

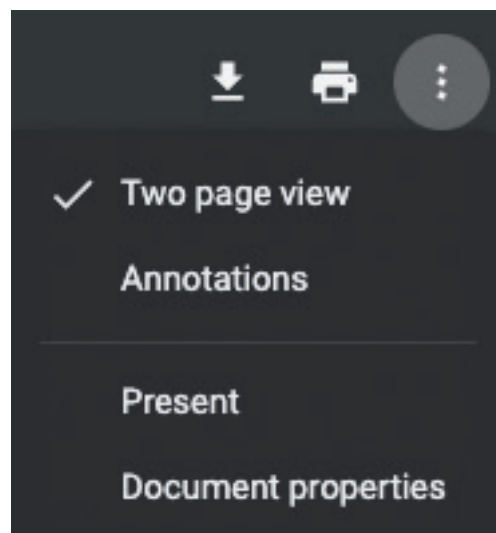
# GLASS MAGAZINE®

THE GLASS AND GLAZING AUTHORITY

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# GLASS

MAGAZINE

THE GLASS AND GLAZING AUTHORITY • JULY 2023

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TOP 50 GLAZIERS

## SALES CLIMB

DESPITE SHAKY MARKET

PROTECT  
WILDLIFE  
WITH GLASS

SECURITY  
SOLUTIONS

ADVOCACY  
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Depiction of bird-friendly glass. Photo courtesy of Glass Coatings & Concepts

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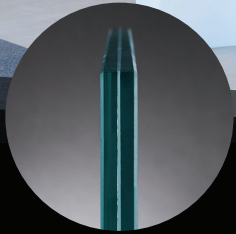
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**ON THE COVER:** The reimagined Seattle Convention Center expanded to include the Summit, a 14-story facility that features large atriums with expansive glass. Top 50 Glazier Enclos assisted in engineering this solution, which included installing reverse glazing, where the frame is on the exterior, allowing the interior surface to be a flush glass plane. Photo courtesy of Adam Hunter/LMN Architects.





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Available at [GlassMagazine.com](https://www.glassmagazine.com) and [glass.org](https://www.glass.org).

### ONLINE RESOURCE

The NGA's new Glazier Recruitment Online Resource promotes the glazing trade

### TOP GLASS FABRICATORS

Fabricators speed up to supply an uncertain but busy market in new report

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On-demand webinar spotlights wide variety of free tools and benefits

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#### Making an Entrance

By Steve Schohan, YKK AP America



### SAFETY

#### Trauma Response Training

By Angela Dickson, FGIA



### INDUSTRY

#### What's Next with Kawneer?

By Max Perilstein, Sole Source Consultants



## PROJECT SHOWCASE

Pictured: Gamco provided several of its glass, window, door and metal products to a new 20-story hotel located in Long Island, New York. The company supplied its W250C fixed and casement commercial windows for the south and west façade of the new structure, as well as its AGC Energy Select 28 low-emissivity dual-pane insulating glass units for

the windows. Gamco's contributions total 19,000 square feet of glazed commercial windows, curtain wall, storefront, balcony doors, commercial entrance doors and metal louvers. RL Aluminum Panel and Glass installed the fenestration systems.

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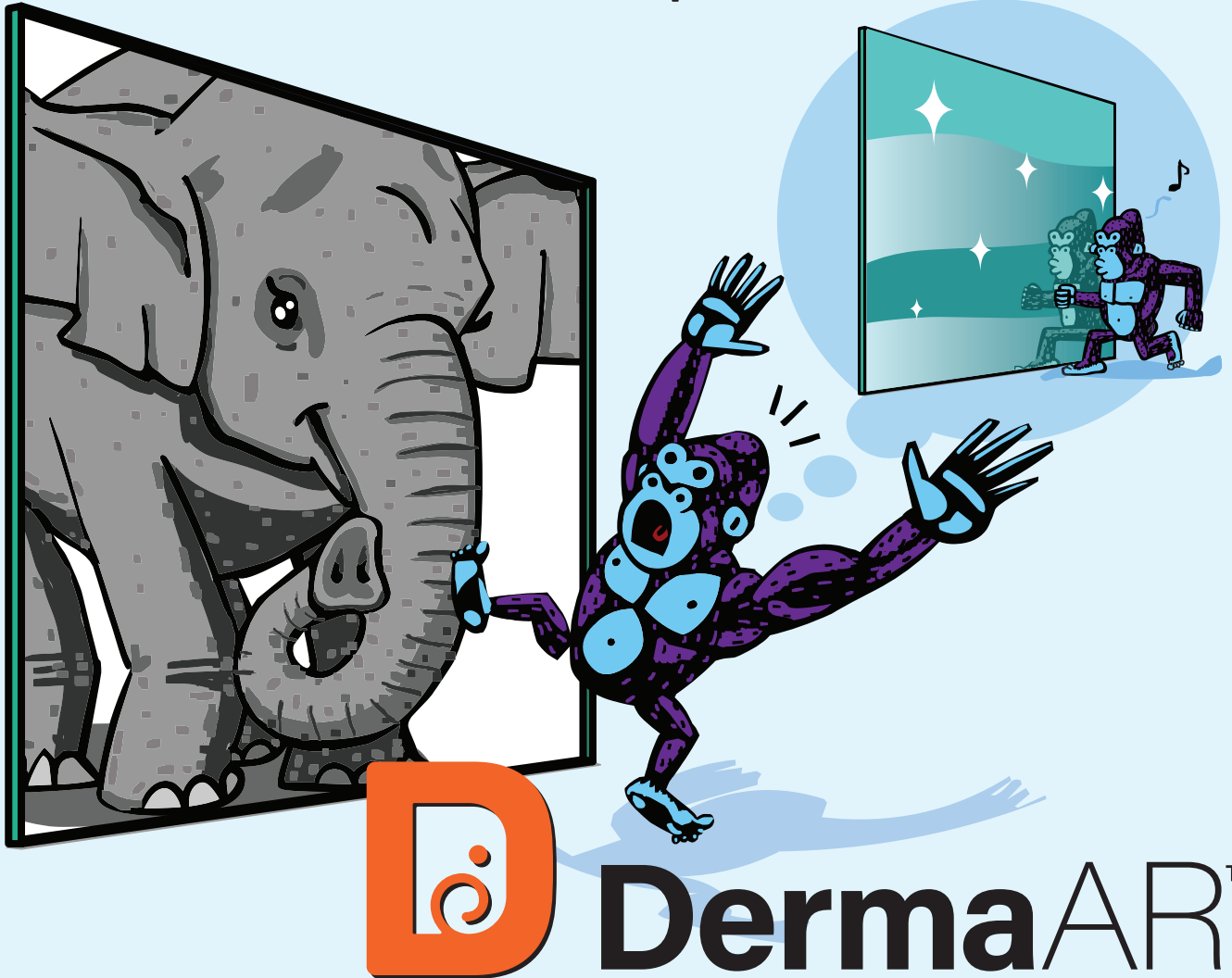
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From left to right: Advocacy Day participants Wade Arnold of U.S. Bullet Proofing; Kayla Natividad, NSG Pilkington North America; and Sophie Penner, Enclos, spoke with Taylor LaJoie, legislative assistant for Senator J.D. Vance of Ohio.

## Turn Up the Volume on Glass Advocacy



**KATY DEVLIN**  
Content Director  
Editor-in-Chief  
kdevlin@glass.org

In March, glass and glazing leaders from 35 companies gathered in Washington, D.C., to promote the industry and discuss several top priorities with legislative representatives and staff, and agency officials. The meetings were part of the National Glass Association's second Glass & Glazing Advocacy Days, where the NGA and its members emphasized the importance of architectural glass in addressing school security, recyclability and sustainability concerns, energy performance requirements, and more. (Read more coverage from Advocacy Days on page 11.)

### Available, but overlooked, innovations

Such advocacy efforts bring the conversation about glass directly to decision-makers, and they are essential to advancing industry innovation and ensuring glass and glazing products are a part of the high-performance building future.

"These are not future, theoretical products," said Bill Strait, vice president of business development, Oldcastle BuildingEnvelope, during Advocacy Days. "We have solutions that exist today."

However, many of the industry's innovative solutions are not widely adopted.

Helen Sanders, general manager, Technoform North America, addressed this challenge—specifically the lack of implementation of high-performance

innovations—during a talk at the Façade Tectonics Forum: Chicago in May. (The Façade Tectonics Institute is also actively pursuing advocacy efforts through an ongoing study with the Department of Energy on shaping the future of facades and driving market transformation to adopting high-performance facades.

"We have complex thermal barriers that have been around for 50 years. We have warm-edge spacers, around for over 20 years; triple pane, over 20 years; room side low-e coatings for over 10 years; dynamic glazing, available for 20 years; thermally broken cladding attachments for 8 to 10 years. But these aren't used as business as usual," Sanders said.

### Look to policy innovations

To address challenges with product innovation, Sanders said the industry needs to focus on increasing its advocacy efforts: "We need innovation in public policy."

Other industries—HVAC, for example—have had notable success in driving industry innovation by focusing on advocacy, Sanders said. The industry can look to HVAC's promotion of heat pumps to see the power of industry advocacy, she said.

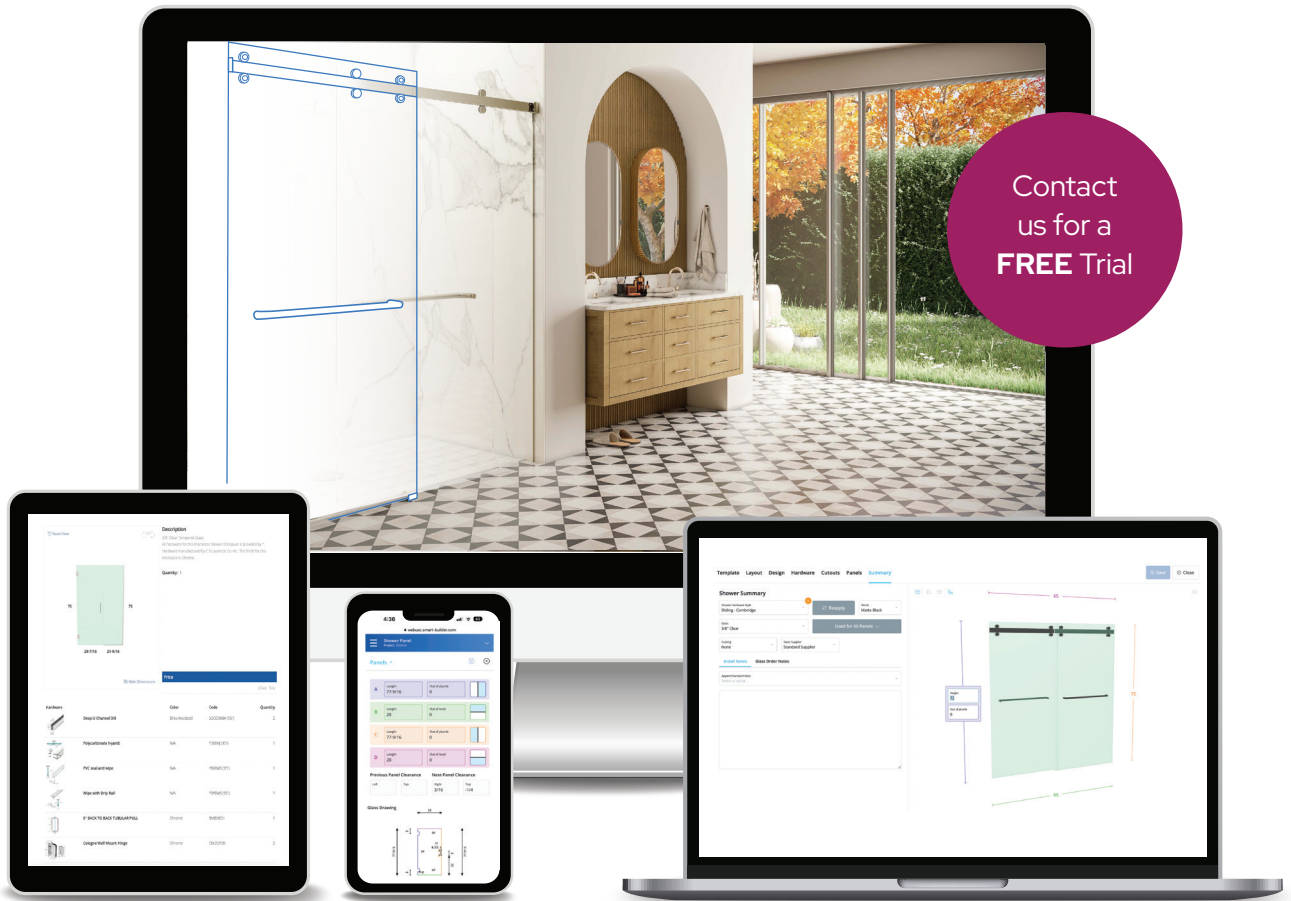
"The HVAC industry has done an amazing job getting to Congress for heat pumps," she said. "Do you know how much money the Building Technology Office of the DOE gets each year? \$400 million. Do you know how much windows get of that? About \$5 million. Do you know how much heat pumps and electrification targeted programs are getting? About half of that \$400 million. And an additional \$250 million for heat pumps has been appropriated through the Inflation Reduction Act."

### What's next?

Continued, coordinated advocacy efforts from the industry—both from organizations such as the NGA and the FTI, and from companies—are needed.

"We need to educate on why the envelope matters. ... Windows, in particular, are difficult to understand," Sanders said. "You need to talk to senators and educate them, as they are the ones who can get the legislation written. And we need to work with the DOE to allocate their resources to the façade."

Read more about the NGA's advocacy efforts at [glass.org](http://glass.org), and about FTI's at [facadetectonics.org](http://facadetectonics.org). ■



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# YOUR ASSOCIATION AT WORK

NEED-TO-KNOW INFORMATION  
 FROM THE NGA

## Do Your Legislators Know Windows and Doors Are Part of the School Security Solution?

By Georgia Scalfano, NGA Technical Services Sustainability Manager



During the National Glass Association’s Glass & Glazing Advocacy Days, March 27-28, in Washington, D.C., NGA members met with over 30 Congressional offices to discuss priority topics with representatives of 18 states. In these meetings, NGA’s School Security policy priority was one topic that sparked great interest from the representatives.

NGA’s School Security one-pager, available on [glass.org](http://glass.org), provided important information on how legislators can improve the safety of schools simply with proper security glazing products currently on the market. This allowed us to encourage sponsorship of the Securing Our Students Act (HR 887 in the 118th Congress), which would allow schools to use funds for security windows and doors for high-risk areas in schools.

NGA also supports the implementation of the new

ASTM standard, the Standard Test Method for Forced-Entry-Resistance of Fenestration Systems After Simulated Active Shooter Attack, which allows manufacturers to test and rate their products to ensure they meet protection requirements after sustaining an active shooting.

### What’s next?

The NGA and its members still actively advocate for using security glazing in schools. Following up on Advocacy Days, attending NGA members are encouraged to send a follow-up email to staffers and offices they met with to thank them for meeting and invite them to use their companies and NGA as a resource going forward.

