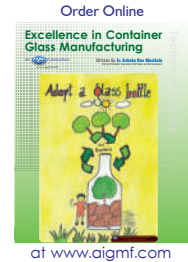


GLASS News



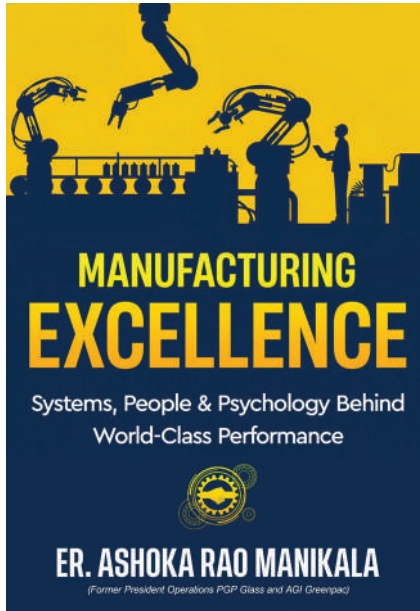
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Bi-lingual

MANUFACTURING EXCELLENCE: SYSTEMS, PEOPLE AND PSYCHOLOGY

Manufacturing Excellence: Systems, People and Psychology by Er. Ashoka Rao Manikala (Member Editorial Board KANCH) offers a distinctive and deeply practical perspective on building world-class manufacturing organizations by integrating technical systems, human capability, and industrial psychology into one coherent framework. Drawing from more than four decades of leadership experience across complex manufacturing environments, the author demonstrates that sustainable excellence cannot be achieved through technology and systems alone; it requires disciplined processes, engaged people, and a culture shaped by purpose, responsibility, and continuous learning.

The book explores critical dimensions of manufacturing success including productivity improvement, quality assurance, reliability enhancement, cost optimization, safety, maintenance effectiveness, and operational leadership. What makes this work unique is its emphasis on the psychological and behavioral foundations behind shop-floor performance, how attitudes, habits, trust, motivation, and leadership influence outcomes as strongly as machines and methods.

Through practical examples, structured



insights, and experience-based reflections, Er. Ashoka Rao Manikala presents manufacturing excellence as a living system where systems thinking, human commitment, and managerial wisdom must operate together. The book serves as a valuable guide for industrial leaders, engineers, plant managers, consultants, and students seeking to create resilient, competitive, and people-centered manufacturing enterprises in a rapidly changing global environment.

This book is available in India and overseas through Amazon as well as Flipkart in India.

NEXT GENERATION INDUSTRY CONFERENCE SHOWCASES THE FUTURE OF AI AND DIGITALISATION

Nearly 150 delegates attended in person or joined online as Glass Futures hosted the Next Generation Industry Conference on March 18 2026, bringing together industry leaders, academics and technology providers to explore how AI and digitalisation are transforming the foundation industries.

Held at Glass Futures' state of the art facilities in St. Helens (UK), the conference offered a unique forum to share real world applications, emerging research and future focused thinking across the glass and wider foundation sectors.

Delegates were welcomed by Mr. Justin Kelly, CEO of Glass Futures, who emphasised the importance of cross sector innovation and the role digital technologies will play in accelerating competitiveness and decarbonisation.



With AI now firmly established as a key industry focus, the conference agenda reflected the pace of change across the supply chain and the growing need for data driven decision making.

Morning sessions highlighted how AI is already delivering impact at scale:

- Dr. Gökce Yüce (Digital Technologies & Simulation Services Manager, Şişecam) demonstrated how one of the world's largest glass manufacturers is embedding AI across its operations. From autonomous furnace control to predictive quality and defect detection systems, AI is delivering tangible reductions in waste and emissions.
- From a systems and engineering perspective, Mr. Daniel Smalley (Business Manager Factory Automation Digitalisation, Siemens Digital Industries) explored the transformative potential of industrial AI, digital twins and agent-based automation, outlining how AI-enabled engineering workflows are redefining design, simulation and manufacturing performance.
- Academic insight was provided by Prof. Hujun Yin (Professor of Artificial Intelligence, University of Manchester), who gave a clear and accessible overview of AI principles, associated risks and real-world industrial applications, grounding innovation within a robust data and governance framework.
- Materials innovation featured strongly, with Mr. Stephen Forrester (Finance Director (Projects), Lucideon) highlighting the use of AI-enabled approaches in materials research and underlining the continued importance of scientific rigour and validation. Dr. Katharina Roettger (Principle Scientist,

Digital Technologies & Data Science, CPI) complemented this with practical insights into how SMEs can establish strong data foundations to unlock future AI adoption and process optimisation.

The afternoon sessions focussed on innovation at scale and long term sustainability:

- Showcasing Glass Futures' own work, Dr. Jim Scotson presented the flagship AI-GLASS Project, introducing the organisation's evolving digital twin ecosystem, multi-physics furnace modelling capabilities and operator training platform designed to support decarbonisation and operational excellence.
- Further industrial perspectives included Dr. Juraj Raič (Development Manager, F.I.C. UK), who outlined advances in furnace modelling, electric boosting technologies and AI-supported process control.
- A key technology focus was provided by Mr. Salvador Sumohano-Verdeja (New Business Development Lead, Industrial Manufacturing, NVIDIA), who explored next-generation industrial AI capabilities enabled by accelerated computing, advanced

simulation technologies and the NVIDIA Omniverse platform, illustrating how AI can be deployed at industrial scale using real-time operational and sensor data.

- Rounding out the programme, Mr. Konstantin Vikhorev (CTO, Virtual Engineering Centre – University of Liverpool) showcased cutting-edge applications of high-fidelity digital twins, immersive simulation and AI-enabled engineering tools being developed to solve real-world industrial challenges.

Delegates were united by a shared ambition to embrace digital transformation and shape the next generation of industrial innovation. The strong turnout and engaged discussions reflected the growing momentum behind AI adoption across the foundation industries. The message is clear: AI is no longer a future aspiration, it is already shaping productivity, sustainability and innovation across the foundation industries today.

