

# GLASS

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NOVEMBER/DECEMBER 2020

## THE METALS ISSUE

2020 TOP METAL  
COMPANIES MARKET  
REPORT

INSTALLATION  
CASE  
STUDIES

HANDLING &  
TRANSPORTATION  
PRODUCTS

SAFETY GLAZING  
CODE Q&A

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**On the cover:** The striking exterior of the United States Olympic and Paralympic Museum, located in Colorado Springs, Colorado, features custom, diamond-shaped rain screen panels from MG McGrath and over 11,000 square feet of Oldcastle Resilience Cassette curtain wall framing. Read more about this project and others beginning on page 50.



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## BONUS ISSUE CONTENT

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Showcase Shower Door's Chris Phillips offers in-the-field demonstrations

### SPECIAL EDITION

A microsite showing glass industry solutions from Italian manufacturers

### MARKET REPORT

Get the complete Top Metal Companies market survey and list

## GLASSBLOG



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**glasstec Virtual Offers the Latest in Products and Education**

By Norah Dick



### INNOVATION

**How Can Flexible Software Automation Help Smaller Glass Fabricators?**

Chris Kammer, A+W Software North America



### 15 YEARS!

**A Look Back at 15 Years of From the Fabricator**

By Max Perilstein, Sole Source Consulting

## PROJECT NEWS



Featured in Glass Magazine Weekly and on [GlassMagazine.com](https://www.glassmagazine.com). To submit projects, write Norah Dick, [ndick@glass.org](mailto:ndick@glass.org). **Pictured:** The new Garden Room at the National Aviary, which features bird-safe glass by Walker Glass, and Acuity low-iron glass with a Solarban coating from Vitro Glass

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# An Industry of Problem Solvers



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

**T**he glass industry is full of problem solvers. Consider installers. Glaziers today are increasingly tasked with tackling more challenging projects, handling larger and heavier units, lifting curved and complex glasses, and more. As Daniel Meuchel, design engineer for Wood's Powr-Grip, said in a recent interview: "If the glass fabricators can make it, the architects design with it. Then it's on the installers [to do it]."

I spoke with Meuchel and other handling company suppliers about recent projects that asked glazing contractors to, quite literally, do the heavy lifting and stretch their installation capabilities. (See pages 54-56 for case studies.)

Completing these daunting projects requires creativity, collaboration and a re-imagining of processes.

Glaziers move from being installers to key project team members. They strive to get involved early in the process with the whole project team to help determine everything from system feasibility to best installation methods. And they collaborate with their handling and lifting equipment suppliers to re-think the way they've done things before to find solutions to emerging challenges.

This ingenuity is reflected across the glass industry. Look at the innovations in machining innovation to meet demands for automated technologies, the advancements in high-

performance systems and façade design to reach new code requirements, or the seemingly unlimited range of decorative glass possibilities to meet any aesthetic vision.

I've been thinking a lot about our industry's problem-solving nature as 2020 comes to a close. Glass industry companies have overcome a lot this year due to the pandemic. And just as glass companies work to tackle more traditional industry challenges, such as accomplishing extraordinary feats of installation, they confronted the challenges of COVID-19. Companies quickly responded to new health and safety requirements, navigated economic and supply chain disturbances, and introduced new products to combat the spread of the virus. (Check out Glass Magazine's Innovation during Crisis recognition program from the September/October issue for more.)

The challenges of 2020 are likely to extend into 2021 and beyond. The effects of the virus will continue to ripple across the economy, the construction market and the design industry. Commercial office, retail and hospitality construction is in for leaner times, according to leading economists. Even architecture itself may change in response to demand for spaces that prevent spread of viruses.

However, I'm optimistic about the ability of our industry to anticipate and respond to the coming challenges. Glass companies have shown themselves to be creative and resilient. They face problems head on and collaborate to develop the best solutions. It is this culture of problem solving that will carry companies through successfully.

I wish you all safe and healthy holidays, and I look forward to a new year in glass. ■

“

GLASS COMPANIES HAVE SHOWN THEMSELVES TO BE CREATIVE AND RESILIENT. THEY FACE PROBLEMS HEAD ON AND COLLABORATE TO DEVELOP THE BEST SOLUTIONS

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## YOUR ASSOCIATION AT WORK

NEED-TO-KNOW INFORMATION  
FROM THE NGA

### NOTES FROM THE CHAIR COME TOGETHER AMID ADVERSITY

BY CHRIS BOLE



**W**hen I started as the National Glass Association board chair last October, who could have ever imagined what 2020 would bring? During our most recent Zoom board meeting for NGA, we started off with a question: What is one positive thing that has come about, both personally and professionally, from our current situation? What was amazing was everyone's answer involved their family and their co-workers. The family revolved around more quality time spent together with fewer distractions. For all of us professionally, it was how our staff came together and looked out for their co-workers and clients. The measure of any company is how it deals with adversity, and this year has brought plenty of it.

As I transition into my role as past-chair, I leave the chair position in great hands. Cathie Saroka, president and CEO of Goldray Glass in Calgary, is our next chair. Cathie was very involved with the Glass Association of North America, which merged with the NGA in February 2018, and has served in leadership positions with GANA and now NGA since 2016. She has numerous industry awards and is very much an influential contributor to the glass industry. Please join me in welcoming her to this very important position within our industry.

The NGA membership, and the industry at

large, have an incredible board dedicated to promoting our trade and ensuring we all have success in the years going forward. Those leaving the board include Angelo Rivera, immediate past-chair, from Faour Glass Technologies, and Mark Twente, fabricator board position, from AGC Glass Co. It has been a blessing for me to work with such professional, dedicated people. You can see a list of current board members on page 6 of this magazine.

Last, and certainly not least, my thanks to Nicole Harris and the staff at NGA. Nicole and her staff are the ones that make it all happen. They are dedicated to the success of NGA and our industry, and it really shows. Our trade organization is one of the most successful in the country, and it couldn't happen without them. Their support to me has been invaluable.

In closing, I truly hope that during these crazy times, you also have been able to connect with your family, co-workers and clients in a meaningful way. Relationships, at the end of the day, are what truly matter.

---

Chris Bole is the 2019 - 2020 Chair of the NGA Board of Directors. He is the owner of two glass companies in Colorado Springs, Colo. - Pikes Peak Glass and City Glass Co.

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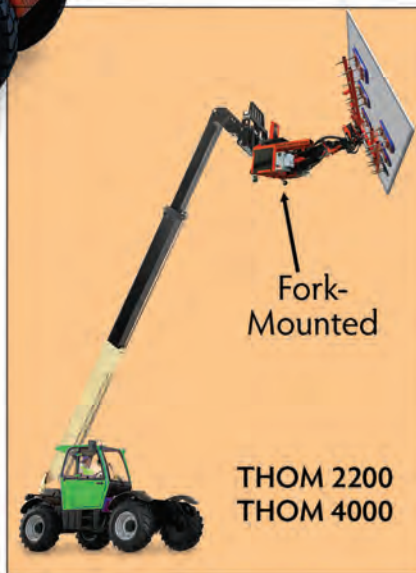
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## YOUR ASSOCIATION AT WORK

### ADVOCACY UPDATE

#### ICC Group B Code Cycle Appeals Concluded

The International Code Council board of directors issued final decisions on the Group B appeals on Oct. 8, following the recommendations of the Appeals Panel. NGA advocacy team members Thom Zaremba, Nick Resetar and Tom Culp actively participated in the code development process. The 2021 editions of the I-codes will be published soon.

#### ASHRAE 90.1 Virtual Meeting

The ASHRAE interim meetings were held virtually in October. Representing the entire glass and glazing industry were members of the NGA technical and advocacy team—Culp, Resetar, Zaremba and NGA Technical and Advocacy Director Urmilla Sowell. Defending window-to-wall ratio was again a critical topic at the interim meetings.

#### ASTM Standards Development - Call for Volunteers

Additionally, Sowell participated in the ASTM C14 Glass and Glass Products virtual meeting on Oct. 13.

ASTM C14.08 Subcommittee on Flat Glass is working on several proposed

new standards, including:

- New Test Method for Bird Collision Deterrence Material Threat Factor
  - Weathering and Evaluation of Laminated Glass
  - Measuring Anisotropy
  - Pummel Adhesion Testing of Two-ply Laminated Architectural Glass
  - Bake and Boil Testing of Laminated Glass
  - Standard Test Method for Center-Punch Fragmentation of Fully Tempered Glass.
- The ASTM C14.11

Subcommittee on Optical Properties is seeking members to participate in one or both of the following task groups:

- Group 1: Discussing the topic of whether the coated or uncoated side of glass should be placed against the light transmittance port when measuring either the transmittance or reflectance of color in accordance with ASTM standards C1649 Practice for Instrumental Transmittance Measurement of Color for Flat Glass, Coated and Uncoated and C1650 Practice for Instrumental Reflectance Measurement of Color for Flat Glass, Coated, and Uncoated.

- Group 2: Discussing the various changes proposed to ASTM C1652 Test Method for Measuring Optical Distortion in Flat Glass Products Using Digital Photography of Grids, including whether to allow Perspective Projection Correction Software in sections 9.1.3 and 9.3.2 and the applicability of Appendix X2. Interested parties who would like to get involved in task groups working on these ASTM documents should contact Sowell at [usowell@glass.org](mailto:usowell@glass.org).

#### NFPA 80

Zaremba also represented glass and glazing interests in the October meetings of the National Fire Protection Association 80 Technical Committee on Fire Doors and Windows. The committee met to review public comments and develop proposed revisions to NFPA 80 and NFPA 105. For more information about the NFPA codes and standards development process, visit [nfpa.org](http://nfpa.org). ■

### NGA RECOGNIZES FOUNDATION SPONSORS

Several leading industry companies made charitable donations to the NGA Foundation, the association's charitable arm. The NGA Foundation is dedicated to industry education, pursuant of its mission to "educate the industry and promote our industry to external stakeholders (such as architects, building owners, code officials and even consumers)."

The NGA would like to recognize the support of the following companies:

- FeneTech, [fenetech.com](http://fenetech.com)
- Deceuninck North America, [deceuninckna.com](http://deceuninckna.com)
- Orgadata, [orgadata.com/us](http://orgadata.com/us).

### NGA GLASS CONFERENCE MOVES ONLINE

NGA Glass Conference will take place online on Tuesday, Feb. 9, 2021. The conference will include committee activities and offer timely and relevant education. Members and non-members are welcome and encouraged to attend. Visit [glass.org](http://glass.org) for more information and to register. ■



# GLASS INFORMATIONAL BULLETIN

## Bird-friendly Glass Design Strategies

Research on bird-glazing collision prevention guides us on how to transform clear and reflective architectural surfaces into barriers that birds will see and avoid. Windows of all sizes are theorized to be invisible to potentially all birds due to what have been defined as fly-through conditions:

- created when architectural elements provide birds with a clear line of sight to sky or vegetation on the other side
- reflected habitat conditions in which the reflected image in glass is undisturbed and blends with the surrounding habitat (i.e. sky, vegetation)
- black-hole effect, also known as passage effect, in which glass can appear black due to lighting conditions and create the appearance of a cavity or passage through which birds can fly.

Glass that is visible to, and avoided by, birds is considered bird-safe and therefore bird-friendly. Possible mitigation strategies include creating visual markers on the glass and interrupting the reflections of the glass.

### Creating visual markers

Research has shown that birds begin to perceive buildings as objects to be avoided when the distance between features or patterns on the glass is approximately 11 inches, with a more effective pattern distance at 4 inches edge-to-edge or less. Markers that are visible to birds are spaced 2 inches



AviProtek Bird-Friendly Glazing from Walker Glass at the University of Minnesota, Bee and Pollinator Research Lab.



ONLINE

### Visit [glass.org/store](https://glass.org/store) to:

- Download the complete Glass Technical Paper, Bird-friendly Glass Design Strategies, which includes essential resources for this GIB.
- Access all available GIBs and additional NGA technical resources.

vertically or 4 inches horizontally on the outer pane of a window.

The application of markers with a 2-inch by 2-inch grid spacing may be more effective for protecting smaller birds, such as hummingbirds. Wider spacing may also be effective if the marker widths are increased. Products following these prescriptive rules have been repeatedly shown to reduce collisions and help eliminate bird strikes. Products may be evaluated to verify the potential contribution to a bird-friendly design. The results of testing can provide documented third-party results of a threat factor (the lower the better) of a glazing solution.

### Interruption of reflections

Interruption of reflections is an important strategy in glass façade design so that birds perceive discrete obstacles in their flight paths. Prospective deterrence provisions include:

- glass surface features such as frit, acid etching and UV elements
- sunshades, screens, grills or mesh
- shutters or louvers
- window film
- building geometry
- site grading and landscaping.

### Existing legislation

International legal agreements continue to be a viable option to force action to prevent

## GLASS INFORMATIONAL BULLETIN—BIRD-FRIENDLY GLASS DESIGN STRATEGIES

### Mitigation strategies for bird-friendly glazing

#### Visual marker

A solid physical design element on the surface of glazing material that makes it visible to birds.

#### Acid etch visual marker

A marker created by washing hydrofluoric acid across the exterior surface of the glass, creating a smooth, non-porous surface.

#### Ultraviolet (UV) marker

A patterned UV reflective coating or marker on the surface of glass that is visible to birds who can see light in the ultraviolet spectrum, while remaining transparent to humans.

