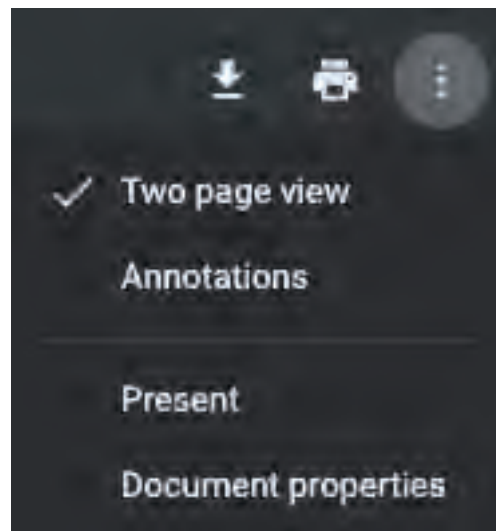


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To view the issue in a two-page format using Google Chrome,
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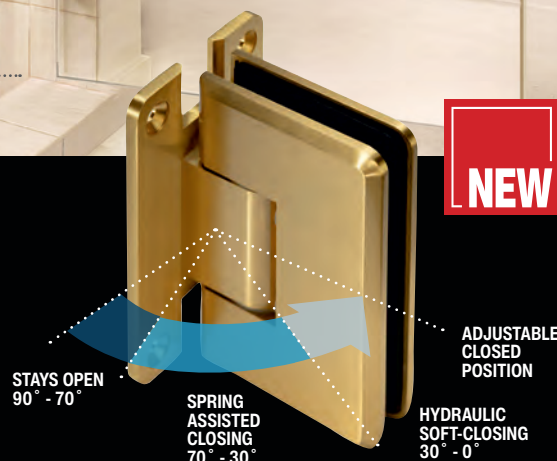
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GlassMagazine.com, glass.org, and GlassBuildAmerica.com.

WEBINAR

Chris Beard of John Burns Research and Consulting shares the newest results from the Window & Door Market Survey, the industry's only dedicated quarterly index of the residential window and door market.

WORKFORCE

The NGA will work towards combining two existing Product Category rules—one for float glass and one for fabricated glass—in order to help manufacturers better measure environmental impact.

GLASSBLOG



ENERGY EFFICIENCY
Facade Market Transformation
By Helen Sanders



TECHNOLOGY
AI to Solve Bottlenecks
By Chris Kammer



INDUSTRY
Advocacy in Real Life
By Max Perilstein



PROJECT SHOWCASE

The Mercedes-Benz showroom at One Manhattan West in New York, features an architectural glass installation by Bendheim where red, textured glass appears to float behind a luxury vehicle display. Designed and installed by IMBranded, the feature wall is composed of a laminated, vertically ribbed, silvered glass containing a deep red interlayer.

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Architects Look for Green Solutions

Glass Magazine Award winners deliver sustainable technologies for a greener built environment



NORAH DICK
EDITOR

In June, I caught up with glass and fenestration leaders on the show floor of the American Institute of Architects (AIA) 2026 expo. While the political climate may have shifted the emphasis away from green building, company reps I spoke with in San Diego agreed that sustainability remains a primary consideration for the architect and design community.

Thankfully, the glass industry can deliver the sustainable, secure and beautiful solutions that architects are looking for, and that is nowhere more evident than in this year's Glass Magazine Award winners. This year's 17 winners underscore the superlative technologies and people that make glass an indispensable part of the built environment. Go to page 38 for the Glass Magazine Awards feature.

As part of Glass Magazine's, and the National Glass Association's, commitment to engaging the design community, this year's competition also featured a new judging panel of architects who selected a superlative project from the 77 number of nominations. The inaugural winner of the Architect's Choice Award, the Shanghai Greenhouse Garden, represents the intersection of what architects want and what glass and fenestration products can deliver.

Adapted from a former industrial site, the greenhouse employs laminated glazing, along with passive and active environmental strategies, to ensure daylight and growth for the plants it shelters. Architects' Choice judge Dan Hart, executive director of architecture at Parkhill, says the project "redefines the role of glass as both enclosure and environmental mediator."

"The Shanghai Greenhouse Garden merits recognition for its seamless integration of advanced glazing technology, structural ingenuity and environmental performance," says Hart. The project's sustainable innovations helped it to win

two additional awards; Runner Up for Project of the Year and Best Green Project.

Like this winner, several of the winning projects this year feature glass's green potential in retrofit and renovation. The historic Gund Hall, winner of this year's Best Specialty Glazing Award, employed VacuMax hybrid vacuum insulating glass by Vitro, with systems supplied by nominating company Oldcastle BuildingEnvelope. The retrofitted glass helps the iconic façade of Harvard University's design school to achieve improved thermal efficiency, even in the Massachusetts climate.

Winners of the competition's product categories also demonstrate the range of high-performance systems that reduce environmental impact and amplify aesthetics. ColorQuant Solar Design Technology, winner of this year's R&D award, is a glass frit technology that facilitates the function of photovoltaic technology, allowing the building itself to generate electricity from solar radiation. With 500 possible colors available, the technology offers the aesthetic range and sustainable performance architects are looking for.

Sustainability is also a major value held by this year's inaugural winner of the Legacy Leadership Award, a reminder that it's the people behind the products that make sustainable systems a possibility. Oliver Stepe, president and CEO of YKK AP America Inc., takes home the award this year, and under his leadership, sustainability has been an important aim for the company. During his tenure, YKK AP launched its first energy-efficient line of aluminum systems, while also sourcing a majority of its aluminum from low-carbon suppliers.

The purpose of the Glass Magazine Awards remains to illustrate how crucial glass is to the performance of the built environment. If you feel your company should be recognized in a future competition, please reach out to myself or Rachel Vitello, associate editor. ■

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■ NEED-TO-KNOW INFORMATION FROM THE NGA



KEYNOTE THEATER TO DEBUT AT GLASSBUILD 2026, FEATURING SHARK TANK STAR

For the first time, GlassBuild 2026 will host a keynote stage, the Keynote Theater, at GlassBuild, featuring a keynote each day of the show. GlassBuild America welcomes Daymond John, star of ABC's Shark Tank, entrepreneur, and FUBU CEO/founder, as the show's kickoff keynote.

"In celebration of 20 years of the Glazing Executives Forum, this year's show will debut the Keynote Theater at GlassBuild, featuring three days of powerhouse opening keynotes, VIP opportunities and dynamic networking experiences," says Lakisha A. Woods, CAE, president and CEO of the National Glass Association, owner of GlassBuild. "The keynotes are above and beyond all that GlassBuild already offers, taking place off the trade show floor and before expo hours, allowing attendees and exhibitors ample time to do it all and see it all." ■

NGA LAUNCHES INDUSTRY INITIATIVE TO MODERNIZE ENVIRONMENTAL REPORTING FOR GLASS PRODUCTS

The NGA announced a major initiative to update and streamline the industry's Product Category Rules (PCRs) for glass products. PCRs are critical tools that help manufacturers consistently measure and communicate the environmental impacts of their products. The effort will combine two existing PCRs—one for flat (float) glass and one for processed (fabricated) glass—into a single, unified framework.

This new approach is intended to better reflect how glass moves through the value chain while also addressing the environmental data needs tied to the most common fabricated glass applications, end uses, and how they impact the built environment. NGA is calling on representatives from the flat glass and processed glass manufacturing communities, as well as key downstream sectors such as fenestration, to participate in the PCR guidance development process. Their input will be essential to ensuring the resulting framework is practical, technically sound, and aligned with how glass products are manufactured, transformed, specified, and used in the market.

Central to the initiative is direct manufacturer involvement. NGA will lead development of the PCRs, with technical

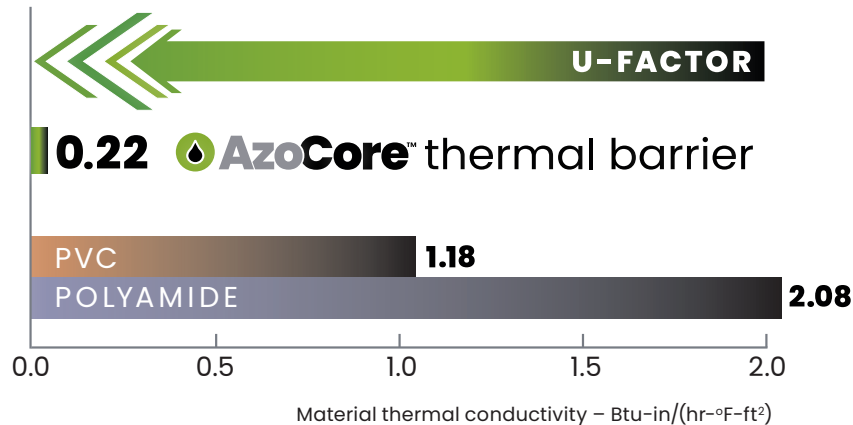
support from TrueNorth Collective sustainability consulting. Through a proven, facilitated process, manufacturer representatives will work together to create a robust PCR guidance document grounded in real-world technical knowledge and market needs. Because a program operator must facilitate development of the final PCR, NGA will first develop a guidance document and then select a qualified program operator to execute the final PCR in conformance with ISO 14025. This approach ensures each participant contributes where they add the most value.

NGA intends to develop the new PCR in two phases. The first phase will focus on a minimum viable PCR that enables industry-average environmental impact calculations for the most common flat and processed glass product options in the near term. The second phase will expand the framework to support robust product- and manufacturer-specific impact calculations. In parallel, TrueNorth Collective will develop a state-of-the-art calculation tool designed to serve as a PCR-aligned sustainability data engine, simplifying product transparency for glass industry manufacturers in a practical and consistent way. ■

Members interested in participating in the PCR guidance development process are encouraged to contact NGA at technicalsvcs@glass.org.

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GLASS ADVOCATE



(L to R) Christopher Hopper, Action Bullet Resistant; Lauren Hamma, K&L Gates guide; Rob Carlson, Tristar; Urmilla Sowell, NGA; Sabrina Wilhelm, Senator Blackburn staffer

ENERGY, AFFORDABILITY TOP PRIORITIES FOR CONGRESS AT NGA'S GLASS & GLAZING ADVOCACY DAYS

BY NORAH DICK

In the middle of May, the National Glass Association staff and 23 leading members of the glass and fenestration industries went to Capitol Hill to advocate for architectural glass as the material choice for the spaces where people live, play, learn, work and heal. Conversations with Congressional Reps in 26 states centered on four main priorities:

- Specifying bird-friendly glazing in select GSA buildings
- Adopting a national framework for stronger security glazing solutions in schools

- Increasing reimbursable funding for workforce development and training
- Implementing high-performance glass and fenestration to strengthen and stabilize the U.S. energy grid

Congressional staff receptive to NGA priorities

In 45 meetings, NGA advocates emphasized the bipartisan nature of our priorities, and how the glass and fenestration industries have products ready to solve the country's current challenges. Congressional staff were interested in how architectural glass efficiency can help support a stronger energy grid and relieve current strain.

Energy costs have been increasing for consumers and businesses in recent months. The Bureau of Labor Statistic's energy index, which tracks fuel costs for consumers, rose 10.9% in March and

another 3.8% in April, as reported in Forbes.

NGA staff and advocates also met with two representatives from the Department of Energy's Building Technologies Office, Asa Foss and Sven Mumme. Foss says that builders and developers are taking envelope performance seriously, and suggested that this could be an opportunity for the glass industry, as substituting high-performance windows into the envelope is a much less disruptive change than altering other parts of the façade.

Advocates also expressed how critical workforce development funding is for the glass industry. "We need trained, skilled labor in order to continue doing our jobs," says Lori Ann Benish, general manager of Enclosures Unlimited.

Overall, participating industry members agreed that advocacy interventions remain critical. Julie Schimmelpennigh, technical applications manager – architectural of Eastman Chemical says industry advocacy is important because "elected representatives have the power to do the things we want them to do." NGA Advocacy Committee Chair Paul Bush, V.P. Technical Service, Sustainability & Government Affairs of Vitro Architectural Glass, says, "Vitro will continue to actively advocate for these priorities and encourages fellow NGA members to do the same as we work together to strengthen and advance our industry." ■



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GLASS INFORMATIONAL BULLETIN

GLASS NOMENCLATURE

Standardizing descriptive language for common glass industry terms

Written descriptions of glass can often lead to misunderstandings due to vague or varied interpretations of the terms used. Different regions of the country and the world use different terminology, measurement systems and structure when defining a glass makeup; terms can even change over time.

This excerpt from NGA Glass Technical Paper Glass Nomenclature aims to standardize descriptive language for glass, providing clear and concise definitions of glass compositions that can be universally understood, and ensuring glass descriptions are precise and accessible to facilitate communication and improve efficiency in the industry.

Definitions of Common Materials

Inserts: layers of sheeting or materials, continuous or non-continuous, within an encapsulated system.

Interlayer: a layer or multiple layers of material acting as an adhesive between lites of glass and/or plastic which add(s) additional performance to the finished product, for example, penetration resistance, glass or plastic shard retention, solar control, acoustic insulation, color, design, or combinations thereof.

Laminate: an assembly consisting of two or more lites of glass and/or plastic that are bonded together by interlayer material.

Lite: a panel or sheet of glass or a panel

or sheet of laminated glass.

Ply: an individual layer of glass or plastic in a laminate.

Kind: a classification of flat glass based on strengthening. Kinds are annealed (AN), heat-strengthened (HS), fully tempered (FT), or chemically strengthened (CS).

Metric v. Imperial

Using metric units to specify glass, interlayer, and airspace thicknesses allows for rapid understanding and summation of overall thickness. To make a more comprehensive structure for defining glass makeups, metric measurements will be used.

Glazing

When defining a monolithic lite of glass, use the nominal thickness. For example, 6 represents 6-millimeter thick glass. To further define the glass kind, the thickness can be followed with a self-declared kind abbreviation or code: annealed (AN), heat-strengthened (HS), chemically-strengthened (CS), and fully tempered (FT). If no kind code is given, annealed is assumed.

Examples:

- 6FT = 6 millimeters fully-tempered
- 2CS = 2 mm chemically-strengthened
- 10 = 10 mm annealed

Glazing Materials

When defining the type of glazing

TABLE 1

Glazing Materials

CL	Clear
LI	Low-Iron
MI	Mid-Iron
BR	Bronze
GY	Gray
GN	Green
BG	Blue-Green
BL	Blue

Plastics

PC	Polycarbonate
AC	Acrylic

TABLE 2

Surface Code	Description
*	Indicates a Low-E or Reflective coating
r	Mirrored surface
a	Acid-etched surface
f	Fritted surface
d	Digital print
p	Painted / Roll Coated (non-frit)
BG	Blue-Green
BL	Blue



Excerpted from NGA Glass Technical Paper Glass Nomenclature – Schema 1 (FB78-25), available for free download at glass.org/store

TABLE 3: INTERLAYERS

Description	Interlayer Code
Film or Sheet Type	
Ethylene-vinyl Acetate (EVA)	{ev}
Ionomer	{ip}
Polyurethane (PU/TPU)	{u}
Polyvinyl Butyral (PVB)	{b}
Liquid / Cure Type	
Liquid Crystal Polymer – Epoxy	{el}
Liquid Resin – Multi Component	{lc}
Liquid Resin – UV Cure	{lu}

material, the glazing definition is followed by the material type in {} brackets or braces. If no code is provided, the material is clear annealed glass. Standard material type codes are defined in Table 1.