WIEGAND-GLAS CHOOSES HEYE SMARTLINE 2 WITH RANGER 2 FOR SPECIALITY GLASS PLANT UPGRADE

Following a successful trial, Wiegand-Glas has installed six SmartLine 2



inspection machines equipped with Ranger 2 optical check devices for its Ernstthal plant in Thuringia, GERMANY.

Wiegand-Glas has been established for more than 450 years and makes around 8 million bottles a day at four glass plants. Its plant in Ernstthal, Thuringia makes about 1.3 million bottles a day and specialises in short runs and complex shapes for the spirits industry. As part of its furnace renovation programme this year, Wiegand sought new hot and cold end equipment to optimise performance.

The plant's high output of non-round containers was the primary reason to test Heye SmartLine 2 with Ranger 2 technology. It also has a colourant forehearth and extra flint containers. Such high-quality glass containers have very tight specifications and, therefore, require the most accurate inspection equipment to remove all defects without over-rejecting and making the plant less productive than it should be.

Heye International has a decade long relationship with the glassmakers at Ernstthal, having first installed equipment there in 2012. Over the years, Heye machines have proved to be stable and very robust.

The company installed a test line at the plant so Wiegand could assess whether or not they wanted to invest in Ranger 2. Heye engineers were confident the system could handle non-round containers better than its competitors. Wiegand tested the machines with a range of different toolings and various non-round container shapes and sizes.

"Our glassmakers are highly skilled and know what good glassmaking looks like," says Dr. Thomas Struppert, CEO of Wiegand-Glas. "We soon realized the advantages of Heye's SmartLine 2. It handles complex containers in a fast and stable manner and provides excellent

data to help us rectify problems before they multiply."

At the hot end, Heye installed a new Multi-weight assortment feeder, part of the company's Industry 4.0 Smart Plant initiative.

It uses a servo drive control, in combination with a servo plunger and dual motor shears, to deliver gobs of different weights to the same IS machine, even in NNPB format. This allows Wiegand to produce a variety of containers simultaneously on one forming line. Heye has overhauled and upgraded the line's existing servo plunger and dual motor shears as part of the contract.

The plunger and shears work in tandem to ensure less energy is used and no gob is wasted. It is perfect for samplings and short runs and means that downtime is reduced to a minimum. The manufacturer needs fewer moulds for each low volume item and fewer machine-wide job changes, so longer jobs keep running alongside several shorter ones.

At the cold end, Heye installed six SmartLine 2 machines. These are all equipped with Ranger 2 optical check detection devices. This modular system allows users to capture five images simultaneously through one camera to check different aspects of the container, such as horizontal,

vertical, bottom, and shoulder.

The bottles tested at Ernstthal were largely heavy, premium containers. Mr. Uwe Schitter, Head of Cold End at Heye International, says that *"Heye Smartline 2 is just as comfortable in this complex environment as it is in a high-speed NNPB scenario."* Wiegand-Glas sees light weighting as a key part of its sustainability strategy.

The SmartLine 2 interface controls the parameters for each job and gives the operator full visibility and detailed feedback on the check results. The SmartLine 2 can be configured to the customer's precise specifications through this intuitive graphic interface. One of its core competences is non-round containers, which is such an important consideration for Wiegand-Glas given Ernstthal's high value, specialist, short-run product mix.

SmartLine 2 with Ranger 2 addresses the key challenges of modern container glass inspection. It is fast and runs accurately at speed with different types of bottles. It offers repeatability, spotting the same defect time and again. Ranger 2 is effective at detecting defects and relaying information regarding which machine sections are affected. It is based on a fixed camera position, with a higher accuracy than other systems, which are available in the market. Ranger 2 performs reliably across



different sample types and inspection challenges.

Mr. Uwe Schitter, Head of Inspection Technology concludes, “A specialist glass plant like Wiegand Ernstthal is made for Ranger 2. We tested all its capabilities and it passed with flying colours. Now it is running on all six lines after furnace reconstruction this summer.”

Wiegand-Glas speaks of itself as a company where experience meets the latest technology and an innovative spirit. Its partnership with Heye International demonstrates all of these qualities.

INDUSTRIAL ACCELERATOR ACT: EUROPEAN GLASS PACKAGING INDUSTRY WELCOMES RECOGNITION OF GLASS AS A STRATEGIC SECTOR

On the European Commission’s proposal for an Industrial Accelerator Act (IAA), the European Container Glass Federation (FEVE) welcomes the recognition of glass manufacturing as a strategic industrial sector and the streamlining of permitting procedures for energy-intensive industry decarbonisation projects.

The proposed objective for manufacturing to account for at least 20% of EU GDP by 2035 sends an important signal of renewed industrial ambition. However, urgent action on multiple fronts is needed to get there and safeguard the competitiveness of the industry, while enabling decarbonisation at scale in a moment marked by increasing energy and carbon costs and intense competition, leading to unprecedented production decline and furnaces closures across Europe.

“Europe’s glass packaging industry is fully committed to decarbonisation and is investing to make it happen” said Mr.

Carlo Pirrone, Secretary General of FEVE. “While today’s proposal is a step in the right direction, we need bolder action to lower energy prices, boost grids development and simplify rules to maintain our competitive edge”

The European container glass industry stands as a resilient and strategically important contributor to the EU economy and to local supply chains. Glass packaging also underpins Europe’s global trade strength, supporting exports of high-value goods — from food and beverages to pharmaceuticals and cosmetics — worth over €140 billion, or 6.1% of total EU exports. With the right framework conditions, the sector can deliver fully circular, non-toxic packaging solutions while advancing towards decarbonised manufacturing— preserving industrial capacity, jobs and strategic autonomy in Europe.