#### Fritted glass

Glass manufactured with a ceramic-based paint fused to its surface.

#### Film

A material applied to the exterior surface of glass. Perforated or non-perforated film can be used without alteration (raw) or be printed with decorative patterning.

#### Louver

A manufactured product for architectural, aesthetic, or mechanical applications that can be used to prevent bird access. Slats or fins are spaced at regular intervals in a door, window, or other building opening to allow air or light to pass through.

Studies have shown that creating visual markers, interrupting reflections in glass facades, and minimizing light pollution are ways to create a more bird-friendly environment. There are a variety of glass and glazing solutions offered by glass fabricators and other stakeholders that will reduce bird collisions.

bird-window collisions, but without clear directives, the current trend is the drafting and adoption of regional and municipal legislation to address the issue.

A nationwide U.S. Federal Bird-Safe Buildings Act of 2019 (H.R. Bill 919) is pending legislation. This bill would require public buildings to incorporate bird-safe building materials and design strategies. New York City passed a bill effective December 2019 that will update the building code to require bird-friendly glass up to 75 feet above grade and on any structure above a green roof on new buildings, and on future renovations where all exterior glazing is replaced. Similar state laws are pending in other states. Although regional legislation is almost exclusively directed at retrofitting, remodeling and new construction of

government buildings, the hope is that mandatory bird-safe government practices will serve as a model and example to stimulate the same practices for private commercial structures.

#### Regulations and recommendations

Specific mandatory ordinances and zoning regulations and voluntary recommendations to prevent bird-window collisions at government and commercial buildings have been adopted by many municipalities, U.S. states and Canadian provinces.

In addition, the Canadian Standards Association (CSA), an international standards organization, developed and published the voluntary guide Bird Friendly Building Design (CSA A460) in June 2019. This standard guide

was developed in concert with North American representatives throughout the glass industry supply chain, municipal government, architects and developers, as well as experts in ornithology. CSA's goal is to have this performance-based guide adopted as a bird-safe building construction approach worldwide.

#### LEED

The U.S. Green Building Council's green building rating system now enables architects, designers, developers and building owners to earn credit for incorporating design strategies that reduce bird collisions. The credit is currently being tested in the LEED Pilot Credit Library, a rating system development tool that encourages new or innovative green building technologies. ■



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

## Atlas Holdings Completes Acquisition of Permasteelisa

Atlas Holdings completed its acquisition of Permasteelisa Group. The Group includes three brands, Permasteelisa, Gartner and Scheldebouw. Collectively, the company employs more than 4,500 associates, and has locations in 30 countries, including nine production facilities and eight principal design offices.

## AGC Glass Europe Plans Closure of One Float Glass Furnace in Boussois, France

Faced with the generalized, structural decline in demand for glass, the



### SIGN UP

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management of the AGC Glass plant located in Boussois, France, announced plans to shut down one of the two float glass furnaces on the site. The furnace has been put on hot hold since April 1. This measure forms part of an overall plan aimed at restoring competitiveness, say officials.

After operating on a market with overcapacity due to stagnant demand and the start-up of new glass production plants, the Group is now feeling the full impact of the health emergency and associated economic crisis which is affecting the two main sectors of glass consumption, namely the construction and automotive industries. This has led

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NEWS TO KNOW

to acute overcapacity, falling prices and a marked deterioration in the Group's result overall.

**Saint-Gobain Proposes Line Closure at Spanish Plant, Starts Jumbo Coater at Polish Plant**

Saint-Gobain Glass proposed the closure of its float plant in L'Arboç, Spain. The plant has one float line, and supplies

Saint-Gobain's Sekurit division. In a company release, officials say the line has come to the end of its life, after several repairs.

Saint-Gobain's Dąbrowa Górnicza plant in Poland also started a new jumbo coater in July. Company officials say the magnetron coater represents a \$35.5 million investment, and will be used to manufacture coated glass for

high-performance and high-added-value solutions for the residential and nonresidential construction industry.

**Guardian Glass Launches New Float Line at Czestochowa Plant**

Guardian Glass completed its first ribbon pull at its second float glass facility in Czestochowa, Poland, to help meet the growing demand for high performance coated and fabricated glass products in Poland and throughout Eastern Europe.

The first pull of glass completes the plant's startup, which began with the groundbreaking in 2018 and led to the start of the plant's technologically advanced new glass coater on July 6.

**Assa Abloy Acquires Olimpia Hardware**

Assa Abloy acquired Olimpia Hardware, a glass hardware and accessories brand in Latin America and the Caribbean. "I am very pleased to welcome Olimpia into the Assa Abloy Group. This constitutes an important next step in our strategy to grow market leadership in emerging markets," says Nico Delvaux, president and CEO of Assa Abloy.

**Giroux Glass Opens New Office Location in Orange County**

Giroux Glass Inc. opened its newest location in Orange County, California. Both office staff and glaziers will work from their new shop and office space in Placentia. Although the new office is just 30 miles from Giroux Glass' downtown Los Angeles headquarters, Bob Linford, vice president of California operations, says, "The travel to Orange County has always been a logistical challenge and has limited our work there, in particular, with smaller service projects. [While] we have always performed our full range of work in the area, from this new freeway-convenient location, we can reduce time wasted in traffic and better serve our Orange County clients as locals." ■

*\*News to press time, Oct. 6. Read these stories, and others, in their entirety at glassmagazine.com.*



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# INSIGHTS

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**Julie Schimmelpenning**  
EASTMAN CHEMICAL CO., NGA LAMINATING  
TECHNICAL LIAISON

**Q: Is all laminated glass safety glazing?**

**A:** No, because glass interlayers are available in different formulations and thicknesses, and not all of them will make two lites of glass laminated together pass safety glazing tests. Similar to tempered glass, laminated glass is only considered safety glazing once it passes 16 CFR 1201 or ANSI Z97.1 [Standard Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test].

**Q: ANSI Z97.1 has several tests, including impact, weathering and center punch. Are all of these required for safety glazing, or is only the impact portion of the test standard required for safety glazing?**

**A:** ANSI Z97.1 is both a standard and a test method, and all portions are required. However, not all portions apply to each type of safety glazing. For example, center punch is required only for tempered glass. The weathering portion applies to laminated, filmed and organic coated glass and plastics. So yes, all portions of ANSI Z97.1 are required to the extent that they apply to the type of glazing being evaluated.

**Q: What part of safety glazing requirements fall under the glazing contractor's responsibility?**

**A:** From a glazing contractor's perspective, it starts with ensuring the specification is correct for the

**CODES & STANDARDS**

## Code Q&A

### All About Safety Glazing, from the NGA Advocacy and Technical Team

During the "All About Safety Glazing" webinar at GlassBuild Connect in September, the National Glass Association's Advocacy and Technical team answered common questions about safety glazing, including test standards, labeling, certification and applications. Below are highlights from the session. Visit [glass.org](http://glass.org) for additional safety glazing resources.

requirements of the project, then having the fabricators and suppliers ensure they have the proper labeling, markings and documentation that the safety glazing testing and certification are current. The actual testing of the product falls onto the glass supplier, not the glazing contractor.

**Q: Are there additional testing requirements for glazing used in behavioral health settings or when ballistics glazing is used as safety glazing?**

**A:** The building code requires safety glazing in life safety areas. When there are additional performance requirements for specific applications beyond life safety, they are specified for the project by the building owner or designer. There are many test standards available to qualify the glass for behavioral health and ballistic applications, but they are not necessarily part of the building code requirements. If the glazing construction has not been certified before, the glass or polycarbonate may be qualified alone, and the interlayer might pass as a component. Typically bullet-resistant laminates tend to be thicker and meet the impact requirement easily, but you must make sure all the other test requirements are met for the components in the laminate.

**Q: What are the weathering requirements for laminated glazing products?**

**A:** The weathering requirements in ANSI Z97.1 have been updated to clarify what is required: either one year of natural exposure or 3,000 hours of accelerated exposure in a xenon-arc apparatus. To pass the weathering test, there are limits on allowable change in yellowness index, visible light transmission, haze increase and overall change in color. Weathering testing does not need to be done on every test submission. Rather, the component suppliers of the interlayers and films submit their products for weathering data and provide this data to the glass fabricators.



**Thom Zaremba**  
ROETZEL & ANDRESS, NGA  
AND GICC FIRE/STRUCTURAL  
AND SAFETY GLASS  
CONSULTANT

**Q: Is all tempered glass safety glazing?**

**A:** No, all tempered glass is not necessarily safety glazing. To qualify as safety glazing, the glass must be tested and meet the acceptance criteria of

Consumer Product Safety Commission 16 CFR Part 1201 Safety Standard for Architectural Glazing Materials or ANSI Z97.1 Standard Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.

**Q: Are the requirements of 16 CFR 1201 the same as those in the building code?**

**A:** There is one very important difference

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to be aware of. In 16 CFR 1201 there is a complete exemption for wired glass complying with the safety standard if it's used in a fire-rated application. The building codes demand a higher standard. While 16 CFR 1201 is a federal standard and preempts any contradictory standard that has lesser requirements, it does not preempt higher requirements. Therefore, if wired glass is used in a hazardous location, whether in a fire-rated application or not, it must comply with ANSI Z97.1.



**Urmilla Sowell**

NGA TECHNICAL AND ADVOCACY DIRECTOR

#### **Q: When is tempered laminated glass required rather than annealed laminated?**

**A:** The requirement to use heat-strengthened or fully tempered laminated glass versus annealed laminated is based on the design loads for the application. For balustrades and guards, the building code requires heat-strengthened or fully tempered laminated. For safety glazing for patio doors opening onto a patio, annealed laminated glass meeting safety glazing requirements can be used. The only restriction would be when wind loads are higher; for example, in high-rise buildings.

#### **Q: What types of organic coated glazing pass as safety glazing?**

**A:** The Safety Glazing Certification Council, SGCC, maintains a certification program where manufacturers of safety glazing products voluntarily submit their products for testing to an SGCC-approved independent testing laboratory. Check their website to see what is listed and certified. Organic coated products could range from a surface applied film to a tape on the back of mirrored glass. There are requirements in ANSI Z97.1 for weathering, durability and adhesion for those materials. ■



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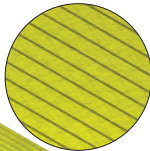
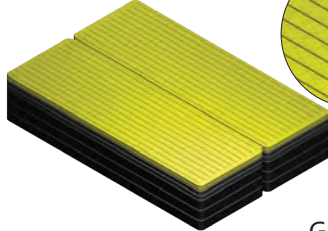
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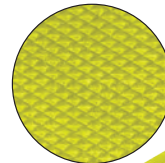
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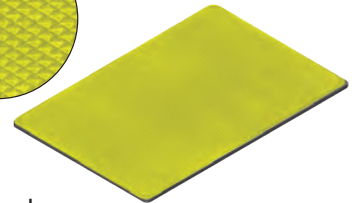
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The physical anchorage of an aluminum window is critical to ensure that it performs and operates as designed and tested. Photo credit: Oleg March and Travis Mark.

# FENESTRATION ANCHORAGE

Installation considerations to ensure safe and reliable framing systems

BY STEVEN SAFFELL



Commercial fenestration systems, which typically feature broad expanses of glass and lengthy sections of framing, tend to be subjected to significant static and dynamic forces on joints and anchors imposed by dead weight, winds, differential thermal expansion, seismic movement and even bomb detonations. Accommodating such forces includes the selection and use of proper fasteners to safely and reliably transfer loads to the building framework at designated anchor locations.

Improper anchorage could pose a threat to the safety of the structure's occupants, notably injury from flying

shards of broken glass. Being key elements in the load path, all fasteners should be analyzed to ensure that the material strength, thickness and quantity are adequate.

## Specification guidelines

Specifying the type, class and performance grade of a fenestration product to meet the North American Fenestration Standard, or NAFS, indicates that the product meets a specific design pressure as tested in one specific anchorage system. In the field, however, fenestration products are often installed with various mullions, transoms, subframe systems or substrates that could require vastly different anchorage systems, or fastener location and spacing, than those tested in the laboratory. These anchorage and fastener differences create several variables that may affect the overall design

pressure performance of the installed product.

Fortunately, no matter which anchor system is utilized, the principal engineering methodology does not change and substantive guidance on the analytical process is available. For example, the companion documents AAMA 2501, Voluntary Guideline for Engineering Analysis of Anchorage Systems for Fenestration Products, and AAMA TIR-A14, Fenestration Anchorage Guidelines, both FGIA publications, comprise an appropriate reference to verify that any anchorage system – including those that differ from what was used for testing in the laboratory – conforms to the project specifications.

AAMA 2501 outlines the minimum requirements for structural analysis by engineering calculation that can be referenced in project specifications and contract documents. Note that the analysis of curtain wall systems is more complex and is therefore not covered.

For the fasteners, the mode of failure could be any (but are not limited to) of the following: the material being fastened through or to (bearing or pull-out and/or pull-over), or the fastener material itself (shear, tension or combined loading). There are different rules and guidelines associated with fastener use in different building substrates—metal, wood and masonry—that govern the type, size and placement of anchors.

The basic procedure for conducting the engineering analysis of the anchorage system is listed, along with the recommended content of the engineering analysis report.

As described in the companion document, AAMA TIR-A14, the mode of failure for the material and fasteners along the load path of each anchor can change. Each component in the load





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path should be analyzed to assure that the material, material thickness and quantity of screws and/or fasteners is adequate for the load.