Surfaces

Each glazing material has two surfaces: an outboard and an inboard surface. These surfaces can have coatings, surface textures, and other decorative elements. To specify the surface properties, a character is placed before the glazing thickness to indicate the outboard

surface property or after the thickness to indicate the inboard surface.

When using the asterisk (*) to indicate specific manufacturer coatings, the name of the coating is used at the end of the product code after a double asterisk (**). If multiple coatings are used, they are listed in order from outboard to inboard, separated by commas (see Table 2).

Interlayers

There are several types of interlayers used in laminates, including, but not limited to: Aliphatic Polyurethane, Cured Resin, Ethylene Vinyl Acetate (EVA), Ionomer, Polyvinyl Butyral (PVB), Thermal Cure Resin, and UV Cured Resin interlayers. The interlayer type would be as indicated in Table 3.

Laminates

When defining a laminated lite, use the same definition of monolithic lites for each ply. Each ply would be separated by a comma and then followed with the interlayer code: 6,6–0.76b.

Laminated Glass

Laminates are often called out by their overall nominal laminate thickness, such as 7/16-inch or 9/16-inch in the United States, or by a metric configuration of 6.76 millimeters or 8.76 mm, for example. In many cases, the nominal configuration needs to be defined per layer in order for the

laminate to be built and installed properly. As such, the listing of each layer can become bulky, especially if both imperial and metric units are used.

Building the summary configuration for a laminate is as follows:

1. Nominal thickness glass 1 (outboard) (add type if desired)
2. <comma>
3. Nominal thickness glass 2 (inboard) (add type if desired)
4. <hyphen>
5. Nominal interlayer thickness (to two decimal places)
6. Interlayer type designation (brand or color may be added)

Examples:

- 6FT,6FT-1.52b = 6 mm fully-tempered | 1.52mm PVB | 6 mm fully-tempered
- 3,3-0.38ev = 3 mm annealed | 0.38 mm EVA | 3 mm annealed

Complex Laminates

To expand on this structure, adding additional lites, all glass plies are listed at the beginning. For example: 6,6,6. The interlayer is designated after the glass plies. If the interlayer is consistent throughout, it is only listed once. For example: 6,6,6-1.52b. If any interlayer is different than the others, they all must be listed in order separated by commas. 6,6,6-1.52b,2.29b.

- 6,6,6-1.52b,2.29b = 6mm annealed | 1.52mm PVB | 6mm annealed | 2.29mm PVB | 6mm annealed ■

The most-clicked news stories on GlassMagazine.com, brought to you by **GLASS MAGAZINE WEEKLY ***

SAFE Schools Act Reintroduced with NGA Proposed Language

In April, NGA staff and consultants met with Representative Chuck Fleischmann's office (R-TN) asking them to reintroduce the SAFE Schools Act with the NGA's proposed language. At the end of April, Rep. Fleischmann introduced H.R. 8506.

Rep. Fleischmann was a cosponsor of the SAFE Schools Act, which the NGA supported in past years. H.R. 8506's introduction into the House is both a representation of the glass industry's support and advocacy efforts, and another opportunity to continue to advocate for glass as a solution in schools security. The SAFE Schools Act establishes a grant program to improve school security, including securing glass in the building's exterior through the installation of forced entry or bullet resistant glass.

"The inclusion of our proposed language in this grant program is a testament to the critical role that high-performance glazing and security glass solutions play in protecting our schools," says NGA President and CEO Lakisha Woods. "I'm proud of the work our team did to push this forward."

NSG Group Launches Pilkington Mirai Øne to Lower Embodied Carbon, Celebrates 200th Anniversary

NSG Group announced that it has introduced Pilkington Mirai Øne, a new architectural float glass offering over 35% less embodied carbon compared to its standard float glass, aimed at supporting lower-impact material choices in the built environment. It forms part

of the Group's wider sustainability commitments.

Pilkington Mirai Øne is designed to help reduce carbon emissions while meeting the criteria for a wide range of specifications. It provides a lower-carbon option within familiar float glass parameters with an Environmental Product Declaration, verified by an independent third party currently in preparation. Achieved by increasing the use of recycled content, thereby reducing reliance on virgin raw materials, alongside other decarbonization measures outlined in their roadmap and when coated, laminated, or further processed, the glass delivers the same standards of aesthetics, quality, and performance as conventional float glass.

NSG Group also announced that the Pilkington brand is celebrating its 200th anniversary this year. Events are being held across regions throughout the year, marking two centuries of innovation in the glass industry. Pilkington was founded in the UK in 1826.

Assa Abloy Acquires Sentinel Dock & Door in Canada

Assa Abloy has acquired Sentinel Dock & Door, a commercial dock and door service company based in Canada. Sentinel was founded in 1983 and has about 375 employees. The company is headquartered in Ontario with coverage across Canada. Sentinel will be part of the Business Segment Industrial within the Entrance Systems Division.

AeroShield Materials Lists Aerogel-Coated Glazing in the International

Glazing Database

AeroShield Materials, manufacturer of insulating transparent materials, announced that its transparent aerogel glazing has been officially tested and listed in the industry-standard International Glazing Database (IGDB). An AeroShield-enabled double-pane insulating glass unit can achieve center-of-glass U-values of 0.13-0.16. The aerogel is compatible with a range of glass thicknesses and low-emissivity configurations. It gives manufacturers the ability to meet or exceed higher thermal targets within standard double-pane systems.

With AeroShield's aerogel glass now listed in the IGDB, window manufacturers and their simulation partners can model AeroShield-enabled IGU configurations directly in Lawrence Berkeley National Laboratory's (LBNL) WINDOW software or similar tools.

Kingspan Light + Air North America Announces Strategic Partnership with Life Safety Services

Kingspan Light + Air North America announced a partnership with Life Safety Services, a provider of fire and life safety inspection, testing and repair services. Through this collaboration, KLA will offer customers access to comprehensive service and maintenance solutions for installed systems, including smoke vents, daylighting systems, and other building envelope components.

Kingspan and Solatube International have launched a new digital design guide, "The Benefits of Daylighting in Architectural Design," alongside

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glasstec will be held Oct. 20-23, 2026, in Düsseldorf, Germany. The focus at glasstec 2026 will be on solutions for the industry's key issues, including decarbonization, circular economy, AI, digital technologies and security glass solutions. Learn more at glasstec-online.com.

The glasstec exhibits will be complemented by glasstec conference 2026, which will combine the expertise of the international glass sector, including representation from industry, science and research. The conference will also include an architecture forum, where renowned architectural firms will highlight innovative projects from this year. Women's expertise will also be highlighted at the newly launched Women in Glass, a forum to promote exchange within the industry. ■

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GLAZIER BULLETIN

AI IS YOUR NEW POWER TOOL

Industry leaders provide actionable strategies to amplify your business with AI tools

BY NORAH DICK

Artificial Intelligence, or AI, remains a hot topic as businesses begin to adopt AI-powered tools and technologies. According to results from Glass Magazine's annual Top 50 Glaziers survey, installers are slowly exploring how AI can aid their processes and bottom line. "Physical Security is embracing AI thoughtfully and strategically, with a phased approach focused on the areas where it can deliver the most immediate impact," says a rep from Top 50 Glazier Physical Security.

Adopting AI for installers was also a topic of discussion at BEC Conference during the session "AI is Your New Power Tool," moderated by Ethan Turner, vice president of sales and marketing, Binswanger Glass with panelists Tyler Clark,

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preconstruction manager/software developer, Barringer Construction; A.J. Hubert, senior project manager, Dynamic Group LLC; and Johnny Maghzal, head of revenue for Togonal.AI. The conversation focused on what AI can and can't do, and how companies can integrate AI technologies while avoiding pitfalls.

AI WILL AUGMENT PROCESSES, NOT REPLACE JOBS

"Let's acknowledge things up front, some people are excited about AI, others are skeptical, and others are just wondering if it's going to come for their job," said Turner at the beginning of the session. Panelists reassured the audience that AI will replace tasks, not jobs, and will likely amplify the value of human judgment. Maghzal underscored that AI is trained on historic data and is therefore not good at creating new ideas. "Humans will still come up with ideas and make decisions," he said, and human judgment will still be crucial.

Barringer's Clark emphasized that AI tools are designed to streamline many tasks. "Being able to make yourself more efficient is really the goal here, your craft is not going away, but faster processes and workflows will allow humans to do higher yield human activities." AI tools can replace repetitive tasks like manual accounting, repetitive document search, data reentry and basic quantity extraction, and can augment scope evaluation, risk interpretation, strategic planning, and pricing management, according to panelists.

By moving these repetitive and iterative tasks to AI, employees can be freed to do "high-yield" activities, according to panelists, including customer engagement. "We want to put the focus back on the people, free up people to build relationships so they're not at a computer doing data entry, but instead getting more face time," said Clark. Turner emphasized that as AI becomes even more common in marketing and sales, the role of sales staff and in-per-

son relationships will have an even greater value. "AI will likely make sales more important—you're going to have to get in front of your customers."

Panelists also reminded the audience of the initial resistance among field workers to mobile technology like iPads and software like Procore and AutoCAD, technologies that have now become industry standards.

While AI will not replace employees, it may change the type of employees that companies hire, according to panelists. "I'm now looking for resourceful individuals. Not for the guy that knows the most about the glass industry—if you can be resourceful with this power tool, it ups the game," said Hubert. AI will also be instrumental in ensuring that institutional knowledge gets catalogued so that it can be used for the next generation of glaziers, explained Turner. "We all have someone in the office who's an encyclopedia. When you use these tools, you can move that tribal knowledge into standard operating procedures."

STRATEGIES AND OPPORTUNITIES FOR INSTALLERS

When companies and leaders are ready to start using AI, they should start small, panelists said. Using AI to summarize emails or meeting minutes, and just getting used to interacting with AI, can be a good first step, explained Hubert. If or when the company is ready to expand their AI strategy, it's important to start slowly and create a plan, panelists agreed, and recommended using a "Crawl, Walk, Run" approach.

Crawl

Before even implementing an AI tool for business processes, panelists encouraged leaders to take stock of company processes and to identify pain points. "Don't start with the software company, instead start by figuring out what process you want to apply the software to," said Maghzal. Business leaders should establish an end goal

for the AI rollout in order to measure success, panelists said.

Implementation will also require an internal champion; an employee that can own the process and focus on the project. Another part of trying AI tools can be side-by-side testing; comparing how AI performs a process compared to non-AI methods, and analyzing the difference.

Walk

After piloting tools, companies can move to broader integration. Key performance indicators should be established to measure performance and to track completion towards the end goal of the project. Maghzal emphasizes how important training is to get broader buy-in from employees and encourages business leaders to have empathy for workers using these tools for the first time. "Employees are already busy, so building training materials is very important. Show employees why the tool will help them," he said.

Whether using a bespoke AI tool or third-party tools, cleaning company data for use can be very important, panelists agreed. Many companies have data spread across different platforms and databases, which will need to be catalogued so that it can feed into new AI processes.

Run

When companies have established broader integration, they can consider scaled adoption across the company as needed, said the panelists. Clark shared that his company developed their own internal tools to extract data most efficiently. At this point in the process, Clark continued, the data extracted can be used for predictive analysis. Barringer's internally built tool analyzed relevant historic data to produce likely estimates for bids. "This process gives an ROI boost from the standpoint of business development leads; building developers want estimates immediately, and we're not seeing more time to estimating and bid jobs." ■



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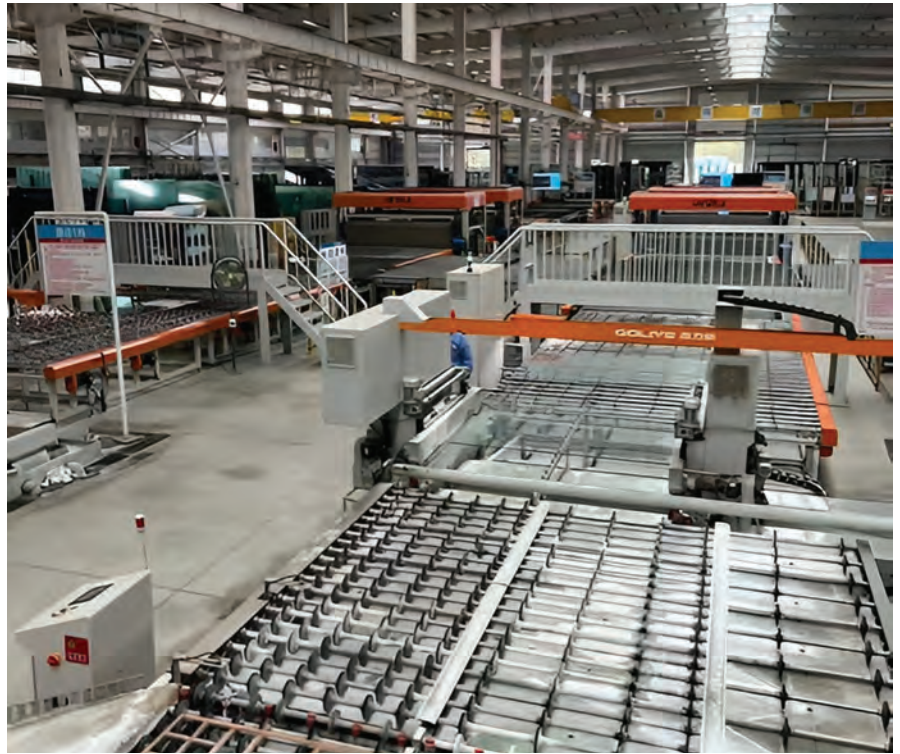
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SMART FACTORIES ARE THE FUTURE OF GLASS FABRICATION

How integrated technologies can provide supply chain solutions to fabricators **BY CLIFTON GREEN**



The North American glass fabrication industry is still in its early stages of adopting smarter, more efficient ways to deliver glass to the marketplace. As part of that evolution towards efficiency, a powerful new phrase has entered our vocabulary: “smart factory.”

A smart factory moves production efficiently through the plant with minimal human intervention, while delivering real-time information and controlling all machinery. It provides solutions up and down the supply chain including storage, cutting, laser identification, fabricating, cleaning, sorting, tempering, insulating, and warehousing / finished goods.

Europe and Asia embraced smart factories years ago. I saw my first one in Europe around 2004. While impressive for its time, it was relatively simple—glass was cut and automatically placed in harp carts, but was then manually moved to an insulating line. In contrast, the smart factories I’ve toured recently in China still leave me saying “Wow!” Glass moves seamlessly from loading to cutting,

edging, washing, sorting, tempering, and insulating with only a handful of people overseeing the entire process.

Most North American fabricators operate as full-service providers, handling tempered glass, insulating units, shower doors, and large commercial projects. This breadth creates integration challenges, but also offers an enormous upside for those who implement smart factory technology successfully.

Smart Factory Technologies

At the heart of this transformation is the seamless integration of four core technologies:

- **ERP:** Enterprise Resource Planning
- **MES:** Manufacturing Execution System
- **CNC:** Computer Numerical Control
- **SCADA:** Supervisory Control and Data Acquisition

ERP – The Business Command Center

ERP integrates core business functions—sales, quoting, procurement, inventory, finance, and planning—into one unified platform. When tightly connected with

MES and SCADA, it receives live shop-floor data to dynamically adjust schedules, factor in maintenance needs, and provide accurate, real-time lead times. This eliminates information silos and empowers data-driven decision making at the executive level.