Read this column in its entirety at [glass.org](http://glass.org). ■



## Overheard on Capitol Hill

What elected representatives and industry leaders had to say during NGA’s second annual Glass & Glazing Advocacy Days.

### “DON’T LET POLICIES GET IN THE WAY OF INNOVATION.”

Rep. Buddy Carter (R-GA)

### “WE REMAIN ADAMANT THAT APPRENTICESHIPS WORK AND CREATE HIGH-PAYING JOBS. YOU HAVE OUR SUPPORT.”

Office of Senator Cortez Masto (D-NV)

### “GLASS IS BEAUTIFUL. IT DOES EVERYTHING WE NEED IT TO DO.”

Julia Schimmelpenninck, technical engagement manager, architectural, Eastman Chemical Co.

## NGA COMMITTEES PRESENT UPDATED GLASS TECHNICAL PAPERS

National Glass Association committees and task groups develop new resources and revise existing publications to address important issues facing the industry. Fabricating Committee and Installing Committee member volunteers worked on updating several Glass Technical Papers through the systematic ballot process in April 2023. NGA GTPs are available for download in the NGA online store.

The NGA Fabricating Committee updated:

- Blast-Resistant Glazing

- Screening Out Ultraviolet Radiation with Laminated Glass
- Understanding Reflective Distortion in Mirror Installations
- Suggested Procedures for Dealing with Broken Glass

The NGA Installing Committee updated:

- Construction Site Protection

NGA’s GTPs are free to download in NGA’s online store at [glass.org/store](http://glass.org/store). ■



Glass industry leaders on Capitol Hill for Glass & Glazing Advocacy Days.

## The National Glass Association Addresses Industry's Top Priorities during Second Annual Glass & Glazing Advocacy Days



### ONLINE

See complete coverage from Glass & Glazing Advocacy Days on [glass.org](https://glass.org), and on Twitter at [@GlassNation](https://twitter.com/GlassNation), [@GlassMag](https://twitter.com/GlassMag) and [@WindowDoorMag](https://twitter.com/WindowDoorMag).

Industry leaders from National Glass Association member companies, Congressional members and agency officials convened in Washington, D.C., March 27-28 for the association's second annual Glass & Glazing Advocacy Days.

NGA architectural glass and glazing industry policy priorities presented at the 2023 event included school security, bird-friendly glazing, high-performance glazing, recyclability and sustainability, and workforce development.

In her opening remarks, NGA President and CEO Nicole Harris stated, "Everyone in this room knows the value of glass and glazing to enhance spaces where we live,

### THE BOTTOM LINE

In March, NGA officials and industry leaders met with elected representatives and other government officials for Glass & Glazing Advocacy Days. The group addressed five policy priorities:

- Recyclability/sustainability
- High-performance glazing
- School security
- Bird-friendly glazing
- Workforce development

play, learn, work and heal ... and we are here to help our legislators understand that value."

Leaders from 35 NGA member companies representing primary glass manufacturers, fabricators, suppliers and installing companies from across the country were invited to advocate on behalf of their businesses, the NGA and the industry. "We had an amazing day on the Hill," says Harris. "We had 30 meetings in Congressional offices, allowing us to spread NGA's message about the solutions our industry provides."

NGA members met with the offices of 20 U.S. senators and 10 U.S. congressional representatives. Additionally, they spoke with leaders from the U.S. Environmental Protection Agency and the Department of Energy's Building Technologies Office. Find the complete list of Congressional members, legislative staff and agency officials who met with NGA members at [glass.org](https://glass.org). ■



# GLASS INFORMATIONAL BULLETIN

## Glass in Protective Applications

Windows and doors can be specified with a level of security performance to help protect buildings and occupants in the event of threats, including ballistic and forced entry, blast events, and fires.

### Ballistic & forced entry

Several test methods are used to assess the performance of glazing used for ballistic and forced-entry protection. In each standard, an application may pass varying levels of resistance based on several factors, including the ammunition type, speed and number of shots resisted. For forced entry, the tests may include common tools such as a ball peen hammer, sledgehammer, CO<sub>2</sub> extinguisher or propane torch, or more standardized blunt or sharp impactors.

There are five types of glazing products used for ballistic and forced-entry applications:

- All-glass laminates include two or more plies of glass and interlayer. Forced-entry-resistant laminates are typically two plies of glass and a 60-mil interlayer. Ballistic-resistant laminates may require multiple plies of glass and interlayer. The outer glass surfaces are easy to clean and resist abrasion. Typically, all-glass laminates are not used for prolonged physical attack resistance.
- Glass-clad polycarbonates are made with outer plies of glass and inner sheets of polycarbonate. The outer glass plies provide abrasion resistance, and the inner core of polycarbonate improves physical attack resistance. Multiple sheets of polycarbonate inside the laminate may offer higher levels of forced-entry protection. Glass-clad polycarbonates are often used in detention facilities.
- Asymmetrical constructions of glass and polycarbonate are typically associated with ballistics protection. Multiple lites of glass are positioned on the attack side, absorbing the bullet's energy and improving durability. Polycarbonate with a hard coat is placed on the protected side of the laminate to prevent glass spray, or spall, into the protected area. Considerations for maintenance and cleaning of the exposed polycarbonate are vital with this construction.
- Laminated polycarbonates provide a high level of forced-entry resistance. These laminates typically do not break or shatter and offer no-spall ballistics protection. A hard coat polycarbonate is incorporated into the laminate on the attack and protected surfaces to minimize abrasion on the outside polycarbonate sheets.
- Applying security film to glass is another means to increase protection from forced entry, especially when adhesively or mechanically secured to the window glazing frame. The applied safety film may help retain broken glass within the unit and limit spall.



**Above:** Fireframes SG Curtainwall Series with Pilkington Pyrostop glass firewall by TGP was used for the stairwell exterior façade of the Roux Center for the Environment at Bowdoin College in Brunswick, Maine. Photo courtesy, TGP, © Jeff Goldberg/Esto.



This Glass Informational Bulletin was compiled from NGA's AIA-approved presentations "Fire-Rated Glazing Today" and "Glazing to Protect." NGA has developed presentations for members to use as a resource when reaching out to architects and other interested parties. View the list of available presentations and learn how to become a presenter at [glass.org/aia-approved-presentations-architects](http://glass.org/aia-approved-presentations-architects) (NGA Member log-in required).



## Blast

Blast-mitigating glazing is designed to help protect people inside a building from flying glass and reduce interior damage after a bomb has exploded. Blast protection may be specified in government and military buildings and in high-risk commercial buildings.

The classification of blast performance levels is defined by the amount and distance glass shards penetrate an occupied space. Product evaluation

may require physical testing of glazing or systems in either a shock tube or arena environment. Due to costs and the project-specific nature of blast requirements and design, the standards may allow software analysis to determine the framing system and glazing construction based on specific project input.

Blast-resistant glazing can be specified by calling out the peak overpressure, impulse and duration of the blast or the TNT load equivalent, standoff distance, site altitude, and height of the glazing above the blast. Since projects require the complete system to be analyzed, the final glazing will be confirmed during the calculation, or project-specific mockup testing, phase.

When specifying glass for blast resistance:

- Laminated glass may be constructed with a 30-mil or 60-mil interlayer with annealed, heat-strengthened or tempered glass.
- When insulating glass units are specified for blast resistance, the laminated lite is positioned on the inboard of the unit.
- Blast projects are typically wet glazed.
- Safety film with an attachment to the frame may be used for select levels of blast protection.

## Fire

Fire-rated glazing is designed to control the spread of flame, smoke, hot gases and, if necessary, heat transfer from one building area to another. It allows building occupants to safely exit a building during a fire while allowing first responders to enter. The International Building Code requires the use of fire-rated

glazing in specific applications.

There are two categories of fire-rated glass: fire-protective and fire-resistive.

- Fire-protective glazing materials compartmentalize the fire, preventing the spread of flames and smoke, but they do not block heat transmission. Examples of fire-protective glazing include wired glass and fire-rated ceramic glass.
- Fire-resistive glazing materials prevent the spread of flames and smoke and limit the transmission of radiant and conductive heat. Intumescent laminated glass is an example of fire-resistive glass.

All fire-rated glass is subjected to a fire endurance test that determines the time (in minutes or hours) that the fire-rated assembly will withstand the fire of a test furnace, which can exceed 1900 degrees Fahrenheit. When testing fire-resistive glazing, thermocouples are placed on the surface of the glass on the non-fire side to monitor the heat transmitted through the glass. Most fire-rated glazing applications also require a hose stream test. Fire-rated glazing in hazardous locations must meet safety glazing requirements.

## Multiple threats

Fire-rated glazing can be combined with additional protection, including forced entry, ballistics and blast. When multifunctional products are created, the characteristics of one product must not negate the performance of the other. Refer to the product listing or certification to ensure compliance with all required tests. Consult the product manufacturer for further information. ■



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

## **First Solar Acquires Solar Tech Company, Partners with Vitro Architectural Glass**

First Solar Inc., a solar technology company, entered into an agreement with Vitro Architectural Glass and acquired another solar technology company, Evolar AB.

First Solar's agreement with Vitro is to manufacture glass for Vitro's advanced thin-film photovoltaic solar panels. Vitro will invest a total of \$93.6 million to rebuild and modernize a production line at its Meadville Plant in Cochranton, Pennsylvania, to support First Solar's growing manufacturing footprint in the U.S. The investment will also include the construction of offline production capabilities. Vitro's investment in the Meadville Plant is expected to provide First Solar with a domestic source of float glass, which is a significant component of the company's advanced thin-film solar panels. Production is expected to begin in the second quarter of 2025, resulting in the creation of approximately 130 full-time jobs.

First Solar's acquisition of Evolar aims to accelerate the development of next-generation PV technology, including high-efficiency tandem devices, by integrating Evolar's know-how with First Solar's existing research and development streams.

Under the agreement, Evolar's laboratory in Sweden will continue to conduct research activity, marking the first time that First Solar will have an R&D facility in Europe. Upon closing of the transaction, approximately 30 of Evolar's R&D staff will transition to First Solar, working with the company's team of about 60 scientists at its

research technology center in Santa Clara, California, and the development teams in Perrysburg, Ohio.

## **After Acquisition by Apollo Funds, Kawneer's Parent Company Will Be Private**

Arconic Corp., parent company to Kawneer, announced that it has entered into a definitive agreement to be acquired by Apollo Global Management Inc., in an all-cash transaction that values the company at approximately \$5.2 billion. The transaction includes a minority investment from Irenic Capital Management. Upon completion of the transaction, Arconic's shares will no longer trade on the New York Stock Exchange, and Arconic will become a private company.

Strategic investments are expected to include upgrades to key machine centers to maximize the full potential of the company's unique production capabilities, technology upgrades to bring the company's plants and process controls to state-of-the-art standards, and investments in projects that will provide for a cleaner environment in the communities in which the company operates.

## **Canadian Premium Sand Takes Steps in Solar Glass Manufacturing**

Regarding its development of North America's first vertically integrated patterned solar glass manufacturing facility, Canadian Premium Sand Inc. executed multiple commercial off-take agreements; signed a turn-key engineering, procurement and construction agreement; enhanced the executive team and board; and initiated a financing process.

"We are excited to have reached this important stage in the development of our integrated solar glass manufacturing project. We are confident in our ability to commercialize this high-return project, supporting the global energy transition," says President and CEO Glenn Leroux.

## **NSG's Joint Venture Disposes of Subsidiaries**

The NSG Group announced that the group's joint venture, SP Glass Holdings BV, a company registered in the Netherlands but owning operating subsidiaries in Russia, has concluded an agreement to dispose of those subsidiaries.

## **Sentech and Slimpact Join Forces**

Sentech Architectural Systems and Slimpact by Faour Glass Technologies joined forces to widen the impact of resistant structural glass product offerings across the U.S.

The combined offering includes impact-resistant, fin-supported glass walls up to 28 feet in height, frameless glass walls up to 20 feet in height and jumbo impact-resistant glass door systems.

## **AGC Discontinues LCD Glass Substrate Products at Japanese Plant**

AGC Inc. decided to discontinue the production of LCD glass substrate products at its Kansai plant, located in Hyogo prefecture, Japan, by the end of 2023. The revenues of LCD glass substrate products have been deteriorating since 2022, say officials.

As part of measures to improve the profitability of this business, AGC is

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**NEWS TO KNOW**

undertaking fundamental structural reform measures, including withdrawal from low-profit size glass substrates and consolidation of production lines, and this decision is part of those measures. Production of other products at the Kansai plant will continue.

**Miru Smart Technologies and ODL Collaborate**

Miru Smart Technologies and ODL

Inc. signed a two-year collaboration agreement to develop electrochromic door glass and patio doors exclusively made with Miru's smart window technology. ODL and Miru are working together to introduce tintable, electrochromic glass as an energy-efficient, comfort-enhancing and affordable addition to smart doors.

"Homeowners want more access to light, views and nature and are

increasingly incorporating door glass and glass patio doors in their home to maintain their connections to the outside," says Curtis Berlinguette, CEO, Miru Smart Technologies.

"Miru and ODL's smart door glass will be a perfect fit for efficient and net-zero homes, providing a beautiful and functional solution for modern homeowners."

**Saint-Gobain Signs Renewable Electricity Agreement with Vibrant Energy**

Saint-Gobain signed a power purchase agreement, or PPA, in India with Vibrant Energy, a portfolio company of Macquarie Asset Management's Green Investment Group, to provide wind-solar electricity to six local Saint-Gobain sites.

The 20-year PPA will begin delivery in 2024 and bring the renewable electricity share in India to 65% in 2025. Under the agreement, Vibrant Energy will provide Saint-Gobain with 189 gigawatt hours of renewable electricity (solar and wind) per year, reducing Saint-Gobain's CO2 emissions in India by around 120,000 tons per year.

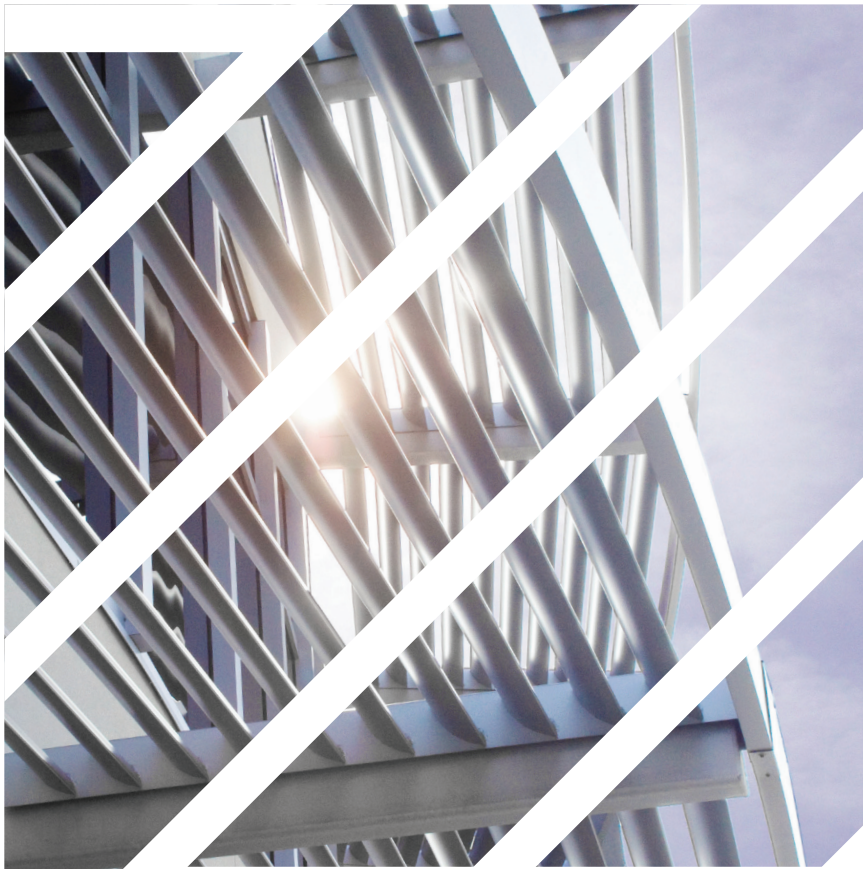
**SDC Doubles Campus Capacity**

Security Door Controls was able to close escrow on a facility at the end of 2022, across the parking lot from its current headquarters.

