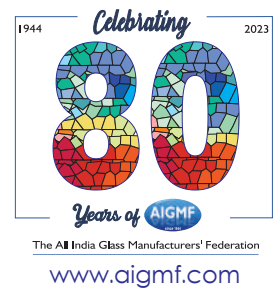


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Quarterly Journal of **The All India Glass Manufacturers' Federation**
Bi-lingual

Special Feature

- Glass News
- 14th International Conference on "Decarbonization for the Sustainable Glass Industry"
- Glasstech & Fenestration Asia 2023
- On the Spot... Prof. Dr. Ahmet Kirman
- 4th glasspro INDIA & 7th glasspex INDIA
- Using Secondary Raw Materials in the Glass Industry
- Turning Up the Heat on Furnace Construction

Upcoming Events

- AIGMF's Executive Committee Meeting and a Special Session on Robots & Raw Materials in Glass Manufacturing (March 16, 2024) at HYDERABAD

Main Stories

14th International Conference on
"Decarbonization for the Sustainable Glass Industry"



Glasstech & Fenestration Asia 2023



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Quarterly Journal of **THE ALL INDIA GLASS MANUFACTURERS' FEDERATION**

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**WE ARE
GLASS
PEOPLE**

From President's Desk

The last quarter of 2023 kept Secretariat busy with some high-profile events that are covered in Oct-Dec 2023 issues of both Kanch and Glass News.

To commemorate International Youth Day, AIGMF invited online entries from the age group between 7-24 years to participate in the contest themed 'Green Energy via Solar Glass or सोलर ग्लास से हरित ऊर्जा'. Top 3 winners were given cash prizes. And later the entire project was converted into the 2024 annual Calendar by using their creatives and poems.

The annual calendar on solar glass was officially released on Dec 7 in AIGMF office at the Container Glass Meet where former President and Office Bearers were present along with other members. As a part of an educative process, 2000 wall calendars were distributed to AIGMF Members / Regional Associations, Stakeholders: All members of the Parliament in upper and lower houses / Secretaries to Govt. of India / office of Chief Secretaries / LGs / Administrators / CMs / select Gol departments / Trade Chambers / Education Secretaries / All FOSG Members / Firozabad / CGCRI contacts / General / Foreign Missions / select PAN India Schools / Colleges / Universities / Niti Aayog / PMO / MNRE / Solar Module Manufacturers' / select worldwide glass associations, etc.



The 19th edition of Glasstech Asia – and the 6th edition for Fenestration Asia was held at IMPACT Exhibition and Convention Centre in Bangkok, THAILAND from Nov 29 to Dec 1, 2023. The event centered on the glass used in buildings and automotive Industry, which included sectors in manufacturing, processing, and supplies for glass machineries, along with construction and façades.

AIGMF supported the event as a Media partner. Secretary and Consultant AIGMF along with Mr. Purvish Shah (Treasurer AIGMF and Director in Gopal Glass Works Ltd., and Gobind Glass and Industries Ltd.) were specially invited by Messe Munchen to be a part of their show. In the technical conference, Mr. Shah gave a presentation on the Future of Solar and Textured Glass on Dec 1.

The World Soda Ash Conference 2023 was held from Oct 10-12 at Athens, GREECE. AIGMF supported the conference as one of the Media partners. Mr. Rajesh Khosla, Sr. VP AIGMF & CEO/President AGI Greenpac presented a paper on Soda Ash and Container Glass Industry on Oct 12.

7th edition of glasspex INDIA & 4th edition of glasspro INDIA took place at Bombay Exhibition Center, Mumbai from September 14-16, 2023. The exhibition was supported by AIGMF and organized by Messe Düsseldorf India. Both events were powered by glasstec, Düsseldorf, GERMANY – the world's leading exhibition for the glass industry. Spread across an area of 7000 square meters, 171 companies from India and abroad showcased their exhibits & solutions and gathered keen interest from buyers.

AIGMF in partnership with Glass Worldwide magazine and Messe Dusseldorf organized its 14th International Conference on "Decarbonization for the Sustainable Glass Industry". The conference was extremely successful in registering over 100 members from the industry world over. Apart from expert speakers, Delhi Technological University, Messe Düsseldorf India and Glass Worldwide's support, the conference was sponsored and supported by companies namely - La Opala, Borosil, Cello, Haldyn Glass, Schott India, PGP, AGI, Gopal Glass, Empire-Vitrum, Asahi, Gujarat Guardian, Kapoor Glass, NIPRO, Neutral Glass, NES, Dukhiram Maurya, Mascot, Firozabad and affiliated members.

Select photos, presentations and press releases are also available at <https://www.aimf.com/past-events.php> ■

Sanjay Agarwal

President AIGMF and

Director, Kwalty Glass Works, Firozabad (UP)



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GLASS News

RELEASE OF AIGMF 2024 PRINT CALENDAR ON THE THEME 'GREEN ENERGY VIA SOLAR GLASS'

The annual calendar on solar glass was officially released on Dec 7 in AIGMF office at the Container Glass Meet where former President and Office Bearers were present along with other members.

To commemorate International Youth Day, The All India Glass Manufacturers' Federation (AIGMF) invited online entries from the age group between 7-24 years to participate in the contest themed 'Green Energy via Solar Glass or सोलर ग्लास से हरित ऊर्जा।

Top 3 winners were given cash prizes. And later the entire project was converted into the 2024 annual Calendar by using their creatives and poems.

As the National Apex Body of the Glass Industry, the AIGMF undertakes socially responsible steps as a voluntary service to society, thereby bringing increased awareness of Glass being a safe and 100% recyclable building and packaging material.

As a part of an educative process, 2000 wall calendars were distributed to AIGMF Members / Regional Associations, Stakeholders: All members of the Parliament in upper and lower houses / Secretaries to Govt. of India / office of Chief Secretaries / LGs / Administrators / CMs / select Gol departments / Trade Chambers / Education Secretaries / All



FOSG Members / Firozabad / CGCRI contacts / General / Foreign Missions / select PAN India Schools / Colleges / Universities / Niti Aayog / PMO / MNRE / Solar Module Manufacturers' / select worldwide glass associations, etc.

Soft copy of the calendar is available at www.aimf.com

SAMIT DATTA AWARDED CIO EXCELLENCE AWARD IN DATA ANALYTICS



Mr. Samit Datta, Global Chief Supply Chain & Technology Officer at PGP Glass Pvt. Ltd., was recognized at the 2nd edition of the CII CIO Excellence Awards 2023 held on Nov 2 in Delhi as follows: Leading CIO of

the Year in the sectoral category of Industrial Manufacturing- this award acknowledges his leadership in driving enduring technology (IT, Digital & Data Analytics) led business transformations, emphasizing technological rigor, business impact and sustenance; And Winning CIO Leader in the thematic category of Excellence in Data Analytics & Business Insights- this award lauds the several use case presented under his leadership in glass manufacturing energy reduction and logistics management emphasizing the successful transformation from "Digital to Data Analytics" that significantly impacted the bottom line.

The CIO Awards celebrate visionary and exceptional CIOs & Tech Leaders with innovation, strategic thinking and transformative initiatives. They are inspiring examples of reshaping the Indian Tech landscape through leadership and business stakeholder partnerships. This year, 15 award categories – 10 sectoral and 5 thematic, recorded 468 entries in total and the Winners were recognized through a rigorous 3 stage process

THE 2023 ICG ANNUAL MEETING



The 2023 ICG Annual Meeting was held between November 12-15 at Hangzhou, CHINA. The Congress covered topics on glass science, technology and production. In addition to the common topics, the Congress focused on new directions of glass developments and applications.

adjudged by industry CXOs and Technology Industry stalwarts.

It is a matter of great pride that Mr. Samit Datta was recognized in both the categories as Winner.

LEYBOLD WINS THE DOUBLE AT TWO INDUSTRY AWARDS

On Nov 1, Leybold UK was honoured with two prestigious industry awards “Best Organisation Culture 2023” from the LAB Awards, and “Employer of the Year 2023” from Composites UK.

Each award recognizing Leybold’s core values of interaction, commitment and innovation, and commitment to making Leybold a Great Place to Work.

Both awards were announced at separate award ceremonies on the evening of Nov 1 during the Advanced Engineering and LAB Innovations exhibitions in Birmingham, UK, where members of the Leybold team received their awards.

Established in 1850, Leybold is a pioneer in vacuum innovation. Their inventions have paved the way for many modern-day vacuum technologies, including the range of next-generation vacuum products. Leybold is recognized globally as a leader in the manufacture



of vacuum pumps and systems for industrial and scientific vacuum applications, that are supported by specialized and globally accessible Service solutions.

Founded in Cologne, GERMANY with sales and service locations around the globe, Leybold is a part of the Atlas

Copco Group. More information at www.leybold.com

CONTAINER GLASS INDUSTRY WELCOMES EP DECISION TO PROTECT DISTINCTIVE PACKAGING DESIGNS

The European Container Glass industry welcomed the outcomes

of the European Parliament Plenary session vote on the Packaging and Packaging Waste Regulation (PPWR) designed to make the packaging sector a key contributor to the EU Circular Economy.

Industry applauded EP recognition of the key role of packaging design to convey product identity, brand recognition & value of high-quality EU products. The Industry called on the Council of the EU also to ensure adequate protection of all Intellectual Property rights and therefore of distinctive and iconic products that rely on them.

“Packaging is an inherent part of the product and by its design it helps consumers recognise brands and make informed choices. Unique and creative packaging shapes are a key touch point on the shelves for all consumers”, comments Ms. Adeline Farrelly, Secretary General of FEVE. *“Protecting Intellectual Property Rights is a major step forward in safeguarding creative designs and the fundamental role of packaging in product differentiation, identity, brand recognition and value creation.”*

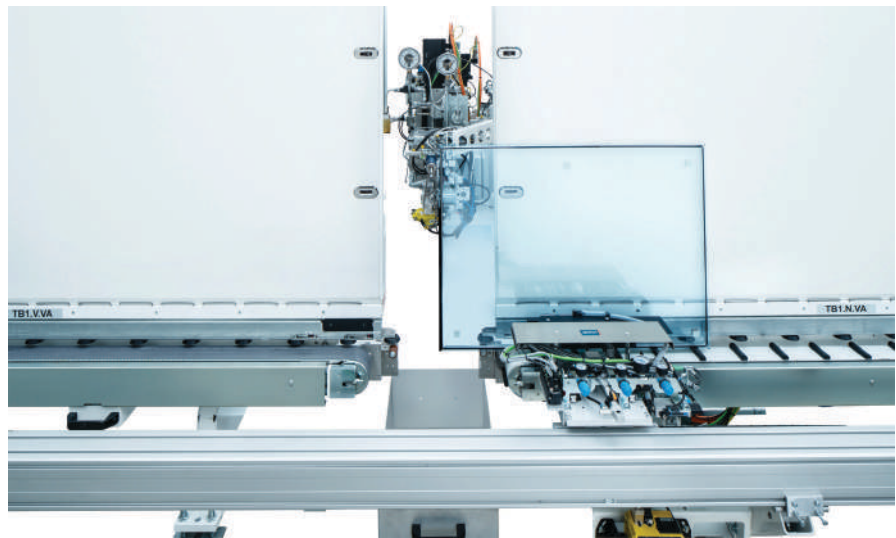
Furthermore, the industry appreciated the EP’s decision to maintain the ambitious packaging waste reduction targets while maintaining a level playing field. *“The Parliament’ vote mitigates against the risk that heavier but circular materials like glass are replaced by lighter packaging materials, but which are harder to recycle or reuse”,* added Ms. Farrelly.

Ms. Farrelly further commented: *“the introduction of recyclability performance grades rewarding packaging that can be recycled multiple times and that can feed into a closed material loop scheme is a major milestone. These grades have*

the potential to incentivize materials like glass that is infinitely recyclable in a closed product loop.”

GLASTON INTRODUCES ACTIVE'SEALER

Glaston recently unveiled its latest sealing robot for insulating glass units – Glaston ACTIVE'SEALER. This innovative addition expands Glaston's sealer product family, complementing the high-end Glaston SPEED'SEALER and bridging the gap for the mid-range market. Its excellent mixing and dosing quality is based on approved two-component sealants.



ACTIVE'SEALER is an efficient yet economical machine designed for automated insulating glass (IG) sealing. With a sealing speed of up to 30 meters per minute, it caters to glass processors who primarily produce double IG units, offering them a reasonable solution without compromising on quality. Processing triple units is even possible.

ACTIVE'SEALER is based on established gear pump dosing technology, which has been serving customers reliably and cost-effectively for decades. The high-precision system ensures excellent sealing quality and allows for immediate volume adjustment when changing

the sealing depth. The special nozzle-spatula system guarantees uniform sealing in corners. Plus, operators can easily fine-tune the material ratio electronically from the control panel to achieve optimal mixing quality. For varying spacer widths, the nozzle is centered automatically, and the quick-action lock system leads to a fast nozzle exchange.

Optionally, the machine offers the flexibility to seal shaped formats according to the shape catalog. It comes with an optional 5-meter-long run-out conveyor equipped for the safe removal of heavy insulating glass

units. Individual customization of the transport sections is also an option.