**Three-step analysis process**

AAMA TIR-A14 describes a three-step process for anchorage design:

**Step 1: Check the material being anchored**

For the material, the mode of failure could be loading along the weak axis of the framing member, bending or buckling. Specifically, if shear is present, then the bearing strength of the base needs to be checked. If tension is present, then pull-over needs to be considered. Analysis equations for both factors, as well as for pull-over of flat head fasteners, are provided for reference.

**Step 2: Check the fastener**

For the fasteners, the mode of failure

could be the same as that of the material being anchored (bearing or pull out/pull-over) or of the anchor material itself (shear, tension or combined loading). Aside from using AAMA TIR-A9 for load values of “generic” fasteners, many manufacturers publish their own load table specific to their fasteners, which gives allowable loads to which the calculated loads can be compared. The total tensile or shear load, divided by the allowable strength, must be 1.0 or less. Where anchors are loaded simultaneously in tension and shear, the sum of the load/strength quotients for tension and for shear, when added together, must be 1.0 or less.

**Step 3: Check the material to which is being fastened**

For the base material, bearing or pull-out and/or pull-over govern. The shear and/or tension in the fastener is compared to the allowable bearing (shear) and fastener pull-out of the

base material. For fastener pull-out in aluminum substrates, reference is made to the Aluminum Association’s Aluminum Design Manual.

AAMA TIR-A14 also looks at the anchoring implications for four different building envelope substrates: metal, wood, concrete and concrete masonry units (CMU) or red face brick.

Analysis and accommodation of the various forces on anchorage systems can help ensure glass expanses will continue to deliver their intended function with minimal danger of becoming dislodged or breaking. ■

Steven Saffell is technical director for the Fenestration & Glazing Industry Alliance. He can be reached at [ssaffell@fgiaonline.org](mailto:ssaffell@fgiaonline.org). The FGIA documents mentioned in this article, AAMA 2501 and AAMA TIR-A14, both of which were recently updated in 2020, may be purchased in the FGIA Online Store at [FGIAonline.org/store](http://FGIAonline.org/store).

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# HERE COMES THE SUN

Mitigate solar heat gain with sunshade systems

BY BRIAN CLIFFORD



**S**unlight can have a positive impact on building interiors. It can reduce electrical lighting usage and create vibrant environments that boost occupant comfort. Direct sunlight on the building envelope must be properly managed, however; otherwise it will place a heavy burden on interior cooling systems, resulting in higher energy consumption.

Sunshades play an important role in reducing solar heat gain and improving energy efficiency. When properly selected and installed, they can help mitigate the adverse effects of direct sunlight on the building envelope, particularly during the summer months when the sun is at its peak and glass façades are most vulnerable.

## Installation

In the Northern Hemisphere, sunshades are commonly installed on the south-



Custom sunshade systems from C.R. Laurence at Sage Park apartment community. Photo by Geoff Captain.

facing walls of the building envelope. This allows them to block a significant amount of direct sunlight during the summer season when the sun is higher in the sky. The result is less strain on a building's cooling system at peak times.

Typical sunshade systems project three feet from above a window or glass span. During the colder winter months, the sun follows a lower path in the sky, so this minimal projection lets an ample amount of sunlight enter the building to help reduce heating loads. Geographic location should be carefully considered before installing sunshades because it will define the extent of sunshade coverage needed on each side of the building.

## Styles and finishes

Aesthetics are another key consideration when selecting sunshade systems. They should complement and not clash

with the building's façade. Fortunately, manufacturers offer custom sunshade programs that give complete control over visual elements. For example, there are various blade styles available such as rectangular, square, round and airfoil blades. Outrigger options include square, tapered square, bullnose and tapered bullnose. For added customization and visual compatibility, sunshades can be finished with powder coat paints, Kynar coatings or RAL color-matched paints.

If customization isn't needed, stock options with fast turnaround times are available. One example is sunshades with perforated panels. They not only help protect interiors from solar heat gain, but also create a distinct visual element that enhances aesthetics. The perforated panels typically have a notched design to allow ample daylight to pass through while effectively blocking solar radiation to reduce cooling loads.



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Another stock option is single blade sunshades. Most sunshades are passive in nature, meaning their orientation cannot be adjusted based on the sun's trajectory throughout the year. On the other hand, single blade sunshades are inherently active. They feature individual operable mounting brackets that allow blade adjustment up to 35 degrees in either direction. Single blade sunshades offer a streamlined aesthetic and are a good solution for most curtain wall and storefront framing systems.

**Sunshades and green buildings**

Green building design has become a critical aspect of contemporary architecture, not only because of environmental and sustainability factors, but also because of increasingly stringent energy codes such as California Title 24. That's why the construction industry is seeing a rise in net-zero energy buildings. Many developers are aiming to

construct energy-efficient, LEED-certified buildings, and sunshade systems can provide credits needed for certification. The use of solar shading can help reduce energy consumption through reduced HVAC usage. In addition, most sunshades are made of aluminum, which is a highly recyclable material that helps minimize a building's environmental impact.

**Performance and cost**

Sunshades mitigate solar heat gain to reduce energy consumption from air conditioning systems; they help create comfortable interior environments that improve occupant productivity; they can protect glazing and furniture from harmful UV rays over time; and they can enhance aesthetics by adding visual depth.

The costs associated with sunshades are offset over the life of the building via savings in energy usage and

reduced wear on HVAC systems. New technologies and components are being integrated into sunshades, including photovoltaic panels and automated mechanisms that can adapt to solar conditions throughout the seasons. But, keep in mind that sunshades are just part of the equation when designing energy-efficient building envelopes. To achieve optimal performance, they should be used in conjunction with low-emissivity insulating glass and thermally broken fenestration systems. ■

Brian Clifford is vice president, architectural railings group, C.R. Laurence. He can be reached at [brian\\_clifford@crlaurence.com](mailto:brian_clifford@crlaurence.com).

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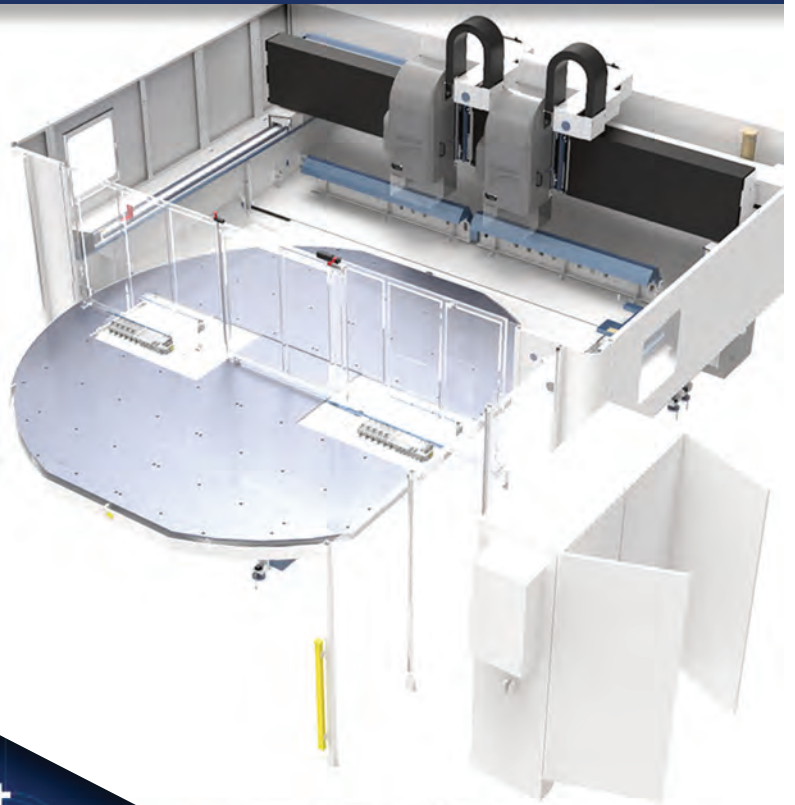


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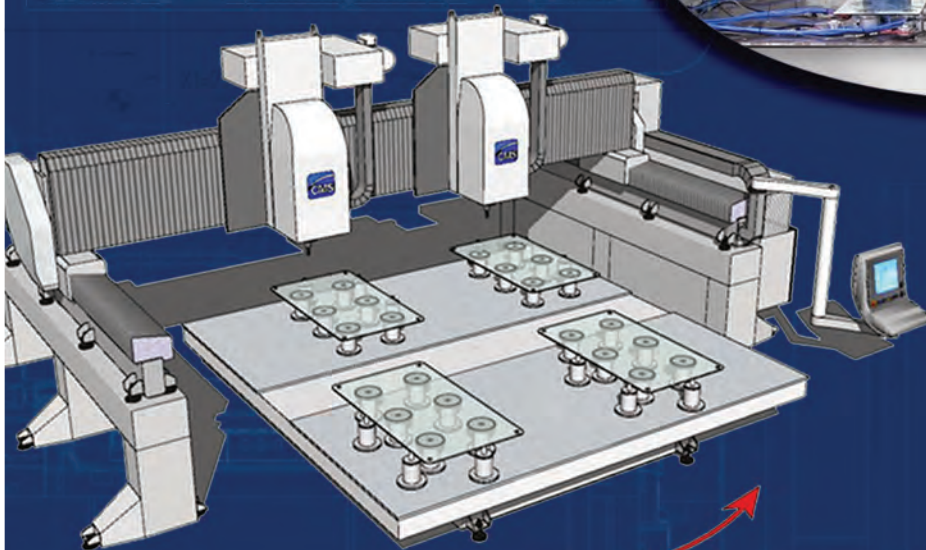


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## MANAGEMENT

# MAXIMIZE YOUR DATA

How trends in construction data and analytics can improve your business

BY DAVID BEN-ISRAEL



One of the biggest questions executives ask themselves is how their company can become more efficient, improve performance and increase profits. Whether it is cost estimating, design management or operations, that question can't be answered if company leadership does not understand the data behind those functions.

A company's data represents what it has done in the past and can create insight into what it can do in the future. The more important question is: how can a company leverage its data to increase its efficiency, performance and business at large?

## 1. Estimate with insight

Gone are the days of scribbling a number on a bid form because it "feels like the right number" and hoping the contract gets awarded. Whether it is quantity surveys, estimates, project controls or material pricing, historical data is a key piece in understanding how to price a proposal.

Without that accurate insight, how could anyone make an informed and strategic bid day decision?

When it comes to cost estimating, what does work is understanding historical data in relation to current market trends, expected escalation and competition. With margins constantly being pushed down by market conditions, data-driven insights can be the difference in deciding to bid on a job and what level of risk a company should bake into their price.

The key to achieving an insight-driven strategy is moving away from folder-based document management to database-focused data modeling—not a folder on a server with hundreds of files from past projects, but one central database with all the historical data. Having all the data in one location can provide businesses the opportunity to build analytic dashboards so they can create data-driven metrics, price bids correctly, win more projects and ensure consistent profits.



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**2. Unlock design data**

In the past, MEP systems (mechanical, electrical and plumbing) and structures were the main focus of building information modeling, or BIM, coordination, with the building envelope being more of an afterthought. As more designs move to BIM and projects become fully coordinated, façades have become a more important aspect of BIM models and the data behind those models.

One of the real benefits of BIM modeling is the ability to have easy access to all of the design data that make up those models. With data in hand, contract glaziers can create analytics-based dashboards that help managers so they can improve coordination, avoid design clashes, ensure material quantity accuracy and improve their system performance. Better coordination and collaboration with designers and contractors will mean improved quality

control and efficiency across design revisions. More importantly, with quick access to design data, contract glaziers can improve their engineering and design efficiency, reduce their estimating and preconstruction overhead, and set themselves apart.

**3. Know your data, know your profits**

Data modeling and analytics is not just something that applies to cost and design. It is the structure that holds a company’s operations together. From project controls, safety compliance and work production to materials management, equipment fleets and labor costs, a company’s operational data has become more important than ever. Most companies track these data points; however, many of them cannot fully understand their true performance until long after a project is completed. By then, it is too late to make adjustments for better results. Having the capability

to track operational data in real time will give managers the ability to make strategic decisions that can lead to better-performing projects.

Whether implementing an off-the-shelf system like Procure, Rhumbix or Fieldwire, or using something as simple and inexpensive as a Microsoft or Google Form connected to a business analytics platform like Power BI, companies should take the time to leverage data and analytics to their benefit. Better data insights mean less time trying to figure out what information is needed and more time to make better decisions. Now is the time of data—and the contract glaziers that can leverage their data will be positioned for success. ■

David Ben-Israel is senior cost consultant – design and construction for MGAC. He can be reached at [dbenisrael@mgac.com](mailto:dbenisrael@mgac.com).

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**Above:** Circus Circus Hotel & Casino, Las Vegas, courtesy of Super Sky Products Enterprises LLC

## BEGIN WITH THE FINISH

Resilient finishing trends for architectural aluminum products

BY TAMMY SCHROEDER

**R**esiliency conveys more than sustainability or rigidity. It communicates adaptability, flexibility, preparedness and endurance. It carries great relevancy for today and the future of commercial building projects. For aluminum architectural products on these buildings, that resiliency begins with the finish.