The new SDC Campus Building No. 2 has been undergoing site improvements and is now ready to accommodate the first phase of a planned expansion of manufacturing, research and development, product and service training, and inventory control/warehouse capabilities.

**PGT Innovations Rebrands, Announces Relationship with Service Finance**

PGT Innovations unveiled new branding for its PGT Custom Windows and Doors, as well as a new exclusive consumer financing relationship with



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NEWS TO KNOW

Service Finance Co., a subsidiary of Truist Bank.

Service Finance provides financing solutions to home improvement dealers across the U.S. As part of the agreement, PGT Innovations dealers will gain access to a financing program, industry-leading payment features, consumer-friendly terms, and high-touch training and customer service that can help dealers increase their sales.

With the rebrand, PGT Custom Windows and Doors is transitioning from being primarily focused on providing hurricane protection through its impact-resistant products to supplying high-performance glass technology for windows and doors, expanding its positioning to allow specialized products for energy efficiency, sound reduction and security to be introduced.

PEOPLE NEWS



Dietrich

**Custom Glass Solutions**, a glass fabricator, named *Matthew J. Dietrich* CEO. Dietrich has more than 35 years of professional experience scaling, optimizing and guiding industrial-engineered products businesses in various functional, executive and board leadership roles.

Dietrich spent the first half of his career at several large public corporations, including Ingersoll-Rand, Timken and Carlisle Companies in a variety of executive leadership roles. He has led industrial businesses in the public, private, foreign and private equity-owned arenas. Most recently, Dietrich was CEO of Alco Manufacturing Corp.



Blossl

**Cyncly**, the software company rebranded from CompuSoft+2020, announced changes to its executive leadership team that will enable the organization to scale and execute its plans for growth. *Matthew Blossl* has been appointed as chief revenue officer and *James Hamilton*



Hamilton

has been appointed as chief operating officer.

Blossl is joining Cyncly as a proven executive with more than 20 years of experience building, leading and scaling organizations in high-growth environments. Key priorities for the chief revenue officer will include executing Cyncly's go-to-market strategy, delivering a seamless experience along the complete customer lifecycle and growing the customer base.

As chief operating officer, Hamilton will work closely with the CEO on groupwide strategic prioritizations and lead efforts to enhance Cyncly's customer-first strategy. He will also drive Cyncly's M&A agenda to

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## NEWS TO KNOW

create greater value for customers, anticipate market changes and shape future needs. He will maintain his responsibilities as chief financial officer in addition to his new role as chief operating officer on an interim basis until a new chief financial officer is appointed.



Phillips

**LuxWall Inc.** welcomed *Jay Phillips* as its new chief revenue officer. With extensive experience in the industry, including turns at PPG Industries, Oldcastle BuildingEnvelope and Guardian Industries as well as being a past BEC chair and president of the Glass Association of North America, Phillips brings a wealth of knowledge to LuxWall's team.



Hall



Sandrock

**Synergy Glass Co.,** a commercial glazing company based in Mandeville, Louisiana, named *Chad Hall* and *Roy Sandrock III* as partners of the company. Hall serves as vice president of estimating and project management, while Sandrock serves as vice president of operations and general superintendent.



Holt

**Eastman Chemical Co.** appointed *Adrian Holt* as chief human resources officer following the retirement of Perry

Stuckey. Holt currently serves as vice president of global talent acquisition and human resources. His appointment is effective immediately. ■

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## THE BOTTOM LINE

The popular thinking behind jury waivers is that they decrease costs, increase a narrower read of contract obligations and speed up litigation. Where a dispute has formalized and legal actions are proceeding, do not delay in seeking to enforce a jury waiver or demand that the other side complies with the contract's terms.

## LEGAL

# JURY WAIVERS

ARBITRATION PUSHBACK SEES COMPANIES RETURNING TO JURY WAIVERS **BY MATT JOHNSON**



**M**any companies are returning to the use of jury waivers as a way to manage the risk present in jury trials. A jury waiver is a contract term by which the parties agree to waive the right to have a trial decided by a jury. Instead, the parties will ask a judge to decide any dispute. But how did we get here?

### Pushback against arbitration

Over the past 30-plus years, the corporate world has relied on arbitration agreements to avoid the uncertainties of a jury. The thought was that a panel of arbitrators might be a more reliable factfinder. Companies often find themselves uneasy when legal liability rests in the hands of people of varying backgrounds, styles and opinions.

But there is a developing pushback against arbitration as a means to avoid jury decisions. States have begun to view arbitration as less desirable, especially concerning consumer transactions. In response, many companies simply require jury waivers rather than trying to stay current with the bounds of permissible arbitration regulations.

### Jury waiver basics

The popular thinking is that including a jury waiver decreases costs, increases a narrower read of contract obligations, and speeds up litigation. These waivers are found in purchase and distribution agreements, supply contracts and project service agreements. Employment agreements that waive jury trials are also gaining popularity due to recent legislative activity. In the case of mergers and acquisitions, jury waivers have been standard terms for decades.

While contract terms, jury waivers



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require more formality than most provisions. This extra protection is needed because the Seventh Amendment of the Bill of Rights guarantees a jury trial in civil cases seeking monetary damages—like a standard breach of contract case. Moreover, certain states have rules that prohibit jury waivers altogether. In large part, however, civil jury trial waivers have been preserved throughout the country and the waiver will be enforced where it was knowingly and willfully made.

**Creating a waiver**

Jury waivers should be drafted in plain and simple terms to ensure that all parties fully understand them. Exact disclosure of the scope of the waiver and what it means are needed. The waiver language should be mutual, so there is evidence that the clause applies equally to both sides. Also, include language in the contract that requires any party contesting the waiver’s validity to bear the burden of proof that it is improper.

To help establish that the waiver was willful, the entire clause should be bolded to stand apart from other fine-print terms. And while not a requirement, an initialing by the parties at the term will help a later court establish that both parties saw the term and knew what they were doing at the time of signing.

Even the best jury waiver can be limited if its scope is not properly thought out beforehand. Depending on the nature of the agreement or work to be performed, a jury waiver’s application is limited to those signing the contract. If other concerned parties are not signatories to the jury waiver, its utility may be lost because they do not have to accept it.

Jury waivers can also benefit from additional, separate clauses in the contract. For example, because states treat jury waivers differently, where a state allows waivers, enforcing the clause is best supported by other contractual terms that specify the application of a state’s law and require all disputes

to be resolved in that state. This helps avoid the situation where one party to a contract is located in a state that is less rigid in enforcement or moves out of state while the contract is pending.

Finally, use it. Where a dispute has formalized and legal actions are proceeding, do not delay in seeking to enforce the jury waiver or demand that the other side complies with the contract’s terms. Enforcement of a waiver can be questioned when an action has gone forward without either party confirming the contract terms. And if a jury is empaneled, it is too late to seek an application or try to overturn a jury’s decision on appeal. The investment made in drafting jury waivers can only be realized through their timely use. ■

Matt Johnson is a member of The Gary Law Group, a firm specializing in legal and risk issues facing manufacturers of glazing products.

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**Flexibility** means the possibility to decide to pick-up glass plate-by plate with an overhead crane loader or to move entire glass packs with a shuttle system and/or telescopic loader.

**Efficiency** means the knowledge of every single glass piece available in stock and its maximum level of optimization along the entire process. Rest plate management is a key add-on for temporary glass storage.







## 4 WAYS TO IMPROVE EFFICIENCY

GLAZIERS MUST CONTINUOUSLY BE BOTH INNOVATIVE AND RESOURCEFUL, DOING MORE WITH LESS **BY MARK SUEHIRO**



**T**ight labor markets and strict timelines present numerous challenges to glaziers regarding providing superior quality and on-time installations. The state of the industry requires glaziers to continuously identify areas where efficiencies can be gained, allowing them to do more with less.

Luckily the industry is both innovative and resourceful. Here are four key areas where glaziers and their teams can improve efficiency and maintain high levels of excellence.

### **Technology: Powerful software**

Software can be an invaluable time-saver for glaziers, whether in the office or on the job site. From project management to design software, there are intuitive applications that non-tech-savvy staff will feel comfortable using. In addition to saving time, software can help prevent

errors and, in some cases, optimize material fabrication on large projects.

Manufacturers frequently lend a helping hand by developing project estimating technologies. These online applications can be used on the job site to design projects, provide estimates and prepare material lists quickly and accurately. These design and estimating programs are available for various glazing systems, including glass entrances, shower enclosures, glass railings and interior glass partitions.

### **Tools: Improved glass handling**

Integration of glass-handling tools is a quick, high-value way to empower employees to complete jobs safely and efficiently. Outfitting staff with tools like glass dollies and vacuum cups streamlines the installation process. When a glazier must work alone,



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innovative glass-handling tools are available to better manage the lifting and precise positioning of large-format glass. These glass-lifting tools can be attached to vacuum cups for greater convenience.

**Transformative products: Unitized and modular options**

The materials and products that glaziers utilize constantly change, sometimes significantly impacting the time it takes for installations and adjustments. Two new and distinct approaches to product design can be beneficial in these cases: unitized and modular systems.

The unitized approach delivers a prefabricated product to the job site, manufactured to fit specific building requirements. Curtain walls, storefronts and glass railing assemblies are all applications that may benefit from factory-assembled products. With no on-site fabrication, impacts from poor weather, congested job sites, insufficient

labor and other unfavorable conditions are minimized.

Modular systems take a different approach. Modular glazing products, including some door rail systems, are delivered as standardized components that glaziers can assemble when most convenient. Because modular products are designed as individual parts of a whole, they can be stocked by glass temperers and glaziers, virtually eliminating manufacturer lead times on standard and custom products.

**Training: Education for efficiency**

Investments in staff training always pay dividends. Staying on top of employee education helps familiarize them with new technologies, tools and processes, opening new opportunities for efficiency gains. Ongoing training develops new skills and serves as a refresher on critical processes that make installations more streamlined, higher quality

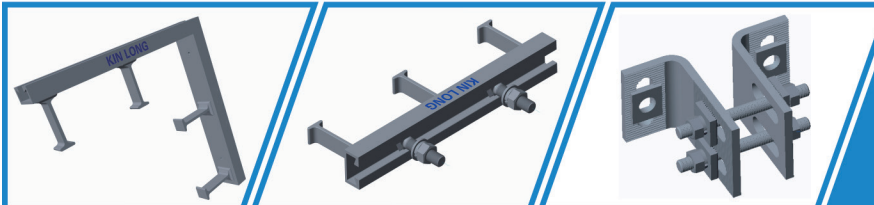
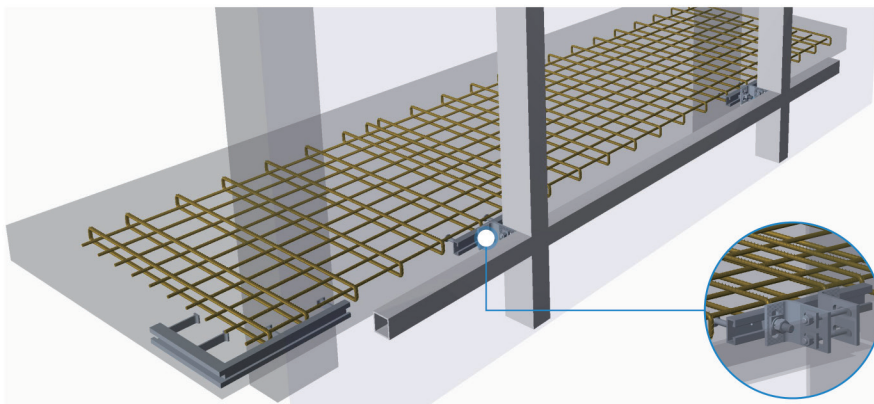
and safer. There are several online training resources available, including MyGlassClass.com.

**Takeaways**

The industry’s current state requires glass and glazing shops to explore opportunities to make their teams more productive and meaningfully reduce the time it takes to design, estimate and install. By utilizing innovative tools and technologies throughout a project’s development and execution, glaziers can improve efficiencies in the field and back in the shop. Ultimately, improved efficiencies, outstanding service and flawless installation enable glaziers to do more with less, making them more competitive and successful. ■

Mark Suehiro is technical director of architectural hardware and entrances for C.R. Laurence. He can be reached at [mark\\_suehiro@crlaurence.com](mailto:mark_suehiro@crlaurence.com).

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#### How big should the reserve be?

Opinions vary regarding the proper size of your emergency reserve. Some experts recommend keeping only a month or two of expenses, while other conservative views recommend three to six months.

Cash reserves also have an opportunity cost. The money in the reserve should not be used to expand the business or pursue new projects. Consequently, a large reserve may affect how quickly you can grow your business. You trade off growth for stability.

The best approach is to work with your CPA to determine a reserve size that meets your needs. Examine your financial reports and determine your monthly expenses during the past year. Use your most expensive months as a guideline for how much money to reserve each month. Ultimately, the reserve should match your requirements, risk tolerance and expectations.

For example, my company reserves about eight months of expenses. Some people argue that keeping eight months is excessive. After all, that money could be better used growing the business. However, I remember how many companies went out of business during the Great Recession of 2008. An eight-month cash reserve bought me time, options and opportunities.

#### How do you build a reserve?

Building a reserve is simple. However, it takes significant discipline.

#### Determine the monthly contribution

The first step is determining a percentage of your profits to direct to the reserve account. It should be large enough to build the reserve in a reasonable amount of time. This step temporarily reduces the amount of money you can take out of the business as earnings. You need to determine an amount that is realistic and practical.

#### FINANCE

## YOUR BUSINESS SHOULD HAVE A CASH RESERVE

BY MARCO TERRY



**Y**our cash reserve is one of your company's most important but underrated components. Small-company executives pay little attention to it unless the company is in trouble. However, there is little you can do if your company is in trouble and you don't have enough cash in reserve. You will be at the mercy of circumstances in a challenging environment.

#### Why is a cash reserve important?

A cash reserve is an essential component of a resilient business. It is your most important financial tool to ensure smooth operations. A cash reserve is typically used as an economic shock absorber. It allows your company to operate normally when faced with serious challenges. For example, you can use a cash reserve to handle unexpected expenses or to cover financial shortfalls.