MES – The Orchestrator of Production

MES is the real-time “brain” on the shop floor. It manages, monitors, and optimizes every production activity, bridging high-level planning (ERP) with actual execution. In glass fabrication, MES dynamically routes individual lites through cutting, edging, washing, tempering, insulating, and sorting. It optimizes furnace bed utilization, tracks quality and defects, monitors Overall Equipment Effectiveness (OEE), and provides full traceability using laser-based QR codes. The result is dramatically reduced errors, minimal staffing requirements, lower waste, and predictive maintenance.

CNC – Precision at the Cutting Edge

CNC machines are the skilled hands of the operation. Designs created in CAD software are converted into numerical code that guides diamond wheels, drills, and waterjets with exceptional accuracy. These machines handle everything from straight cuts and complex shapes to holes, notches, and polished edges. In a smart factory, CNC equipment receives jobs automatically from the MES and sends real-time quality data back into the system, minimizing waste and maximizing precision—especially important as glass sizes continue to increase.

SCADA – Real-Time Monitoring and Control

SCADA serves as the nervous system of the factory. It continuously monitors critical parameters such as tempering furnace temperatures, conveyor speeds, equipment status, and polishing performance. Through centralized dashboards,

operators (and automated systems) gain immediate visibility, enabling faster responses to issues, predictive maintenance, maximized uptime, and improved energy efficiency.

The Power of Integration

The true advantage of today's smart factories lies not just in automation, but in the depth of system integration. Data flows bidirectionally:

- ERP sends orders to the MES
- MES schedules and routes
- SCADA and CNC execute and monitor
- Feedback loops update all systems in real time.

This creates a responsive, self-optimizing environment that delivers cleaner, safer, more efficient, and far less labor-intensive operations. As glass sizes grow and quality standards tighten, smart factories will rapidly shift from a competitive advantage to an industry

necessity. They deliver improved quality, safety, equipment utilization, and predictive capacity planning. Fabricators can quote reliable lead times that automatically account for maintenance and true factory capacity. Inventory reordering becomes automated, and downstream processes are optimized far beyond traditional cutting yields.

I believe smart factories will become the standard—especially in major markets where reliability and service are critical. General contractors will increasingly choose fabricators who can demonstrate this level of control, quality, and dependability. The next five years will be exciting as the industry shifts. ■



Clifton Green is the President and Founder of TSS – Glass Machinery Sales Inc. He has over 42 years of experience in the glass industry.



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OPERATIONS: WE'VE ALWAYS DONE IT THIS WAY...BUT SHOULD WE?

Why revisiting assumptions is critical to success

BY PETE DE GORTER

W

ith almost two decades in the glass world, I've had the privilege of walking through a lot of fabricating plants covering all kinds of varied production, every size company, and endless different levels of operation. But there's one thing that tends to sound the same wherever I go. At some point in the conversation with a client, typically when I ask "why" about a certain process, I'll hear "We've always done it this way." And it's amazing how often there will be no further explanation.

Experience has a way of turning into assumption if we're not careful, and we all know what they say about assumptions. After years, decades or in some cases longer, the way businesses operate can turn into a game of Telephone. In that game, it can become unclear what the original word or phrase was as it's repeated again and again among players. Similarly, as industry wisdom and individual company processes get handed down to the next generation, the reasons that motivated those processes can become lost or confused.

Let me give a few industry specific examples of where I've seen this kind of mentality to demonstrate the possible risks of not questioning the "why" behind decisions.

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TECHNOLOGY IMPROVES, PROCESSES EVOLVE, BUT OFTEN THE ONLY THING THAT DOESN'T CHANGE IS THE WAY WE THINK. THE GOAL IS TO PAUSE LONG ENOUGH TO KNOW WHY.

Accepted industry wisdom

In the laminating world, we hear regularly “You can’t laminate PVB without an autoclave because you need strict climate control during storage and assembly.” In many cases, that message comes directly from PVB suppliers themselves as they’re speaking with fabricators evaluating our machinery.

My company in fact *does* offer solutions for laminating PVB without the use of an autoclave, and have offered these solutions for decades, but the idea that it’s impossible persists with our customers. Why? First of all, PVB suppliers tend to be multinational, multibillion-dollar organizations, so they’re the kind of company people pay attention to. They’re bigger, so surely they know more, right?

On top of that, this “knowledge” about PVB lamination needing an autoclave has been passed down throughout our industry for a century. I do not believe there’s any ill intention on the part of the PVB supplier; in fact, they likely believe they’re looking out for a could-be future partner, and believe their advice to be true. This isn’t about proving anyone wrong. It’s a reminder that what was once accepted knowl-

edge should, over time, get revisited to see if it still holds true.

Brand loyalty

Another version of “We’ve always done it this way” is loyalty to a certain brand or supplier. I see this all the time related to edging equipment. One of the most common types of feedback we get is “We’ve always used X edger.” There’s nothing inherently wrong with that, and I respect this kind of loyalty, as it’s something that benefits my own company.

However, even though long-lasting relationships with suppliers matter, it doesn’t mean that those supply lines—for machinery or other equipment—shouldn’t be questioned from time to time. There must be more to it than that. Long-lasting relationships matter and if something has worked well there’s a reason it is still in place, but this doesn’t mean it shouldn’t be occasionally reconsidered. Periodically questioning why we’ve always done it a certain way keeps the industry sharper and on a path to continuous improvement.

Company operations

The “we’ve always done it this way” mindset can also affect internal company operations. A good example of

this are errors that happen in the cutting department—often, when errors happen during edging, it’s blamed on the machinery, when the real issue began far upstream.

I’ve seen operators of double edgers not think twice when glass arrives with a 1/8-inch flare on every piece. I’ll hear things like “Yeah, we get those a lot” or “It’s no problem for the edger.” But what impact does that have on your edger? A flare along with a 1/16-inch or even 1/8+ inch removal is putting greater wear on the wheels, driving up costs, and not just because the wheels have to be replaced. If the flare is really bad, the edger might leave a small chip or fissure, which can potentially blow up the lite when it gets tempered. The blame is placed on the edger, but this is like putting a band aid on a broken leg. You’re not addressing the real problem.

How to move on from “We’ve always done it like this”

The scenarios described above could have been prevented if someone asked a simple question: “Why do we do it this way?” Technology improves, processes evolve, but often the only thing that doesn’t change is the way we think. The goal is to pause long enough to know why.

The industry isn’t broken; in fact, it’s well experienced and quite mature. There’s an enormous amount of knowledge, a lot of hard-earned lessons, and processes which were built for excellent reasons. We don’t want to reinvent the wheel, but there’s also a risk to never reconsidering your processes. The “We’ve always done it this way” mentality can compromise your product’s quality, raise costs for your company and limit your growth.

“We’ve always done it this way” is perfectly OK, but only when the “why” makes sense. ■



Pete de Gorter is vice president of DeGorter Inc.

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SELLING YOUR BUSINESS TO PRIVATE EQUITY

How to protect your company when dealing with professional dealmakers

BY MATT JOHNSON

Private equity has been a major player in the glass and glazing industry since at least the early 2010s. At that time, large consolidated funds made aggressive moves into the industrial flat glass arena and those moves have continued until today. But now, the more fragmented nature of the local glazing contractor marketplace has become attractive to these same players because these glazing shops tend to be founder-led and without effective succession planning.

At base a private equity transaction should be viewed with the risk attendant to most sales of a business. A key difference is, however, that the players in these markets are professionals in this process who may, or may not, have any experience in the glass industry business arena itself. As professional dealmakers, the terms and teams they bring to these transactions must be reviewed and ad-

dressed both carefully and creatively to ensure a fair and reasonable end for both sides. So, what are a few considerations if private equity comes knocking, whether invited or not?

Understanding private equity ownership and stakes

Start with the fact that it is best to think of private equity as a generic term that fits into various parts of many kinds of financial transactions. Small and mid-cap markets are finding the result of these transactions can help investors acquire ownership stakes, usually in closely held, non-publicly listed companies. And for the target entity, meaning the company to be acquired, these transactions can help resolve complex, and sometimes personal, issues surrounding an owner or leader exit. The reasons for taking ownership stakes vary widely and require balancing the goals of both the target and acquiring entities. Potential

scenarios can include:

- Capital growth, where the target gives up little control over operations but must repay the infused capital.
- A turnaround, where there is investment to stabilize a potentially struggling target company, who must then give up control to reposition the business.
- A secondary sale, involving a private equity holder's sale of its interest to another similar fund.
- Public-private sales, with the goal of returning a publicly traded company to private hands. Or, if the transaction is a management buyout, current managers use debt and equity supplied by private equity to obtain ownership, while the equity fund becomes a debtor who may have a voice alongside the retained management.
- The opposite is possible too, with a management buy-in, where external

managers use debt and equity supplied by private equity to obtain ownership and then use their skills to replace existing managers to realize growth.

Managing risk while using private equity

Combinations and permutations vary widely, but the crux remains managing the risk presented by the privilege of using private equity. Those risks are as varied as the transaction types, but a few key considerations do exist at points throughout a private equity transaction.

Start with the operations of a target entity. Regulatory and compliance issues are key considerations for any business sale, but the extent of compliance can make a target entity more or less attractive to outside capital given the health and safety compliance issues attached to modern glazing work. Labor issues like misclassified contractors, wage-and-hour compliance, or entitled benefit uncertainty each have the capacity to sink a potential deal for outside investors.

And in smaller markets, deals can fall through for simple things like abnormalities in regulatory compliance with meeting minutes, shareholder approvals, or simple business founding formalities. For those interested, getting a business' internal operations in good order is an essential step before entering the realm of the private equity marketplace.

Limit post-sale liability. If the due diligence phase suggests things are solid, many issues about the target entity are then addressed in the Representations and Warranties sections of a sale or contribution agreement. In these long sections of the agreement, the target makes various commitments regarding the current state of the business and representations of facts as to its good standing. Where agreed to, these representations about the target business become warranties for the purchasing or contributing party. And if

those representations are later found to be inaccurate, and the warranty of that term breached, one can expect years of litigation or cost reimbursement battles with private equity.

Limiting post-sale liability starts with the adage that an ounce of prevention is worth a pound of cure, but essential agreement terms like liability caps, termination periods, escrow and insurance for representation and warranties can each play a role.

Care is also needed when negotiating price. Among the deal types noted above, earn outs are often used to set a final price. In these situations, the ultimate payout to the target can be expressly tied to business performance after the sale, with the price then adjusted depending on agreed to metrics. Of course, given that many times the private equity group takes full control over the business at

the time of sale, their interest in meeting targets, or changes in accounting for how an individual business unit performs, are not in the control of the former shareholder/owner.

And while we do not need to assume any bad intentions, the seller should feel more secure if the agreement includes terms addressing guaranteed minimums, third party valuations on consistent accounting methods, or performance metrics that incorporate considerations beyond the simple profit-and-loss statement. ■



Matt Johnson is president of The Gary Law Group, a nationwide risk management consultancy firm specializing in the identification, planning and managing of legal and product risks for the glass and glazing industry.

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FORMERLY INCARCERATED COULD BE THE ANSWER TO LABOR SHORTAGES

The untapped potential of the second-chance workforce for the glass industry

At the National Glass Association's annual BEC Conference, held March 1-3, 2026, in Louisville, Kentucky, Joshua Johnson spoke to attendees about the benefits of second-chance hiring—meaning the hiring of formerly incarcerated, detained or arrested individuals, who he refers to as “justice-impacted.” Johnson himself was previously incarcerated for ten years and is now the founder of The Redemption Collective, an organization that “helps states, employers and workforce systems to design and implement fair-chance hiring strategies.”

About 600,000 individuals are released from incarceration every year, Johnson says, and just over a quarter of them are unemployed. Despite this, he adds that 85% of human resources professionals report that this demographic “perform their jobs about the same or better than workers without criminal records” because “justice-impacted individuals represent one of the most motivated, loyal and under-utilized talent pipelines in America.”

Johnson's story

During his presentation, Johnson spoke about his own experience being incarcerated at the age of 17 in 1995. After being released in 2004, Johnson got a job with Walsh Construction thanks to Jay Titus, a leader in the company at the time who decided to give Johnson a chance.

In 2005, Johnson became an apprentice with Laborers' International Union of North America Local 113 in Milwaukee, Wisconsin, as a construction craft laborer. By 2019, after working his way through the ranks, Johnson had his signature on that same apprenticeship contract for every apprentice in the state of Wisconsin, but this time as the State Director of the Wisconsin Apprenticeship Program.

His story of working his way up throughout the years is one of perseverance and hard work, but also an example of how company leadership can help lift people up by giving people a second chance at employment. Johnson says his career progression post-incarceration would not have been possible without Titus' help. Unlike Titus, many in leadership see criminal history on the job application and immediately disqualify that person as a potential candidate. There is a movement right now called “Ban the Box” that seeks to remove questions about criminal history from initial job applications.

Johnson says one thing that Titus did not have at that time was a “structured blueprint for engaging justice impacted individuals.” In response to a need for this structured blueprint, Johnson created an “opportunity excellence framework.”

“[This is a] simple framework to help employers really try to engage justice impacted populations and what that looks like,” Johnson said as he quickly walked through the

framework, which consists of leadership at the foundation, as well as employer readiness and skills-based recruitment. “Before organizations can expand access, redesign recruitment or invest in development, they must ensure that their internal structures are aligned to support people effectively. All of this will start at the top.”

Examples of this framework in action include offering flexibility for required obligations like needing to visit with a parole officer, as well as access and transport support, scheduling adjustments, referrals and overall “helping them access those things they need to be successful,” Johnson says.

What the industry can do

As the glass and glazing industry continues to face labor shortages and work towards better recruitment and retention, pursuing individuals who have previously been incarcerated could be an untapped demographic of hard workers.

Building partnerships to find new labor from this talent pool is key, Johnson says, and advised glass industry owners and leaders to build strong partnerships with workforce development boards, local community groups, and faith-based organizations in order to find justice-impacted individuals to join their workforce. “You don't need to build a talent pipeline from scratch,” he says. After establishing partnerships, he also recommended that leaders invite members from those organizations to visit their facilities and get to know their business, so that they can better understand what kind of workforce is needed for glazing contractors.”

Johnson shared that preconceptions about formerly incarcerated employees can negatively affect retention, especially if employees are not offered competitive wages and the opportunity to grow within the company. “People think of justice-impacted talent as only able to come in and build the widget, not run the line,” he says, a mindset that doesn't appreciate their full potential. ■

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A GUIDE TO BUILD PLANT SAFETY

Best practices for factory housekeeping, PPE and glass handling **BY AMY BECKER**

While a significant portion of FGIA's documents deal with performance testing, safety is always the top priority. In the fabrication of insulating glass units, detailed and written procedures are critical to provide safety process uniformity between individual operators and work shifts.

The fabrication of IGUs needs to be assessed for safety hazards, but we all know creating in-plant safety control measures is easier said than done. To that end, FGIA produced IGMA TM-5000, Do's and Don'ts of Glass Safety, a technical manual that can act as a template in creating such a plan. The following includes just some of the "do's and don'ts" tips.

Best Practices for Walkways and Housekeeping

- DO instruct visitors on emergency procedures, warning signals and exits. DO NOT allow visitors or employees to

take short cuts through production areas.