### 1. Protective integrity

Whether specified as liquid coatings, powder coatings or anodize, the finish

provides a protective layer for the aluminum. This finished surface shields against the elements—water, wind, heat and salt, as well as from pollution and continuous use. For spaces with high traffic and high visibility, antimicrobial architectural coatings are trending as interest grows in enhancing finishes to protect against stain- and odor-causing microbes.

### 2. High-performance durability

Ensuring the expected performance

and durability, AAMA 2605 for painted coatings and 611 for anodize are the industry-leading specification standards for high-performance architectural finishes on aluminum products. Finishes applied to these standards resist chalk, erosion and salt spray and deliver exceptional color retention.

Neutral and earth tone colors typically retain their original appearance longer than bright colors. White, cream and brown paint colors, and bronze and clear anodize remain the most-requested colors for products such as cladding, column covers, sunshades, light shelves, doors, and window, storefront and curtain wall framing.



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### 3. Environmental responsibility

A greater awareness of buildings' environmental impact strengthens the trend for properties to meet green standards, guidelines and certifications. Those concerned for sustainable construction and energy-efficient operation also have an increased interest in occupants' well-being.

Recently, this trend has led to a more transparent examination of buildings' material selection and indoor air quality, including volatile organic compounds. Powder coatings and anodize finishes do not contain VOCs. Because liquid paints use solvents, environmentally responsible finishers apply these coatings under quality-controlled, enclosed conditions to safely contain, capture and destroy the VOCs within their facilities.

The Living Building Challenge "Red List" catalogs materials with VOCs and other potentially harmful chemicals. Products, including at least one

finishing provider's anodize offering, that are verified as Red List Free can earn the Challenge's highest level of Declare Label. This Label is recognized by the LEED Rating System, the International WELL Building Standard, the EPA and others.

### 4. Longevity

With proper application, installation and maintenance, architectural aluminum finishes can last for decades, reducing the need for repair or replacement. To demonstrate confidence in their finishes and processes, some finishing providers are seeing a trend where manufacturers, contractors and owners are requesting warranties of up to 10 years or more.

### 5. Recyclability and circularity

Architectural aluminum products often are manufactured using secondary billet with recycled content exceeding 60 percent. Supporting

this environmental and economical option, finishing providers have improved techniques to hide some of the imperfections inherent to recycled metal. After its useful life on a building, the finish can be removed and the resilient, infinitely recyclable aluminum can be reused as part of a strategic cycle to maximize existing resources.

Selecting durable, high-performance finishes for architectural aluminum products contributes to creating greater value, appeal, usefulness and more resilient buildings. ■

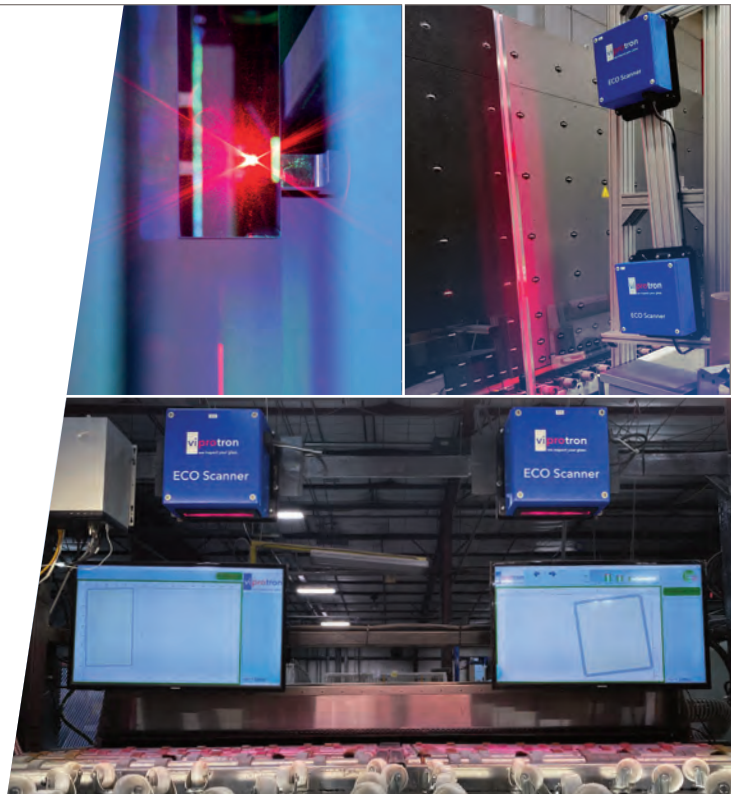
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Tammy Schroeder, LEED Green Associate, serves as marketing manager at Linetec, a single source solution and the nation's largest independent architectural metals finishing company. She can be reached at [tammy.schroeder@linetec.com](mailto:tammy.schroeder@linetec.com).



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SCHÜCO



# Top

Facing a new reality,  
architectural metal companies  
adapt and innovate

# Metal

By Norah Dick

# Companies



- 42. Sales & Markets
- 44. Challenges
- 46. Products
- 48. List
- 50. Projects

In December, the U.S. will be entering the ninth month of the pandemic, a situation that would have been unthinkable at the start of 2020. Glass Magazine's Top 50 Glaziers report, released in June, captured responses from an industry that was just learning to grapple with the "new normal" of state-wide shutdowns, supply disruptions and a completely new set of labor force issues. Responses from Top Metal Companies, surveyed in September and October, point to an industry that is struggling,

but also adapting to the many obstacles posed by the everyday reality of COVID-19.

"Throughout the pandemic, since day one, we have had to reinvent ourselves almost on a daily basis to navigate this crisis in the best way possible," says Steve Schohan, marketing and communications manager of YKK AP America Inc.

As expected, the pandemic has had a financial impact on industry companies. Almost a third of respondents in Glass Magazine's Top Metal Companies survey reported lower sales in 2020, a stark

increase compared to the 3 percent of companies reporting declining sales in the 2019 report.

Additionally, respondents noted major operational shifts to ensure worker safety. "We have implemented several policies in line with CDC guidelines and local, state and federal mandates: social distancing, face masks, separation of workspaces, hygiene standards and remote working where possible," says Barbara Haaksma, senior vice president, marketing of C.R. Laurence Co. "We are taking continuous measures

to ensure operational and supply chain continuity, manage inventory, and remain in close contact with our customers to continue to provide exceptional support and service."

Andrew Russo, vice president of Glass and Metal Craft, described the year as a "roller coaster ride" as the shutdowns of spring gave way to an increased workload in summer as delayed projects reopened. "Labor issues hamstrung us during the rapid ramp up when the openings occurred, and then it was slow again as glaziers had their labor issues and were overwhelmed with work." Russo says that the pandemic has also changed the type of work available. "Smaller and residential projects have increased. Active larger projects have been significantly delayed due to shutdowns, COVID measures and other trades still doing their work."

The 2020 Glass Magazine Top Metal Companies report provides an in-depth look at the health of the metals segment of the glass and glazing industry, based on a survey of leading companies, including glazing system suppliers, metal fabricators, extruders, and finishers and coaters. The report highlights sales and market data, product trends and leading challenges. It presents a list of leading metal companies, ranked by workforce size, and features a selection of standout projects from contributing companies.

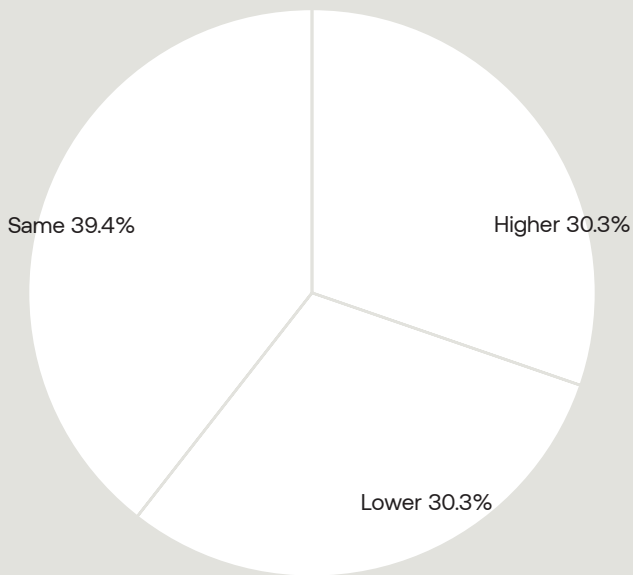
# Sales & Markets

## Companies eye investment, despite some early indications of weakening market

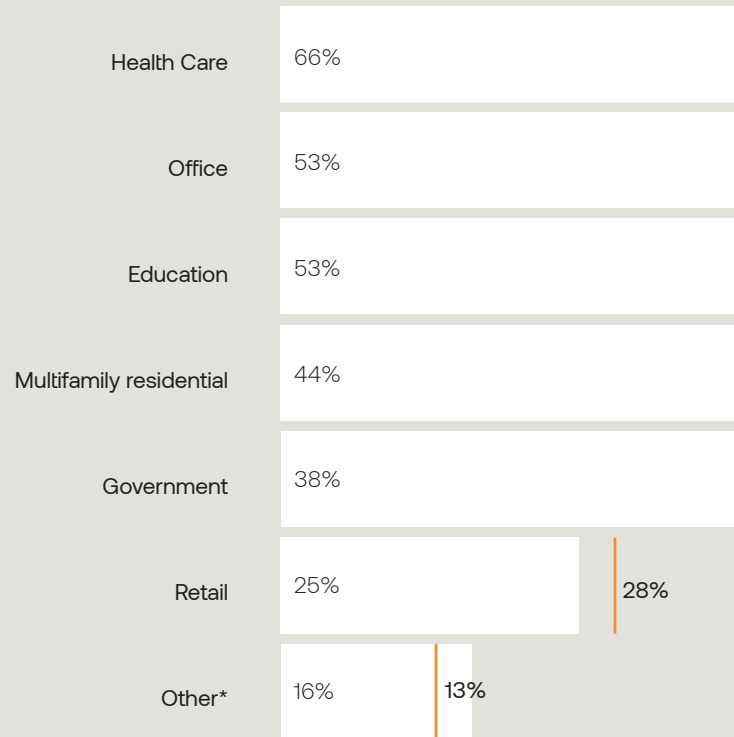
This year's responding Top Metal Companies reported sales and market data that reflect the strain of COVID-19. While in 2019, 84 percent of companies reported higher year-over-year sales,

the number fell to just 30 percent in the 2020 report. An additional 39 percent of 2020 respondents reported no change in sales. The final third of 2020 respondents reported a decrease in sales, a

### How did sales in 2020 compare to 2019?



### Which market segments have been strongest for your company?



significantly higher percentage than 2019, in which a mere 3 percent of reporting companies posted a decrease.

By market segment, the majority of Top Metal Company respondents, 66 percent, said the health care sector was the strongest for their company, and 75 percent

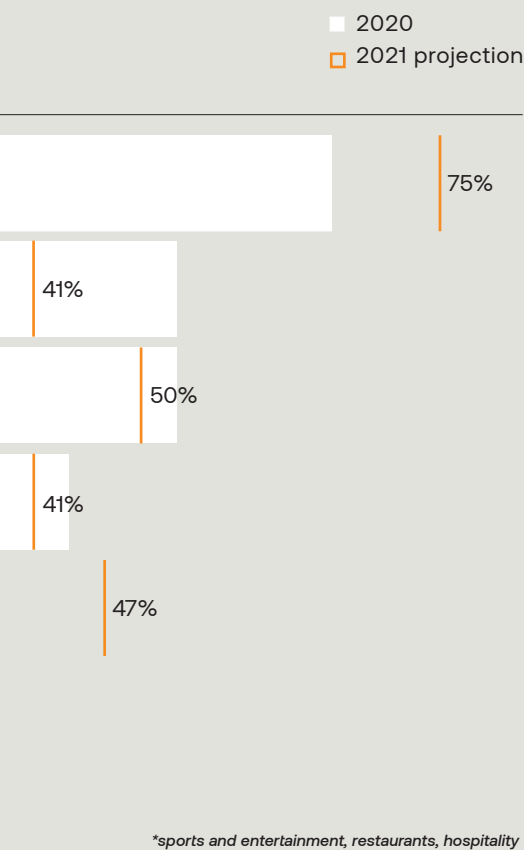
said they expected the sector to be strong in 2021, reflecting the critical need for health care infrastructure during the pandemic. Fifty-three percent of respondents identified office construction as a strong sector for 2020, but only 41 percent made the same choice when asked about

2021, perhaps indicative of a decline in the development of commercial office space.

