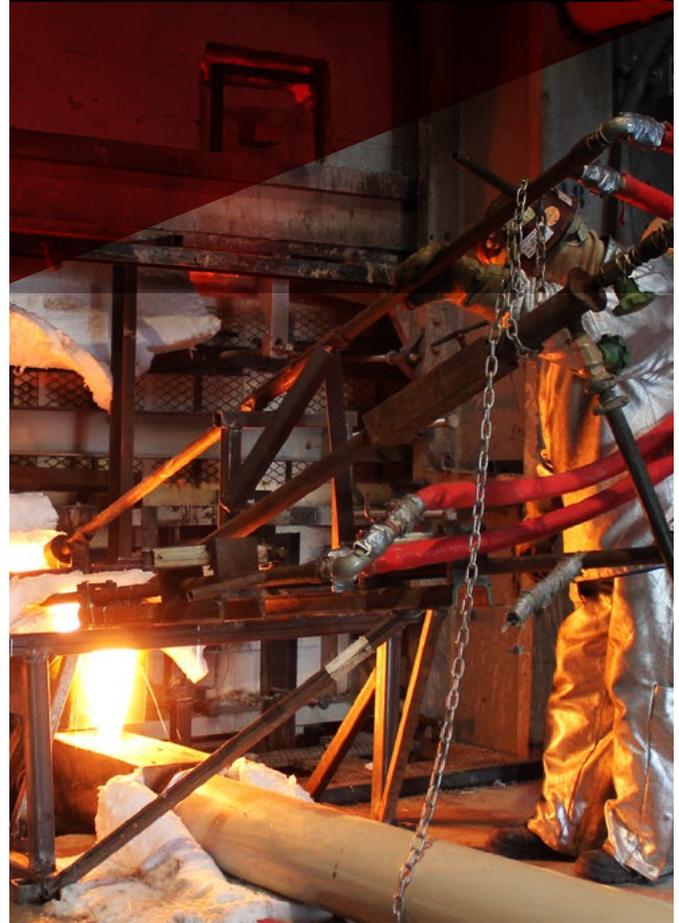
The Covid-19 pandemic has also impacted the Russian ruble, which lost nearly 20% of value against the hard currency since the beginning of 2020.

According to Vladimir Osipov, President of the Russian glass producers’ association Steklosouz, the Russian currency’s depreciation incurred higher costs to Russian hollow glass plants. The ruble’s downward rally pushed up maintenance costs as all equipment is imported, plus raw materials are also getting more expensive.

In March–July 2020, Russia experienced the strongest ever slump in sales in the alcoholic beverages market, which went down by 15% compared to the same period of the previous year, the *Russian Gazette* (official publication of the Russian government) estimated. Sales of strong alcoholic beverages have dropped by 13%; Champagne by 30% and wine by 9%. In a similar fashion, sales of non-alcoholic beverages slumped by some 20%.

“This year, demand for glass containers in Russia will be the lowest in a decade” commented a source in the Russian hollow glass industry who wished not to be named. “The restrictions on the HoReCa [hotel, restaurant, cafe] segment’s operation removed ▶

Serving the glass industry for over 30 years



Hotwork
INTERNATIONAL

Furnace Heat-Up
Furnace Draining
Regenerator Repair
without Production Loss
Regenerator Cleaning
Combustion Technology
Electric Boosting
Bubbling

www.hotwork.ag



Demand for all kinds of beverages in Russia is reducing.

up to 20% of last year's sales volume from the market. The hollow glass market is entering a period of strong oversupply and dumping since glass plants are not shutting their furnaces but keep producing and releasing bottles, for which there is no demand."

In this situation, the industry recovery anticipated by all market players in 2019 is likely to be delayed. Investors have to put their expansion plans on hold. For example, in late 2019, Rif Corp announced plans to build a hollow glass plant in Voronezh Oblast for Rub5.5 billion (\$90 million). According to Alexander Ivanov, Rif Corp's General Director, construction was slated to be started in the first half of 2020. Production capacity was estimated at 400 million glass containers per year and the company was intending to ramp this up to 900 million in the future.

However, there were no reports that the construction has actually been started. The company is not disclosing



A new bill could provide Russian plants with more cullet.

when it plans to put the plant into operation. Several other projects are also currently up in the air.

Long-awaited changes are still not guaranteed

In October 2020, the Russian State Duma, the lower chamber of the Russian Parliament, finally began discussing a draft bill that would prohibit selling alcoholic beverages in plastic bottles with sizes above 0.5 litres. If adopted, the new bill could boost domestic demand for glass bottles by at least one billion units, market participants estimated.

The project's objective, however, is to cut alcohol consumption in Russia, which remains rather high.

"Aside from Russia and China, beer is not selling anywhere in the world in plastic bottles with a volume above one litre. This is why we recommended

approving the bill to match the standards adopted in other countries" commented Mikhail Tarasenko, Deputy Chairman of the State Duma's committee for social policy and labour.

The idea is that beer in glass containers would be more expensive and thus less affordable to Russian citizens.

Russian beer producers spoke against the proposal, citing rising costs and no guarantees that the bill would indeed cut alcohol consumption. However, the Russian media reported that all factions in the Russian Parliament preliminary supported the idea, which means there is a good chance the bill will be adopted.

Besides, Russian authorities are pushing forward the environmental reform. In 2020, containers for separate waste collecting were installed in several Moscow regions. They have also appeared in some Russian provinces. Russian government targets [stipulate] that more than half of used glass containers will be recycled by 2030. In this case, the plants could end up with more glass cullet.

Russian plants currently experience a strong shortage of cullet. Currently, it accounts for 10%-15% of batch, the Russian hollow glass producers' association estimates. Separate waste collection would positively impact the Russian glass industry without doubt, market participants pointed out. However, in most Russian regions the environmental reform has not even started and it remains to be seen when this will happen. ●

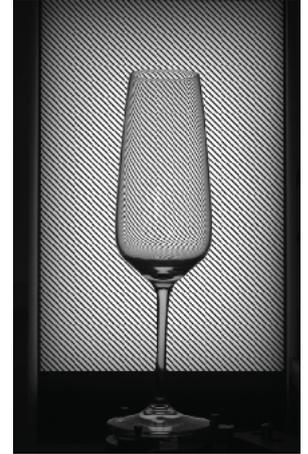
About the author:

Vladislav Vorotnikov is an independent international journalist



Pre-Covid, Russian hollow glass producers had plans to produce 1,000 tons of glass containers per day.

THE RIGHT WAY TO PERFECTION



IProTec INSPECTION MACHINES



linear · rotary · hot end · cold end
high accuracy · easy set-up · customized
(from 2 to 20 cameras)



IProTec GMBH
Dr.-Schott-Straße 35
94227 Zwiesel · Germany
www.iprotec-gmbh.com

Tel.: +49 (0) 99 22 98-676
Fax: +49 (0) 99 22 882-590
info@iprotec-gmbh.com

IProTec
Innovative Process Technology

Ready for a breakthrough

Resumption of investment is helping the glass market to recover from its Covid-19 inertia in Russia and former Soviet states. Eugene Gerden reports on progress in multiple glass sectors and government-backed plans for 2021.

The glass market of Russia and the former Soviet states is steadily growing despite the Covid-19 pandemic and associated negative economic consequences for regional economics, according to recent statements made by representatives of some leading local glassmakers and global majors. The ongoing recovery of the industry is reflected by the resuming implementation of many investment projects in recent months – the majority of which were suspended due to the pandemic at the beginning of 2020.

Among the countries of the region, it is likely that Ukraine has the greatest potential for increasing its glass production within the next several years. Some of the country's leading glass producers have already announced plans for an expansion of their production facilities at the beginning of 2021.

Lisichansk Glass Factory

One such company is the Lisichansk Glass Factory – the only producer of float glass in Ukraine – which has declared its plans to launch production of satin glass, as well as glass for the automotive industry at its capacities in the city of Lisichansk. At time of writing there is a possibility that the new production will be officially launched at the end of 2020 as part of Lisichansk's ambitious plans to increase its overall



Moscow's ZAO Expocentre Exhibition Centre hosts the Mir Stekla international trade shows for the glass industry.

float glass production up to 12 million square metres annually.

Most Ukrainian analysts believe the project has strategic importance for the entire glass sector of Ukraine, as it will provide an opportunity to reduce the country's heavy dependence from glass imports, currently estimated at 90–95% share of the local market.

At present 90% of float glass in the domestic market accounts for imports primarily of Chinese origin, according to Ukrainian official state statistics.

However it is possible that the launch of the new production will contribute to more active development of the industry in the coming years.

Ukrainian investment

According to Ukrainian analyst agency Pro-Consulting, despite ever-growing investment activities, the current situation in the Ukrainian glassmaking sector remains complex. Among the major reasons for this is the lack of large investors and the small volume of support. Low attention to the problems of the industry from the state negatively affects the level of its investment attractiveness and prevents more active development.

Analysts also believe that much will depend on the further economic situation in Ukraine, as well as a future policy of the Ukrainian major energy producer Ukrenergo, which has announced plans for an increase of tariffs starting from 2021, which will inevitably lead to an increase of glass production costs in Ukraine. ▶



A flat glass-clad shopping mall in Kiev, Ukraine.



Kyzylorda in Kazakhstan is the site of the Orda Glass manufacturing plant for sheet glass.

PRECITEC



SHARP IMAGES ENSURED BY PRECITEC

Smart glasses are expected to be the next big trend, with face wearables replacing smartphones. The images in such glasses are enabled by internal reflection on the different layers of the 'glass', which ensures sharp imaging. Only Precitec has the interferometric sensors needed for such ultra-precise measurement of the multiple layers in the production process. Here, Precitec's CHRocodile 2 IT RW is the smartest solution. **Measure more precisely with light.**



CHRocodile 2 IT RW

precitec.com · phone +49 6102 3676-100 · info@precitec-optronik.de

JetScreen! LT

High Tech CtS System with UV Lasers for Large Formats

With Swiss precision engineering and state-of-the-art laser technology, Lüscher Technologies AG sets new standards in digital imaging of screen printing stencils and is available in various formats up to 5500 x 3200 mm.

- Lüscher Trioptic! System with resolution of 635 / 1270 / 2540 dpi
- Optional resolution up to 5080 dpi
- Ultra-long service life of laser diodes
- Low maintenance and energy costs



Lüscher Technologies AG
4665 Oftringen, Switzerland, www.luescher.com

BASED ON INNOVATION.

Lüscher
Technologies

Russian glass sector

In Russia, one of the main reasons the glass sector of the country is growing is due to the rapid recovery of the construction sector. This has already led to an increase in demand for insulating glasses, creating conditions for an expansion of production in the local market. One of the largest of such productions is set to be established in Blagoveshchensk, a city in the far eastern part of Russia. The volume of investments in the project that will be implemented by the local Blagoveshchensk Glass Factory-Douglas is estimated at US\$10 million. The enterprise will have the capacity to produce up to 180,000 units of glass products per year, the majority of which will be supplied to the domestic market.

Container growth

Glass containers are expected to represent another promising sector in terms of growth for the Russian market. This is reflected by the planned launch of some major investment projects scheduled for the beginning of 2021.

Siberian Glass, one of Russia's largest producer of glass containers (which is part of RATM-Holding) has announced plans to build a new glassmaking furnace with a capacity of 375 tons per day in Q1 2021. According to the company, its new furnace will be designed by the Italian firm Glass Service. The volume of investment in the project is estimated at about RUB 1.3 billion (US\$25 million). The capacity of the enterprise will vary in the range of 400–450 million units of glass containers per year, making it one of the largest such facilities in Russia for the next several years.

According to Anton Mor, acting General Director of Siberian Glass LLC, the glass container sector has become less vulnerable to the Covid-19 pandemic and restrictions associated with it. This is due to the generally good situation in the food and drinks industry in Russia. Existing trends in the Russian glass sector have been confirmed by representatives of some major industry players and glassmaking associations in Russia: Earlier in 2020, Viktor Osipov, head of the Russian Union of Glass Producers (Steklosoyz) said in an interview with the *Russian Kommersant* business paper that in addition to the pandemic, profitability of the glassmaking sector in Russia has been affected by the volatility in financial markets. That, according to Mr Osipov, has led to a significant increase in the cost of repairs at domestic glass factories (particularly those that use imported equipment in their production processes), as well as an increase in the price of raw materials.

Buoyant Belarus

Although political protests in Belarus caused significant interruptions at domestic glass factories, the current situation in the country's industry remains generally stable.

"Despite the pandemic and political protests, one of the major tasks for the Belarus glass sector at present is related [to] a further increase of production and expand[ing] the range" said Oleg Shvets, Deputy Minister of Architecture and Construction and a figure responsible for the development of the glassmaking sector in the Belarus government.

"In order to achieve this, the current situation in the market is constantly being analysed. We expect the glass container sector will be the most promising in terms of further growth in the entire glass market in Belarus in 2021. That will contribute to the implementation of investment



Despite investment the current situation in the Ukrainian glassmaking sector remains complex.

projects in the industry, probably the most important of which will be implemented by the JSC Grodno Glass Factory, one of the leading glassmakers in Belarus, which has recently announced plans to build a large-scale facility for the production of glass containers that will have the capacity to produce up to 220 tonnes of glass per day, or 220–240 million bottles per year."

Part of the plans of the Belarus government and local producers concerns further investment in the expansion of the industry's output and range. So far, some progress in this field has been achieved, as local producers have successfully completed the launch of some glass-based products for Belarus in recent months, such as glass fibre.

Kazakhstan

In Kazakhstan, the most developed former Soviet state in the Central Asian region, the local government in the field of domestic glass production has pinned its biggest hopes on a new facility for flat glass production in the city of Kyzylorda. Local company Orda Glass LLP has been running the project since 2017. The annual capacity of the plant will be 197,000 tons of sheet glass per year, while its cost will reach KZT 42.1 billion (US\$100 million).

Implementation of the project is part of the existing Kazakh state programme's 'Industrialisation Map'. According to the Kazakh government's plans, construction work was supposed to have been

completed in 2017. Initially, the plant was to be built by Kazakh investors together with the US Stewart Engineers company, although the American company left the project later. At present, construction works are being carried out by China Triumph International, a subsidiary of China National Building Materials, which is one of the largest producers of construction materials in China.

The Orda Glass manufacturing plant is designed to be part of a large scale glass cluster for the production of sheet glass in the Kyzylorda region that will consist of nine of such facilities.

According to Kyzylorda authorities, this will involve the production of various types of glasses and glass products, including glass fibre, mirrors, glassware etc. Most of the future output of the cluster will be supplied to the domestic market, with the remainder sent for export.

This is just the beginning, as the Kazakh Government has plans for creating conditions for the development of domestic glass production. That will be achieved by investing funds in the building of glassmaking facilities throughout the country. The majority of these funds are expected to be provided by Chinese business, which has always been the main investor in the glassmaking sector of Kazakhstan. ●

About the author:

Eugene Gerden is a freelance correspondent

F I C 2

Are you interested
in CO₂
reduction?

**Come to FIC for superboosting and
large all-electric furnaces – we have
the answers to reduce carbon footprint**



**www.fic-uk.com
+44 (0) 1736 366 962**



The World's **Number One
in Furnace Technology**

FIC (UK) Limited
Long Rock Industrial Estate
Penzance, Cornwall TR20 8HX
United Kingdom

 **A Division of
Glass Service**



On the Spot... Greg Savage

Orora Glass has invested \$200 million in its glass packaging facility in Gawler, Australia over the past five years. In an exclusive *Glass Worldwide* interview, Greg Savage, General Manager, details recent investment initiatives undertaken despite the challenges of the Covid-19 pandemic, including a furnace rebuild and the construction of an on-site, fully automated warehouse.

GW: What are the highlights of Orora's performance since our last interview in 2017 and what is the company's current standing in the local market?

Orora Glass' market share has remained stable since our last discussion in 2017, although customer expectations around flexibility of supply, quality and on-time product delivery have continued to increase. To support this, Orora has invested over AUS \$200 million [£110 million] in the glass business over the last five years.

Since 2017 we have completed the rebuild of G2 furnace, a capacity expansion upgrade, an inspection upgrade as part of the G2 rebuild to Tiama and a new fully automated 30,000m² warehouse operated by E80 laser-guided vehicles (LGVs).

A key highlight throughout the period has been our people and the way they are supporting each other and our customers, especially through the current Covid-19 pandemic. Our people are the cornerstone of our business and I am incredibly proud and motivated by everything we have achieved.

GW: What was motivation for undertaking significant investment during 2020?

Reliable on time delivery to our customers is a key business driver, so we are always working to ensure our business is well invested and our furnaces are in good condition. We are pleased that prior to the rebuild, the G2 furnace achieved ~12,000 tonnes per square metre during its last campaign. Supply flexibility, cost reduction and quality control were the key drivers behind the construction of our new state-of-the-art warehouse, which has safety and quality built into the design.



Capacity sits at approximately a billion bottles a year from Orora's packaging facility in Gawler, Australia.

GW: How will the upgrades assist Orora to achieve its goals?

The recent rebuild provides Orora with an upgraded and 'as new' furnace, forming machines and inspection equipment. All upgraded to the latest technology including furnace refractories, insulation, forming machine servo technology and state-of-the-art optical inspection equipment. As a result, customers have the comfort of reliable and consistent supply of the exceptional quality product for which Orora is known.

We are also well positioned to continue progressing our sustainability agenda. Orora's furnaces are set up to utilise heat recovery within our processes and to maximise the use of recycled glass. We are currently working towards our goal to achieve 70% recycled content for Orora Glass.

GW: How challenging was it to complete a furnace rebuild during the Covid-19 pandemic?

Covid-19 has been a significant feature for all operating activity, including the recent G2 furnace rebuild. A comprehensive Covid management plan was implemented to look after the health and safety of all personnel working across Orora's sites and on the rebuild project.

Throughout the project, we were well supported by all our major equipment and technology partners.

Travel restrictions were a complicating factor, with

overseas specialists prevented from entering Australia. These teams would normally oversee the detailed construction and commissioning. Pleasingly, using video technology combined with local expertise, Orora's site operations, engineering teams and contractors filled the void to ensure the project was completed successfully. We are very proud of the efforts of all the on-site Orora employees involved in the project and incredibly grateful for the support of all our equipment and technology partners.

GW: And what are the capacities following the investment into your forming lines?

Our capacity sits around a billion bottles a year from the site, depending on product mix and colour schedules.

GW: How is the business benefitting from the investment last year into your warehousing facilities?

We invested around AUS \$35 million ▶



Unless it solves a problem automatically, isn't data just data? Our technologies speak the **same language**.

Data is power. However, only our industry leading machines can communicate with each other, automatically collecting and sharing data throughout the hot end and cold end to influence the entire process. And with plans to develop the first fully automated lines, Emhart Glass is the only supplier worth talking to. Start the conversation at emhartglass.com

BUCHER
emhart glass



During the recent G2 furnace rebuild, Orora was well supported by equipment and technology partners.

[£19 million] in a fully automated 30,000m² warehouse. The warehouse is equipped with autonomous E80 Laser Guided Vehicles (LGVs) that deliver optimal efficiency, accuracy and enhanced safety. Orora now holds significantly greater inventory on-site, reducing off-site storage and transportation costs, as well as enhancing responsiveness to customers.

GW: Who were the main equipment suppliers involved in all these investment projects and what were your reasons for selecting them?

The main equipment suppliers were Heye and ZIPPE, who are very long-term partners to the Orora business, as well as HORN, MSK and Tiama.

GW: Having additionally co-operated with international technology partners such as Bucher Emhart and Pennekamp in addition to Heye, HORN, MSK, Tiama and ZIPPE, how important are such suppliers to the realisation of your productivity goals?

Having strong relationships with world class suppliers plays a critical role in supporting our success. It's especially important in Australia, as we are often in a different time zone from key suppliers and several days away from on-site support if something goes awry. We have a strong continuous improvement process on site and our key suppliers are vital to our ongoing success.

GW: In general, how successful has the significant investment programme proven over the past five years?

Very successful. It is a credit to our technology team and capital project managers that all projects have been delivered on time and within budget. We are very happy with the benefits being delivered by all our investments and believe this is thanks to thorough research, results focused investment and our highly skilled team.

GW: Are there any other important investment projects in the pipeline and if so, what is the main focus?

Our plant is very well invested and set up to service the glass packaging market reliably for many years. Potential future investments are likely to revolve around further automation, reducing manual handling risks, meeting any specific customer needs and achieving our sustainability targets.

GW: How have customers reacted to your recent upgrades and the opportunities they present?

Orora is a customer-focused business, which means that

we always ensure our investments in the business set us up well for meeting current and future customer needs. Customers have been very supportive of the investments to support their businesses with reliable quality supply of glass packaging.

GW: In terms of Industry 4.0, what is your automation/digitisation strategy and what goals have been set?

The digital evolution is well underway in Australian manufacturing and to make the most of 'Industry 4.0', Orora partnered with Swinburne University in Victoria to recruit and train industry cadets.

Under the programme, cadets shared their time between Orora and the university, completing a tertiary qualification, while also working in the business.

Orora also has a strong and well embedded continuous improvement process based on Lean principles. We see the use of data from Industry 4.0 as fundamental to supporting our teams with this improvement process. Our initial work has been around energy, although we are currently working with our technology partners on data capture and analysis across the balance of the manufacturing process.

GW: How important is the workforce in Orora's progress?

Our people and our culture are the backbone of our business. We bring this to life through our Enterprise Excellence programme and support this with wellbeing, inclusion and diversity, graduate, cadets, apprentices, scholarship programmes and certificate IV accreditation for all ▶



Orora continues to work on projects with multiple customers in the wine segment.

It's often what you **don't** see that matters most.

“BUILT-IN” ROI –
BECAUSE YOUR FUTURE
IS OUR FUTURE.

NOT ONLY MEETING
INDUSTRY STANDARDS –
ANTICIPATING FUTURE ONES.

LARGE OR SMALL, EVERY
PROJECT COMES WITH
ZIPPE QUALITY,
EXPERIENCE & CARE.

99 YEARS OF THE BEST
VALUE FOR OUR
CUSTOMERS.

ZIPPE. The future of batch plant technology – today.

100%



DEDICATION

BATCH PLANTS | CULLET PLANTS | PREHEATING | FACTORY CULLET RECYCLING
GLASS RECYCLING | BATCH CHARGING | GLASS LEVEL CONTROLLING
MODERNIZATION | AUTOMATION | ENGINEERING | MAINTENANCE & SERVICE



our operations team. Our people are the cornerstone of our business and I am incredibly proud and motivated by everything we achieve together.

GW: What is the company's approach to increasing recycled glass content?

Orora Glass is committed to reducing the impact of our operations through sustainability initiatives. Increasing our use of recycled glass is a core initiative and something we believe is a strategic imperative for closed loop sustainable glass packaging manufacture.

Orora currently recycles over 80% of all glass collected through South Australia's container deposit scheme. From October 2020, Orora commenced collecting waste glass from WA's container deposit scheme, boosting our available cullet. We also source recycled material from New South Wales. One hundred percent of the cullet we receive goes into the furnace at Orora Glass, where it is melted down and made into new products.

We are also creating closed loop systems with customers to improve glass collection rates and reduce waste going to landfill. By working closely with one customer, 350 tonnes of waste glass has been diverted from landfill since the programme began in 2019. Our recycled content is currently 35% and our goal is to drive recycled content above 70%.

There are geographic constraints in Australia that affect access to available cullet, although Orora continues to work collaboratively with all stakeholders to find solutions.

GW: How can further significant improvements be realised to the glass container manufacturing process and the products made by the industry?

Flexibility around run lengths, lightweighting and sustainability work around low CO₂ glass manufacturing are all important initiatives for the industry. Orora is an International Partners in Glass Research (IPGR) member and we see our involvement with IPGR as a key to ongoing investment in research and development and collaboration on achieving a sustainable industry.

GW: Are further major product launches planned for 2021 and if so, in which sectors?

We continue to work on projects with multiple customers in the wine segment who realise the power of glass packaging in enhancing their



Orora's fully automated warehouse is equipped with autonomous E80 Laser Guided Vehicles.

brands. We have numerous proprietary bottles in the pipeline, which will make for some exciting product launches for our customers in the coming year.

GW: In general, how would you describe prevailing market conditions in your region?

2020 was a challenging year for many of our customers, with Covid-19 impacting routes to market through cellar doors, restaurants and cafes as a result of various government restrictions being put in place to combat the risk of Covid-19. The mainstream beer market continues to rationalise and this provides both challenges and opportunities.

GW: Are any market sectors performing better than any others and if so, what is the driving force?

As mentioned previously, Covid-19 has impacted many of our customers. As a result, we are seeing mainstream beer brands perform very well and the sub \$15 (£8) segment in wine also hold up well.

GW: What are your hopes and expectations for the business moving forward?

We continue to focus on delivering our strategic game plan according to our four key objectives: Be valued by our customers; Be our Best by being involved and growing together; Deliver quality by ensuring reliable and consistent supply; and Be efficient with all inputs and outputs.

We will continue to improve safety by eliminating high

risk tasks from our business, as well as reducing risks through manual handling, predominantly around our IS machines. Digital enablement and industry 4.0 are also key initiatives that will further enhance our customer offering and service levels, as well as ongoing investment in automation.

Environmental sustainability remains a significant focus for Orora and the glass industry more broadly, as we continue to invest in technology, as well as research and development to reduce greenhouse gas emissions and increase recycled content. Sustainability will continue to be a key driver into the future and we are actively looking at ways to further invest in this area and deliver against our objectives. ●

Further information:

Orora Glass, Gawler, a division of Orora Beverage, Kingsford, South Australia
tel: +61 8 8521 4600
web: www.ororagroup.com

WE ARE GLASS PEOPLE



NO. 1 IN SPEED AND FLEXIBILITY

MAXIMISE YOUR PROFIT

HiPERFORM



COMBINE SPEED AND FLEXIBILITY WITH SUPERIOR LIFETIME

- High production speed
- Fast job changes
- Reduced downtimes
- Robot option
- Clean design

Australian glass industry looks to the future

Despite a slow growth rate over the last few years, long-term prospects for the Australian domestic glass industry are promising on account of anticipated expansion in end-user sectors. Sunder Singh presents an overview of the glass industry with a focus on the flat glass sector.

Catered for by two container glass, a single float glass and nearly a dozen downstream flat glass processors, the Australian glass industry has registered average growth rates over recent years. Although small in size (mainly due to a population of about 25 million), the industry caters to a country with one of the highest per capita incomes in the Asia-Pacific region, with wine and beer sub-segments accounting for more than 60% of Australia's total container glass consumption.

Slow economic growth in the last two years and the current economic situation in the country are expected to have a major bearing on the Australian glass industry. However, a number of stakeholders are expecting a strong rebound in 2021 on account of stagnant demand last year.

Economic conditions

It has been almost 30 years since Australia last experienced a recession and almost 10 years since the country recorded a negative GDP growth, which was back in 2011 when the Queensland flooding and Cyclone Yasi hit.

In March, before the coronavirus disruption hit Australia, the Australian Bureau of Statistics reported that Australia's economy had contracted by 0.3%. The decline is mainly attributed to a decrease in household income and consumption. Statistics show that this is the largest quarterly decline in consumption in 34 years – with 10 of the 17 consumption categories falling. Spending on transport services and hotels, cafes and restaurants experienced their largest falls on record.

Notwithstanding the current blip in economic growth, Australia has had relatively high levels of economic growth (3.3% annually) compared to other developed economies between 1992 and 2017, placing it eighth out of the 32 Organisation for Economic Cooperation and Development (OECD) nations.

Flat glass industry

REliant on the importation of float glass until 1972, Pilkington established the first float glass line in Australia in a joint venture with ACI in Dandenong (a Melbourne suburb area). Following the acquisition of Pilkington by Japanese company Nippon Sheet Glass (NSG), the Australian float glass business was sold by NSG to the Australian company CSR Ltd for 70 billion Yen in 2007. At that time, the company was operating two float lines in Melbourne and Ingleburn (New South Wales). In 2013, however, CSR Group ceased operations at the Ingleburn float line.

At the time, Ingleburn cited the rising imports of cheap float glass in the country as one of the major reasons of closure. According to older statement from the CSR Group, "The high Australian dollar made imports so competitive that the company now expects import competition is here to stay. This has been compounded by weak residential and commercial construction in recent years. There has been



With a population of 25 million and one of the highest per capita incomes in the Asia-Pacific region, Australia has one of the highest per capita usage of glass products in the major sub-segments of container and flat glass.

an unfavourable shift in product mix from higher value glass to float glass, impacting revenue. Higher energy and manufacturing costs are doing the rest."

CSR Group sold the flat glass business to the equity investment company Crescent Capital Partners in November 2018 for US\$155 million [£117 million]. In December 2019, Viridian Glass Australia was separated into two businesses: Viridian Glass and Oceania Glass, each specialising in different areas of glass offering and specification.

Viridian is now focused solely on the manufacture of high performance double glazing, custom lamination, cut-to-size product and custom decorative solutions.

Currently, Oceania Glass operates the only float glass line in the country that makes flat architectural glass in Melbourne, with distribution centres in Melbourne, Sydney, Perth and Brisbane and merchandising sales centres in Sydney and Melbourne. The company meets the flat glass demands of Australia and New Zealand.

Rebuilding confidence

The Australian construction industry generates over AUS \$360 billion [£273 billion] in revenue, producing around 9% of Australia's GDP and has a projected annual growth rate of 2.4% in the next five years.

Yet the last two years have not been the best of times for the country's flat glass industry due to lacklustre demand from the construction segment. Even before Covid-19 struck, Australia's construction industry was already in the doldrums. In the fourth quarter of 2019, activity in the sector had slumped by -7.4% year-on-year. The residential building segment bore the brunt of the downturn, with a -12.6% year-over-year drop in the fourth quarter. This was largely a result of the housing bust that swept through Australia's core markets from late 2017 through mid-2019.

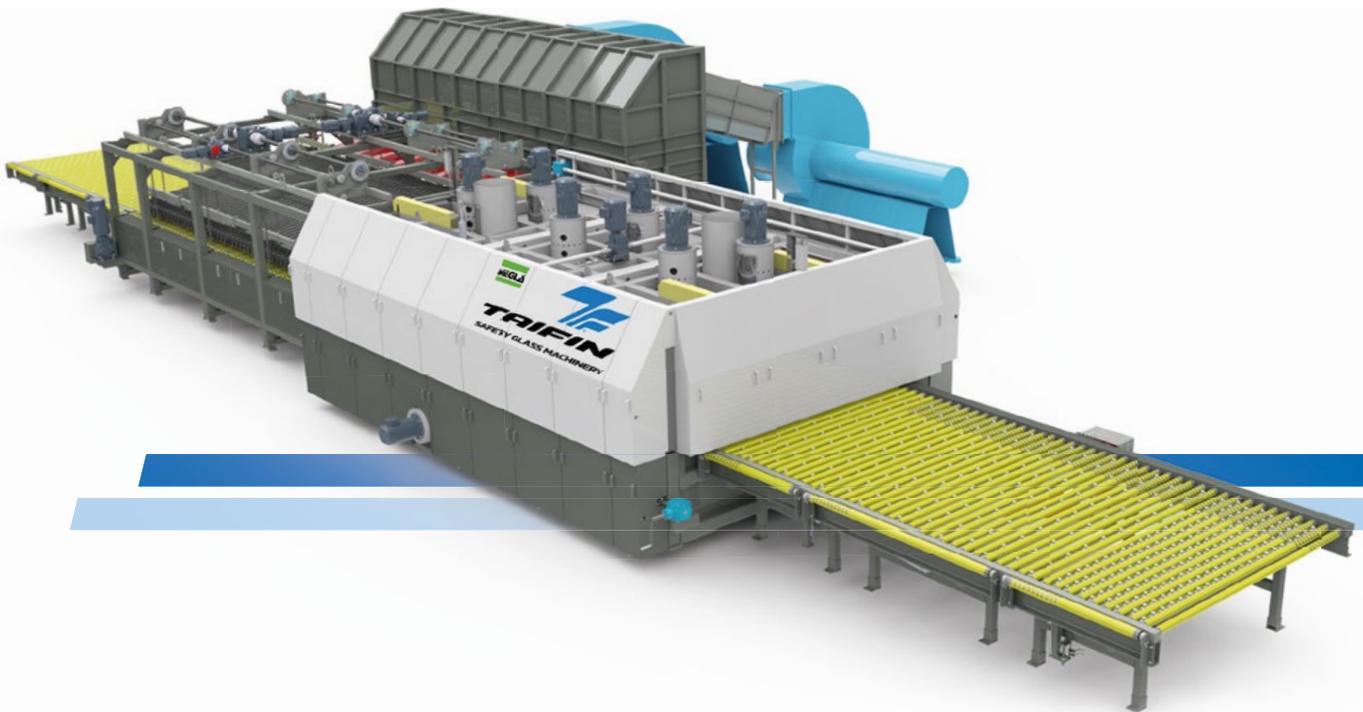
The decline in residential construction is expected to be further aggravated by a rise in unemployment across the country. New residential unit approvals were already down, reduced by -6.2% during the first two months of the year, pointing to a period of severe weakness in 2020. The downturn is expected to be compounded by further unemployment and the impact on household incomes and confidence emanating from the Covid-19 outbreak. ●

About the author:
Sunder Singh is a freelance correspondent

Further information:
email: sunder.singh@gmail.com

High-Tech Premium Glass

Energy-saving Modular design



CTF – Push the boundaries of excellence

With the CTF-SERIES, top-quality tempered glass is more than a promise. The full convection principle protects the surface from direct radiation, thus preventing unwanted transformations. Additional scanner available to check and improve the quality of the glass and its anisotropy level.

The CTF's furnaces enable optimum and even heating/cooling for any size, thickness or coating of glass. Automate your production processes with automatic loading, software-supported bed and recipe optimisation for even greater efficiency.

- Easy to use and maintain
- Advanced heating and cooling control
- Modular design ensures the best configuration for each customer



Doubling up on furnace inspection measures

Inspections can help to optimise expenditure on maintenance and repairs. Alexander Arendec describes how a partnership between PaneraTech and US-based refractory repair and maintenance company Fosbel addresses comprehensive recommendations to keep glass furnaces operating at optimal levels.

Fastidious inspection technology is vital for comprehensive furnace audits and risk management. A specialist in refractory repair and maintenance, Fosbel is now a certified partner with PaneraTech and its SmartMelter inspection technology. The partnership has been officially endorsed by FM Global, signalling it as a positive step forwards for the future of the glass industry.

Insurance data sheets

A property insurance company utilised by over a third of Fortune 1000 companies, FM Global conducts research in property loss prevention, supporting clients' efforts in protecting their businesses. The company's data sheets have been the basis of property loss prevention and are used by a variety of industries to enhance external and internal standards and codes. Outlined in data sheet 7-26 'Glass Manufacturing', recommendations are put forth on maintenance, operations and prevention processes.