FEVE is the Federation of European manufacturers of glass containers for food and beverage, perfumery, cosmetics and pharmaceutical sectors. Its members produce over 20 million tonnes of glass or more than 80 billion containers per year. The association has 24 independent group members. Manufacturing plants are located across 23 European States and include global blue-chip and major companies working for the world’s biggest consumer brands. The Container Glass sector in Europe makes a significant contribution to the EU Economy and supports essential sectors. More than 125,000 people work in the glass packaging value chain across Europe. It guarantees resilient local supply chains with a proximity of service to its suppliers and clients. Every year €610 million is invested in upgrading plants for better energy efficiency and reduced CO₂ emissions (i.e. representing a significant 10% of the operational and maintenance costs). The sector exports around €1.2

billion (empty bottles and jars) and if we take account of items almost always or often packed in glass, glass is an enabler of extra EU exports of around €140 billion.

COMPLETION OF FIRST TRIALS CAMPAIGN MARKS NEW CHAPTER IN GLASS FUTURES’ DECARBONISATION MISSION

Glass Futures has reached a significant milestone in its mission to accelerate the decarbonisation of energy intensive industries, with the successful completion of alternative fuel trial programmes testing biofuels and electric melting, and commissioning hydrogen capabilities on its 30 tonnes-per-day pilot line.

The achievement comes almost exactly seven years after the organisation secured funding for its first Industrial Fuel Switching projects from the Department for Energy Security & Net Zero, marking a new phase of innovation and momentum for the global glass sector.

These complex, multi-pathway trials that started in October 2025 have delivered groundbreaking results that demonstrate the technical potential of low-carbon fuel technologies at industrially relevant scales.

Key successes include the installation and commissioning of a bespoke biofuel delivery system, fully integrated into the site’s digital control environment which has been used to successfully fire four novel, low-cost, waste-derived biofuels for sustained periods over several days.

The Glass Futures team, supported by F.I.C UK Ltd, installed, commissioned, and trialled a custom electric-boost (e-boost) system. The work tested a wide range of power settings, including rapid switching, to demonstrate how a glass furnace could provide



demand-side response capabilities to local electricity networks.

Glass Futures also commissioned a new hydrogen fuel delivery system on the pilot line, enabling successful firing of hydrogen supplied by Ryze Power and natural-gas blends, up to 100% hydrogen.

Commissioning the world's first multi-fuel hybrid pilot-scale glass furnace involved several technical complexities, and this achievement has already attracted strong interest across Glass Futures' membership, government, and the wider foundation industries.

Mr. Justin Kelly, CEO of Glass Futures, said: *"The successful completion of these trial programmes marks a crucial milestone not just for Glass Futures, but for the industry's journey to net zero. We have demonstrated, at industrial scale, the technical viability of a number of alternative low-carbon fuel pathways that have never before been trialed in this way. It is a testament to the resilience, ingenuity, and collaboration of the entire Glass Futures team."*

Mr. Barry King, Engineering Manager at Encirc said: *"Encirc is delighted to be part of Glass Futures' groundbreaking trials in biofuels, electric, and hydrogen technologies. Collaboration and innovation are at the heart of our decarbonisation journey, and working*

together on these pioneering projects brings us closer to finding viable alternatives to fossil fuels. By exploring new energy pathways side by side with industry partners, we're helping to shape a more sustainable future for glass manufacturing and the communities we serve."

With completion of our first trial campaign around alternative fuels, Glass Futures has already progressed into detailed discussions with its members around our next campaign, exploring the next generation of raw materials and process innovations, and looking to our third campaign, to explore product innovations in both flat and packaging glass.

Our technical teams are collating the results from this first campaign to ascertain the technical readiness of each alternative fuel pathway, and how this will influence the broader policy landscape for decarbonisation.

There remain additional technical and adoption barriers to each, and we work directly with our members to explore the right combination of solutions to help decarbonise. The outcomes from these trials will act as a catalyst for further research and investment to overcome remaining technical and commercial challenges to support the energy transition and accelerate the pathway to net zero.

Glass Futures' Head of Innovation, Mr.

Rob Ireson, added: *"These results show that waste-derived biofuels, e-boosting technologies, and other emerging solutions can all play a critical role in decarbonising high-temperature sectors without compromising product quality or operational reliability. Now, we need coordinated action across supply chains, regulators, and energy providers to turn these technical successes into deployable solutions."*

Glass Futures has now commenced the next phase of pilot activity through its AI-GLASS project, funded by the Made Smarter Innovation Programme at Innovate UK, which will gather operating data to validate the advanced furnace model, allowing advanced sensing, digitalisation and intelligent control to further optimise industrial furnace performance and reduce emissions.

GLASS TECHNOLOGY SERVICES SECURES UKAEA FUNDING TO PIONEER GLASS AND GLASS-CERAMIC SHIELDING FOR FUSION ENERGY SYSTEMS

Glass Technology Services (GTS) has been awarded a contract under the United Kingdom Atomic Energy Authority's (UKAEA) Fusion Industry Programme, as part of a national £8.1 million investment supporting next-generation shielding and fuel-cycle technologies for future fusion power plants.

Working in partnership with Sheffield Hallam University, GTS is leading the project "Glass and glass-ceramics for fusion reactor shielding applications." The project investigates the potential of glass and glass-ceramic materials to serve as economical and sustainable radiation shielding solutions within fusion energy systems and associated plant environments.

The project is taking an economics and sustainability driven approach to identify materials that are both low

cost and environmentally responsible, while still meeting the stringent performance requirements of nuclear fusion.

By exploring alternatives that are holistically competitive with traditional shielding materials, such as lead, concrete, and specialist metal alloys, the team aims to deliver solutions that combine high physical performance with lower costs, reduced environmental impact, and simpler end of life management. This work aligns closely with the UK's commitment to sustainable innovation and the advancement of clean energy technologies.

As part of the programme, GTS and Sheffield Hallam University are undertaking a comprehensive programme of work including:

- Identification and modelling of high-performance glass and glass-ceramic materials.
- Simulations to evaluate radiation attenuation behaviour.
- Laboratory-scale melting trials to validate material feasibility and performance scale melting trials to validate material feasibility and performance.
- Assessment of commercial manufacturing routes, including integration of secondary raw materials.
- Lifecycle and environmental impact analysis to ensure long-term sustainability and end-of-life viability.