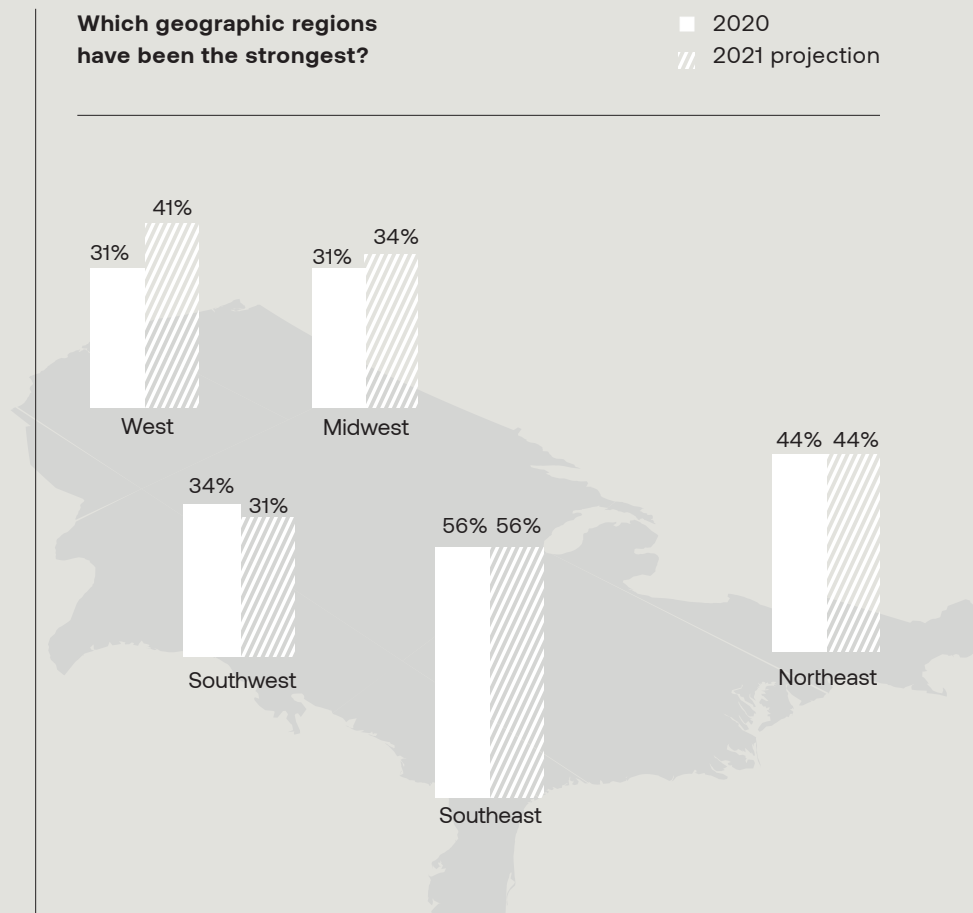
By geographic region, the Southeast was selected as the strongest geographic region for 2020, with the Northeast in second place. Respondents' predictions for 2021 suggest little change in

market strength by region.

Despite economic uncertainty, almost all companies said they have plans to make future investments. A significant majority, 71 percent, say they will invest in capital equipment, and 61 percent plan to launch new products.

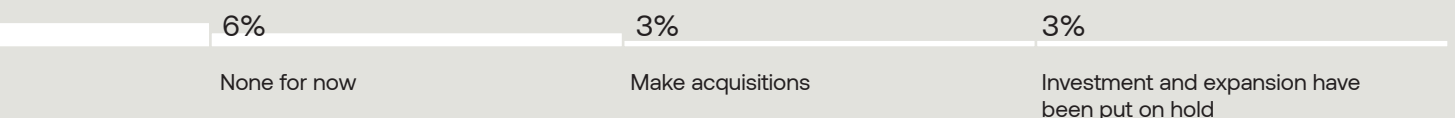


### Which geographic regions have been the strongest?



### What are your company's expansion and investment plans?

*\*Investing in human capital, new technologies and software*



# Challenge

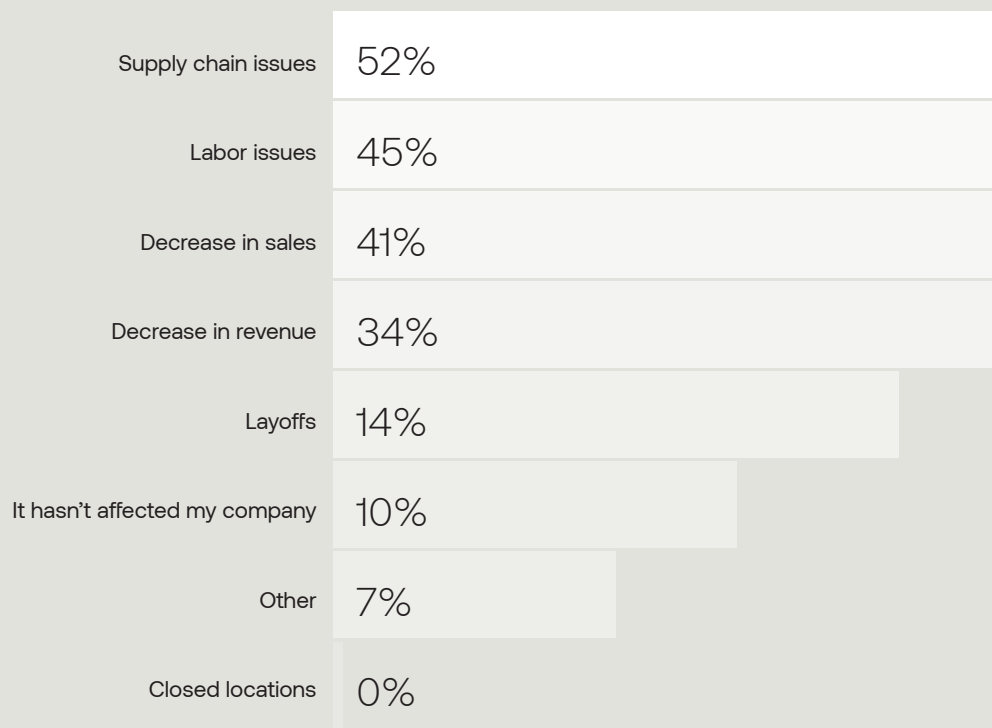
## Pandemic-related supply chain problems and labor issues disrupt companies

Companies faced several challenges this past year due to the pandemic. More than half of respondents reported supply chain issues, followed by 45 percent that identified labor issues related to the pandemic. Only 10 percent of respondents said the pandemic had no effect on their business.

“Supply chain issues have been sporadic, but not to the magnitude that we feared they could be initially,” says Will Stephenson, president, Clayton Commercial Glazing. “The market still seems to be primed for more growth or at the very least, maintaining; however I am seeing a ‘wait and see’ approach right now from many developers. The longer it takes for a clear path out of the pandemic issues to arise, the more I fear the market could deflate.”

“The pandemic has produced an unstable, fearful work force,” says Joshua Leets, plant engineer, Cross Aluminum Products. “Continual testing and daily cleaning practices are wearing down staff. Still-valuable personnel are opting for early retirement or unemployment, due to fear, uncertainty, or increased workloads.”

Beyond the pandemic, companies also faced metal tariffs, which have continued to fluctuate in the U.S. However, a majority—59 percent—said tariffs did not



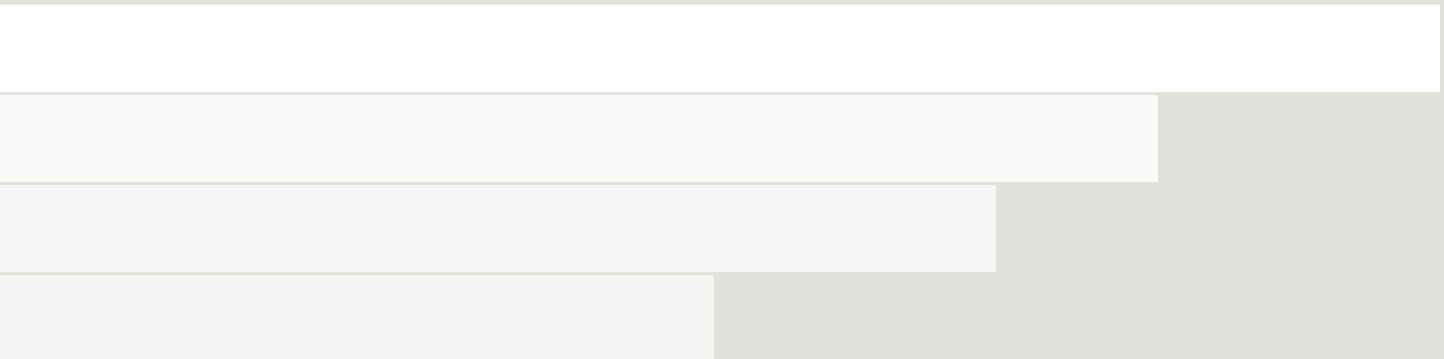
affect their company in 2020. For those that were impacted, supply chain issues were the most common challenge.

“We have seen some lead times increase as some companies are shifting from overseas buying to domestic,” says Tom O'Malley, partner, Clover Architectural. “This has made our normal suppliers busier and thus [there is] increasing lead time.”

YKK AP made adjustments to production in order to offset the costs resulting from tariffs. “We have also continued to focus on the development of shop glazed and unitized products, which has allowed contractors to offset any increase in metal costs by allowing the use of less expensive shop labor,” says Steve Schohan, marketing and communications manager.

# es

## How has the pandemic affected your company?

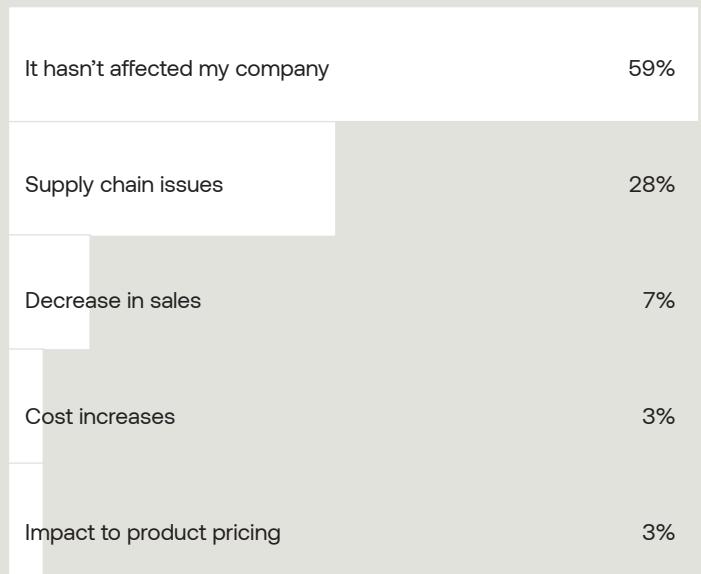


### Have metal tariffs decreased company sales in the past year?

- Yes 7%
- No 93%



### How have tariffs affected your company in 2020?



# Products

## What types of products do you supply?

Storefronts	67%
Entrance systems	67%
Curtain wall	64%
Thermally broken systems	64%
Sun-control systems	61%
Window wall	55%
Commercial windows	55%
Metal panel systems	48%
Railings	45%
Unitized/prefabricated systems	39%
Other	24%

## What product areas/trends offer the most potential for growth?

Thermal performance/energy efficiency	33.3%
Unitized/prefab/modular construction	33.3%
Renovation and retrofit	13.3%
Other*	20%

*\*cladding, interior and demountable systems, increased product lines, partnering with larger firms, use of grilles in parking structures*

Despite the economic fallout and supply chain issues of the pandemic, most Top Metal Companies continued to roll out new products in 2020. Seventy-two percent of Top Metal Company respondents introduced new product lines in 2020, and 82 percent of companies continue to plan for product releases in 2021.

Looking at product types, interest in

thermally broken and efficient systems, as well as unitized and modular units, lead product trends, according to company responses. Sixty-four percent of respondents supply thermally broken systems, and 57 percent of respondents have introduced high-performance or sustainable products in the last year. Thirty-nine percent of respondents say they currently

supply unitized systems, and further identified both unitized and thermal products as areas for future growth.

Companies were surveyed regarding the future market development of unitized and prefabricated systems. Many companies that responded identified a less skilled workforce as a likely push toward prefabrication. Companies may

**R&D surges ahead,  
with target toward  
performance and prefab**

**Did you  
introduce new  
product lines in  
2020?**

■ Yes 72%  
■ No 28%



**Do you have  
plans to  
introduce new  
product lines in  
2021?**

■ Yes 82%  
■ No 18%



**Have you  
introduced high-  
performance  
or sustainable  
products in the  
last 12 months?**

■ Yes 57%  
■ No 43%



**Has COVID-19  
affected the type  
of products you  
supply?**

■ Yes 33.3%  
■ No 66.7%



also move toward prefabrication due to increasing constraints on schedules and space in the field.

“Construction projects will continue to require high-performing products, simplified fabrication, quality control, fast installation, reduced costs, design flexibility and exceptional performance,” says Angela Naphin, marketing director,

building and construction systems, Kawneer. “Additionally, ongoing development in urban areas means jobsite space is limited requiring products to be fabricated offsite in order to maximize onsite space and labor. Architects and building owners are continuing to look to close-in buildings faster, and both unitized and modular systems are alternative

delivery methods that successfully drive construction efficiencies, including lowering construction costs and accelerating building time.”

Many companies, about two-thirds, said the pandemic did not affect the types of products supplied. Of those that did, many reported the addition of partitions, barriers and shields to their product mix.

# The List

The 2020 Top Metal Companies report identifies key movements and trend points in the industry by surveying a range of companies across the architectural metals segment. Contributors to this year's survey include metal glazing system manufacturers and suppliers, fabricators, extruders, and coaters and finishers. It also includes several companies that fabricate both glass and metal systems, along with glazing firms that provide metal fabrication services.

In a departure from previous years, the 2020 Top Metal Companies list is not organized by gross sales but rather by workforce. The decision to change the ranking allows the list to continue to present the largest employers and leaders in the architectural metals segment, while providing opportunities to recognize additional types of companies.