Cash reserves also serve a strategic advantage. They allow you to capitalize on opportunities during recessions when other companies struggle to stay afloat. You will be one of the few financially stable



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**Transfer funds to the reserve account**

Transfer the reserve funds to a separate account every month. Keep contributing funds to the account until the reserve reaches the desired size. Avoid mixing your reserve funds with your operations funds. Tracking funds can be difficult, and it's easy to make mistakes. Instead, use a separate savings or checking bank account.

**Consider using a different bank**

Recent news has reported several potential problems with the banking system. As I write this, three banks have already failed, and there is a short list of banks that could fail soon. I think your money is still safe in the banking system. However, experience has taught me to be cautious. Consider opening your cash reserve account in a different bank than you normally use for operations. This step ensures you always have access to funds in case one bank gets into trouble.

**How do you use a reserve?**

You should use your cash reserve only when your operations account can't cover an urgent need. For example, if you need funds to cover payroll, an urgent repair or another essential expense, consider using the cash reserve. Replenish the reserve account to its usual amount as soon as practical. It's to your advantage to keep the account at its normal amount whenever possible.

Most importantly, resist the temptation to use the account for special projects. Misusing reserve funds is one of the biggest mistakes business owners make. Unfortunately, that mistake leaves your company unprepared for emergencies.

**Should you complement your cash reserve with financing?**

Some companies combine a cash reserve with a line of credit or similar product. In theory, the line of credit can be tapped for emergencies, enabling

you to keep a smaller cash reserve.

When used correctly, this strategy allows you to keep more funds deployed for projects and business expansion. Many large companies follow this strategy. Maintain discipline, however, since using a line of credit to cover part of your reserve can be a double-edged sword. You could accidentally find yourself overleveraged and with minimal reserves. Or worse, you could lose the line of credit and end up with no reserve funds. ■

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Marco Terry is managing director of Commercial Capital LLC, a factoring company and provider of invoice financing to companies in the glass industry. He can be reached at 877/300-3258.




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**Above:** Entrance to TD Bank at One Vanderbilt. **Right:** Entrance area to the adjacent Grand Central Terminal.



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## THE BASICS

One Vanderbilt Avenue is a 77-story skyscraper that has redefined the Manhattan skyline. At 1,401 feet tall, it is the tallest office tower in Midtown, with a prime location just steps from another world-famous architectural icon, Grand Central Terminal. The tower was designed by KPF and the transit areas were designed by Stantec.

## FIRE-RATED DESIGN

One Vanderbilt features fire-rated glass and glazing in several key areas, including in the entrance to the location of its largest tenant, TD Bank. To showcase what TD Bank has to offer, clear, low-iron fire-rated glass was used for the storefront and entrance. Spanning floor-to-ceiling at a height of almost 16 feet, the

designers wanted as much transparency as possible.

The project also relies on fire-rated glazing for the tower elevators, in a new entrance area to the adjacent Grand Central Terminal, and in the cellar level to allow visitors to see into the retail tenants occupying the space.

## THE GLASS AND SYSTEMS

To achieve design goals for the TD Bank entrance, SAFTI FIRST® supplied SuperLite II-XLB 120 low-iron in GPX Architectural Series Framing for the ASTM E-119 rated, 2-hour fire resistive assembly. To give vision and transparency for the entrance, SAFTI FIRST® supplied 9-foot-tall GPX Builders Series Temperature Rise Doors with SuperLite II-XL 90 low-iron. The doors had a narrow profile with concealed rods to give it the clean, sleek look and fitted with specialty hardware to provide secure access control.

SAFTI FIRST® also supplied SuperLite II-XL 120 low iron in GPX Architectural Series framing for the elevator enclosure for the basement levels. Incorporating vision and transparency to these 2-hour elevator enclosures provide an open and airy feeling to visitors as they descend to the basement levels.

To improve wayfinding and accommodate high visitor traffic, multiple pairs of 90-minute, full-vision GPX Builders Series Temperature Rise are placed at the new entrances to Grand Central Terminal. These doors are equipped with electromagnetic hold opens during normal hours and then closed and secured through a card reader during off hours.

Finally, the cellar level systems feature SuperLite II-XL 120 low-iron in GPX Architectural Series Framing for the 2-hour glass walls.

All of the fire-rated glazing used for this project is proudly USA-made in SAFTI FIRST®'s world-class manufacturing facilities in Merced, California. They were expertly installed by W&W Glass LLC, one of New York City's premiere glazing contractors.

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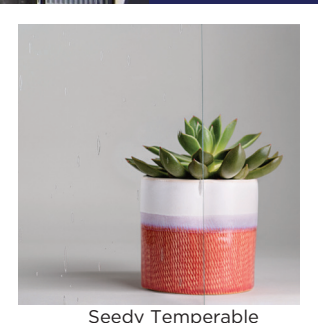




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# *AS TOP 50 GLAZIERS' SALES CLIMB, COMPANIES STRUGGLE AGAINST WORSENING INVESTMENT CONDITIONS*

BY NORAH DICK

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**T**op 50 Glaziers posted combined gross sales of \$4.07 billion this year. While that impressive figure seems to suggest a return of some markets, glaziers say it does not mean a return of labor, or a good sense of the future of building, largely due to how material price inflation and interest rates have tempered investment.

"Many projects are shelved or progressing very slowly until there is a better understanding of where interest rates are heading," says Thomas Cornellier, CEO, TSI Corp.

Interest rates compounded already-existing factors of getting material, in time, and keeping up with deadlines. "A big challenge in 2022 was the supply chain.

Prices skyrocketed, lead times were the longest we've seen in a long time and construction didn't slow down," says Hemely Homez, project manager, Eastern Glass & Aluminum "It felt like it was us versus the world trying to get back on our feet."

It goes without saying that labor, especially skilled labor, continues to be a significant challenge to growth. "Qualified and experienced glaziers are very hard to come by," says Kevin T. Miner, vice president, Countryside Glass & Mirror.

For more analysis of the market challenges that glaziers face, see pages 48-49. For data and analysis on the market segments glaziers are operating in, see pages 50-52, and to learn about business and geographic growth, see pages 46-47.

The Top 50 Glaziers industry ranking, now in its 31st year, can be found on pages 36-43. Companies are ranked according to gross sales in contract glazing for the North American market. If you think your company belongs on the list, please contact Norah Dick, senior editor, Glass Magazine. Beyond gross sales, Glass Magazine recognizes the excellent work of North American glaziers, nominated by their fabricator partners, who provided superior service in 2022. See testimonials about those companies on page 44.

Visit [glassmagazine.com](http://glassmagazine.com) to see additional standout projects from Top 50 Glaziers and to download the in-depth Top 50 Market Report.



# 01

[ THE LIST ]

**C**elebrating 31 years this year, Glass Magazine's Top 50 Glaziers List remains the longest-running glass industry ranking. Companies included on the List are asked to provide gross

sales information, and are ranked by that number. For companies that do not provide gross sales information, their listing reflects research by editorial staff.

If you think your company should be a Top 50 Glazier, please reach out to Norah

Dick, senior editor at Glass Magazine. It is only with the full cooperation of the glazing industry that we can continue to compile a comprehensive representation of leading industry glaziers.

**MORE THAN \$200 MILLION ↓**

**\$100 TO \$200 MILLION ↓**

1  
**Harmon Inc.**  
Bloomington, Minn.  
harmoninc.com  
15 regional office locations; 4 manufacturing locations  
Full-time employees and total employees: 1,025

3-4-5  
**Crown Corr Inc.**  
Gary, Ind.  
crowncorr.com  
5 additional locations  
Full-time employees: 99  
Total employees: 495

3-4-5  
**Benson/MiTek**  
Portland, Ore.  
bensonglobal.com  
9 additional locations  
Full-time employees: 500  
Total employees: 650

7  
**W&W Glass**  
Nanuet, N.Y.  
wwglass.com  
1 additional location  
Full-time employees and total employees: 200

2  
**Permasteelisa**  
Bloomfield, Conn.  
permasteelisagroup.com/  
America  
3 additional locations

3-4-5  
**Enclos Corp.**  
Eagan, Minn.  
enclos.com  
15 additional locations  
Full-time employees: 385  
Total employees: 400

6  
**Architectural Glass and Aluminum Co.**  
Livermore, Calif.  
aga-ca.com  
3 additional locations  
Full-time employees and total employees: 263

8  
**Binswanger Glass**  
Memphis, Tenn.  
binswangerglass.com  
45 additional locations  
Full-time employees and total employees: 610



Mission Glass provided systems and services to a new high-end office building in Kirkland, Washington. The project represents the first large-scale mass timber office development east of greater Seattle, say the glaziers, and employed dowel laminated timber for the structural columns and floor decking. Photo by Mychal Bohart, CM Focus.

**\$50 TO \$100  
MILLION ↓**

9

**Flynn Group of Companies**

Toronto, Ontario, Canada  
 flynncompanies.com  
 35 additional locations  
 Full-time employees and total employees: 6,000

11

**Massey's Plate Glass & Aluminum Inc**

Branford, Conn.  
 masseysglass.com  
 2 additional locations  
 Full-time employees: 225  
 Total employees: 275

13

**Karas & Karas**

Boston  
 karasglass.com  
 2 additional locations  
 Full-time employees and total employees: 200

15

**Pioneer Cladding & Glazing Systems**

Mason, Ohio  
 pioneerglazing.com  
 4 additional locations  
 Full-time employees: 201  
 Total employees: 250

10

**New Hudson Facades**

Linwood, Penn.  
 newhudsonfacades.com  
 5 additional locations  
 Full-time employees: 400  
 Total employees: 420

12

**Carey Glass**

Nenagh County, Ireland  
 careyglass.com  
 3 additional locations  
 Full-time employees: 600  
 Total employees: 650

14

**Dynamic Glass**

Houston  
 dynamicglass.com  
 3 additional locations  
 Full-time employees: 400  
 Total employees: 405

16

**Eastern Glass & Aluminum Inc.**

Norcross, Ga.  
 buildega.com  
 2 additional locations  
 Full-time and total employees: 125



The new student dorm for the University of South Carolina, "The Standard at Columbia," features systems from Oldcastle BuildingEnvelope and YKK AP America. Top 50 Glazier Eastern Glass Aluminum partnered with fabricator Clayco on the design, fabrication and installation of more than 1,000 openings.



---

19

**Yuanda USA Corp.**

Chicago  
yuandacn.com  
1 additional location  
Full-time employees: 12  
Total employees: 13

---

20

**Gualini Inc.**

Bergamo, Italy  
gualini-inc.com  
3 additional locations  
Full-time employees: 200  
Total employees: 220

---

21

**Momentum Glass**

Spring, Texas  
momentum-glass.com  
3 additional locations  
Full-time and total employees: 205

---

22

**seele Inc.**

Long Island City, N.Y.  
seele.com  
2 additional locations  
Full-time employees: 18  
Total employees: 106

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17

**Above All Store Fronts**

Hauppauge, N.Y.  
aboveallstorefronts.com  
3 additional locations  
Full-time and total employees: 190

---

18

**SPS Corp.**

Apex, N.C.  
spscorporation.com  
1 additional location  
Full-time and total employees: 84

---

23

**Glass Systems Inc.**

Atlanta  
glasssystems.biz  
2 additional locations  
Full-time employees: 125  
Total employees: 170



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[glasswerks.com](http://glasswerks.com)

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2323 Firestone Blvd.  
South Gate, CA 90280  
888 789-7810  
[glasswerks.com](http://glasswerks.com)

GLASSWERKS TEMECULA  
42005 Zevo Dr.  
Temecula CA, 92590  
800 729-1324  
[glasswerks.com](http://glasswerks.com)

AVALON GLASS AND MIRROR  
642 E. Alondra Blvd.  
Carson CA 90746  
Tel: 800 422-8806  
[avalonmirrorglass.com](http://avalonmirrorglass.com)

NORTHWESTERN IND. - AZ, INC.  
7595 E. 30th St.  
Yuma, AZ 85365  
206 285-3140  
[nwglass.com](http://nwglass.com)





The stylish facade of the newly renovated Rupp Arena, home to Lexington's Kentucky Wildcats, features Top 50 Glazier Anderson Aluminum's unitized curtain wall, which was installed by the glazier as well. Viracon supplied fabricated glass. Photo by Tim Arvin.

**\$30 TO \$50  
MILLION ↓**

24

**Roschmann Steel & Glass  
Constructions Inc.**

New Haven, Conn.  
roschmann.group  
2 additional locations  
Full-time employees: 30  
Total employees: 35

25

**Giroux Glass Inc.**

Los Angeles  
girouxglass.com  
5 additional locations  
Full-time employees: 272  
Total employees: 277

26

**The Glass Guru  
Enterprises Inc.**

Plano, Texas  
theglassguru.com  
80 additional locations  
Full-time employees: 400  
Total employees: 500

27

**8G Solutions**

Riverside, Mo.  
8g-solutions.com  
3 additional locations  
Full-time and total employ-  
ees: 120

28

**Countryside Glass and  
Mirror**

St. Petersburg, Fla.  
countrysideglassandmirror.  
com  
1 additional location  
Full-time employees: 130  
Total employees: 140

29

**Glass Solutions Inc.**

Itasca, Ill.  
gsichicago.com  
1 additional location  
Full-time employees: 100  
Total employees: 135

30-31

**Cherry Hill Glass Co.**

Branford, Conn.  
cherryhillglass.com  
Full-time employees: 150  
Total employees: 165

30-31

**Architectural Wall  
Systems**

Des Moines, Iowa  
archwall.com  
1 additional location  
Full-time employees: 100  
Total employees: 110

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Top 50 Glazier SPS Corp. installed curtain wall and vertical sunshades at 301 Hillsborough, a mixed-use building located in the downtown of Raleigh, North Carolina. Photo by SPS Corp.