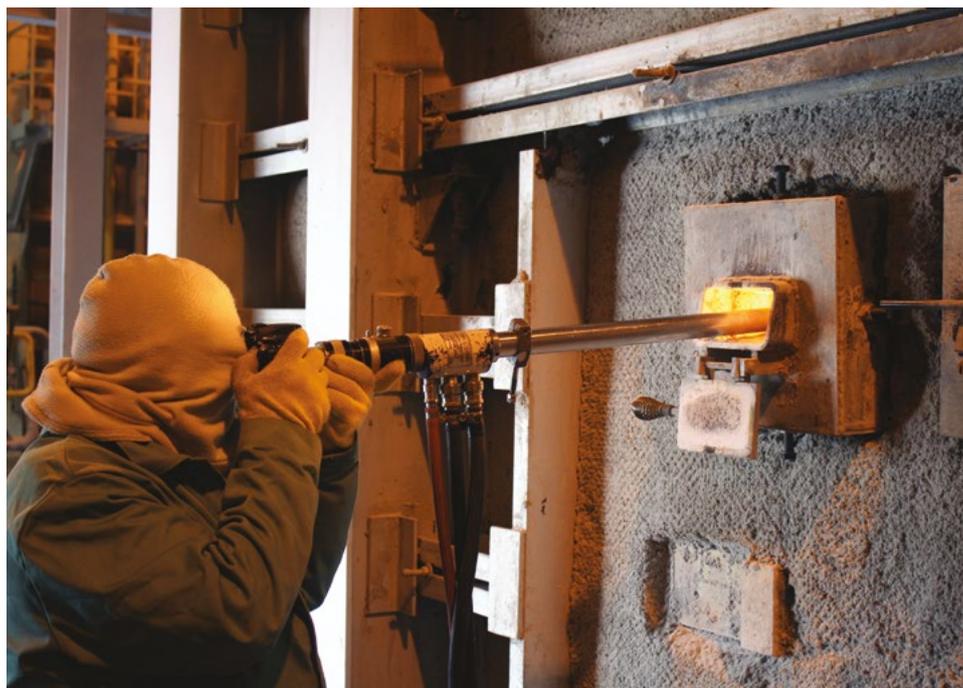
Section 2.5.13

'Implement an asset integrity program for the glass furnace. Document the asset integrity program in a furnace campaign management plan. Create the management plan in accordance with OEM guidelines and Data Sheet 9-0, Asset Integrity. At a minimum, include the following maintenance, operating, and remaining life assessment activities in the program.'

This recommendation pertains to the inspection, audit and repair services that Fosbel provides to glass manufacturers. The recommendation continues in 2.5.13 A.

Section 2.5.13 A

'Perform routine walkdown inspections, preferably each shift but at least daily for: Normal furnace and support system operating conditions; refractory hot spots; containment



A Fosbel technician performing an inspection using an endoscope.

area for clean, clear, and dry (ie free of combustibles, or inert batch ingredients or other contents that may compromise containment capacity); integrity check of containment dike walls and steel protection; and breakout emergency response equipment per section 2.5.7 is present, serviceable and accessible.'

Radar inspections

Fosbel inspection and audit services now include the data-driven SmartMelter radar inspections as part of a comprehensive furnace analysis. Fosbel works in conjunction with PaneraTech and its SmartMelter technology to address the recommendations put forth by FM Global. Section 2.5.13 of the data sheet suggests that glass manufacturers consider the following: 'Fosbel's inspection and audit services along with SmartMelter innovative technology can detect glass penetration 1–3 years before there are

visual or thermal indications. Their radar-based technology is in accordance with FM Global's recommendation laid out in section 2.5.13 D'.

Section 2.5.13 D

'Consider employing emerging technologies to help assess refractory health. Radar-based technologies have been employed successfully for several years to monitor for thinning and/or glass penetration. If utilised, modify refractory support (steel) during the following rebuild to allow for a complete examination of furnace refractory.'

Routine inspections are crucial to keep glass furnaces operating at optimal levels. Inspections lead to targeted recommendations for optimised expenditure on maintenance and repairs. ●

SmartMelter is a registered trademark of PaneraTech.

About the author:

Alexander Arendec is a Marketing Analyst at Fosbel

Further information:

Fosbel Inc, Brook Park, Ohio, USA
tel: +1 216 201 2447
email: alex.arendec@fosbel.com
web: www.fosbel.com / www.smartmelter.com

2021

glass
WORLDWIDE

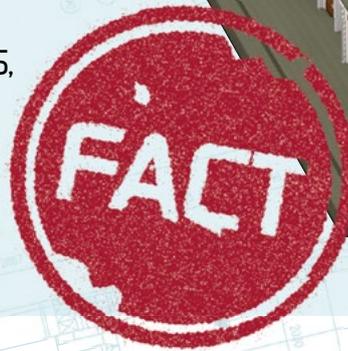
FOCUS USA

BUILDING YOUR GLASS PLANT

BETTER

A TECO fact...

Did you know our float furnaces, designed and installed with our latest technology, can deliver campaigns in excess of 20 years?



DESIGNING, BUILDING AND MODERNISING YOUR FURNACES, FOREHEARTHES AND FURNACE EQUIPMENT

www.teco.com

TECO®

TOLEDO ENGINEERING / TECOGLAS / ZEDTEC / KTG ENGINEERING / KTG SYSTEMS / EAE TECH

From the publishers of



Preferred journal of



Official journal of



INTRODUCING GAWIS⁴ GLASSTM

Dimensional measurement system for glass containers

Comprehensive dimensional measurement of entire bottle

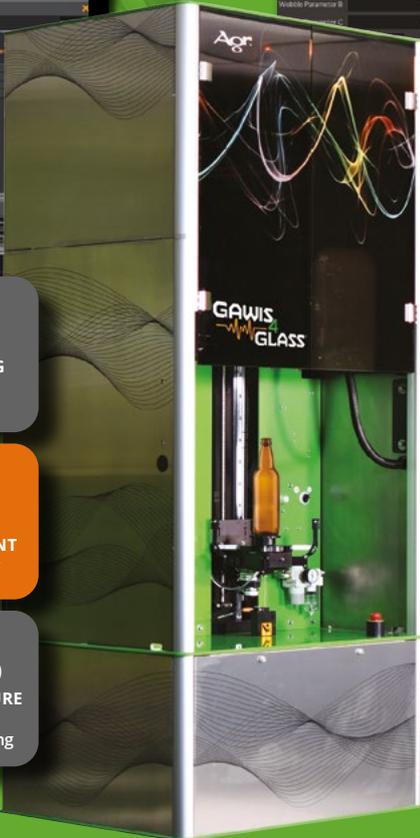
Accurate. Fast. Intuitive.



360°
CAMERA IMAGING
Captures frames up to every degree

0
CAMERA MOVEMENT
Maximizes accuracy

100%
FULL-BOTTLE CAPTURE
Facilitates efficient dimensional processing



- Powerful, simple job creation and editing
- Industry standard finish templates

• Pre-defined container measurement routines

AutojobTM
automated feature recognition and job setup

Dimensional measurement simplified.



AGRINTL.COM
+1.724.482.2163



From home brew to drinking at home

The glass packaging industry in the USA continues to show both promise and difficulties as 2021 begins. Amid the continuing trend of beer packaging moving from glass bottles to aluminium cans, Richard McDonough reports on segments of the industry that have been impacted by the Covid-19 coronavirus pandemic and examines the potential for increased recycling of glass packaging.

Glass packaging is an important segment of the glass industry in the USA. Businesses utilise glass containers to package a wide variety of items, from food and beverage products to cosmetics and pharmaceuticals. Based on the most recent statistics, the workforce in this segment of the glass industry has steadily decreased in the past 15 years in the USA. Those same statistics show that the value of shipments by glass container manufacturing firms has also decreased.

According to the United States Census Bureau, 13,213 people worked in glass container manufacturing in the country in 2018 (the most recent year for this report). This statistic highlights a continued decrease in the number of workers in this segment of the glass industry. In 2006, 14,193 individuals worked in glass container manufacturing; in 2010, 13,834; and in 2016, 13,636. Payroll for people working in glass container manufacturing was (US) \$897,642,000 in 2018.

This represented a slight increase from payroll in 2016 – (US) \$895,757,000.

The value of shipments from glass container manufacturing firms totalled (US) \$4,627,031,000 in 2018 (the most recent year for this report), according to the U S Census Bureau. This statistic represents a decrease from the value of shipments in 2016 – (US) \$5,074,286,000 – and the value of shipments in 2010 – (US) \$4,937,651,000.

Glass Packaging Institute

In addition to the dedicated Glass Packaging Institute (GPI) article in this issue, Scott DeFife, GPI President, provided an overview of the glass packaging industry in a recent statement: “Whilst alcoholic beverage consumption trends are changing, resulting in a slight decline for beer sales, other categories for glass continue to expand, highlighting a path for stronger growth in the



Wine bottles are seen in a production line at Ardagh Group. (Photo provided courtesy of Frederick Julius Photography, November 14, 2017).

food, organic, health and functional beverages, wine and spirits categories. The societal and economic response to the Covid-19 crisis has accelerated in-store grocery purchasing and has given the industry an opportunity to remind consumers about the long-term stability of glass packaging for food and beverages, as well as medicine and pharmaceuticals.” The GPI describes itself as “the trade association for North American glass container manufacturers and the entire supply chain.”

The GPI indicated that “Through the third quarter, overall glass container food and beverage shipments are down a little over two percent, but up in key categories like food jars (up 10% YTD) and non-alcoholic beverages (up about two percent).”

“Although the glass packaging industry, like many others, has experienced challenges due to the Covid-19 pandemic, there have been bright spots during this time” Mr DeFife continued. “A significant increase for in-store grocery purchases in 2020 has given the glass packaging

industry a unique opportunity to remind the general public of the long-term sustainability of glass packaging for food and beverages. The economic impact of the pandemic has exposed the need to redouble efforts to collect more post-consumer glass for recycling and reuse and helped policy-makers better understand the connection between recycling and domestic manufacturing output. With more officials looking to build stronger, more resilient domestic supply chains, glass has a great opportunity to fill those needs.”▶



Dietary supplements sold by Live Wise Naturals are sold in glass bottles. (Photo provided courtesy of Live Wise Naturals).



The GPI has focused much of its attention on sustainability issues and how to encourage more recycling of glass products in the USA. The organisation cited 2017 recycling percentages from the U S Environmental Protection Agency (EPA): 39.1% for beer and soft drink glass bottles, 39.1% for wine and liquor glass bottles, and 15.1% of food and other glass jars; overall 33.9% of all glass containers were recycled. The organisation also cited statistics from the Container Recycling Institute: States with container deposit legislation have an average glass container recycling rate of just over 63%, whilst non-deposit states only reach about 24%.

“GPI and our members are engaging in conversations to boost recycled content to meet brand customer sustainability goals and industry environmental objectives” stated Mr DeFife. “These conversations have become even more important as the pandemic persists and demand for safe and sustainable packaging rises. The GPI has made some direct grants to communities to bolster their glass recycling infrastructure, and with help from the Glass Recycling Coalition (GRC) whose mission is to educate and inform consumers about glass recycling and work together to help address problem areas. The GRC has made intervention grants to communities, and helped spin up the Glass Recycling Foundation (GRF), which is taking over that role within the coordinated glass industry stakeholders.”

Ardagh Group

Ardagh Group, headquartered in Ireland, is a global company with metal and glass production facilities in 12 countries, including 13 glass manufacturing facilities in North America. “Ardagh Group, Glass – North America is currently the largest domestic glass container supplier to the food, spirits and wine industries in the United States” said John Shaddox, Chief Commercial Officer of Ardagh Group’s Glass – North America. “For more than 125 years, Ardagh Group has been producing innovative glass bottles in the U S.”

Public reports issued by Ardagh Group indicated that the Glass – North America business unit had revenue of \$1.246 billion for the nine months ending September 30, 2020 versus \$1.287 billion during the same period in 2019.

Mr Shaddox noted the Covid-19 coronavirus has affected the glass packaging industry in the US: “The packaged food industry has experienced increased demand, due to an overall increase in at-home consumption. Other segments, primarily those within the alcoholic beverage market, have seen disrupted sales, due to restrictions that have impacted on-premise consumption opportunities.”

“The Covid-19 pandemic continues to evolve, and the assessment of the potential impact is still ongoing for many businesses” said Mr Shaddox. “Ardagh continues to prepare



A depalletiser for glass bottles is seen here at Hamburg Brewing Company, Hamburg, New York. (Photo provided courtesy of Ska Fabricating).

to react quickly to adjustments in demand from our customers. Whilst the demand for packaged food could normalize in 2021, the consumption of alcoholic beverages could experience an upward trend through increased opportunities for on-premise consumption.”

Opportunity for growth in 2021 and beyond

“According to Euromonitor, US consumption of food and beverage products packaged in glass are expected to increase overall in 2021 as compared to 2020” detailed Mr Shaddox. “Euromonitor is also projecting increases in overall US consumption of products in glass for 2022, 2023 and 2024, when compared to the prior year, as well as for each of the respective markets – beer, non-alcoholic beverages, food, spirits, and wine.”

The ability to utilise cullet – recycled glass – to produce new glass products has been critical to the operations of the company. “Ardagh is a leader in the use of recycled glass content in Europe and aims to grow its use of cullet in North America,” explained Mr Shaddox. He noted that the company “is an active member of the Glass Packaging Institute (GPI) and the Glass Recycling Coalition...Glass – North America promotes sound energy, environmental and recycling policies.”

Arglass Yamamura

Arglass Yamamura also sees growth opportunities in the USA. As covered in the ‘On the Spot’ interview in this issue, production began at new manufacturing facility in Valdosta, Georgia in December of 2020. “We

are certain our products, our flexibility and service will be appreciated and welcomed by our customers” stated Luis Gonzalez, Vice President of Sales and Marketing at Arglass Yamamura.

Mr Gonzalez indicated that among the products the firm will be producing at this facility are “glass containers for the spirits, wine, beverage, and food industries.” He explained that glass products will be “mostly in flint colour with the possibility of producing a wide array of colours as well.”

Sales will focus initially on the USA, but Arglass Yamamura is also “eager for business in the Caribbean countries and others that may need our high quality bottles,” according to Mr Gonzalez.

Much as with Ardagh Group and others in the glass industry, Arglass Yamamura sees sustainability as a key element of the glass industry. “We hope to play a very important role in recycling of glass by trying to simplify the process and hopeful to be able to capture as much glass from Georgia and neighbouring states for our facility” said Mr Gonzalez. “Sustainability is a core value at Arglass Yamamura, and we will do as much as we can to improve and increase the recyclability of glass bottles in our immediate area of influence.”

Ska Fabricating

One indication that growth may be possible within the glass container industry comes from Ska Fabricating. This business produces bottle and can depalletisers as well as pre- and post-fill equipment that allows customers to get their product packaged and distributed. Ska Fabricating is based in Durango, Colorado.

“We build machines that are ▶



Three of the varieties of products sold by Sherpa Chai. (Photo provided courtesy of Sherpa Chai).

Our conveyor chain transports
glass around the world.



**INDUSTRIAL
EQUIPMENT**



All Pennine

**Conveyor Chains : 100% UK manufactured
100% European steel**



hand-crafted to move glass safely and efficiently down a packaging line” stated Jim Mackay, CEO of Ska Fabricating. “From jars to bottles to pharmaceutical containers, our depalletisers unload full pallets of glass vessels of all shapes and sizes onto packaging lines for cleaning, filling, capping, labelling – you name it.”

“When it comes to serving the brewing industry, our bread and butter, glass has always been a favourite choice” Mr Mackay continued. “As we’ve grown and expanded to industries beyond beer, we’ve seen environmentally-conscious businesses choosing glass (or cans) over PET/ plastic more frequently than ever. We’ve taken a stand against the use of plastic and in favour of glass and aluminium by turning down any business that deals in PET/plastic containers.”

According to Mr Mackay “2019 seems like a lifetime ago. We grew our business about 30% that year from 2018. We have already surpassed our 2019 sales and revenue after three quarters [in 2020]. Covid-19 has driven consumers to buy packaged drinks that they can take home, and that has been very good for us.” He sees potential for innovation in 2021: “One of our biggest goals in the coming year is to create a bigger, better machine that can handle more glass/weight, so we aren’t actively attempting to turn away from glass by any means. If anything, we’re leaning in.”

National Beer Wholesalers Association

One of the changes seen in the glass packaging industry for a number of years has been a transition from glass bottles to aluminium cans for beer packaging. “At the end of 2019, about 30% of beer in the USA was sold in glass bottles and about 60% was sold in aluminium cans, and about 10% was draft beer” stated Lester Jones, Chief Economist of the National Beer Wholesalers Association. “During the past ten years, glass packaging has lost about one percentage point each year, whilst aluminium cans gained about one percentage point annually. Draft sales have been relatively consistent during the years – until 2020. The closure of bars and restaurants due to the Covid-19 coronavirus devastated the draft beer market.”

Mr Jones related that changes in the beer market have helped fuel the changes in packaging. As craft beers became more mainstream, he indicated that aluminium cans were more likely



This is a rendering of the new facility being built by Arglass Yamamura in Valdosta, Georgia. See also the Arglass ‘On the Spot’ interview in this issue. (Photo provided courtesy of Arglass Yamamura).

to be used in packaging for off-premise sales. He also noted that where beer is consumed generally impacts the type of packaging chosen by consumers. “Packaging follows occasions” Mr Jones continued. “Cans are more likely to be the packaging of choice on boats, whilst hiking, or sitting at a concert.

Sherpa Chai

Whilst the beer industry has seen a shift from glass to aluminium for packaging, some other types of businesses have shifted to glass containers from other types of packaging.

“We use a 32oz [0.9l] Amber Boston Round glass bottle for our shelf-stable tea concentrate” stated David McKean, CEO of Sherpa Chai, LLC. “We supply a Chai tea shelf-stable concentrate product that is a family recipe and has been passed down through the generations. Our typical customer is 65% female and between the ages of 15 and 65.” The firm is based in Lafayette, Colorado, and focuses on sales within the USA.

The company previously used plastic bottles. “We have found that our customers prefer the glass look and feel,” remarked Mr McKean. “Our customers also value the environmental benefit of a recyclable product.”

Mr McKean indicated that sales have increased each year since the company was founded in 2014. He detailed that Sherpa Chai did about (US) \$400,000 in sales in 2018, and about (US) \$775,000 in sales in 2019.

The Covid-19 coronavirus pandemic impacted Sherpa Chai. According to Mr McKean, there was “one setback: [we] lost almost all retail sales due to Covid-19, but anticipate it to bounce back at the beginning of 2021. Considering the pandemic, we are still doing very well despite the

changes in retail with the loss of income. We have been able to take this time to review our product offerings and concentrate on future endeavours. We are still looking to process \$1.3 to \$1.5 million [in revenue] this year, and next year, we looking to due \$2.5 million in sales.”

That level of projected revenue may be altered depending on the course of the pandemic in 2021. “If Covid-19 is still with us next year, we are unlikely to see the coffee shop business return” continued Mr McKean. Coffee shop business “was 40% of our pre-Covid-19 revenue. This would likely make us readjust our goals.”

Live Wise Naturals

Health care products are one of the larger segments of the glass packaging industry. Live Wise Naturals, a company that sells dietary supplements, uses glass to package its products. “We use glass bottles and droppers,” stated Greg Bulgarelli, President of Live Wise Naturals. “We chose glass over plastic due to the fact that plastic interacts with some ingredients and can also leach into the products.”

Unlike many businesses, Live Wise Naturals has seen sales increase, according to Mr Bulgarelli, year-over-year: “Live Wise Naturals is on pace to finish Q4 [of 2020] with sales up 50%... Covid-19 has actually helped our sales.”

The business is based in Bradenton, Florida. Sales are currently focused on the USA market, with the company indicating that it intends to expand more internationally in the years ahead.

The glass packaging industry shows promise in a number of segments even as some market segments, like the beer industry, are likely to continue to see a decrease in overall usage of glass bottles. Investments continue to be made among large manufacturers that see opportunities for future growth in the USA and beyond. The fact that glass is a product that can be recycled on a continuous basis will likely continue to place glass in a key position when businesses and consumers consider sustainability. ●

About the author:

Richard McDonough is a civic journalist based in the USA. He writes on a variety of topics in the glass industry.

Further information:

TwoCents.News
email: gloinechronicles@gmail.com
web: www.twocents.news



Hotwork™

The worldwide leader

For more than a half century, Hotwork has provided **exceptional service** and **expertise** to glass manufacturers around the world. With over 20,000 projects completed to date, Hotwork's **knowledge** and **experience** are second to none.

- Cold Water Drains
- Recirculated Hot Water Drains
- Furnace Heatup
- Expansion Control Supervision
- Contraction Control Supervision
- Rapid Steam Furnace Cooling
- Sulfate Burnout
- Cullet Fill Options
- Furnace Controlled Cooldown

Learn more about the services listed above:
hotwork.com | hotwork@hotwork.com | +1 859 276 1570



Proud Sponsor of
THE PHOENIX AWARD®
COMMITTEE



Glass packaging giant shares global sustainability strategy

The world's leading glass container manufacturer, O-I Glass has a huge task implementing a cohesive sustainability agenda across 72 plants in 20 countries, with joint ventures in China, Italy, Malaysia, Mexico, the USA and Vietnam. Randolph (Randy) Burns, O-I's Chief Sustainability and Corporate Affairs Officer spoke exclusively to *Glass Worldwide* about this challenge and how the company intends to become the most sustainable producer of the most sustainable rigid package.

Previously O-I's Vice President of Global Government Affairs, Randy Burns' current role as Chief Sustainability and Corporate Affairs Officer was created by the company in May 2020 to elevate sustainability into a senior level of management and drive the agenda deep into the organisation.

Leading O-I's Sustainability and Social Responsibility, Government and Public Affairs and Corporate Communications strategy, Mr Burns' role also entails connecting the

company with external stakeholders.

"Sustainability has always been important to the business but the improved approach helps broaden our horizons" explains Randy Burns. ▶



Randolph (Randy) Burns is O-I's Chief Sustainability and Corporate Affairs Officer.



Now more than ever, consumers are demanding safe and healthy packaging.

Expect more



EME Glass Recycling Plants

The magic of glass recycling



Recognising that it does business uniquely in each geography in which it operates, O-I's business structure enables top line global scale functions such as R&D and operational skills to be deployed locally. Elevating

sustainability to the same hierarchy in the company makes it easier to replicate success and leverage opportunities in different countries by unifying the sustainability reporting. "Having a global leader drive

the sustainability agenda across all countries with this structure means we can function at maximum impact" Mr Burns believes. "And of course, having sustainability at the highest management level demonstrates the company's commitment to driving this agenda globally. We are certainly elevating our sustainability ambitions."



Headquartered in Perrysburg, Ohio, O-I operates 72 plants in 20 countries.

Global matrix

Co-ordinating sustainability across O-I's international operations is a challenging prospect and part of Randy Burns' role is to build the infrastructure to accomplish sustainability goals in all corners of the company.

"We looked at various structures to create a global matrix organisation" he confides. "As an analogy, a plant manager in our business doesn't make glass, he oversees glass being made. And that's the same with my role in sustainability... there's a lot of work to do but with the function at global level, we have a matrix organisation with the necessary resources in place on a global scale to deploy sustainability easily into the fabric of our existing infrastructure."

Clear road ahead

O-I's vision for the group's approach to sustainability in the future is to create the most innovative and brand-building packaging company- as well as the most sustainable, according to Randy Burns.

"Our priority will be to continue on the path of reducing emissions, looking at our energy usage differently and exploring ways in which to increase recycling, while paying attention to all other variables that factor into being a



**100%
AMERICAN-MADE**

OVERLAY FOR ALL APPLICATIONS:

- Industry Leader with Multiple Overlay Chemistries
- In-house Fabrication Available
- Immediate Delivery for Various Sizes and Thicknesses
- Lowest Nickel Content Available in Market
- Leading the Market Since 1980

APPLICATION FOR AREAS SUCH AS:

Hopper Liners, Shaker Liners, Mixer Paddles, Overlay Pipe, Cullet Chutes, Impact and Abrasion Challenge areas



O-I is committed to the consideration of sustainability from a manufacturing point-of-view.

sustainable manufacturing company, such as for example, community engagements, water usages etc” Mr Burns clarifies. “To follow up our previous CSR report, soon we will publish a comprehensive sustainability report to outline our agenda” he adds.

According to Mr Burns, the Covid-19 pandemic won't

prevent O-I from pursuing goals already articulated by the company but it has interrupted consumer recycling trends in some geographies, particularly in North America. The combination of a change in consumer patterns due to people staying at home, along with changes to collection services etc, are a challenge to recycling infrastructures in some regions and to manufacturers with recycled content in their supply chain, he cautions, noting that O-I was “very active in drawing attention to this at the beginning of the pandemic.”

Rebooting recycling

Recycled content is a very important component to sustainability for O-I and improving the recycling infrastructure in North America is a priority for the company. Seeking industry-wide initiatives for long-term solutions, O-I is a member and supporter of the Glass Packaging Institute (GPI), the US trade association that promotes glass as a packaging choice, advances environmental and recycling policies, advocates industry standards and educates packaging professionals.

“Industry collaboration is

addressing recycling inefficiencies in North America and GPI has studies underway to determine how best to improve” says Randy Burns. “There will be developments on that in the coming year that will align with major effort from the GRC” [Glass Recycling Coalition, which promotes glass as a core recyclable]. In the know will be Jim Nordmeyer, O-I's Vice President of Global Sustainability, who is a board member of the GRC.

Think big

“North America is a priority but we need to look globally for solutions and the best recycling infrastructures” Randy Burns continues. “For example, our Estonian plant uses waste heat to supply energy to neighbouring towns, so it can't just be about recycling when we are integrating our operations in a sustainable way into the communities in which we operate. It's as much about balancing people and the prosperity of our operations as it is about what comes out of our factory; part of that is what you make but also how you make it and how that fits into the community.”

With its own focus on containers that will provide the most circulatory ▶

Advanced Staking Technology Decreases Chain Elongation.



At Ramsey, we use a proprietary staking process to head our Sentry 2-Pin chains. Unlike laser-welded chains, this staking method does not add extra heat to the links and pins. This means that the pins and links are the same hardness throughout. The result is a chain that wears consistently with minimal elongation, and a longer life.

Sentry 2-Pin chains are available in ½” and 1” extended pitch and run on standard sprockets.

Contact Ramsey at
www.ramseychain.com
sales@ramseychain.com
 (704) 394-0322





potential, O-I looks to Europe as a “great example of how glassmaking can be very circular” according to Mr Burns. “Technology advancements in glass melting will play a major role moving forward to reduce carbon to required levels” he affirms.

O-I is pushing for progress with its Modular Advanced Glass Manufacturing Asset (MAGMA) project to enable a flexible, modular, expandable glassmaking process that does not require the resources of a traditional furnace. The company is currently operating both a prototype and pilot.

“O-I has always been an innovator in glassmaking, inventing the first mass bottle making machine over 100 years ago and with MAGMA, we are reinventing how glass packaging is made” claims Randy Burns. “We want to innovate our way to a better future because that is what O-I stands for.

“In addition, we are looking to innovate collaboratively with the industry on different types of furnace technology. With our more sustainable view to operations, we need to make glass with different technology. Like the rest of the glass industry, we are investing and are anxious for results but our strategy is holistic and doesn’t favour or exclude any options; we want to capture the very best of what’s available on the marketplace.”

Founding initiatives

By supporting initiatives such as those co-ordinated by Glass Futures and FEVE, O-I shows its commitment to the consideration of sustainability from a manufacturing point-of-view. O-I is one of the founding members of Glass Futures and Ludovic Valette, Vice President of Global Technology at O-I, represents the company as part of the Board of Directors, focused on the decarbonisation of the UK glass industry.

In addition, O-I co-founded and supports FEVE’s ‘Furnace of the Future’ project to develop the world’s first large-scale, hybrid oxy-fuel furnace to run on 80% renewable electricity. The venture is “a fundamental milestone” in the industry’s decarbonisation journey towards climate-neutral glass packaging, replacing current fossil fuel energy sources and cutting CO₂ emissions by 50%, according to Randy Burns.

Working conditions

A crucial element of the company’s research and development programme towards increased sustainability is O-I’s Innovation Centre at its global headquarters in



The workforce is a key part of O-I’s sustainability strategy.

Perrysburg, Ohio. The 24,000ft² building, which recently celebrated its seventh anniversary of producing glass, features a quarter-sized furnace and two small production lines that allow the company to trial new processes and prototype new product designs without interrupting the factory lines.

“We are able to recreate the challenges of the plants themselves and safely address them in a controlled environment” Mr Burns explains. “For example, we can look at ways to make the process more efficient, and safer, and can experiment with different inputs to address some of the aspirations of our customers.”

O-I is also keen to safeguard a

key part of its sustainability strategy; its workforce. “Our people are what makes sustainability happen” says Randy Burns. “We are completely focused on making sure our workforce mirrors the surrounding communities and it’s always been a priority to have an inclusive workplace. Our employees are passionate about sustainability and are working at it every day; it’s very important to keep them engaged on the subject matter to fuel their enthusiasm.”

Something to shout about

Although customers and consumers have their part to play in influencing a drive to sustainability, in O-I’s case the goal has constantly been in sight, Mr Burns believes. “Sustainability has always been a major part of O-I’s business, not just because of the nature of what we produce but because we felt in every corner of the globe there was heightened interest in ensuring our operations fit in with their communities and economies etc.

By elevating sustainability to the top level, we can now demonstrate our commitment of being completely aligned to the needs of our communities, customers, investors and external stakeholders etc.”

O-I’s sustainability message is now coming across, loud and clear. ●



Recycled content is an important component to sustainability for O-I.

Further information:

O-I, Perrysburg, Ohio, USA
tel: +1 567 336 5000
web: www.o-i.com

Don't just look at it, look into it.

Tiama Xlab – the revolutionary sampling system

Turn virtual reality into reality with the new Tiama Xlab.

This highly flexible laboratory module can be installed at the hot end, the cold end or in the laboratory. It loads the container automatically and makes a 3D scan, generating an image composed of millions of facets.

The 3D image can be rotated and “dissected” on all sides. Virtual volume, capacity, and vacuity can be measured as well as glass distribution fully mapped. You can also analyse engraving, embossing and much more. Practically all container types and shapes can be inspected and it's non-destructive because the image (and not the container itself) is “cut” virtually.

For an online presentation of the Xlab please contact us at marketing@tiama.com.



tiama



Data – the deciding factor

Xlab



North American year in review



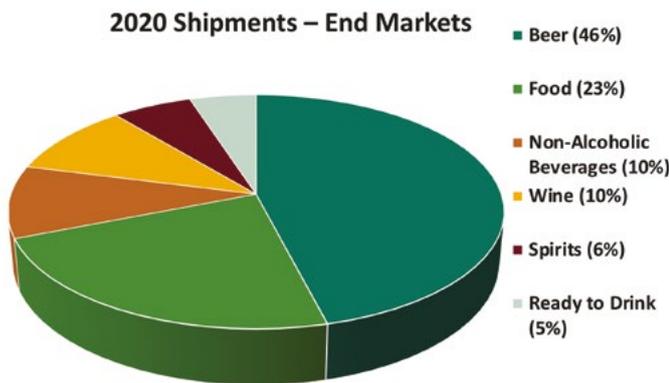
Deemed essential by the US Department of Homeland Security, the American glass container manufacturing industry was nonetheless impacted by the Covid-19 pandemic. Scott DeFife, President of the Glass Packaging Institute reflects on glass packaging trends from 2020 and examines challenges moving forwards, prior to the implementation of the incoming Biden administration's approach to trade and tariffs in 2021.



Scott DeFife is President of the Glass Packaging Institute.

Along with many other manufacturing industries, the Glass Packaging Institute (GPI) and its member companies experienced a remarkable and unprecedented year. The onset of the Covid-19 pandemic in 2020 required a quick reset and restructuring of association priorities, with nearly all efforts directed to weekly (if not more frequent) communications with GPI members, to inform and support the continued safe production of glass containers throughout the end of the first and second quarter of the year. The glass container manufacturing industry was deemed 'essential' early on by the

2010 & 2015 & 2020 - U.S. Glass Container Shipments by Category – End Market Shifts



Sources: Glass Packaging Institute, Precision Consulting

Category	2010	2015	2020
Beer	59%	57%	46%
Food	18%	19%	23%
Non-Alcoholic Beverages	8%	9%	10%
Ready to Drink Alcoholic Beverages	4%	3%	5%
Spirits	4%	5%	6%
Wine	6%	8%	10%

North America's glass container shipment volume continues to be dominated by beer, despite an 11% decrease in its market share for all glass bottles and jars since 2015.

US Department of Homeland Security, permitting operations to continue for the glass companies and supply chain in a safe manner, in support of food and beverage customers.

The second quarter of 2020 saw additional challenges being met by member companies, as supply chain adjustments, curtailed/halted recycled glass programmes and evolving workplace safety requirements were put in place at state and national level. In support of these efforts, GPI formed

a working group with EHS and other workplace safety leaders within the glass companies to share best practices at the plants. These were supported by frequent committee and membership webinars to keep personnel informed of evolving regulations and Covid-connected initiatives.

The association held its first virtual annual meeting in the first week of November. Over 60 GPI members heard from leadership in the beer, spirits and wine industries, in addition to presentations describing the latest technologies in labelling, learning about brands' perspectives on sustainability and recycling and initiatives being led by the raw materials supply chain.

US Glass Plant Shipments to Customers Food Category



Reflects continued increased in-store grocery purchasing

Source – Precision Consulting

In-store purchasing by US consumers during the third quarter of 2020 resulted in a sustained double digit increase in shipments of glass food containers to brands, grocery and similar consumer-facing outlets.

Domestic shipments

Shipment and production data collected and aggregated by Precision Consulting shows the US glass container industry trending towards flat growth for the year, with varying shifts in key categories. Overall Q3 2020 versus Q3 2019 shipments were up almost 4%, with overall shipments down about 2.5% for the year.

While beer continues to be the largest market segment, it now represents 46% of the glass container industry's shipment volume (a decrease of 11% of market share for all glass bottles and jars since 2015). The food category accounted for 23% of the industry's volume, followed by non-alcoholic beverages (10%), wine (10%) and spirits at 6%.

Chinese glass container imports

Imports of empty wine bottles for all food and beverage containers from China during 2020 were down 35% (through September) and for the 750ml (standard wine bottle size) category, this decreased by almost 22%.



On the Spot... José de Diego Arozamena

The USA's first greenfield glass packaging plant in over a generation, Arglass Yamamura started operations in December 2020 in southern Georgia, with the ambitious goal of revolutionising the North American glass container industry. José Arozamena, Chairman and CEO, exclusively updated *Glass Worldwide* on proceedings, including employing state-of-the-art technology to deliver customer requirements for flexibility, efficiency and customisation.

GW: What were the manufacturing capacities at the time of start-up?

Our first furnace is capable of producing over 300 million glass containers a year.

GW: How was progress affected by the Covid-19 pandemic?

We faced many challenges during the construction phase of the project, with some delays caused by Covid-19 but we persevered with the help of our suppliers and contractors to get the plant operational with minimum delay.

GW: Have you succeeded in the goal of developing the most environmentally-friendly plant in North America?