Visit [GlassMagazine.com](http://GlassMagazine.com) for a more detailed version of the Top Metal Companies list, which includes additional information about product types, locations and more.

It is only by industry participation that the list and report can best capture the market's realities. If you feel your company should be included in the report, please contact Norah Dick, associate editor, [ndick@glass.org](mailto:ndick@glass.org).

Company	Employees	Locations
<b>Oldcastle BuildingEnvelope</b> obe.com, Dallas	7,000	82
<b>Tecnoglass</b> tecnoglass.com, Barranquilla, Colombia	5,500+	5
<b>Flynn Group of Companies</b> flynncompanies.com, Mississauga, ON, Canada	5,500	35
<b>Kawneer Co.</b> kawneer.com, Norcross, GA	3,000	27
<b>Trulite Glass &amp; Aluminum Solutions</b> trulite.com, Peachtree City, GA	2,500	27
<b>Reynaers Aluminium</b> reynaers.us, Duffel, Belgium	2,322	40
<b>C.R. Laurence Co.</b> crlaurence.com, Los Angeles	1,300	26
<b>EFCO Corp.</b> efcocorp.com, Monett, MO	1,300	4
<b>YKK AP America Inc.</b> ykkap.com, Austell, GA	1,170	15
<b>Sierra Aluminum</b> samuel.com, Riverside, CA	650	2
<b>Linetec</b> linetec.com, Wausau, WI	590	1
<b>Tubelite Inc.</b> tubeliteinc.com, Walker, MI	450	4
<b>Aldora Aluminum &amp; Glass</b> aldoraglass.com, Coral Springs, FL	425	6
<b>Coral Industries Inc.</b> coralap.com, Tuscaloosa, AL	400	4
<b>MG McGrath Inc.</b> mgmcgrath.com, Maplewood, MN	300	1
<b>SAF</b> saf.com, Atlanta	250	5
<b>PAC-CLAD   Petersen</b> pac-clad.com, Elk Grove Village, IL	200	6
<b>Northern Architectural Systems</b> NAS-USA.com, Teterboro, NJ	195	3
<b>MillerClapperton</b> millerclapperton.com, Austell, GA	175	2



Company	Employees	Locations
<b>Trex Commercial Products</b> trexcommercial.com, Minneapolis	164	1
<b>US Aluminum</b> crlaurence.com, Waxahachie, TX	160	1
<b>WinTech</b> wintechinc.com, Monett, MO	160	3
<b>Bamco Inc.</b> gobamco.com, Middlesex, NJ	150	1
<b>Glass and Metal Craft</b> gamcusa.com, Wixom, MI	140	2
<b>Stylmark</b> stylmark.com, Minneapolis, MN	120	1
<b>United Architectural Metals</b> unitedarchitectural.com, North Canton, OH	120	1
<b>American Products Inc.</b> americanproducts.com, Tampa, FL	100	1
<b>Americlad</b> americlad.com, Rogers, MN	80	1
<b>Livers Bronze Co.</b> liversbronze.com, Kansas City, MO	80	1
<b>Gamco Corp.</b> gamcocorp.com, Flushing, NY	65	1
<b>Spectrum Metal Finishing</b> spectrummetal.com, Youngstown, OH	60	1
<b>RPM Rollformed Metal Products</b> rpmroll.com, Concord, ON, Canada	50	3
<b>Architectural Grilles and Sunshades</b> agsshade.com, Frankfort, IL	30	1
<b>Morse Industries</b> morseindustries.com, Kent, WA	30	4
<b>Cross Aluminum Products</b> crossaluminum.com, Niles, MI	25	1
<b>Tri-City Glass Inc.</b> tri-cityglass.net, Kennewick, WA	20	1
<b>Clayton Commercial Glazing</b> claytoncommercial.net, Smithfield, NC	15	1
<b>Clover Architectural</b> cloverarchitecturalproducts.com, Palos Heights, IL	12	1

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# Projects



AC Hotel  
Dallas  
**C.R. Laurence**

ARCHITECT  
5G Studio Collaborative

GLAZING CONTRACTOR  
Waxahachie Glass

METAL SYSTEMS  
C.R. Laurence Co.

INNOVATION  
AC Hotel's upper-floor facade was designed by 5G Studio Collaborative to contrast with the all-glass bottom level. The off-white metal cladding system is intricately woven into modular forms of geometric complexity, and sharp diagonal edges conspicuously protrude to create a structural exoskeleton. To balance the vigorous geometrical visual and provide cohesion with the first-floor glass façade, guest rooms are outfitted with large windows that incorporate CRL's FT601 Storefront. The system is thermally broken to help maintain comfortable interior temperatures and reduce cooling loads.



The United States Olympic and Paralympic Museum  
Colorado Springs, Colorado  
**MG McGrath Architectural Glass & Glazing**

ARCHITECTS

DS \$ R Architects

GLASS FABRICATOR

Viracon

GENERAL CONTRACTOR

GE Johnson Construction

INNOVATION

MG McGrath Architectural Glass & Glazing provided and installed several systems for The United States Olympic and Paralympic Museum, including a set of custom, diamond-shaped rain screen panels. Each diamond-shaped panel is unique and shaped slightly differently to accommodate the building's complex geometry, providing complexity to the project. Early involvement, 3D modeling, and BIM coordination were essential for smooth execution of panel fabrication and installation, say officials, as well as the panels' integration with the curved curtain wall, the Oldcastle Resliance Cassette curtain wall with Viracon VE1-85 insulated glass and spandrel.

RAIN SCREEN SUPPLIER, INSTALLER

MG McGrath Architectural Glass & Glazing

CURTAIN WALL SUPPLIER:

Oldcastle BuildingEnvelope



Woburn Public Library  
Woburn, Massachusetts  
**Oldcastle BuildingEnvelope**

ARCHITECT  
CBT Architects

GENERAL CONTRACTOR  
Consigli Construction  
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GLASS MANUFACTURER  
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METAL SYSTEMS  
MANUFACTURER  
Oldcastle  
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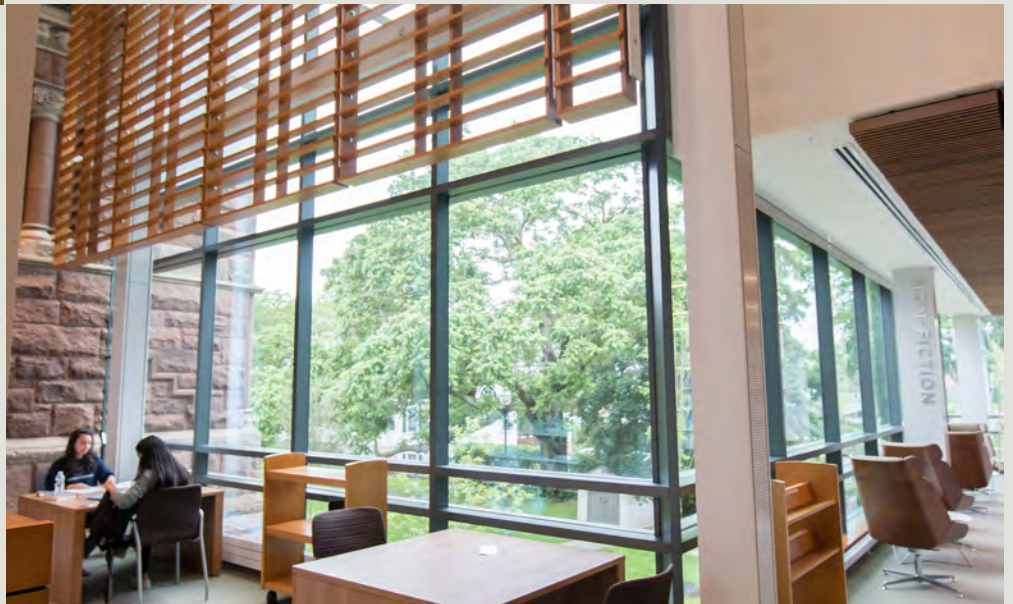
CONTRACT GLAZIER  
Lockheed Window  
Corp.

GLASS FABRICATOR  
Oldcastle  
BuildingEnvelope

ENTRANCES  
Oldcastle  
BuildingEnvelope and  
C.R. Laurence

INNOVATION

The design goal, and main challenge, of the Woburn Library renovation was to integrate the new addition with an over 140-year-old historical building that was only two-thirds the size of the addition. Oldcastle BuildingEnvelope partnered with CBT to use a range of OBE systems to discreetly connect the new and old, say officials at OBE, including the company's medium stile thermal clad doors and CRL Blumcraft Entice Entrance Systems and Panic Devices.



# CHALLENGING

Case Study 01—

## CURVED AND COMPLEX AT THE DENVER ART MUSEUM

Glass is getting bigger and heavier, and geometries more complex. Glass lifting and handling equipment suppliers have responded with higher-capacity, heavy-duty, more flexible machines to tackle nearly any job. Check out the equipment in action in three case studies.



**Challenges:** An elliptical façade of floor-to-ceiling curved glass lites surrounds the new welcome center at the Denver Art Museum, designed by Fentress Architects. Jobsite logistics and installation of 36 massive curved lites, each 24 feet tall and 8 feet wide, presented notable challenges. The units are laminated and insulating, each weighing 3,200 pounds. However, it was the curvature of the glass that presented the most notable hurdles, says Daniel Meuchel, design engineer for Wood's Powr-Grip.

The curved nature of the glass “just throws us for another loop. Your [center of gravity] is so far out from the pick point, and your hang angles are different,” says Meuchel. The glass for the museum project hung at a 6-degree angle, due to the size and curve of the glass, he says. Additionally, the glass was to be set from the concave side, requiring more flexible vacuum pads to maintain suction.

**Solution:** Wood's Powr-Grip worked with contract glazier Harmon Inc. at the mock-up stage to develop a successful lifting solution for the job. The custom vacuum lifter features 32 smaller suction cups to attach to the concave curve. “The 9-inch cups have a lower capacity, but they offer ease of attachment,” says Meuchel. To address the 6-degree hang angle, the team attached a separate vacuum cup to the back of the lite, allowing installers to essentially “pull” the glass into a righted vertical position.

# INSTALLS



**Online:** Get your installation case studies featured on GlassMagazine.com. Send photos and project information to [kdevlin@glass.org](mailto:kdevlin@glass.org).



Case Study 02—

## SIZABLE STOREFRONT IN THE HURRICANE ZONE

**Challenges:** Faour Glass Technologies recently completed mockup testing for a specialty installation featuring jumbo glass units that are impact-rated to meet Florida’s more stringent hurricane codes. The job features 20-foot by 10-foot glass lites, each weighing about 5,200 pounds. The glass is 2-inch laminated.

“Due to the massive size of this piece of glass, combined with the weight, we required specialized equipment to handle it. Maneuvering such a huge piece of glass is no easy feat,” says Annette Trevisan Nuhfer, director of sales, marketing and estimating, Faour Glass.

**Solution:** Faour Glass teamed with Ergo Robotic Solutions to accomplish the installation. “Ergo Robotics was key in this undertaking, as they were able to produce a custom piece of equipment for us to lift and balance the panels as they were set into the frames,” Tresvisan Nuhfer says.

The team used the Plumbline 8000 from Ergo Robotic Solutions to lift and set the glass. The lifter is designed to hold up to 8,000 pounds. It is a below-the-hook unit, meaning it’s hung from the crane, and it was designed to pick up and rotate the jumbo units of glass, says Alan Nudi, director of sales and marketing for Ergo.

“This is huge stuff,” says Nudi. “When you have heavy, very large pieces of glass, it’s not that hard when you know how to do it right.”



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www.etkinternational.com  
sales@etkinternational.com

Case Study 03—

## BIG REACH, BIG GLASS AT MINNESOTA HOME

Online: Watch this installation at [GlassMagazine.com](http://GlassMagazine.com)



**Challenges:** For an impressive private residential project on Lake Marion outside of Lakeville, Minnesota, installers were tasked with maneuvering large, heavy, triple-pane insulating glass units around several jobsite obstacles. The project features 70 windows, including 45 large-size units. “The bigger the pieces, the tighter the spaces,” says John Olson, technical support, Quattrolifts. “Architects design with these large sizes, but they don’t realize how difficult it will be for the units to be put in place.”

To reach the glazed openings on the project, installers required equipment that would reach at least 40 feet from the vehicle. To add to the challenge, a structural beam stood in the path of the boom, requiring additional handling precision as installers maneuvered the large panes of glass.

**Solution:** The project team used the Quattrolifts Omni 1800, attached to a telehandler, to complete the installation. Using the equipment, the team was able to extend the boom and maneuver the glass units over the interrupting load beams to reach the openings. A rotating head allowed for placement of glass units in multiple openings, without requiring the team to move the machine to a different location on the jobsite.





[www.milletglass.com](http://www.milletglass.com)

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\*\*Subject to restrictions

# PRODUCTS



01



02



03

## GLASSBUILD CONNECT

# Lifting and Transport Solutions

CHECK OUT NEW GLASS LIFTING AND TRANSPORTATION PRODUCTS THAT WERE HIGHLIGHTED DURING GLASSBUILD CONNECT IN SEPTEMBER. VIEW THESE SOLUTIONS AND MORE UNTIL DEC. 30 AT [GLASSBUILD.COM](http://GLASSBUILD.COM).