ACTIVE'SEALER features a user-friendly and intuitive graphical interface for easy operation. It is available in three configurations: Light (max. 2.8 x 3.5 m), Standard (max. 2.8 x 4.0 m) and Extended (max. 2.8 x 5.0 m).

AGC SUCCESSFULLY RECYCLES SOLAR PANEL COVER GLASS

AGC announced that it recycled around 24 tons of used solar panel cover glass into raw material cullet, which can be reused for flat glass production through a special heat treatment.



Recycling process for solar panel cover glass

According to the officials, the successful test demonstrated that the process can reduce industrial waste and conserve raw materials derived from natural resources such as silica sand and soda ash, thereby promoting a circular economy.

The test demonstration occurred at AGC's Yokohama Technical Center's glass production furnace. To recover the glass from the solar panels, AGC used heat treatment technology of the commercial solar panel recycling production line of Mitsubishi Chemical Group company Shinryo Corp.

According to officials, the service life of solar panels is estimated to be 20-30 years, and panels weighing hundreds of thousands of tons are expected to be disposed of annually starting in the late 2030s. Cover glass accounts for about 60% of this total weight, and there is concern that a serious environmental impact will occur if disposed of as industrial waste in large quantities in landfills.

NL VARSHNEYA MEMORIAL LECTURE ON SUSTAINABILITY WITH GLASS

The inaugural 'NL Varshneya Memorial Lecture on Sustainability with Glass' was presented by Dr. Erik Muijsenberg of Glass Service Co., Czech Republic on Sept 4 at the annual meeting of the Society of Glass Technology at the Murray Edwards College, University of Cambridge UK.

The lecture was entitled, "Pyrex(R) Furnace: on the road to decarbonization". Dr. Muijsenberg emphasized the use of electric melting in low expansion borosilicate tanks to move in the direction of decarbonization of the glass industry - a UN sustainability theme.

Professor Arun Varshneya, the current President of the Society of Glass Technology introduced the lecture by introducing his father the late Mr. Nathi Lal Varshneya's steps 'From Agra (INDIA) to Sunderland UK - in search of Pyrex(R)'. Dr. Varshneya indicated that his father's travel in June 1953 from Agra to Sunderland UK visiting James A. Joblings Ltd., to negotiate a distributorship of Pyrex(R) brand laboratory glassware in India later became the foundation of Prof. Varshneya's path to the UK to pursue glass technology degree at the University of Sheffield in 1962



followed by an internship at James A. Joblings.

A champaign reception in the memory of NL Varshneya, sponsored by Saxon Glass Technologies, Alfred NY was given on Sept 5th evening just preceding the society banquet at the Corpus Christi College.

Yet another major highlight of the event was the presentation of a paper entitled, "Packing in PbO-B2O3 and Bi2O3-B2O3" by Ms. Keya Aggarwal, a great granddaughter of NL Varshneya, currently a high school student at the Welham Girls College, Dehradun (INDIA). The presentation was based on research conducted under the advisorship of Professor Steve Feller, Coe College IA (USA). Ms. Aggarwal is the youngest ever to present a technical paper at the Society of Glass Technology annual meetings throughout its 107 years of history.

SISECAM'S PROF. (DR.) AHMET KIRMAN RECEIVED THE PHOENIX GLASS PERSON OF THE YEAR AWARD

Sisecam Chairman and fully Authorized Executive Member of the Board of Directors Prof. Dr. Ahmet Kirman received the 'Glass Person of the Year 2023' award for his long-term, significant, and valuable contributions to the global glass industry.

This prestigious award, widely known as the 'Oscar' of the glass industry, was presented to Prof. Dr. Kirman by the Phoenix Award Committee at a special ceremony held in Como, Italy. Representatives of the global glass industry and

the business world convened at this special event, where Phoenix Award Committee Chairman Mr. Lincoln Brown presented the award to Prof. Dr. Ahmet Kirman.

At the award ceremony, Prof. Dr. Ahmet Kirman delivered a speech on how the glass industry can play an active role in for solving the major challenges that the world is currently facing: "Today, the world has three critical problems, and the glass industry could have a vital role to play in solving



these problems. The biggest issue the world is facing today is unequal income distribution. The glass industry should adopt a more constructive and inclusive approach that enriches not only its shareholders but also its employees. We must go beyond defining everything with costs and EBITDA and step up our efforts to correct the income distribution in the glass ecosystem. Another pressing issue is that the concept of a sustainable world is not sufficiently taken into consideration for the sake of political and economic interests, in spite of being strongly voiced, especially in developed countries and at the United Nations. First of all, the glass industry needs to act together to address resource use. In order to tackle our common problems effectively, we must create a shared

wisdom, free from the desire for profit, and focused on collaboration rather than competition. Another critical issue is that the world's population has exceeded 8 billion and women, who make up more than half the total, are still not offered an equitable environment despite a lot of sophisticated rhetoric. We should also work harder to provide equal opportunities for women in the glass industry at all levels and every stage of production."

Prof. Dr. Kirman also expressed his thoughts about the Glass Person of the Year Award: "It is a tremendous honor to be presented with this prestigious award. My professional journey has included roles as a judge, an academic, and a banker, culminating in my experience in the glass industry. It is very impressive both in terms of motivation and responsibility to know that what we do is followed and appreciated in this sector. I would like to thank the distinguished members of the Committee."

Phoenix Award Committee Chairman Mr. Lincoln Brown stated that they were very happy to present this award

to Prof. Dr. Ahmet Kirman, who had made significant contributions to the development of the glass industry for 17 years. He also pointed out that Sisecam was able to become a global powerhouse under Prof. Dr. Kirman's inspiring leadership.

काँच निर्यातक को मिली डाक्ट्रेट की उपाधि

पर्यावरण स्वास्थ्य व सामाजिक क्षेत्र में बेहतर कार्य करने पर फ्रांस की दी बैम्स इंटरनेशनल यूनिवर्सिटी ने प्रमुख काँच निर्यातक मुकेश बंसल टोनी को डाक्ट्रेट की मानद उपाधि दी है। नवंबर 5 को गुरुग्राम में आयोजित कार्यक्रम में उन्हें इस उपाधि से सम्मानित किया गया।

गुरुग्राम के होटल रेडिसन में आयोजित कार्यक्रम में फ्रांस की कॉमनवेलथ वोकेशनल यूनिवर्सिटी के वाइस चांसलर डा. रिपुरंजन, सीईओ डा. मानव आहूजा व डा. सुधीर गौर द्वारा एक्सपोर्ट एसोसिएशन अध्यक्ष व प्रमुख निर्यातक मुकेश बंसल टोनी को यह उपाधि प्रदान की। उन्होंने बताया कि फ्रांस की यूनिवर्सिटी द्वारा यह उपाधि सामाजिक कार्यों के लिए प्रदान की जाती है। मुकेश बंसल ग्रेटर नोएडा की सोशल वेलफेयर सोसायटी के पदाधिकारी हैं। निर्यात के क्षेत्र में बेहतर प्रदर्शन करने पर केंद्र व प्रदेश सरकार



बैम्स इंटरनेशनल यूनिवर्सिटी फ्रांस द्वारा निर्यातक मुकेश बंसल टोनी को डाक्ट्रेट की उपाधि देते कॉमनवेलथ वोकेशनल यूनिवर्सिटी के कुलपति डा. रिपुरंजन, डा. मानव आहूजा व डा. सुधीर गौर

से अब तक 72 अवार्ड मिल चुके हैं। जल संरक्षण के लिए रेन वाटर हार्वेस्टिंग सिस्टम स्थापित कराए हैं। कोरोना काल में साथी फाउंडेशन के साथ मिलकर आक्सीजन कांस्ट्रेटर बैंक की स्थापना कराई।

WORLD SODA ASH CONFERENCE 2023

The World Soda Ash Conference 2023 was held from Oct 10-12 at Athens, GREECE. The All India Glass Manufacturers' Federation supported the conference as one of the Media partners.

Mr. Rajesh Khosla, Sr. Vice President AIGMF & CEO/President AGI Greenpac presented a paper on Soda Ash and Container Glass Industry on Oct 12.

Pre-event article published in Kanch is available at <https://www.aigmf.com/past-events.php>

ग्लास युग के मुख्य संपादक श्री एस. पी. शर्मा नहीं रहे



स्व. श्री एस. पी. शर्मा
2 मार्च 1947 - 2 दिसंबर 2023

ग्लास युग के संपादक श्री एस. पी. शर्मा 76 वर्ष की आयु में 2 दिसंबर 2023 को लम्बी बीमारी के पश्चात् अपने निवास स्थान पर रात्रि 9.30 बजे अपनी सांसारिक यात्रा पूर्ण कर भगवान के श्रीचरणों में विलीन हो गये।

एस. पी. शर्मा अपने शोकाकुल परिवार में अपनी धर्मपत्नी श्रीमती मंजु लता शर्मा के अतिरिक्त एक मात्र पुत्र अतुल शर्मा एवं पुत्रवधु,



दो पुत्रियों-दामादों, पौत्र-पौत्री, नाति-नातियों सहित भरा-पूरा परिवार छोड़ गये हैं।

GOLD PLUS GROUP INAUGURATES SOLAR GLASS PRODUCTION



Gold Plus Group recently inaugurated its Solar Glass Production Plant – a historic event that marked a significant stride towards a more sustainable and environmentally conscious future.

This new facility is situated at Gold Plus' Belgaum (Karnataka, INDIA) facility and has a production capacity of 300 tonnes per day production equivalent to solar glass for 2.0 GW

of solar modules. The product range shall include higher transmission and low iron content Solar Glass-textured and processed. Standard and customized thickness shall also be available.

Gold Plus is the fastest growing float glass manufacturing company in India. It is the only 100% Indian Company in the whole world producing float glass. Also, the first BIS certified float glass in India. Gold Plus has installed capacity of 2050 Tonnes per Day of float glass at present and by the end of FY 2024 Gold Plus Group will be having installed operational capacity of 2850 Tonnes Per Day of float glass ■



(News Source: AIGMF Research Team / World Wide Web)



The All India Glass Manufacturers' Federation



AIGMF's Executive Committee Meeting and a Special Session on Robots & Raw Materials in Glass Manufacturing

(March 16, 2024)

at Novotel Hyderabad Airport, HYDERABAD

(Entire arrangements by M/s AGI Greenpac)

PROGRAM as on Jan 20, 2024

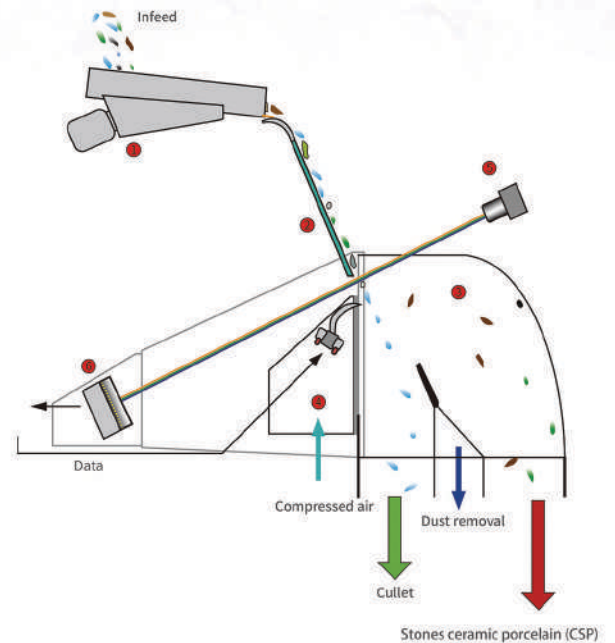
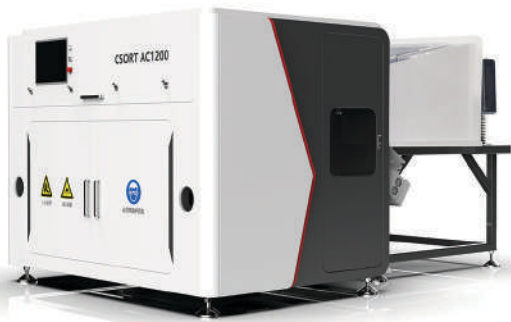
March 16 (Saturday)	
0800-1130 hrs	Arrival of AIGMF Members / Ex-Com Members / Office Bearers (All guests to be received at the airport)
1200 hrs	Registration: Tea / Coffee
1230 hrs	Executive Committee Meeting
1315 hrs	Lunch
1430 hrs	<p>Welcome speech By Mr. Sanjay Agarwal (President AIGMF)</p> <p>Role of Container Glass in World Consumer Rights Day (March 15) By Mr. Rajesh Khosla (Sr. VP AIGMF and CEO / President AGI Greenpac)</p> <p>Presentations on:</p> <p>1) ROBOTS IN GLASS MANUFACTURING (offering technical solutions) By Er. Pulkit Gaur (Chief Technology Officer of Gridbots Technologies Pvt. Ltd.) and recipient of CK Somany Glass Award 2023 for Innovation and Technology <i>Er. Pulkit Gaur drives the companies Innovation and Technological advancements. An Engineer by education and the founder of Gridbots Technologies - Robotics is his passion. He has been building robots since his childhood.</i></p> <p>2) RAW MATERIALS FOR GLASS MANUFACTURING (Samples of Quartzite, Silica sand, Glassomite Slag, Iron Chromite, Alumina Hydrate, Soda Ash will be on display) By Mr. Aurindam Dey (Director) and Mr. Puspendu Chakrabarty (Dy. General Manager of IMR Resources India Pvt. Ltd.) By Mr. Dharmendra Baid (General Manager of Karneet Enterprises India Pvt Ltd.) By Mr. Pratik Joshi (Director of Eco Clay Solutions Pvt. Ltd.)</p> <p>Q & A</p>
1700 hrs	High Tea
1800 hrs onwards	Return Flights to the respective destinations