Yes, our plant is equipped with sophisticated environmental systems and controls including closed-loop water systems and best available emissions control technology.

The plant has been designed and equipped to be the most agile, versatile, flexible, efficient and sustainable glass container plant in the USA. We have invested heavily in automation and closed-loop systems, as well in continuous training for our team members.

GW: How important have partnerships with technology suppliers been to date?

Our partnerships with all technology suppliers (in glass technology, as well as in other fields) have been excellent as they have understood our ambitious technological goals and objectives. We will continue these partnerships into the future for continuous improvements.

GW: Do you have plans to develop and invest further in the plant?

Arglass Yamamura is committed to the US market and we have plans for further growth. Our priority for now is to get this first furnace working at top efficiency.



Arglass has attracted a team of talented, experienced and highly dedicated people.

GW: What recycling initiatives are being undertaken to ensure the desired level of cullet?

Cullet in North America is a huge challenge that can only effectively be tackled with the active collaboration of all glass companies, our customers and local, state and federal authorities. We hope to be an active part of this necessary industry-wide effort. For our part, Arglass has designated an area of land next to our facility to eventually install our own sorting facility to get the cullet to the quality levels necessary for significantly increased use. Without higher quality cullet, the task of increasing its quantity will continue to be a tough challenge.

GW: How can the Glass Recycling Foundation (GRF) support your goals?

We plan to be an active participant in the GRF. We believe this is the right forum in which to develop industry-wide initiatives based on active collaboration of all members.

GW: What was the motivation for Arglass to join the Glass Packaging Institute (GPI)?

We believe that having more active members in GPI pushing together to communicate the strengths and benefits of glass is the only way to grow the US glass market for everyone.

GW: How is the customer base developing and what has been the reaction to your venture?

This project would not have been born without the confidence and active support of our customers and the

excellent reaction from the market. I have to thank our founding customers and the market in general for the exceptional support and confidence they have deposited in Arglass Yamamura. We will work tirelessly to meet and exceed their expectations.

GW: Has the local community been welcoming?

The support of the Lowndes County, Valdosta and the State of Georgia has been exceptional. We are delighted to be in a community that has welcomed us and our team members with open arms.

GW: Have you reached the desired level of employees and necessary expertise?

Our project has attracted a team of talented, experienced and highly dedicated people. We are now at full force but we are always open to receive additional talented, enthusiastic and experienced people to be part of our success and our growth.



GW: Moving forward, how will Arglass invest in its workforce?

I strongly believe that continuous training is a key factor in the success of any company. Arglass has invested heavily in training for our team members and we will continue to do so. The continuous development of our team is a fundamental element of our business philosophy.

GW: What is your approach towards Industry 4.0?

The term Industry 4.0 seems a bit overused these days. We are investing in technology in all areas of our business, including by adopting technology from other industries into our operations. We are committed to continue to invest in technology that improves all aspects of our business to make us even more flexible, efficient and sustainable.

GW: How important has the partnership with Nihon Yamamura Glass (NYG) proven as the plant approaches commissioning?

The partnership with NYG is a critical element in the development of Arglass Yamamura. NYG is a fantastic partner and instrumental in our success.

GW: Could there be opportunities for further brownfield or greenfield ventures for Arglass in North America or globally?

For now, we are focused on getting this first furnace to operational efficiency quickly. After that, we will search for additional opportunities for growth. We have a long-term outlook and are committed to further growth in the American market as opportunities arise.

GW: How would you describe prevailing market conditions for the hollow glass sector in North America and what are the prospects for 2021?

We are seeing strong demand for hollow glass in many categories and especially for custom glass containers for craft products, high end brands and brands looking to differentiate their products in the market. We expect this trend to continue in 2021.

The North American market has suffered for too long operating as an oligopolistic market with old and underinvested plants and its focus on standard long-run products. This has created an opening for imports from all over the world. Arglass is poised to offer

quality custom glass containers to customers that want to buy American-made products that meet their needs and the fast-changing demands and tastes of consumers.

GW: To summarise, what are the greatest challenges and opportunities facing Arglass?

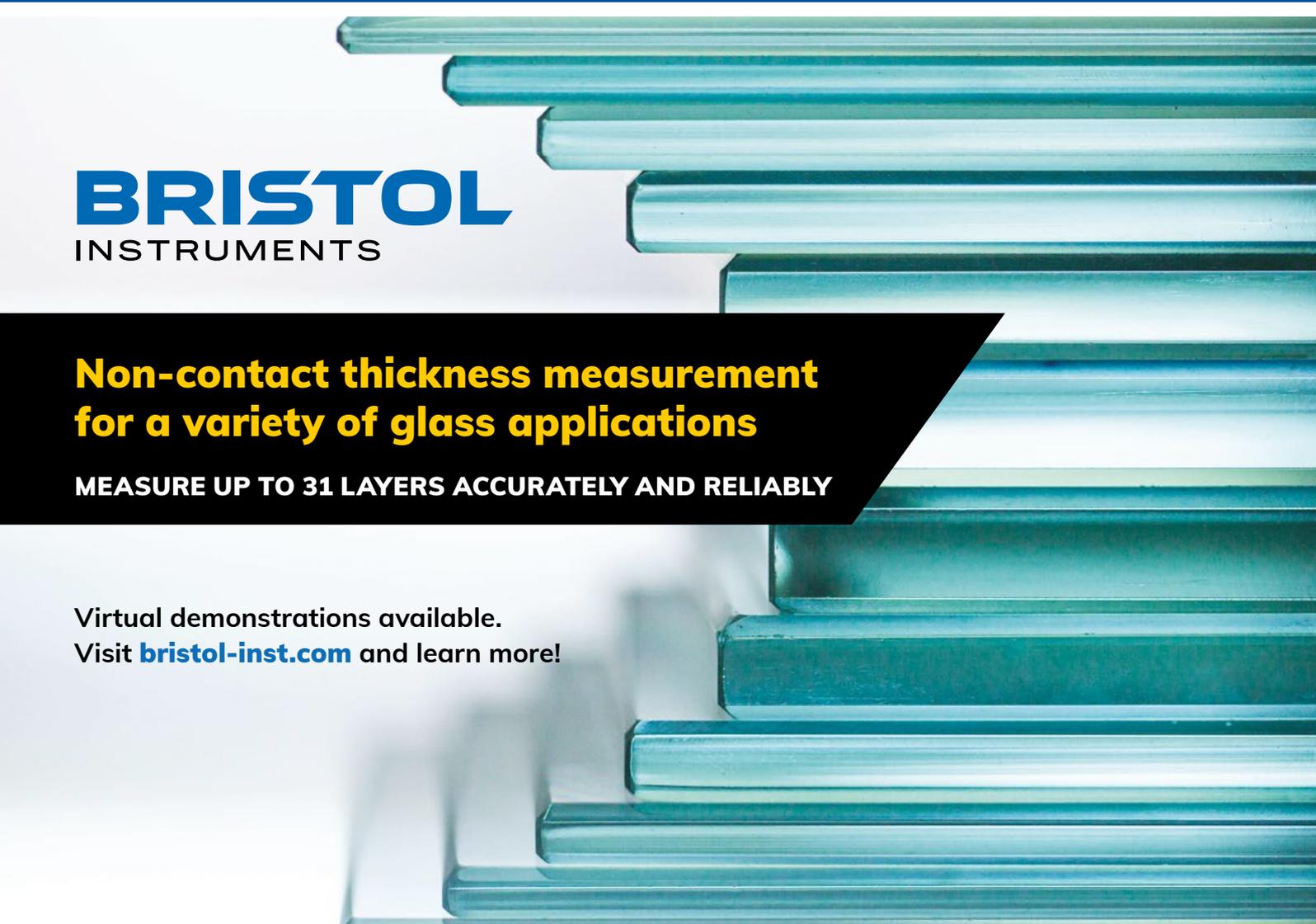
Starting a greenfield project is always a challenge and especially so for a start-up company. We have overcome many obstacles and challenges to get the project off the ground but with the strong support of our customers and the market in general, our partnership with Yamamura and our very talented and experienced team, we are ready to succeed in creating a new reality in the US glass container industry.

With our state-of-the-art plant, focused on flexibility, efficiency and sustainability, Arglass sees great opportunities to grow beyond this first furnace. The launch of Arglass Biogenic, our proprietary glass formulation with its enhanced sustainability attributes has been exceptionally well received by customers and represents a great opportunity for growth. ●

Arglass Biogenic is a registered trademark of Arglass Yamamura

Further information:

Arglass Yamamura, Georgia, USA
tel: +1 229 466 1200
email: contact@arglass.us
web: www.arglass.us



BRISTOL
INSTRUMENTS

**Non-contact thickness measurement
for a variety of glass applications**

MEASURE UP TO 31 LAYERS ACCURATELY AND RELIABLY

Virtual demonstrations available.
Visit bristol-inst.com and learn more!



Overview of the USA glass industry

Last year was eventful for the glass industry in the USA. In this news column, Richard McDonough reviews aspects of the industry in manufacturing, packaging, recycling and glass fibre. His report also details some of the impact of imports of glass containers from China and the impact of the Covid-19 coronavirus on the industry.



Vijay Shah is Vice Chairman of Piramal Glass (image courtesy of Piramal Glass).

The glass industry in the USA is a major part of the global glass industry. According to the United States Census Bureau, 93,499 people worked in glass and glass manufacturing in the country in 2018 (the most recent year for this report). This statistic represents an increase from 2016 (90,507) but is still below the levels for 2006 (100,919). The payroll for these individuals was US\$5,022,396,000 in 2018, an increase from the payroll in 2016: US\$4,754,118,000.

The value of shipments from glass and glass product manufacturing firms totalled US\$27,585,735,000 in 2018 (the most recent year for this report), according to the US Census Bureau. This statistic represents an increase from the value of shipments in 2016 – US\$26,230,901,000 – and the value of shipments in 2006 – US\$23,760,248,000.

According to the 'Glass Industry' dossier issued by Statista in 2020, using information from Grand View Research as well as Statista estimates "The United States market for flat glass amounted to an estimated value of nearly 22 billion US dollars in 2018 and is forecast to increase to almost double that amount by 2025. More than 90% of flat glass is produced through the float process."

This dossier from Statista indicated that flat glass market revenue increased from US\$13.45 billion in 2014, to US\$21.7 billion in 2018. The

firm estimated that flat glass market revenue will reach US\$43.71 billion in 2025. Forecast figures, according to Statista, have been calculated using a compound annual growth rate of 10.3% from 2018 to 2025.

Piramal Glass

The glass manufacturing industry in the USA includes a number of global businesses. Some, like O-I and Libbey Glass, are headquartered in the USA. Others, like Piramal Glass and Gerresheimer, while headquartered elsewhere, have major operations in the USA.

Piramal Glass USA Inc is the US subsidiary of Piramal Glass Private Ltd. With corporate offices located in Dayton, New Jersey, Piramal Glass USA has a glass manufacturing operation in Park Hills, Missouri and a decoration facility in Williamstown, New Jersey. In addition, the company has warehouses in Santa Fe Springs, California; in Park Hills, Missouri; and in Dayton, New Jersey.

Within the USA, Piramal Glass USA produces type III glass in flint. The firm imports types I, II and III glass in amber and flint from company facilities in India

and type II and type III glass from company operations in Sri Lanka. "We specialise in products for the following segments: Specialty liquor, personal care, pharmaceuticals and food and distribution" stated Vijay Shah, Vice Chairman of Piramal Glass. "We are a vertically integrated company, providing value added services, [including] screen printing, spray coating, ink transfer, pressure sensitive labelling and PVC coating."

Mr Shah noted major customers of Piramal Glass USA include, among others, Diageo and Bacardi in the specialty liquor segment; L'Oréal, Coty and Revlon in the personal care segment; Fresenius Kabi and Bayer in the pharmaceuticals segment; and JM Smuckers and McCormick in the food and distribution segment.

Piramal Glass USA focuses its business only on the North America region according to Mr Shah. He explained that the firm has done well in this region and expects that growth to continue: "The sales for US operations for FY 2020 were US\$131 million. Piramal Glass USA operations expect to grow by 7–8% in CY 2021."

Gerresheimer

One of the largest global glass companies with operations in the USA is Gerresheimer. According to the company, Gerresheimer has about 10,000 employees working in manufacturing plants in Europe, North America, South America and Asia; revenue approximates €1.4 billion. With headquarters in Germany, Gerresheimer has glass manufacturing plants in Vineland, New Jersey; Morganton, North Carolina; and Chicago Heights, Illinois.

"We provide moulded (type I) and tubular type I ▶



Glass from Guardian Glass was used at the Conrad Washington DC Hotel (image produced by Eric Petschek and provided courtesy of Guardian Glass).



**Are you
interested
in CO₂
reduction?**

**Come to FIC for superboosting and
large all-electric furnaces – we have the
answers to reduce carbon footprint**

- All-electric furnaces
- Electric boosting
- Electrode holders
 - High 'Q'
 - Maxi 'Q'
- Bubbler systems



www.fic-uk.com
+44 (0) 1736 366 962



**The World's Number One
in Furnace Technology**

FIC (UK) Limited
Long Rock Industrial Estate, Penzance,
Cornwall TR20 8HX, United Kingdom

 **A Division of
Glass Service**



glass primary packaging solutions for pharmaceutical, diagnostics, food and beverage, nutraceutical and other key packaging segments across North America” stated Gary Waller, President of Gerresheimer Glass Inc. “We supply all important pharmaceutical and cosmetics customers with our glass packaging. There are also a substantial number of customers in the food and beverage industry.”

The Americas are an important facet of business for Gerresheimer Glass. “After Europe, the Americas ranks second at Gerresheimer with sales of €381 million” said Mr Waller. “Our business has been growing year-over-year based on the strength of our technology innovations, increased product portfolio offerings and aligned commercial sales and operations groups in the Americas.”

Vaccine development by pharmaceutical companies has increased the demand for glass injection vials. “We are working together with vaccine manufacturers to prepare for the global Covid-19 vaccination campaigns” Mr Waller continued. “For this purpose, we are building additional capacity for the production of injection vials. Beyond this, there are numerous growth opportunities for us. And we are consequently implementing our strategy for profitable and sustainable growth. We are investing in our company’s future, growing profitably and expect a strong fourth quarter.

“The American market is an important market for Gerresheimer. We have been established there for decades and are well connected. We have also invested a lot in our American locations in recent years and created numerous innovations with which we were able to inspire our existing customers and win new customers. We have made our plant in Chicago one of the most modern production sites for container glass in the USA. Our Forest Grove facility produces our Gx Elite vials, which have set a new standard in patient safety.”

Additional details on the impact of the Covid-19 coronavirus at Gerresheimer, as well as at other businesses active in the glass industry in the USA are explored further on.

Gerresheimer projects continued growth in North America in the years ahead.

“We are well-positioned for 2021 and beyond, with strong growth coming from our pharma and non-pharma customer segments” Mr Waller noted. “Covid-19 continues to be something we are tracking not only in our North America business unit but we anticipate significant growth in 2021 and beyond. We are forecasting strong growth for 2021–2025 and beyond, driven by our core pharma business, along with our non-pharma segments. We have forecast strong profitability and plan to continue to invest in our business significantly in 2021 and beyond.”

NSG

Active in the architectural and automotive glass segments in North America, NSG is continuing its expansion in the USA. In November of 2020, NSG Group began operations at its new 500,000 ft² production facility in Luckey, Ohio, according to a statement from the company. The statement indicated that “the float furnace [produces] TCO (transparent conductive oxide) coated glass for solar panels [...]. With the expanded supply capability for VA [valued-added] products, such as solar glass and other products, NSG Group intends to drive its growth strategy, while supporting the expansion of renewable energy.”

Guardian Glass

Creativity and growth have been key elements at Guardian Glass in the USA. In early 2020, the company recognised the leadership of several of its customers. One of those honoured was the Conrad Washington, DC Hotel. “At the hotel’s ground



Puncher’s Chance bourbon is produced, aged and bottled in Kentucky (image courtesy of Wolf Spirit Distillery).

level, ribbons of curved storefront glass wrap a band of retail spaces to engage and activate the public sidewalk whilst reinforcing the street front” according to a statement from Guardian Glass. “The convex shape of the glass also engages with the scale of the pedestrian, whilst the upper floor facades react directly to the internal hotel functions and the larger urban context whilst emphasising the monolithic aspect of the overall massing.”

The team that developed this project using glass from Guardian Glass included Herzog & de Meuron, Cristacurva and TSI Exterior Wall Systems, providing architectural services, fabrication, and glazier services respectively.

“The design is unique; it’s very progressive” explained Javier Sánchez-Gil, Chief Operating Officer for Cristacurva, an independent Guardian select fabricator. According to Guardian Glass, Cristacurva fabricated approximately 15,000ft² of curved insulating glass units for the structure’s first floor. The upper floors utilised roughly 11,000ft² of curved IGUs for angles and corners and approximately 100,000ft² of flat IGUs. TSI installed all of these glass make-ups.

Year 2020 was also the 50th anniversary of Guardian Glass entry into float glass production. According to the company, “the first ribbon of glass [was pulled] on 20 August, 1970. Until that point, the company had been a manufacturer of automotive laminated windscreens using glass sourced from others.”

“It is a testament to the hard work and dedication to safety of all our employees over the years and to our customers and suppliers, that our Carleton team has maintained 50 years

of float glass production consistently at the highest levels of quality” said Ron Vaupel, President and CEO of Guardian Industries.

Liquor industry success

One of major users of glass are businesses active in the food and beverage industries. In August 2020, the Wolf Spirit Distillery started distribution of Puncher’s Chance, a 100% pure Kentucky Bourbon. As of October of 2020, the product was registered for sale in 14 states; by the end of 2021, Wolf Spirit Distillery indicated that Puncher’s Chance should be available nationally in the USA. In the first three months of sales, revenue was “close to US\$700,000” according to the business.

“Our core use is related to bottles, which – in the spirits business – are one of the most essential elements in building brand equity” stated Umberto Luchini, founder and proprietor of Wolf Spirit Distillery. “One of the ‘core Ps’ of marketing strategy: Price, packaging and promotion. We use 100% new glass.”

According to Mr Luchini “Glass has always been the best way to package liquors because they are very delicate liquids and glass does not alter the taste or character notes. We have always used glass to bottle our products. Glass best maintains the integrity and flavour of our products. It guarantees stability and also communicates the premium quality of Puncher’s Chance. We are expanding very quickly, so I am certain our glass usage will increase.”

The use of aluminium is being considered for certain sizes of the product. “We will not be moving away from glass any time soon” explained Mr Luchini. “Whilst in our industry, ▶



Fosbel®

www.Fosbel.com

CERAMIC TECHNOLOGIES



Fosbel audit services now include SmartMelter® inspections.

Fosbel now utilizes SmartMelter® technology, a non-invasive, radar-based service measuring refractory thickness.

Prevent production losses by taking advantage of scheduling critical repairs before costly glass leaks or incursions occur.

Fosbel's 2020 Global Footprint



163 Furnace Inspections Performed

222 Ceramic Welding Jobs Completed

Placed Teams of Multi-Cultural Technicians Around The Globe

56 Successful Hot Repair Projects Completed

Safely Performed All Projects Without Incidents

"Fosbel...constantly reimagining innovative technologies for the needs of the glass industry today and tomorrow"

United States
Fosbel Inc.
20600 Sheldon Road
Brookpark, Ohio 44142
+1 216 362 3900

Western Europe
Fosbel GmbH
+49 2161 27751 0

Eastern Europe
Fosbel Ukraine
+380 50 320 74 44

India
Fosbel India Private Ltd.
+91 657 2315193

Japan
YK Fosbel Asia Ltd.
+81 78 915 8005

Brazil
Fosbel Industria e Comercio Ltda.
+55 11 4161 9707

South Africa
Fosbel Africa (Proprietary) Ltd.
+27 16 362 0007



more and more 'ready to drink' brands come in aluminium cans, these are an addition to glass, not a replacement. PET – mainly the so-called 'traveller's packs' – is on a downward trend. We have considered using aluminium cans for small sizes; the standard spirits bottle holds 750ml, the typical larger sizes are 1 litre and 1.75 litre [and] the legal smaller sizes are 375ml, 200ml, 100ml and 50ml; it is for these smaller sizes that we have considered aluminium."

Competition with aluminium and plastic products, as well as further details about the glass packaging industry in the USA are explored in the accompanying news column: Focus USA – Glass Packaging Industry.

Impact of imports of glass containers from China

One of the strongest advocates for the glass industry in the USA has been the United Steelworkers (USW). Members of the USW work in the glass container, flat glass, specialty glass, glass fibre and other segments of the glass industry. In a letter to the United States International Trade Commission (ITC) dated 1 November 2019, Thomas Conway, International President of the USW, wrote in favour of the anti-dumping and countervailing duty investigation of glass containers from China: "The United Steelworkers (USW) represents the majority of workers in the US container glass industry, including those at Ardagh, Anchor, Owens-Illinois and Gallo, along with representation in container glass among smaller manufacturers and is fully supportive of this case and the ITC finding injury by reason of the imports from China.

"As you no doubt know, the US glass industry has been under heavy pressure from Chinese dumping and US container glass shipments are

down, whilst Chinese imports are up by approximately 30%" Mr Conway continued. "The injurious effects are intensifying with the passage of time, alongside the steadily increasing Chinese import volume. Over the last 14 years, 12 glass container manufacturing facilities have closed in the US, resulting in more than 3500 family-supportive jobs lost in communities across America. In addition to the direct job loss from shuttered plants, the reduction in domestic production results in reduced worker hours at the facilities which currently remain open. We are requesting relief from the injury that this unfair attack by China's glass producers [have] brought on US glass manufacturing and its workers through an affirmative determination by the Commission."

Labour unions have been part of the glass industry for more than 175 years. Today the USW represents about 25,000 members in all segments of the glass industry in the USA. According to the USW, its members work in the "glass container, architectural glass, automotive glass, specialty glass, scientific glass, pharmaceutical glass, glass fibre and optical glass businesses. The vast majority of these members come to the USW from one of three mergers of predecessor Unions: GMP (2016), AFGWU (2003) and ABG (1996)." The GMP – the Glass, Molders, Pottery, Plastics and Allied Workers International Union – traced its roots to 1842. At that time, glass blowers in Philadelphia, Pennsylvania, organised to represent workers that made green glass in Pennsylvania and New Jersey. The American Flint Glass Workers' Union (AFGWU) was founded in Pittsburgh, Pennsylvania, in 1878. The ABG – the Aluminum, Brick and Glass Workers Union – represented workers in those three industries for years.

Glass recycling

A key aspect of the glass industry in the USA is recycling. Glass is one the most recycled products in the United States.

"We are the largest glass recycler in North America, with nearly 50 locations in the US, Canada and Mexico" stated Laura Hennemann, Vice President of Marketing and Communications of Strategic Materials. "We have been recycling glass since 1896."

Among glass products recycled by Strategic Materials are beverage and food containers. "We work closely with businesses to provide on-site, closed loop glass recycling back into their manufacturing process or through aggregating glass scrap for recycling at one of our facilities – all which help businesses work towards zero waste" Ms Hennemann continued. The business also accepts such items as plate glass-like doors, windows, outdoor furniture and mirrors at select locations.

"We process recycled glass to meet customer specifications for furnace-ready, recycled glass – aka cullet" explained Ms Hennemann. "Cullet is primarily sold back into glass container manufacturing and glass fibre insulation. We also process glass for highway bead, decorative glass, filler, abrasives and filtration."

In certain areas of the USA, glass recycling programmes are quite localised. Ripple Glass is one such entity. This collection and processing company established a metro-wide collection network around the Kansas City Metropolitan Area to collect glass from residents. More than 100 purple recycling bins were placed in convenient locations like grocery store or liquor store parking lots. Individuals are encouraged to drop off glass products in these recycling bins. According to Ripple Glass, the source separation of containers keeps the glass clean and free of contaminants. This collection network has since expanded to other cities in the Midwest region of the USA.

In addition to securing glass products dropped off by individuals at the free collection containers, Ripple Glass also collects glass products from a number of communities as well as from bars, restaurants, multi-family homes and other commercial customers. Most of those customers recycle glass food and beverage containers. Other sources of product for Ripple Glass include plate glass manufacturers, recycling centres and municipal-operated programmes in the region.

"After the glass is collected through our collection programme in Kansas City and from the surrounding states we work with, the glass is brought to our processing facility in Kansas City, where it is processed into furnace-ready cullet and bottle cullet" said Lydia Gibson, Director of Sourcing at Ripple Glass. "After the cullet is processed, it is sent to a glass fibre insulation manufacturer and a bottle manufacturer."

Ms Gibson noted that these manufacturers "use recycled glass as a substitute for raw materials. The glass fibre insulation melts the furnace-ready glass cullet and spins it into glass fibre insulation. Bottle manufacturers melt the furnace-ready glass cullet and mould it into new bottles."

"We took the glass recycling rate in the Kansas City Metro from 3% in 2009 to 20% in 2019" said Ms Gibson. "We have recycled [more than] 200,000 tons of glass since 2009. Our business has been steadily growing in 2020 [but] we do not publicly release dollar amounts or units."

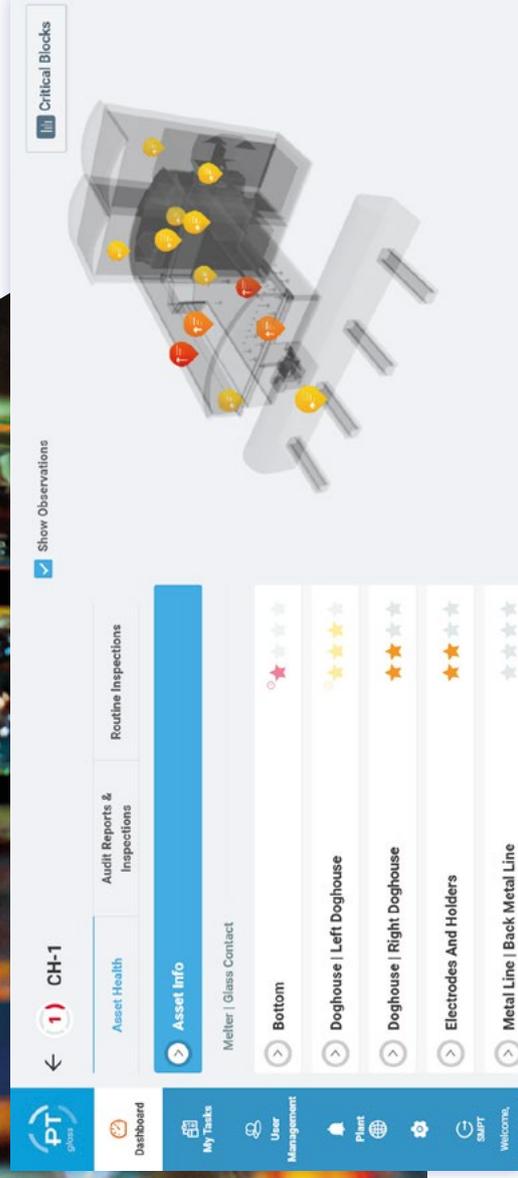
One of the techniques used to encourage glass recycling in the United States is a bottle deposit and return programme. Ten states in the USA as well as Guam have laws that require customers to pay a deposit each time they purchase a product in a beverage container, including glass beverage containers. Whilst the specifics vary from state to ▶



Production of dental and pharmaceutical cartridges, including insulin pen cartridges, are produced by Gerresheimer in Vineland, New Jersey (image courtesy of Gerresheimer).

The Industry's First Refractory 4.0 Solution

It's time for your refractory to go digital. Standardize refractory health management with visibility of all furnaces in your organization. Store all refractory maintenance and inspection data in a format where you can drill down to each refractory block. Prioritize maintenance based on your organization's risk appetite, choosing the most effective way to spend time and money. Introducing XSight by SmartMelter: your tool for data-driven decisions.





Ripple Glass provides large recycling containers to businesses including Le Fou Frog Restaurant in Kansas City, Missouri (image courtesy of Ripple Glass).

state, the overall goals are the same – to encourage recycling of beverage containers.

In Oregon, the Oregon Beverage Recycling Cooperative (OBRC) administers that State’s bottle deposit and return programme. The organisation collects and processes glass bottles, among other beverage containers, for recycling that have an Oregon refund value.

“Our organisation is a co-operative made up of 227 patrons which represent manufacturers, distributors and retailers of glass beverage containers covered by Oregon’s Bottle Bill” explained Liz Philpott, Public Relations and BottleDrop Give Programme Coordinator of the OBRC. “The deposit law in Oregon covers most single serving beverage containers other than liquor, wine or milk. So, we collect glass bottles for beer, coffee, kombucha, specialty juices and teas and more.”

According to the OBRC, there are 25 Redemption Centres in Oregon that have reverse vending machines and staff that can hand-count glass beverage containers for returns. In addition, the OBRC indicated that all retailers that sell beverage containers covered by Oregon’s Bottle Bill are also required to take these containers back from customers.

“The public can return glass containers [...] with a refund value to us or to retailers. We then [...] sort and process them before transporting them to be recycled” Ms Philpott continued. “In 2019, we processed [more than] 239 million glass beverage containers for recycling.”

Beyond glass container recycling, the OBRC has its “Green Bag Programme, which allows our customers to return all their deposit containers (aluminium, plastic and glass) all in the same bag” noted Ms Philpott. “We have 40-plus bag drop doors in Oregon, where customers can drop these bags. We pick them up, process the containers and credit the customers’ accounts with the refund value.”

The cullet generated from the recycled glass products is utilised in the production of new glass products, especially in the food and beverage segments of the glass industry in the USA.

In addition, cullet is used in the production of other new glass products. For example, glass products for the pharmaceutical segment and the cosmetics segment of the market. “Sustainability is an important strategic goal for Gerresheimer” said Mr Waller of Gerresheimer. “The reduction of our CO₂ footprint plays an important role.

For our type II and type III glass, our plants are increasing their usage of post-consumer recycled (PCR) glass and are committed to a greener footprint for Gerresheimer. Over the years, customer interest in sustainable cosmetics packaging has grown steadily. The higher the proportion of recycled glass used, the less energy is required for production. This means that the amount of recycled glass leads to energy savings in the production phase compared to non-recycled glass.”

Glass recycling - problems and potential solutions

There are major problems with glass consumer product recycling in many areas of the USA. “We believe there are issues with glass collection and recycling across the country, primarily stemming from co-mingled collection” commented Ms Gibson of Ripple Glass. “We observe a lack of transparency in the recovery of glass post collection. Therefore, receiving glass that is clean enough to process for end users and markets is a persistent problem. We have approached this with transparency and source separated collection through drop-off collection.”

“Our largest competitor in the US is landfill” stated Ms Hennemann of Strategic Materials. “Our biggest challenge is competing in areas where it’s less expensive to landfill than recycle. Glass recycling, as with any material in the stream, needs to be economical.”

“We believe one of the biggest challenges in consumer recycling is every city, municipality, township or state have different recycling programmes and the materials accepted vary” Ms Hennemann continued. She explained that it can be difficult for consumers to find accurate information on glass recycling. “Further, the recycling symbols on some products don’t mean what they used to and packaging on the shelf has changed. There are more products today sold in packaging that cannot be recycled which can also result in ‘wishcycling,’ causing a further stream on the single stream collection system.”

“Consumers expect to be able to recycle glass containers” said Marissa Segundo of the Glass Recycling Coalition (GRC). “Yet, in the past five years, glass has been targeted for removal from recycling programmes.” The GRC includes more than 25 members from different segments of the glass industry involved in recycling; the coalition was established in April of 2016. ▶



REFRACTORY MACHINING SERVICES

**24 Hour Emergency Service
On Site Inventory**

**Cutting, Grinding, Drilling, Assembly, &
Custom Fabrication of Refractory Products
Since 2002**

**Global Supplier of
Lip Spout Assemblies and Bay 0 Covers**

Our Customers Include:

- Refractory Manufacturers
- Engineering & Contracting Firms
- Float & Container Plants

What Can RMS Do For You?

www.rmsbrick.com

(724) 285-7674

sales@rmsbrick.com

Butler, Pennsylvania USA

MEETING YOUR REQUIREMENTS, ON TIME, EVERY TIME

The Virtual Conference on Glass Problems by the Numbers

By Robert Lipetz, MBA – Executive Director,
Glass Manufacturing Industry Council and VGPC Conference Director

glassproblemsconference.org



6

Technical programs (2 Plenary; Construction and Repair; Melting; Environmental and Sustainability; and Quality, Controls and Sensors)

16

Industry experts in the GMIC symposium, **The Future of Glass Manufacturing**



9

Years of **Glass Worldwide** being exclusive GPC journal

201 VGPC attendance.

54

Students attending



4.12

Average attendee rating of speakers out of 5

Countries participating

20



28.5

Hours of technical education provided



86

Years since first conference (the conference took a hiatus during WWII)

20

Speakers

3

Short course instructors. C. Philip Ross - **Batch and Furnace Operations**, Corinne Claireaux and Oscar Verheijen - **Introduction to Redox and Sulfur Chemistry**

ANNOUNCEMENT:

November 1 through November 4, 2021
Dates of the 82nd Conference on Glass Problems



A creative use of recycled glass was utilised to landscape the American Specialty Glass (ASG Glass) facility in North Salt Lake City, Utah. ASG Glass is a division of Strategic Materials (image courtesy of Strategic Materials).

The GRC has highlighted several entities with best practices to encourage recycling. "Removing glass at the start of the sorting process leads to several advantages" explained Ms Segundo. By implementing this process, the GRC noted that "glass does not run through the entire system, which reduces equipment maintenance; sorting of other materials improves; no labour is required; and glass value increases as contamination decreases."

On the consumer side, GRC encourages individuals and businesses to recycle clean and empty glass bottles and jars avoiding common contaminants like ceramic dishes and containers, light bulbs and other non-container glass. Items like plastic bottle caps, food waste and shredded paper are issues in the secondary sorting process.

Impact of Covid-19

The impact of the Covid-19 coronavirus has varied depending on the segment of the glass industry in the USA.

"Covid-19 impacted our business across our customer segments" reflected Mr Waller of Gerresheimer Glass. "The health of our employees is absolutely paramount. In recent weeks and months we have taken many precautions to ensure this. These include a worldwide pandemic plan, special hygiene regulations, travel and visiting restrictions, working in isolated groups and other shift patterns. Many thanks to all our employees who are actively helping to achieve this. At the same time, we are doing everything in our power to maintain production. In our plants we produce vital packaging for medicines, drug delivery devices and packaging for food, beverages and hygiene and personal care products.

Millions of patients and consumers trust that they will be cared for and we take responsibility for this. We are therefore part of the critical infrastructure of the countries in which we operate. We face up to this responsibility and together with our dedicated employees, do everything in our power to ensure that our production and thus the care of patients and consumers worldwide is guaranteed."

Decisions by individual states – the USA operates under a federal system of government – has impacted different businesses in various ways. "The US operations had some impact on sales in Quarter 2 (2020) due to lockdowns imposed by different states" explained Mr Shah of Piral Glass USA. "However, the company has seen sharp recovery in Quarter 3 (2020) and has a strong order book for Quarter 4 (2020). The Covid-19 threat remains an external challenge which can impact the business during 2021 if future lockdowns are imposed by states."