**\$15 TO \$30  
MILLION ↓**

---

37-38

**Key Glass Inc.**

Bradenton, Fla.  
keyglass.com  
1 additional location  
Full-time employees: 48  
Total employees: 52

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39

**Sharp Glass**

San Antonio, Texas  
sharpglass.com  
Full-time and total employees: 85

---

40

**Hall Aluminum Products Inc.**

Fort Wayne, Ind.  
hallaluminum.com  
2 additional locations  
Full-time employees: 35  
Total employees: 50

---

32

**Alexander Metals Inc.**

Nashville  
alexandermetalsinc.com  
1 additional location  
Full-time employees: 60  
Total employees: 120

---

34

**Desa Glass**

Calgary, Alberta, Canada  
desa.ca  
1 additional location  
Full-time employees: 120  
Total employees: 150

---

36

**National Enclosure Co.**

Ypsilanti, Mich.  
nationalenclosure.com  
3 additional locations  
Full-time employees: 40  
Total employees: 100

---

41-42

**Anderson Aluminum Corp.**

Columbus, Ohio  
andersoncompanies.com  
1 additional location  
Full-time employees: 105  
Total employees: 140

---

33

**Denison Glass and Mirror**

Denison, Texas  
denisonglass.com  
1 additional location  
Full-time employees: 110  
Total employees: 112

---

35

**TSI Corp.**

Upper Marlboro, Md.  
tsicorporations.com  
1 additional location  
Full-time employees: 102  
Total employees: 104

---

37-38

**Aragon**

Montclair, Calif.  
aragonconstruction.com  
1 additional location  
Full-time employees: 65  
Total employees: 100

---

41-42

**Mission Glass**

Tumwater, Wash.  
mission-glass.com  
1 additional location  
Full-time employees: 60  
Total employees: 100

43

**Dallas Glass**

Salem, Ore.  
dallasglass.net  
1 additional location  
Full-time and total employees: 82

45

**Egan Co./InterClad**

Champlin, Minn.  
eganco.com  
1 additional location  
Full-time and total employees: 75

47

**U.S. Glass & Aluminum Inc.**

Pittsburg, Calif.  
us-glass.com  
3 additional locations  
Full-time employees: 65  
Total employees: 75

49

**Aurora Glazing Solutions**

Langley, British Columbia, Canada  
auroraglazing.com  
1 additional location  
Full-time employees: 68  
Total employees: 80

44

**Pacific Glazing Contractors**

Hollister, Calif.  
pacificglazing.com  
3 additional locations  
Full-time and total employees: 76

46

**AAC Glass Inc.**

Hayward, Calif.  
aacglassincsf.com  
1 additional location  
Full-time employees: 40  
Total employees: 60

48

**Brin Glass Co.**

Minneapolis, Minn.  
bringlass.com  
4 additional locations  
Full-time employees: 207  
Total employees: 215

50

**H.J. Martin and Son**

Green Bay, Wisc.  
hjmartin.com  
2 additional locations  
Full-time and total employees: 661

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# The Partners

Leading glazier companies come in all sizes. Glass Magazine continues to recognize the many glaziers who make our built environment a reality, whether or not they are on the industry ranking according to sales volume. We once again asked 2023 Top Glass Fabricators to nominate notable glazier partners they had worked with during the past year. Here are some of the companies they wanted to recognize.

## Lucent Glass Solutions

Marietta, Ga.

"[Children's Healthcare of Atlanta] was and still is a very big project and we have supplied over 1,000 Vistamatic units for this project. Lucent have made us feel part of the project ... and have soaked up the information we have passed on regarding installation, and the project has gone flawlessly." – Privacy Glass Solutions

## Royal Glass Co.

Santa Clara, Calif.

"The level of professionalism and communication is unparalleled. Working with Royal Glass ensures that projects will go smoothly." – Vitrum Glass Group

## Honorable mentions

### 8G Solutions

Riverside, Mo.

Nominated by Insulite Glass Co.

### Alumax Shower Enclosures

Magnolia, Ark.

Nominated by Over the Mountain Glass

### Andy's Glass and Mirror

Cincinnati, Ohio

Nominated by Glenny Glass

### BCI Construction USA

Belleville, Ill.

Nominated by Grupo Tecnovidrio

### Blomberg Windows

Sacramento, Calif.

Nominated by AGNORA

### Crystal Glass, Commercial Division

Edmonton, Alberta, Canada

Nominated by Can-Am Glass Products

### Glass Masters

Ketchum, Idaho

Nominated by TBM Inc.

### Karas and Karas Glass Co.

Boston

Nominated by Tecnoglass

### Infinium Wall Systems

Strongsville, Ohio

Nominated by Consolidated Glass Corp.

### MiTek/Benson Curtain Wall and Glass Divisions

Portland, Ore.

Nominated by Tvitec | Cricursa

### My Shower Door

Fort Myers, Fla.

Nominated by D3 Glass

### Modernfold

Greenfield, Ind.

Nominated by Custom Glass Products

### Roberts Glass Service

Indianapolis, Ind.

Nominated by Basco Shower Door

### Waltek Co.

Cincinnati, Ohio

Nominated by Standard Bent Glass

### W&W Glass

Nanuet, N.Y.

Nominated by sedak



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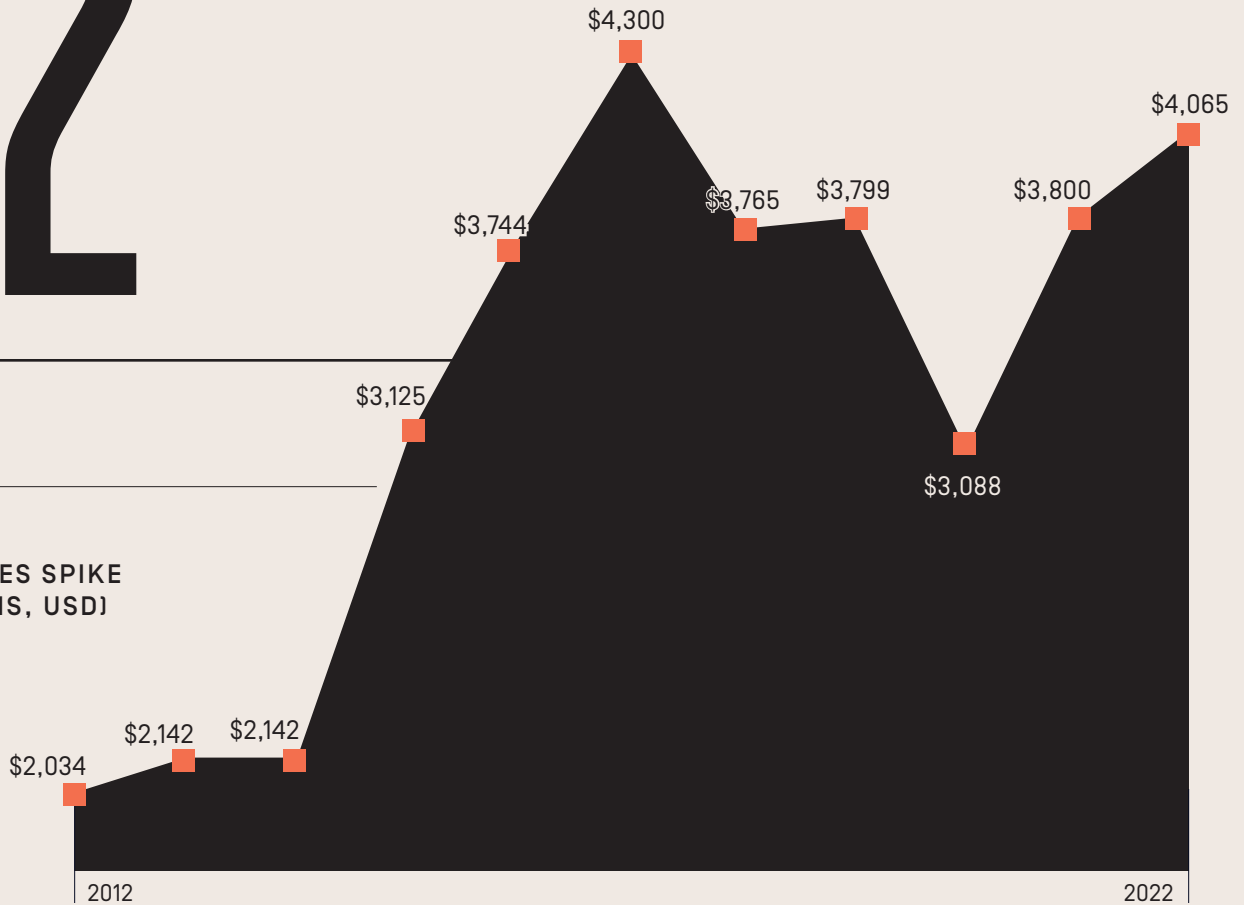


# 02

[ SALES + GROWTH ]

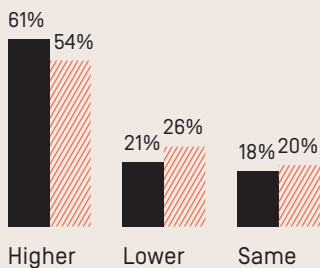
## Sales

TOTAL GROSS SALES SPIKE (IN MILLIONS, USD)

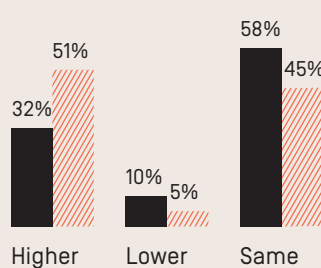


### GROSS SALES

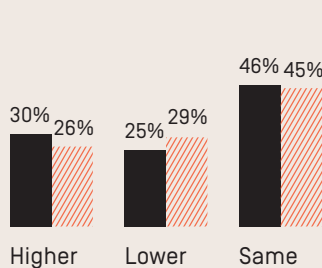
■ 2022 ▨ 2021



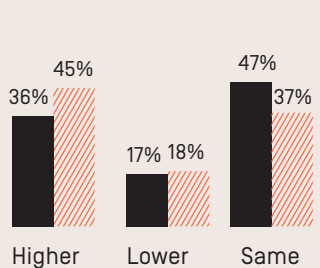
### COMPETITION FOR PROJECTS



### PROFIT MARGIN



### BID LEVELS



### Sales—and struggles—on the rise

Sales were higher in 2022, according to Top 50 survey respondents. Sixty-one percent of respondents said they had higher gross sales last year, as opposed to 54% in last year's survey. While respondents also report higher profits in 2022, fewer respondents said competition levels and bid levels had increased this last year. This may be due to the project delays or pauses that respondents also described.

"Many projects are shelved or progressing very slowly until there is a better understanding of where interest rates are heading," says Thomas Cornellier, CEO, TSI Corp. "Right now, interest rates are creating issues in the banking community, which in turn is affecting financing. That ultimately can hurt the financial models for new builds, and since there is no rush, many developers are choosing to wait a year or so until they have a better un-

derstanding of the economic environment."

### Southeast, West show growth

A plurality of last year's survey respondents predicted the Southeast would see growth in 2022. That region did see growth, but was surpassed by the Western market, according to respondents.

Nonetheless, responding glaziers again predict that the Southeast will see the most growth in the upcoming

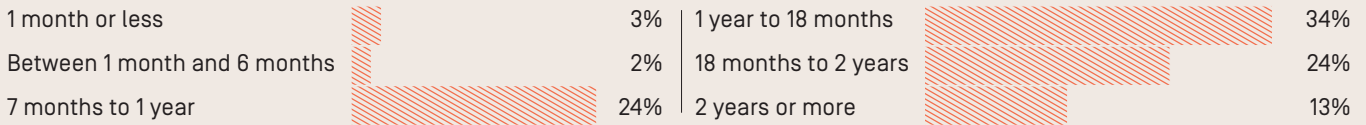
year. Several factors are affecting the expanding population in this region.

"This growth is due to a combination of great colleges and universities, great health care, and a large number of people migrating to this region for quality of life and cheaper standards of living," says TSI Corp.'s Cornellier.

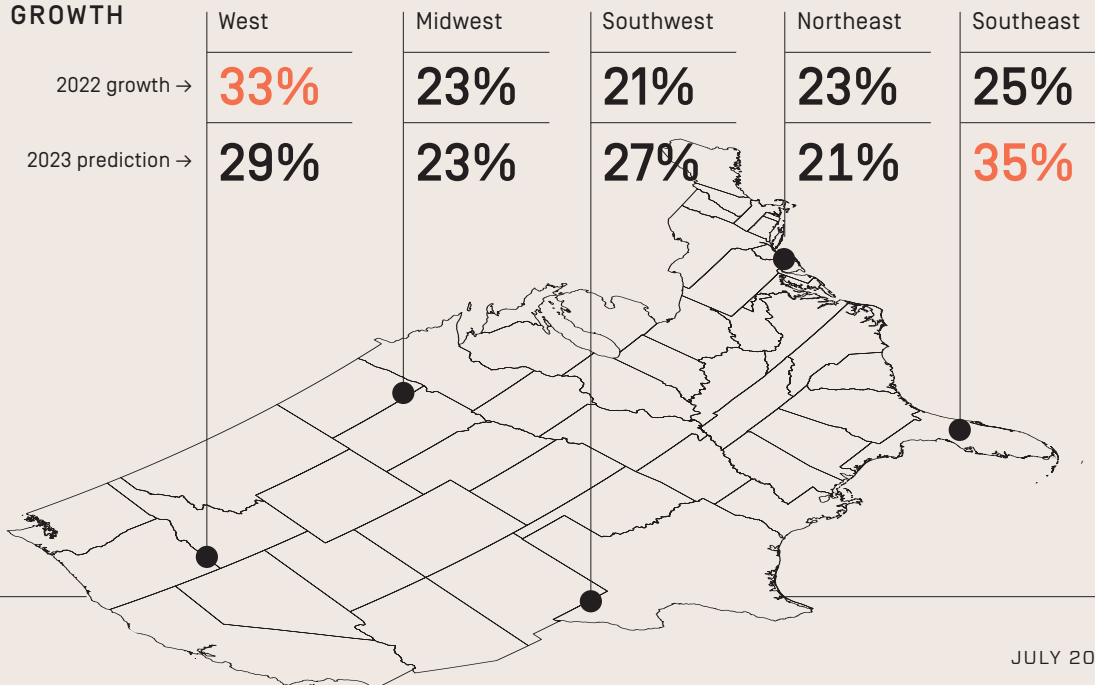
In the West, some respondents noted a rise in senior and low-income housing, and a strong health care market.