Dr. Owen McGann, Principal Technologist and Innovation development lead said *“Glass and glass-ceramic technologies offer a unique combination of compositional flexibility, manufacturability and radiation shielding capability.”*

“This project gives us the opportunity to demonstrate how these materials can deliver sustainable, economical, high-performance shielding solutions which support the UK's long-term fusion energy ambitions.”

The outcomes of the project are expected to contribute directly to the UK's growing fusion materials capability and may offer broader benefits to sectors such as nuclear medicine, nuclear fission, aerospace, and industrial radiography.

NEW STUDY BY STAZIONE SPERIMENTALE DEL VETRO CONFIRMS STRONG RECYCLING PERFORMANCE OF OPAQUE GLASS PACKAGING ACROSS EUROPE

FERVER and FEVE welcome the publication of a new technical report by Stazione Sperimentale del Vetro (SSV), which provides robust scientific evidence on the actual recycling performance of opaque glass packaging in Europe.

The study, which was commissioned by FEVE and conducted with the operational support of FERVER members, identifies the minimum visible light transmittance threshold at which opaque glass fragments can still be correctly recognised as glass by the optical sorting systems nowadays used in Cullet Treatment Plants (CTPs). Through extensive laboratory measurements and industrial-scale trials, the research offers clear, data-driven insight into the state-of-the-art performance of Europe's glass-recycling infrastructure.

The findings of the study support the conclusion that today, in Europe, optical sorting technologies can reliably identify opaque glass fragments with an average visible light transmittance higher than 2.5%, measured according to the opacity protocol currently being defined in the European Committee on Standardisation (CEN) taking into account the input of the International Technical Center for Bottling and Related Packaging (CETIE). This confirms that, when it comes to the actual performance of glass packaging

recycling in Europe, current CTPs' capabilities significantly exceed the much higher thresholds enshrined in some national packaging laws, which under-estimate real-world sorting performance.

To ensure statistically robust findings, SSV conducted comprehensive industrial trials at nine CTPs across Europe, using 2,700 kilograms of standardised cullet from different types of opaque bottles, measuring false CSP (Ceramic, Stones, Porcelain) rejection rates under real operating conditions and across different sorting technologies.

Due to its robustness, the findings of this study are being taken into consideration in the development of the design-for-recycling technical specifications for glass packaging, currently being finalised by CEN with input from the whole value chain, including glass container manufacturers, Cullet Treatment Plants, fillers, label suppliers, closure producers, machinery providers and EPR schemes. Recyclability guidelines will require regular review and improvement to reflect innovations in design, collection, sorting and recycling.

By grounding this work in industrial evidence and full value-chain scrutiny, the study contributes to ensuring that the future work of the European Commission on design for recycling criteria for glass packaging is technically sound and aligned with Europe's state-of-the-art recycling practices, thus contributing to Europe's circular economy and industrial resilience.

FEVE and FERVER remain committed to working with European and national policymakers to ensure that the harmonized EU regulatory framework on packaging and packaging waste fully reflects the proven capabilities of Europe's recycling system.

REMEMBERING SWARN KANTA CHITKARA w/o LATE MANOHAR LAL, FORMER SECRETARY AIGMF



A very special volunteer who was always active at the AIGMF booth in the initial glasspex exhibitions in 2009 and 2011; and wife of Former Secretary Mr. Manohar Lal passed away on March 15, 2026 at Delhi at the age of 90 years.

Mrs. Swarn Kanta Chitkara was remembered at the Executive Committee meeting of the AIGMF on March 27 at K R Mangalam University.

SORG ACHIEVES 100% ELECTRIC GLASS CONDITIONING

SORG has successfully completed long-term testing of its fully electric ‘Viking’ forehearth, which enables glass conditioning for all tonnages.

The first installation on a glass melting furnace has successfully passed extended testing in a large-scale industrial environment.

Conditioning remains one of the major sources of CO₂ emissions in the glass manufacturing process.

While electrically heated conditioning systems have been available for some time, their use has generally been limited to special applications.

This is due to limitations such

as contamination from the heating elements, slow response times, local overheating, and wear of the heating elements.

The Viking forehearth is designed to change this standard by offering a 100% electrically heated conditioning system suited to all tonnages.

The forehearth benefits from heating elements integrated into its specially designed superstructure, which completely eradicates local overheating.

In addition, because the heating element material cannot fall into the glass bath, the design also protects the melt from potential contamination, ensuring a cleaner and safer conditioning process.

The forehearth was equipped with an emergency gas heating system for safety at a production facility. However, the forehearth’s reliable performance meant it was not necessary to put the safety system into operation. With the Viking forehearth, SORG continues to advance sustainable glass production.

When combined with SORG’s VSM and VSM+ fully electric melting technologies - or the Clean Melter hybrid system, which reduces CO₂ emissions by 80% - the Viking forehearth makes 100% CO₂-free glass production possible from the initial melt to the final conditioned glass.

ENERGY CONSERVATION AND DECARBONISATION TRAINING

A 5-day training programme on Energy Conservation and Decarbonisation

in the Glass Industry was conducted from March 16-20, 2026, at the Centre for the Development of Glass Industry, Firozabad. The programme was organised by the Centre for the Development of Glass Industry (CDGI), an institution established as a joint venture to support technological advancement and sustainable development in the glass sector.

The programme was conducted by Er. Ashoka Rao Manikala, Former President (Operations) of PGP Glass and AGI Greenpac and Member, Editorial Board of KANCH, who shared extensive practical knowledge from his long industrial experience in glass manufacturing and furnace operations.

More than 30 participants from various glass factories in and around Firozabad attended the programme. The training covered key aspects of furnace energy efficiency, combustion optimisation, reduction of heat losses, fuel conservation and practical measures for lowering carbon emissions in glass production.