AGC Glass North America (AGC) has implemented a number of efforts regarding the Covid-19 coronavirus to protect the safety of its employees, customers and suppliers. In a letter dated 17 March 2020, Mike Antonucci, President of AGC Glass North America wrote that "Our focus is to protect our employees during this outbreak and to leverage AGC's strong systems and processes to minimise any negative impact on our customers. We are confident in our ability to perform and will monitor this situation daily."

The USW has noted the impact within the glass industry in the USA. "Many segments of the glass industry have been considered 'essential' so most USW members in the glass industry have continued to work through the pandemic" according to a statement from the USW. "Although we have had some members test positive for Covid-19 at some glass plants around the country, the vast majority of those cases appear to come from community transmission rather than at work, due to the safety precautions being taken. Auto glass assembly plants (where flat glass is turned into windows and windscreens) were shut down for a few weeks this past Spring when the auto assembly plants themselves were shut down but those are all back in full operation now. The most notable impact was on Libbey which gets a majority of its US sales from the food service segment (bars and restaurants). Libbey shut down its US factories for two months and went into bankruptcy in June but had

its reorganisation plan approved by the court." Libbey emerged from bankruptcy on 16 November 2020.

The introduction of a new bourbon product, Puncher's Chance Kentucky Straight Bourbon, by Wolf Spirit Distillery highlighted an example of the impact of Covid-19 coronavirus. "Whilst people are still consuming plenty of alcohol, it is mainly at home" stated Mr Luchini of Wolf Spirit Distillery. "What we are losing out on is in-store tastings, as well as cocktail opportunities in bars and restaurants. These are both very important when you are launching a new brand, because people want to taste a brand before spending US\$35 to buy a full bottle of it."

Whilst glass sales to the food service industry has been negatively impacted by the Covid-19 coronavirus, aspects of the recycling industry have seen growth during the same time period. "Covid-19 brought unique challenges" said Ms Gibson of Ripple Glass. "Due to stay-at-home orders and the easy access to our drop-off recycling bins, we saw a 22% increase in the amount of glass we collected year over year in the Kansas City Metro."

The Covid-19 coronavirus also impacted Strategic Materials. "Even though we are considered essential business with essential workers, we struggled to receive inbound glass supply" detailed Ms Hennemann of Strategic Materials. She noted this was "primarily due to lack of redemption enforcement in deposit states and the temporary shutdown of bars and restaurants, casinos, sporting events and more. However, demand for recycled glass for products like glass packaging was high, as people spent more time cooking at home and buying grocery store goods."

Decisions to enforce or not enforce certain policies because of the Covid-19 coronavirus impacted segments of the glass industry. Oregon is one example.

"Covid-19 significantly impacted glass recycling in Quarter 1 and Quarter 2 for 2020" according to Ms Philpott of the Oregon Beverage Recycling Cooperative. "Oregon Governor Kate Brown declared a state of emergency and ordered the temporary closure of many retail businesses in March. The Oregon Liquor Control Commission, which regulates Oregon's Bottle Bill, did not enforce the requirement for retailers to accept empty beverage container returns from March through May of 2020. Enforcement resumed as counties entered Phase 1 of the Governor's plan to reopen Oregon. During this time, all BottleDrop Redemption Centres remained open and accepted glass beverage containers from the public."

The glass industry in the USA will likely continue to see the impacts of the Covid-19 coronavirus on operations. It is probable that imports from China will also continue to be an issue in the glass container segment. Recycling efforts will no doubt experience both promise and difficulties – promise because a number of segments of the glass industry see value in using cullet but difficulties will remain until recycling of glass is considered a priority by leaders in local communities throughout the USA. The economics in many communities will likely continue to encourage landfill disposal of glass. ●

About the author:

Richard McDonough is a civic journalist based in the USA. He writes on a variety of topics in the glass industry.

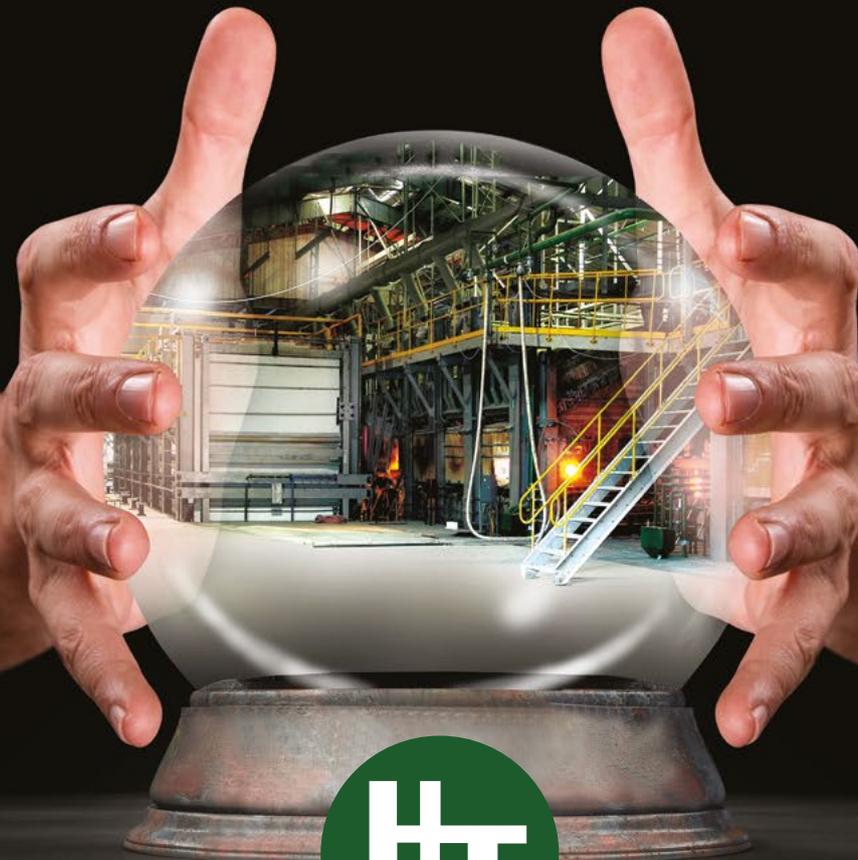
Further information:

TwoCents.News
email: gloinechronicles@gmail.com
web: www.twocents.news

PUT YOUR FUTURE IN SAFE HANDS

The key to the success in turnkey projects is to seamlessly integrate ...

- *Engineering / Procurement Services / Construction Services / Project Management*
- *Glass Melting Furnaces / Batch Plants / Annealing Lehrs / Buildings and Civil Work*



EWB

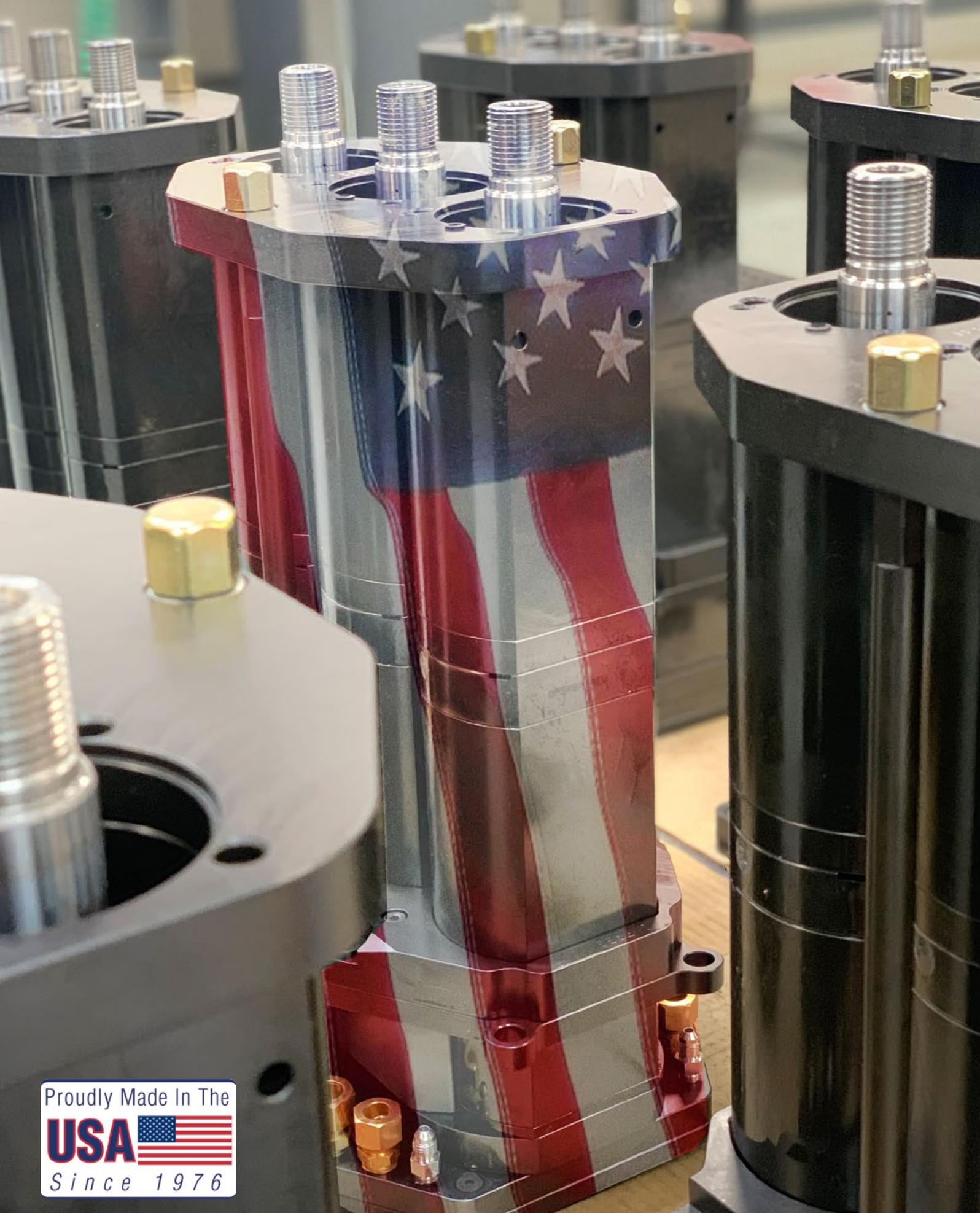
HENRY F. TEICHMANN, INC.

Engineers and Contractors to the Glass Industry

3009 Washington Road • McMurray, PA 15317-3202 • USA

+1 724 941 9550

Fax: +1 724 941 3479 info@hft.com www.hft.com



Proudly Made In The
USA 
Since 1976

 **QuantumForming.com**

30 years of press and blow machines

Renowned for its engineering, manufacturing, installation and commissioning of hollow glass plants, systems and machines, Olivotto Glass Technologies Group recently celebrated the 30th anniversary of its O.90 press and blow machine. Massimo Pucci delves into the company's history.



Massimo Pucci, Olivotto's Sales Area Manager has worked with the company since 1998.

In 1980, Olivotto introduced the first proprietary electronic control systems on automatic forming machines (dedicated to the production of glass bulbs for lighting). Until then, almost all automatic machines had mechanical cam handling systems, with limited operating and production flexibility.

Olivotto decided to invest in the research and development of electronic control systems that could be used on its machines. The systems developed allowed greater production flexibility and a significant reduction



Two O.90 28 section TR28 models, recently installed.

in operating costs, with important streamlining of machine management, as well as an increase in production line output. The doors were opened to a technological development that would never stop and that strongly contributed, after a few years, to the

creation of the first fully electronic press and blow machine.

In the second half of the 1980s, knowledge acquired through the development of proprietary electronic control systems and based on contingent market needs led ▶



The first O.90 press and blow machine – still going strong 30 years on.



The O.90 18 section enlarge model in production.

Development and evolution of the Olivotto press and blow

1990 Standard model

Designed to increase the dimensional range produced by existing press and blow machines. First press and blow automatic machine fully electronically controlled with full servo substitution mechanisms.

1993 Compact model (12 and 18 working sections)

Designed for the production of small to medium size glassware at high production speed.

1995 Enlarge model (18 working sections)

Designed for the production of big glassware. Total machine weight of 34 tons, mould centre diameter of 3800mm. The largest press and blow process automatic machine ever made.

1996 TR28 model (double gob; 28 working sections)

Designed for the production of small glassware at very high production speed. The only double gob press and blow process automatic machines existing in the world. Production speed up to 210 pieces per minute.

1999 PSL model (in line section machine; two working sections)

Designed for the production of medium/large glassware at low production speed. The first press and blow automatic machine designed with independent fully servo (brushless motor actuated) blank mould and plunger mechanisms.

2003 Electronic control system upgrade aimed to increase the machine's performance

Scaleable electronic control architecture consisting of worldwide brand components: Multitasking PLC with motion axes integrated system, HMI interface and high speed deterministic field networks for major improvements on the machine process control repeatability. The control system upgrade was an important milestone of the O.90 machine technological development. Some of the features introduced with the control system were:

- Independent neck ring electric speed control including special rotation cycles specifically designed for the improvement of the glass distribution and glassware forming.
- Individual automatic temperature controls (closed loop) for blank moulds and plungers.
- High accuracy full servo tracking gob delivery system with independent gob loading timing adjustment for each working section.
- Independent electronic servo substitution; brushless motors actuated for the bottom forming improving and parison elongation control.
- High accuracy camera system for the parison elongation closed loop control.

2007 HQS type (12 and 18 working sections)

Specifically designed for the production of high quality stemware.

2016 OGT 4.0 approach

Applied to all OGT group products and technologies – an innovative global approach centred around engineering, manufacturing, sales and after sales.

The OGT 4.0 approach applied to the press and blow process combines the best existing and well proven technical solutions with innovative functionalities.



The O.90 12 section compact model in production.

Olivotto to focus on the development of an automatic machine suitable for the press and blow process.

The company's engineering team concentrated on the design of a fully electronically controlled machine that would be able to overcome production limitations at the time. Small changes were made to the technological process and thanks to the application of proprietary electronics, control of the process was substantially improved.

30 years of operation

Olivotto made its first fully electronic automatic 'O.90' press and blow machine in 1990. It was a modular rotary machine consisting of 12 working sections, each equipped with independent electronic control of the movement, electric motors for the neck rings rotation and electric servo substitution for the parison elongation control.

The O.90 was installed and put into production by an Italian customer



An O.90 press and blow in production.



Olivotto's OGT 4.0 approach applied to a press and blow automatic forming line.

who agreed to start a pioneering technical collaboration with Olivotto. Objectives were set during the development phase and customer expectations were completely satisfied.

That machine was the first of a long series of press and blow machines that Olivotto would go on to produce. The fact that after 30 years, the first installed O.90 machine is still fully functional and still in production at the same customer's site is testament to its workmanship and design.

Reliable high performer

Well-established knowhow of the electronic control systems, together with experience derived from the production of many machines over the years, ensure that the Olivotto O.90 is a high performance and extremely reliable machine. Thanks to hundreds of successful installations the press and blow system has effectively completed a technological 'self-learning upgrade'.

In 2020, the O.90 stands as an innovative machine with high technological content, performing in a reliable and user-friendly manner, with minimal maintenance requirements.

A tailored approach

The O.90 is a versatile machine which, thanks to the different models available, is capable of producing a wide range of products according to customer-specific needs, such as: Tumblers, large vases, one-piece and two-piece stemware. Accordingly, the company is able to offer different consolidated technologies in terms of equipment and services.

As well as electronic equipment, Olivotto Glass Technologies can design and manufacture moulds according to customer requirements. The company has a 'production expert team' for each production process. Each team is composed of a production supervisor and senior operators with proven experience in the field. Customer after-sales service is available at any time. ●

About the author:

Massimo Pucci is Sales Area Manager for Olivotto Glass Technologies

Further information:

Olivotto Glass Technologies, Avigliana, Italy
 tel: +39 011 9343 511
 email: info@olivotto.it
 web: www.olivotto.it

....your partner for

INSPECTION MACHINES

made in Germany



IGI Dr. Günther Inspections GbR

www.optical-inspections.com
 info@optical-inspections.com
 +49 (0) 3764 77918 - 70

Delivering excellence as standard

Effective container handling is at the heart of Sheppee's business. Roy Clarkson takes a close look at the company's portfolio of hot end ware handling products and examines finely developed components designed for complete integration into the ultimate high speed ware handling production line.

The drive to increase productivity will never stop. It is vital not only for the profitability of a company but also for its long-term stability and position in the market. For most glass container manufacturers the real incentive is to increase production speeds while maintaining as near to possible 100% production efficiency, an impossible dream but a goal which the manufacturing industry will consistently strive to achieve.

Increased technology in the glass container forming process has allowed for production speeds to easily surpass 650 bottles/min and the push to go to the next milestone continues. Currently, container manufacturers are looking

above and beyond the 720 bottle per minute figure.

Sheppee has been working with glass container manufacturers to deliver solutions to satisfy these production speeds. In its research and development centre, a ware handling test facility with accurate production conditions has allowed the company to develop and improve existing ware handling products, all proven to handle containers at extreme production

speeds. Sheppee is confident that it can provide glass manufacturers with the ability to take their production speeds and efficiencies to the next level.

Handling with care

The VFT-2000 and ITS-1000 are the combination of a dedicated high speed transfer unit, designed primarily for quad and triple gob production and a dual belt delivery conveyor

The complete high speed ware handling system from Sheppee, featuring the Speedliner, VFT-2000 and ITS-1000.



Sheppee's latest energy-efficient CCA/1250 cross conveyor.

GLASS WORLDWIDE DIGITAL ARCHIVE

Sponsored by



The Digital Archive of past and current issues is presently available free of charge at www.glassworldwide.co.uk alongside Hot Topics news, highlights from this issue and the Virtual Marketplace.



that provides ultimate container stability through the transfer process. The first generation VFT-1000 was initially introduced in 2007 and was immediately commissioned on a production line running 635bpm; in subsequent years the VFT has handled containers at 706bpm on tandem production lines. Continuously looking to improve and future proof equipment, Sheppee released the VFT-2000, which has seen successful container trials at 1000bpm on lightweight, long neck beers and is currently installed on several production lines where customers are aiming to increase production over 700bpm.

Efficient conveyance

For the last two decades, Sheppee cross conveyors have provided users with the reliability and performance they require. Specially designed features inherent within the CCA/1200 ensure that the conveyors remain straight, without any need for cooling. Adjustable dead plates and both the transfer and the lehr entrance offer a perfect surface for handling containers. A latest generation energy-efficient cross conveyor has been commissioned in several facilities over the last 12 months, with a 50% reduction in energy consumption.

Easing the load

Speedliner is Sheppee's 10th generation lehr loader. It has a wider footprint than the company's other lehr loaders, allowing greater Y axis travel. With four-point pushbar contact, it can easily meet the demands of lehrs over 5m. Also recently introduced to a Sheppee lehr loader is the captive lift frame, producing the fastest possible down

stroke of the pushbar. This reduces unnecessary cycle time, allowing the reclaimed cycle duration to be allocated during the critical push phase of the lehr loader. Combined with Sheppee's patented software – its most intelligent design to date – the Speedliner is also Industry 4.0 ready.

The complete package

Industry 4.0 has given Sheppee a real opportunity to deliver a complete product: A fully integrated ware handling package that can be monitored through one centralised system on the Speedliner. The container manufacturer and Sheppee can monitor real-time operating data of the ITS-1000 delivery conveyor, the transfer drive, cross conveyor, as well as the lehr loader itself. With a vast amount of data available, Sheppee can analyse the performance of key components and determine if intervention is required to prevent possible down time, or create an alert if routine maintenance is required, based on cycles run on a component rather than a typical periodical recommendation. The benefits are endless.

With the backup of Sheppee's 24 hour dedicated customer support engineers and the ability to remotely dial is the equipment, support and service is instant. Support engineers can look at the production settings on the Speedliner and determine, according to the characteristics of the container being produced, if the customer has commissioned the job correctly and also make any modifications to that specific production setting remotely.

Sheppee continues to innovate and further develop its products by working with and listening to its partners in the glass industry so that it can do things that have never been achieved before. ●

About the author:

Roy Clarkson is Regional Sales Director at Sheppee

Further information:

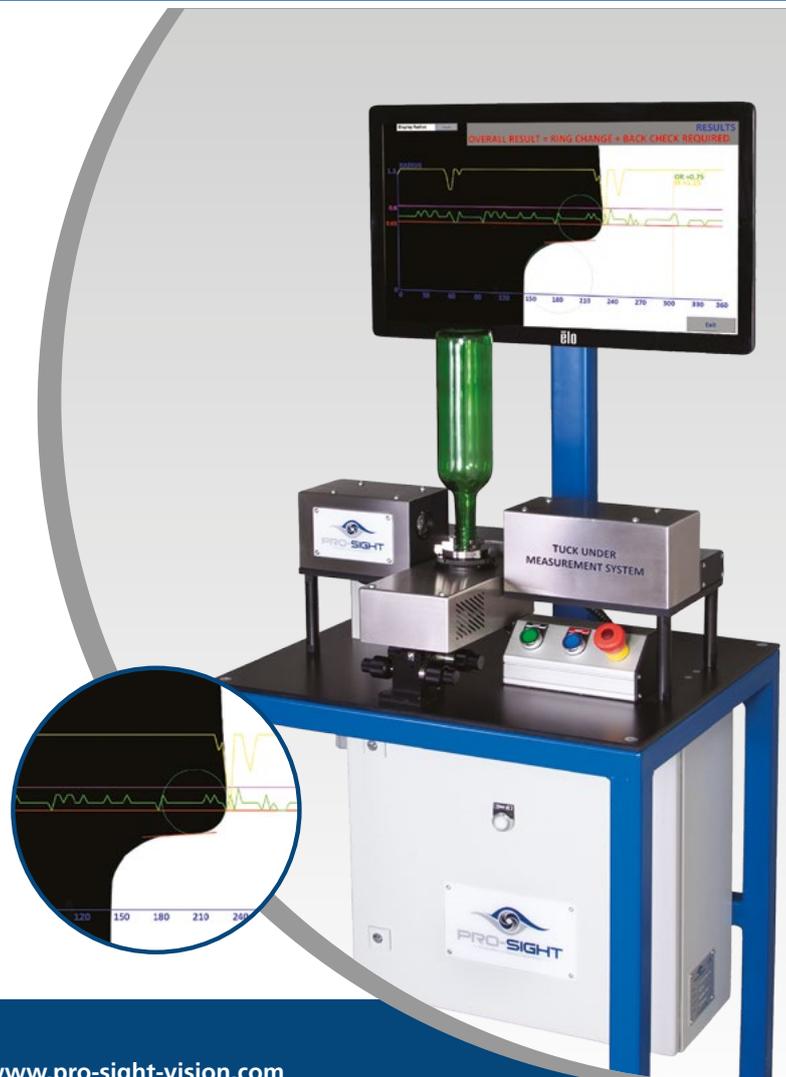
Sheppee International Ltd,
Elvington, York, UK
tel: +44 7736 157385
email: rclarkson@sheppee.com
web: www.sheppee.com

Tuck Under Measurement System

for ROPP caps

Key Features...

- Precise measurement of tuck under angle and radius
- Offline machine – 120 images taken per bottle
- Touchscreen interface
- Stepper motor driven rotation
- Fast and user friendly operation – 9 seconds per bottle
- Single Bottle and Full Mould Set modes
- History of all measurements are saved by mould number and by cavity location on the IS Machine
- All data can be exported to CSV file for reviewing in Microsoft Excel



Boosting glass quality with electrically optimised heating

When it comes to glass melting systems, rising energy costs in conjunction with demand for consistently high glass quality are an issue due to the generally required high energy input. Frank Schlieper explains how Advanced Energy Industries came up with a powerful yet low grid impact solution.

Glass, depending on its composition, only forms a uniform mass at temperatures of around 1100°C-1500°C. Therefore, the issues of energy supply, energy distribution and ultimately energy costs are of utmost importance.

Although many melting tanks are still heated by fossil fuels, additional electric heating systems are increasingly being used to improve glass quality and melting performance, while simultaneously reducing emissions. Since glass becomes electrically conductive starting at about 800°C, heating electrodes for the so-called boosting are installed directly in the melt. This means there are hardly any losses and controllability is much more precise than with fossil heating systems.

Forehearth is either exclusively heated electrically or consist of a combination of gas heating with additional electrical heating, in order to further homogenise the mass.

Electrically optimised heating

In the glass industry, regulating transformers are often used to control the electrodes in the boosting range but they have considerable disadvantages as they are too heavy, too expensive and ultimately too space consuming. In addition there is generally a higher risk of environmental pollution and high maintenance due to oil cooling.

Based on the disadvantages of regulating transformers described above and customer feedback gained from installations worldwide, the Advanced Energy Industries (AEI) team came up with the idea to use SCR (silicon controlled rectifier) power controllers in combination with smaller step transformers for boosting, because they can act much more dynamically in control processes. This enables multiple use even with unstable supply grids, since the process can react quickly to any potential fluctuations in the mains voltage.

Power controller

AEI's Thyro-PX SCR power controller series is characterised by a wide range of operating and control modes and has the ability to communicate with various modern control systems. The devices are available with currents up to 2900A and voltages up to 690V.

Employing a Thyro-PX power controller in a Voltage Sequence Control (VSC) circuit significantly reduces reactive power and harmonic distortion, thus increasing the overall power factor of the boosting (see figure 1). The special feature of the resulting heating system is therefore the integrated two-stage VSC technology (figure 2).

VSC differs from the widely used phase-angle control method (VAR). Figure 3 shows the power factor curve for a two-stage VSC connection. In this instance, the power factor is at ≥ 0.9 from a load control of $> 53\%$, with the result that no grid usage fees are incurred for reactive power. For high performance systems, this is a serious cost factor.

At the same time, harmonics are also reduced considerably. The high edge of the grey line in figure 4 shows a high ratio of harmonics to (expensive) reactive power during VAR phase control. The orange line illustrates the advantages of the VSC mode: It achieves the same

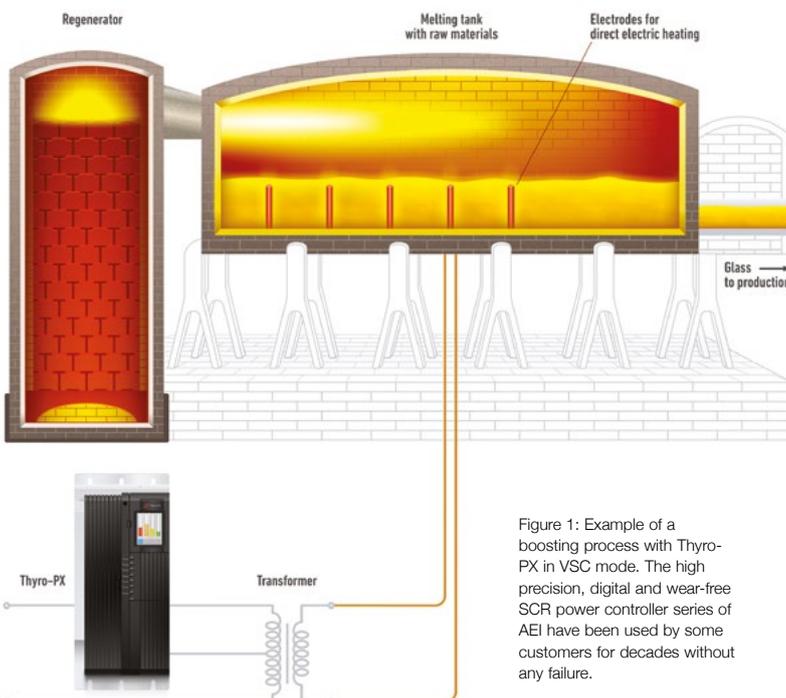


Figure 1: Example of a boosting process with Thyro-PX in VSC mode. The high precision, digital and wear-free SCR power controller series of AEI have been used by some customers for decades without any failure.

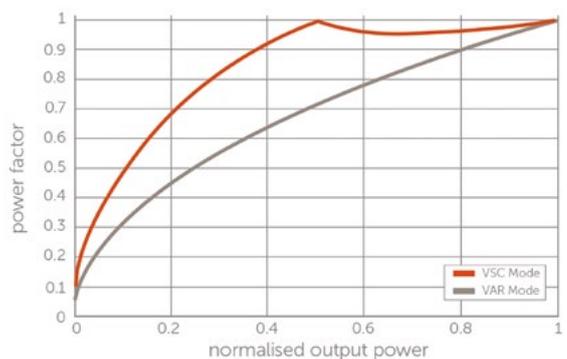


Figure 2: Diagram of a two-stage VSC circuit.

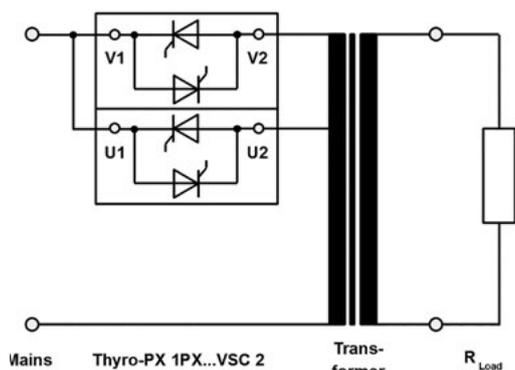


Figure 3: Power factor rated to output effective power (modulation of a two-stage VSC connection).

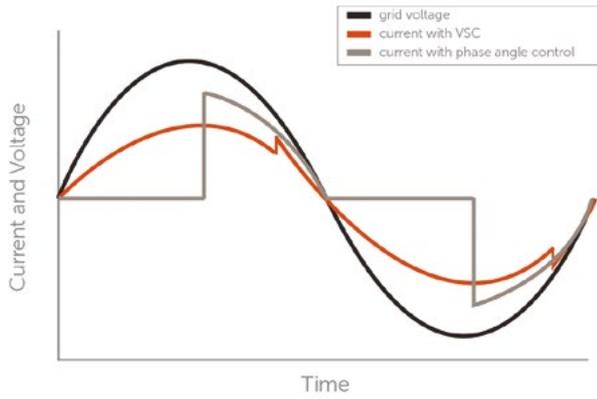


Figure 4: Comparison of phase angle control (VAR) and VSC (Voltage Sequence Control) with the same RMS current value.

RMS value as the phase angle control but with an approximately sinusoidal [sine wave oscillation] shape. The resulting small edge is so marginal that, as a result, a high power factor with low harmonics and equally low reactive power arises.

Not only are reactive power, space requirements and installation costs optimised with AEI's solution but also, the costs of the transformer. Modern static transformers with water cooling increase the savings potential as well.

Reactive power does not mean invisible costs

The power factor, a calculation variable, can quickly increase operational costs if not managed correctly. A hypothetical calculation shows the differences in the use of the operating modes phase angle control (VAR) and voltage sequence control (VSC). Consider reasonably realistic system values of a heater with an output of 1000 kW. If this heater was operated with a power factor of $\lambda = 0.83$, annual costs for the reactive power of about €15,000 [£13,340] per year would be incurred, as shown in figure 5. An increase to $\lambda = 0.9$ eliminates these additional costs. Thus, saving €15,000 per year. The figure shows an example of normalised reactive power costs.

However, that is not all. Due to lower apparent power, the transformer can be dimensioned correspondingly smaller. The same applies to various other electrical system components, of which smaller models may be sufficient. Switchgear can also be made smaller. ●

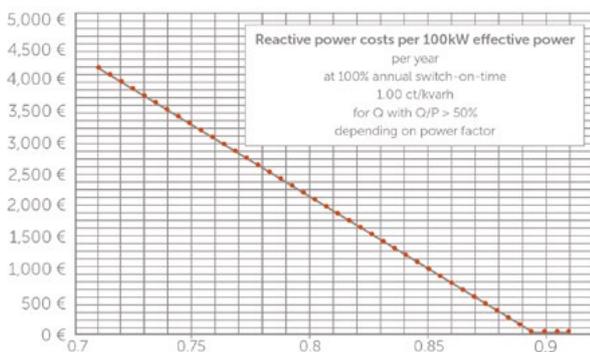


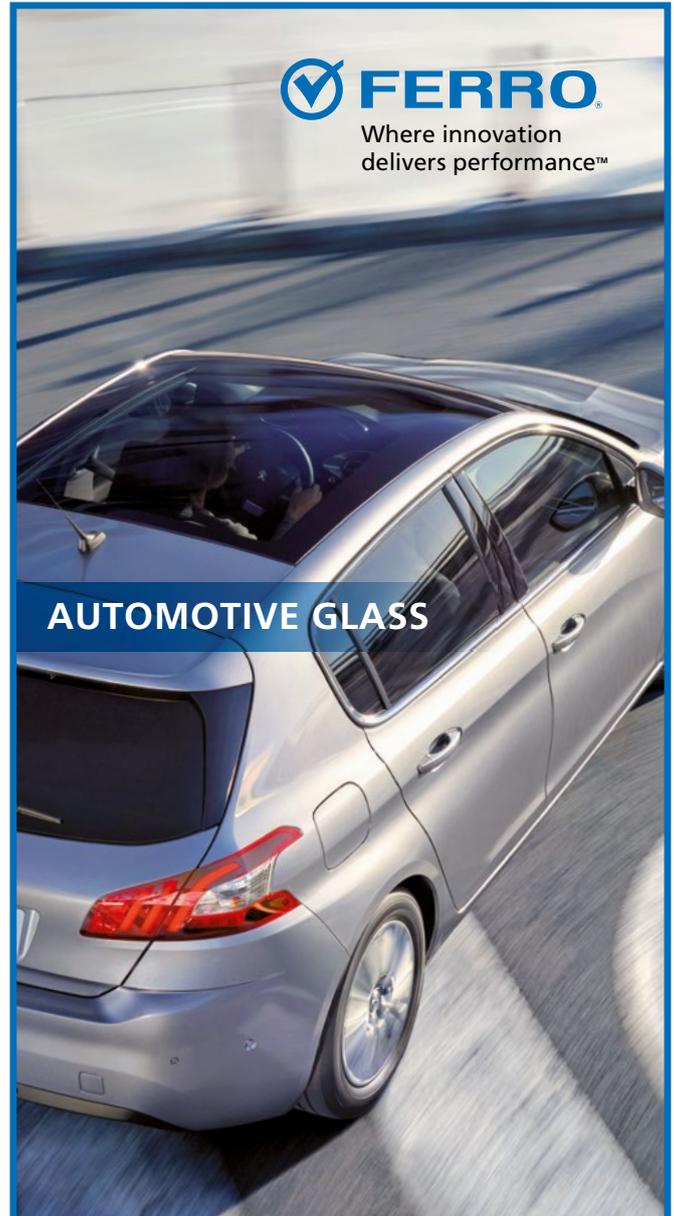
Figure 5: Example of normalised reactive power costs.