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14th International Conference on "Decarbonization for the Sustainable Glass Industry"

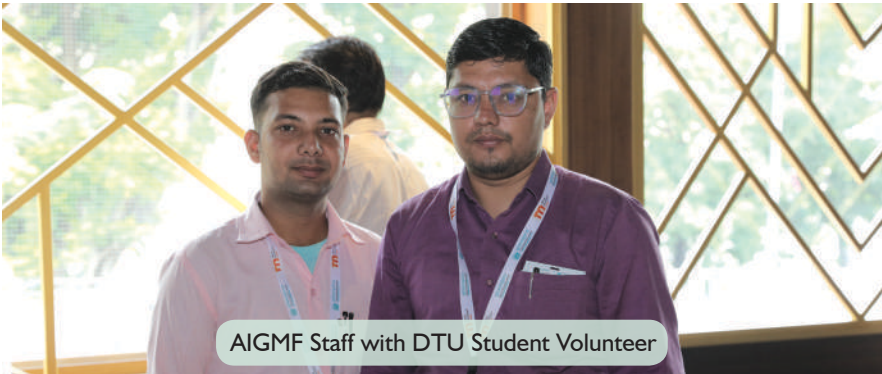
(September 15, 2023)

AIGMF in partnership with Glass Worldwide magazine and Messe Dusseldorf organized its 14th International Conference on "Decarbonization for the Sustainable Glass Industry" on Sept 15.

The conference was held parallel to glasspex / glasspro exhibitions at Bombay Exhibition Centre, Mumbai covering following technical presentations from the world's renowned glass technology providers:

- Accelerating International Capability for a Circular Economy by Mr. Neil Butler, Global Innovation Lead of GLASS FUTURES Ltd.
- The Future of Glass Furnaces in a Decarbonized world by Mr. Steve Burns, Technical Manager of FIC (UK) Ltd.
- New Melting Technologies Require Updated Refractory Monitoring Methods by Mr. Fred Aker, Vice President of PANERATECH
- All-electric forehearths and the role they play in a carbon neutral





AIGMF Staff with DTU Student Volunteer



Prof. A S Rao with students of DTU who helped as Volunteers for the AIGMF related programs at the exhibition and conference



glass manufacturing industry of the future by Mr. Graham Stuart, Project Engineer of ELECTROGLASS



- In-Furnace Thermal Imaging for Process Optimization for Energy



Reduction and Asset Protection by Mr. Neil Simpson, Consultant of AMETEK Land





- Your Vision for Sustainable Glass Melting - Our Tools by Mr. Matthias Haas, Associate Director of EMISSION by SORG Group



The conference was extremely successful in registering over 100



members from the industry world over. Apart from expert speakers, Delhi Technological University,





Messe Düsseldorf India and Glass Worldwide's support, the conference was sponsored and supported by companies namely - La Opala, Borosil, Cello, Haldyn Glass, Schott India, PGP,

AGI, Gopal Glass, Empire-Vitrum, Asahi, Gujarat Guardian, Kapoor Glass, NIPRO, Neutral Glass, NES, Dukhiram Maurya, Mascot, Firozabad and affiliated members.

The Q&A sessions were moderated by Mr. Dave Fordham, Publisher of Glass Worldwide magazine & Prof. A S Rao, Head, Department of Applied Physics, Delhi Technological University and Member Editorial Board of KANCH (quarterly journal of the AIGMF).

The wrap-up was done by Mr. Purvish Shah, Treasurer AIGMF and Director in Gopal Glass Works Ltd., and Gobind Glass and Industries Ltd.

The concluding presentation on glasstec 2024 was given by Mr. Lars Wismer, Director Occupational Safety & Health / Glass Technologies, Messe Düsseldorf GmbH.

Vote of thanks was delivered by Mr. Rajesh Khosla, Sr. Vice President AIGMF and CEO / President AGI Greenpac.



All participants were given an official kit bag (sponsored by North East Sillimanite- a unit of NES Refractories LLP) and 80 years of AIGMF glass mementoes (sponsored by LA Opala RG Ltd).



Select photos of the event, presentations and press release are available at <https://aigmf.com/past-events.php>



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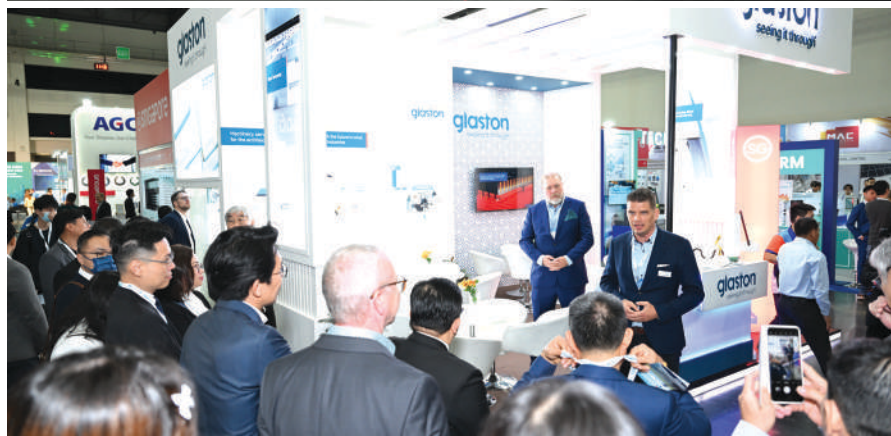
Glasstech & Fenestration Asia 2023

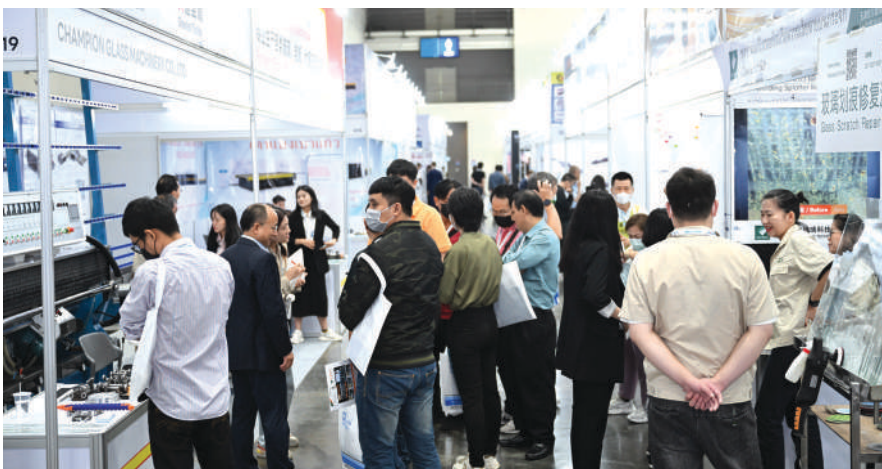
(Nov 29-Dec 1, 2023)

The 19th edition of Glasstech Asia – and the 6th edition for Fenestration Asia was held at IMPACT Exhibition and Convention Centre in Bangkok, Thailand from Nov 29 to Dec 1, 2023. The event centered on the glass used in buildings and automotive Industry which included sectors in manufacturing, processing, and supplies for glass machineries, along with construction and façades with more than 20 supported Industry Associations, as the positioning of “Glass Family of Asia”.

AIGMF supported the event as a Media partner. Secretary and Consultant AIGMF accompanied Mr. Purvish Shah (Treasurer AIGMF and Director in Gopal Glass Works Ltd., and Gobind Glass and Industries Ltd.) who were specially invited by Messe Munchen to be a part of their show. In the technical conference, Mr. Shah gave a presentation on Future of Solar and Textured Glass on Dec 1.

Glasstech & Fenestration Asia 2023 showcased products and services from global glass and façade technology entrepreneurs





and industry associations, where representatives of global trade and industry organizations met. In an atmosphere conducive to business negotiations, attendees got additional information from industry experts, including architectural solutions in order to drive the business forward and meet the future needs of the glass and façade technology industry. There were over 200 leading national and global representatives who attended this event in over 8,000 square meters of event space. The event was supported by the Thailand Convention and Exhibition Bureau (Public Organization – TCEB), leading entrepreneurs from Singapore, Singapore Pavilion, Enterprise



Singapore, Singapore government agencies supporting small and medium enterprises in Singapore.

Mr. Michael Wilton, CEO and Managing Director of MMI Asia Pte Ltd, said “Thailand proved to be an excellent location to host Glasstech and Fenestration Asia 2023 this time. What we have learned after the COVID-19 outbreak is that various industrial businesses want to return to face-to-face business negotiations, especially at trade exhibitions again. Moreover, the glass and façade industry in Thailand is growing at a very high rate, so for me, as an MMI Asia representative, Thailand was a very interesting location for the conference and exhibition space.”



Mr. Wirat Leewairot, President of the Thai Glass Industry Business Association said, “The COVID outbreak and the war situation have made various industries, including the glass industry, slow down. But it is expected that next year will be better according to NESDB’s predictions. However, it also depends on the government’s policy on how to help promote this industry.”



Mr. Wichai Wiratkaphan, Director and Secretary Banking Inspector and Acting Director of the Real Estate Information Center said, “The glass industry will expand in line with the direction of real estate. Because if the real estate industry grows, the glass



and façade industries that are related tend to grow in tandem. In 2024, it is expected that the real estate market will expand approximately 5-10%, so I think the glass industry will likely expand in the same direction.” In addition, Mr. Wirat also mentioned on interesting glass technology that “In the past, we used glass only for windows and doors, but in the past 20 years Curtain Wall have begun to be used in high-rise buildings in the heart of the city, in addition to having wind and rain protection properties, it also reflects heat. The new innovation in producing environmental glass, or Low Emission Glass, is to take ordinary glass and coat it with a metal substance. Resulting in





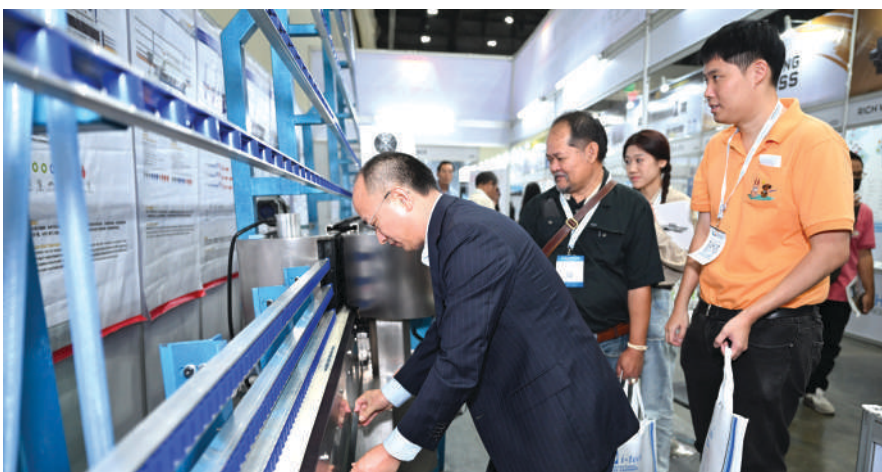
the reflection of heat. But still allows light to enter the building. This results in saving more energy. Because the building has a Curtain Wall, it means that less heat will enter the building. Reduce the cost of using air conditioners and reduce carbon emissions in another way.”

Overall, it can be considered that Glasstech & Fenestration Asia 2023 event was a great success. Business negotiations occurred that made the glass and façade industry and other related industries move in a positive direction that will result in a trend of higher economic growth rates.

Select photos, AIGMF presentation and wrap-up video are available at <https://www.aigmf.com/past-events.php>



The Glasstech Asia and Fenestration Asia events were organized by MMI Asia in partnership with the Singapore Glass Association (SGA) and BAU Network. The 2024, 20th edition of Glasstech and Fenestration Asia is slated to be held in Vietnam from Dec 11-13, 2024. AIGMF would again be supporting the event as an important partner from India.