- DO clearly mark aisles and passageways separate from motorized traffic. DO NOT allow anyone but the crane operators in the glass unloading area.
- DO visibly mark "No Traffic" or "Hazard Warnings" in glass handling areas. DO enforce "Stop and Look" rules at intersections.
- DO remove trash and debris daily. DO NOT allow unused and scrap glass to accumulate in the production area.
- DO clean up spills immediately, and any vacuum interleaving powder (Lucor) from the floors in the cutting and loading areas. DO NOT allow water to accumulate on the floor around the glass washer and water filtration. DO clean up spills immediately, and any vacuum interleaving powder (Lucor) from the floors in the cutting and loading areas. DO NOT allow water to accumulate on the floor around the glass washer and water filtration.
- DO place warnings or floor markings where doors may open into walkways. DO NOT allow team members to work in the glass area(s) without wearing proper Personal Protective Equipment, or PPE that is not approved for use.

PPE Requirements

PPE for cutting and breakout of annealed glass includes gloves, arm and chest protection, shoulder and neck protection, waist protection and steel-toed shoes. Based on glass size, the consideration for gloves is cut rating. Other PPE to wear includes chaps and a full cut-resistant jacket. For further safety, mandate safety glasses, shoes, cuffs with thumb loops, sleeves and an apron.

Additionally, work involved with transporting racks requires a hardhat.

In fact, one is necessary any time glass is handled over shoulder height. Face shields and metatarsals are also required. This is also mandatory for line supervisors and managers.

Glass Storage and Moving

When moving glass via a crane and fork truck, do not use a pallet jack to move racks. The load has a high center of gravity, and there is no counterweight for the load, meaning any sudden stop can cause the load to tip. Also, avoid moving from the front as the load could tip forward. Or, if tilted toward the mast, the glass could fall toward the operator. Use a fork truck from the rear of the rack. This way the load is supported by the mast.

Never attempt to catch falling glass; not a piece on site worth it. When handling tempered glass, avoid striking or damaging the edge, which could result in instantaneous failure of the entire piece. Keep both hands on lites and keep lites vertical to body. When in doubt about larger pieces, get assistance.

DO face the direction you are travelling toward and hold the glass away from the body, with palms out facing away. DO NOT walk backward with glass. Be aware delayed breakage can occur if the damaged glass is subjected to moderate thermal or mechanical stress. DO NOT stack glass racks two or more high near a production line, equipment or electrical switch gear.

Proceed with Caution

The purpose of this manual is to set forth examples for in-plant safety measures, which IGU fabricators are encouraged to review, modify and adopt for use in their own plants to satisfy the requirements for providing a safe work environment. As always, documenting processes at your own plants will go a long way when it comes to preventing accidents in the future. ■



Amy Becker is the glass products specialist at the Fenestration and Glazing Industry Alliance.

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CLEAR ADVANCEMENTS, PUSHING BOUNDARIES

From carbon capture, smart glass and emerging technologies, Cardinal Glass is redefining what glass can do **BY TARA LUKASIK**

Cardinal Glass has never been content to let its products speak only to light and line of sight. From a landmark carbon capture partnership targeting a 95% carbon dioxide reduction at its float plants, to a switchable privacy glass that's rewriting expectations for residential and commercial design, the company is operating at the intersection of environmental responsibility and product innovation. In a wide-ranging conversation, Cardinal's James Gondek, Jordan Lagerman and Pete Whaley walk through the technical realities of decarbonizing float glass manufacturing, the design thinking behind the new LoE³-340+ glass and why CLiC switchable privacy glass may finally be ready for its mainstream moment.



CARBON CAPTURE GIVES US A PATH TOWARDS DECARBONIZATION THAT DOES NOT AFFECT OUR MANUFACTURING PROCESS AND BUILDS ON THE WORK WE HAVE BEEN DOING OVER THE LAST DECADE.

Glass Magazine: Cardinal has taken a definitive stand on decarbonization with the K2-CO₂ partnership. How does this partnership, which aims for a 95% capture rate, change the way you view the “hard-to-abate” nature of float glass manufacturing?

James Gondek: Decarbonizing an energy-intensive operation like float glass manufacturing remains challenging. The length of time between furnace rebuilds limits the windows of opportunity to make changes to our furnaces. Potential solutions like electrification or switching to hydrogen combustion are either not yet mature enough or cost effective to meet our needs. Changes also run the risk of disrupting the supply of glass to our other plants. Carbon capture gives us a path towards decarbonization that does not affect our manufacturing process and builds on the work we have been doing over the last decade to voluntarily install additional air pollution controls at our float plants to manage nitrogen oxides, sulfur dioxide and particulate emissions. Carbon capture adds to that foundation and supports our vision to supply the innovative, energy-efficient products our customers need, while minimizing the environmental impact of our operations.

GM: You've achieved minor source status at most Cardinal float plants. What were the biggest technical hurdles in integrating this new carbon capture system into existing, high-volume furnaces?

JG: One of the biggest challenges is simply space. Float furnaces and their air pollution control systems are already tightly integrated, so adding new equipment like absorbers, ductwork and carbon dioxide handling infrastructure requires creative engineering and careful layout planning. The carbon capture system also must operate in harmony with our air pollution control

devices. Any imbalance can ripple back into furnace performance. We cannot compromise glass quality or furnace stability. Float glass is a continuous, high-throughput process, and even small changes in combustion or exhaust conditions can impact the final product. The integration has to be effectively invisible to the furnace.

GM: How does this initiative affect the overall carbon footprint (embodied carbon) of your products, and how do you anticipate customers in the residential and commercial markets will respond?

JG: Float glass production is the largest contributor to Cardinal's operational carbon footprint. One float line makes up approximately 8% of Cardinal's Scope 1 and 2 greenhouse gas emissions. We recently updated the Environmental Product Declarations for our broad product categories. These life cycle analyses show that the largest contribution to the environmental footprint of our float glass comes from burning natural gas to melt raw materials. For our coated, tempered, laminated and insulating glass, the largest impact area is from raw materials—namely, our float glass. Focusing on decarbonizing our float glass will reduce the environmental footprint of all Cardinal's products.

Along with our EPD updates, we worked with a third party to develop a life cycle analysis calculator that we will be able to use as an internal tool to model how sustainability initiatives like carbon capture will translate to the product level, which is ultimately what our customers care about. We have had some customers reach out already to ask us for more details about this project. They are excited to know how our project can support their own sustainability goals.

GM: The new LoE³-340+ maintains a low 0.18 solar heat gain coefficient while offering a more neutral

appearance. Was the development driven more by the need for enhanced performance or by aesthetic demand from designers?

Jordan Lagerman: As energy codes continue to drive lower SHGC requirements, a more color-neutral product was needed to complement a wide range of building color palettes. Along with the improved aesthetics, LoE³-340+ now comes standard with our low-maintenance Neat+, helping glass stay cleaner, longer.

GM: CLiC switchable privacy glass has moved from a niche to a more mainstream product. What are the biggest opportunities for smart glass in the residential commercial or multifamily market right now?

Pete Whaley: Switchable privacy glass has struggled to gain mainstream adoption for multiple reasons. Notably, durability shortfalls and failure meeting users' high expectations for clarity. Cardinal Glass has addressed and solved those issues with our proprietary technology and developments found in CLiC. For the first time, a switchable privacy glass that exceeds expectations for clarity is widely available for purchase. This opens the gates for exterior residential applications like never before.

We have seen unprecedented demand for use in key applications throughout the home. These include front door systems, bathrooms, home offices, bedrooms and any windows where the homeowner wants to maximize their view while also having a simple instant privacy solution at their fingertips. Pair this with the ability to have privacy without limiting natural daylight, the inherent benefits of laminated products, and the possibilities are endless. A current residential trend centers around wellness extending to biophilia—bringing the benefits of the outdoors inside. CLiC addresses these needs not just with its clarity, but also via the diffusion of

light in privacy mode, keeping spaces bright and airy and enhancing mood and décor.

GM: Can you discuss the partnership with Skyline Design on the SDX3 SmartView? What does this mean for the future of integrating smart technologies into traditional glass products?

PW: Skyline Glass is a great partner and an expert in the health care market. They have been instrumental in educating hospital and health care focused professionals about the advancements and benefits CLiC delivers. This includes discussing why CLiC isn't like the switchable privacy films and products of the past (PDLC) and is a new innovation in the space.

The specialized controllers we developed for CLiC/SDX3 provide efficiency gains by allowing nurses to select privacy and clear views from both in the room and, more importantly, from the central nursing stations during emergencies. This increases both nurse efficiency and patient safety. But that isn't the biggest reason CLiC improves patient safety. Patients are susceptible to secondary infections the longer they are in the hospital or clinic. These are referred to as health care associated infections, which cost the industry billions of dollars annually, extending patient stays at an alarming rate. This is reason enough to eliminate dirty, porous curtains that need laundering, changing and have a short lifecycle before replacement is needed. Instead, CLiC provides easy-to-clean non-porous room dividers and doors that eliminate the need for curtains. This is just the tip of the iceberg with many more opportunities coming into view every day. Your imagination is the only limit. ■

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HONORING THE PR PRODUCTS AND PERSONNEL THAT S THE BUILT ENVIRO

GLASS MAGAZINE AWARDS 2026



OBJECTS, SHAPE ENVIRONMENT.

BY RACHEL VITELLO

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This year's Glass Magazine Awards winners are prime examples of what is possible within the glass industry. Winning projects and products feature thought-provoking design, colorful decoration as well as protective performance, exemplifying the wide spectrum of glass innovation. To better recognize glass's unique qualities as a building product, and its unique contributions to the built environment, this year's competition also included a new category: "Architect's Choice." A panel of judges, all architects, had the opportunity to select their superlative project from among 77 project nominations.

"I am proud to be in my second decade of judging the awards program. I have seen many exciting entries, in my tenure, reflecting changes in the design industry," says Architects' Choice judge John R. Stephenson, senior architect, BRPH. "This year's entries are no exception. They reflect possibilities of glass in the building envelope, and the creativity and technical sophistication of the designer's vision as well as the products available to us. It's this apparent dedication to our craft that keeps pushing us forward to a greater built environment."

This year's winning projects and products demonstrate how crucial glass is to the built environment. Several projects demonstrate glass's critical role in updating existing infrastructure to preserve historic structures, maintain skylines and increase building performance.

Glass Magazine recognizes that it's glass industry professionals that make the standout projects and products recognized in this program happen. To that end, this year's competition also added the "Legacy Leadership Award," a new category that shines a light on individuals who make this industry so exemplary. Those nominated for this award are glass industry veterans whose work, leadership and expertise have helped to shape the glass industry. Glass Magazine's editorial staff thanks all the companies that took the time to complete a nomination form. We realize that many more industry companies have outstanding projects and products they could showcase. To participate in next year's Glass Magazine Awards, contact Associate Editor Rachel Vitello at rvitello@glass.org.



THE JUDGES

The project awards are only possible with the expertise of our judges, who come from every part of the glass industry. The Glass Magazine editorial team again thanks them for taking the time to share their insights with us. Products, program and personnel categories are selected through public voting.



Tara Brummet
Chief of Staff, Vitrum Glass Group



Tom O'Malley
Managing Partner, Clover Architectural Products



Brian Risinger
Chief Operating Officer, Country Glass & Mirror



Carolyn Spellman
Chief Financial Officer/
Co-Owner at IGE Glass Technologies Inc. and VIG Technologies



Syndi Sim
Director of Sales and Business Development, Q-Railing



Alice Dickerson
Founder and Managing Director, Division 08 Marketing



Nathan Seaman
National Sales Manager, Form Metal Systems



Kayla Natividad
Glass Technology Manager, NSG Pilkington North America



Austin Zajichek
Marketing Manager, Linetec - Apogee Architectural Metals



Brian Tobias
Senior Product Marketing Analyst, Tubelite - Apogee Architectural Metals



John R. Stephenson
Senior Architect, BRPH



Dan Hart
Executive Director of Architecture, Parkhill

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THE PROJECTS



Blight Rayner Architecture in partnership with
Snohetta Photography: Christopher Frederick Jones

PROJECT OF THE YEAR AND BEST FEAT OF ENGINEERING GLASSHOUSE THEATRE

Nominating company
Kuraray

Location
Brisbane, Australia

G

lasshouse Theatre at Queensland Performing Arts Center is a 1,500-seat performing arts venue located in Brisbane, Australia. Superlative design vision and engineering made judges award this project twice—both as Project of the Year and Best Feat of Engineering. This project is distinguished by a rippling structural glass façade engineered as a transparent, frameless “curtain.” Delivered by seele with curved glass by NorthGlass and 1.52-millimeter SentryGlas interlayers from Kuraray, the façade transforms complex geometry into a landmark of technical precision. “The Glasshouse Theatre stands out as the Project of the Year because it represents one of the most ambitious and refined expressions of structural glass in contemporary architecture,” says Glass Magazine Awards judge Austin Zajichek, marketing manager, Linetec - Apogee Architectural Metals. “The defining feature is a rippling, transparent glass façade that transforms an incredibly complex engineering challenge into something that appears effortless and fluid.”



GLASS MAGAZINE AWARDS

WINNING TEAM

Architect
Blight Rayner
Architecture and
Snohetta

Interlayer provider
Kuraray

Curved glass
fabricator
NorthGlass

Façade specialist
seele Inc.

Owner
Queensland
Government
/ Queensland
Performing Arts
Centre (QPAC)

Structural engineer
Arup



Blight Rayner
Architecture
in partnership
with Snohetta
Photography:
Christopher Frederick
Jones



“What elevates this project above others is not just the technical difficulty, but how seamlessly that complexity is resolved into a clean architectural gesture that connects the building to its surroundings. The façade becomes more than an enclosure. It is the identity of the building, blurring the boundary between structure, skin and public interface,” he adds.

Glasshouse Theatre is a standout Best Feat of Engineering entry because its defining architectural gesture, a wavelike, transparent glass façade, required highly specialized engineering, advanced glass forming and precision installation at an exceptional scale. Designed by Blight Rayner Architecture in partnership with Snøhetta, the project transforms the edge of a major cultural venue into a fully glazed civic interface inspired by the movement of the Brisbane River.

The façade comprises 217 individually shaped panels forming a continuous undulating surface, with flat, concave and convex insulating glass units engineered to create the theatre’s signature wave effect. Curved panes reach up to about 23 feet in height and required tight radii and highly controlled tolerances. According to representatives of seele, the façade is a 3D-engineered structural glass system in which vertical loads are carried by tension rods and fins, while horizontal wind loads are managed through structural silicone glazing.

NorthGlass’s deeply curved laminated insulating glass, incorporating 1.52 mm SentryGlas interlayer, pushed forming precision even further. The result is a façade that appears effortless and frameless, yet is technically demanding, structurally expressive, and central to the project’s identity as one of Australia’s most talked-about new cultural landmarks as one the city’s newest performing arts theaters.

“The Glasshouse Theatre façade stood out, as the project details reinforce what the images already convey—the complex engineering required to bring this design to life. Combined with its striking aesthetics, advanced product integration, and the high level of engineering and installation expertise, this project is truly outstanding,” says Glass Magazine Awards judge Alice Dickerson, founder and managing director, Division o8 Marketing.