About the author:

Frank Schlieper is Sales Manager EMEA, Photonics & Power Control Solutions at Advanced Energy Industries

Further information:

Advanced Energy Industries GmbH, Branch Office Warstein-Belecke, Germany
 tel: +49 2902 910 370 10
 email: powercontroller@aei.com
 web: www.advancedenergy.com



FERRO
 Where innovation delivers performance™

AUTOMOTIVE GLASS

A WORLD BUILT ON PERFORMANCE AND STYLE

Rising to the demands of 21st Century Auto design.

Pb-free, acid resistant, low Bi and Bi-free black bands – tailored to glass and automobile manufacturers specifications. Packaged with fine-line conductive silvers for lead-free soldering applications.

Ferro glass colors, providing high-quality solutions for a window to the future.



Front view of the Fluke ii900 industrial acoustic imager.



Rear view of the Fluke ii900 industrial acoustic imager.

Air, gas, steam and vacuum leak detection

Compressed air plays a vital role in the supply of raw materials, production and distribution processes across every glass packaging production facility. According to Tako Feron, despite the challenging environment of a glass packaging production site, the Fluke ii900 acoustic imager has been developed to operate in and overcome these challenges.

Glass packaging production sites are among the largest consumers of compressed air in the world. Electric power consumption for compressed air accounts for about 30% of wasted energy in compressed air systems due to leaks alone. The potential for energy savings could be significant. Despite the potential energy savings, the indirect costs related to unplanned downtime play an important role in the increasing focus on leak detection within the industry.

Proper compressed air supply is critical in all aspects of the glass packaging process. There is a direct correlation between compressed air

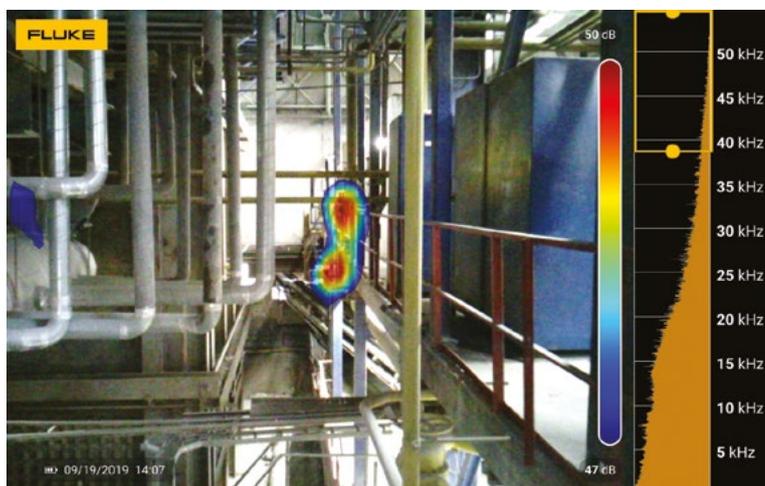
system leaks and lower production quality. For example, a drop in air pressure can impact the drive of a forming machine, impacting production speed, or a drop in air pressure can reduce the blowing of molten glass into moulds, which will directly affect container quality and result in scrap.

Other areas where compressed air systems are used in glass container production include:

- Pneumatic conveying systems rely on air pushed through pipelines to move bulk goods. The pneumatic conveying (flow) always requires a pressure difference between the beginning and the end of ▶

Equipment features

- Sound-based detection with ultrasonic range: Non-dependant on ambient or air/gas temperatures and useful even in loud noise conditions.
- Detects any type of leak, including gas, air, steam or vacuum.
- Intuitive interface: Train teams in a matter of minutes; first-time users can find leaks within minutes.
- Compressed air is the single most expensive energy source across all factory types.
- According to a US DOE study, compressed air leaks account for 20% to 30% of total produced capacity in an average facility.
- Do more with existing air compressors and delay capital expense of installing new or additional units.
- Inspect five to 10 times faster by spotting leaks on-screen via live images.
- Visualisation of leaks means reducing leak detection time and validating subsequent repairs in real-time.
- Ensure proper air pressure to pneumatic equipment.
- Improve reliability in production lines.
- Report leaks by tagging pictures of exact locations.
- Make leak detection part of regular maintenance routines.
- Acoustic imaging: Blended live SoundMap with visual image.
- Frequency range: 2kHz to 52kHz.
- Maximum operating distance: Over 120m, depending on ambient conditions.
- 64 digital MEMS (Micro-Electro-Mechanical Systems) microphones.
- Display: 7in 1280 x 800 LCD with capacitive touchscreen.

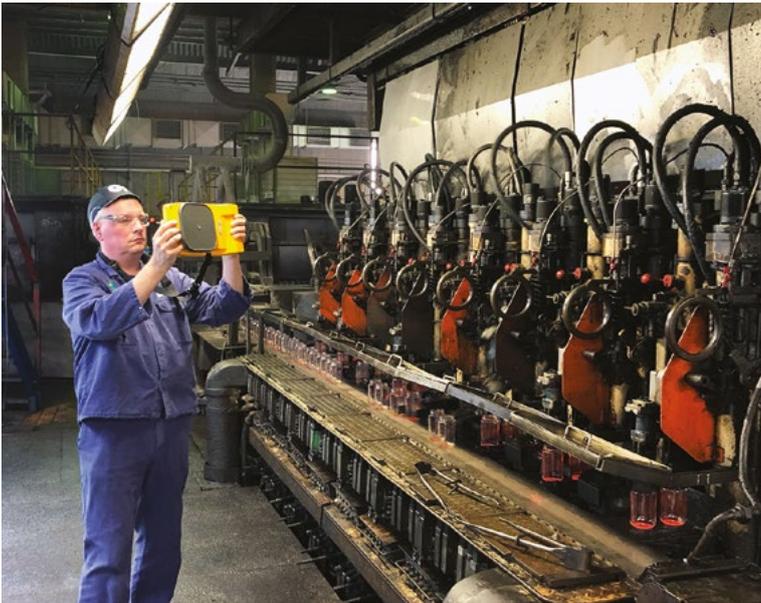


Compressed air leak detection at long distances.



Manufacturing quality components and providing excellent after sales service for over 50 years to the global glass container industry.





Left and above: Equipment in use at O-I Manufacturing Maastricht in the Netherlands.

the pipeline. To overcome this pressure difference, conveying blowers or compressors are used.

- Automated sorting systems in glass container facilities are reliable, cost-effective and efficient. But for those systems where

compressed air guns are used to remove faulty products from the sorting line, any unplanned downtime will have a direct financial impact on both internal operations/opex and potential supply chain/logistics.

Detecting system leaks

Unfortunately, glass packaging production sites are known for harsh environments, including loud ambient noise, high temperatures and large amounts of conscious compressed air 'leaks' that often limit the ability to (easily) find leaks. Access to hazardous and/or remote locations in production plants are often restricted due to high temperatures, glass waste or safety guards. Conventional products require access close to the leak source to determine the exact location.

The Fluke ii900 Sonic industrial imager visualises leaks in compressed air, gas, steam or vacuum systems in even the most challenging environments. This equipment includes advanced algorithms, strategically positioned microphones and a broad frequency range that lets users 'see' leaks at distances over 120m. Detecting distance is influenced by various conditions like ambient sound, frequency of leak and the size of leak meters.

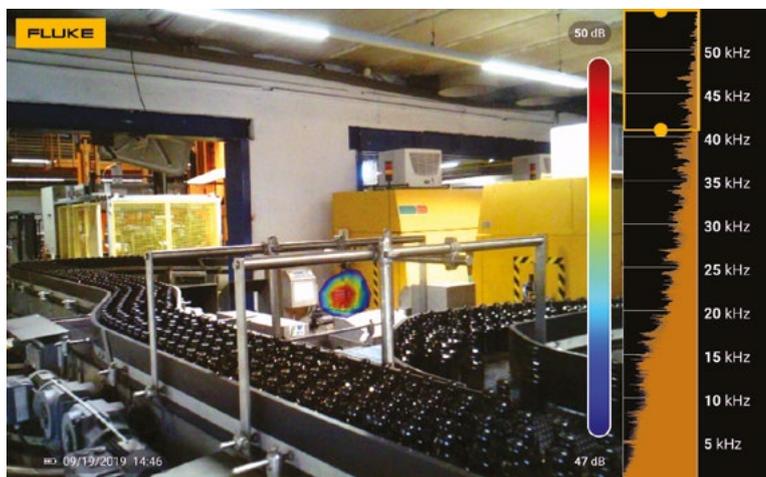
The imager enables maintenance teams to easily pinpoint the location of compressed air, gas and vacuum system leaks without interrupting production processes. The 7in touchscreen, easy user interface and Sound Map, which overlays a visual image for quick leak location, makes it easy for anyone to use within minutes of holding this tool. Across multiple glass packaging production sites around the world, the Fluke ii900 has expedited leak detection and significantly reduced the hours of labour spent on the task.

Conventional methods of leak detection require measuring and recording a decibel reading at a fixed distance from the leak, marking the physical location with a tag, taking pictures and manually describing the location of the leak for the future repair. The Fluke ii900 eliminates this tedious exercise.

Within moments of identification, leaks can be tagged using photographs, video or text notes. The Fluke ii900 automatically measures the sound level in decibels and the distance to the leak by triangulation. The ii900 LeakQ reporting tool estimates the size and potential costs of the leak should it not be repaired. ●



Compressed air leak detection.



Compressed air leak detection on a sorting line.

About the author:

Tako Feron is Senior Category Manager Industrial Imaging EMEA, Fluke

Further information:

Fluke Corp, EC Son and Brugel, the Netherlands
 tel: +31 6 30 82 86 41
 email: tako.feron@fluke.com
 web: www.fluke.com

KEEP SMILING
THE WORLD NEEDS
BEAUTIFUL THINGS



ANNEALING AND DECORATING LEHRS

**SPECIAL THANKS TO THE STAFF MEMBERS
WHO HAVE NEVER STOPPED WORKING WITH THEIR
SMILING FACES BEHIND THE MASKS**

ANTONINI S.R.L. ITALY Phone: +39057193221 com@antoninisrl.com
WWW.ANTONINISRL.COM

Creating bird-safe beauty with glass

Eyal Porat demonstrates how Ferro and Dip-Tech, the supplier of digital glass printers and digital ceramic inks for glass that it acquired in 2017, have collaborated to produce an aesthetically pleasing way to reduce the dangers of glass to birds.

Someone once related a rather sad story: She let her beloved parakeet out of the cage, after conscientiously closing the door and windows. It swooped around until it thought it saw another bird in the mirror and flew headfirst at full speed toward it, dying instantly. Birds and glass do not mix!

Every year almost a billion migrating birds die from collisions with windows and glass facades, an environmental, safety and humanitarian issue. Combined with ever-increasing loss of habitat, the impact is immense.

Three characteristics of glass make it especially dangerous to birds.

- **Reflection** – Especially during daylight hours, the glass reflects familiar habitats, leading to collision.
- **Transparency** – Also largely a daytime problem, birds try to fly through the glass to get to whatever is beyond that seems desirable such as plants, a place to perch etc.
- **Beacon effect** – Particularly hazardous to nocturnally active birds are illuminated buildings, especially under rainy or hazy conditions. Birds drop to lower altitudes to get their bearings and the lights from the buildings attract the birds, with predictably disastrous results.

These dangers are dramatically exacerbated during migration periods, when large flocks migrate through urban areas. While most people envision birds soaring above and crashing into higher floors, the deadliest areas of buildings are the first three to four floors, as the birds leave the trees to continue their paths south or north. Therefore, these floors are the most critical for treatment; a whole 40-story building does not have to be clad, except for aesthetic purposes.

It became clear over the years that a humane, science-based deterrent had to be found.

Saving birds with printed glass

The American Bird Conservancy has researched and developed guidelines to protect birds, with designs on glass that have been scientifically



Facade glass at Columbia College, Chicago. Ferro and Dip-Tech's solutions allow exact reproduction of designs on glass, resulting in graphics on the inside with bird-safe patterns on the outside.

proven to be visual deterrents. Bird-safe glass contains a pattern where horizontal elements such as dots, lines, silhouettes etc that are no more than two inches apart are paired with vertical elements no more than four inches apart. These are visually picked up by birds in flight, averting crashes.

Printing ink on glass is achieved either through screen printing or digital printing – interior and exterior or exterior only. Hundreds of glass processors around the world have been equipped with the technology and tools to provide architects with the full solution, in order to achieve the required performance and of course, the right aesthetics.

Screen printing

Screen printing is the ideal solution when creating traditional and repetitive patterns for a bird-safe environment. Ferro provides glass processors with two solutions. The first comprises specially developed side one inks, which are intended to be applied on the exterior side of glass and are

designed in a way that would allow the ink to resist harsh conditions of the outdoors.

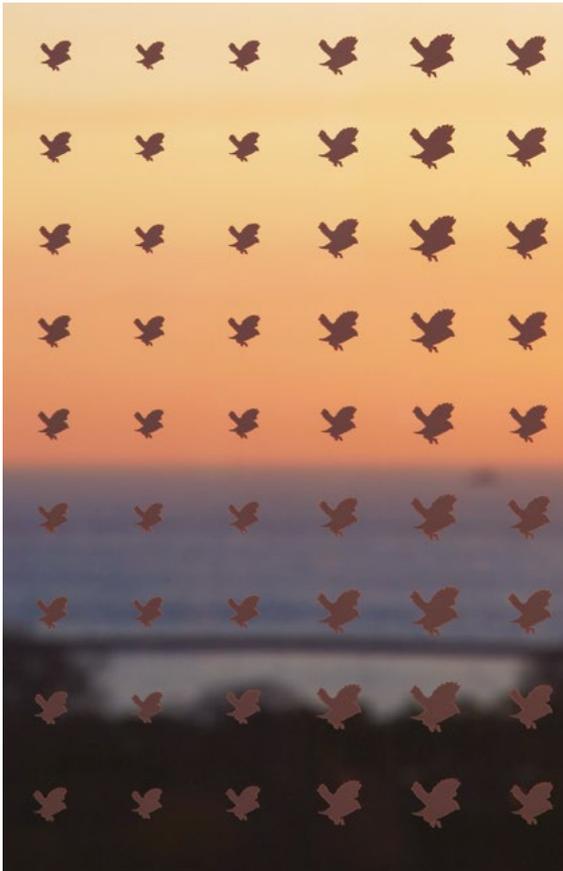
The second solution is UV print. Unlike humans, birds have a fourth cone in their eyes which allows them to see UV. Therefore designs can be applied using UV semi-transparent ink – more visible to birds but less so to people. UV inks are applied with three or five layer applications. A three layer coating reduces UV reflectance by 40%, with a 55% improvement using the five layer process.

Digital printing

Digital printing on glass delivers endless design possibilities, while fully protecting the birds. Similar to inkjet printers, the glass is placed into the machine and jets apply the ink. This is intended to offer a fast, accurate and cost-effective solution, especially for graphics that contain a more complex design, more colours or a non-repetitive print throughout the panels

Research shows that birds perceive colours, which means patterns that are colourful and random will likely decrease the amount of collisions. Those inks can be applied on the inner sides of the glass (side two); however side one print remains the most functional solution.

Fortunately side one inks are also available in the digital world, allowing for complex designs to be printed on the outside surface. Just as a screen printed ink, this high performance solution reduces the glare and



A close-up look at Columbia College's bird-safe glass.

reflection on the glass, creating a much safer barrier for the birds. Design possibilities are endless and are easily adaptable to the required standards.

A prime example of the efficacy and beauty of digital printing on glass is at Columbia College in Chicago. The design of the facade had to meet the approval of the Commission on Chicago Landmarks, while also being bird safe. It features a recreation of the image of the original terra cotta facade using a dot matrix pattern, with 'dots' that are actually small graphics of a bird combined with printed dots on the outside following the two x four rule of the American Bird Conservancy. The result has been a staggering 80% reduction in bird collisions.

Partners in creative design and bird safety

The combination of Dip-Tech's digital printers and Ferro-Dip-Tech's specially formulated external and internal inks ensures that architects and building facade designers are bound only by imagination and desire. Dip-Tech's digital glass

printing technology or Ferro's screen printing solutions can be used on both the interior and the exterior surface facades of buildings, located in even the most punishing of climates for complete durability and functionality. Any building facade design can be accurately printed on glass in a range of colours.

Dip-Tech and Ferro's architectural team has advised on bird-safe projects around the world, providing support, ideas and practical solutions for architects who are rehabilitating old buildings or designing for new construction. Furthermore in co-operation with the American Bird Conservancy, the companies offer a complete catalogue of bird-safe patterns for general use. ●

About the author:

Eyal Porat is Chief Architect at Dip-Tech

Further information:

Dip-Tech, a Ferro company,
Kfar Saba, Israel
tel: +972 9 790 8400
email: eyal.porat@ferro.com
web: www.dip-tech.com

SWISS SCREEN TECHNOLOGY 

SCREEN MAKING



**BOOK
A LIVE
DEMO!**

AUTOMATION

Today, screens must be manufactured in a reproducible and cost-efficient manner at optimal quality. Only then will you be better than your competitors.

Grünig

**STRETCHING
COATING
WASHING**

Simulation theory becomes reality

Intent on revitalising the standard of glass furnace modelling, technology specialist CelSian has made the most significant upgrade to its GTM-X simulation software in more than a decade, reports Harmen Kielstra. The company's latest release offers special features for the glass industry, including an enhanced user interface and an advanced method of determining glass quality.

CFD modelling stands for Computational Fluid Dynamics; this is a mathematical simulation of all fluid flows in the melting tank. With today's computer power it has become the standard for almost any new rebuild and has become very important as a tool to solve quality problems during the furnace campaign. CelSian's latest GTM-X glass furnace modelling software is the most advanced type of CFD software available to the glass industry.

Apart from a few minor bug fixes, the company's latest release offers additional features for the glass industry. The GTM-X user interface is further upgraded, as well as its capability to model precisely the aspects of the glass melting process which are important for daily production. Early test users have deemed the bubble size distribution model 'the holy grail' of furnace modelling.

Enhanced grid generation

CelSian has fully switched to Pointwise as the grid generation tool for GTM-X. Pointwise is one of the leaders in CFD meshing and has many features to ensure that generating a furnace grid in GTM-X is quick and easy.

A CAD file (drawing of the furnace) can be uploaded and used as the

blueprint for setting up the computational grid. It has an intuitive interface to manipulate and interact with the grid and contains options to analyse and improve the grid quality.

User interface and visualisation

In GTM-X, the user is now intuitively guided through the set-up of the simulation by hiding/showing only input options that are relevant for the model the user is working on. Figure 1 shows the GTM-X user interface while looking at model results for the batch blanket only. Customers trialling the user interface have reportedly been very enthusiastic about its ease of use and the immediate feedback it provides.

Visualisation options have been added to GTM-X to enable the user to monitor and visualise a running GTM-X simulation. These range from a residual plot to a 3D visualisation of the batch blanket shape and flame shape that updates as the simulation progresses.

High precision simulation

The modelling capabilities in GTM-X have been further extended with a bubble size distribution model and an advanced fining model, which can be fully coupled. The bubble size distribution model simulates the transport of bubbles in the glass melt. This feature offers the most precise method of predicting product quality. The bubbles are transported by the glass melt flow and additionally experience an upward buoyant force, mainly depending on their diameter, content and the viscosity of the surrounding glass. The advanced fining model, in combination with the prediction of bubble number and size offers enhanced levels of precision in simulation (see figure 2). Glass quality is now part of the furnace simulation and helps glass manufacturers to fine-tune process settings for higher yield levels. This type of simulation for the glass industry has been validated by multiple real life furnace measurements.

When applying the two models in combination with the flow and temperature distributions in the melt, GTM-X provides a powerful model for determining the amount of bubbles and their average diameter/composition at the end of the melting process.

Effects on seed/blister count of the following changes can be determined:

- Effects of changes in glass composition:
 - bulk composition.
 - redox state.
 - amount of fining agents.
 - cullet fraction.
- Effects of process changes:
 - pull rate.
 - boosting/gas ratio and distribution.
 - bubbler settings.
 - stirrer settings.

User meeting, April 2021

With these latest developments, CelSian is proceeding to increase the impact that computer modelling is making on the daily production of glassmakers. The value is proven by the successful

KSK
PTA MACHINES

We produce a wide range of PTA surfacing machines used in the glass industry.



Plasma weld surfacing automatic machines for overlaying of parts from face or onto the circuit (centring rings, **mouth moulds, bottoms, plungers** etc.) by PTA method with powder.

In-house surfacing and complex technology support.



+420 605 253 542 kskct@kskct.cz www.kskct.cz



Figure 1: GTM-X visualisation of the batch shape during the simulation.

application of GTM-X in solving a wide range of production issues, the user feedback CelSian receives, along with the increasing number of users.

Software at CelSian is continuously being developed with direct input from glass manufacturers and the current, recently introduced models have been validated by leading glass manufacturers.

Following the release, CelSian will provide an open training course for its GTM-X users. The course will take place during the week commencing 19 April 2021 at CelSian in Eindhoven, The Netherlands. Customers will be invited for this training course or can respond to this publication. ●

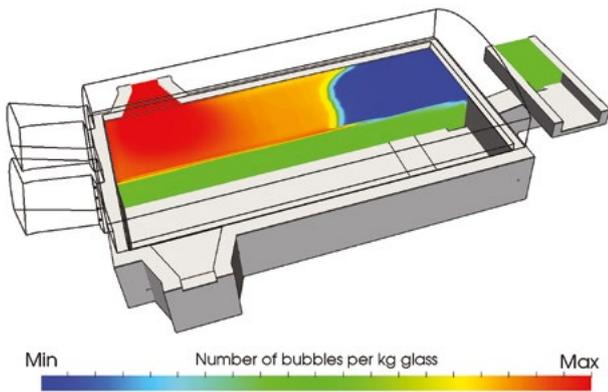
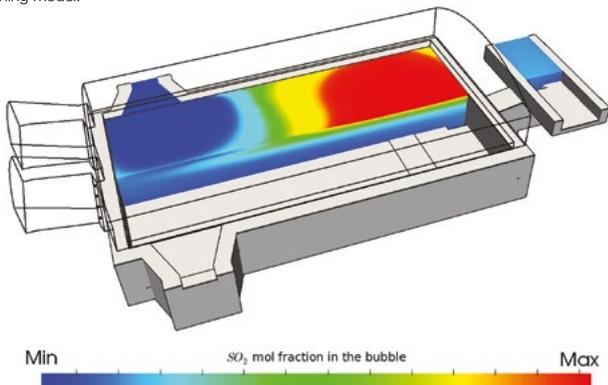


Figure 2: The number of bubbles per kg glass (above) and the amount of fining gas (SO_2) (below), showing the rapid decrease of the number of bubbles in the fining area where a lot of SO_2 is produced. These results show the strong coupling between the BSM and the fining model.



About the author:

Harmen Kielstra is Managing Director of CelSian

Further information:

CelSian Glass & Solar BV, Eindhoven, The Netherlands
 tel: +31 40 249 0100
 email: infodesk@celsian.nl
 web: www.celsian.nl



ON-SITE GAS GENERATION SYSTEM FOR A MORE COST-EFFECTIVE AND RELIABLE SUPPLY

At HyGear, we succeeded in downscaling highly efficient hydrogen generation and recycling systems to a scale that matches your needs in your glass manufacturing process.

We differentiate ourselves with our cutting-edge technology. In order to guarantee the reliability of supply, we offer back-up with our own fleet of trailers and through our global partners.

Our approach is unique because of our strong technology backbone and the way we partner with you as our customer.

OUR PROMISE



COST SAVINGS



RELIABLE SUPPLY



INCREASED SAFETY



CO₂ REDUCTION



NO SURPRISES



GLOBAL SUPPORT

Contact us today to find out how.
 Europe: +31 88 9494 308 | sales@hygear.com
 Asia: +65 6909 3064 | asia@hygear.com
www.hygear.com

Refining the ride for float glass transportation

The latest conveyor technology from Grenzebach aims to increase the productivity of float glass plants. Peter Seidl explains how the company's specially developed drive train and collaboration app will keep glass moving smoothly and efficiently.

Operators of float glass plants want continuous production 24 hours a day, 365 days a year. Conveying technology is the connecting element in a float glass plant. Provider of automation solutions for the global glass, building material and intralogistics market, Grenzebach is committed to transporting glass gently and safely.

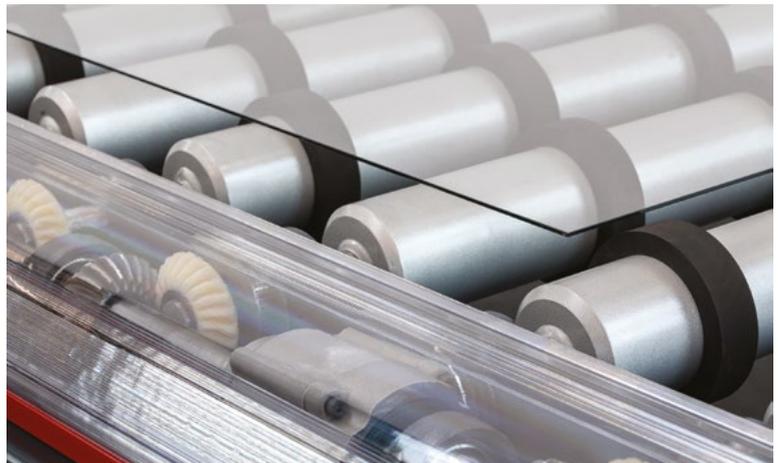
"Every hour of standstill costs the operators of glass plants immense money" emphasises Markus Schmid, Senior Manager Mechanical Concept Engineering at Grenzebach. "With our new generation, we are once again increasing the availability of conveyor technology and significantly fewer resources are required for spare parts and maintenance."

Advantages of direct drive

Grenzebach's recently developed drive train with direct drive works without the usual belts and drive shafts to provide greater dynamics during transport, increase efficiency and also reduce requirements for spare parts storage and maintenance. "These service-intensive components have been eliminated and are now a thing of the past for conveyor technology" comments Markus Schmid.



To enable smooth and gentle running as well as precise positioning, specially developed bevel gears are used for power transmission to the respective support rollers. Source: Grenzebach.



Access to the conveyor system is possible via a continuous transparent protective cover that offers a clear view of the key components at all times. Source: Grenzebach.



CE-conformal quick release fasteners make the drive train easily accessible. Thanks to a quick lock system, access for maintenance work is easier and faster. Source: Grenzebach.



Taking remote servicing to the next level: Plant technicians can use the collaboration app to receive live graphic overlays on-site. Source: Grenzebach.



The gear unit in Grenzebach's latest direct drive has no belts or cardan shafts. Common motors from different manufacturers can be directly mounted to the transmission. Source: Grenzebach.



Grenzebach's collaboration app makes it easier for the service team to connect to float glass plants worldwide. Source: Grenzebach.

The drive train also makes it possible to use all common motors. Recently developed bevel gears are used to transmit power to each roller for smoother running and more precise positioning.

Clear view of key components

Due to the system's compact design, all components are arranged below the conveying level. Access to the drive train is provided by a continuous transparent protective cover, ensuring a clear view of key components such as gears and shafts at all times.

An innovative lock system allows quick and easy access for maintenance work. Made from a special plastic mixture, the durable protective cover is almost unbreakable – suited to the harsh requirements.

Swift conversion for substantial savings

"The advantages of the new generation of conveyor technology are also open to the operators of existing glass lines" underlines Florian Nagler, Head of Customer Service. "As a competent service partner, we retrofit lines so that they can benefit too."

Provided that the necessary preparations have been made, conversion of a drive to Grenzebach's latest generation conveyor technology can usually be completed in less than three hours. Downtimes due to maintenance work are eliminated and the production yield is increased. Maintenance intervals and scope, as well as spare parts requirements, will be reduced.

Operators' wishes and requests were instrumental to the development of this conveyor technology generation. "As a sparring partner of the industry, an ongoing exchange of ideas to optimise the technologies is just as important to us as optimal support in day-to-day business" says Markus Schmid.

Less downtime, predictable maintenance and thus lower costs: With this focus, Grenzebach supports the further development of systems throughout their entire life cycle.

Collaboration app

In order to solve questions and problems on the flat glass line as quickly as possible, Grenzebach customers can now use the company's collaboration app. "The Covid-19 pandemic has shown us what is possible in virtual ways" explains Florian Nagler. "With the collaboration app, we can provide customers all over the world with practical help directly at the plant, in addition to our existing service channels."

Key functionalities include not only the classic communication channels via chat, audio or video call but also the option to use a graphic live annotation to incorporate specific notes and comments directly into the situation on-site.

"In the future, we will have our eyes and ears directly on our customers' systems and will be able to provide even more extensive, targeted and better support" Mr Nagler concludes. ●

About the author:

Peter Seidl is Head of Product Management Business Unit Glass at Grenzebach

Further information:

Grenzebach Maschinenbau GmbH, Asbach-Bäumenheim, Germany
tel: +49 906 982-2000
email: info@grenzebach.com
web: www.grenzebach.com



Bock

Electrical melting in perfection

- Engineering and modelling for boosting systems
- Water-cooling Systems for electrode holder
- Electrode holder for bottom / side / top
- Power regulation / Transformers

Special services



- Hot drilling
- Change of electrode holder



Bock Energietechnik GmbH
Gösen 15
92685 Floss
Germany

www.bock-energetec.de

Letting the customer take control

Allowing customers to choose a scaleable and expandable process control system best-suited to their specific requirements is the way forward, according to Eckard Eberle. Here the CEO of Siemens Process Automation discusses future-proof hardware platforms and software systems for maximum investment protection.



Eckard Eberle is CEO of Process Automation at Siemens.

Nobody wants to be operating process plants manually and reading measured values on-site in the manner employed in the first half of the 20th Century. And fortunately industry is also beyond the phase that began in the 1960s, where pneumatic or electrical control equipment measured certain values electrically and transmitted them to a predecessor of the modern control room.

The introduction of the microcontroller 10 years later meant that it was possible to automate processes for the first time. A central control unit was able to perform actions autonomously, for example by evaluating certain process states and then initiating the appropriate measures.

Distributed systems then followed a few years later. Together with its customers, over recent decades Siemens has developed process control systems into central and fundamentally important data and information hubs within production, as well as between production sites and various enterprise levels.

High system availability, few unscheduled downtimes, easy maintenance and above all, investment protection – these are the key ingredients to ensure that production is profitable, innovative and fit for the future. Siemens offers



Siemens has over 20 years of experience in the process control market and is confident of further product developments and innovation.

customers in all areas of the process industry a broad product portfolio, which is of course modified and extended over time and adapted to the growing challenges of the industry.

Leading the way

The focus is now on the digitalisation of the industry and use of the digital twin as a lever for increased productivity and added value. At the same time, Siemens is ensuring easy plant operation, fast and secure data access; flexibility,



The Simatic PCS neo web-based system with integrated multi-user capabilities offers companies in the process industry an efficient new way of working.

scalability, a high level of process safety and short response and failure times.

For all of these tasks, the ideal control technology is supplied in the form of the Simatic PCS 7 process control system, currently on version 9. Through the continuous expansion of the system and the integration of solutions such as Comos in plant engineering, Simit for simulations and the implementation of the digital twin, Siemens is ensuring that Simatic PCS 7 remains a leading process control system.

Reliable communication using Profinet supports the integrated diagnostics, monitoring and evaluation of process-related data, which is essential for plant operators in the era of big data. Automatically initialised field devices and highly scaleable peripherals complete the Simatic PCS 7 range.

What next?

The next question is what the future holds for process control. The trend is towards disruptive ecosystems and networked platforms, which ensure reliable data exchange and protected access to plants worldwide. Siemens is ready to support this development on the one hand with the latest version of Simatic PCS 7, which is sure to be around for many years.

On the other hand, with Simatic PCS neo the company has introduced a system software that offers companies in the process industry distinct opportunities in the age of digitalisation; a fully HTML5-based (and therefore web-based) control system with integrated multi-user capabilities.

The completely web-based system and the multi-user concept for engineering and operations offers customers an innovative, efficient way of working. Via a protected internet connection, users have direct and secure access to all relevant information, making it possible for them to work in parallel on projects worldwide. A central, object-oriented data management solution guarantees data consistency and fast, secure decision making. With a single workbench for all disciplines and its intuitive GUI, Simatic PCS neo can also be operated easily on mobile devices.

Thanks to flexible scalability, it is suitable for the smallest applications as well as for world-scale plants. Process modules can also be integrated efficiently into existing systems. With its flexible licence model, Simatic PCS neo offers additional transparency and cost-effectiveness and reflects the latest standards for modern software licensing. This is supported by the 'my Simatic PCS neo' web platform, which offers another world of information management for the entire project and plant life cycle.

Customer support

What do these developments mean for users and for the future of process control? On the one hand, the systems are scalable and expandable; on the other hand, customers choose. The choice of process control system is left to the user, depending on their specific conditions and issues.

For example, is it a greenfield or brownfield approach? Which system does the user already have? What plans – including in terms of investment – does the user have for the future? Siemens been supporting customers for over 20 years, guiding them through the digital transformation and will remain by their side in the future, meeting all possible challenges with appropriate innovations. ●

About the author:

Eckard Eberle is CEO Digital Industries Process Automation at Siemens

Further information:

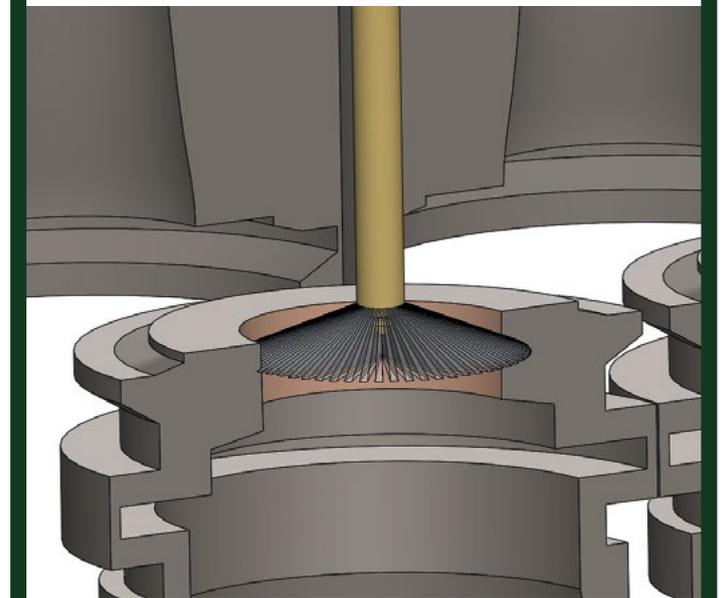
Siemens AG, Karlsruhe, Germany

tel: +49 721 5950

web: www.siemens.com/simatic-pcs-neo



MOULDS & NECK-RINGS INDEPENDENT SWABBING



THE UNIQUE SMART LUBRICATION SPRAY

administration@novaxion.fr

+33(0)4 90 95 41 86

www.novaxion.fr



Thermal imaging hot's up

The ability to extract and analyse data from critical locations is essential for efficient control and optimisation of the glass melting process. Philippe Kerbois and Neil Simpson demonstrate how the latest infrared temperature measuring equipment is being used in oxy-gas borosilicate furnaces to optimise production and quality.

Ensuring consistent temperatures and thermal profiles in glass melting tanks is an essential part of maintaining high quality glass production and extending the campaign life of a furnace.