## Growth

### BACKLOGS REMAIN STEADY



### REGIONAL GROWTH

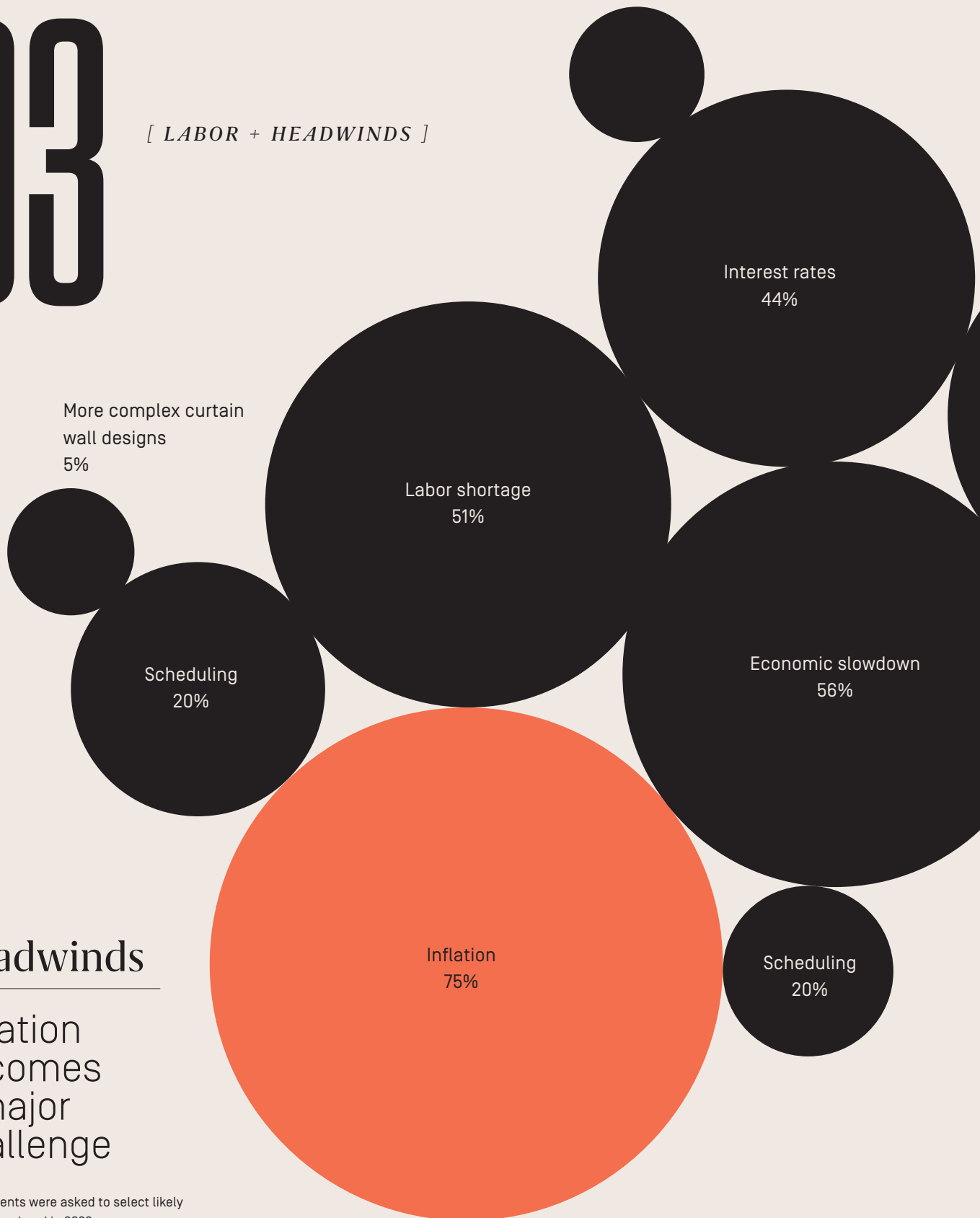




9%

# 03

[ LABOR + HEADWINDS ]



## Headwinds

Inflation becomes a major challenge

\*Respondents were asked to select likely challenges ahead in 2023



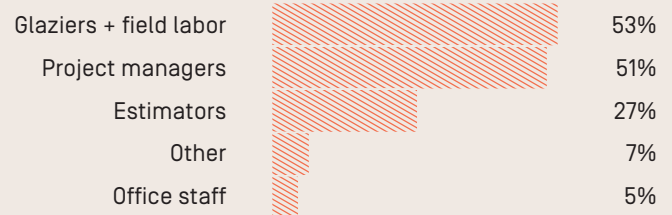
# Workforce

## MOST DIFFICULT LABOR CHALLENGE



## POSITIONS THAT WERE DIFFICULT TO FILL

\*Respondents were asked to check all that apply



### First inflation, now rising interest rates

Inflation replaced supply chain challenges as the major anticipated headwind for glaziers in 2023. Demonstrating the dramatic changes in the broader economic landscape, last year only 17% of respondents said an economic slowdown would be a challenge;

this year, 56% of respondents did. Some respondents directly linked interest rates to the potential for a slowing economy. "Interest rates ... will stall the economy if they keep increasing. This is one of the main contributing factors in my opinion for an economic downturn," says Michael Carew, North American sales

director, Carey Glass.

"We previously saw projects go on hold due to rising costs and material shortages, and now those same projects are still sitting because of rising interest rates and the concern of an economic slowdown," says Egan Co.'s Ryan Woodruff.

"Inflation continues to drive up the cost for our products and services," says Dan Frey, founder and president, The Glass Guru. Continued inflation, as well as increased interest rates, are also simply decreasing the amount of investment in building, glaziers say. "Banks aren't taking on as much risk, larger projects are harder to get off the ground," says Cassie Harker, CEO and COO, Pacific Glazing Contractors "There's also

this belief that construction material costs will decrease, so owners are delaying future builds."

### Supply chain delays remain

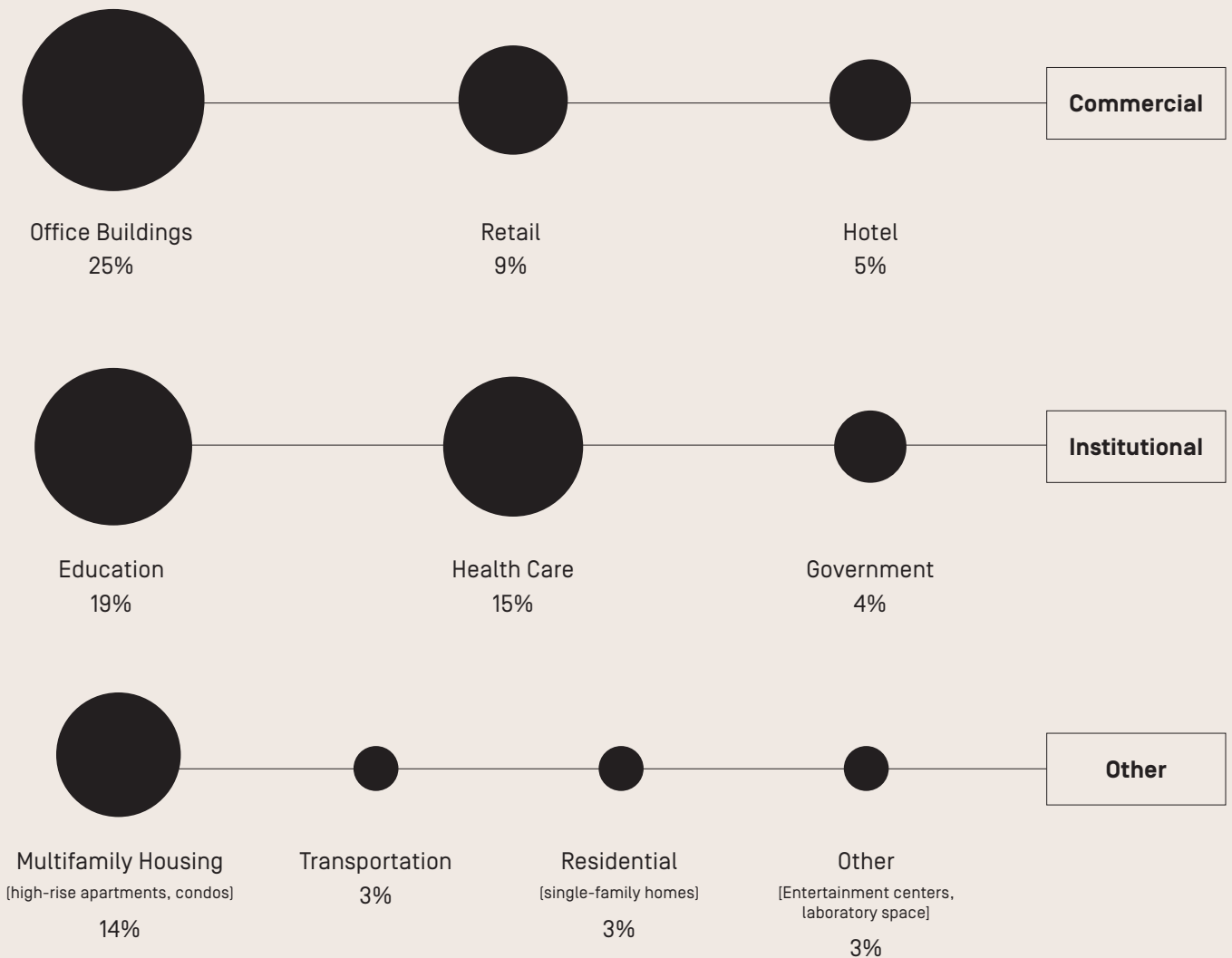
While supply chain woes may have lessened somewhat, they remain a significant issue to navigate for several companies. "A big challenge in 2022 was the supply chain," says Hemely Homez, project manager, Eastern Glass & Aluminum. "Prices skyrocketed, lead times were the longest we've seen in a long time and construction didn't slow down." Eastern Glass worked to include both contractors and vendors in conversations in order to mitigate these issues.



# 04

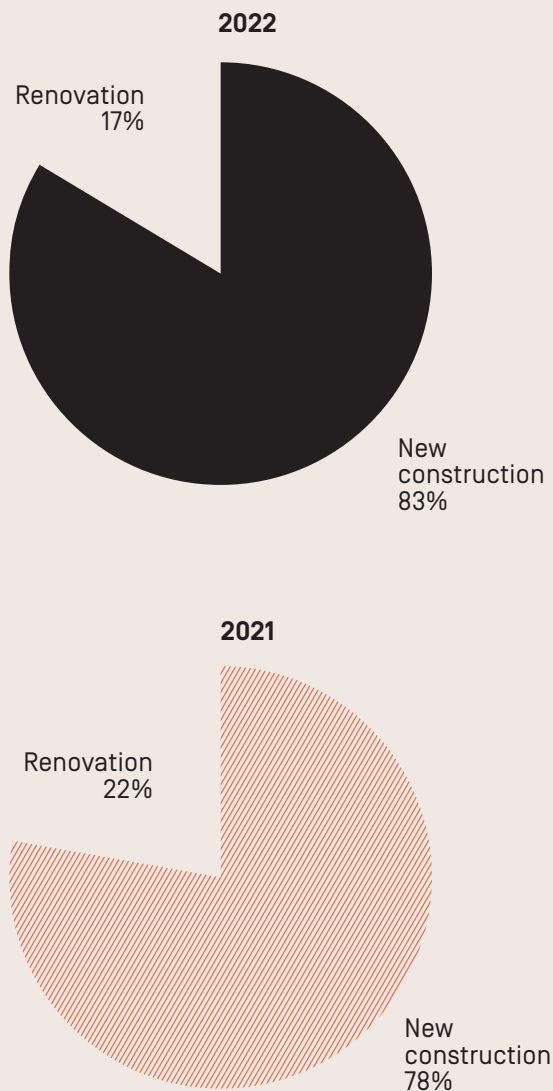
[ MARKET + SERVICES ]

## Project type by market



“We’ve seen the commercial office building sector slow down, with more companies having remote or hybrid workers.”

**NEW CONSTRUCTIONS STILL DOMINATES**



**Commercial building remains uncertain**

Institutional building saw an increase in 2022, according to Top 50 respondents. Commercial market growth remained relatively flat year over year, with office building construction falling by about 2 percentage points from the 2022 survey.

The future of the hybrid workplace remains a major reason for uncertainty about office building construction. “We’ve seen the commercial office building sector slow down, with more companies having remote or hybrid workers,” says Ryan Woodruff, vice president, Egan Co. “We’ve seen a fairly large increase in the health care sector as both hospitals and clinics are updating or creating new facilities.”

The economic slowdown has seen many tech-industry projects go on hold or be withdrawn altogether, causing the market to shift to other sectors of the industry.

**Glaziers invest in trucks, pre-fab**

In terms of production capabilities, more glaziers, 54%, reported fabricating curtain wall in-house this year. However, storage space and supply

chain remain obstacles to pre-fabrication, as does having adequate staff. “Labor is at an all-time low. Pre-fab is at an all-time high. The two don’t mix,” says Andrew C. Wright, vice president of operations, Glass Solutions Inc.

Similarly, many glaziers report increasing their logistical operations. Trucks became companies’ primary capital acquisition this last year, likely due to continued transportation issues and product transportation coming in-house. Fabrication equipment purchases remain a top capital acquisition as well, though slightly fewer glaziers report fabricating glass in-house this year.

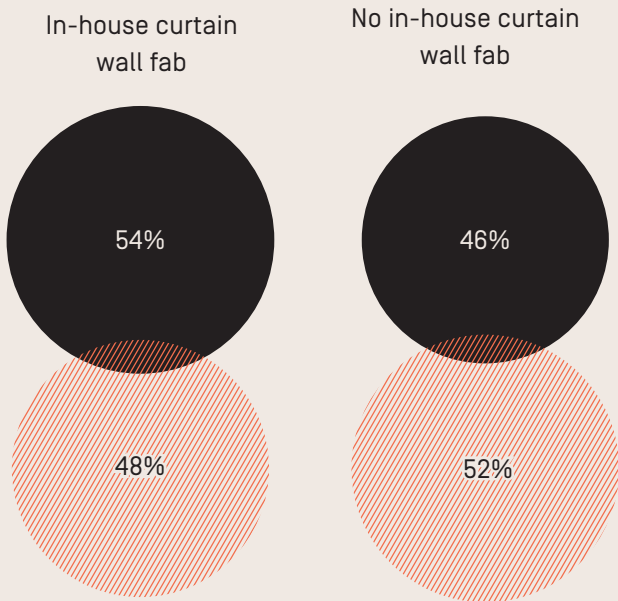
**Glaziers encounter more protective glazing**

The survey also asked about product trends. Seventy-two percent of responding glaziers say they encountered projects with protective glazing in 2022, a four-point year-over-year increase. Bird-friendly glass also saw a spike of almost 10 points year-over-year. Jumbo glass showed another expansion; 59% said they worked on projects with jumbo glass in last year’s report, leaping to 72% for this year’s report.

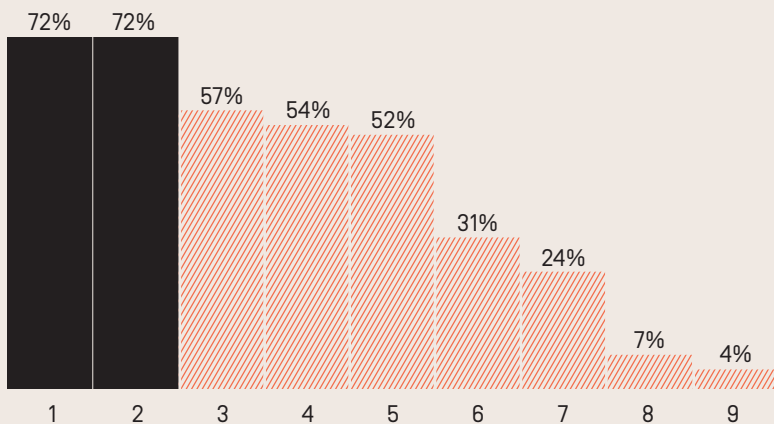


# Product mix

MORE GLAZIERS ARE DOING PRE-FAB ■ 2022 ▨ 2021



## SPECIALTY GLASS IN 2022



- 1. Ballistic or bullet-resistant glazing
- 2. Jumbo glass
- 3. Curved or bent glass
- 4. Bird-friendly glass
- 5. Electrochromics
- 6. Glass stair treads or floors
- 7. Other specialty glass\*
- 8. BIPV
- 9. VIG

[\*handrail, impact-resistant, fire-rated, mirror]

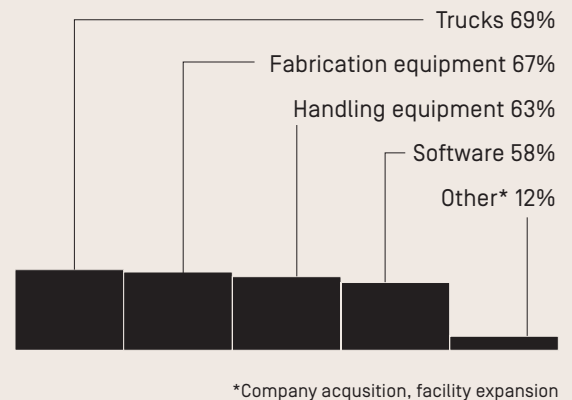
SLIGHTLY FEWER GLAZIERS FABRICATE GLASS

# Down 3%



## Investment

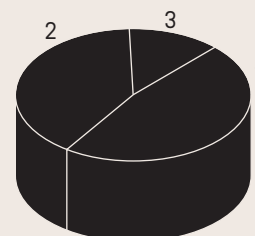
CAPITAL ACQUISITIONS FOCUSES ON TRANSPORTATION



\*Company acquisition, facility expansion

## 3D MODELING/BIM

1. Using 3D modeling 47%
2. Not using 3D modeling 40%
3. Not using the software, but planning to 13%



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# PROTECT WILDLIFE

Walker's Starphire Ultra-Clear glass used for the Tropical Rainforest Habitat at the National Aviary in Pittsburgh. The roof and lower wall panels with Walker Textures Velour finish on surface 1 and the upper wall panels with AviProtek pattern 214 on surface 1. Photo by Walker Glass.