Special emphasis was given to improving specific energy consumption, operational discipline, and adopting sustainable manufacturing practices. Interactive discussions and practical examples made the sessions highly relevant to present-day industrial challenges. The programme provided valuable technical guidance for improving competitiveness through energy-efficient and environmentally responsible glass manufacturing practices.



HIGHLIGHTS OF THE UNION BUDGET OF INDIA 2026-27

The Union Minister for Finance and Corporate Affairs Mrs. Nirmala Sitharaman presented the Union Budget 2026-27 in Parliament on Feb 1, 2026. The key highlights of the Budget are as follows:

- Restructuring Power Finance Corporation (PFC) and Rural Electrification Corporation (REC).
- Raising the STT on Futures from 0.02% to 0.05%.
- Establishment of new Dedicated Freight Corridors connecting Dankuni in the East, to Surat in the West.
- Operationalising 20 new National Waterways connecting mineral rich areas, industrial centres and ports.
- Scheme to adopt Carbon Capture Utilization and Storage (CCUS) with an outlay ₹20,000 crore.
- **Exemption of BCD on import of sodium antimonate for use in manufacture of solar glass.**
- Exemption of BCD on import of capital goods required for the processing of critical minerals in India.
- Extending exemption of BCD to capital goods used for the manufacture of Lithium-Ion Cells for batteries to be used in battery energy storage systems.
- Extension of the existing basic customs duty exemption on imports of goods required for Nuclear Power Projects till the year 2035 and expand it for all nuclear plants irrespective of their capacity.
- Exclusion of entire value of biogas in Central Excise duty payable on biogas blended CNG.
- 'Growth Connectors' - 7 High-Speed Rail corridors between cities - Mumbai-Pune, Pune-Hyderabad, Hyderabad-Bengaluru, Hyderabad-Chennai, Chennai-Bengaluru, Delhi-Varanasi, Varanasi-Siliguri - Environmentally sustainable passenger systems.
- Enhancement of duty-deferral period for Tier 2 and Tier 3 Authorised Economic Operators (AEO) from 15 to 30 days. Eligible manufacturer-importers to get the same duty deferral facility. Government agencies will be encouraged to leverage AEO accreditation.
- Individual Persons Resident Outside India (PROIs) will be permitted to invest in equity instruments of listed Indian companies through the Portfolio Investment Scheme (PIS).
- Reduce TCS rate on sale of overseas tour program package from 5% and 20% to 2% without any stipulation of amount.
- Reduce TCS for pursuing education and for medical purposes under the Liberalized Remittance Scheme (LRS) from 5% to 2%.
- TDS on Supply of manpower services to be at the rate of either 1% or 2%.
- Enable depositories to accept Form 15G or Form 15H from taxpayers holding securities in multiple companies.
- Time available for revising returns extended from 31st December to up to 31st March with the payment of a nominal fee.
- Individuals with ITR 1 and ITR 2 returns will continue to file till 31st July and non-audit business cases or trusts are proposed to be allowed time till 31st August.
- TDS on the sale of immovable property by a non-resident to be deducted and deposited through resident buyer's PAN instead of TAN.
- Introducing a one-time 6-month foreign asset disclosure scheme below a certain size for small taxpayers.
- Allow taxpayers to update their returns even after reassessment proceedings have been initiated at an additional 10 percent tax rate over and above the rate applicable for the relevant year.
- Framework for immunity from penalty and prosecution in the cases of underreporting extended to misreporting.
- Immunity from prosecution with retrospective effect from 1.10.2024 for non-disclosure of non-immovable foreign assets with aggregate value less than ₹20 lakh.
- Constitute a Joint Committee of Ministry of Corporate Affairs and Central Board of Direct Taxes for incorporating the requirements of Income Computation and Disclosure Standards (ICDS) in the Indian Accounting Standards (IndAS).
- Tax buyback for all types of shareholders as Capital Gains. However, promoters will pay an additional buyback tax.
- Single and interconnected digital window for cargo clearance approvals.
- Honest taxpayers willing to settle disputes will now be able to close cases by paying an additional amount in lieu of penalty.

भारत सरकार का केंद्रीय बजट: 2026-27

केन्द्रीय वित्त और कॉर्पोरेट मामलों की मंत्री श्रीमती निर्मला सीतारमण ने 1 फरवरी, 2026 को संसद में केंद्रीय बजट 2026-27 प्रस्तुत किया। बजट की मुख्य विशेषताएं इस प्रकार से हैं:

- पावर फाइनेंस कॉर्पोरेशन और सरल रूरल ग्रामीण विद्युत निगम कॉर्पोरेशन का पुनर्गठन।
- फ्यूचर्स पर एसटीटी को 0.02% से बढ़ाकर 0.05% करना।
- 20,000 करोड़ रुपए के परिव्यय के साथ कार्बन कैप्चर उपभोग और भंडारण (सीसीयूएस) अपनाने की स्कीम।
- बैट्री ऊर्जा भंडारण प्रणाली में प्रयोग किए जाने के लिए लिथियम आयन सेल बैटरियों के विनिर्माण में प्रयुक्त पूंजीगत सामानों के लिए बीसीडी छूट देना।
- **सोलर ग्लास के विनिर्माण में प्रयुक्त सोडियम एंटीमोनेट के आयात पर बीसीडी की छूट।**
- वर्ष 2035 तक नाभिकीय ऊर्जा परियोजनाओं के लिए अपेक्षित सामानों के आयात पर बेसिक सीमा शुल्क रियायत का विस्तार करना और यह सुविधा सभी नाभिकीय संयंत्रों के लिए उनकी क्षमता के निरपेक्ष लागू करना।
- भारत में महत्वपूर्ण खनिजों की प्रोसेसिंग के लिए अपेक्षित पूंजीगत सामानों के आयात पर बीसीडी छूट।
- बायो गैस मिश्रित सीएनजी पर देय केंद्रीय उत्पाद शुल्क में बायो गैस के संपूर्ण मूल्य को छोड़ना।
- वृद्धि संयोजक शहरों के बीच 7 हाईस्पीड रेल कॉरिडोर- मुंबई-पुणे, पुणे-हैदराबाद, हैदराबाद-बेंगलुरु, हैदराबाद-चेन्नई, चेन्नई-बेंगलुरु, दिल्ली-वाराणसी, वाराणसी-सिलीगुड़ी- पर्यावरण अनुकूल यात्री प्रणालियां।
- टीयर 2 और टीयर 3 प्राधिकृत आर्थिक ऑपरेटरों के लिए ड्यूटी डेफरल अवधि को 15 दिन से बढ़ाकर 30 दिन करना। पात्र विनिर्माता-आयातक को समान ड्यूटी डेफरल सुविधा मिलेगी। सरकारी एजेंसियों को ईईओ प्रत्यायन का लाभ उठाने के लिए प्रोत्साहित किया जाएगा।
- सीमा शुल्क पर बाध्यकारी उन्नत नियमन की वैधता अवधि को 3 वर्ष से बढ़ाकर 5 वर्ष करना।
- इंडिबिजुअल पर्सन्स रेजिडेंट आउटसाइड इंडिया (पीआरओआई) को पोर्टफोलियो निवेश स्कीम (पीआईएस) के माध्यम से सूचीबद्ध भारतीय कंपनियों के इक्विटी लिखतों में निवेश की अनुमति दी जाएगी।
- विदेशी टूर प्रोग्राम पैकेज की बिक्री पर टीसीएस दर को बिना किसी धनराशि के निर्धारण के 5% और 20% से घटाकर 2% कर दिया जाएगा।
- उदारीकृत धन प्रेषण योजना के अंतर्गत शिक्षा प्राप्त करने और चिकित्सा उद्देश्यों के लिए टीसीएस को 5% से घटाकर 2% कर दिया जाएगा।
- जनशक्ति सेवाओं की प्रदायगी पर टीडीएस को या तो 1% या 2% रखा जाएगा।
- छोटे करदाताओं के लिए नियम आधारित स्वचालित प्रक्रिया के माध्यम से कम या शून्य कटौती प्रमाणपत्र प्रदान करने की सुविधा दी जाएगी।
- अनेक कंपनियों में प्रतिभूति धारित करने वाले करदाता से फॉर्म 15 जी और 15 एच स्वीकार करने के लिए न्यासों को सक्षम बनाया जाएगा।
- संशोधित रिटर्न के लिए उपलब्ध समय को मामूली शुल्क के भुगतान के साथ 31 दिसम्बर से बढ़ाकर 31 मार्च किया गया।
- आईटीआर 1 और आईटीआर 2 दाखिल करने वाले व्यक्ति के लिए 31 जुलाई तक और लेखापरीक्षित व्यवसायों अथवा न्यासों के लिए 31 अगस्त तक की समय सीमा की अनुमति दिए जाने का प्रस्ताव है।
- किसी अनिवासी द्वारा अचल संपत्ति की बिक्री पर काटे जाने वाले टीडीएस को टैन के स्थान पर निवारी क्रेता के पैर के माध्यम से जमा किया जा सकता है।
- छोटे करदाताओं के लिए एक निश्चित आकार से कम मूल्य वाले विदेशी आस्ति प्रकटन के लिए एकबारगी छह माह की अवधि का प्रावधान किया गया है।
- करदाताओं को पुनर्निर्धारण कार्रवाई के आरंभ के पश्चात भी अपनी विवरणियों को संगत अवधि के लिए लागू दर के ऊपर 10 प्रतिशत अतिरिक्त कर दर पर अद्यतन करने की अनुमति होगी।
- आंकड़े कम दिखाने के मामलों में दंड और अभियोजन से उन्मुक्त संबंधी ढांचे का विस्तार गलत सूचना देने के मामले में भी किया गया है।
- लेखा बही और दस्तावेज प्रस्तुत न करने तथा पीडीएस भुगतान की अपेक्षा को अपराध की श्रेणी से हटा दिया गया है।
- 20 लाख रुपए से कम कुल मूल्य के साथ गैर अचल विदेशी संपत्तियों को प्रकट नहीं करने के संबंध में 01.10.2024 से भूतलक्षी प्रभाव से मुकदमेबाजी से उन्मुक्त दी गई है।
- भारतीय लेखांकन मानकों में आय गणना एवं प्रकटीकरण मानकों की अपेक्षाओं को शामिल करने के लिए कॉर्पोरेट कार्य मंत्रालय तथा केंद्रीय प्रत्यक्ष कर बोर्ड की संयुक्त समिति का गठन ■

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



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Workshop on Future of Security Glasses

(March 27, 2026, Gurugram)

Parallel to the AIGMF Executive Committee meeting, a workshop on the Future of Security Glasses was organised on March 27 at K R Mangalam University, Sohna GURUGRAM. The program was organised in association with the Federation of Safety Glass (FOSG) and the Glazing Society of India (GSI) with stakeholder participation from all segments of glass and related associations.

The event started with a welcome address by the Vice Chancellor Professor Dr. Raghubir Singh and an Opening Address on Security of Health and Environment by the AIGMF President Mr. Rajesh Khosla and CEO/President of AGI Greenpac.

Mr. Khosla gave the overview on glass packaging and how important role it plays for protecting health and environment vis-à-vis threats to the general masses from the unsustainable packaging. He said that role of the AIGMF is to impart education by taking help of the Youth to spread the message of green packaging offering security via Glass.





The keynote address was delivered by Mr. Aashish Tyagi, Director of Gold Plus Glass Industry Ltd., on developing the unbreakable Glass solutions that set the stage for academia and industry interaction.