Within the furnace, there are a variety of temperature measurements that can be taken in different locations and it is important to be able to trend temperature measurements at points such as the crown, ports and burner blocks. Also, temperature visualisation of cold spots should be carried out in the refractories as a precaution against air leaks typically caused by structural issues or the condensation of volatiles.

The latest technology, including the Near Infrared Borescope (NIR-B) in-furnace thermal imaging system developed by Ametek Land, has taken the glass industry to another level of understanding of glass furnace operations. This is true for many end-fired or cross-fired regenerative furnaces where glass producers have demonstrated the potential of using data obtained from the NIR-B to further develop controls to meet the needs of Industry 4.0 and the optimisation of furnace processes.

NIR-B provides a true-temperature radiometric image, enabling live continuous temperature values to be obtained 24/7 from >324,000 pixels (and three million pixels with the latest high definition NIR-B-2K).

Utilising ImagePro software, it is possible to measure the temperature of the melt line, the batch coverage and batch transit time for recording and comparison.

The NIR-B delivers many benefits that ensure a short return on investment including:

- Thermocouple verification.
- Thermal profiling with hot spot locations.
- Air ingress and batch control.
- Combustion optimisation for energy efficiency.
- Emission optimisation.

Oxy-gas furnace project

Following a rebuild in 2019, glass packaging manufacturer SGD Pharma installed an Ametek NIR-B in-furnace thermal imaging system on its furnace in St Quentin Lamotte, France, to replace its existing CCTV system. The company's 50 tonnes/day oxy-gas furnace is dedicated to the production of borosilicate glass for pharmaceutical packaging.

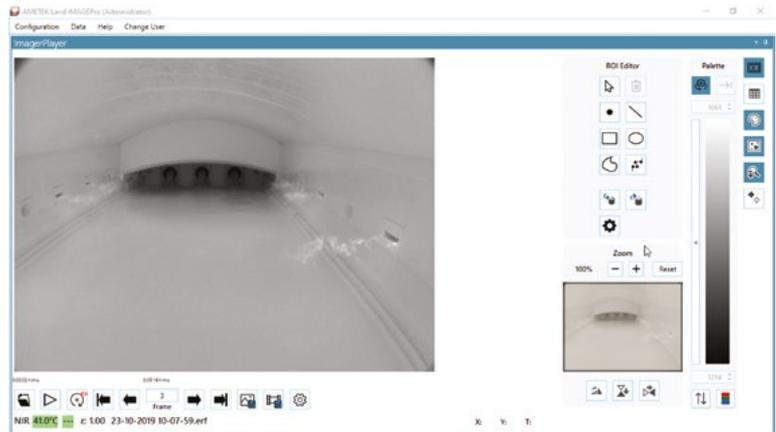
The original purpose of the system was to obtain clear higher resolution images to monitor batch line/ flow and improve the setup of the batch line. There is an inherent risk of damage to oxy-fuel burner blocks in oxy-fuel furnaces when borate condensate/run-down can start to deflect the flame and potentially damage the burner blocks.

Utilising an over-temp alarm function, it is possible to include the monitoring of hot spots and burners. Receiving temperature data from the NIR-B with additional thermal profile data to improve the overall

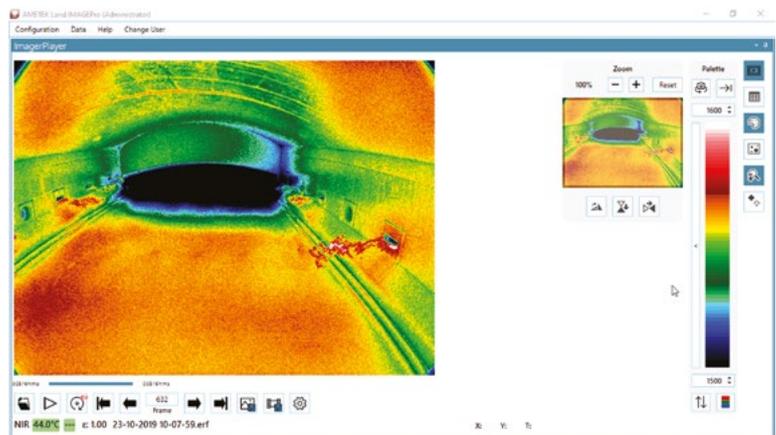
efficiency of the process was essential for SGD Pharma.

Benefits of using the NIR-B for daily operation in an oxy-gas furnace include the combustion

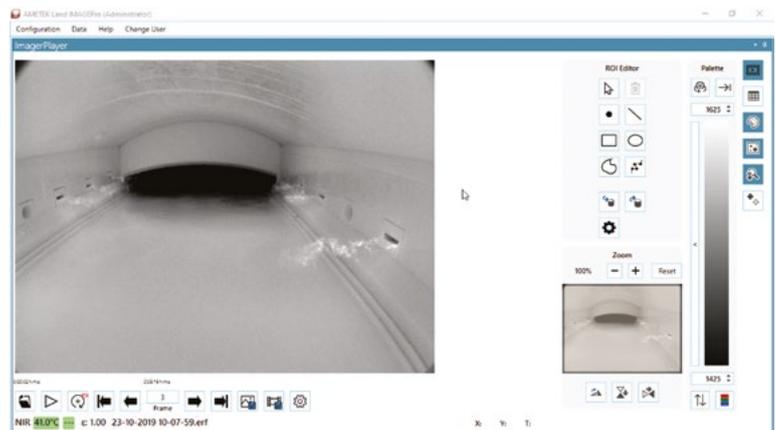
side for flames' heat deflection to prevent overheating. Since there are no regenerators with a reversal, the solution allows long-term data trending for flames optimisation, ▶



Black and white NIR-B thermal image. NIR-B offers the operator the same views as a typical CCTV system.



An NIR-B thermal image.

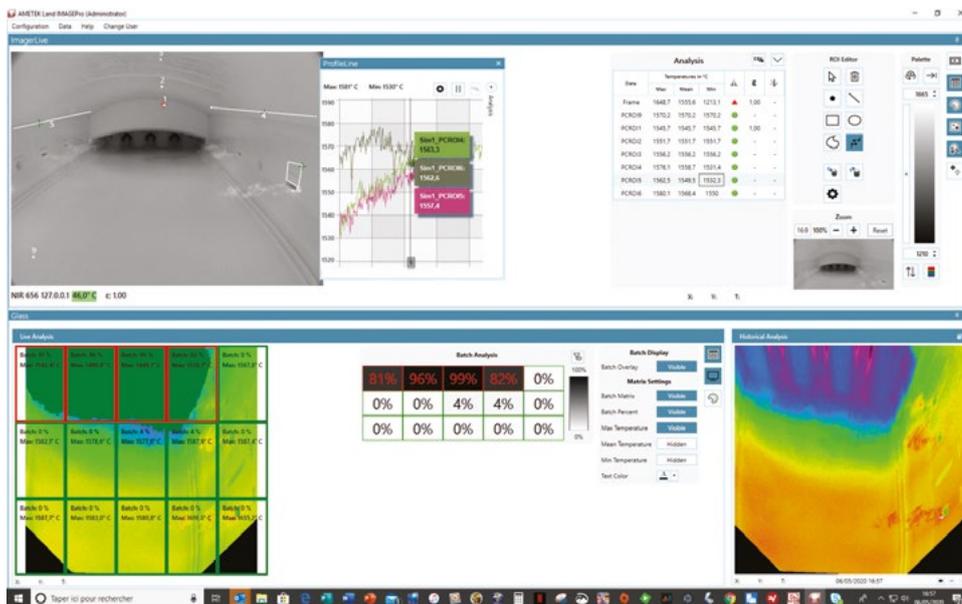


Lower temperature band 200°C greater resolution shows run-down on the L4 batch line is skewed and longer on LHS.

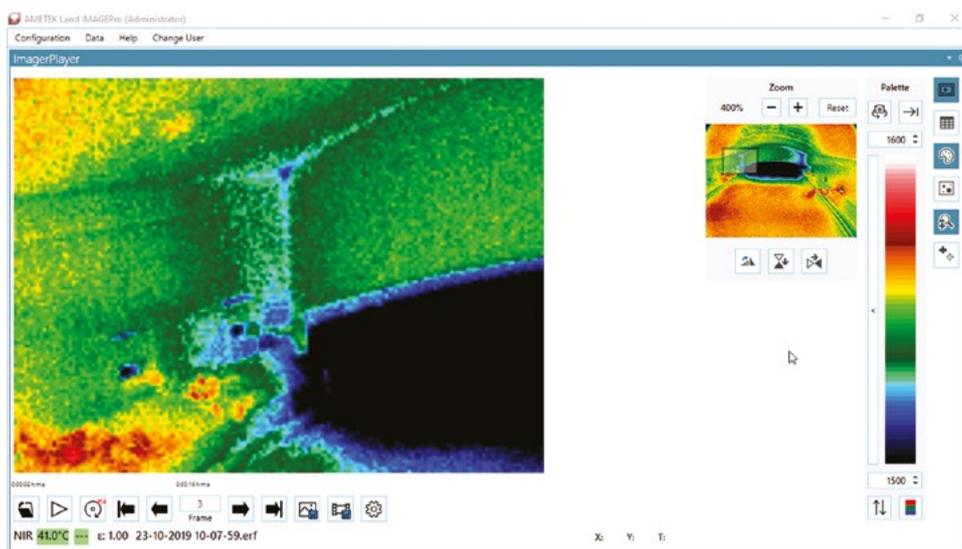


WHEN QUALITY MATTERS

www.parkinson-spencer.co.uk



Batch line location and thermal profiling with Ametek's ImagePro software.



Crown 400% above R2 is hotter.

plus it enables thermal optical profiles to be measured continuously, which is ideal for oxy-gas borosilicate furnaces with continuous operation.

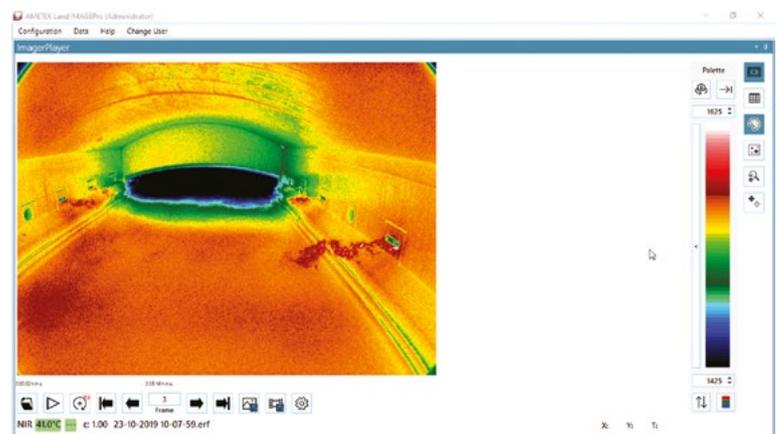
SGD Pharma has used its latest infrared temperature measurement equipment to highlight best practices within a glass melt tank, enabling the company to make necessary repairs and then optimise flames to achieve desired pull rates.

Isotherms provided by the NIR-B tool are highlighted to show cold and hot locations. Alarms and temperature isotherms also provide the manufacturer with long-term asset protection against over-heating and condensation zones. On the firing side, burners block cleaning and inspection will be shown as the flame risk of impact on refractories.

At this stage at SGD Pharma, there is no direct data exchange for thermal zones of interest to the DCS (Digital Control System) of the furnace or to a system for optimisation. This is a potential future option for SGD, as the NIR-B is already able to collect temperature data based on 100 zones of interest and send all the data to any DCS or expert systems.

Implementation on borosilicate glass furnaces

In the past, the implementation of CCTV for an oxy borosilicate glass



Rainbow palette RHS glass flow is hotter than LHS cold spot in the crown skew corner – cold spots on tuck stone joints.

furnace was always a challenge due to the highly aggressive furnace atmosphere. Clearly, this is a harsh environment, often resulting in blurry images and inconsistent measurements or videos.

However when using the NIR-B a clear image is visible due to the high quality of the lens. Proper installation is essential for robustness and dedicated infrared shields have been created for the protection of the NIR-B's retraction mechanism against the infrared radiation coming from the whole camera block and the glass working zones around the instruments.

The most suitable location for installation on a small furnace is above the throat in the centreline of the furnace to provide a good field of view of the refractories including crown, sidewalls, burner blocks and batch line.

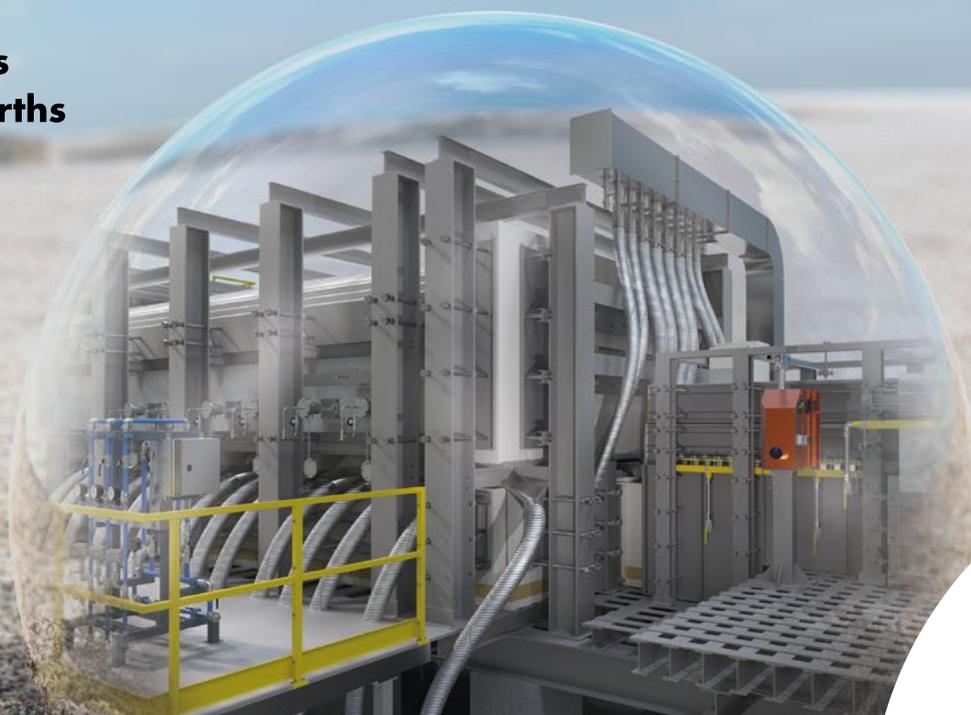
Optical measurement and batch flow focus

Accurate and repeatable temperature measurement is essential for efficient control and optimisation of glass manufacture and processing. This is even more critical within oxy-gas furnaces where the temperature of the flame is significantly hotter – measurements are typically performed only at critical locations. Point measurements can be obtained using thermocouples, either embedded in the walls or intermittently by using a hand-held portable infrared (IR) pyrometer.

Focusing on visual images, operators can forget that there are 320,000 thermocouples with temperature data that can be used to optimise the furnace and validate CFD models. Ametek Land's software enables points of temperature measurement to be exported to a ▶

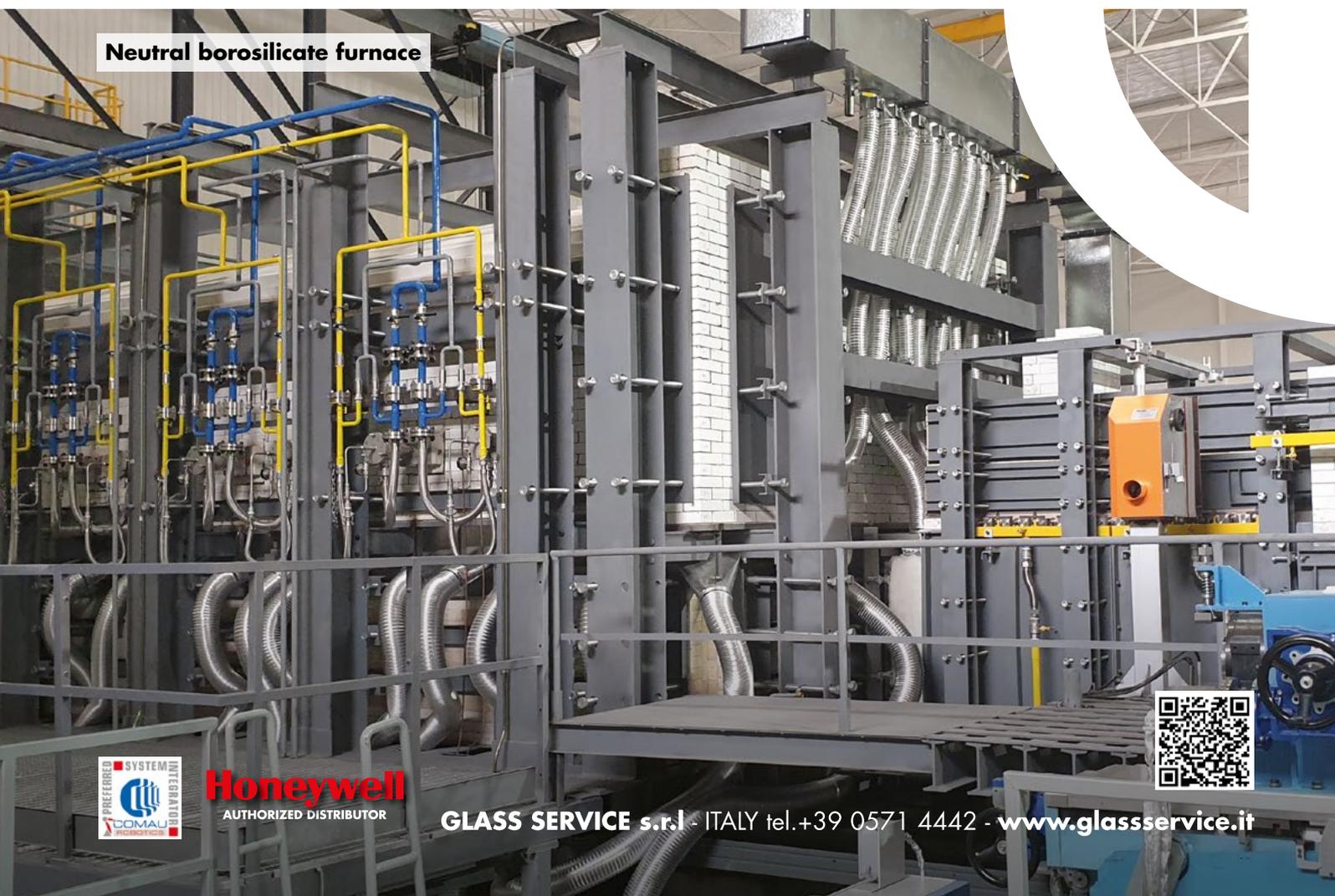


**Furnaces
Forehearths
Robotics**



SOLUTIONS FOR THE GLASS INDUSTRY

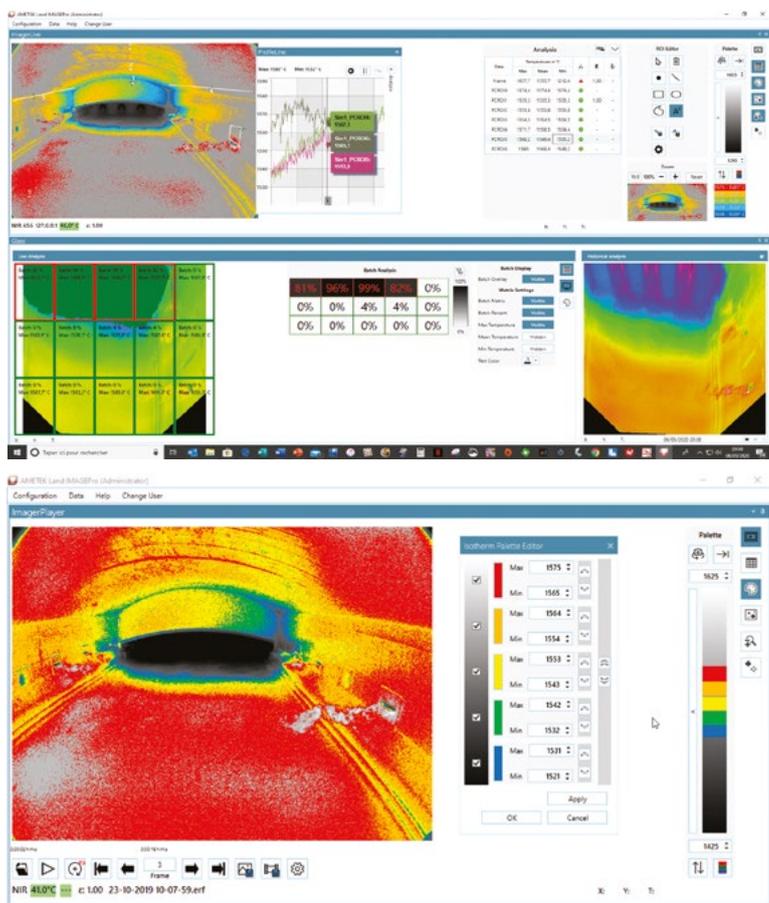
Neutral borosilicate furnace



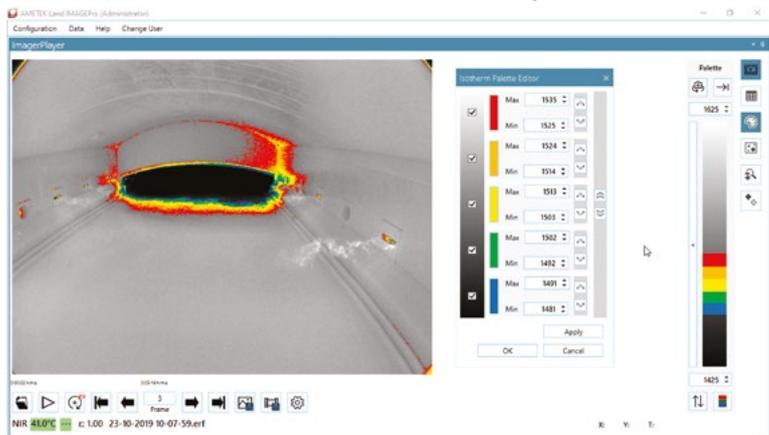
Honeywell
AUTHORIZED DISTRIBUTOR

GLASS SERVICE s.r.l. ITALY tel. +39 0571 4442 - www.glassservice.it





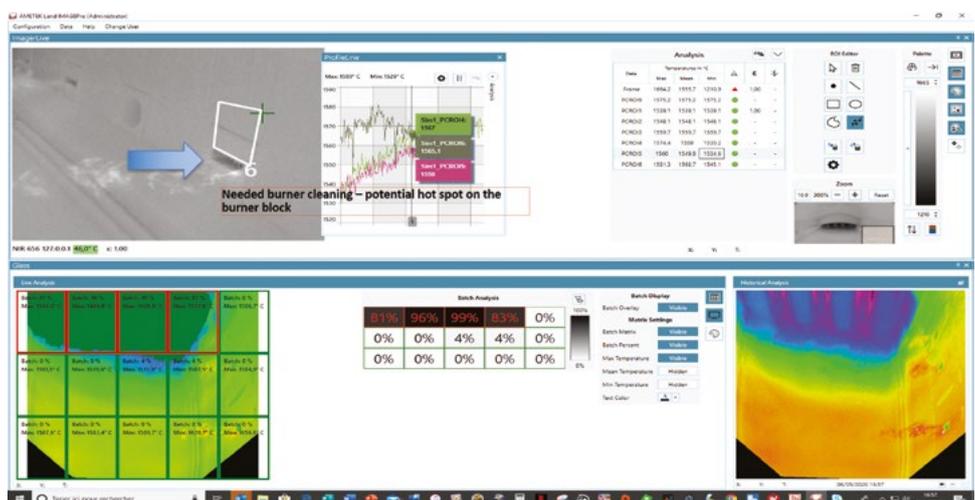
Above: B&W plus isotherms shows RHS hotter; possible crown overheating above R2.



Refractory cold spots.

furnace control system.

By setting minimum or maximum temperature, it is possible to have an alarm function. When an alarm is triggered, a snapshot is taken of the whole image and stored for future analysis. An 'area' function of the software also enables multiple areas to be configured. Examples could include the crown, port/target wall, tuck stones, breast walls and skew line. In some applications the corresponding crown thermocouple location temperature is measured within the image to verify the accuracy of thermocouples, which decay and ultimately fail through time.



L4 block 300% zoom. The last frame shows the hottest part on an L4 block.

The most important initial benefit of the NIR-B is the ability to obtain a furnace thermal profile continuously in oxy furnaces and confirm that hot spot locations are well aligned with the furnace design and batch line. This is probably the most powerful tool from an operation's perspective.

By drawing profile lines at desired points such as crown and/or skew, it is also possible to obtain a thermal profile continuously.

Batch patterns

Batch flows are initially impacted by charging control and potentially the flames. However, flow patterns are driven by the thermal flows/convection currents. In the same way that heat flows from hot to cold, thermal currents follow the same thermal vectors.

The primary purpose is always looking at the batch pattern. Time-lapse recording can be used for reviewing batch flows as a conventional CCTV. Ametek's ImagePro software provides batch coverage based on a grid with rows and columns for better batch tracking.

Since the image is based on thermal data, it is possible to add areas and apply alarms if the cold batch reaches a certain point. Whenever an alarm is triggered, the image is recorded for QA and troubleshooting purposes.

By utilising a specific thermal palette and adjusting temperature bands, it is possible to identify which flames and which blocks are the most intense or hottest, therefore generating the optimal flames pattern and heat transfers.

From an asset protection perspective, one of the most important analytical tools is the negative image, which can be instantly displayed. This function shows the areas with the greatest cooling. Utilising an up to 400x zoom function, the NIR-B can accurately determine the relative location of the small hole and assist in determining its absolute location. It could also be employed to identify over-cooling of the metal line, which leads to increased wear due to the Marangoni effect [mass transfer along an interface between two fluids due to a gradient of the surface tension] and cold batch piles scraping along the furnace length.

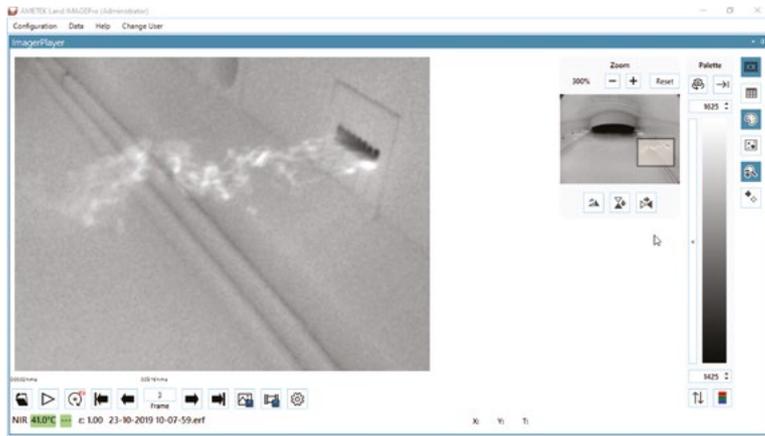
Data analysis

One of the challenges of the NIR-B system is the massive amount of data captured and how it should best be interpreted. While it is suggested that operators use some of the functions in real-time, other functions are better suited to off-line analysis by batch and furnace managers. ▶

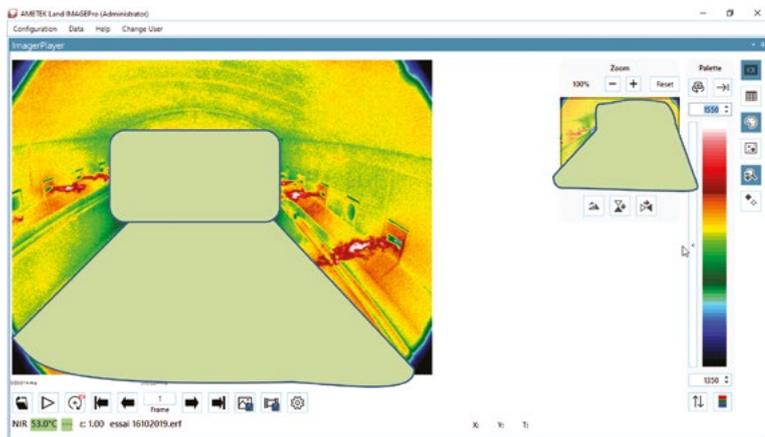


SAFE COMBUSTION SYSTEMS? Yes, of course! We specialise in that!

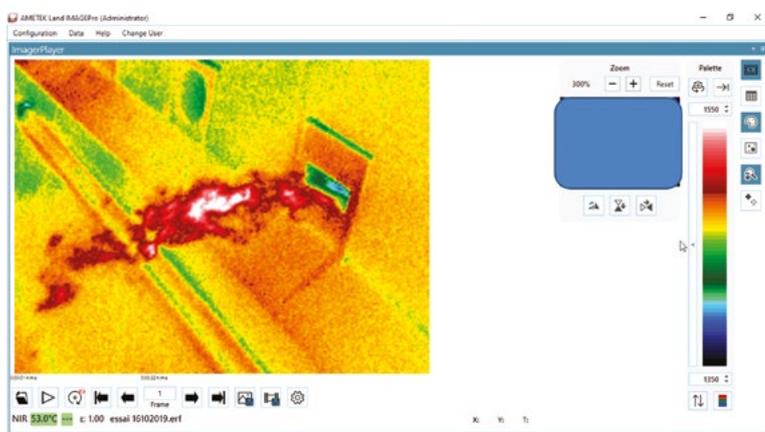
Design and delivery of demanding combustion systems that exceed the most rigorous safety standards, including EN 746-2.



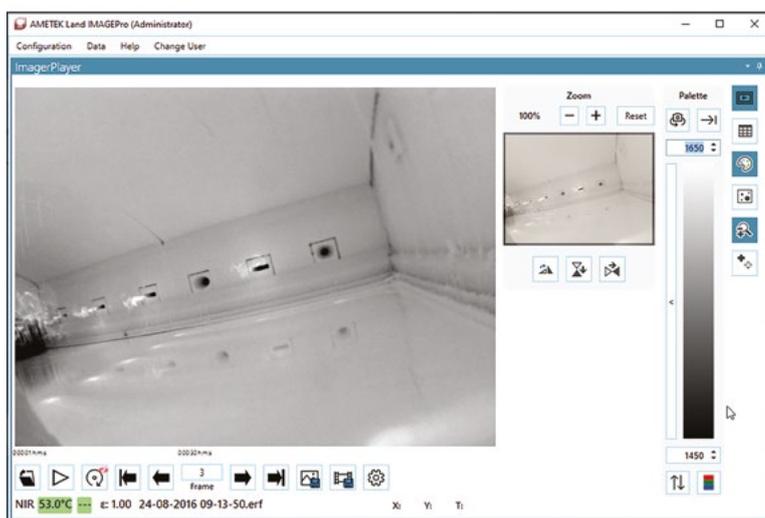
Continued operation will most likely see damage to the L4 block on the bottom downstream corner.



Furnace heat-up at the start of a fill.



Heat-up fill showing early damage on L4.



Survey mode with transportable NIR-B via an existing peephole.

It is suggested that every day at given times, snapshot images are taken of the furnace. It is then possible to compare data from 24 hours, one week, one month, three months, six months and 12 months previously to identify short-term problems and long-term changes in the asset. With this data, it is possible to prepare a long-term preventative maintenance schedule and more importantly, a short-term reaction.

Isotherms for hot and cold spot locations

By utilising a specific thermal palette and adjusting the temperature bands, it is possible to identify refractory temperatures to see which flames and blocks are the most intense or hottest, therefore generating the best suitable flames pattern and heat transfers.

Burner block Inspection

The NIR-B zoom enables the identification of potential refractory damage, especially on burner blocks requesting actions for cleaning or repair.

Furnace heat-up

The NIR-B is a powerful tool during heat up in which to review the expansion and gain reference images of the melt tank before and during filling. See some snapshots from the existing location above the throat are presented as part of this article.

Survey mode from existing peep holes

A transportable NIR-B model is available, providing the possibility to use the tool temporarily for thermal surveys. In addition, a thermal survey has been undertaken to explore other locations in the furnace. Available peepholes are used and snapshots of the refractories taken, revealing many other details on flames, batch pattern, electrical boosters and glass temperatures.

Conclusion

Data from the NIR-B was used at SGD Pharma to reduce labour input, improve response times, identify and then troubleshoot furnace operations to improve yield or achieve higher pull and lower specific energy. Utilising 32in LCD monitors could be the best way to achieve a clear furnace image that could become the focus of attention of the operators' team and during customer visits.

While this should result in increased asset life, it has helped support the team with the potential for future energy optimisation and cost reductions. What can clearly be seen is that temperature measurement at critical locations in the production process is essential for efficient control and optimisation of the glass melting process and today, the technology to enable glass producers to do this is better than ever. ●

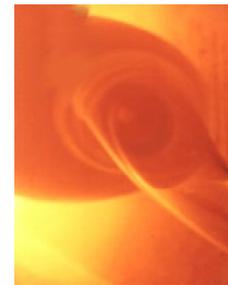
About the authors:
 Philippe Kerbois is Global Industry Manager – Glass at Ametek Land. Neil Simpson is an Independent Consultant – Combustion, Energy and Glass at Simpson Combustion and Energy Ltd

Further information:
 Ametek Land, Dronfield, UK
 tel: +44 1246 417691
 email: land.enquiry@ametek.com
 web: www.ametek-land.com

VMA



Wherever glass is made.



VMA GmbH

Graefinauer Strasse 2, 98693 Ilmenau, Germany

Phone: +49 36 785 58 70

info@vma-online.de, www.vma-online.de



gallus

A Heidelberg Group Company

Perfect Team Per4mance.

The perfect solution for Flat Screen Printing

Flat screen printing reaches a new level. Gallus combines Screeny screen printing plates, Phoenix UV-LED imagesetter, a development system and an ingenious frame system into a unique complete solution. All together leads to first-class and reproducible printing results in just a few simple steps.

Fab Phoenix



Flex Frame



Captain Screeny



Dr. Develop



www.gallus-group.com/en/screen-printing/flat-screen-printing



Using smart sensors to deliver powerful results

Data is power but only if the data is accurate. Andreas Helfenstein and Martin Grönblad detail how smart sensors developed by Bucher Emhart Glass allow automatic adjustments and process improvements that can translate into significant time and cost savings.

GobRadar checks each gob immediately after the shear cut, registering parameters such as weight, temperature, angle, position, trajectory, length, diameter and so on. The user can view continuous analysis in real-time, enabling monitoring and traceability right from the start. Emerging trends can be spotted as soon as they arise and the process overall is made much more stable.

The shape of the gob can be compared to a previously saved 'best' shape, which helps to reduce time spent on job changes. The system also supports multiple weights, making job changes even faster.

With closed-loop control, process adjustments can be made automatically based on live measurements of each gob, rather than merely each time weight is measured manually. That reduces the demand on the operator and makes for increased efficiency.