S

PROJECT OF THE YEAR RUNNER-UP, ARCHITECTS' CHOICE AND BEST GREEN PROJECT SHANGHAI GREENHOUSE GARDEN

Nominating company
Kuraray

Location
Pudong, Shanghai, China

Shanghai Greenhouse Garden, located in the Shanghai Expo Culture Park in Pudong, Shanghai, China, is a roughly 440,000-square-foot botanical and cultural complex. Through this renovation, this project transformed a former industrial site into a major public destination, combining a visitor center and three themed greenhouse pavilions within a new urban park landscape. In a unique and notable feat for the Glass Magazine Awards, this project has taken home three awards total — Project of the Year Runner-Up, Best Green Project and the new Architects' Choice Award.

The project uses laminated glazing with SentryGlas interlayer in the greenhouse enclosure. The three pavilions are supported by a lightweight steel and aluminum structural framework engineered to maximize transparency and



Photo credit:
CreateAR

WINNING TEAM

Architect
Delugan Meissl
Associated
Architects (DMAA)

Interlayer supplier
Kuraray - SentryGlas

Glass supplier and
fabricator
NorthGlass

Façade engineer
Zhang Hai

Executive planning
and local architect
of record
Shanghai Institute of
Architectural Design
and Research Co.

Structural engineer
Bollinger +
Grohmann

General contractor
Tongzheng
Construction
Technology Group

complement themselves in a very gracious way: industrial and natural, orthogonal and organic, static and movement, land and water, are concepts that meet regularly in the contours of these new structures,” says officials from architecture firm DMAA.

“The Shanghai Greenhouse Garden merits recognition for its seamless integration of advanced glazing technology, structural ingenuity and environmental performance,” says Architects’ Choice judge Dan Hart, executive director of architecture at Parkhill. “The project redefines the role of glass as both enclosure and environmental mediator. Its rationalized system of linear and curved laminated panels, combined with large circular skylights and a slender tension-supported roof, maximizes daylight while minimizing structural mass. Crucially, the design challenges convention by using simulation-driven single glazing to enhance plant growth and energy efficiency, supported by passive climate strategies.”

“I chose the botanical gardens for several reasons. The glass is exceptional in its transparency and visual lightness and is attuned to the gardens within,” says Stephenson. “The reclamation of the building is artful in its execution,” he says. “The cladding is expressive as a curtain, a transparent enclosure which expresses the qualities of both shelter as well as transparency.”

Shanghai Greenhouse Garden also won Best Green Project. Sustainability was a primary design driver for Shanghai Greenhouse Garden. According to the design team, the project was conceived as a zero-energy building, an especially notable goal for a large-scale public greenhouse. It was determined that single glazing would be more energy-efficient for plant growth than double glazing in this climate, because reduced daylight from insulating glazing would increase the need for artificial lighting.

The greenhouse also incorporates multiple passive and active environmental strategies: natural ventilation through operable roof and façade openings, passive cooling supported by adjacent water bodies, and photovoltaic panels located below the water surface and on the existing roof.

minimize structural depth. The façades combine linear and curved glass panels on an 800-millimeter grid, while the roof integrates large circular glazed openings with fixed and operable double-glazed skylights. The system was developed to deliver high daylight transmission, structural efficiency, and long-term durability in Shanghai’s hot, humid greenhouse environment. This project won Architects’ Choice; a new category introduced to the awards program this year to better highlight the crucial collaboration between glass and architecture. This category was decided on by architects familiar with the unique and important role that glass plays in large scale architectural projects.

“This project [features] contrast and constant interactions between elements that are different from each other but

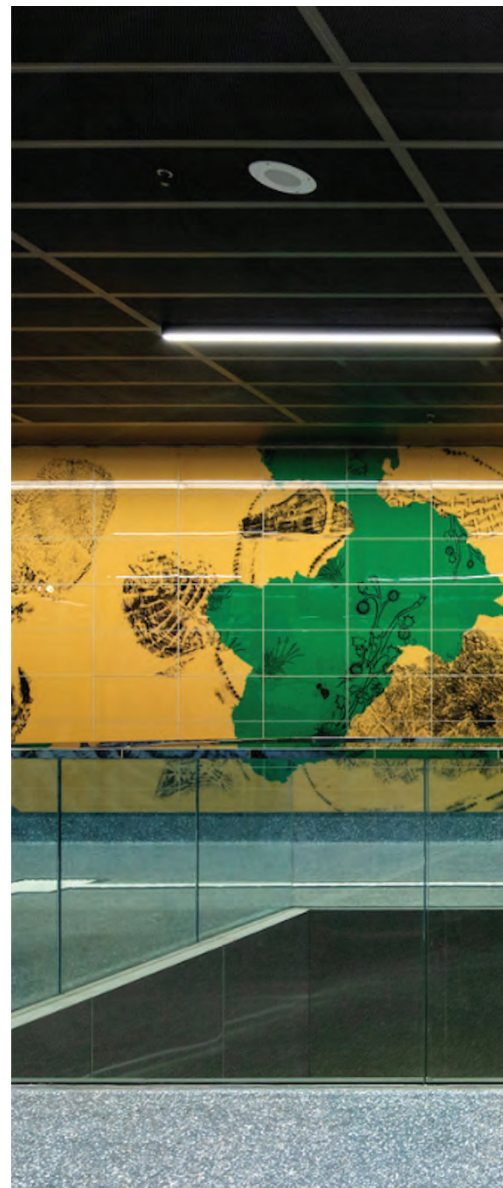
BEST DECORATIVE GLASS APPLICATION

METRO D LINE SUBWAY EXTENSION – SECTION 1

Nominating company
Aragon Construction

Location
Los Angeles, California

Photo credit: Fran Siegel, Detail of Re: Orientation, 2026: Installation view at Wilshire/La Brea Station, LA Metro. Courtesy of Metro Art (LA Metro)



WINNING TEAM

Architect
Parsons

Glass fabricators
Moon Shadow Glass Inc., Pulp Studio, Glasswerks, Vetrotech Saint Gobain

Metal systems manufacturer/contract glazier
Aragon Construction Inc.

Glass canopy
Stella Glass Hardware

General contractor
Skanska Traylor Shea Joint Venture

Client
Los Angeles County Metropolitan Transportation Authority

ix artists designed murals that portray stories through glass walls. Project players collaborated over a span of years to produce samples, digital artwork and full-scale mockups of the panels. Aragon and general contractor Skanska worked with glass fabricators and the artists themselves to create a proprietary art-glass system combining a digitally printed interlayer, laminates and low-iron glass. The result is an incredibly nuanced and vibrant scene for each station.

Metro D Line Subway Extension – Section 1 in Los Angeles, California, extends subway service west along Wilshire Boulevard in three sections to improve travel between central

Los Angeles and the Westside. The project improves access to jobs, schools, medical centers and cultural destinations, according to Aragon Construction officials.

“The design adds much needed color and vibrancy to a normally dark and crowded space,” says judge Tom O’Malley, partner and director of sales, Clover Architectural Products.

This decorative glass brings the artists’ and architects’ vision to life in high-definition views. What the murals depict varies based on the artist and the section of the subway they worked on. For example, at the Wilshire/La Brea Station, “the artwork at the station’s entrance and escalator landing

Photo credit: Mariana Castillo Deball, Detail of Four Pleated Landscapes: Fossil Ground, Woven Cienega, Medicinal Flora, and Urban Desert Fauna, 2026: Installation view at Wilshire/La Cienega Station, LA Metro. Courtesy of Metro Art (LA Metro)



GLASS MAGAZINE AWARDS



pays tribute to L.A.'s architectural and cultural past while imagining its rapidly changing future," says artist Eamon Ore-Giron. But the murals also share a commonality: depictions of recognizable local landmarks like the Wilshire Tower, the La Brea Tar Pits, and the Saban Theater.

The magic of this project was capturing the vision and translating it into the real world, say project players. Though the concrete wall substrates exceeded the tolerances required for art murals, the field installation team were able to render a finished product that hid the structural concrete elements beneath. The colors, tones, and details of the artwork were refined by Moon

Shadow Glass Inc. and Pulp Studio to bring together a finished product that impresses and inspires Los Angeles commuters and travelers in their daily lives. Without these art glass feature walls, passengers would walk through concrete corridors.

The all-mounted art glass murals were affixed to concrete utilizing a custom aluminum extrusion grid system. Large, cantilevered steel trusses support a glass canopy system creating a decorative translucent shade structure over the escalators/stairs. The canopy is composed of stainless-steel point fittings and laminated acid-etched low-iron silk screen fritted glass and structural silicone. Custom stainless

steel, fire-rated enclosed glass stairwells surround the passengers from the platform level to the mezzanine levels.

"The decorative glass completely changes the passenger experience. Instead of plain concrete corridors, the stations become public art spaces that tell stories and bring color, detail and identity into everyday transit," says judge Zajichek. "What makes it successful is the scale and execution. Translating multiple artists' work into durable, vibrant glass murals required a lot of coordination, but the final result feels approachable and impactful for the public."



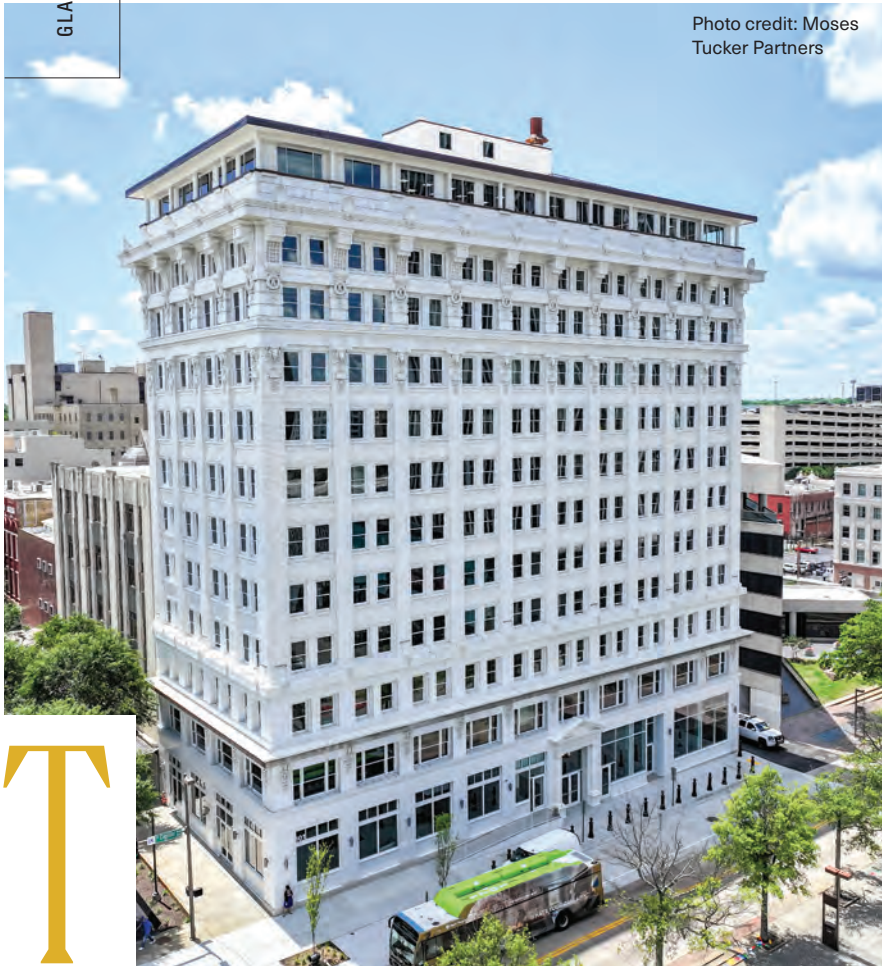
BEST RETROSPECTIVE PROJECT

BOB R. BROOKS JR. JUSTICE BUILDING

Nominating
company
Quaker Commercial

Location
Little Rock, Arkansas

Photo credit: Moses
Tucker Partners



his \$35-million rehabilitation project received a Preserve Arkansas Award, an organization dedicated to historic preservation. Originally known as the Boyle Building and built in 1909, this building was completely renovated, and Quaker Commercial played a big part. The building's original use in 1909 was to house architect John Parks Almand's architectural business. According to a local news outlet, the building had sat vacant for 25 years before this renovation took place.

WINNING TEAM

Architect
District Design
Architecture

Manufacturer of
fenestration systems
Quaker Commercial

Contract glazier
Conway Glass

General contractor
Central Construction
Group

With Quaker's H650 Series Single Hung and H450 Series Casement and Fixed, high-performing aluminum windows, the original architectural style was preserved. Every window was customized to the building's unique profile. Windows were painted white to match the original windows' color. Glass thicknesses varied by floor and elevation; reinforced sills provided water and air infiltration resistance essential on upper floors exposed to elevated wind loads. "This is a strong example of bringing a building back to life in a way that feels authentic and purposeful. The project doesn't try to reinvent the architecture, it carefully restores it while quietly upgrading performance behind the scenes," says judge Zajichek.

Completed in April 2025 and marked with a ribbon-cutting ceremony, Quaker officials say that the Bob R. Brooks Jr. Justice Building is a testament to what is possible when fenestration expertise meets historic stewardship, preserving what a city remembers while serving the needs of the community it has become.



BEST SPECIALTY GLAZING PROJECT GUND HALL

Nominating
company
Oldcastle Building
Envelope

Location
Cambridge,
Massachusetts

The most technically challenging aspect of renovating Gund Hall was addressing the thermal performance of the expansive glazing. After extensive research and collaboration, the solution was to use VacuMax hybrid vacuum insulating glass by Vitro, offering superior insulation in a slim profile. Integrating this advanced glazing into the curtain wall required significant engineering, reducing the system's sightline from 2-1/2 inches to 2 inches and decreasing its profile depth as well, all while maintaining structural integrity and performance. The results achieved a U-factor of 0.19.

Gund Hall at Harvard University's Graduate School of Design is located in Cambridge, Massachusetts, and is the centerpiece of Harvard's design curriculum. According to Oldcastle BuildingEnvelope officials, the 15,000-square-foot renovation project needed to dramatically improve the building's energy performance while maintaining its distinctive mid-twentieth century aesthetics. Gund Hall was originally constructed in 1972.

"Known for expertise in mid-century and concrete-modernist architecture,

WINNING TEAM

Architect
Bruner/Cott
Architects

Primary glass
manufacturer
Vitro Architectural
Glass

Glass supplier/
fabricator
Oldcastle
BuildingEnvelope

Contract glazier
A&A Window
Products

Metal systems
installer
A & A Window
Products Inc.

Glazing/façade
consultant
Simpson, Gumpertz
& Heger

Structural engineer
RDH Building
Science Inc.

General contractor
Shawmut Design
and Construction

Developer/owner
Harvard Graduate
School of Design

[architect] Bruner/Cott provided the skills needed to bridge the gap between conservation priorities and environmental performance on a project of this scale," says the architectural team in a statement. "Bruner/Cott led the team and design in a way that ensured continuity of design intent throughout the process."

The structure's clerestory windows—a row of windows placed high up on a wall, typically above eye level and just below the roofline—are central to the building's distinctive appearance and natural lighting. The windows were surrounded by a complex web of steel trusses making interior access impossible. The solution was both innovative and practical: modify the new frames designed to secure energy-efficient glass for exterior installation, eliminating the need for interior scaffolding or lifts.