See more details at www.fenestrationasia.com and www.glasstechasia.com.sg or on Facebook www.facebook.com/glasstechasia and LinkedIn www.linkedin.com/company/glasstech-asia-fenestration-asia ■



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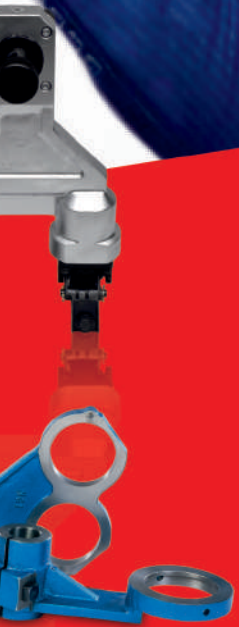
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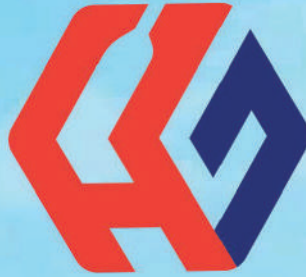
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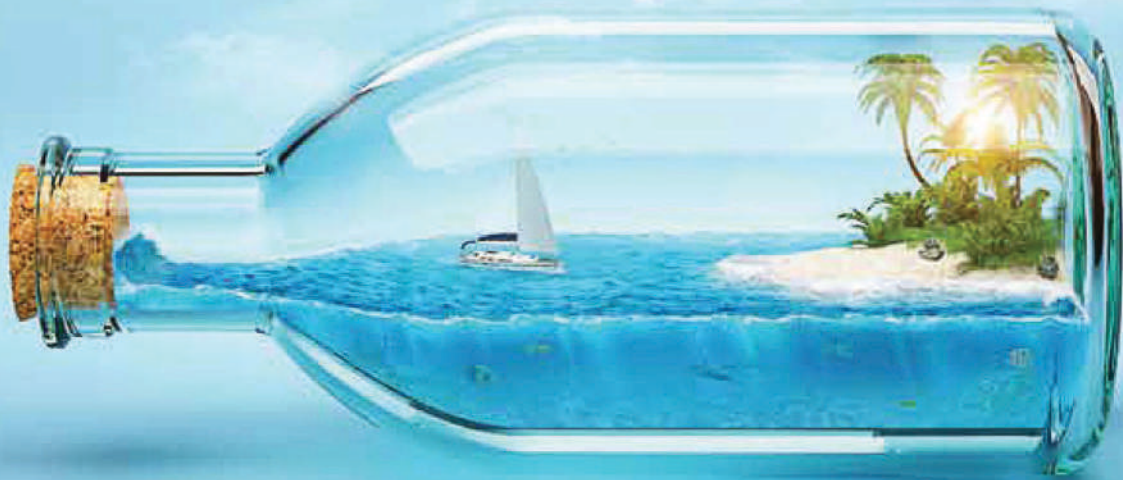
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Foreign Companies supplying machinery etc., to the glass industry are also enrolled as **Affiliate Members**.

Membership forms can be downloaded from www.aimf.com/membership.php

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- Eastern India Glass Manufacturers' Association (EIGMA)
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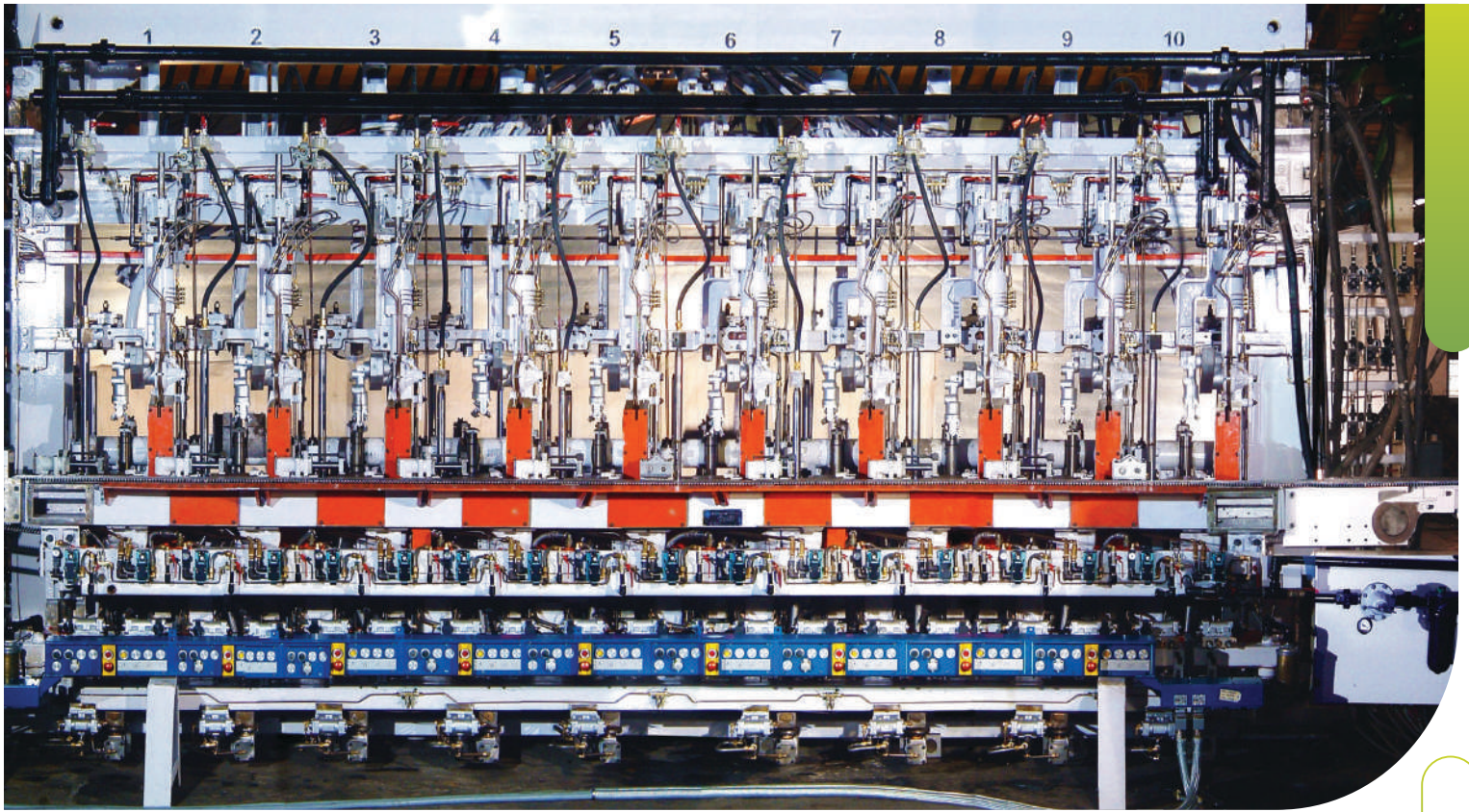
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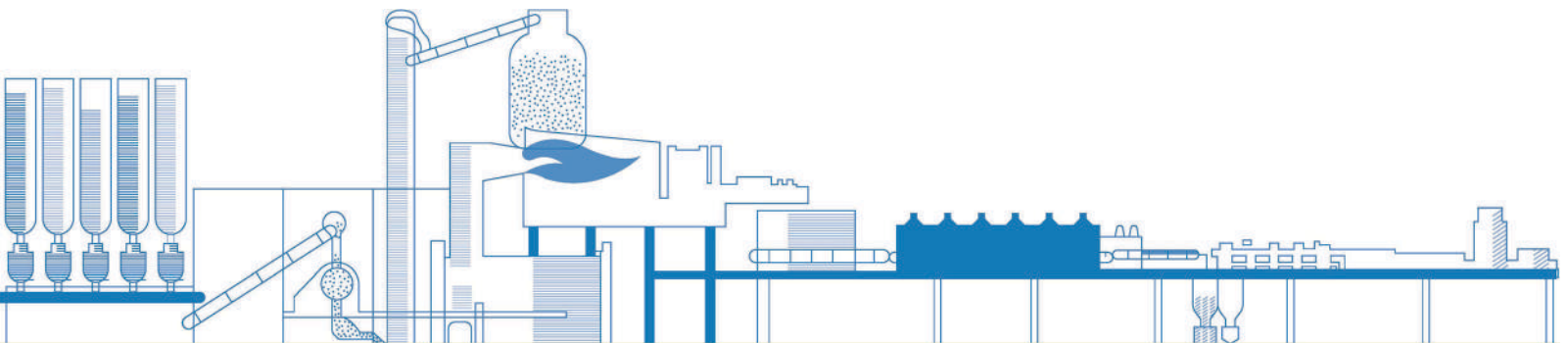


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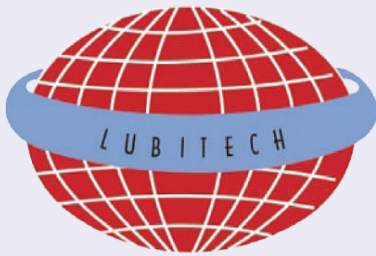


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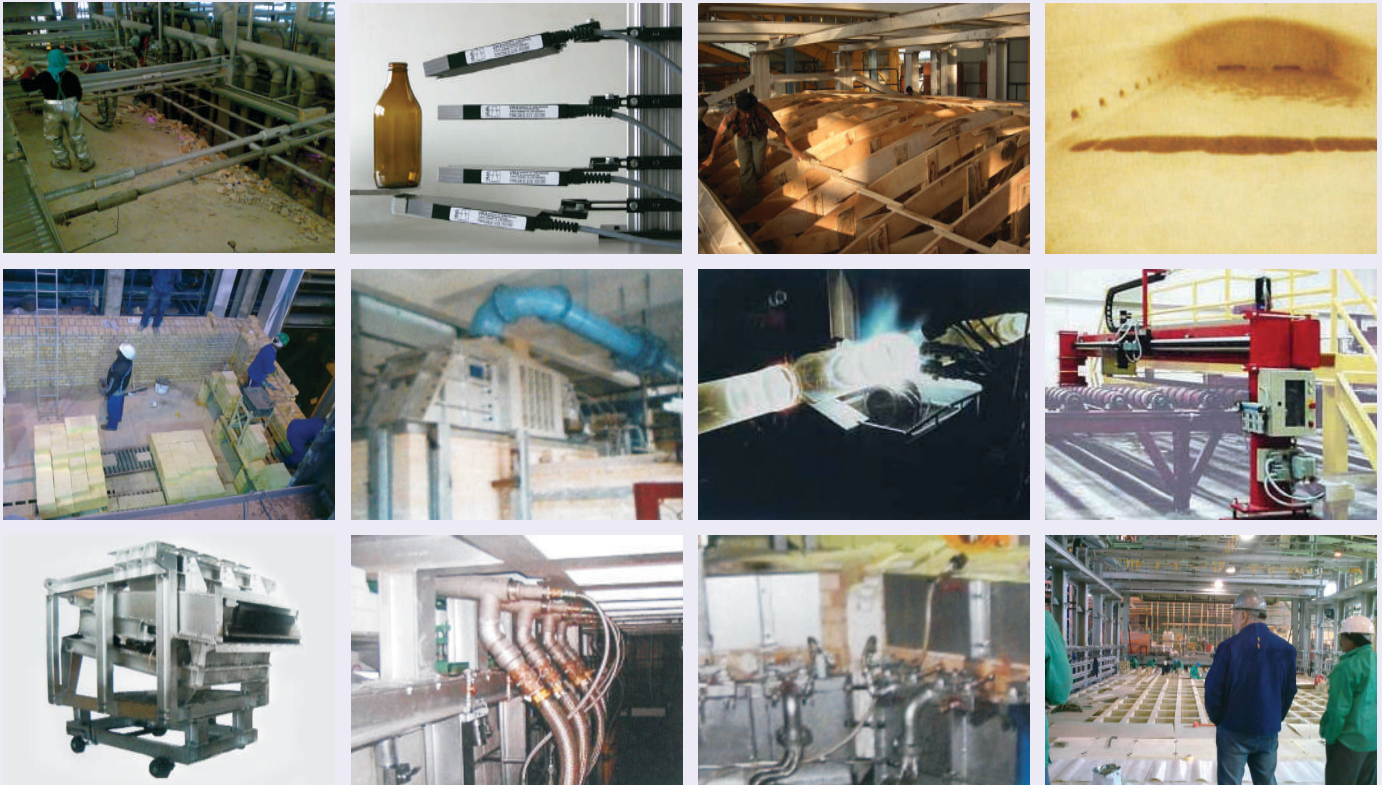
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On the Spot... Prof. Dr. Ahmet Kırman

In an exclusive interview with *Glass Worldwide*, Prof. Dr. Ahmet Kırman, Şişecam's Chairman and Executive Member of the Board of Directors, discussed the contributions he has made to the global glass manufacturing company – and the industry as a whole, and explained what it meant to him to be elected Glass Person of the Year 2023 by the Phoenix Award Committee.



Şişecam's Chairman Cavaliere Prof. Dr. Ahmet Kırman has been elected the Glass Person of the Year 2023 by the Phoenix Award Committee.

GW: Please could you provide an overview of your career to date?

Throughout my career, I have had the opportunity to explore diverse fields such as law, banking and academia, each contributing to my professional growth and enriching my perspective. In 2006, I joined Şişecam, and since then, I have been dedicated to contributing to its success.

I served as Şişecam's Chairman and Fully Authorised Executive Member from 2006 to 2011; Vice Chairman and CEO from 2011 to 2021; Chairman and CEO as of 30 March 2021. I was appointed Chairman on 1 July 2021 and Fully Authorised Executive Member of the Board of Directors at the General Assembly meeting held on 28 March 2022.