Gob loading

Problems with gob loading can sometimes be at the root of defects. However, the aim is usually to rule it out as a cause. BlankRadar provides valuable information on the gob loading process, reducing human-machine interaction to safeguard operators' wellbeing.

Blank cooling control

FlexIS blank cooling control works with BlankRadar or TCS to keep blank mould temperatures within a tightly defined band. Using machine-controlled individual cavity cooling frees up operators from permanently monitoring and adjusting up to six cooling valves per section.

Plunger process control

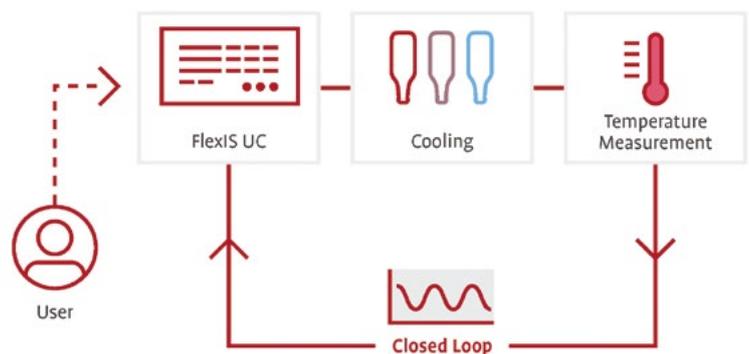
The Plunger Process Control System, or PPC, monitors individual plunger motions during the NNPB and PB parison forming process. The system uses full stroke sensors and a method to eliminate cabling in the plunger mechanism. PPC controls gob weight automatically, using closed-loop technology to adjust tube height and individual plunger needles in the feeder. The display shows the full plunger stroke profile by cavity, allowing press time and plunger up profile to be optimised. Profiles can be stored electronically.

Plunger up control

FlexIS plunger up control was the first closed-loop system introduced by Emhart Glass. Along with plunger process control (PPC), it helped to make the pressing process in press-and-blow far more stable.

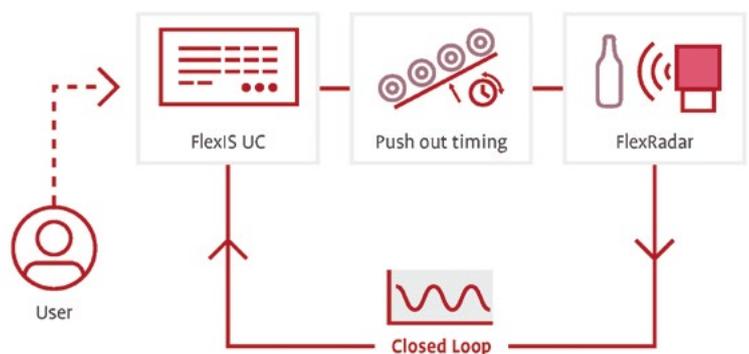
Plunger up control makes automatic adjustments to achieve up to three distinct pressure steps during the pressing process. These steps are essential to manufacture certain items – but almost impossible to achieve and maintain with manual adjustments.

FlexIS Blank Cooling Control



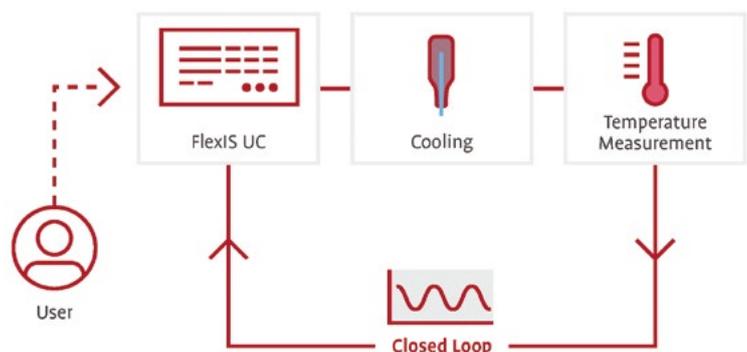
FlexIS blank cooling control keeps blank mould temperatures within a tightly defined band.

FlexIS Bottle Spacing Control



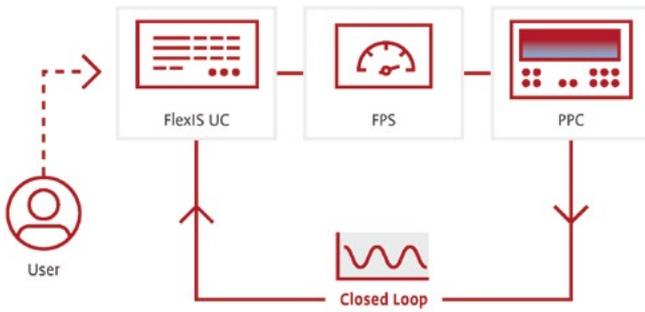
Bottle spacing control ensures that ware is equally distributed on the conveyor.

FlexIS Plunger Cooling Control



The Plunger Process Control System monitors individual plunger motions during the NNPB and PB parison forming process.

FlexIS Plunger Up Control



Plunger up control makes automatic adjustments to pressure steps during the pressing process.

Plunger up control has since been installed in many glass manufacturers' production lines worldwide.

Forming process monitoring

The sooner defective containers can be identified and rejected, less money is wasted on processing unsellable wares. Traditionally, this was a job for trained forming specialists and operators, which often meant a drop-off in quality when they clocked off from their shifts. Now FlexRadar can take over, keeping a watchful eye on all newly formed ware and rejecting any that violate process limits. At the same time, the system also gathers statistics to support further process improvements.

FlexRadar also has the ability to register the average energy radiated from formed containers, which in turn allows it to measure glass mass. Using an interface to the tube, the system then automatically holds the weight steady at the setpoint.

Bottle spacing control

FlexIS bottle spacing control ensures that ware is equally distributed on the conveyor. Using data from FlexRadar, it automatically corrects the push-out angle for each section, as well as other factors, such as pocket air, that are linked to the pushout. When the system is fully integrated into FlexIS, the operator can alter FlexPusher parameters or conveyor offset and the system will compensate to maintain even ware spacing. ●

About the authors:

Andreas Helfenstein is Senior Systems Engineer/Product Manager and Martin Grönblad is Product Manager at Emhart Glass

Further information:

Emhart Glass SA, Steinhausen, Switzerland
tel: +41 41 749 42 00
email: webmaster@emhartglass.com
web: www.bucheremhartglass.com

virtualmarketplace
Connecting the international glass community...
www.glassworldwide.co.uk
glass WORLDWIDE



ELECTROGLASS ALL-ELECTRIC FURNACES

Electroglass has earned a worldwide reputation for technical innovation in the development of all-electric furnaces with exceptionally low energy consumption coupled with high glass quality and flexibility of operation.



A question of balance: Sustainability and profitability

Sustainability is no longer merely an environmental imperative. There are also sound economic reasons for decarbonising. René Meuleman discusses why an Industry 4.0 approach to process control is the key to balancing profitability with carbon neutral goals.



René Meuleman.

The global glass industry is entering a new age of green manufacturing, in which it needs to bring its total carbon emissions down to zero during the next two furnace campaigns. Consequently, that means stepping away from fossil fuels towards alternative, sustainable energy sources; most likely to electrical energy, perhaps hydrogen, bio-fuels, or a combination of these.

This represents a complex change, not only from a technological point of view but also from a commercial aspect. There are many complications to overcome, the bottom line of which is to keep earning money to finance the technological changes needed to secure the business, by managing capital expenditure and specifically operating expense. In the meantime, a new generation of workers is entering the industry, replacing most of the experienced workforce.

The technological shift that needs to be introduced in this new era of glassmaking will in fact have a bigger impact on the industry than the introduction of the Pilkington float or NNPB processes of the past.

Every detail counts

More than ever, the glass manufacturing process will need to look for every tiny improvement that contributes to

revenue and profit; squeezing savings out of every bit of available process flexibility. To support those operational advancements, process control and data analytics will have to adjust substantially. The way energy is paid for will change, the mix of energy used will change and the way energy enters the process will change.

Manufacturers will need to ensure that they are on the lowest possible energy tariffs, fulfilling CO₂ emission targets, maintain manufacturing flexibility and maximising pull and yield, while keeping customers happy at all times.

Glass Industry 4.0

The parameters involved do not necessarily amplify each other by working in the same direction. Typically, each advantage comes with a disadvantage, so the only option is to tweak all parameters in a way that gets the most out of them as a whole. Over the next few decades, the industry faces a huge technology change, during which the most experienced workers will be replaced by enthusiastic but inexperienced youngsters and the manufacturing process will move away from fossil fuel to begin using alternative energy sources. At the same time, it is important to ensure that glass continues to be the preferred packaging material for food and beverages, to make vehicles and buildings more energy efficient and to contribute to a better world. The industry needs to maintain its social licence to operate and this will require utilising the latest digital technologies. Consider this transformation as Glass Industry 4.0.

Data is at the heart of sustainable practices

The development of process control over the last 25 years has resulted in established technology capable of solving the complex balances previously

mentioned. However the traditional approach still tends to treat each part of the process separately. An important part of the transformation to achieve the balance between sustainability and profitability is to start treating the process as a whole, as one multi-variable process. Therefore, batch house, hot end, forming, cold end, quality, packaging and warehouse can no longer be considered separate systems. Start recognising that each is part of and has an impact on the overall outcome. All parts interact with each other so they should all be controlled at the same time.

Controlling the process correctly from end-to-end will improve the process as a whole. With the right infrastructure and actionable data, sustainability can be embedded in the entire production cycle, comprehensively including everything from supply chain management and glass manufacturing quality control to energy consumption and recycling.

Taking the right steps together

With renewables and distributed energy resources on the rise, businesses have the opportunity to become more profitable in the long run. By pairing energy information with analytic tools that make timely recommendations based on relevant historical and real-time data, digital transformation can set a business's economy on a sustainable footing and accelerate its transition to low carbon glass manufacturing.

Taking active steps forward, the amount of electrical power required for glass manufacturing will increase exponentially. Getting the balance between sustainability and profitability right needs specific knowledge and skill sets that are not typically available from traditional furnace hardware and process equipment suppliers. Schneider Electric [which acquired Eurotherm in 2014] has a mission to 'empower all to make the most of our energy and resources, bridging progress and sustainability for all'. Working with the company as a trusted partner to harness digital and electrical technology and interlock the latest technologies 'from grid to glass' will help manufacturers contribute to the low carbon economy and maintain their social licence to operate. As a bonus, refreshment from glass bottles can continue, as the world cannot do without 'green' glass! ●

About the author:

René Meuleman is Business Leader for Global Glass at Eurotherm

Further information:

Eurotherm Ltd, Worthing, West Sussex, UK
tel: +44 1903 268500
email: rene.meuleman@se.com
web: www.eurotherm.com/glass



Maintain your social license to operate

Eurotherm[®]

Expertise to manage glass plant energy more efficiently

Eurotherm power control solutions and EcoStruxure™ energy & sustainability services are designed to reduce costs, optimize energy usage and improve sustainability, for a more efficient, carbon neutral future - from grid to glass.

eurotherm.com/glass

Life Is On

Schneider
Electric

Inspection takes a starring role

Hans Renders reveals how Heye is advancing the evolution of glass container inspection with its second generation starwheel inspection equipment SmartLine 2, which combines speed, reliability and flexibility to deliver accurate results.

Developed and manufactured at Heye International's dedicated Cold End Centre in Nienburg, Germany, the company's SmartLine 2 glass container inspection equipment can be configured in several different ways, with up to six inspection stations available.

The SmartLine 2 is equipped with Heye's Ranger 2 camera-based check inspection system, which is reputed to detect more than 99.8% of all critical defects on products including pharmaceutical mini-ware.

System operating principle

Each system inspects independently and does not have to be synchronised with others.

There is no influence between the systems and therefore no need to compromise one system in favour of another. This allows individual optimisation of all settings, eg lighting, camera position etc, on the respective type of crack. If one system is not available or is not optimally adjusted, the others are still fully functional.

Every container produced must be considered as a unique object and every concept of a crack test must take this into account. Therefore, the Ranger 2 uses 'Intelligent Cloud Masking', which makes any kind of 'teaching' superfluous after a job change.

Assuming that each container is unique, the Ranger 2 inspects each container for itself and sets one mask for each single container. Therefore, each container is its own reference and has no negative influence on following items, allowing for immediate adaptation should changes occur during production.

Mastering the 'non round'

Surveying container shapes that differ from the standard round container is one of the most common tasks in the glass container inspection industry. Although the range of inspectable container sizes and shapes is above average, Heye has made inspection of almost all imaginable shapes possible, no matter if they are angular, oval or simply round.

With a huge range of testable



Heye's Smartline 2 inspection and sorting machine for the hollow glass production industry.

container sizes and forms, the SmartLine 2 matches the market approach to be a universal check inspection machine.

Improved job change times

The application of servo technology results in a high degree of flexibility. Fast and easy changes to an item's indexing positions and optimal use of

the servo torque for up to four rotation stations are possible. Optimised motion sequences allow faster reactions to changing process parameters. The SmartLine equipment's design and its large and easy-to-open hood provide more working space between the inspection stations. Job changes become much simpler.

The maximum article height accommodated is up to 450mm, with angular, oval and round containers processed. Thanks to the servo-driven starwheel, indexing positions from six to 48 are possible.

Job history can be customised for quality requirements, set-ups and reproducibility data.



The Ranger 2 camera-based check inspection system works with software for image processing to make a decision; 'container okay' or 'not okay'.

Intuitive interface

The design of the graphical user interface of SmartLine 2 has been conceptualised with a specialised engineering service provider. The main goal of the development was a practicable and fast operating interface. It achieves this with two-click-management, smart configuration and an overview of all the statistics an operator needs for easy-to-use handling.

In addition, job history can be customised for quality requirements, set-ups and reproducibility data.

Positive feedback

Feedback generated from Heye International customers has confirmed the SmartLine equipment's robustness and reliability. The mechanical design and drive system in particular are highlighted for their robust design, while the control system is praised for its reliable operation. ●



The graphic user interface of SmartLine 2 was designed for practicality and ease of operation.

About the author:

Hans Renders is Head of Product Management at Heye

Further information:

Heye International GmbH, Obernkirchen, Germany
 tel: +49 5724 26-0
 email: marketing@heye-international.com
 web: www.heye-international.com



Weighing Excellence
 for your **BATCH PLANT**

For all types of glass,
 for all types of needs,
 big and small –
 let us show you how
 we can be of help

- Greenfield and brownfield projects
- Modernization projects
- Automation
- Key process equipment
- Plant audits
- Service & spare parts

LAHTI-GLASS.FI



Supporting pharmaceutical glassware investment in Thailand

Thailand's Wellgrow Glass Industry Co Ltd has recently completed an investment to meet the pharmaceutical industry's need for additional Covid-19 vaccines packaging. IRIS Inspection machines is supporting the glassmaker in matching the industry's exacting specifications, as the following contribution explains.



Khun Udomsak Tangsaksathit, General Manager of Wellgrow Glass with Jean-Luc Logel, CEO of IRIS Inspection machines.



Evolution Dim NEO machine installed at Wellgrow Glass.

As the pursuit of successful vaccines to control the spread of the global Covid-19 pandemic intensifies, demand for specialist pharmaceutical glassware to package these critical vaccines has required glass manufacturers throughout the world to create or boost their manufacturing capacities accordingly.

Few industrial sectors have such stringent quality requirements as the pharmaceutical industry and to meet these exacting specifications, IRIS Inspection machines and its innovative ware inspection technologies are available to support the world's specialist pharmaceutical glassmakers to meet these challenges.

Established independent producer

Among the companies to have accepted this challenge is Thailand's Wellgrow Glass Industry Co Ltd (WGI), an established independent producer of high quality glass bottles for the pharmaceutical and cosmetics sectors.

Located in Chacheongsao Province, some 50km east of Bangkok,

WGI has more than 18 years' experience in the international glass container market, having successfully created extensive capabilities to make an established portfolio of products in flint, high flint and colour glass on its 12 production lines, primarily to satisfy the needs of local customers.

Just 15 years ago, WGI's manufacturing capabilities comprised a single melting furnace and five production lines but as local demand for its specialist output has steadily increased in the intervening period, the need for additional manufacturing capacity has also grown gradually.

In support of the glassmaker's business expansion initiatives, close working relationships have been established with many leading international technology suppliers. This includes a mutually beneficial long-term partnership with the non-contact inspection solutions specialist, IRIS Inspection machines.

Maintaining quality

Since ordering its first two Evolution 16 inspection machines in 2005, Wellgrow has worked closely with the IRIS team to improve and maintain the quality of its output. Today, the glassworks features three furnaces and 12 production lines and the factory's IRIS inspection equipment has been the subject of extensive investment and modernisation to support these investment initiatives.

The hardware and software for all machines has been upgraded and converted to the latest Evolution NEO technology, making it capable of operating like brand new,

smart inspection equipment. All production lines now feature the IRIS body inspection solution, with some lines also benefitting from the Evolution DIM dimensional inspection machine.

The innovative ware inspection technologies available from IRIS Inspection machines are continuing to support the world's specialist pharmaceutical glassmakers to meet the challenges posed by the Covid-19 crisis. In Thailand, for example, the longstanding partnership between WGI and IRIS Inspection machines has benefited both parties. Based on mutual trust and a belief in the advantages of business co-operation, this successful relationship is expected to continue long into the foreseeable future. ●

Further information:

IRIS Inspection machines,
Bron, France
tel: +33 4 72 78 35 27
email: contact@iris-im.fr
web: www.iris-im.fr

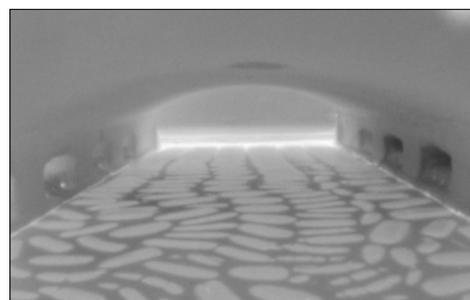
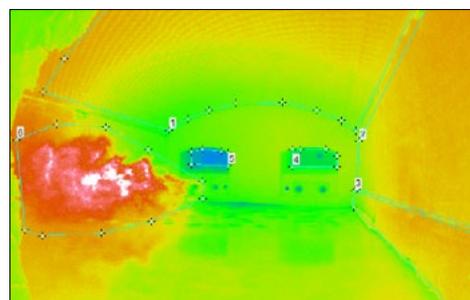
IN-FURNACE THERMAL GLASS SURVEYS

GAIN INSIGHTS INTO THE THERMAL PROCESSES IN A GLASS MELT TANK WITH ACCURATE REAL-TIME TEMPERATURE MEASUREMENTS.

A unique service for the thermal optimisation of furnaces, the In-Furnace Thermal Glass Survey produces real-time and recorded images for analysis, supplementing traditional refractory inspections.

A SURVEY HELPS TO:

- Improve productivity with optimised pull rates
- Increase thermal and combustion efficiency
- Lower fuel costs
- Protect the refractory from damage
- Extend campaign life
- Optimise flame pattern to reduce energy consumption
- Ensure emissions compliance



MARKET-LEADING TECHNOLOGY

Optimised for measuring high temperatures between 1000 to 1800°C (1832 to 3272°F), the NIR-B Glass thermal imager creates detailed and live high-resolution images from within the furnace. Dedicated image processing software ensures accurate data analysis. The Lancom 4 portable multi-gas analyser measures up to eight flue gases for the optimisation of combustion and emissions processes.

THE IN-FURNACE THERMAL GLASS SURVEY IS AMETEK LAND'S UNIQUE THERMAL OPTIMISATION SOLUTION FOR GLASS REFRACTORY APPLICATIONS

Every second counts

David Dineff introduces Agr's laboratory-sized measurement system for glass containers, which utilises optical gauging technology in combination with automation and advanced operational software to perform a complete dimensional analysis in a matter of seconds.

Agr's Gawis4Glass product is an all-in-one dimensional measurement system, designed specifically for the glass container quality control laboratory. With a footprint of one square metre, the Gawis4Glass is ideal for laboratories with very limited space or operations, where space is at a premium. The test system incorporates a host of measurement capabilities that can replace the routine laboratory measurements needed to support the design, process and quality management of glass containers. Through automation, the system

combines a number of these critical bottle measurements into a single operation, performing a complete dimensional analysis in a matter of seconds.

In addition to its compact size, the Gawis4Glass directly addresses challenges that the dimensional measurement of bottles presents to laboratory personnel. Agr's system incorporates features and functions specifically oriented to simplify this time-consuming task, while providing highly repeatable and accurate measurement results. To achieve this,

the Gawis4Glass utilises the latest optical gauging technology in combination with automation and advanced, intuitive operational software to simplify container measurement operations, while maximising testing throughput.

Features and capabilities

Built upon a specially developed measurement platform, the Gawis4Glass incorporates a number of advanced features and capabilities including:

- Precise finish gauging and body measurement capabilities utilising high resolution, USB 3 camera technology, optimised lensing and telecentric optics with 360° imaging.
- Performance that exceeds all relevant international standards.
- Powerful yet simple job creation and editing tools, featuring Agr's patent-pending AutoJob for automated job set-up.
- Large, customisable and intuitive user interface, with swipe and zoom capabilities.
- Industry 4.0 communication protocols.

Precise dimensional gauging

A major design emphasis for the Gawis4Glass was to provide measurements with a level of precision and repeatability suitable for documenting the dimensions of ▶



The Gawis4Glass system features AutoJob, a tool to simplify job set-up by providing automated recognition of key finish measurements.

With a footprint of one square metre, the Gawis4Glass system can fit in laboratories with very limited space.

futronic
automation

Efficiency and productivity
increase

Reduction of
investment costs

Optimized
production run

Increase in plant
availability

Reduction of
downtime

Compliance with current
standards and regulations

retrofit
by futronic



info@futronic.de

www.futronic.de

automation in a new dimension



Global Combustion Systems

Here to support you for the future.

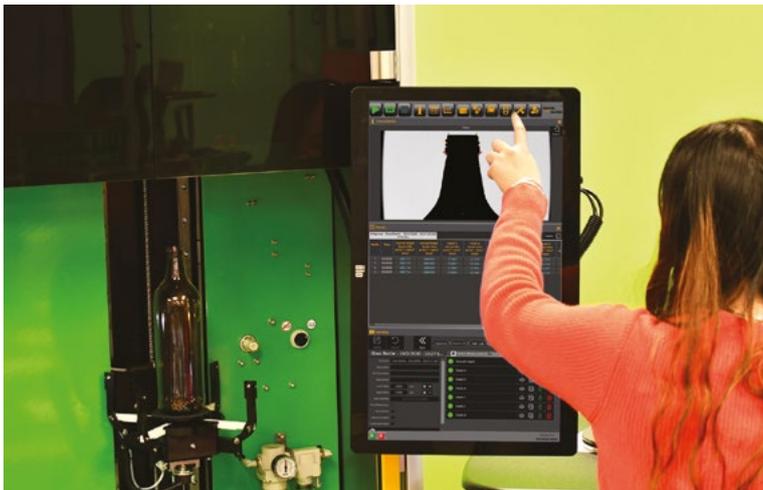
- **Burners for all Furnace Types**
Gas, Oil & Oxygen
- **Complete Fuel Control Systems**
Gas, Oil & Oxygen
- **Furnace Control Systems**
- **Engineered System Solutions**
- **After Sales Support**

**NEW - NOx
Reduction by
Auxiliary Injection
to below
600mg/m³**

www.globalcombustion.com

E-mail: sales@globalcombustion.com Tel: +44(0)1506 416160





The Gawis4Glass system offers a simple, configurable and easy-to-understand user interface.

production containers, as well as mould qualification and management. To accomplish this, the vision measurement technology selected for the Gawis4Glass utilises advanced high pixel density camera components, in combination with enhanced telecentric optics and LED lighting.

Telecentric optics ensure that every measurement is accurate and repeatable, regardless of container size, shape or distance from the camera. Cameras and optics are mounted on a rigid, fixed base for zero movement. This eliminates any potential errors from vibrations due to camera movement. The combination of telecentric optics and enhanced lighting provides a crisp edge shadow, making it possible to achieve the highest dimensional precision and repeatability, as well as a very low percent of process variation for

individual measurements.

To facilitate efficient dimensional processing, images are captured at one-degree intervals and the entire bottle is scanned, achieving 100% full bottle capture. Once a sample is placed in the system, a rotary lift table presents the sample in front of the optics and provides 360° of rotation, allowing measurement over the length of and at any position around, the sample. Precise vertical and rotary positioning ensures that measurements are performed consistently every time, on every sample – preventing human error, unnecessary adjustments and incorrect data.

Ease of job set-up

One of the biggest challenges with measurement systems of this type is the preparation and programming of the device to perform the desired

measurements. The Gawis4Glass offers a range of tools to simplify this process and minimise the time required to edit jobs. All job set-up methods are straightforward and intuitive, yet provide the versatility to enable an operator to customise tests for the application. For example, an operator can select a single measurement or combination of measurements for a particular job.

AutoJob is a patent-pending feature on the Gawis4Glass that is designed to simplify job set-up by providing automated recognition of key finish measurements. Operators can use AutoJob to automatically identify finish measurements, build a job from individually selectable measurement routines or choose from a library of industry standard or customised templates that include a collection of measurements and their associated limits.

To set up a job in under 20 seconds, the operator simply selects the AutoJob mode and the work of locating and identifying finish features is performed automatically. The Gawis4Glass scans the sample, identifies the standard finish measurements for that sample and incorporates them into the job within a matter of seconds. The operator can adjust the selection, add control limits and incorporate additional measurements as necessary. AutoJob can be used to create a new job or identify an existing job template through Template Matching, which provides the closest match of a scanned bottle finish to job templates in the template library. In all, the AutoJob feature greatly accelerated job creation, saving hundreds of labour hours through the course of a year.

Industry 4.0 communication

Industry 4.0 standard communication protocols have also been incorporated into the Gawis4Glass to improve communications and support Industry 4.0 objectives. This capability facilitates advanced communication with other devices to share data, support remote job change and interface with factory robotic handling systems without operator intervention.

Continuing the legacy

Agr International has a long history of providing high precision dimensional gauging and measurement systems to the glass container industry. Agr's Dimensional Sampling Gauge and OmniLab products are well known within the industry for their high precision and automated measurement capabilities. These systems are relied upon by a number of bottle manufacturers for at-the-line or near-the-line sampling and measurement. The Gawis4Glass continues this legacy, while filling a need for similar measurement capabilities in the laboratory, in a format that is more compatible with the size and style of laboratory operations. The Gawis4Glass was designed specifically to fit this requirement.

Offering an array of systems for the measurement and testing of glass containers, Agr's products are designed to help container producers, converters and fillers stay competitive, while meeting the increased quality demands of today's changing world. ●



High pixel density camera components, along with telecentric optics and lighting, are incorporated in the Gawis4Glass system to achieve a high level of dimensional precision and repeatability.

About the author:

David Dineff is Director of Marketing for Agr International

Further information:

Agr International Inc, Butler, Pennsylvania, USA
 tel: +1 724 482 2163
 email: marketing@agrintl.com
 web: www.agrintl.com

**22–25 March
2021**

**EXPOCENTRE
Fairgrounds,
Moscow,
Russia**



Mir Stekla

PRODUCTION • PROCESSING • APPLICATION

22nd International
Exhibition for Glass Products,
Manufacturing, Processing
and Finishing Technology

Organised by EXPOCENTRE AO

Supported by Russian Ministry
of Industry and Trade

Under auspices of Russian Chamber
of Commerce and Industry

www.mirstekla-expo.ru/en

Advertising **12+**



 **EXPOCENTRE**

Family business goes global

Twenty five years after its inception in a small office in east Germany, Dr Günther Inspections is now fully a family firm. Mark Ziegler relates how the supplier of optical inspection systems has been given a boost by the next generation.

Founded in 1995 by Dr Friedrich Günther, the company of the same name supplies high precision camera inspection solutions for container glass, tableware and speciality glass segments. In the spring of 2020, Linda and Tilo Günther became shareholders and executive partners of the family business. Together with their father, they now form the management team of the company and are looking forward to strengthening the global market position of Dr Günther Inspections.

“Standing still is going backwards” has been Friedrich Günther’s motto since he started as an entrepreneur in Zwickau, Saxony in 1995. Customer number one was another family-owned company; the Heinz Glas group, with a 400 year history of glassmaking. Inspection machine number one was a customer-specific solution, as there was no appropriate existing solution on the market.

In 2000, a first expansion step was made on the farmyard of the Günther family. As a result of continuous company growth, in 2014 a large and modern headquarters was built in Meerane, south of Leipzig, comprising a 2000m² factory workshop and 600m² for research and development and administration. This site in the heart of Europe is ideal from the



The company building at Meerane near Leipzig.

logistic viewpoint; more than 20 glass factories in three countries can be reached within a medium road trip and the nearest international airport is just one hour away.

Enlarged executive team

Friedrich Günther completed his doctorate in technics in the cities of Dresden and Zwickau and gained a thorough understanding of optical testing technology, especially in the field of image processing. His son Tilo graduated in electrical engineering and joined the company in 2014. He is concentrating on R&D and project management, propelling the company forward with technical expertise

and experience from many customer projects. Daughter Linda completed her studies in business administration, before gaining experience within another business and then moved into the company in 2019. She now heads up the supply chain and business management.

In the spring of 2020, it was time to reposition the ownership and management structure of the company. Linda and Tilo became shareholders, forming the leadership team with their father Friedrich. Their main target is preserving the company’s strengths, ensuring it is a leader in high precision inspection, combined with outstanding customer proximity and a quick response technical support. The strong growth of the company is based on a personal corporate culture, with focus on the people. “The customers feel the short internal communication channels and the good team spirit of the company” says Linda Günther, youngest member in the leadership team.

Global approach

Right from the beginning, the company had a global approach. The first inspection machines were installed at Heinz Glas plants in Poland and Germany. Focus in the initial years was



Dr Günther’s large facility for research and development and manufacturing.

on container glass. Then, in 2010, the portfolio was expanded to tableware. In addition, customer-specific solutions have been designed for kitchenware and other speciality segments.

“We are proud to have more than 700 machines in glass plants all over the world in production” confirms Dr Friedrich Günther. “Many international groups or famous regional players are on the customer list, ranging from Ardagh to Gerresheimer, Heinz Glas, O-I, Siseecam or Wiegand Glas.”

In addition to R&D investments, focus lies on an expansion of the marketing and sales team. With a strong basis in Europe, other continents like Asia, the Americas and Africa are on the growth map. State-of-the-art remote service and diagnostics capabilities, combined with the use of locally available standard components, makes life easier for operators across the plants.

Product strategy

Target markets are the container glass and the tableware industry. In addition, solutions for kitchenware and speciality glass have been achieved. The technology is based on high precision camera modules, structured in different machines types. The CSWI is a combined camera sidewall machine, with up to 18 cameras. The BMF is dedicated to bottom and mouth rim inspection, including a mould number reader.

Specifically for jars, a two camera-based planity and mouth rim inspection can detect even the smallest deviations (axis deviations from an uneven conveyor belt are automatically compensated). The BMSI tableware inspection machine comprises sidewall inspection, mouth rim, ovality, stem and base plate inspection.

The company’s large R&D team with in-house software development is able to create customer-specific solutions, such as an inspection solution for kitchenware or for the glass doors of washing machines.

Technologic differentiation

The cornerstone of technologic differentiation is superior precision, which can increase the financial performance of the plant. Unlike other suppliers, Dr Günther’s sidewall machines use one light source per camera position, permitting more opportunities to run checks and for the detection of defects. As a result, many of the starwheel machine tasks can be performed by the company’s camera inspection machines, such as checks in the most critical areas, planity and tightness, (inner) bore diameter, container height or dimension and ovality.

Embracing the Internet of Things and data management was high on the agenda. A user-friendly, self-learning approach is combined with an improved classification of defects. Many of the latest software technologies, such as masking of embossing are now included as standard. Innovations are available for black glass and opal glass inspections as well. Key for data-integration between the hot end and cold end is a dedicated screen

for the hot end operator, showing any defects per cavity in order to improve the reaction time for eliminating the defect cause. All existing plant management systems can be connected through open interfaces and real-time statistics are available on a smartphone.

Room to grow

Understandably 2020 was a challenging year for the young members of the executive team. Despite the current obstacles all projects have been completed on time and within budget. “What motivates us and gives us self-confidence is the continuous, positive customer feedback” states Tilo Günther. “With the combination of our agile service and our high precision inspection approach, we have created good conditions for further growth on a global scale.”

As an independent, family-owned and run company, Dr Günther Inspections is well positioned to pursue a long-term development strategy, while remaining fast and flexible in its decision making. ●

About the author:

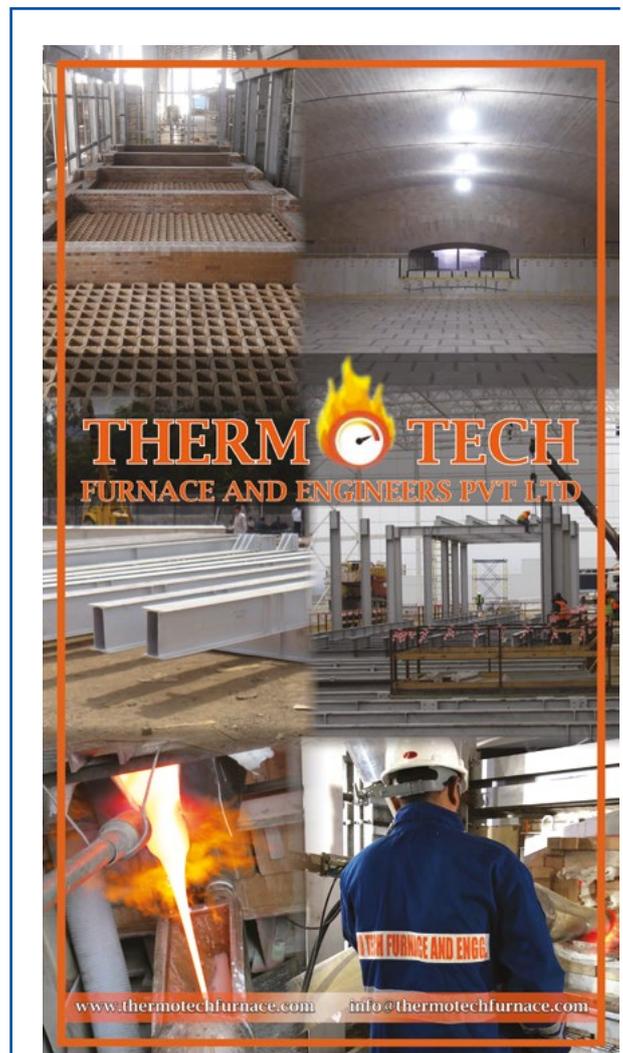
Mark Ziegler is a representative for Dr Günther Inspections

Further information:

Dr Günther Inspections GbR, Meerane, Germany
 tel: +49 3764 7791870
 email: info@optical-inspections.com
 web: www.optical-inspections.com



(Left to right) Dr Friedrich Günther, Tilo Günther and Linda Günther – the executive team of Dr Günther Inspections.