To meet the project's demanding U-factor requirements, due to Massachusetts' climate, the system was altered to accommodate the added size of triple-glazed units. This adjustment, supported by extensive thermal modeling, ensured the clerestory windows preserved the building's well-known aesthetic while significantly improving its energy performance.

"The Gund Hall Project ... is using the most thermal efficient and acoustical glazing technology exceeding all current standards, including aesthetics," says judge Carolyn Spellman, chief financial officer and co-owner at IGE Glass Technologies Inc.



BEST PROTECTIVE GLAZING PROJECT MOBILE INTERNATIONAL AIRPORT

Nominating company
Innovation Glass LLC

Location
Mobile, Alabama



The Mobile International Airport, in Mobile, Alabama, has a facade area of 35,000 square feet. The facade system consists of a VS1 large missile impact system tested to ASTM 1886/1996 Zone 4 wind. Designers of the project had to balance protection of the building—located in a hurricane-prone region—with maintaining a feeling of openness accomplished with large glass spans and minimal framing.

This design challenge was overcome by employing a hybrid point-supported facade system comprised of only vertical extruded mullions and cassette glass panels, with pre-assembled glass

units housed within a specialized frame or metal grid system, attached to the mullions with T-brackets. Fifty percent of the metal (horizontal framing) of a standard curtain wall was eliminated, dramatically increasing the facade's transparency according to project players. The mullions spanned 28 feet and 6 inches without steel reinforcements.

The wall assembly passed a performance mockup test, resisting 169 miles per hour wind forces. An innovative pin connection detail was developed to accommodate a segmented radiused wall geometry, allowing over 30 glass panels to be set per day. The wall exterior features a flush-glazed aesthetic with no visible metal. The system details allowed any panel of glass to be set anywhere on the wall without requiring a set sequence, providing ultimate freedom of installation, according to project players.

"This project stands out because the protective glazing had to perform at a very high level while still creating an open, transparent terminal experience. The impact-rated façade, long clear spans and successful high-wind testing show that safety was fully built into the system without making the building feel heavy or overbuilt," says judge Zajicek. "For an airport in a hurricane-prone region, the glass wall protects occupants while still giving the space the openness and visibility people expect in a modern terminal."

"The architecture focused on simplifying both the passenger experience and airport operations through a clear and efficient organizational strategy," says Project Architect Brandon Chouinard, FSB Architects. "By placing all passenger functions on the upper concourse level and locating operational and support spaces at the lower apron level, the design creates an intuitive circulation experience while improving operational efficiency behind the scenes."

Chouinard adds that a defining architectural feature of the project is the expansive, fully-glazed entry façade with four entrance portals through the high curtain walls, where passengers arrive beneath a sweeping canopy into a light-filled terminal environment.

WINNING TEAM

Architect
HOK & FSB
Architects

Contract glazier
Metropolitan Glass
Co.

Curtain wall
engineer/supplier
Innovation Glass
LLC

SPANCraft

GLASS AND MIRROR



Antique Mirror

Serves as a stunning focal point in any design space. Effortlessly adding a vintage element that imbues the area with a profound sense of history and elegance.

Incorporating an antique mirror not only enhances the visual appeal but also creates an illusion of space and light.

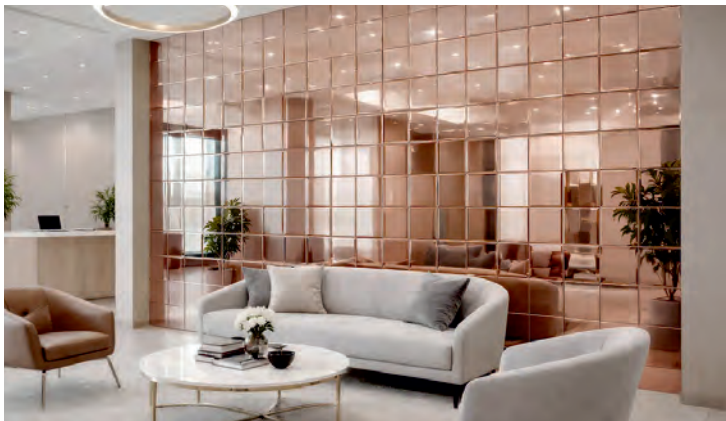
By choosing antique mirror, you not only enrich your space with vintage charm but also create a striking visual narrative that celebrates the beauty of the past while complementing the present.



Colored Mirror

Colored mirror tiles are a versatile design element that can dramatically enhance various spaces, including accent walls, dressing rooms, and bathroom backsplashes.

These tiles not only serve a functional purpose but also contribute to the overall aesthetic, creating a visually striking environment.



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BEST PROJECT TEAM HEARTLAND WHOLE HEALTH INSTITUTE

Nominating
company
Ace Glass

Location
Bentonville,
Arkansas



M

ore than just a healthcare facility, Heartland Whole Health is viewed as a cultural landmark, “because it embodies a uniquely Northwest Arkansas vision: using architecture, art, and nature together to promote community well-being, while creating an iconic public space that reflects the culture and landscape of the Ozarks,” say company officials. Representatives of contract glazier Ace Glass add that the project is a testament to what’s possible when wellness and the arts are placed at the heart of community design,

WINNING TEAM

Architect
Marlon Blackwell

Primary glass
manufacturer
Guardian

Contract glazier
Ace Glass

Aluminum curtain
wall supplier
Kawneer

Fabricated glass
supplier
Agnora

Curtain wall
fabrication
CenterLine Systems

General contractor
**Baldwin & Shell
Construction**

demonstrated by the building’s co-location on the same campus as Crystal Bridges Museum of American Art.

Early collaboration was critical to the success of the Heartland Whole Health project due to the complexity, size and lead times associated with the custom glazing systems. Because the glass was highly specialized, oversized, and carried significant cost and long lead times, errors or late changes could have resulted in substantial schedule impacts and replacement costs, say project players.

Early coordination among Ace Glass, the design team, the general contractor and suppliers helped align fabrication schedules, delivery sequencing and installation planning.

The final glazing installation also required a high level of coordination because the last two insulating glass units measured approximately 11 feet by 22 feet and weighed over 5,500 pounds each, requiring specialized lifting equipment. “This project is an incredible example of what can be accomplished when collaboration starts early to achieve the vision and purpose of a building,” says judge Tara Brummet, chief of staff, Vitrum Glass.

Ace Glass’ scope included custom curtain wall systems, high performance storefront glazing and precision-crafted interior glass elements. Façade highlights include 19,780 square feet of Kawneer Toggle Glazed Clearwall; German Designed Veneer Framing System and 43,500 square feet of custom IGUs, all supplied by Agnora. The glass on this project includes 10-millimeter heat strengthened laminated Pilkington Optiwhite Glass with a Kuraray SentryGlas interlayer on the exterior, paired with 6-millimeter HS Guardian SN68 HT UltraClear Glass on the interior lite of the IGU.

BEST GLASS INTERIOR 270 PARK AVENUE

Nominating company
Lafayette Metal & Glass
Co. and Kuraray

Location
New York, New York



L

WINNING TEAM

Architects
Foster + Partners,
Gensler, and Studios
Architecture

Contract glazier
Lafayette Metal &
Glass Co.

Contract
glazier (façade
manufacturer)
New Hudson
Facades

Interlayer supplier
Kuraray

Glass fabricators
Pulp Studio,
Glasshape

Metal fabrication
Pohl Metal Systems

Structural engineer
Severud Associates

Construction
management
AECOM, JPMorgan
Chase, and JRM
Construction

located at 270 Park Ave, New York, New York, at the JPMorgan Chase Headquarters, this renovation project required high-level technical coordination, starting with 3D scans of as-built structural conditions overlaid into an architectural 3D model. On the conference and exchange floors, Lafayette engineered a unique cantilevered support system for the four-story escalator openings. The Level 56 Ribbon Stair features spherical, uniquely shaped glass and metal components where every step was meticulously aligned with adjacent finishes. This was part of a three-year collaborative effort between Lafayette's in-house shop in Hauppauge, New York, and international partners.

Lafayette's scope included the conference center and exchange floors (levels 13–16) and the level 56 “Top of

House” bar and lounge.

The project features 1 $\frac{3}{16}$ -inch Optiwhite chemically tempered bent glass for guardrails at the escalator openings, supported by a custom cantilevered steel system, wrapped in $\frac{1}{8}$ -inch formed aluminum panels with a copper-nickel finish. The “Ribbon Stair” utilizes $\frac{7}{16}$ -inch curved tempered glass from Glasshape and copper-nickel posts and stringer cladding from Pohl Metal Systems with an orbital grain and lacquered tinted finish. “The interior design is amazing. For such a special building, often the exterior gets all the attention, and it’s great to see the interior shared in the glory,” says judge O’Malley.



LEGACY LEADERSHIP AWARD OLIVER STEPE

Nominating
company
YKK AP America Inc.



A

According to company officials, YKK AP America Inc. is rooted in the “Cycle of Goodness” philosophy that “no one prospers without rendering benefit to others.” As President and CEO of YKK AP America, Oliver Stepe takes this philosophy to heart and champions it amongst his team. Stepe is seen by his management, peers and employees as a transformative and progressive leader who is not tunnel-focused on short-term results, but rather intensely focused on creating a path toward continuous success, generational transfer and assuring all major stakeholders share benefits; including employees, customers and society.

“Under Stepe’s leadership, YKK AP has expanded from a regional supplier to a national company and has become a fully integrated fenestration systems producer with businesses in both commercial building envelope and residential windows. Stepe has spearheaded the acquisition of strategic North

American subsidiaries and has also been committed to building and expanding YKK AP Inc.’s business to new markets,” say YKK company officials.

Sustainability is a core value at YKK AP. Stepe has been instrumental in bringing sustainable products to market when he helped launch the first energy-efficient line of aluminum building products. YKK AP also now sources 80% of its aluminum from low-carbon North American suppliers, a result of Stepe’s vision and leadership and a milestone that is part of the company’s Evolution 2030 initiative to contribute to the global environment.

The president and CEO also believes in giving back to the Atlanta community. After relocating the company’s North American headquarters to downtown Atlanta in 2020, he began participating in numerous local organizations. Stepe also empowers YKK employees to service personal causes and invest in a happier, improved Atlanta community.

Having instituted a corporate social responsibility program focused on philanthropy and volunteerism at YKK AP, Stepe realizes those values personally through his service work, which includes serving as associate board member for the Atlanta Youth Soccer Foundation, a nonprofit dedicated to supporting youth in Atlanta’s underserved communities. He also acts as an organizational advisor, advocate and fundraiser for the organization.

Stepe is also actively involved with SPIKE Studio, a nonprofit organization whose mission is to mentor, educate and develop creative abilities in youth to promote greater diversity in the architecture, engineering and construction industry. He created the “Foundation Crew,” a voluntary, employee-driven committee that regularly organizes community activities. As part of the Foundation Crew, YKK AP’s employees have impacted local organizations like Open Hand Atlanta, where they regularly volunteer to deliver meals to neighbors in need.

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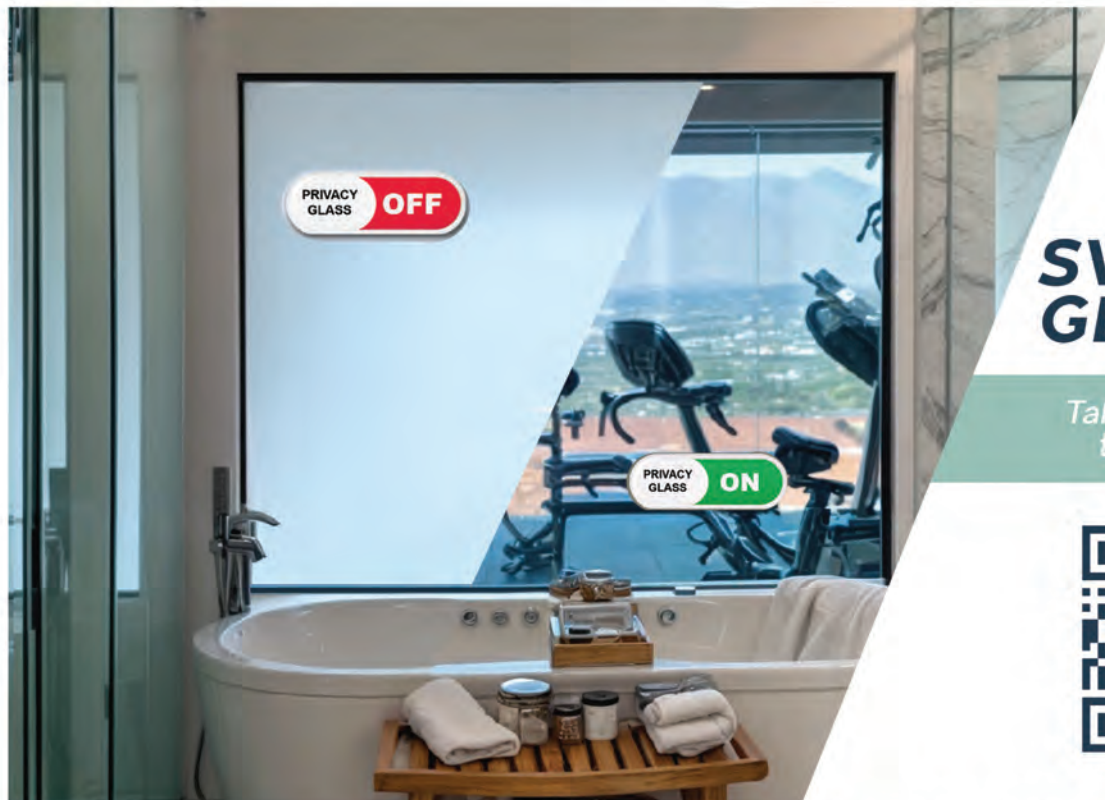
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BEST INTERNAL TRAINING PROGRAM TIG UNIVERSITY

Nominating company
Thompson Innovative Glass



Thompson Innovative Glass' proprietary training platform, TIG University, serves as the foundation for the company's Quality Management System that directs a workforce of over 120 employees, effectively addressing employee turnover and enabling ongoing transformation over time, say company officials. Designed to ensure consistency, scalability and technical excellence, TIG University offers over 130 regularly updated, job specific courses delivered through a structured, video-based curriculum. This approach enables standardized skill development across all departments, shifts and experience levels while maintaining flexibility needed in a dynamic manufacturing environment.

TIG's training program is purpose-built for plant and shop floor personnel working directly in manufacturing. This targeted approach ensures that the curriculum addresses the practical needs and challenges faced by those working directly in the plant.

"The Best Internal Training Program category exists because a well-trained workforce isn't just a competitive advantage; it's the foundation of safety, quality, and innovation across every segment of our industry," says Jenni Chase, vice president of workforce development, NGA. "When we recognize organizations that have made structured, intentional training a priority, we're sending a message to the entire industry: this work matters, and it deserves to be celebrated. TIG University is a wonderful example of an innovative training method; with its combination of online learning and hands-on mentorship."

As TIG grew and employees increasingly cross trained into multiple roles, managing training data manually became unsustainable. To address this challenge, TIG implemented a Human Resource Information System (HRIS) with an integrated Learning Management System. This solution automated training records, improved transparency and collaboration, and enabled remote learning.

Employees can now complete video training in distraction free environments, accelerating certification timelines while maintaining rigorous standards. "TIG University has become a cornerstone of the company's organizational culture and a key differentiator in its competitive labor market," say company officials. The program accelerates new hire readiness, improves confidence and job satisfaction, and creates clear pathways for skill development and advancement. It has also contributed to measurable improvements in retention, with many returning "boomerang," or returning, employees citing TIG University as a primary reason for rejoining the company.