The following technical presentations were made:

- Burglary Resistance Glasses by Mr. Rishabh Patel, Technical Manager, AIS
- Bulletproof Glasses by Ms. Pallavi Mungekar, Country Sales Manager (Security), FG Glass Industries Pvt. Ltd.
- Blast Resistant System by Mr. Ashwin K B, Technical Engineer, Vetrotech Saint Gobain
- Transparent Glass-Ceramics for Armour by Dr. Atiar Rahaman Molla, Sr. Principal Scientist, CSIR-CGCRI

The event was well organized and well collected by industry leaders. I had a great learning from the fellow dignitaries as well as from the speakers who talked about different subjects





from safety glass to bulletproof glass to the new ceramic glass. **Mr. Amit Malhotra, President of Confederation of Construction Products and Services, Treasurer of uPVC Window & Door Manufacturers Association and Managing Director of McCoy Silicones Ltd.**

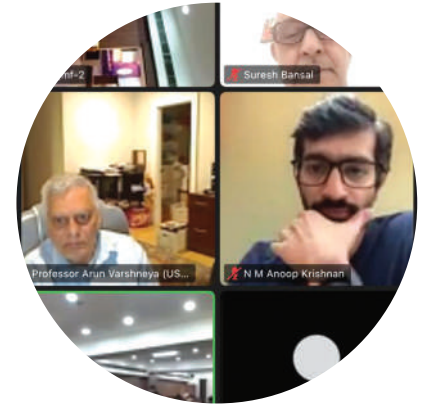


The future of security glass, particularly bullet-resistant glass, is being shaped by rapid advancements in material science and engineering. Innovations in multi-layer laminates, advanced interlayers, and lightweight polycarbonate composites are enabling superior protection while maintaining high optical clarity and aesthetic appeal.



As security requirements continue to grow across commercial, residential, and defence sectors, modern bullet-resistant systems are evolving to deliver higher ballistic performance with reduced thickness and weight. Enhanced durability, energy efficiency, and seamless integration with





Managing Committee, Federation of Safety Glass (FOSG)

- Mr. Gohul Deepak, Executive Director, Glazing Society of India (GSI)
- Dr. Gaurav Gupta, Assistant Professor, K R Mangalam University
- Mr. Amit Malhotra, President, Confederation of Construction Products and Services; Treasurer of uPVC Window & Door Manufacturers Association and Managing Director, McCoy Silicones Ltd.
- Ms. Sheetal Khanna, General Manager, Gold Plus Glass Industry Ltd.
- Dr. Arun K. Varshneya, PhD Hon FSGT Former President, The Society of Glass Technology; Professor of Management, Alfred University; Prof. of Glass Science & Engineering, Emeritus, Alfred University & President Saxon Glass Technologies, Inc., USA

contemporary architectural designs are becoming key focus areas.

Looking ahead, the emphasis is on intelligent protection, where safety meets innovation. Next-generation bullet-resistant glass will be lighter, stronger, and more adaptable, offering visually seamless solutions that meet the dynamic challenges of modern security environments.

However, high-performance glass

alone is not sufficient; a robust and well-engineered framing and support system is equally critical to ensure overall ballistic integrity and real-world effectiveness.

Ms. Pallavi Mungekar Country Sales Manager – Security, FG Glass Industries Pvt. Ltd.

The Q&A was chaired by the expert panellists:

- Mr. Sharanjit Singh, Member





Mr. Vinit Kapur Secretary, AIGMF mentioned that the industry is excited to hold this event at K R Mangalam University, which houses 10,000 students on its 38-acre green campus. He appreciated that the current and upcoming campus buildings have many glass applications which aligns with the green concept.



“It was a great experience interacting with the industry leaders, scientists and academics on addressing the grand challenges faced by the industry. Such workshops and brainstorming sessions play a foundational role in bringing the academia and industry together to develop innovative and sustainable solutions that can catapult India toward a global leader in glass manufacturing and innovation.” **Prof. N M Anoop Krishnan, Dept. of Civil Engineering and Yardi School of AI, IIT DELHI**



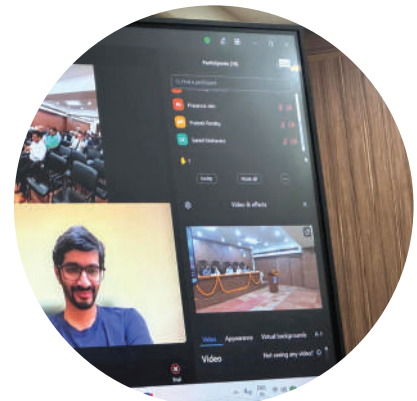
It was stated that a series of workshops are planned on Solar, container and pharma (vials/ampoules) to cover all segments of glasses

- Mr. Mohit Garg, Deputy Director & Member Secretary - CHD 10, Bureau of Indian Standards, Gol
- Mr. Lakhan Singh, Editor & Publisher Glass Bulletin Magazine
- Prof. N M Anoop Krishnan, Dept. of Civil Engineering and Yardi School of AI, IIT DELHI

offering a cost-effective alternative to conventional glass and transparent ceramics. I invite Indian industries to participate as co-development partners in technology development, demonstration, and subsequent commercialization, noting that the demand for such materials is steadily increasing while indigenous technologies remain limited in the country.

Dr. Atiar Rahaman Molla, Scientist-F at CSIR-CGCRI

Glass-ceramics are emerging as a promising class of materials for both armour systems and electronic displays,





expertise, ensuring that standards remain scientifically robust, innovative, and globally harmonized.

Mr. Mohit Garg, Deputy Director & Member Secretary - CHD I0, Bureau of Indian Standards, Gol.

before the 16th AIGMF International conference on the theme ‘Developing Unbreakable Glass Solutions,’ to be held parallel to glasspex and glasspro exhibitions in 2027 at Mumbai INDIA. Papers are invited on the subject covering flat, hollow, solar, vials, decorative and tableware at info@aigmf.com

The interactive session included over 100 participants covering students, faculty, and industry members from AIGMF, FOSG, CCPS, ICG, GSI, BIS, uPVC, IIT, CGCRI, K R Mangalam University, Glass Bulletin magazine, Alfred University USA, Glass manufacturers, and affiliate members via hybrid mode.