Taking glass testing to the limit

Commissioned to develop a machine for pressure testing medical syringes, Somex undertook the project as an opportunity to further its engineering skillsets. Brian O Keeffe details the risk assessment, prototyping and testing process involved in testing medical-grade glass to breaking point.

Known for its glass and PET container testing instruments, Somex recently received an unusual request: To develop a machine to pressure test medical-grade syringes and cartridges. The thin glass walls of medical grade syringes belie their ability to withstand significant pressures.

Initially, the customer expected that 250 bar would be required – a significantly higher pressure than the capability of existing pressure testers on the market used for glass containers. It was an interesting project that also had other challenges. Unlike a glass bottle that has only one opening, syringes and cartridges have two openings and also there was a wide variation in product types. The customer required compliance with pressure testing standard ISO 7458:2004.

Risk assessment

While there is no significant market for pressure testing syringes, it was a valuable opportunity to develop further Somex' engineers' skillsets on pressure testing.

By their nature, design projects carry risk; the more uncertainty as regards the solution, the higher the risk.

For machine design and build projects, risk can broadly be divided into three categories: Time, cost and quality of solution. The risk for each is primarily carried by the machine builder. Getting any of these wrong will have a reputational or financial cost. Once the uncertainties have been identified, prototyping is key to mitigating the risk; it will protect both the customer and supplier.

It is not always easy to convince a customer that prototyping is the best strategy, particularly when funds have already been approved. It can sometimes be viewed as prolonging a project or adding unnecessary cost. However, a successful outcome to prototyping means the design solution to the technical challenges is already in place and some of the hardware can be transferable.

In this instance, the customer understood the significant challenges of the project and was agreeable to a project plan that included a 12 week prototyping phase. A risk evaluation identified key challenges to be resolved:

- Sealing under high pressure: Using the flange surface or inside the bore of the syringe.

Seal the second opening (needle position).

- Prefill the syringe with water and extract the air.
- Accommodate two primary product types (syringe and cartridge) and a wide range of diameters in both.

Challenges and solutions

Prototyping phase: A simple bench top fixture was designed that included modifications to Somex' existing pressure generator with pressure capability upgraded to 250 bar. Manually controlled valves were used for control of water and pressure ramp. This facilitated testing solutions for each of the technical challenges:

Sealing: Early stage prototyping demonstrated the flanges on a syringe are not sufficiently strong to withstand the downward sealing force required to maintain a seal.



Somex was commissioned to develop a machine to pressure test medical grade syringes and cartridges.

There were two challenges with sealing on the internal bore: The internal diameter is not parallel (narrower at open end); and the small diameter, as there were three functions required of the pressure head (provide a suitable sealing; filling the syringe with water; venting air from syringe) with limited area available

Sealing the second opening

(needle position): Initially, Somex developed a simple tool to crimp the needle but invariably, the bonding on the needle yielded prior to achieving bursting pressure on the syringe. It was decided to test without the needle. The diameter to be sealed was 3.5mm, which was satisfactorily sealed using a spigot with dual O-Rings. However, using a nitrile rubber ball instead proved very effective.

Upping the pressure

As a solution to each of the challenges was developed, engineers realised that 250 bar was insufficient to burst most of the syringes, so it was back to the drawing board to design a pressure generator with 350 bar capability. Fifteen weeks after starting the project, a solution has been designed for each challenge.

An unexpected outcome of prototyping was that a simple bench top device was created that was sufficient for the customer to use in its laboratory, while work progressed on design and build of the final machine.

Given the variety of syringes and cartridges to be tested, each requiring tooling for upper and lower opening, 'poka-yoke' [a Japanese

term for 'mistake-proofing'] was used for tooling design. This approach eliminated inadvertent use of incorrect tooling by the machine operator.

The project was a useful benchmark for Somex' mechanical, electrical and software design engineers and an added benefit was an understanding the pressure generator used in the company's standard range of burst testers operates well below its maximum capability. ●



About the author:
Brian O Keeffe is CEO of Somex

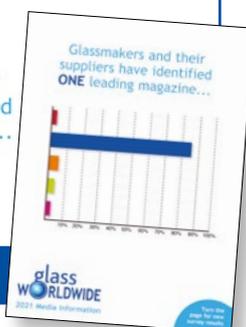
Further information:
Somex Ltd, Co Cork, Ireland
tel: +353 26 24155
email: bokeeffe@somex.ie
web: www.somex.ie

Index to display advertisers

Acmos Chemie KG.....	21	Glass Problems Conference.....	S25 (USA)	Pro-Sight Vision	53
Advanced Energy Industries.....	14	Glass Service Srl.....	71	Quantum Engineered Products Inc.....	S28 (USA)
Agr International Inc.....	S2 (USA)	glasstec 2021	15	Ramsey Products Corp.....	S11 (USA)
Air Products	3, 6 & 17	Glaston Group.....	31	Refractory Machining Services Inc.....	S24 (USA)
All India Glass Manufacturers' Federation.....	99	Global Combustion Systems Ltd.....	85	Sheppee International	Insert 16-17
AMETEK Land.....	83	Grenzebach Maschinenbau GmbH	29	Socabelec SA	23
Antonini Srl.....	59	Grünig-Interscreen AG.....	61	Somex Ltd.....	12
Applied Vision Corporation.....	19	HEGLA TaiFin	47	Nikolaus Sorg GmbH & Co KG	Front Cover
ATIV	95	Heye International GmbH.....	45	Stara Glass SpA.....	24
BDF Industries SpA.....	11	HORN Glass Industries AG.....	Inside Front Cover	Strutz International Inc	Inside Back Cover
Bock Energietechnik GmbH	65	Hotwork International AG.....	33	TECO Group	S1 (USA)
Bottero Glass Technologies	7	Hotwork USA	S7 (USA)	Henry F Teichmann Inc.....	S27 (USA)
Bristol Instruments Inc.....	S17 (USA)	Hunpreco.....	57	THERMO TECH FURNACE	
Bucher Emhart Glass	41	HyGear	63	& ENGINEERS PVT LTD.....	89
CelSian Glass & Solar BV	93	IProTec GmbH	35	TIAMA	S13 (USA)
China Glass	97	IRIS Inspection machines.....	Outside Back Cover	Vidromecanica Lda	9
Dr Günther Inspections GbR	51	JADCO Manufacturing Inc	S10 (USA)	Virtual Marketplace	1, 26, 77 & 91
Dura Temp Corporation	S15 (USA)	Koenig & Bauer Kammann GmbH.....	5	VMA GmbH	75
Electroglass Ltd	77	KSK sro.....	62	D Widmann GmbH	21
EME GmbH.....	S9 (USA)	Lahti Glass Technology	81	XPAR Vision BV.....	25
Eurotherm by Schneider Electric	79	Lüscher Technologies AG.....	37	Zippe Industrieanlagen GmbH.....	43
Excelsius Global Services GmbH	1	Mir Stekla.....	87		
Ferro Corporation.....	55	NOVAXION	67		
FIC (UK) Ltd.....	4, 39, S19 (USA) & 52	Olivotto Glass Technologies	13		
Forglass Sp. z o.o.	73	PaneraTech SmartMelter	1 & S23 (USA)		
Fosbel	S21 (USA)	Parkinson-Spencer Refractories Ltd	69		
futronic GmbH	85	Penico Gauges Ltd.....	16		
Gallus Ferd Rüesch AG.....	75	Pennine Industrial Equipment Ltd	9 & S5 (USA)		
Glass Futures	22	Pneumofore Spa.....	27		
Glass Global (OGIS GmbH).....	91	Precitec GmbH & Co KG.....	37		

To request 2021 media information visit our website www.glassworldwide.co.uk

Glassmakers and their suppliers have identified ONE leading magazine...



Did you know ...

... that glassglobal Group celebrates its 20th anniversary this year? They support customers from more than 80 countries and count 3.6 million page views per month on their website. Banner advertisements reach show rates of over 2 million per year.

Please go online and request a free guided tour!



glassglobal Group
 Grafenberger Allee 277-287, 40237 Düsseldorf, Germany
 Phone +49 (0)211 280733-0, Fax +49 (0) 211 280733-22
 office@glassglobal.com, www.glassglobal.com

glassglobal
 Group

Zooming in on decarbonisation and post-Covid strategies

Last autumn glassmakers, suppliers and independent researchers gathered online to share presentations about the impact of decarbonisation technologies on glass production and to forecast the future of the glass industry following the Covid-19 pandemic.

The GlassTrend autumn seminar last November focused on how decarbonisation technologies can help the glass industry to progress towards a more sustainable manufacturing process.

The reduction of both energy consumption and CO₂ footprint, while increasing production efficiency, are key challenges for the industry. Last autumn glassmakers, suppliers and independent researchers from all horizons gathered online to share insights to their latest innovations and to illustrate the positive impact of decarbonisation technologies on glass production.

Presentations included 'CO₂ emissions in the glass industry' (Oscar Verheijen, CelSian); 'NSG decarbonisation strategies and hydrogen firing' (John Marsh, NSG/Pilkington); 'Your technical options are crystallising. Now what? Energy, political and location-related considerations' (Gary Café, Schneider-Electric); 'Emissions analysis of hydrogen supply options – A techno-environmental analysis of hydrogen supply options and gas recovery for the glass industry' (Ellart



Live video technology was employed for the GlassTrend autumn seminars.

de Wit, HyGear); 'CO₂ uses and sequestration: An overview of the past decade and perspective' (Fabrice Del Corso and Luc Jarry, Air Liquide); 'How horizontal hot top electric melting hybrid furnaces with hydrogen combustion will look in a de-carbonised future' (Stuart Hakes and Andreas Birle, FIC and FlammaTec); 'The carbon footprint of

glass packaging. What else is there?' (Jim Nordmeyer, O-I); and 'CO₂ capture, utilisation and storage' (Earl Goetheer, TNO).

Selected presentations will appear in future issues of *Glass Worldwide*, preferred journal of GlassTrend.

Winter webinars

Addressing the cancellation of on-site events, the decarbonisation seminar was part of GlassTrend's series of regular TEDx-like webinars for members, focusing on the future of the glass industry after the Covid-19 pandemic and before facing the crisis of the global climate change.

Webinars staged in December included a BV Glas presentation on environmental challenges from the viewpoint of the German glass industry by Dr Johann Overath and a nuclear energy and waste vitrification presentation by Sophie Schuller from CEA (Commissariat à l'Énergie Atomique et aux énergies alternatives).

On 26 January, GlassTrend will stage a webinar on oxy-fuel melting by Shrikar Chakravarti and Hisashi Kobayashi from Linde. ●



Jim Nordmeyer, O-I's VP of Global Sustainability presented 'The carbon footprint of glass packaging. What else is there?'.



Oscar Verheijen presented 'CO₂ emissions in the glass industry' on behalf of CelSian.

Further information:

GlassTrend, Eindhoven, The Netherlands
tel: +31 402 490 100
email: glasstrend@celsian.nl
web: www.glasstrend.nl



Forthcoming events 2021 Visit www.glassworldwide.co.uk for latest information

JANUARY 2021

26 January: GlassTrend webinar: Oxy-Fuel Glass Melting

MARCH 2021

2-3 March: CelSian training course - glass melting (Sheffield, UK)

16-17 March: CelSian training course - raw materials and melting (Eindhoven, the Netherlands)

18 March: CelSian training course - glass defect diagnosis (Eindhoven, the Netherlands)

22-25 March: Mir Stekla 2021 (Moscow, Russia)

APRIL 2021

13-14 April: CelSian training course - sustainability and energy savings (Eindhoven, the Netherlands)

15-16 April: CelSian training course - redox, fining and glass quality (Eindhoven, the Netherlands)

17-19 April: Deco '21 (Pittsburgh, USA)

MAY 2021

6-9 May: China Glass 2021 (Shanghai, China)

10-12 May: 94th Annual DGG Conference (Aachen, Germany)

12-14 May: ATIV International Conference (Parma, Italy)

23-28 May: 14th Pacific Rim Conference on Ceramic and Glass Technology / PACRIM 14 including Glass & Optical Materials Division 2021 Annual Meeting / GOMD 2021 (Vancouver, Canada)

JUNE 2021

9-10 June: Furnace Solutions Conference 15 and Training Day (Stoke-on-Trent, UK)

9-11 June: Intersolar 2021 (Munich, Germany)

15-18 June: glasstec 2021 (Düsseldorf, Germany)

22-24 June: InPrint (Munich, Germany)

28 June - 2 July: CelSian training course - general glass technology training (Detroit, USA)

JULY 2021

4-9 July: 16th International Conference on the Physics of Non-Crystalline Solids (Canterbury, UK)

AUGUST 2021

22-25 August: ICG Annual Meeting (Incheon, Republic of Korea)

SEPTEMBER 2021

1-4 September: Glass South America (Sao Paulo, Brazil)

8-9 September: Glassman Latin America (Monterrey, Mexico)

13-15 September: GlassBuild America 2021 (Georgia, USA)

21-23 September: Gulf Glass 2021 (Dubai, United Arab Emirates)

22-23 September: 16th International Seminar on Furnace Design - Operation & Process Simulation / Glass Service

23-25 September: glasspex INDIA 2021 (Mumbai, India)

27 September - 1 October: CelSian training course - general glass technology training (Eindhoven, the Netherlands)

OCTOBER 2021

5-8 October: Vitrum 2021 (Milan, Italy)

6-8 October: PRINTING United Expo (Orlando, USA)

12 October: CelSian training course - heat transfer in glass melting furnaces (Eindhoven, the Netherlands)

12-15 October: FESPA Global Print Expo (Amsterdam, the Netherlands)

13-14 October: CelSian training course - burners, combustion and NOx emissions (Sheffield, UK)

20-22 October: GPD Finland 2021 (Tampere, Finland)

26-27 October: CelSian training course - refractory selection, maintenance and related defects (Eindhoven, the Netherlands)

28-29 October: CelSian training course - flat glass melting and forming (Eindhoven, the Netherlands)

NOVEMBER 2021

1-4 November: 82nd Conference on Glass Problems (Columbus, Ohio)

16-18 November: Glasstech Asia 2021 (Bangkok, Thailand)

JULY 2022

3-8 July: ICG 2022 - 26th International Congress on Glass / DGG Conference (Berlin, Germany)





Glass experts

Furnace support Process optimization Training and R&D

Celsian's aim is to minimize the cost of making glass for end users and the environment. We have an agile team of glass experts using proven methods like furnace modelling, laboratory measurements and practical furnace health checks to optimize glass melting processes. We also train operators and glass technologists through our standard course, dedicated programs and various e-learning modules. We strive to be the best partner for optimization of glass production worldwide.

www.celsian.nl

Air Compressors



Pneumofore

VACUUM PUMPS
AIR COMPRESSORS

SWISS ENGINEERING
ITALIAN DESIGN
GLOBAL PRESENCE

SINCE 1923

www.pneumofore.com

Analysis / Consultancy



Glass Technology Services

EXPERTS IN GLASS

- routine laboratory analysis
- defects and inclusions
- glass property measurements
- failure and foreign body analysis
- quality assessment
- food contact materials
- pharmacopoeial verification
- melting trials and development
- troubleshooting, consultancy and research

www.glass-ts.com
+44 (0) 114 290 1801
enquiries@glass-ts.com

Application Systems

Your supplier of applicators for powder separator and liquid stain protection



Grafotec
for perfect glass

Keimstrasse 7a
D-86420 Diedorf

Phone: +49 821 88588 170 info@grafotec.com
Fax: +49 821 88588 188 www.grafotec.com

Cold End Technology



GRENZBACH

Grenzbach Maschinenbau GmbH
Albanusstrasse 1-3
86663 Asbach-Bäumenheim, Germany
Tel. +49 906 982 0
Fax +49 906 982 108
e-mail: info@grenzbach.com
www.grenzbach.com

TO PLACE A CLASSIFIED ADVERT
+44 (0)1342 322133



MSK
COVERTECH GROUP

Cold End from one source

- Palletising systems
- Packaging machines
- Shrinking machines
- Conveying systems
- Software systems

MSK Verpackungs-Systeme GmbH
Benzstraße, D - 47533 Kleve
Tel.: +49 (0) 2821 / 506-0
Fax.: +49 (0) 2821 / 17866
info@msk.de
www.mskcovertech.com

Combustion Systems / Burners



Low-Emission Oxy-fuel Solutions

- Oxygen & oxygen flow control equipment
- Global oxygen enrichment applications
- Cleanfire® oxy-fuel burners
- Start-up services

Inerting Applications

- Hydrogen, nitrogen & other gases
- Enabling flow control equipment

800-654-4567 (code 344)
gigmrtg@airproducts.com
airproducts.com/glass



Global Combustion Systems

TOTAL SUPPORT

- Gas & Oil Burners for Melting Furnaces
- Complete Fuel Systems
- Furnace Control Systems
- Commissioning
- Servicing

2 Elphinstone Square
Deans Industrial Estate
LIVINGSTON EH54 8RG
Tel: +44 (0)1506 416160
Email: Sales@globalcombustion.com
Web: www.Globalcombustion.com



Hotwork
INTERNATIONAL

Low NOx
Combustion Technology

- Air Fuel Burner
- Oxy Fuel Burner
- Electric Boosting
- Bubbling

www.hotwork.ag

Decoration



High performance decoration inks for glass

Johnson Matthey
Inspiring science, enhancing life
www.matthey.com

Engineering Technology



Complete glass plants, expert services and high performance equipment.

www.heye-international.com

TO PLACE A CLASSIFIED ADVERT
+44 (0)1342 322133



JB

ELECTRICAL & MECHANICAL CONTRACTORS

- Complete Batch Plant & Furnace Electrical Installations
- IS Machine, Coating Hood, Lehr Installations
- Conveyor, Inspection & Palletizer Installations
- General Services, Distribution, Compressor, Vacuum System Installations

"Engineering Excellence within The Glass Division"

Get in touch for a free site survey and quotation
www.jbemc.co.uk info@jbemc.co.uk +44 (0) 1709 519 446

Forming



Building Innovation

BOTTERO S.p.a.
12100 Cuneo - Italy - via Genova 82
Tel. +39 0171 310611 - Fax +39 0171 310757
hollowglass.sales@bottero.com



D A Oldfield Ltd
GLASSWORKS TECHNOLOGY - PARTS - SERVICE

OVERHAUL, UPGRADE AND SUPPLY NEW PARTS TO ORIGINAL DRAWINGS

- 81 Standard Feeder
- 503 High Speed Feeder
- Shear Mechanisms
- Spout Bowl
- Revolving Tube Mechanism
- Plunger Chuck Assemblies
- IS Machine Mechanisms and Sub-Assemblies

Sole suppliers of I.S. Maintenance spare parts and machinery.

DESIGN • ADVANCEMENT • ORIGINALITY

1, The Green, Elvington, York YO41 4AF
Phone/Fax: +44 (0)1904 607086
Email: sales@daoldfield.co.uk
www.daoldfield.co.uk

Furnace Technology



DISMATEC
Glass Plant Engineering Worldwide

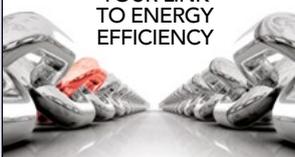
Turnkey Optimum Solutions in Glass Plant Engineering and Furnace Installation

Consultancy
New Furnace Installation
Existing Furnace Rebuild
Hot Repair
Inspection and Maintenance

Omnia One, Queen Street
Sheffield S1 2DG, UK
Tel. +44 (0) 114 279 2618
email. info@dismatecglassplant.com

www.dismatecglassplant.com

ELECTROGLASS
YOUR LINK TO ENERGY EFFICIENCY



ELECTROGLASS

Electroglass Ltd,
4 Brunel Road, Manor Trading Estate,
Benfleet, Essex SS7 4PS, England
t: (44) 01268 565577
e: info@electroglass.co.uk
w: www.electroglass.co.uk



FIC
F.I.C. (UK) LIMITED
Tomorrow's Technology Today

Are you interested in CO2 reduction?

Come to FIC for superboosting and large all-electric furnaces - we have the answers to reduce carbon footprint

- Innovative all-electric furnace designs
- Electric boost for extra tonnage and reduced emissions
- Versatile bubbler systems to eliminate floor wear
- All-electric forehearts reducing energy consumption by up to 80%
- Mathematical modelling
- Proven technical innovations

www.fic-uk.com
+44 (0) 1736 366 962

The World's Number One in Furnace Technology

FIC (UK) Limited, Long Rock Industrial Estate, Penzance, Cornwall TR10 9PL, United Kingdom

In the year of

“Parma Italian Capital of Culture 2021”



XXXIV ATIV

Where Glass Science, Art and Technology meet together

Parma (Italy)
May, 12th-13th-14th 2021
Parma University Campus



Organizing Secretariat



Via Marchesi 26/d - 43126 PARMA (Italy)
Tel. +39 0521 290191 - Fax +39 0521 291314
ativ2020@mvcongressi.it

With the Patronage of



www.ativ2020.it

glass
WORLDWIDE
OFFICIAL JOURNAL OF ATIV



glass SERVICE
Furnaces Forehearths Robotics
 SOLUTIONS FOR THE GLASS INDUSTRY

GLASS SERVICE s.r.l - ITALY
 tel. +39.0571.4442
 glass-service@glassservice.it
 www.glassservice.it

ULG-GmbH / UL-GLASS
 WORLDWIDE SERVICE FOR GLASS

Harrbacher Weg 30
 D-97753 Karlstadt
 Germany



Tel: +49 9353 4926
 Fax: +49 9353 996399
 Email: office@ulglass.de
 Web: www.ulglass.de / www.ulglass.com

Glass level measuring

KÜHNREICH Mess-
MEIXNER Regeltechnik

Kühnreich & Meixner
 Frankfurt am Main - Germany
 Tel: +49 (0) 69 - 55 14 79
 Fax: +49 (0) 69 - 55 26 51
 info@kuehnreich-meixner.com
 www.kuehnreich-meixner.com

Monitoring and controlling of processes for the glass production - worldwide!

Hot End Technology



GRENZBACH
 Grenzbach Maschinenbau GmbH
 Albanusstrasse 1-3
 86663 Asbach-Bäumenheim, Germany
 Tel. +49 906 982 0
 Fax +49 906 982 108
 e-mail: info@grenzbach.com
 www.grenzbach.com

TO PLACE A CLASSIFIED ADVERT
 +44 (0)1342 322133

Inspection



Reliable
 Innovative
 Accurate
 Intuitive

EVOLUTION by
IRIS Inspection Machines

Parc du Chêne,
 14 rue du 35^{ème} Régiment d'Aviation,
 F - 69500 BRON, France
 phone: +33.(0)4.72.78.35.27
 email: contact@iris-im.fr
 www.iris-im.com



It's really scary not to have the full picture!

Complete control, guaranteed.

Not just Information - ALLformation: www.tiamo.com

Inspection & Forming Controls

xparvision
 heading for perfection



www.xparvision.com

Measurement Systems

PENICO MOULD GAUGE EQUIPMENT



Penico Gauges Limited
 Albion Works • Keighley Road
 Bingley • BD16 2RD • UK
 Tel: +44 (0) 1274 511044
 Fax: +44 (0) 1274 510770
 E-mail: info@penico.com
 Web Site: www.penico.com

VMA
 Wherever glass is made

optical and non-contact thickness measuring techniques for

- container glass
- flat glass
- glass tubes
- patterned glass



www.vma-online.de

Melting Technology

Optimize Furnace Life



www.smartmelter.com

TO PLACE A CLASSIFIED ADVERT
 +44 (0)1342 322133

Process Control



Explore the Possibilities for a Sustainable Efficient Future

eurotherm.com/glass Eurotherm by Schneider Electric

futronic
 automation

Timing and Drive Systems for IS Machines

Tolnauer Straße 3-4 | D - 88069 Tettwang
 Tel. +49 7542 5307-0 | info@futronic.de
 www.futronic.de

automation in a new dimension

SIEMENS
 Ingenuity for life



Digitalization ensures lasting success!

siemens.com/glass

Quality Traceability

Vertech'
 Drive the future

Your whole production process under control



vertech.eu
 Vertech' on LinkedIn
 Vertech' on YouTube

Screenprinting

ATMA **SPS**
 TechnoScreen

SCREEN PRINTING MACHINERY FOR:

- Appliance glass
- Cover & technical glasses
- Architecture
- Automotive

www.sps-technoscreen.com
 www.atma.com.tw

DUBUIT Inks
 INNOVATIVE INKS

Screenprinting, pad printing and digital printing inks for glass decoration

www.encresdubuit.com

FERRO
 Where innovation delivers performance™

For outstanding glass color and coating technologies

www.ferro.com



CHINA GLASS 2021

31st China International Glass Industrial Technical Exhibition

Shanghai New International Expo Centre

May 6-9, 2021

Organizer: The Chinese Ceramic Society
Supporter: Shanghai Ceramic Society
Contractor: Beijing Zhonggui Exhibition Co., Ltd.

Tel: +86-10-57811261, 57811409
Fax: +86-10-57811262
E-mail: ceramsoc@chinaglass-expo.com
<http://www.chinaglass-expo.com>



WeChat ID: CHINAGLASSEXPO



Fimor
SERIGRAPHY

POLYURETHANE SQUEEGEES
FOR FLAT & HOLLOW WARE
SCREEN PRINTING

Worldwide
distribution



serilor@fimor.fr
fimor-serigraphy.com



Gallus

**Gallus Screeny
G-Line & C-Line**
Hollow glass printing
with system



www.gallus-group.com



Grünig

STRETCHING
COATING
WASHING

Screen printing
technology to
produce the
perfect screen

Grünig-Interscreen AG
www.grunig.ch

SWISS SCREEN TECHNOLOGY 



ISIMAT
a KURZ company

Printing machines for direct printing
onto packaging containers.

ISIMAT GmbH Siebdruckmaschinen
Rindelbacher Str. 36 - 40
D-73479 Ellwangen | Germany
Tel. +49 - (0) 7961 886 0

www.isimat.com



KIWO

- Screenmaking chemicals
- Specialty adhesives
- Resists and coatings



Germany
info@kiwo.de · www.kiwo.de

USA
info@kiwo.com · www.kiwo.com

Australia
info@kiwo.com.au · www.kiwo.com.au

Singapore
info@kiwo.sg · www.kiwo.eu



KOENIG & BAUER
Kammann GmbH

**DIGITAL
SCREEN PRINTING
HOT STAMPING**

FULLY AUTOMATIC
UNIVERSAL DECORATING
MACHINES

Weidehorst 80,
32584 Löhne, Germany
kammann.de

TO PLACE A
CLASSIFIED ADVERT
+44 (0)1342 322133



Organic Glass Inks

Marabu GmbH & Co. KG
Asperger Strasse 4
71732 Tamm
Germany

Your link to ink:
+49 7141 691 0
info@marabu.com
www.marabu-inks.com




RKS

HIGH TECH PRINTING
AND COATING EQUIPMENT

- RKS System and Carbon Squeegees
- RKS Squeegees & Holders for PVT and Micro Electronic printing
- RKS Squeegee grinding technology
- RKS Special application machinery

RK Siebdrucktechnik GmbH
Nußbaumweg 31
51503 Rösrath Germany
Tel. +49 (0) 2205 949970
info@rk-siebdruck.de

www.rk-siebdruck.de



RUCO

RUCO Druckfarben
A. M. Ramp & Co GmbH

Lorsbacher Straße 28
65817 Eppstein/Ts., Germany
Phone: +49.61 98 - 30 40
Fax: +49.61 98 - 3 22 88
info@ruco-inks.com
www.ruco-inks.com

SAATIglass:

The Pre-Press Package
For The Glass Industry

Screen Fabrics, Chemicals,
Stencil Materials and Equipment

SAATI S.p.A
Via Milano 14
22070 Appiano Gentile (CO)
Italy

Tel: +39 0319711
Fax: +39 031933392
email: screenprinting@saati.com
web: www.saati.com



S E F A R

Screen printing
mesh for the
glass industry

Sefar AG
Hinterbissastrasse 12
9410 Heiden – Switzerland
Phone +41 71 898 57 00
printing@sefar.com
www.sefar.com

TO PLACE A
CLASSIFIED ADVERT
+44 (0)1342 322133



SignTronic
AG

CtS direct exposing technology
and screen automation

SignTronic AG
www.signtronic.com

SWISS CIS TECHNOLOGY 

Subscribe today

To receive future copies
of Glass Worldwide and
download content, visit
www.glassworldwide.co.uk
Subscribers receive a FREE
copy of the Who's Who /
Annual Review Yearbook!

TO PLACE A
CLASSIFIED ADVERT
telephone
+44 (0)1342 322133
or email sales@
glassworldwide.co.uk

Services



Hotwork
INTERNATIONAL

- Furnace Heat-Up
- Furnace Draining
- Regenerator Repair
without Production Loss
- Regenerator Cleaning
- Hot Drilling / Electrode
Holder Replacement

www.hotwork.ag



Worldwide supplier of glass furnace
heating, expansion control supervision,
regenerator sulfate burnouts, glass
draining with hot water recycling,
wet cullet filling, furnace cooldowns
and hold pots, and electronic crown
rise monitoring. The only continuous
operating Hotwork heatup company
since 1965 and proud sponsor of -



Hotwork-USA, 223 Gold Rush Road
Lexington, KY, USA 40503
1-859-276-1570 www.hotwork.com

Swabbing




administration@novaxion.fr
www.novaxion.fr

UV curing

UV curing systems
Exposure units
UV measuring devices

made in Germany 



TECHNIGRAF

info@technigraf.de www.technigraf.de

Glass packaging industry launches sustainability hallmark



glass
WORLDWIDE
Preferred
journal
of FEVE

Backed by growing consumer preference for products in glass packaging, a collaborative effort from the glass industry has resulted in the creation of a packaging symbol that brands and retailers can use to highlight the health and environmental credentials of glass.



Michel Giannuzzi, President of FEVE.

Over the course of a year the glass industry collaborated with designers, customers and consumers to co-create a recognisable symbol of protection and recycling. The resultant hallmark is available for licensed use on food and beverage packed in glass, as well as pharma, perfumery and cosmetics products.

Jointly developed by designers and consumers – who voted on the final logo – to be emblematic of health and sustainability, each graphic element of the hallmark symbolises the commitment made when choosing glass: To use resources wisely in an endless loop; to recycle wherever possible; to protect and preserve both the quality of the product and the health of the people who use it; and to actively choose a sustainable future.



Available for licensed use on all glass packaging, the hallmark is designed to highlight the environmental and health benefits of choosing products packaged in glass at a glance.

Transparent affection

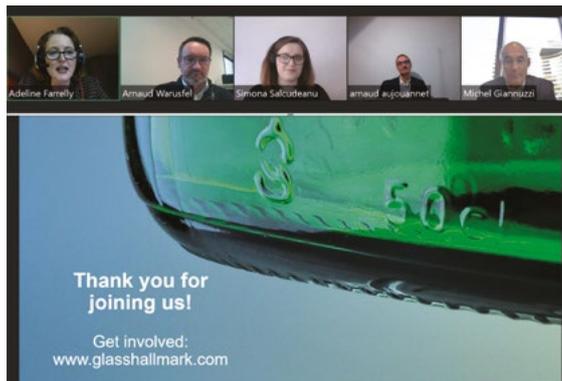
As part of the European Week for Waste Reduction, over 220 participants joined representatives from the European glass container industry, together with Packaging Development Manager Arnaud Warusfel of plant-based food supplier Bonduelle and Researcher Simona Salcudeanu from Insites Consulting and Eyeka Creative Crowdsourcing to officially launch the new hallmark at the online event.

Commenting on its first public reveal, Michel Giannuzzi, President of the European Container Glass Federation (FEVE) said “This symbol marks the first milestone on our journey to work together with customers and brands to provide packaging solutions that answer to a growing sustainability focus from consumers. With glass already a success story in both sustainability and health, we want to remind the world what they already love about everyday products in glass. Our ultimate aim is for consumers across Europe to see this new hallmark on all products in glass packaging on the shelves – whether that’s preserved foods, beverages or olive oils – and to know that their choice of glass stands for creating a more sustainable future.”

Bonduelle voiced its support for the hallmark, with Arnaud Warusfel offering the following endorsement: “If we only try to tackle the issue of sustainability individually, we will arrive in 2030 and realise that we have moved no further than some numbers on a Powerpoint slide. Standing for both environmental preservation and health, this new symbol will be a useful tool to co-ordinate brand efforts with those of our packaging suppliers, bringing together the concerns of business and the public to fully commit to sustainability.”

Industry initiative backed by consumer choice

The hallmark launch followed a survey of 10,000 European consumers across 13 countries, carried out by market



The hallmark initiative was launched online on 24 November 2020.

researcher InSites Consulting. The findings demonstrated that not only are Europeans increasingly concerned about the environmental impact of packaging but that the majority consider glass to be the safest, healthiest and most environmentally-friendly form of packaging. Increasingly this perception is driving purchasing decisions:

- 42% buy more products in glass because they consider it can be recycled more than other packaging.
- 33% do so because they consider glass better at preventing food contamination and preserving health.
- 31% consider glass to give a strong health safety feeling.
- 30% choose glass because it causes less littering of containers into the natural environment.

While consumer desire to purchase more products in glass is high, the top barrier cited for buying less glass (by 27% of respondents) is that their preferred brands are often not available in glass packaging.

For brands looking to grow their market share, these are all clear drivers in favour of increasing the availability of products packaged in glass and making the message of preservation and protection resonate directly at shelf point.

With the public expecting business to do its part for the environment, the glass hallmark represents the ideal visual medium for brands wishing to demonstrate their commitment towards sustainability. The glass industry invites all brands, customers and retailers to participate in the glass hallmark initiative to promote glass as the packaging of tomorrow, for the health of the public and the planet. Visit www.glasshallmark.com to learn how brands can use the hallmark on packaging. ●

Further information:

FEVE, Brussels, Belgium
tel: +32 2 536 0080
email: secretariat@feve.org
web: www.feve.org

NEW!

STRUTZ

Non-Contact
Optical
Registration
Vision System
for the Strutz
Chainless
CLS-175
and CLS-200
Decorators



The revolutionary Strutz high production body and shoulder decorating machines now feature:

- Optical registration camera with servo control eliminating contact with glass beverage bottles
- Easy control of seam angular position or print placement on bottles with operator interface
- Detection using existing lugs on bottles, quality Plant Symbol, or Mark
- Up to 200 pieces per minute
- CLS-175 decorates body and shoulder of large bottles up to 1.25 liter
- CLS-200 machine provides optimum production for body and shoulder decorating typical 12 oz. bottles at speeds of up to 200 BPM

Performance Proven Worldwide



**CHAINLESS
CLS decorating machine**

For information on the complete line of STRUTZ equipment and services, visit our website:
www.strutz.com



Machines from Mars



Strutz International

P.O. Box 509 • Mars Valencia Road • Mars, PA 16046 • U.S.A.
Tel: (724) 625.1501 • Fax: 625.3570 • E-Mail: info@strutz.com

This is not a solar eclipse



Wire Edge detection
with zero compromise by

Evolution5
NEO