Şişecam has a rich history dating back to 1935. It was established in Turkey and has played a pivotal role in the development of the glass industry. Today, I am thrilled to share that Şişecam has transcended its national boundaries and stands out as a major global player in the glass and chemicals industries. With over 24,000 employees spread across 14 countries and four continents, we are committed to making a lasting positive impact on a global scale.

Our corporate growth journey is driven by a shared vision of excellence,



Şişecam is the world's and Europe's second largest producer of glassware.

innovation and sustainability. We believe in harnessing the power of glass to shape a brighter future by transforming industries and enriching lives. Through the utilisation of cutting-edge technologies, continuous research and development, and an unwavering commitment to quality, Şişecam is pushing the boundaries of what is possible in the global glass industry.

GW: What does it mean to you personally to be the recipient of the Phoenix Award and 'Glass Person of the Year 2023'?

First and foremost, I would like to express my sincere belief in glass and its infinite potential for development. Over the past 17 years, I have been contributing to the growth of our company and the glass industry, driven by this belief and enthusiasm. Working on subjects that I deeply believe in, that contribute to humanity, and that I know bring positive advancements to the world, motivates me greatly. I have always seen glass, a miraculous product, as a means to serve humanity.

With our company culture, vast experience, competent human resources, and appetite for transformation, Şişecam has been the right place for me to transform this motivation into tangible achievements with thousands of my colleagues. Our investments, value-creating growth, development endeavours, and transformation capabilities have been recognised with numerous awards across various platforms. We have collectively experienced the pride of these awards and celebrated them together. Each award

has been a source of motivation for us to do better. However, I would like to emphasise that awards related to the subject of 'glass' hold a special significance for me. As an individual dedicated to serving the glass industry and witnessing the everyday miracles of glass, this award stands as one of the most distinguished honours of my career.

Through consistent R&D efforts, we diligently work towards transforming glass into a versatile material. These efforts not only contribute to product development, but also drive advancements in manufacturing technologies. It is a source of pride for us that all the initiatives Şişecam has implemented for the industry's progress are recognised by the prestigious international Phoenix Award Committee, consisting of valuable suppliers to the glass sector.

GW: Over the years, how familiar were you with the Phoenix Awards before receiving the award?

I have been familiar with this prestigious and meaningful award ▶

Milestones since 2006

Şişecam's milestones since 2006, the year Prof. Dr. Ahmet Kirman started working for Şişecam:

2006 to 2010

- First furnace commissioned for Ruscam Glass Packaging Holding's Kuban Plant.
- Şişecam's first facility outside of Turkey, in the automotive glass sector, was commissioned in Bulgaria.
- Production partnership agreements for Russia and Egypt with Saint-Gobain were signed.
- The decision to invest in a second glass packaging furnace in Krishi, Russia was made.
- Acquisition of Ukraine's Merefca Glass Company was completed.
- Investment for an increase in production capacity by 200,000 tons at the Mersin Soda plant was completed.
- First steps were taken for the centralisation within the organisation.
- Operational excellence became one of the focus areas for the company.
- Research and development efforts were accelerated for cost-saving and efficiency practices.

2011 – Ready for growth

- Şişecam established its goal to become a leading global company. The ambition was to be among the top three global glass players.
- Growth efforts were initiated in a wide geographical area.
- Bulgaria's second float investment was started.
- Two lines and a furnace were commissioned for production of frosted glass in Mersin.
- Decision to establish two new float lines in Ankara, Polatlı was announced.
- 50% stake in Cromital S.p.A. was acquired and Şişecam became the sole shareholder.

2012–2014 – Intensive investment period

2012

- Şişecam entered a three-year intensive investment period.
- The company realised investments worth of (US) \$2.5 billion in three years.
- In 2012, Şişecam continued with three separate float glass investments in Turkey, Bulgaria and Russia.
- Glassware furnace

- investments were made in Bulgaria and Russia.
- Glass Corp. was acquired in Romania.
- A new furnace for glass packaging production was commissioned at our Bursa-Yenişehir plant.

2013

- 50% of HNG Float Glass was acquired.
- Şişecam acquired Richard Fritz, operating in automotive glass.
- Eskişehir Glass Packaging plant started operations with two furnaces.

2014

- A flat glass production line was commissioned in Polatlı, Turkey, and another line was commissioned in Alabuga, Russia.
- A production facility for automotive glass was launched in Tatarstan.
- Official opening of the Glass Corp plant in Romania.
- Second furnace was commissioned at the Mina plant in Georgia.
- Şişecam's Science, Technology, and Design Centre, which is currently one of the biggest R&D centres of Europe, was established.

2015-2018 – Digestion period

2015

- Profitability and revenue growth was achieved.
- Operational excellence was the focus area.

2016

- Sangalli Vetro Porto Nogaro was acquired in Italy.
- Şişecam became Europe's largest flat glass producer.
- Şişecam Headquarters were relocated to Tuzla, Turkey.
- Şişecam Çevre Sistemleri A.Ş. was established in collaboration with EBRD.

2017

- Pearl for Glass Manufacturing in Egypt was acquired.
- Glass fibre plant investment commenced in Balkesir.
- A 6.2 MW solar power plant was commissioned at Şişecam Flat Glass Mersin Plant.
- Turkey's first and only

- international 'Glass Symposium' and the annual meeting of the International Commission on Glass (ICG) were hosted simultaneously.
- Third furnace was commissioned at the Şişecam Glass Packaging Mersin plant.

2018

- Manfredonia facility in Italy was acquired.
- Şişecam became the sole shareholder of HNG Float Glass Limited in India.
- The second coated glass production line investment at Yenişehir was completed.

2019 – Infrastructure transformation period

- Inauguration of the Manfredonia facility in Italy.
- Firing ceremony held for Şişecam Flat Glass Bulgaria plants.
- Solar power plant installed on the roof of Şişecam Science, Technology, and Design Centre.
- A natural soda ash production plant investment plan in the US with Ciner Group was announced.

2020 – 'One Şişecam' transformation period

- Şişecam achieved the largest consolidation in the Turkish Capital Markets.
- Overcame the uncertainty of the global pandemic by providing comprehensive solutions encompassing its entire ecosystem.
- Antimicrobial V-Block Technology, an effective solution against viruses and bacteria on glass surfaces, was introduced.

2021

- A flat glass furnace was renewed and commissioned in Bursa, Yenişehir.
- A two-furnace glass packaging facility investment in Hungary was announced.
- An investment decision to establish a new glass packaging furnace in Eskişehir was announced.
- A memorandum of understanding to find a global joint venture was signed with 7CBasalia, the owner of Basalia Technology,

in efforts to make the world more sustainable.

- Şişecam became a 60% shareholder of the Pacific Project by acquiring additional shares. Şişecam also purchased majority shares in the Atlantic Project and Ciner Resources natural soda ash production facilities of Ciner Group in Wyoming.
- Şişecam undertook the management of these investments. This investment in the United States changing the partnership structure with Ciner Group, made Şişecam one of the world's three largest soda producers.

2022

- United Nations (UN) declared 2022 the 'International Year of Glass', with contributions from Şişecam.
- Italian refractory company Refel, one of the world's leading refractory materials manufacturers, was acquired.
- Şişecam announced its decision to increase the capacity of its frosted glass furnace and production line investments in Mersin.
- The ground-breaking ceremony of Şişecam's first glass packaging investment in Europe was held in Hungary.
- Announcement made regarding capacity increases for Şişecam's ongoing frosted glass furnace and processing line investment in Mersin.

2023

- Şişecam made a port management investment in California together with Ciner Group to meet the logistics needs of its natural soda ash investment in the USA.
- Şişecam became the sole shareholder of Şişecam Çevre Sistemleri.
- Two mining investments were announced in Turkey.
- Şişecam signed the United Nations Global Compact, the world's largest corporate sustainability initiative.
- Şişecam signed the UN Women's Empowerment Principles (WEPs).

for many years. I am aware of the meticulous selection process undertaken by the committee to honour deserving recipients. In addition to getting to know many glass industry professionals whom this committee has awarded, we have developed friendships with the people in the glass industry who work on the committee. All of them are esteemed figures who have dedicated years to the glass industry. It is a true honour to be recognised and appreciated by such esteemed and dedicated people.

Since 1971, this prestigious award has been given to outstanding individuals who have made unique contributions to transforming the industry. The glass industry is a strategic sector with broad influence, encompassing the sectors it supplies to and its suppliers. Therefore, it is particularly meaningful to me that our efforts are appreciated by our stakeholders. I extend my gratitude to the entire committee for this award. Receiving The Glass Person of The Year award at a ceremony at Como, Italy on 29 September will be one of the most prestigious honours of my career in the glass industry.

GW: What would you consider your career highlights to date and why?

Since the beginning of my career at Şişecam, our big Şişecam Family has dedicated substantial efforts into expanding Şişecam's global footprint and adding value to glass through remarkable R&D initiatives. Our utmost commitment has always been to meet



Prof. Dr. Ahmet Kirman joins outstanding personalities in the glass industry that have been awarded with the Phoenix Award since 1971.



In the flat glass sector, Şişecam is a leader in Europe and the world's fifth largest producer in terms of production capacity.

the needs of our planet and all living beings. We put so much effort into creating sustainable value and foster inclusive growth.

Let me highlight what Şişecam has achieved and its growth statistics since 2006, my first year in the company. We define the period between 2006 to 2010 as the period of regional leadership. During the global economic crisis of 2008, Şişecam focused on exports and regional investments and embraced a 'regional leadership' strategy. We established glass packaging and automotive glass plants in Bulgaria and Russia. We made strategic partnerships with global industry players such as Saint-Gobain. We acquired the Merefca Glass Packaging facility in Ukraine and strengthened our regional presence. While navigating through the recessionary period, we prioritised operational excellence and efficient resource utilisation, exemplifying resilience, adaptability and long-term planning as we celebrated Şişecam's 75th anniversary in 2010. Şişecam's story serves as an inspiration, highlighting how businesses can not only survive but thrive, even in the most challenging times, by embracing the right strategies.

From 2011 to 2014, Şişecam embarked on a transformative journey towards global expansion. Starting from 2012, Şişecam brought \$2.5 billion worth of investments to life within an intensive three-year period.

Şişecam not only expanded in countries where it already had a presence, like Bulgaria and Russia, but also ventured into new territories. During this period, Şişecam acquired Glasscorp and started production activities in Romania. In 2013, Şişecam acquired Richard Fritz Holding GmbH which had factories in Hungary, Slovakia and Germany. Additionally, Şişecam, began production activities in India, investing in the field of flat glass. Through these strategic acquisitions and expansion into new territories, we solidified our position as a major player in the glass industry.

Şişecam also showcased its commitment to innovation with a science-based growth strategy and established Şişecam Science, Technology, and Design Centre. These investments set the stage for future growth and expansion opportunities, enabling Şişecam to pursue global leadership while maintaining profits and operational excellence.

Following successful growth in sales revenue and profitability, Şişecam continued the 2015–2017 period with more controlled investments to ensure sustainable and continuous expansion. Şişecam became the leading flat glass producer in Europe after its flat glass investment in Italy. The company also introduced its sustainability strategy, 'CareforNext', for the first time in 2011. In the same period, Pearl for Glass Manufacturing, a glassware company in Egypt, was acquired.

In 2019, Şişecam embarked on a comprehensive digital transformation, investing in enhanced data architecture, analytics and visualisation. Our 'Roots and Wings Digital Transformation Programme' connected all global facilities with data. This holistic project gained recognition as one of SAP's [Şişecam's chosen enterprise resource planning system] most complex projects in the world.

During the same year, Şişecam pursued global growth by revitalising an Italian flat glass facility and expanding in India and into the US soda ash industry. The American investment marked the first step of a game-changing strategic plan, including a co-investment decision of (US) \$4 billion into the US soda ash industry and subsequently a new partnership in the field of US port management. These initiatives showcased Şişecam's exceptional leadership and ▶

the strategic approach in expanding the company's global presence.

2020, the 85th anniversary of Şişecam, has been a unique year in the company's deep-rooted history. Despite the challenges posed by the global pandemic, Şişecam recorded a major milestone in its corporate history by consolidating all its operations under a single entity. Şişecam completed the largest merger in the history of the Turkish capital markets with exemplary success. With this strategic move, Şişecam took a major step towards shaping its future. The completion of this effort unveiled a new era – 'One Şişecam'; simplifying its legal entity and shareholding structure; consolidating all its activities under one company strengthened Şişecam's global competitive position further.

As part of the 'One Şişecam' transformation, the company's operating model – which was built on a business unit-based structure – was also transformed into function-based management. This new operating model enabled the company to more effectively manage its operations that span four continents across various business lines. This was an enormous step towards a more customer-centric, streamlined, more flexible, leaner, integrated, digitalised, optimised and agile structure.

During this period, Şişecam not only prepared for the post-pandemic world but also considered the needs of its ecosystem at every step. Recognising that sustainable growth can only be achieved through inclusivity, the company implemented measures such as ecosystem financing to provide support for its customers and suppliers. Additionally, Şişecam introduced Antimicrobial V-Block Technology, an effective solution against viruses and bacteria on glass surfaces.