THE GLASS  
INDUSTRY STEPS  
UP TO PROTECT  
ANIMALS WITH  
ARCHITECTURAL  
GLASS  
SOLUTIONS

BY TARA LUKASIK

J

Just as the use of glass in buildings can affect the overall well-being of people, glass and glazing provides the same benefits to animals, birds and reptiles. It protects wildlife by mitigating impact collisions, heat stress, habitat fragmentation, and light and noise pollution. It allows animals to maintain crucial circadian rhythms and physiological cycles. It also provides regulated climate and protection from disease. Glass creates a safe and non-claustrophobic barrier that allows animals to interact with their surroundings and humans to view and engage wildlife for education and research. From urban hubs and residential areas to zoos, aquariums and wildlife sanctuaries, glass enhances the welfare of animals. This article looks at the role of glass and glazing in protecting wildlife in three applications: bird-friendly glass, turtle glass and habitat enclosures.

WITH GLASS



# SAFETY IS FOR THE BIRDS

**B**irds have a fraught history with glass. Bird glass collision, also known as bird-window collision or bird strike, refers to instances when birds collide with glass surfaces, such as windows or glass curtain wall façades.

## THE CHALLENGE

Both clear and reflective glass pose problems for birds. Birds cannot perceive glass as a solid barrier. They may see a clear passage or a reflection of the surrounding environment, tricking them into thinking they're flying through trees or clouds and leading to fatal collisions.

Up to 988 million birds die annually in the U.S. alone due to collisions with buildings, including both residential and commercial structures, according to the U.S. Fish & Wildlife Service. The National Audubon Society says that number is much higher, citing as many as one billion bird deaths annually from building collisions.

## BIRD-FRIENDLY GLASS

Research on bird-glazing collision prevention has guided the development of bird-friendly architectural glass and building design, transforming clear and reflective glass into barriers that birds will see and avoid. Particularly important in urban areas or regions with high bird populations, bird-friendly glass employs various strategies to make the glass more visible to birds, including patterned or frosted glass, acid-etched glass, UV-reflective coatings, and films or coatings.



Birds begin to perceive buildings as objects to be avoided through distance between features or patterns on the glass. The denser the pattern the more effective it becomes in projecting itself as a solid object perceived by birds. Most bird-safe building code requirements use a 2 by 4 or a 2 by 2 rule—meaning patterns should be no more than 2 inches apart vertically and 4 inches apart horizontally, or 2 inches by 2 inches apart.

## LEGISLATING SAFETY

In North America, there are nearly 30 locations that have bird-safe building regulations, including New York City; Portland, Oregon; and San Francisco; the states of Illinois and Minnesota; and various Canadian cities such as Vancouver, Calgary and Toronto. By October of this year, bird-friendly glazing might be a requirement on specific buildings in Washington, D.C. While not a law, LEED

certification also provides guidelines for constructing bird-friendly buildings and includes credits for incorporating bird-collision deterrents into design and construction.

There are also moves for federal bird-safe legislation. The National Glass Association, as part of its advocacy efforts for safe and sustainable glass and glazing practices, supports the implementation of bird-friendly design strategies such as the Federal Bird Safe Buildings Act of 2021.

“As federal legislation is passed to require more bird-safe building materials, this market continues to grow,” says Tim McGee, sales manager, Glass Coatings & Concepts.

## INDUSTRY SOLUTIONS

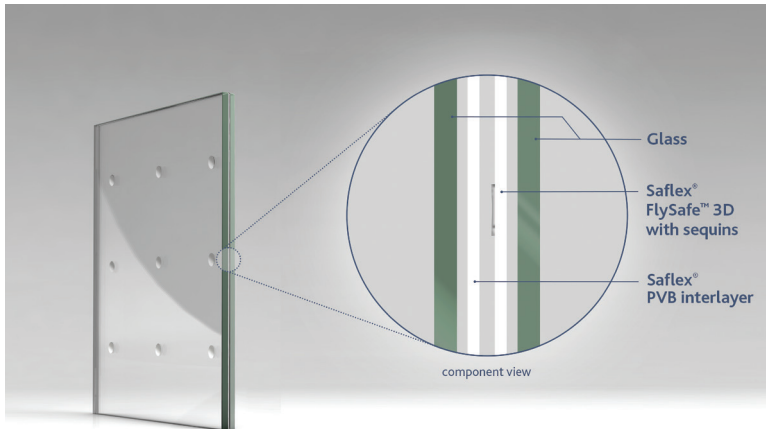
Over the last decade, interest in bird-friendly glass has grown among building industry professionals such as glass manufacturers, architects and



**Clockwise:** Sedgwick County Zoo in Wichita, Kansas, features Guardian Bird1st Etch glass. Photo by Gavin Peters Photography.

Depiction of bird-friendly glass. Photo by Glass Coatings & Concepts.

Eastman's sequin-based Saflex FlySafe 3D PVB interlayer helps prevent birds from colliding into glass. Image by Eastman.



developers. Many glass companies have stepped forward in the last few years with products designed to prevent bird collisions. Today, there are many products tested and marketed as bird-safe.

The glazing industry offers “innovative new products to help prevent birds from colliding into glass,” says Priya Kalsi, global segment market manager, Eastman. “As technologies work to make glass noticeable to birds without obscuring or distorting views through glass, and as humans visualize and use the material, more bird-friendly cities are likely to be on the horizon.”

McGee adds, “Our solution needed to be two-fold: develop a product that would deter bird collisions and engineered to meet durability requirements while exposed to external elements and various climate conditions.”

Glass and glazing products such as etch, frit, film, decals, fenestration patterns of vertical and horizontal

mullions, decorative grilles and louvers, artwork, and ultraviolet patterns can help minimize bird-related injuries by creating visual markers. Additionally, strategies to mute reflections, such as angled glass, awnings and overhangs, sunshades, screens, grills or mesh, shutters, louvers, and window film, are essential in glass facade design.

“As awareness grows around the impact of window collisions on birds, building owners interested in environmental stewardship demand more bird-friendly approaches—as do governments at multiple levels,” says Jacob Kasbrick, director of commercial segment and technical services, Guardian Glass North America. “With different priorities, geographic considerations and legal requirements, every bird-friendly architectural project is unique. Designing for bird safety in conjunction with other project goals and constraints can be a challenge.”

### Task group member companies who contributed to NGA's bird-friendly resources:

3M	Intertek
Agnora	Kuraray America
Alliance Glazing	Madico
Cardinal	Manko Windows
Dip-Tech a Ferro Company	McGrory Glass
Eastman Chemical Company	Oldcastle BuildingEnvelope
Fusion Ceramics	Pilkington North America
Glas-Pro	Thompson Innovative Glass
Glass Coatings and Concepts	Tristar
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ICD High Performance Coatings	Vitrum Glass
	Walker Glass



### LEARN MORE ON BIRD-FRIENDLY GLASS AND GLAZING DESIGN STRATEGIES



**Bird-Friendly Glass Design Strategies**  
(FB35-12)



**Best Practices for Bird-Friendly Glazing Design Guide**



**Laminated Glazing Reference Manual**





**Left:** Beachfront home in Florida featuring turtle glass. **Above:** Hatchling baby loggerhead sea turtles climb out of their nest and make their way to the ocean at dusk on Clam Pass Beach in Naples, Florida.

# SAFE PATHS FOR SEA TURTLES

**A**s highly migratory animals, sea turtles rely on specific habitats throughout their life cycle, especially where it involves coming onshore to nest and lay eggs. They can be affected by glazing and window glass near coastal areas or beachfront properties, which interferes with the natural light they use for navigation and can disorient hatchlings, causing them to move away from nests and become prey to predators. This habitat fragmentation also disrupts their migration patterns.

## THE CHALLENGE

The increasing use of glass flood walls, widespread near coastal residential buildings as a protective barrier that allows unobstructed water views, also threaten sea turtles. The turtles often mistake these glass barriers for open water, fatally hitting the glass as they attempt to swim through it or become trapped between it and the water's surface. Many Southeast and Gulf Coast states are turning to impact-resistant and floodproof glass sea walls to com-

bat the threat of sea level rise in coastal areas, which may affect the Loggerhead, Green and endangered Kemp's Ridley sea turtles.

## SEA TURTLE GLASS

Many coastal residents install "turtle glass" on oceanfront windows, door openings, and other transparent surfaces on buildings near nesting beaches. Treated with a special greenish coating, turtle glass protects sea turtles and their nesting habitats. It limits reflective glare from outside sources and the amount of light transmitted through the glass from the interior.

Turtle glass may incorporate low-reflectivity, UV protection, and darkened or tinted glass to minimize visual distractions. The glass also affects visible light transmittance, or VLT, the amount of visible light that can pass through the glass.

## LEGISLATING SAFETY

In the U.S., all sea turtles are protected under the Endangered Species Act and



## LEARN MORE ON COASTAL GLAZING AND SEA TURTLES



**Coastal Glazing and  
the Turtle Codes**  
(FB36-12)



**Laminated Glazing  
Reference Manual**

Marine Turtle Conservation Act. The first in the nation, Florida's Marine Turtle Protection Act and the Florida Building Codes mandate that oceanfront property use turtle glass or dark gray tinted glass on openings facing the water. Colloquially known as "turtle codes," they are the state regulations pertaining to sea turtle



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conservation and protection of habitats and nesting areas. These codes specify a VLT of 45% or less in new construction. Many tinted, low-emissivity and reflective coated glasses meet this VLT requirement and missile-impact glass that complies with the state's building code requirements for windborne debris protection can also be constructed with these products.

While 70% of the nation's sea turtle nesting occurs on Florida beaches, several state coastlines are habitats for sea turtles, including California, Delaware, Georgia, Hawaii, Maryland, North Carolina, New Jersey, New York, South Carolina, Texas and Virginia. Several have implemented or are considering turtle codes or regulations. Last year, South Carolina Rep. Greg Hembree introduced amendments to the Sea Turtle Protection Act that states beachfront homeowners should use tinted or filmed glass on ocean-facing windows above the first floor of a multistory structure.

#### INDUSTRY SOLUTIONS

Various wildlife conservation agencies, environmental groups and researchers have been collaborating with industry associations to develop strategies and guidelines to mitigate the impacts of glass on sea turtles and develop turtle-friendly glass and glazing practices.

For two years, the Fenestration and Glazing Industry Alliance has worked with Florida Fish and Wildlife Commission representatives to better understand what sea turtle hatchlings see at night through glass used in windows and doors. The FWC conducted research with Florida sea turtle hatchlings in the summer of 2022 using glazing samples in a wide range of visible transmittance levels. FGIA members donated the glazing samples FWC used in the independent study. The first-of-its-kind research will help inform FWC's future recommendations for suggested VT levels in glazing in Florida coastal areas.

"FGIA and its members are working with the FWC and others to help consider options that benefit the needs of sea turtle hatchlings and people," says Kathy Krafka Harkema, U.S. technical operations director, FGIA.



## WILDLIFE HABITATS

**R**enovating wildlife habitats and enclosures using glass and glazing can help protect animals and provide them with suitable living conditions. Glass glazing offers several benefits regarding animal welfare, visitor experience and conservation efforts.

Glass glazing can provide a transparent, noise-reduced barrier that ensures the safety and comfort of wildlife within their habitats, allowing visitors to observe and appreciate the animals without stress. Glass can also help create a controlled environment within enclosures, allowing for better temperature, humidity and ventilation regulation. Properly designed glass

glazing enables natural daylight to enter the enclosures and filters out harmful ultraviolet radiation. And glass surfaces are generally easier to clean and maintain, ensuring a hygienic environment and reducing the risk of diseases and infections.

#### WILDLIFE GLASS

NGA's GANA Glazing Manual, IYOG Edition, includes information on special glass applications for viewing windows in large aquariums and animal enclosures. In short:

**Animal enclosure windows** consider the applied force—weight, impact velocity, glass rigidity and support cushioning—of animal impacts on the



**Clockwise:** Glass allows visitors to observe and appreciate wildlife without disturbing or stressing the animals.

The Woodland Park Zoo in Seattle, Washington, retrofitted the glass roof of its Komodo dragon exhibit with 13 Solatube SkyVault M74 Tubular Daylighting Devices to add natural light to the exhibit without compromising the reptile's strict climate conditions. Photo by Solatube.

SentryGlas laminated glass windows by Kuraray America are used in the 132,000-gallon underwater hippopotamus observation tank at the Bioparque Ukumari nature complex in Colombia. The glass used had to be strong enough to support the weight of 1,342 tons of water. Photo by Kuraray America.





## LEARN MORE ON AQUARIUM VIEW AND ANIMAL ENCLOSURE WINDOWS



NGA's GANA Glazing  
Manual, IYOG Edition

glass. Calculating the required glass to withstand this force involves estimating the animal's deceleration, which determines the applied force and can be four or five times its weight for highly active animals. Glass selection should consider potential breakage from impact, mechanical and thermal stresses, and inclusions. Typically, a proper design involves laminating at least two plies of tempered glass, with the safety factor influenced by the threat to people. Thicker laminates may be needed for butt-glazed applications to decrease the deflection of direct animal contact.

**Aquarium view windows** require a different design approach than windows in buildings subjected to wind loads. The continuous, long-term loading and greater magnitude of water pressure, as well as factors like marine animal weight and impact, make standard glass thickness charts and uniform load-based design procedures inadequate for aquariums. Safety considerations, including impact, mechanical and thermal stresses, and some inclusions,

necessitate using laminated glass to prevent complete failure.

### INDUSTRY SOLUTIONS

Many glass companies specialize in enclosures for zoos, including Cristacurva with its curved and tempered glass products for animal habitats, Oldcastle BuildingEnvelope and Pilkington's specialty enclosure glass, Vitro Architectural Glass' energy-efficient options, and Agnora Architectural Glass, Kuraray America, Isoclima Specialty Glass and Solatube products.