BEST HARDWARE PRODUCT OR SYSTEM ASPIRE HD HIGH PERFORMANCE INSULATING GLASS ENTRANCE SYSTEM

Nominating company
Frameless Hardware Co.



F

HC's Aspire HD High Performance Insulating Glass Entrance System is a heavy-duty thermal glass entrance system with high air/water/structural/acoustic performance, as well as lead time. The Aspire HD delivers all-glass Herculite-style aesthetics paired with the thermal performance of a traditional thermal door without requiring bulky frames.

This innovative system enables architects and designers to create entrances up to 10 feet high and 4 feet wide, paired with sleek 1-5/8-inch door stiles. FHC Aspire HD features 1-inch insulating glass and a distinctive full perimeter seal with stops, delivering performance and design pressure capabilities in all weather conditions throughout the year.



BEST INNOVATION FOR INSTALLERS HYDRAULIC SERIES SHOWER HINGE

Nominating company
Frameless Hardware Co.

The FHC Hydraulic Series Shower Hinge delivers hydraulic closing performance within a standard hinge design. It seamlessly integrates advanced damping technology, which is a technology that absorbs vibrational energy, providing stability and control—preserving clean frameless aesthetics while enhancing functionality, say company officials. By balancing performance, ease of installation, and design, it allows glaziers to install with confidence using a system they already know, while delivering a smooth, controlled user experience.

Its key innovation is the integration of true hydraulic damping technology into a traditional hinge footprint, eliminating the need for bulky external closers. The hinge holds the door open from 70 degrees to 90 degrees, then initiates a two-stage closing sequence: spring-assisted return from about 70 degrees to 30 degrees, followed by smooth hydraulic closure from 30

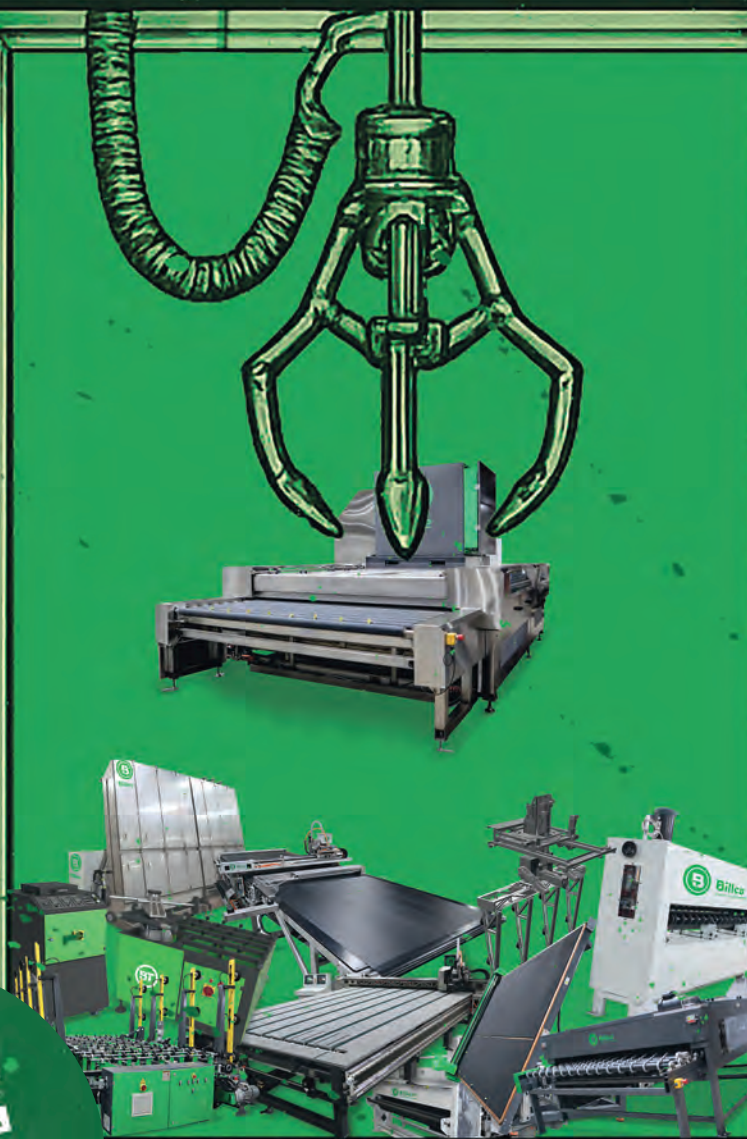
degrees to fully closed—ensuring quiet, safe, and precise operation.

Product development was spearheaded by FHC Shower Hardware Brand Manager Danny Donahue. Donahue also chairs the National Glass Association's Frameless Shower Installation committee which is tasked with developing best standards and practices for the design and installation of frameless shower enclosures. The goal in designing this new system was developing a hinge that offered smooth, hydraulic self-closing functionality while retaining traditional hinge sizes, glass cutouts, and installation methods. FHC's in-house testing lab enabled the team to design, test, iterate and retest; the final product is tested to over 100,000 cycles.



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BEST INNOVATION FOR THE FACTORY

FENEVISION TRACKING — WEB-NATIVE MOBILE APP

Nominating company
Cyncly



FeneVision Tracking by Cyncly has been rebuilt as a browser-based Progressive Web Application that removes the limitations of legacy handheld scanners and terminal server sessions. Operators can access tracking from a smartphone, tablet, or desktop by opening a URL, with no RDP, VPN, or device specific installation. The 2026.1 release delivers mobile ready workflows for container handling and essential accept and reject actions. Station setup and configuration are handled directly inside the application.

FeneVision Tracking provides scanning, traceability, and work-in-process visibility that window, door, and glass manufacturers rely on during production. The app runs in any modern browser and can be installed on iOS, Android, or Windows without the overhead of app stores or specialized hardware. It includes five modes: Accept, Reject, Container, Plant Location, and Inquiry. Operators can scan manufactured and non-manufactured items, containers, and plant locations.

Traditional tracking workflows depend on specialized handheld devices, registry-based station settings and RDP sessions tied to terminal servers. Adding or relocating a scan point requires new hardware, provisioning and IT involvement. These constraints can slow down production changes and limit ability to broaden tracking coverage across the factory. Manufacturers can also face onboarding challenges as new employees must learn outdated device workflows and navigate RDP access. The web native Tracking application removes these barriers.



R&D AWARD COLORQUANT SOLAR DESIGN TECHNOLOGY

Nominating company
Glass Coatings & Concepts

Ceramic Colors Wolbring GmbH's ColorQuant is a frit technology that allows glass panels to look just like spandrel glass but are 80-90% transparent to solar radiation. This allows for the installation of photovoltaics behind the panel to generate electricity. The panels are more aesthetically pleasing than a solar cell, according to company officials, and they still allow for the generation of electricity.

The product is a frit paste that can be applied by screen printing and is then processed in the same fashion as a typical frit spandrel coating. Over 500 shades are currently available. This product addresses the need to construct building envelopes that are both energy efficient and remain attractive, say company officials.

During R&D, the Ceramic Colors Wolbring team balanced energy performance with aesthetics. The technology's color palette is achieved through a complex interaction among the different layers of the solar module, ensuring a visible color effect while maintaining the power generation of the system. By using a principle of physics called wavelength interference, those involved in R&D could ensure that only the desired hue was reflected by the glass, while all other color wavelengths were absorbed by the solar panel.



BEST DIGITAL TOOL GLASS WALL DESIGNER

Nominating company
Smart Glazier Software

T

he Glass Wall Designer is a fully web-based, responsive design tool for mirror walls and backsplashes. It offers a combination of browser-based access, interactive 3D visualization, and easy design functionality; including drag-and-drop cutouts, hardware, and fittings. Users can design, visualize, and quote projects from the office or on-the-go without any installation required.

The development of the Glass Wall Designer began as an effort to transition a desktop-based backsplash designer into a modern, web-based, responsive environment. However, as the project progressed, it became clear that customer demand extended beyond improving existing functionality. With a high volume of requests for mirror wall functionality, Smart Glazier realized this would fit best within the same designer.

The Glass Wall Designer was developed specifically for glass installers and fabricators. It allows users to create accurate mirror walls and backsplash layouts using an intuitive, browser-based interface. Key features include real-time visualization, configurable glass panels, and the ability to add and adjust cutouts, hardware and fittings. It supports coatings, paint, edgework, and notches, making it suitable for a wide range of applications.

The software is device-independent and responsive, working across desktops, tablets, and mobile devices, whereas many other glass design tools remain desktop-based. The development team focused on carrying across the strengths of the existing designer, while introducing the new components needed to enable it to better suit customer needs.



BEST FRAMING SYSTEM OR COMPONENT **SERIES 3000XT**

Nominating company
Oldcastle BuildingEnvelope

Built for versatility, high performance and design flexibility, the Series 3000XT storefront delivers next-generation thermal efficiency to meet today's evolving energy codes. Its dual pour and debridge thermal break not only maximize energy efficiency, but also enhance condensation resistance, ensuring long-term durability and occupant comfort while maintaining a 2-inch by 4-1/2-inch depth. The system supports 1-inch insulating glass for enhanced efficiency or 1-inch thin triple insulating glass unit for next-generation thermal performance.

The Series 3000XT is engineered to meet IECC Climate Zones 3 through 8, with a focus on regions like the Northeast and Northwest where higher performance standards and stretch codes are driving demand.

Designed for easy installation, the Series 3000XT features a center-set glazing configuration, screw spline assembly, outside glazing and a high-performance sill receptor. With 90-degree corner mullions and Red List Free materials, the Series 3000XT delivers breakthrough energy efficiency while preserving installation simplicity and design flexibility.



BEST GLASS OR GLASS COMPONENT PILKINGTON SUPERWHITE

Nominating company
Pilkington North America

P

ilkington Superwhite is an extra-clear, low-iron glass developed to achieve a high level of transparency, resulting in a more neutral and refined appearance. The product addresses a growing demand for higher visual quality in commercial interiors. Standard glass introduces a greenish tint that can alter appearance of colors, which limits applications such as retail displays, museums or premium interiors.

What sets this glass apart is its ability to maintain exceptional clarity even at greater thicknesses, while also preserving the true colors of objects seen through it. This makes it particularly valuable in applications where visual accuracy and aesthetics are critical. In addition, its compatibility with decorative processes such as digital printing and enameling makes it suitable for a variety of applications without compromising visual quality.

Superwhite is produced using carefully selected raw materials and controlled manufacturing processes to ensure high light transmission and minimal color distortion. The product is available in 8 millimeters, 10 mm and 12 mm, with 6 mm available on request. It can be processed in various ways, including acid-etching, enameling, and digital printing, making it suitable for both functional and decorative uses. Common applications include furniture, shelving, kitchen surfaces, retail displays and high-end interior architectural elements. ■



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MEET THE EXPERT: CHRIS GIOVANNIELLI

Director Product Management North America

Kawneer Company

33 Years in Industry



Most surprising thing I've learned

How each project has its unique challenges; from product type, application, installation and surround conditions to performance requirements.

My definition of success

Taking all of these unique challenges and being able to better align the expectations to provide a solution that works for the owner, architect, general contractor and glazing sub-contractor.

One common misconception I encounter

A misconception in product management is that a framing system used in the past will work everywhere else. We always educate the architect and building owner that one type of framing solution will not work for every type of condition. In these product applications, you must understand the building location, design pressures, climate zone, hurricane zone and more that can impact the overall building performance.

How I stay ahead of the curve

Participating in local AIA and CSI chapter events to better understand the local dynamics. Other areas we follow include federal, state and local building codes; stretch codes; and energy performance programs.

One problem that needs attention

Façade complexity and long-term maintainability. Façades have become increasingly more complex over the last 15 to 20 years; what happens in 10 to 30 years after the handover of the building?

What I'd change about how our industry operates

I would bring in more field intelligence earlier in the design phase. They can better influence geometry, tolerances, sequencing or access strategies.

What you might not know our company does

We have several new product enhancements coming out this year

along with a new Window Wall platform coming out later in 2026. Each of these solutions will meet a new market growth opportunity and align with many of the market segments we cover in North America.

Anything else to add?

Our design guidelines are to develop sustainable solutions that support the goals of protecting Plant/People/Product, which means integrating a holistic approach with sustainable methods and practices. At Kawneer, this has always been at the heart of our business, operations, product and value chain. We have made significant progress in our efforts towards sustainability and paved a leadership approach for over 100 years. With a focus on mindfully balancing business strategy with business responsibility, we are renewing our commitment to this approach through BALANCE as an ongoing journey to continuous growth for future generations. ■

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BUILDING

A

LEGACY



PHOTO-ILLUSTRATION BY CORY THACKER

In May, I attended a construction trades career fair organized by the Maryland Center for Construction Education and Innovation. The National Glass Association partnered with Atmos Solutions, the Association's glazier apprenticeship sponsor for the Washington, D.C., area to help educate 1,100 high school students about potential careers in glazing.

When I asked Atmos' Senior Manager of Compliance and Workforce Operations Khalilah Woodland Adams why it's important for employers to invest in construction education programs like an apprenticeship, she said that these programs are crucial for construction to continue to exist. "If you want a legacy, if you want your business to continue, it's something you have to invest in," she said. That question of legacy, and how current businesses can transition to the next generation, has already come to a head for many in the industry as owners consider their exit and succession plan. According to a joint 2024 study published by FMI and the Construction Financial Management Association, 38% of surveyed construction business owners who plan to step down in 3-5 years did not have an ownership plan in place.

"Too often, owners rely on a buyer coming to the table or key employees

coming up with a buyout plan; however, passively waiting isn't a strategy," says Matt Godwin, managing director, FMI financial advisory services. "Taking a proactive approach is essential to mitigating potential transition risks, ensuring continuity and safeguarding the legacy you've built."

Exit and succession models

CFMA outlines six potential options for passing on the company business.

Family Succession. Transferring ownership and management of the business to family members is common, but it can be a complex process, CFMA warns. Training successors, establishing a governance structure and implementing legal and financial mechanisms are critical, they say.

Liquidation. Before shutting the business down, CFMA suggests having business assets professionally

appraised to ensure a fair price when sold. Paying debts and taxes, notifying stakeholders and closing accounts are also part of the process.

Employee Stock Option Plans.

Familiarly known as ESOPs, these plans transfer ownership of the business to employees. Getting employee buy-in is crucial for this type of succession plan.

Selling to Management. This exit option allows for business continuity and allows outgoing owners and leaders to reward high-performing employees, CFMA reps say.

Selling to Private Equity. While many private equity firms purchase businesses with the goal of exiting the investment in a few years, CFMA says they've seen this pattern slightly shift, with smaller groups having a longer hold period. CFMA notes that strong management is attractive to private

equity and recommends that owners be ready to discuss how their exit strategy aligns with the firm's goals.

Selling to a Strategic Buyer. As with a private equity firm, selling to strategic buyers requires aligning goals between the two entities. One advantage is that "strategic buyers often value culture fit more than private equity buyers," according to CFMA.

When selling to a buyer outside the business, profitability is not the only thing to consider, say the leaders of Beacon Exit Planning, a firm specializing in exit and succession planning. Founder and CEO Kevin Kennedy and COO Joseph Bazzano shared their insights at GlassBuild America 2025, advising glass industry business owners that potential buyers are evaluating the business based on future returns, not just current ones.