In 2021, Şişecam announced its first glass packaging facility investment in Europe, located in Hungary. Additionally, the company announced its decision to invest in the establishment of a new glass packaging furnace in Eskisehir, Turkey. Keeping sustainability at the core of its activities and operations, Şişecam decided to invest in Basalia Technology, an important innovation in the field of biotechnology. Basalia is expected to contribute to Şişecam's 2030 CareforNext strategy and play a key role in the global expansion of biotechnology.

Şişecam has demonstrated corporate excellence and growth through strategic mergers and acquisitions. The company effectively navigated supply chain disruptions and implemented scenario-based strategies to mitigate risks. With a focus on sustainability-driven investments, Şişecam secured its access to critical materials through the acquisition of Refel, an Italian refractory manufacturer. We also made strategic investments in mining resources and recently announced a major logistics project in the USA. Şişecam's commitment to sustainability is evident through its ownership of Şişecam Çevre Sistemleri and participation in the United Nations Global Compact and Women's Empowerment Principles. These initiatives help Şişecam position for a sustainable and successful future.

Since 2006, the start of my career at Şişecam, we have expanded the reach of our products to 150 countries, and sales have increased 3.5-fold. By 2022, the share of international sales exceeded 60%. Şişecam's annual glass production has increased 2.3-fold, and soda ash production has increased 4.2-fold. The number of Şişecam employees has grown from 15,000 to over 24,000 in 16 years.

Throughout our 88-year history, we have managed to maintain an upward growth momentum. Şişecam stands as a truly exceptional corporate example that has consistently achieved growth through development and transformation. To ensure continuity and further development we have many more plans on the table.

GW: Who has been the main influence and inspirational personality in your life?

The visionary perspective, science and technology-based strategy, inclusive language that makes people of all backgrounds feel valued, ability to foresee risks and opportunities, efforts to create a civilised society, passion for development, and the aspect of treating everyone equally... Certainly, through the years there have been some individuals who I respect and value. However, I consider the great leader Mustafa Kemal Atatürk as the main source of inspiration. He founded the Turkish Republic through an unprecedented struggle. He also founded Şişecam and his vision



Şişecam boasts a strong distribution network for glassware as well as an extensive range of products and exceptional production capabilities.

encouraged me to make Şişecam a global company in the glass industry. It feels great to be part of a company that was founded by the person who is not only my inspiration but also admired by the whole world.

GW: In addition to the Phoenix Award, please can you tell us about other recognition you have been honoured with in your glass career so far?

Serving the glass industry, which I consider as a means of serving humanity, has always been a source of pride for me. Being recognised and awarded for our comprehensive efforts and successes on various platforms motivates us.

I have been honoured with the title of 'Cavaliere' of 'the Order of the Star of Italy,' nominated by the Minister of Foreign Affairs and bestowed by the President of the Italian Republic, in recognition of strengthening economic bilateral relations and mutual investments between Italy and Turkey. This prestigious distinction was a source of great pride for Şişecam and me personally.

The President of the Republic of Tatarstan honoured me with the 'Medal of Valorous Labour' in recognition of Şişecam's contributions to the development of investments and economic cooperation. I have also been honoured with the 'Medal of Appreciation' for our contributions to the economic development of the Targovishte Region in Bulgaria.

I was also awarded 'Chairman of the Year' at the Le Fonti Awards, an award platform of one of the leading economics media organisations in Italy. Şişecam's global achievements focusing on innovation and sustainability were acknowledged with this award.

In 2019, in recognition of my lifetime contributions to the glass science and technology, encouraging the exchange of knowledge and promotion of national and international glass community, I was awarded the 'President's Award' by the International Commission on Glass (ICG).

And this year I have been honoured for my long-term efforts in the glass industry and elected 'Glass Person of the Year 2023' by the Phoenix Award Committee. ●

Further information:

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Phoenix Award:
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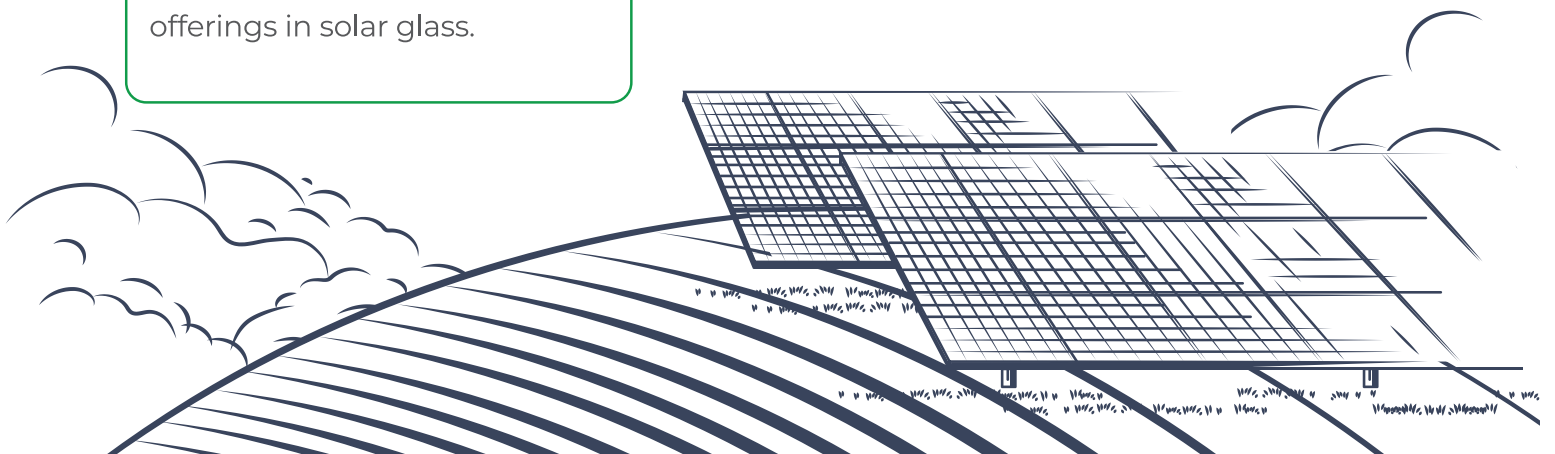
Our Solar Glass manufacturing capacity at GMB Glasmanufaktur Brandenburg GmbH in Tschernitz, GERMANY has now also been enhanced to 350 tons per day after a recent rebuilt of the furnace.

As such, our combined solar glass manufacturing capacity has reached to 1350 tons per day, (equivalent to around ~8 GW). With these increased production capacities, we will be able to serve effectively, our domestic and overseas customers in various glass sizes, glass thicknesses, and other value-added offerings in solar glass.

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4th glasspro INDIA & 7th glasspex INDIA

(Sept 14-16, 2023)

The recently concluded 7th edition of glasspex INDIA & 4th edition of glasspro INDIA, which took place at Bombay Exhibition Center, Mumbai from September 14-16 witnessed an enthusiastic response from the glass industry over 3 days of cutting-edge product-showcase, insightful conference and extensive networking.

Organised by the leading trade fair organiser, Messe Düsseldorf India, the much-awaited shows returned after a gap of 4 years when the hankering for face-to-face networking was at its peak. Described by the participants as a crucial meeting point for the global glass fraternity, glasspex INDIA & glasspro INDIA hold a position of great significance not just for the solution providers but also for buyers across industries.

At this grand confluence of innovation & ideas spread across an area of 7000 square meters, 171 companies from India and abroad showcased their exhibits & solutions and gathered keen interest from buyers. glasspex INDIA 2023 brought forth unique glass production, processing & finishing technologies for hollow glass, hollow glass products and applications, glass packaging technologies, presented by leading





companies from the production part of the glass manufacturing value chain.

The exhibition was supported by AIGMF and the German Engineering Federation (VDMA); and organized together with Glass Bulletin. glasspro INDIA 2023 displayed high-tech glass production techniques, latest trends, cutting-edge glass processing



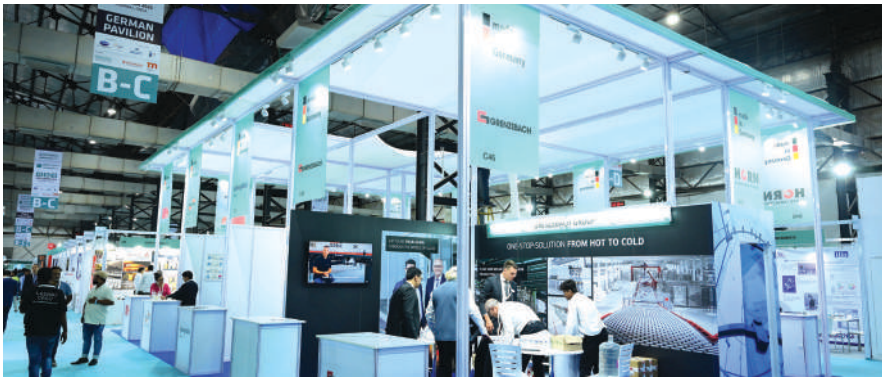
solutions, tools, glass products and applications, auxiliary products and services for the flat glass industry. As part of glasspro INDIA, fenestration-pro INDIA hosted discussions on the upcoming design trends and energy-efficient building technologies. Both events were powered by glasstec,





Düsseldorf, Germany – the world's leading exhibition for the glass industry.

The shows kick-started on a positive note in the presence of key dignitaries from the industry. The industry stakeholders who attended the ceremony include Mr. Sanjay Agarwal, President - The All India



Glass Manufacturers' Federation (AIGMF) and senior representatives from leading organisations such as Dukhiram Maurya Engg. & Refractory Works, Thermo Tech Furnace & Engineers, Furnotherm Glass Projects India, Gopal Glass Works, JGS Glass Industries and





the German Engineering Federation (VDMA).

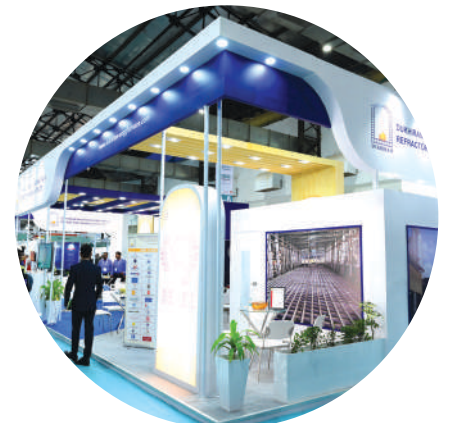
The shows were rightly placed at a time when the glass industry is witnessing burgeoning growth due to factors such as rising need for energy-conservation, growing demand for sustainable packaging and increased application of glass in construction, design & architecture.



“We had a very successful time at glasspex INDIA 2023 in terms of meeting existing & new esteemed customers and new orders finalisation. Dukhiram Maurya Engg., was the largest exhibitor during the event and we thank glasspex INDIA and Messe Düsseldorf India for their contribution in further expanding our business horizons.”, said Mr. Rajnath Maurya, Director - Dukhiram Maurya Engg. & Refractory Works (I) Pvt. Ltd.



Mirroring the demand for glass across industries, the shows attracted a great mix of visitors from a variety of sectors such as construction, architecture, pharmaceuticals, beverages, cosmetic & perfumery manufacturers, lighting, glass instrument makers, interior design and more.

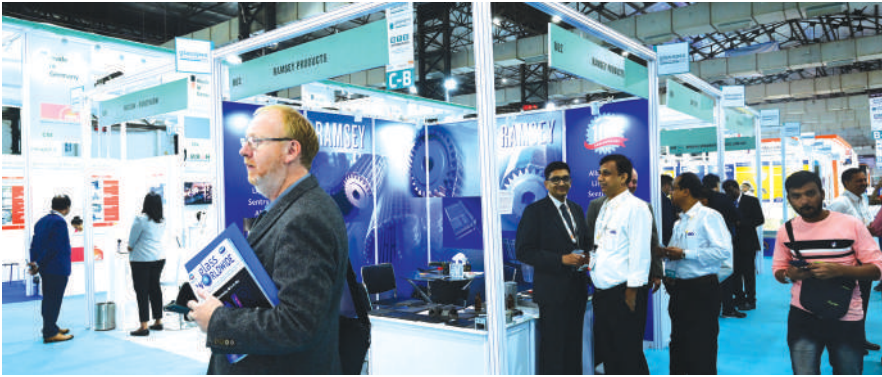




Mr. Tejkaran Bachhawat, Founder - JGS Glass Industries, an exhibitor at glasspro INDIA 2023 stated, "Participating as first-time exhibitors at glasspro INDIA was both thrilling and inspiring. We meticulously prepared our booth to showcase our glass-related products and services, engaged with attendees and industry experts providing invaluable insights and connections. The experience allowed us to gain a deeper understanding of the glass industry's dynamics. We're excited to build on this experience and return to glasspro INDIA with even more confidence in the future".

This year, the shows witnessed participation from all over the world with companies from China, Czech Republic, France, Germany, India, Italy, Mexico, UK and USA joining the exhibition floor. China, Germany & Italy brought together companies at the dedicated pavilions. Visitors at the shows came from 22 countries including Austria, Bangladesh, France, Germany, India, Indonesia, Japan, Kenya, Macedonia, Malaysia, Mozambique, Nepal, Oman, Qatar,





Russia, Saudi Arabia, South Africa, Turkey, UAE, USA and Vietnam.