"We love working with zoos and helping to install the right glass constructions for their spaces. We've provided glass for bears, tigers, leopards, chimpanzees and many other exhibits in the U.S.," says Trent Thiry, vice president of sales and marketing, Isoclima Specialty Glass. "For us, it is all about safety and design; maximizing the interaction that the animals have with the environment and allowing the visitors to interact with the animals safely. Glass allows a more natural design appearance to the environment." ■

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**Left:** Innovative Inowa hardware technology creates smooth functionality for a sliding patio door up to 12 feet tall, 6 feet wide and 800 pounds. **Above:** The Roto PS Aintree product range includes parallel stainless-steel stays and accessories for outward-opening aluminum windows.

## MAXIMIZING RESOURCES THROUGH INNOVATION

HOW ROTO IS DELIVERING HARDWARE SOLUTIONS FOR A NEW AGE OF INNOVATION

BY TARA LUKASIK  
MANAGING EDITOR

In manufacturing environments, continuous improvement is vital to efficiency, quality and profitability. While the economic landscape of the past year has remained tumultuous with increased raw material prices and stubborn supply chain challenges, companies that continue to prioritize customer service and growth while trailblazing innovation have the best odds of success and growth.

Roto Frank is becoming synonymous for innovative, tailored and reliable hardware systems that create added value for windows and doors. In addition to focusing on digitalization within its own company, Roto is actively helping its customers increase their efficiency using digital processes and automation.

In May, I sat down with Dan Gray, director of sales for Roto North America, to clarify Roto's involvement in the North American market, its domestic manufacturing strategy and investment in infrastructure to increase production. We also discussed window and door trends, developments in multi-use, and hardware solutions to keep pace with the market trends. And we chatted about Roto delivering innovative hardware programs, incorporating automation, and utilizing digitalization to help fabricators stay ahead and proactively prepare for the future.

**Let's start by talking through Roto's domestic manufacturing. Can you provide us with insights on your North American operations?**

Founded in 1935, Roto Frank is headquartered in Leinfelden-Echterdingen, Germany, and is the global market leader for Tilt&Turn hardware. With two manufacturing plants in North America—Roto Frank of America Inc. in Chester, Connecticut, and Roto Fasco Canada Inc. in Mississauga, Ontario, Canada—we provide a vast portfolio of North American and European-style products.

In addition to stocking European-style hardware manufactured in several Roto plants worldwide, local manufacturing competencies in North America are a strategic advantage. We combine zinc die cast, powder coat painting, advanced laser-cutting technology, metal stamping, and injection molding to manufacture an array of hardware products for Casement & Awning windows, Sliding Patio Doors, and Hung windows. This allows us to provide consistent and reliable product quality and delivery performance to customers throughout North America.

**How does Roto's domestic manufacturing strategy contribute to ensuring a reliable and efficient supply chain for your products?**

Local manufacturing helps ensure

our hardware upholds our high-quality and exceptional performance standards, which is especially important to our customers. Controlling the manufacturing process allows for a more consistent and efficient inventory and delivery program.

Over the past five years, Roto North America has invested heavily in infrastructure (including equipment, space and personnel) to increase production capacity and ensure impressive delivery service.

**Let's talk trends. Can you describe the role of automation, innovation and smart technologies in the built environment?**

Technological advancements have increasingly permeated our daily lives. Homeowners expect, if not demand, that windows and doors keep pace. Whether single-family dwellings or multi-family high-rise buildings, there is a clear trend towards larger windows and doors, contemporary designs and colors, user-friendly opening and closing mechanisms, and energy efficiency.

**What is trending within the multi-use and multi-family segment?**

This is a fast-growing segment. In many communities, costs are high and living space is relatively small; products that make the most of limited space are desirable. In urban areas, buildings can span 30-plus floors, creating a focus on energy performance due to high wind conditions. In addition, small decks or balconies require doors that provide superior energy performance without compromising floor space.

At Roto, we're developing hardware solutions to keep pace with these market trends. The Roto Patio Inowa hardware system for sliding doors and windows allows manufacturers to build larger and heavier openings, achieve sound abatement results, create energy-saving performance, and deliver

low operational forces for the end user. In addition, Roto is partnering with companies, such as Autoslide, who produce automation technologies to enhance the homeowners' experience.

**Regarding technology, what specific needs and requirements do your customers have?**

Customers rely on their hardware suppliers to provide technical solutions that give them a competitive advantage in the market. Keeping pace with market trends is key at Roto; we deliver innovative hardware programs, some of which have optional automation.

Digitalization has become, and will remain, vital in our industry. We've developed a digital interface, Roto City, to allow customers to view the hardware features and benefits of window and door applications.

**What should customers know about incorporating innovations and implementing Roto's solutions into their processes?**

Collaboration between fabricators and hardware suppliers is critical in the initial stages of an innovative design/development project. As Roto grows in the light commercial aluminum market, we aim to share our existing portfolio and encourage enhancements and applications of hardware to suit the requirements of individual fabricators.

As technology continues to advance, embrace it. If the needed expertise is unavailable in-house, partner with companies that can incorporate technological advancement (automation, a new glazing pack, etc.) into the window and door platform. ■





# PRODUCTS

## SOLUTION: NEW DECORATIVE GLASS DESIGNS

GGI continues to expand its specialty glass offering by introducing a range of new textured patterned glass designs. The ultra-transparent designs include Reeded, Micro Ribbed, Stream Ribbed, Flemish and Stylos S; each offering a distinct and virtually colorless aesthetic and level of privacy. Additionally, Seedy Clear is now available as a temperable option for safety glazing applications.

While textured patterned glass, also known as “obscure glass,” has been available for years, it continues to trend upward in both commercial and residential design applications.

**Privacy and daylighting.** GGI’s textured pattern glass designs give building occupants the open-concept aesthetic desired without compromising privacy or daylighting. With up to 90% visible light transmission, this makes the glass ideal for doors, windows,

### KEY FEATURES

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CLEAR AND LOW IRON OPTIONS

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EASY TO STORE, CUT AND FABRICATE



partitions and more. Low-iron options are particularly sought-after, as they offer a colorless edge for shower enclosures and truer color rendering when viewing through glass, such as for cabinetry or furniture inlays.

**Linear and nature-inspired designs.** When it comes to patterns, the growing demand for biophilic design and the ever-popular industrial look means that linear and nature-inspired glass textures are in high demand.

GGI’s decorative glass designs come in clear and low iron options and offer varying levels of translucency and are easy to store, cut and fabricate. Textured patterned glass is available in different sizes and thicknesses, ranging from  $\frac{5}{32}$  inch to  $\frac{3}{8}$  inch. Other options are available for order.

**Ease of access.** GGI simplifies the purchasing process for specialty glass customers and fabricators by offering

the ease of ordering mixed loads. Buyers can promptly obtain the exact materials they require without being forced to purchase entire containers or truckloads of a single product. The loads can be tailored to their unique needs, combining textured patterns, float glass, laminated, satin-etched and other options in one shipment.

GGI decorative glass solutions are an excellent choice for customers who want to create unique and beautiful architectural and interior designs. Learn more at [generalglass.com](http://generalglass.com). ■

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01



02



03

### 01. Bird-friendly glass

Silverstar BirdProtect and BirdProtect Saflex FlySafe 3D bird protection glass reduce the number of bird strikes while satisfying planners' aesthetic requirements for their façade designs, say Glas Trosch officials. The BirdProtect Saflex FlySafe PVB film for laminated safety glass features three-dimensional reflective sequins, which create a sparkling effect that helps birds recognize the glass as an obstacle. Less than 1% of the glass is covered by the pattern, providing an almost unrestricted view.

+{41} 6295-8539-5 | GLASTROESCH.COM/EN

### 02. Glass divider

The Sanco Divide Easy all-in-one glass partition system was designed to be easily assembled. Its refined profiles and invisible seals produce an all-glass look, say officials, and also feature hinge-less door leaves; door frames that sit flush with the surrounding surface or are made with a shadow groove and integrated lock bodies. The lack of a closing edge is designed to eliminate the risk of accidents due to jamming.

+{49} 0-731-4096-147 | SANCO.DE

### 03. Thermally broken entrance series

The Transcend Series by Dawson Metal features thermally broken technology that prevents deterioration caused by condensation. Its efficiency for water infiltration is zero leakage at a 1.0-pound-per-square-foot pressure differential at over 300 gallons per hour. The series offers a fully glazed door and frame using 1-inch low-emissivity insulating glass. Its construction aids building performance and its fully assembled construction is designed to save time on installation.

716/664-3811 | DAWSONMETAL.COM



## PRODUCTS



01

02



03



### 01. Entrance system

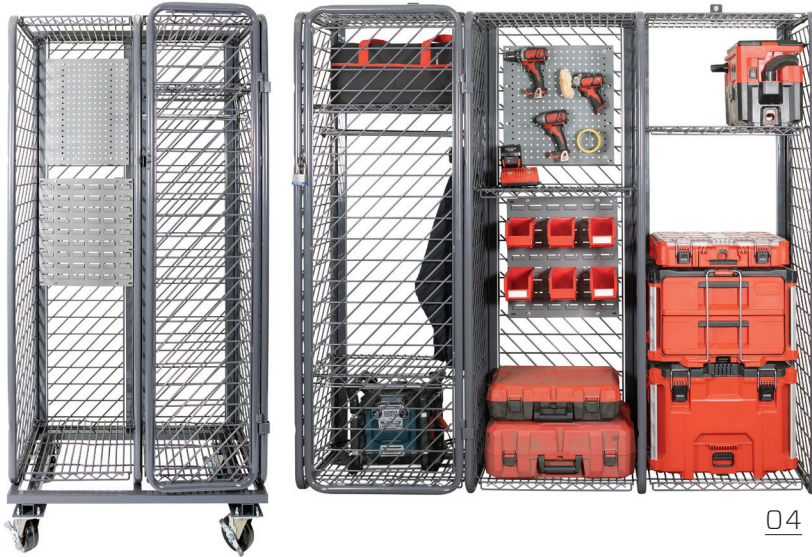
YKK AP America's T Series Entrance Systems are designed to provide a clean aesthetic with a narrow sightline. The family of T Series Entrance Systems is composed of three entrances: the 25T (narrow), 35T (medium) and 50T (wide). Each entrance features several options, including: 2-inch door leaf thickness; 10-inch bottom rails with seven various options for mid-rails; 1-inch insulating glass unit standard; up to 1-¼-inch available; and mill-free transom kits. 678/838-6000 | YKKAP.COM

### 02. Door system

The DRX Modular Door Rail System by C.R. Laurence is designed to give glazing contractors greater control over when, where and how door rails are installed, adjusted and updated. Independent side covers and end caps can be installed or replaced without removing the door from the pivot. Rail bodies can be moved along the glass to accommodate standard or custom door lengths, so they can be stocked to ease lead times for installing custom glass doors. 800/421-6144 | CRLAURENCE.COM

### 03. Cooling gear

Cooling gear from Magid Cool Powered by Mission aims to help prevent heat stress and other heat-related health issues on the jobsite. The line includes a portable cooling towel, neck gaiter, skull cap and bandana that can be activated in under 60 seconds with just water, as well as a safety skull cap with a neck nape, a sun defender hat with a neck nape, a hi-vis t-shirt, a flame-resistant cooling towel and an FR neck gaiter. 800/867-1083 | MAGIDGLOVE.COM



04



05

#### 04. Tool storage system

With the Groves tool storage system, tools, accessories and other small items can be stored in one secure location. Engineered with robust, welded steel construction and powder coated, this heavy-duty system combines durability and security with functionality and organization. Users can customize the system using additional shelves, optional metal peg boards and metal-louvered panels as well as a security door and security shelf.

800/991-2120 | GROVESGLASSANDSTONE.COM

#### 05. Work light

The Reliable Uberlight by KBC Tools is a solution to light up a work area with up to 600 lumens and three-color settings: warm white, natural white or ultra bright. This allows each machinist, tool and die maker, CNC operator or fabricator to choose the combination that works best for them. The light comes in black or white and has three styles, with a convenient clamp mount for any machinery or worktable.

800/521-1740 | KBCTOOLS.COM



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### BENT

Go to category BENT GLASS

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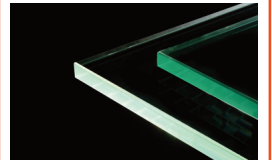
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

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

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Glasswerks	39	888/789-7810	glasswerks.com
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MAGID	19	800/444-8030	magidglove.com/glass-mag
MarketPro Point of Sale Solutions	74	888/616-3706	marketpropos.com
McKeegan Equipment & Supply	78	734/459-5870	mckeeganequip.com
Mueller Technologies AG	80	905/427-3400	muller.ch
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Rockwell Security	72	510/270-5633	rockwellsecurityinc.com
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Companies from all parts of the glass and glazing industry have implemented innovative, out-of-the-box ideas to improve business from the ground up. Here's an Idea showcases these sometimes small behind-the-scenes ideas that can make a big impact on a company's bottom line. If you have an idea that you would like to share, contact [Norah Dick, ndick@glass.org](mailto:Norah Dick, ndick@glass.org).



## USING PV INSTALLATIONS TO ACHIEVE GREEN GOALS

Above: Sedak's extended photovoltaic installation. Right: Sedak provides free use of bicycles for its employees.

The Inflation Reduction Act, signed by the Biden administration, incentivizes greener products and manufacturing practices. As a result, more companies are looking for ways to support their green initiatives, which often include goals such as carbon neutrality, reducing waste and finding energy alternatives, among others.

Sedak, a Germany-based glass manufacturer, has been using photovoltaic, or PV, installations to reach its environmental goals. By extending its PV system in February, most of sedak's electricity requirements at its Gersthofen location are covered by solar power. Photovoltaic technologies, more commonly known as solar panels, generate power using devices that absorb energy from sunlight and convert it into electrical energy through semiconducting materials, according to the U.S. Department of Energy.

### How PV works

As a specialist in oversized glass, sedak has set several targets for 2023

to take steps towards even more environmentally friendly production, like creating sustainable energy. With the extension of the PV system, sedak can now cover around 80% of the electricity requirement using regenerative energies, and 100% of the sustainable energy will be used within the company.

### Sedak's PV installation

"It started in 2021 with the installation of our first photovoltaic system (1,250 quadratmeters) on the roof of our production hall in Gersthofen, Germany. Today, 788 panels generate 260,000 kilowatt hours of solar electricity.

The recent installation provides an additional 1,400,000 kWh per year of solar power. In total, there are more than 4,000 modules with an area of approximately 86,200 square feet," says Verena Simon, sedak marketing manager. "Additional installations are planned for smaller buildings, such as in our storage area."

"With its recycling quota of more than 90% (meaning 90% of it can be recycled), glass is a particularly resource-saving building material. But the energy balance of its manufacture leaves a lot of room for improvement as it is energy intensive. Further measures are planned at sedak and PV is one contribution towards a greener production," says Simon.

### Other green measures

In addition to the PV extension, sedak supports a range of measures from free use of bicycles for employees to economical energy management in the offices and consistent recycling: up to 94% of the total waste materials are sorted and recycled. Around 95% of the waste from polyvinyl butyral and SentryGlas Plus interlayers, for example, goes back to the supplier.

According to Simon, most of the company's green targets for 2023 are still in the drafting stage, meaning the company is still deciding on its goals for the year. ■



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