### 01. Folding Side Door

Bromer Inc. introduced a high-quality and durable solution for glass transportation, the aluminum folding side door option instead of curtain or roll-up tarp. The product is equipped with rust-free, heavy-duty stainless fasteners and hardware to suit industrial expectations. Thus, the folding side doors maintain an effective weather seal and help speed up the delivery process of glass transportation companies.

450/477-6682 | [BROMERINC.COM](http://BROMERINC.COM)

### 02. Model P212-S Glazing Body

F. Barkow Inc. debuted the Barkow Model P212-S Glazing Body on a Hino 155 diesel chassis cab. The 12-foot-long by 105-inch-tall glazing body is stainless steel, fully welded construction. Body features include 10 Stake-Loc self-locking stainless steel stakes and "B" load-holding horizontal slats on exterior and interior for belting down loads. Large sign panels are included on each exterior side at the top. Additional features include a cantilevered metal carrier with removable bars in center and rear of body, and a pull-out ramp in the rear skirt. 800/558-5580 | [BARKOW.COM](http://BARKOW.COM)

### 03. Patriot Glass Truck Bodies

MyGlassTruck highlighted its Patriot family of glass truck bodies, which offers an open body design for fast and easy loading and is available for a wide array of trucks. The Patriot LT can be installed on Class 3-5 trucks, while the Patriot HD can be installed on Class 5 and higher vehicles. Standout features of the Patriot body include up to 10-foot-high racks and extra-deep ledges. With lengths up to 28 feet, it's easy to carry extra-long or wide sheets of glass, and a walkway between the racks provides access to interior racks and plenty of extra cargo space. 844/364-4022 | [MYGLASSTRUCK.COM](http://MYGLASSTRUCK.COM)



04



06



05

**04. Bumper trailers**

The Unruh Fab Bumper Trailers are designed to provide flexibility and safety to customers, according to the company. The trailers, available in aluminum, steel or stainless, come in 8-foot to 16-foot lengths, and with the 98-inch-tall racks. Features include: stake guides, single or tandem axles, a 7-inch usable ledgeboard, optional metal carrier, removable wheel skirts, and tarp or open options.

888/772-8400 | UNRUHFAB.COM

**05. Racks with ledgeboards**

Weldco Sales Inc. offers chassis-mounted racks with straight ledgeboards. The company provides a 5-inch ledgeboard for Chevy 3500 Duallys and a straight, 7-inch ledgeboard for Isuzus, Hinos and other cab over chassis trucks. There is no “up, over and down” portion of the ledgeboard to interrupt the loading space in front of the wheels, and the racks can be added without voiding manufacturer warranties.

818/506-5490 | GLASTRK.COM

**06. GBX2 Vacuum Lifter**

Automak Assembly showed the Glass Boy GBX2 Vacuum Glass Lifter, a versatile vacuum lifting tool for installing glass. The lifter features a rechargeable battery and an audible alarm that warns when the vacuum level is too low or the battery is running down. With the removable extension tubes and suction cups, it is possible to adapt the device for different glass sizes. Additionally, a short suspension arm makes it possible to install glass under balconies.

219/310-8458 | AUTOMAKASSEMBLY.COM

## PRODUCTS



01

02



04



### 04. Winlet 2200

Reachmaster North America LP highlighted the Winlet 2200, the largest glass handler of the series, capable of lifting 2,200 pounds. According to company officials, the self-propelled handler improves job efficiency and is safer than manual handling. The handler offers a narrow footprint, allowing access through doorways, as well as in elevators and on balconies—and its twin wheels allow for use in rough terrain operations. 281/358-7088 | WINLETUSA.COM



03

05



### 05. MRPT16 Rotating Lifter

Wood's Powr-Grip promoted its manual rotator/power tilter MRPT16 vacuum lifter. The lifter features a large capacity and powered tilt, and can be ordered with an integrated counter-balancer that keeps heavy loads from tilting forward. To prevent accidental releases, an integrated weight sensor stops the lifter from detaching from unsupported loads. It comes with Intelli-Grip Technology, automatically monitoring vacuum and power systems to maximize safety and efficiency while simplifying maintenance and repairs. 406/628-8231 | WPG.COM

### 01. MPK50

Jekko USA offers the MPK50 minipicker crane. The crane is radio remote-controlled and battery-powered. It offers a 5-ton pick and carry boom rotation system and frontal stabilizer bar. 410/388-9144 | FASCAN.COM

### 02. Spider Dual Monorail

The Dual Monorail System from Spider is a complete and customizable solution for challenging curtain wall applications. It provides continuous, horizontal mobility for swing stages and material hoists around a structure's perimeter. 877/774-3370 | SPIDERSTAGING.COM

### 03. Vector Glazing Robots

Quattrolifts developed the Vector range of glazing robots that can lift maximum glass weights of 880 to 1,800 pounds. The range includes the Vector 880, Vector 880 Off Road and Vector 1800 Off Road. All Vectors come standard with six vacuum cups, along with a dual vacuum pump and vacuum system. Vectors also use a slewing bearing for 360-degree glass rotation, which is far safer and stronger than a single main central bolt or shaft, to support all the weight of the vacuum head and glass. 301/748-7127 | QUATTROLIFTS.COM

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SPOTLIGHT

## HIGH-SPEED MACHINERY ERDMAN DURA HIGH SPEED IG LINE

### Challenge

Insulating glass manufacturers expect more out of their IG production equipment, including speed and benefits such as reduced floor space and labor, and a higher-quality product.

### Solution

The Erdman High Speed Dura line produces IG at a rate nearly twice as fast as a “traditional” IG line. Total labor for the Dura High Speed line is three to four operators per up to 1,200+ units per shift.

### Case in Point

Kyle Hawthorn, Mathews Brothers Co., shares how the Erdman® High Speed Dura line changed production:

“The Automated Parallel Process Duralite IG line has given us a huge advantage in an area with a very low unemployment rate. We have been able to shift a significant amount of labor into more critical thinking tasks. We can accomplish what we do on one of our standard goal post lines (12 employees, 10-hour shift) with four employees in an 8-hour shift on the Erdman Automation line. Additionally, SAM, or the ‘Swiggle Application Machine,’ which automatically applies the Duralite, also lowers the amount of soft tissue wrist injuries by decreasing repetitive tasks needed to be done by employees. “The inkjet printer allows us to stamp the spacer system as opposed to etching the

Sponsored By



For more information, contact Erdman Automation at 763-389-9475 or visit [erdmanautomation.com](http://erdmanautomation.com).

Left: The Erdman® High Speed Dura line produces IG vertically in a fashion that nearly doubles the speed of traditional vertical lines—a first for vertical automation for the single-seal IG market. Vertical production eliminates the need to tip a unit up to four times in the production sequence, which saves time, eliminates injury potential, qualifies more operators for service and minimizes breakage.

glass with a laser or sand. This allows us to greatly minimize any obstructions to the sight line or view of the windowpanes. And, the argon filling chambers have lowered our costs as they fill more efficiently than any of our previous methods.

The unique industry heating methods allow for immediate sealing of the units, which increases our quality control and leads to a better product for our customers. The final press has an application of even pressure, as an alternative to the standard tapered roll press, which we feel adds to the quality of the units.”



01



02

## Industry Products

### 01. Glass door

Faour Glass Technologies' Slimpact door system passed AAMA 920-11 for AW Class Doors. The test was conducted and certified by Intertek test lab in Tampa, Florida. The Slimpact door exceeded the minimum AW Class requirement of 500,000 cycles by another 500,000, doubling the number of applied cycles needed to achieve the AW Class Door rating. AAMA 920-11 is a test standard for the Operating Cycle Performance of Side-Hinged Exterior Door Systems.

813/884-3297 | FAOURGLASS.COM

### 02. Security system

Oldcastle BuildingEnvelope launched ArmorGarde and ArmorOne, security solutions that offer forced-entry protection. ArmorOne™ and ArmorOne™ Plus, standard and enhanced systems respectively, are complete storefront, entrance and glazing systems whose components are tested together to provide forced-entry resistance to a multitude of industry-recognized testing standards. The glazing is composed of laminated insulating glass units with proprietary interlayer makeups that excel in forced-entry test standards. Applications include school entrances, recreational buildings, retail storefronts and pharmacies.

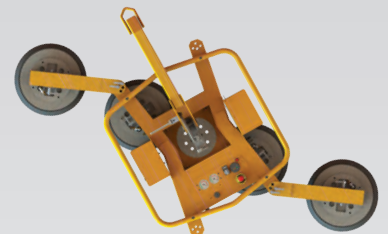
866/653-2278 | OBE.COM



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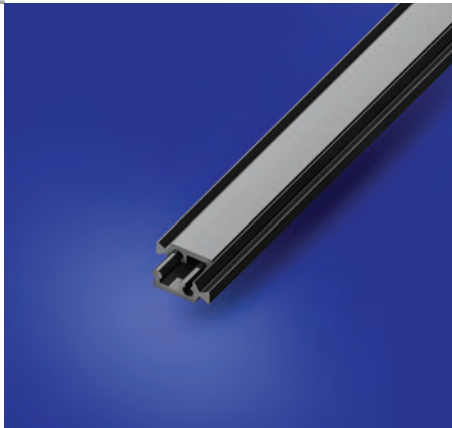
## PRODUCTS



01



02



03

### 01. Coating process

GGI launched the Enhance coating process to create easy-to-clean, protected glass surfaces for custom fabricated glass, for both interior and exterior applications. As a certified fabricator, GGI applies the ultra-thin, permanent coating to one or both glass surfaces using EnduroShield X-Line High Speed automated coating equipment. This machine-applied coating creates a uniform, durable coating that keeps glass looking clean and clear for long-lasting results with minimal upkeep. Enhance glass surfaces are hydrophobic and oleophobic; they repel water, oil and other contaminants.

800/431-2042 | GENERALGLASS.COM

### 02. Glass protection

Unelko Corp. released Invisible Shield PRO 15, which was developed after years of research for the preservation, enhancement and “easy clean” benefit of commercial glass. This cleaner durably protects glass with a hydrophobic water, soil, stain and bio-film repellent “barrier” that preserves and protects glass and other surfaces against corrosion, scratching, pitting, and the adhesion and growth of bio-films and microbes.

480/991-7272 | UNELKO.COM

### 03. Thermal barrier

Technoform introduced a new, shearless polyamide thermal barrier for windows, doors and façade systems. This new thermal barrier solution significantly reduces the deformation caused by uneven thermal expansion in aluminum framing members and minimizes thermal conductivity to improve energy performance. Made from environmentally-friendly polyamide 6.6, Technoform’s new shearless thermal barrier is available in multiple standard widths and can be further customized for project and customer needs.

330/487-6600 | TECHNOFORM.COM

### Hands-free door

AD Systems’ new AutoMotion is an automatic sliding door system that features a low-energy operator and safety sensors to ensure easier, safer entry with a wave or push of a button. In operation, the new automatic sliding doors open and close quietly thanks to a low-noise unit and advanced brushless motor and worm gear integration. AutoMotion also enables energy efficiency, as the solution can function on a wide range of power input, and comes with an energy-saving standby mode.

425/740-6011 | SPECADSYSTEMS.COM





05

**05. Window and door hardware**

Rehau launched its new Rehau Attivo hardware program, which includes the European-made Kovinoplastika Lož Hardware ARXspin line, throughout the United States, Canada and Mexico. The product range being offered in North America through the new Rehau Attivo hardware program includes Rehau branded components for window and balcony door configurations that can support up to 287-pound sash weight and up to 94.5-inch sash height.

703/618-1088 | REHAU.COM



06

**06. Laser scanning**

Faro Technologies Inc. launched Faro Trek, a fully autonomous 3D mobile scanning integration built in collaboration with the Massachusetts-based robotics firm Boston Dynamics. The solution combines the scanning speed and accuracy of the FARO FocusS Laser Scanner with Spot, a quadruped robot capable of remote and autonomous data capture in challenging environments. Ideal for general contractors and construction managers to verify production and quality on jobsites, Trek leverages Spot's Autowalk feature to create a repeatable automated scanning workflow.

800/736-0234 | FARO.COM



07

**07. Vacuum lifters**

ETK International Inc. has been supplying the glass industry throughout North America with products from euroTECH Vertriebs GmbH since 2003. Along with euroTECH's suction cups and MTC suction cup covers ETK is now stocking euroTECH's eT-Hover Univac lifters. Featuring euroTECH's dual vacuum safety circuit and designed for both indoor and outdoor use, these lifters are suitable for lifting and moving large surface loads made of glass, wood, coated particle boards, as well as other materials such as stone, metal or plastic.

704/819-1541 | ETKINTERNATIONAL.COM



08

**08. Digital printing**

Xaar, an inkjet printing technology company, launched a simple-to-install printhead, following close collaboration with its global original equipment manufacturers. Designed to deliver 720 dpi print resolution quality and performance across a range of applications including glass, the new Xaar 2002 has been developed specifically to provide fast and easy integration and is ready to use straight out of the box. Using drop-in printhead alignment, mechanical tolerance improvements allow the printheads to be dropped into the printbar more easily.

+{44} 1223-4236-63 | XAAR.COM

**PRODUCTS**



01

**01. Digital publication**

The Italian Trade Agency and GIMAV produced a dynamic digital publication highlighting glass machinery, equipment and tool solutions from leading Italian manufacturers. The dynamic and mobile-responsive digital publication highlights products from 22 companies, with videos, photos and additional resources. View the publication at [GlassBuild.Readz.com/Italian-Glass-Industry](http://GlassBuild.Readz.com/Italian-Glass-Industry).