Delighted with the great response received from the industry, Mr. Thomas Schlitt, Managing Director – Messe Düsseldorf India, states, “The 2023 editions of the shows have set a new benchmark in terms of the number of attendees who visited and conducted highly productive business interactions with solution providers from the industry. With representation from India and abroad, the show emerged as an extremely successful platform for the global glass industry to network and explore new dimensions. We strongly believe that this is an opportune time for the glass industry and the success of glasspex INDIA & glasspro INDIA



2023 is a testament to the exponential growth potential of the industry”.

Day 1 of the shows concluded with the 5th Glass Bulletin Awards that felicitated the achievements of individuals and companies for their laudable contributions towards the growth of the glass industry across various award categories. The magnificent ceremony brought the industry together for an evening of appreciation and celebration.

Alongside the well laid-out exhibition, the concurrent 14th biennial International Conference organised by The All India Glass Manufacturers’ Federation (AIGMF), held on September 15th, hosted in-depth deliberations by thought leaders from across the globe on key aspects of the glass industry.



Mr. Sanjay Agarwal, President - AIGMF said, "By all aspects the 7th glasspex and 4th glasspro exhibitions organised by Messe Düsseldorf India was a huge success. I thoroughly enjoyed my visit to Mumbai and had the opportunity to meet varied stakeholders after a long time on a common platform. I understand from the industry members that the business meetings were meaningful and may pave cooperation for future collaborations and new partnerships. The 14th AIGMF international conference on Decarbonization was extremely successful in registering over 100 members from the industry world over. Apart from expert speakers, Delhi Technological University, Messe Düsseldorf India and Glass Worldwide's



support, our sincere thanks is due to the sponsors and supporting companies namely - La Opala, Borosil, Cello, Haldyn Glass, Schott India, PGP, AGI, Gopal Glass, Empire-Vitrum, Asahi, Gujarat Guardian, Kapoor Glass, NIPRO, Neutral Glass, NES, Dukhiram Maurya, Mascot, Firozabad and affiliated members."

The shows concluded with high energy and optimism for the future of the glass industry. The 8th edition of glasspex INDIA & 5th edition of glasspro INDIA will be held at Bombay Exhibition Center from September 10-12, 2025.

Select photos of the event, presentations and press release are available at <https://aigmf.com/past-events.php>

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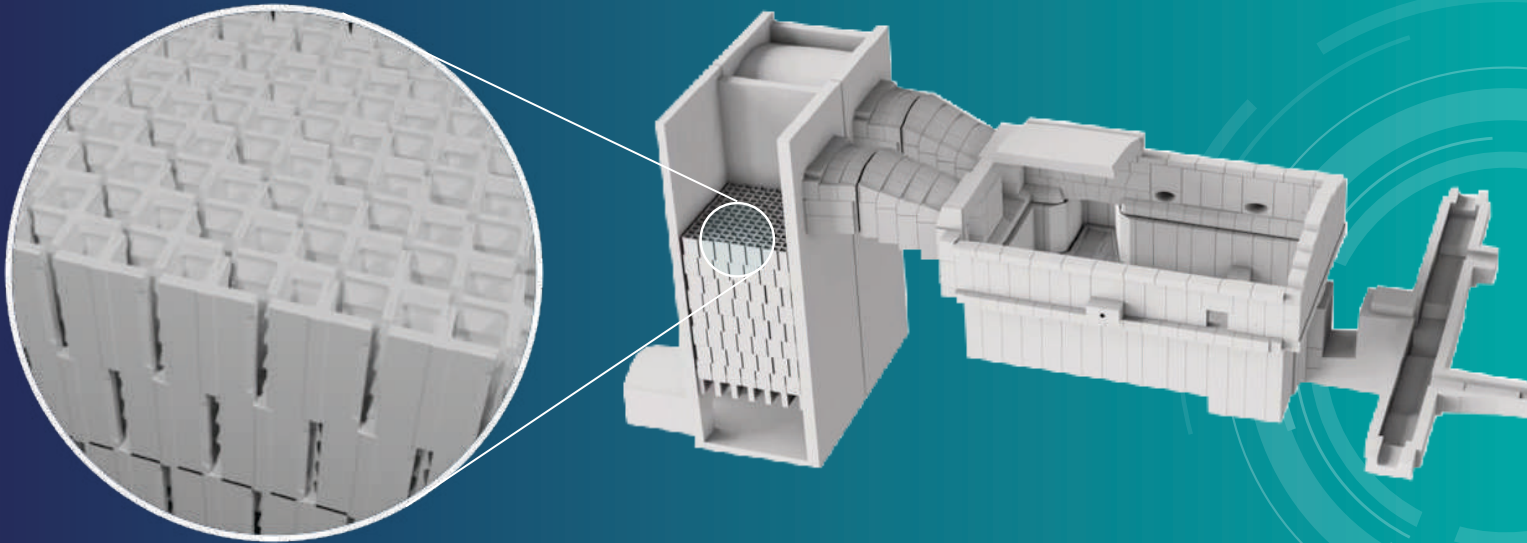
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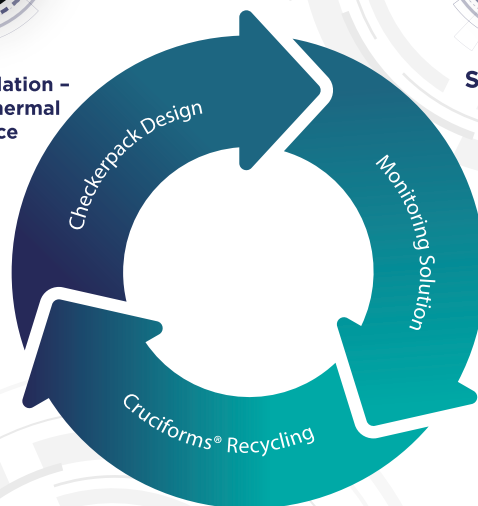
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Using secondary raw materials in the glass industry

Chris Holcroft from Glass Technology Services provided an update to *Glass Worldwide* on investigations into using waste ashes and other secondary raw materials to increase the recycled content of glass containers beyond what is possible by cullet additions alone.

As the world moves towards a low carbon and circular economy, it is increasingly necessary to look beyond traditional glass-making materials, including cullet, to maximise recycled content and achieve further resource savings.

Over the past 10 years Glass Technology Services (GTS) and Sheffield Hallam University (SHU), assisted by industry partners and supported by BEIS [the UK Government's Department of Business, Energy and Industrial Strategy] and InnovateUK [the UK's national innovation agency], have investigated how waste materials from other industries, such as ashes from biomass power generation, can be converted into valuable raw materials for use in glass manufacturing. The use of such 'secondary raw materials' will play an important role in the sustainability and net zero goals of the glass industry.

In the glass industry there is a long history of re-using cullet to replace a proportion of virgin batch material and of industrial symbiosis by adding steel-making slags (calumite) to furnaces. In fact, this is not a new concept and Merrett in his translation of Neri's *Art of Glass Making*¹ makes reference to the use of all manner of ash from different plant species being used in glass making as a source of alkalis.

This has multiple potential benefits: reducing raw material extraction, diverting materials from landfill and reducing energy consumption and CO₂ emissions.

Potential ashes

Initial work focused on assessing the composition of a range of waste materials to identify those that had the potential to replace constituents of glass batches. Wastes ranged from: food industry by-product to fly ash from power plants. 26 new sodium silicate glass compositions

were produced from these wastes and those containing biomass ash were seen to show the most promise. Material from 23 different power plants burning different fuels was analysed to find those that best matched.

From this initial set of ashes, those that showed the most promise in terms of composition and availability was selected for detailed melting trials. An example of an ash sample and the glass produced is shown in Figure 1. This material was added in varying quantities to modified glass batches to perform lab scale melts. The melting characteristics and glass properties of the different glasses were measured, and these are reported in the tables and graph in Figure 2. As can be seen, the addition of ashes at 10% had no detrimental impact on glass properties.



Figure 1: Selection of ashes investigated as potential glass-making materials.

Furnace trials

Following lab melt trials, one flint and two amber recipes were selected for pot furnace trials of approximately 35kg each to test how the new batches performed on a larger scale and to also look at the impact on furnace emissions and refractory. 10% ash was added to a flint glass and 5% and 9% added to amber batches. An amber batch was also designed to reduce the

Sample	Thermal Expansion Coefficient	Liquidus Temperature (°C)	Density (kg/m ³)
Flint Baseline	9.3999 x 10 ⁻⁶	1037	2.52
Amber Baseline	9.3237 x 10 ⁻⁶	1016	2.51
Flint with 10wt% Ash	9.7166 x 10 ⁻⁶	1024	2.52
Amber with 5wt% Ash	9.0509 x 10 ⁻⁶	1015	2.5
Low Melting Amber with 8.6wt% Ash	9.3888 x 10 ⁻⁶	1026	2.52

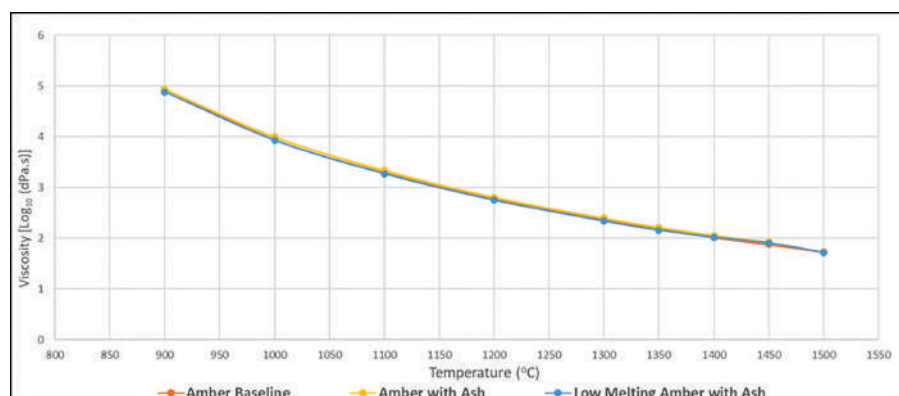


Figure 2: Glass properties of selected glasses produced with ash additions.

melting point of the glass. Baseline compositions based on commercial batches were melted for comparison.

The glasses produced were tested for durability and all met the required criteria for type 3 glasses, with elemental analysis meeting required standards for food contact.

This study showed that additions of biomass ash waste to container glass in conjunction with modified batch recipes has the potential to reduce melting temperatures by approximately 40°C, realising savings in energy use of up to 3% and similar carbon emission reduction.

Upscaling

As with any raw material quality, consistency and a steady supply are key criteria that must be ensured to enable commercial adoption. Lab scale studies identified techniques suitable for removing undesirable components from the ashes and early stage scale-up trials suggest that these techniques can be used on an industrial scale. This can allow standardisation of materials which will overcome another potential barrier around end of waste categorisation and regulation.

Currently there is no established infrastructure for the processing of this material to the standards required for glass manufacturing, however, the techniques and equipment identified are used in other recycling and mineral processing sectors enabling reconfiguration and optimisation for preparation of ashes to be carried out relatively swiftly as markets develop. Upscaling of processing infrastructure will bring help to reduce processing costs making SRMs [supplier relationship management] more competitive financially compared to traditional raw materials.

Further benefits

Beyond the economic and tangible environmental benefits of reducing energy and CO₂ emissions, the addition of waste ashes and other secondary raw materials provide the potential to increase the recycled content

of glass containers beyond what is possible by cullet additions alone. This is of increasing interest to both brands and consumers. Secondary raw material use also meets circular economy and sustainability goals through the reduction in material extraction and diversion of material that would otherwise be destined for landfill or low value alternatives.

The project team continues to work with a number of European glass manufactures and power generators to prove the [benefit of] techniques identified, with the goal of trialling an ash-based secondary raw material in a

commercial furnace within the next two years, enabling the creation of a supply chain for this valuable material. ●

1 'The Art of Glass' was first published (in Italian) in 1612 by Antonio Neri. An English translation + notes by Christopher Merrett MD, was published in 1662.

About the author:

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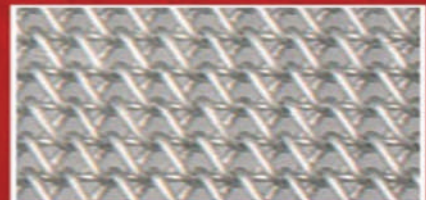
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Turning up the heat on furnace construction

Jogendra Singh from Furnotherm Glass Projects India provided *Glass Worldwide* with an update on the furnace manufacturer's recent projects and achievements.

Furnotherm has successfully completed several prestigious projects in the last few years, exhibiting the ability to handle several projects simultaneously with its large workforce of competent team members.

During the first wave of Covid-19 global pandemic (January 2020 – Sept 2020), when most of the world stood still, Furnotherm successfully executed four different projects with four different customers at four different locations. Of these projects, three were in India (a 145tpd container glass rebuild for Piramal Glass in Kosamba, Gujarat; a 180tpd container glass rebuild for Sunrise Glass in Surat, Gujarat; and a greenfield T66 tube glass furnace for Schott Glass in Jambusar, Gujarat) and one abroad (a greenfield 160tpd container glass furnace for Ooo Sirdaryo Universal Oyna., Uzbekistan).