National standardization, which is vital for ensuring safety, quality, and uniform performance in the glass and glassware sector, particularly for

applications involving security and structural integrity. The Bureau of Indian Standards (BIS) has established a robust set of Indian Standards, including IS 2553 (Parts 1 & 2) for safety glazing in buildings and vehicles, IS 18158 for bullet-resistant glasses, IS 19328 for fire-resistant glasses, and IS 16978 (Parts 1 to 4) for forced entry security glazing. These standards define critical performance parameters such as impact resistance, fire endurance, and safe breakage behavior, enabling safer use of glass in modern infrastructure and enhancing trust among stakeholders.

BIS continues to strengthen this framework through ongoing work on structural glazing, advanced coated and laminated glass, and performance-based standards aligned with international practices. Academia plays a key role in this process by contributing research, testing methodologies, and technical

Overseas participants from the USA, Japan and Iran were noteworthy. A brief tour of the University was also organised.

All participants received a glass memento specially made by AGI Greenpac and La Opala from 100% recycled glass.

The workshop concluded with lunch and a group photograph.

We should understand that the words, “bulletproof”, “fireproof”, or “unbreakable” glass are commercial terms only. In reality, there is no material which qualifies for being “proof”. Technologically, they are bullet-resistant, fire-resistant, or break-resistant. As a single component flat glass product, chemically strengthened transparent glass-ceramics are perhaps the strongest; having surface compression level at 1 GPa and a



depth of compression around 100 to 300 microns. Relative to glasses, glass-ceramics have a high fracture toughness making it possible to absorb some impacting energy pulse. However, when using any strengthened glass as armour, one needs to be cognizant of what happens when the second bullet strikes.

In strengthened glasses, tensile stress in the interior can lead to web fractures causing loss of visibility for vehicle occupants. In general, armours should be made as laminates with several plies bonded using polymers such as polyvinyl butyrate which provide a tough assembly and prevent glass bits from flying. A ply of transparent ceramic such as Mg-spinel can improve performance. In this context, the framing of the armour can also help absorb some of the impacting energy. Work on transparent glass-ceramics is being carried out by Dr. Atiar Molla at the CGCRI, Kolkata. Fracture simulations studies (among other topics) are being conducted by Professor Anoop Krishnan at the IIT Delhi.

As Mr. Rajesh Khosla stated in his welcome address, “security” also includes health security. A serious



threat to human health are the cancer-causing microplastics. Use of glass containers in place of plastics is a step in the right direction. At Saxon Glass Technologies, we have been developing strengthened thin-walled glass containers in an effort to make glass containers a cost-competitive option. In addition, we regularly supply chemically strengthened borosilicate glass cartridge for autoinjector use which has reduced glass fracture probability from around 10% down to next-to-nothing, thereby help saving thousands of human lives each year. Many modern parenteral medicines are quite potent; they should be contained in break-resistant vials. Strengthened vials have been used to contain Covid-19 vaccines.

I am looking forward to developing closer working relations with glass manufacturers and R&D establishments

in India in an effort to advance towards a “Secure India”.

I thank Vinit Kapur of the AIGMF to have given me the opportunity to take part online during middle of the night from the other side of the Earth in the special AIGMF workshop on the future of security glasses.

Dr. Arun Varshneya (Emeritus Professor of Glass Science & Engineering, Alfred University, and President, Saxon Glass Technologies, Inc. Alfred NY USA)

After the workshop, the AIGMF Executive Committee met to discuss the current Gulf war situation, energy, raw materials, the ADD on Soda Ash, and other issues ■

Select photos of the event and presentations are available under past events at www.aigmf.com



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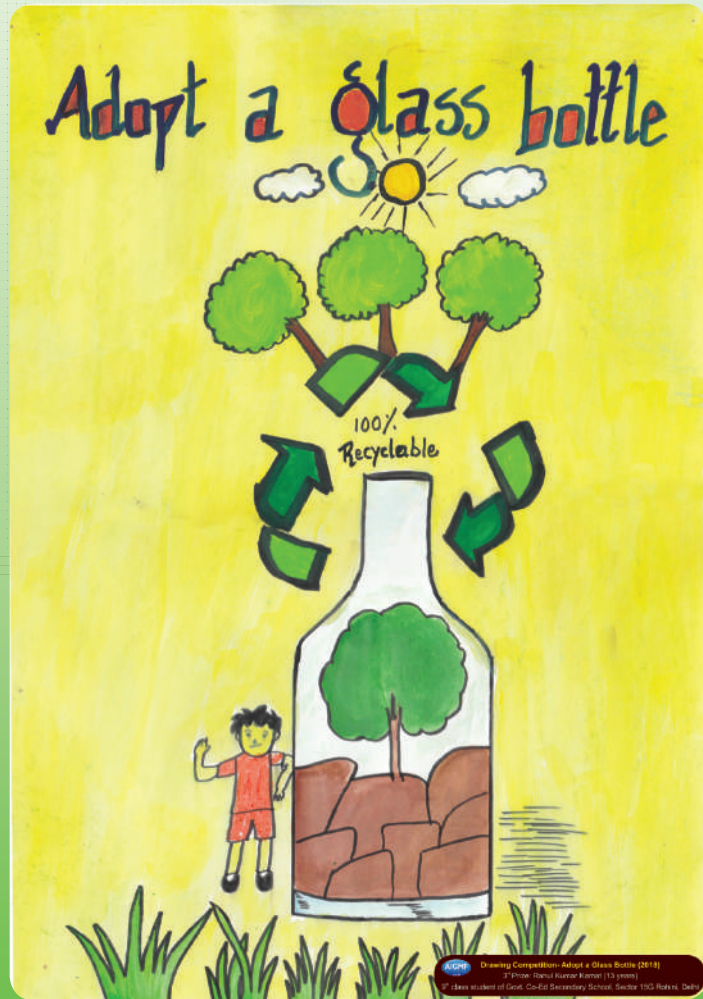
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Written By **Er. Ashoka Rao Manikala**
(Former President Operations PGP Glass and AGI Greenpac)



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