281/888-4288 | ICE.IT/EN



02

**02. Production app**

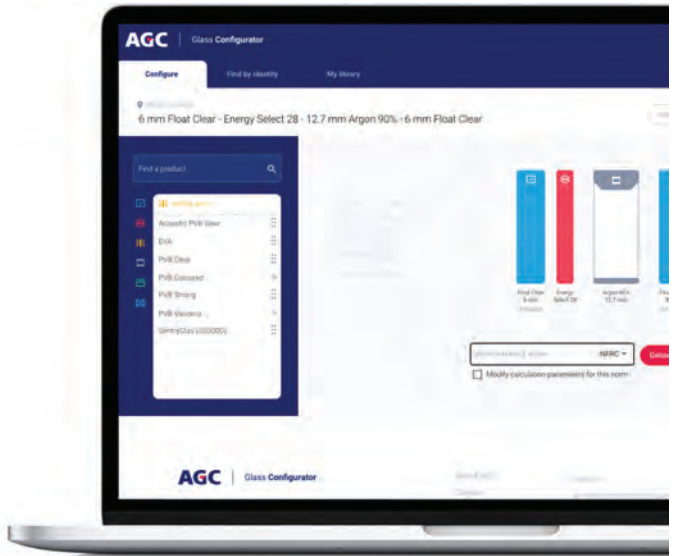
Hegla's Shop-Floor Assistant App works to close gaps produced by the need to unify different digital processes. The app provides operating personnel with key information to help reduce process times. For example, the "Maintenance" section of Shop-Floor Assistant offers comprehensive options for simplifying and centralizing maintenance and service tasks. Whether it's a glass machine, stacker, roll-up gate or indoor crane, all documents and maintenance jobs can be filed in the app, which reduces handling time and means the information is available anywhere via smartphone, tablet or an AR headset.

+{49} 0527-3905-0 | [HEGLA.COM](http://HEGLA.COM)

**03. Online tool**

AGC Glass North America launched the new AGC Configurator. A robust, user-friendly online tool, the AGC Configurator allows design professionals to select, review and specify the optimal glass solution for their projects based on the customized specifications they create. Available on the AGC website, the tool provides architects and fabricators the ability to create their own profile and preferences. As they review the many solutions manufactured by AGC, they can gather and synthesize granular details so they can specify the right product for the job.

+{81} 3321-8574-1 | [AGCGLASS.COM](http://AGCGLASS.COM)



03

PEOPLE

**Guardian Glass**

Ron Vaupel, president and CEO of Guardian Industries, assumed leadership of the company's glass business following the departure of Kevin Baird, formerly president and CEO of Guardian Glass. In further changes at the senior leadership level, Rick Zoulek and Guus Boekhoudt have each been named executive vice president for Guardian Glass. Zoulek oversees the company's operations in North, Central and South America, while Boekhoudt will now add Guardian Glass operations in India, the Middle East and Africa to his previous responsibilities in Europe and Asia.

**Apogee Enterprises**

Apogee Enterprises Inc. announced that Joseph F. Puishys communicated to the Board his intent to retire from his role as CEO and member of the company's board of directors effective Feb. 27, 2021, the conclusion of the company's fiscal

year. Puishys has served as CEO and a member of the company's board since 2011. The board has initiated a process to identify the company's next CEO and has retained a leading executive search firm to support the process.



Bracamonte



Brion

**Vitro Architectural Glass**

Vitro Architectural Glass had several personnel changes in recent months. Martin Bracamonte was appointed to the newly created post of vice president, marketing and innovation. In his new role, Bracamonte will oversee marketing efforts for Vitro Glass throughout the U.S. and Canada while also leading a range of value creation efforts across all aspects of the business. He also will be responsible for managing

profitability and operations initiatives for value-added product platforms.

Vitro also appointed several account managers. The company named Heather Brion the Western region national architectural manager team leader, replacing Dan Adams, who recently retired. Andre Kenstowicz was named commercial account manager for the Pacific-Mountain region, which covers Northern California, Nevada, Utah and Colorado.

In the eastern sales regions, Vitro named Daniel Plotnick commercial account manager for the New England/Metro New York City region in the U.S. as well as all of Europe. The company also appointed Mike Dishmon as commercial account manager for the Mid-Atlantic region, and Michael Shettler as commercial account manager for the Mid-South region.

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PEOPLE

**Glaston Corp.**

The board of directors of Glaston Corp. appointed *Anders Dahlblom* as president and CEO of Glaston. Dahlblom joins Glaston from Owens Corning where he has been working since 2019 as vice president and managing director of the European Insulation business unit. Prior to this position he has, among others, held the position as managing director and CFO at Paroc Group. Owens Corning, specialized in building and industrial materials, acquired Paroc Group at the beginning of 2018.



Reinhart

**Salem Flat Glass & Mirror**

Salem Fabrication Technologies Group Inc., formerly Salem Distributing Company

Inc., made changes in ranks along with its recent rebrand and restructure. Mike Willard, CEO of Salem FTG, announced

that *Dan Reinhart* has been named president of Salem Fabrication Supplies, the newly integrated tooling and supplies division previously comprising four separate industry divisions. Company officials also announced the promotion of *Ashley Price* to Eastern region sales director for Salem Fabrication Supplies. Additionally, the company welcomed *Anthony Worobe* to the sales team as regional account manager for the Northeastern region of the U.S.



Schiavone

**Safti First**

Safti First added *Joe Schiavone* as director of sales. In this role, Schiavone will be responsible for directing all inside and outside sales activities while working closely with R&D, operations, marketing, engineering and project management to increase sales volume, say officials. He will also lead

the sales efforts for Titan Metal Inc., the custom metal door and framing division, and O’Keeffe’s Inc., the architectural aluminum ladder division.

**YKK AP America**

YKK AP America appointed new sales reps. The company welcomed *Juan Hernandez* as architectural sales representative for the Southwest market. Hernandez will expand the company’s efforts in Houston and the Southwest region, providing sales support and resources for architects and glazing contractors. YKK AP also hired *Tyler Quinn* as architectural sales representative for the Southeast market. He is now responsible for servicing architects and glazing contractors in the Louisiana and Mississippi markets to build and maintain long-term relationships. ■

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Glass Magazine®'s classified ad section provides a convenient, cost-effective way to reach our unique and verified print and digital subscribers. The deadline for the March issue is Jan. 22, 2021. For more information or to submit your ad for a price quote, e-mail: [classifieds@glassmagazine.com](mailto:classifieds@glassmagazine.com). New equipment/product ads are prohibited.

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**Principals:** Bill Pilcher and Tony Wood

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**Model 3317:** 60 Ft. long x 60" wide system, complete with Quench section and infeed conveyor.

The system will accept glass 1/2" (12.0mm) thick by 120" long and runs continuously.

Maximum line speed is 300 Inches per minute on 2.7mm thick glass at a rate of 7500 Square Feet per hour.

Power consumption is 2400 KW/hr. **Price: \$200,000 - this does not include removal cost.**

**Model 2775:** 120 Ft. long x 60" wide system, complete with Quench section and infeed conveyor.

The system will accept glass of similar size and meets performance standards of ANSI Z97.1-1990 per 16CFR 1201.

The operator rooms, Control systems and field devices

(sensors and heating controls) are in place.

The maximum line speed on the 120 Ft. line is 580 Inches per Minute on the thinner glass.

These require 480VAC, 3 phase supply. **Price: \$250,000 - this does not include removal cost.**

Please call Tony Dawson 423-229-1852 or Keith Moody 423-229-1265 for information, pictures and or questions.

Both units can be inspected onsite by appointment only in Kingsport, Tennessee

**Both systems are without Quench and Cooling Blowers, but have ductwork intact that will connect to the quench and cooling systems.**

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#### Responsibilities:

- Prospect, evaluate and develop sales leads through a variety of channels and generate interest in IGK's solutions among target customers
- Develop strong long-term partnerships with customers in the assigned territory by providing technical expertise and excellent levels of service
- Accompany IGK on sales visits to customer sites as appropriate
- Provide full estimation services to customers by analyzing their proposals, specifications and products and services, while applying knowledge of specialized methodologies, techniques, principles and processes.
- Maintain industry and technical product

knowledge by attending relevant educational workshops and company-sponsored technical training and by reviewing professional publications

- Establish and nurture professional networks within the industry
- Provide technical assistance to customers as needed
- Act at all times with the highest levels of integrity and professionalism

#### Qualifications:

- Track record of Sales success in the insulated glass industry supported by a strong technical knowledge in the field. Candidates should ideally bring an existing contact network of potential target customers.
- Excellent communication and presentation skills and the ability to explain advanced technical concepts in layman's terms
- Strong organizational and problem-solving skills
- High levels of enthusiasm, energy and self-motivation
- Ability to travel frequently within assigned territory
- Ability to calculate figures and amounts such as discounts, fractions, percentages, area, and volume.

Send resume to: Christoph Schick (VP), [cs@na.igk.global](mailto:cs@na.igk.global), 872/205-1711.

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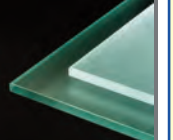
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# Suppliers Guide

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### RAY BAR

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E-mail: sales@mcgrory.com  
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Fax: 415/824-5900  
E-mail: info@safti.com  
www.safti.com



## Technical Glass Products

8107 Bracken Place SE  
Snoqualmie, WA 98065  
Phone: 800/426-0279  
Fax: 800/451-9857  
E-mail: sales@fireglass.com  
www.fireglass.com



## Vetrotech Saint-Gobain Fire-Rated Glass and Framing

2108 B St. NW, Ste. 110  
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Phone: 888/803-9533  
E-mail: vetrotech.sales@saint-gobain.com  
www.vetrotechusa.com



## FOLDING

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www.solarinnovations.com



## GLASS

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www.solarinnovations.com



## RAILINGS



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www.fhc-usa.com

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www.solarinnovations.com



## STOREFRONTS & ENTRANCES

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**REBCO Inc.**  
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www.vetrotechusa.com



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## ARCHITECTURAL

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## DECORATIVE

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www.interlayersolutions.com

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Website: www.smartrigcranes.com

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 Fax: 845/547-0328  
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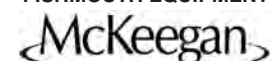
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 j.nudi@ergorobotic.com  
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E-mail: claire@amerope.com  
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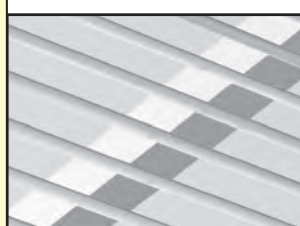
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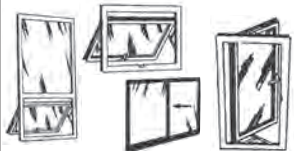
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Companies from all parts of the glass and glazing industry have implemented innovative, out-of-the-box ideas to improve business from the ground up. Here's an Idea showcases these sometimes small behind-the-scenes ideas that can make a big impact on 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).

## COMPANIES LAUNCH NEW ONLINE TOOLS DURING COVID

As the pandemic continues, online and virtual tools have become the norm for the communication of information. Many companies have built out their online platforms to make information more accessible to online traffic and potential customers. Pilkington UK, Oldcastle BuildingEnvelope and Laurier Architectural Services are some of the businesses that have released online tools in recent months.



### Pilkington UK Ask Pilkington

“Ask Pilkington” is an “online encyclopedia of all things glass” hosted on Pilkington United Kingdom Ltd.’s website. The tool is searchable and designed for industry users as well as architects, specifiers and homeowners. Users of the database can search a question or keyword, and the encyclopedia’s “smart search” function will scan hundreds of articles to return relevant information, according to a company release.

Phil Brown, European regulatory marketing manager at the company, says that moving the information online is necessary to speak to the new generation of glass professionals who are accustomed to a digital environment. “Ask Pilkington aims to have all this information in one convenient place for quick reference—something that’s important in meeting the needs of the next generation of digital native glass professionals, homeowners and architects, who are used to finding answers at a click of a button,” he says.

### Oldcastle BuildingEnvelope OBE Academy

Oldcastle BuildingEnvelope launched OBE Academy, an online education portal that offers on-demand courses focused on a range of industry-related topics, including the benefits of natural lighting and how to select curtain wall, window wall or storefront for a project.

OBE’s curriculum is certified by the American Institute of Architects, and the courses count toward continuing education credits. “We are excited to roll out our new learning management system, especially at a time when virtual learning has become an essential resource for architects who have traditionally obtained many of their continuing education credits through in-person events,” says Brenda Kelly, vice president of marketing at OBE.

OBE Academy is available on the company’s website, and requires free registration.

### Laurier Architectural Chatbox

Laurier Architectural implemented a new chatbox feature on its website; the functionality allows website visitors to have a conversation with a company representative upon visiting the site.

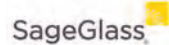
In adding this feature, Laurier Architectural officials also cited the need to adapt to the expectations of a younger generation, as well as the new communication realities created by the pandemic. “In this period when teleworking is becoming widespread, it became obvious that a new channel of communication with the group’s partners had to be added,” say officials in a company release. “The new generations prefer to exchange in text or chat mode rather than making a call, going through telephone directories and/or leaving messages on voice mailboxes.”

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-Devin Norton, project designer, HOK San Francisco

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