During the second wave of Covid (February 2021 to September 2021), Furnotherm carried out another three projects simultaneously. These took place in India (a 250tpd greenfield container glass furnace + batch house) and overseas (a 300tpd container glass furnace rebuild for Frigo Glass in Nigeria, and a 300tpd greenfield float glass furnace for Zarafson Oyna LLC, Zarafson, Uzbekistan).

Talented teams

Working at Furnotherm are a number of experienced project managers and experts in the different sectors of glass furnace construction. Thanks to their careful planning, the goal of accomplishing a project before the target deadline can be achieved, while the use of the latest equipment and innovative ideas enables the company to stand out from its competitors in the construction field.

Furnotherm is the only company in India that has its own heat-up team for the job of controlled heat-up and cool-down of a furnace, along with the job of furnace drilling-draining and cullet filling. Furnotherm also has a dedicated team to execute utility piping and ducting, and employs technicians for electrical and instrumentation jobs to take any glass furnace project in semi-turnkey basis.

Domestic projects

Furnotherm is always engaged with the execution of multiple projects across the world. Recently the company has accomplished a number of domestic projects, as follows:-



A 240tpd greenfield solar glass project for Triveni Renewables.



Receiving an award for successful completion of Schott Tank 67 project for production of FIOLAX amber glass.

AGI Greenpac, Hyderabad:

Capacity expansion of existing 300tpd furnace to make it a 425tpd, designed by SORG, within 48 days. The job involved demolition of the old 300tpd furnace, fabrication of 300 tons of new steel, erection of 325 tons of steel and 3,900 tons of refractories. It was successfully completed in 38 days.

Triveni Renewables, Andhra Pradesh:

240tpd solar glass furnace (greenfield), designed by SORG. The scope of the job involved steel and

ducting fabrication and installation, and refractory installation along with refractory lining at the chimney. It was successfully commissioned in the second week of July, 2023.

Schott Glass, Jamubsar, Gujarat: Tank67 – oxy-fuel fired borosilicate amber tube glass furnace (greenfield). The job involved fabrication and erection of steel, installation of refractory, fabrication and installation of piping and tubing. Successfully commissioned in March 2023. ▶



425tpd expansion project for AGI Greenpac, India.

Devi Innoventures LLP, Puducherry (Erstwhile Mohan Breweries And Distilleries Ltd.): Rebuild of 260tpd container glass furnace; successfully completed within a month in September 2022.

Overseas projects

A sample of overseas projects completed in recent years includes:-

- Sotuver Glass, Tunisia:** Heat-up and expansion control along with hot sealing of a 300tpd container glass furnace.
- “JSC” Grodno Glass Factory, Belarus:** Furnace refractory installation job (June 2022 – August 2022).
- Glassica, CJSC, Azerbaijan:** Recuperative furnace refractory installation work (from March 2022 to August 2022).

Ongoing projects in India

Sisecam Flat Glass, Halol, Gujarat: Demolition and reinstallation of a 600tpd float glass furnace. The job involves the handling of 8,800mt of refractory along with all furnace equipment. The demolition was completed in nine days and refractory installation is ongoing [at time of writing]. We have been given target of 105 days for demolition and erection. We are trying to get it completed in 90 days and we are on target. This would be the first time in history to rebuild a float glass furnace in the shortest time.

Schott Glass, Jambusar, Gujarat: Rebuilding of T63 borosilicate tube glass furnace. The job involves refractory installation along with demolition and reinstallation of utility piping.

Forthcoming projects

Sevam Glass, Casablanka, Morocco: Rebuilding of 210tpd container glass furnace. The project is to be started in October 2023. The job is comprised of drilling-draining, modification and installation of partial steels, refractories installation, stainless steel piping, heat up and cullet filling, and hot sealing.

Schott Glass, Jambusar, Gujarat: Rebuild of T65 borosilicate glass tank furnace. The job involves demolition and reinstallation of refractories, fabrication and modification of part steels; and fabrication and erection of utility

piping and tubing. The project is likely to be started in October/November 2023.

Frigo Glass (Beta Glass PLC), Nigeria: Cold repair of 60m² GF1 furnace. The job involves drilling-draining, cool-down, demolition, erection of refractories, modification and erection of partial steels, heat up and cullet filling, and hot sealing. The project is likely to be started in February 2024.

Haldyn Heinz Fine Glass, Kosamba, Gujarat: Rebuilding/capacity expansion (40m² to 52m²) project for a container glass furnace. The job involves demolition of old furnace refractories along with steels and ducting; fabrication of new steel

(about 200mt) and modification of old steels; fabrication and installation of new ducting and installation of refractories along with all the furnace equipment; plus hot sealing. ●

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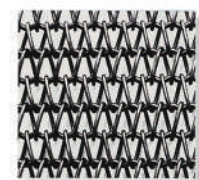
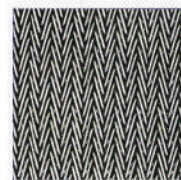
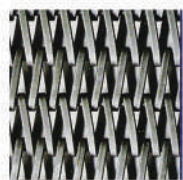
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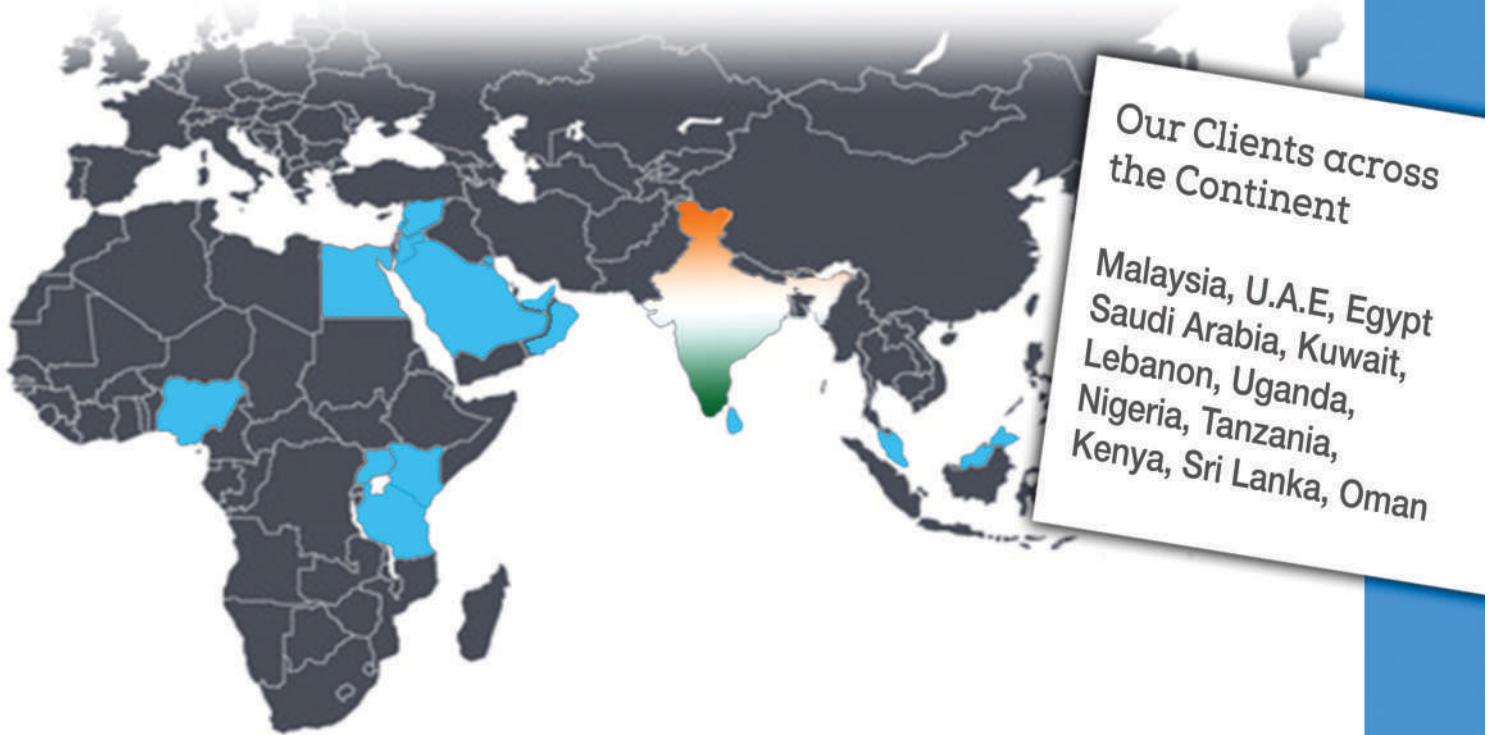
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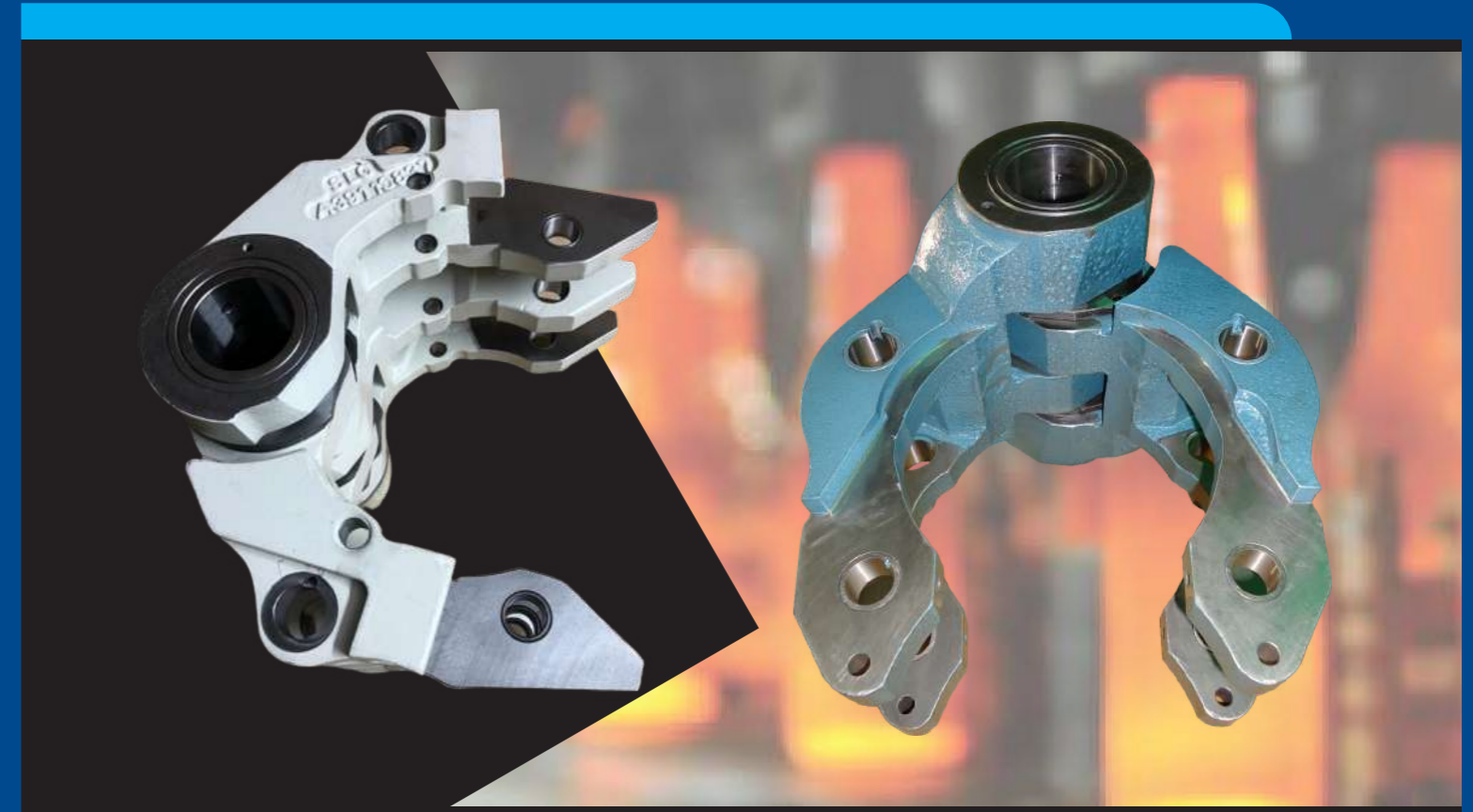


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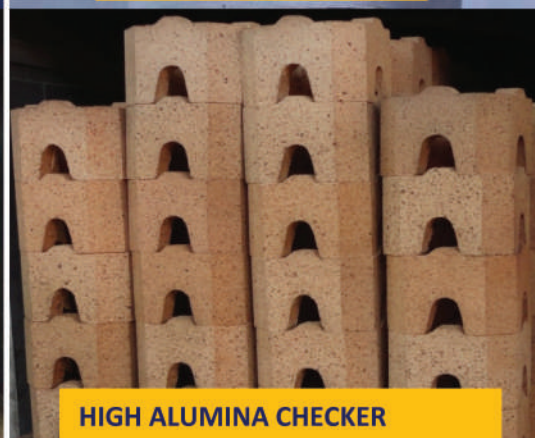
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