"They're looking to the future, and the ability to scale the business," says Bazzano. "They want to know that there are opportunities and the potential for growth—that's going to be a better return on investment, in the end."

Exit Planning: Two Glass Industry Case Studies

Exit and succession planning also took center stage at BEC Conference this year, with two sessions focusing on the challenges and rewards of successful exit strategies. In "New Gen, New Rules: Fresh Perspectives on Family Business Succession Strategies," moderator Ted Baumgardner, president, Guthrie AI Inc. spoke with Patric Murphy, president, Texas Commercial Glass Concepts; Emily Yukish, president/CEO, Specified Systems Inc.; and Evan Afenir, president, DP Glass Co. about their shared experience as next generation leadership of family-owned businesses.

In the session "Protecting Legacies, Transitioning Leadership and Building the Next Generation," Priscilla Koeckeritz, president & CEO, Brin Glass Co. offered her insights on taking on leadership of an installing company as a glass industry outsider, and what kind of transformations were needed during the transition. Together, the

two sessions offered business owners a range of ideas for getting started on their own succession plan.

Start small, and start early

Panelists and presenters urged glass industry companies to start thinking seriously about a succession plan for the business. Koeckeritz, who joined Brin Glass in 2019 as a consultant, saw first-hand the difficulties of a business that did not have a succession plan in place. The unexpected passing of CEO Doug Nelson, the onset of the pandemic, and a wave of leadership retirements all created challenges for the company at the start of her tenure.

While firm succession planning can help mitigate unexpected challenges, early planning is also important because there is no "one size fits all" approach, says panelist Patric Murphy. His company is three years into a succession plan that is still being finalized; he anticipates it will likely take 13 years to complete.

Panelist Emily Yukish agreed that starting early is critical, as it's not always obvious what pathway for the company is best. At Specified Systems, leadership considered different scenarios, including selling the company, liquidation, and implementing an ESOP. She said leadership had to also consider the ramifications of succession if her father, the owner of the company, suddenly passed, and suggested that the first step for owner exit planning could be getting a life insurance policy.

Succession planning can also be an expensive process, panelists warned, and another reason why it's best to start early. Specified Systems hired lawyers specializing in company transitions, as well as an executive trainer from a Fortune 100 business during the process.

Draw on veteran knowledge and invest in future generations

Succession planning inevitably brings into focus intergenerational shifts. This can be especially important for family-owned businesses that are shifting to the next generation.

Yukish, who worked at the family business as a teenager before pursuing

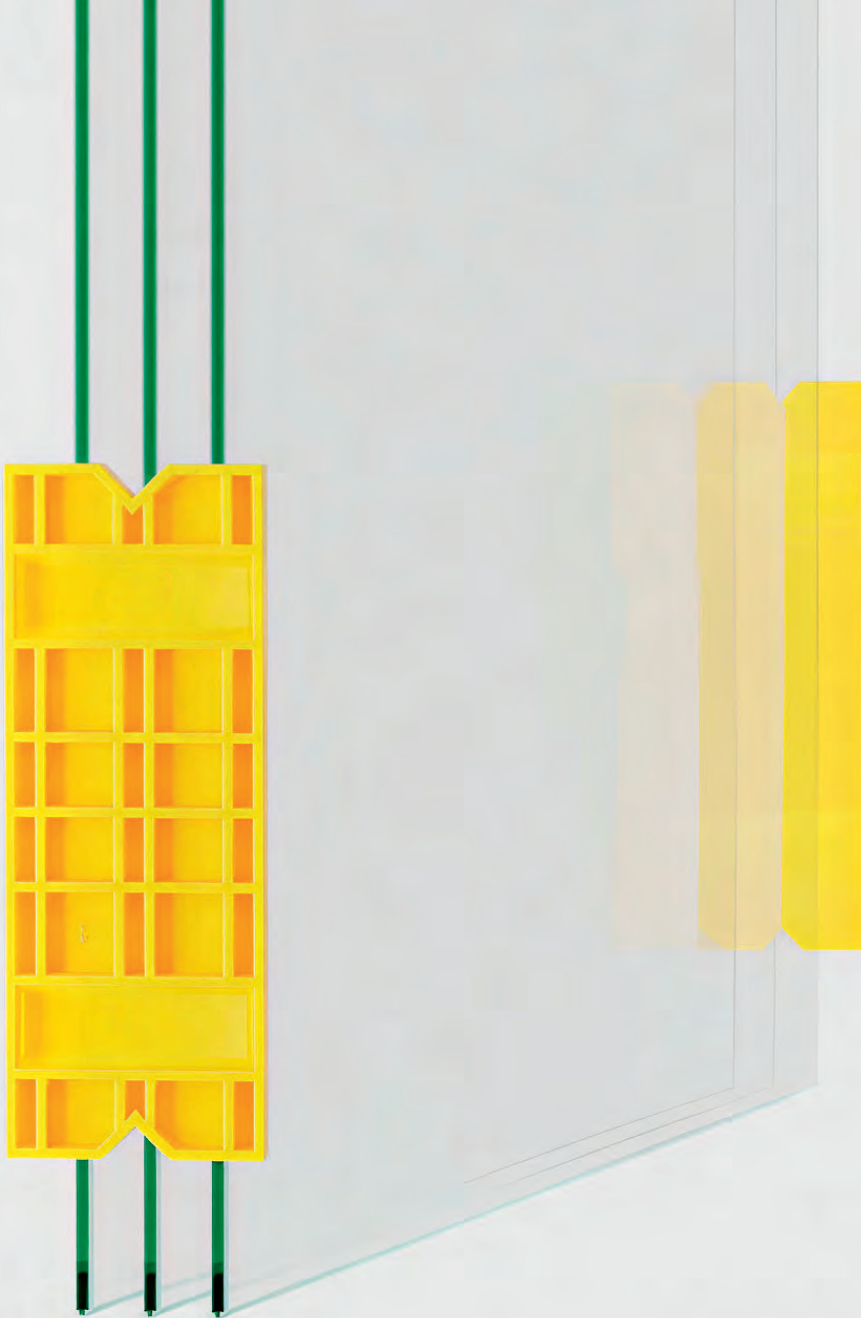
a career outside the industry, says that taking the reins from her father was a gradual process. "Respect always has to be earned. It can be hard to grow up in the business, because employees will see you as a child," she shared. "But my father also helped me get that buy-in during the transition, and it helped ensure employee's feelings of security."

Beyond establishing continuity, retiring owners are also critical sources of institutional knowledge, panelists agreed. While Yukish's father is now part of the company on a consultative basis, she continues to value his insight. "We need that knowledge while we have it. Once it's gone, it's gone forever," she said.

While continuity can help create trust with employees, change is also necessary, as Koeckeritz found when she joined Brin Glass, which celebrated its 114th anniversary this year. Despite the challenges of the pandemic and leadership transitions, many veterans in the company wanted to "go back to the way things were," a mindset that Koeckeritz had to push against during her early years at the company. "We're not going back to the way we've always done it, but we are going to build on the legacy of the way we've done it, so that we can learn and we can grow the next generation," she said.

Like Khalilah Woodland Adams at Atmos Solutions, Koeckeritz sees workforce development itself as part of successful succession planning; training and investing in employees increases the likelihood that someone will want to replace leadership when they retire. To create this pathway to leadership, Koeckeritz made all job roles, including hers, transparent by making job descriptions available to all employees. "If they know what I do, they might want to do what I do," she says.

Despite the fact that her son is training to be a glazier, Koeckeritz emphasized that glass industry companies cannot always count on their children entering the trade; instead, they need to work on company culture and embracing the different expectations of Gen Z in order to continue. "We have to be a company that people want to work for." ■



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Solarban Champagne™ low-emissivity glass by Vitro Architectural Glass.
Photo courtesy of Vitro.

SOLUTION: PERFORMANCE THAT POPS: SOLARBAN CHAMPAGNE™ LOW-E GLASS

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Vitro Architectural Glass introduces Solarban Champagne™ low-emissivity glass, a breakthrough innovation that brings a crisp, aesthetic to high-performance glazing. Subtly reflecting champagne hues, this advanced glass is a natural fit for soft, contemporary palettes. Unlike conventional tinted glass, Solarban Champagne™ low-e glass achieves its distinctive color through a first-of-its-kind low-e coating, delivering a refined, consistent aesthetic while maintaining the trusted energy efficiency of Solarban® solar control, low-e glass.

The characteristics

Solarban Champagne™ low-e glass offers subtle champagne tones with low reflectivity and high visual clarity. Its innovative coating technology minimizes glare while preserving daylighting and views, creating comfortable, light-filled interiors. Solarban Champagne™ low-e glass also provides the proven solar control performance of the Solarban® glass family, minimizing ultraviolet and infrared light transmission.

Solarban Champagne™ low-e glass is available on clear glass as well as low-iron substrates, including

KEY FEATURES

A non-tinted natural aesthetic from the coating, for a consistent and refined appearance

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Starphire Ultra-Clear® glass and Acuity® glass by Vitro, plus select tinted options, including Optigray® glass and Solarbronze® glass by Vitro.

The application

Solarban Champagne™ low-e glass is designed for today's advanced building envelopes. "By offering a warm neutral aesthetic with low reflectivity, Solarban Champagne™ low-e glass is the perfect complement to the soft, natural hues prevalent in contemporary architecture," says Erin Casci, MSVD product manager, Vitro Architectural Glass. "It enables designers to create visually appealing façades that are both highly functional and energy efficient."

Manufactured exclusively at Vitro's facility in Wichita Falls, Texas, and shipped direct, Solarban Champagne™ low-e glass ensures consistent quality, reliable supply and streamlined project delivery. Visit vitroglazings.com/solarbanchampagne to learn more. ■



02



03

01. Window wall

Kawneer upgraded its window wall portfolio with the launch of the MetroView 4-SSG Window Wall. The unitized system was developed to meet a growing trend toward larger, uninterrupted spans of glass, say company officials. MetroView 4-SSG delivers visual impact to both new construction and retrofit slab-to-slab commercial applications. The system is suited to mid- to high-rise multifamily, office and institutional projects that need a combination of daylighting, enhanced acoustic capability, and thermal efficiency.

770/449-5555 | KAWNEER.COM

02. Curtain wall

Oldcastle BuildingEnvelope Inc. announced the launch of Reliance-TC SS (Thermal Control Screw Spline), a new high-thermal screw-spline curtain wall system built on OBE's Reliance curtain wall system. Designed to meet increasing energy-efficiency requirements, the Reliance-TC SS combines thermal performance with fabrication efficiency and facade flexibility, according to the company.

866/653-2278 | OBE.COM

03. Windows

Crystal Window & Door Systems' new aluminum outswing projected Series 8700 windows are available in casement, awning, and fixed styles. With a 3-1/4-inch jamb depth, the Crystal Series 8700 windows are suitable for both new construction and replacement applications involving mid-rise, high-rise, multi-family, office, hospitality, or institutional properties. These new architectural windows provide thermal performance and comply with the latest stringent energy code requirements of New York City and other jurisdictions.

718/961-7300 | CRYSTALWINDOWS.COM



01

02



03

01. Windows

Graham Architectural Products' GT6300 Human Impact Window system is designed specifically for behavioral health and healthcare environments where patient protection and therapeutic design must work together. The GT6300 integrates anti-ligature design and other engineered safety features directly into the window assembly, helping reduce risk in patient environments while preserving daylight and architectural continuity.

800/755-6274 | GRAHAMWINDOWS.COM

02. Inspection tool

k-Space Associates Inc., a provider of advanced metrology and inspection solutions, announced new machine learning capabilities for its kSA Glass Breakage & Defect Detection tool. The enhancement adds intelligent defect classification to the system's inline inspection platform, and is designed to help manufacturers identify subtle defects and emerging process issues.

734/426-7977 | K-SPACE.COM

03. Gas-fill detection

Sparklike Handheld NOVA helps insulating glass manufacturers verify gas fill levels non-destructively with a redesigned structure, modernized software and improved usability for production environments. Designed for double-glazed insulating glass units, Handheld NOVA measures argon concentration quickly and without damaging the sealed unit, say officials. The proven spark emission spectroscopy technology remains unchanged, delivering reliable measurements in approximately two seconds while supporting daily production quality control.

358/50-387-0427 | SPARKLIKE.COM

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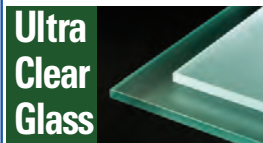
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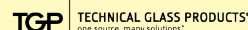
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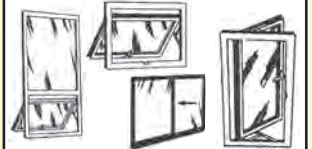


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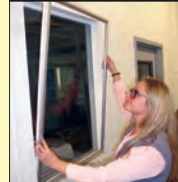
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AN ODE TO THE SMALL-TOWN FACTORY

How facilities in rural areas help create community

BY SARA BARCHAK

In a world that feels increasingly driven by scale, speed and distance, there's something profoundly grounding about the small-town factory. Its influence runs deep; quietly shaping livelihoods, identities and the rhythm of entire communities.

More than 70% of land is considered rural in the United States. It's home to 46 million people, 14% of the U.S. population. According to Rural America at a Glance, a report published by the U.S. Department of Agriculture, total employment has grown in recent years with more job opportunities, including in advanced manufacturing.

In these small towns, factories are more than just places of employment. They are community cornerstones. They create stable jobs that allow people to stay close to family, buy homes and

invest in the community that raised them. They support local schools, youth sports and volunteer organizations. When a local fundraiser needs support or a family faces hardship, it's often the people from these workplaces who step forward first. The impact stretches far beyond the factory walls and into nearly every corner of daily life.

How factories create community connection

I've spent the last 12 years working in a manufacturing facility in the same town where I was born and raised. For me, work has never been separated from home. I work alongside people I went to school with, my parents' friends and neighbors whose stories are woven into my own. That kind of connection changes the meaning of work. You're not just contributing to a company's

success; you're contributing to the well-being of people you know personally.

For many, work can feel remote and disconnected, but small-town manufacturing remains deeply human. It reminds us that industry isn't just about output, it's about people showing up for the work and showing up for one another, day after day. It's about conversations during lunch breaks that continue at the grocery store or the bleachers on Friday night. It's about knowing that the work you do helps someone you care about make a living. There's comfort in that familiarity, but also accountability.

These factories preserve something that feels increasingly rare, a sense of shared purpose. In many ways, they become part of a town's identity and a cornerstone to that history. Generations of families often pass through the same buildings, carrying with them traditions, work ethics and stories that connect the past to the present. The factory becomes woven into the culture of the town itself, representing resilience and continuity through economic shifts and changing times.

Working where I grew up has given me a perspective that I wouldn't trade. I've watched careers grow alongside families. I've seen firsthand how a factory can anchor a community through change and uncertainty. I've seen coworkers rally around one another during difficult seasons and celebrate milestones together like extended family. The small-town factory may not draw attention, but its value is undeniable. It builds more than products. It builds stability, pride and a sense of belonging, and it remains the quiet heartbeat that keeps everything else moving. ■



Sara Barchak serves as a marketing manager for Apogee Architectural Metals, which includes EFCO, and Wausau Window and Wall Systems brands.



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