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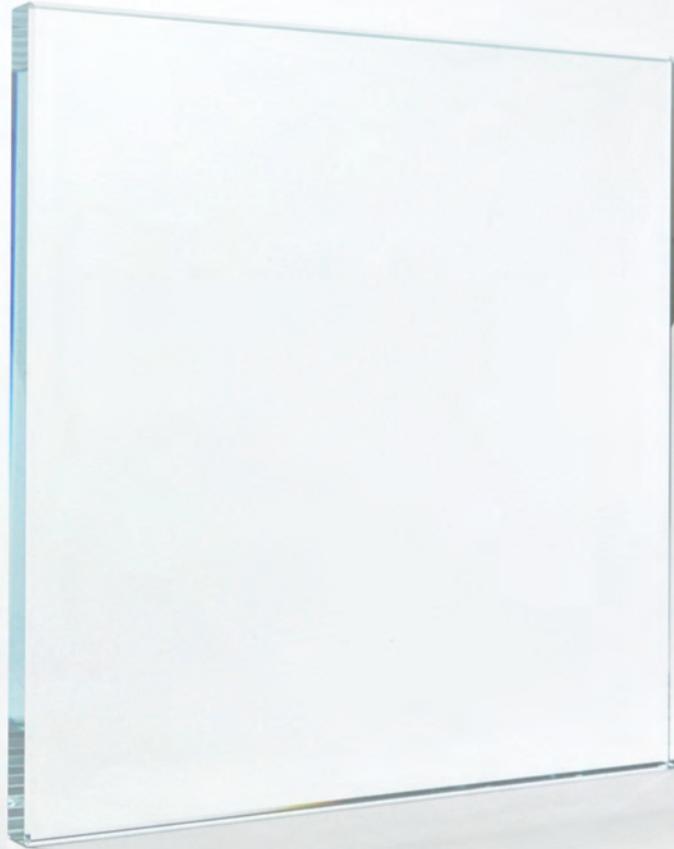
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Ottawa LRT stations, Ottawa, Canada. Top Metal Company Flynn Group of Companies supplied metal systems.

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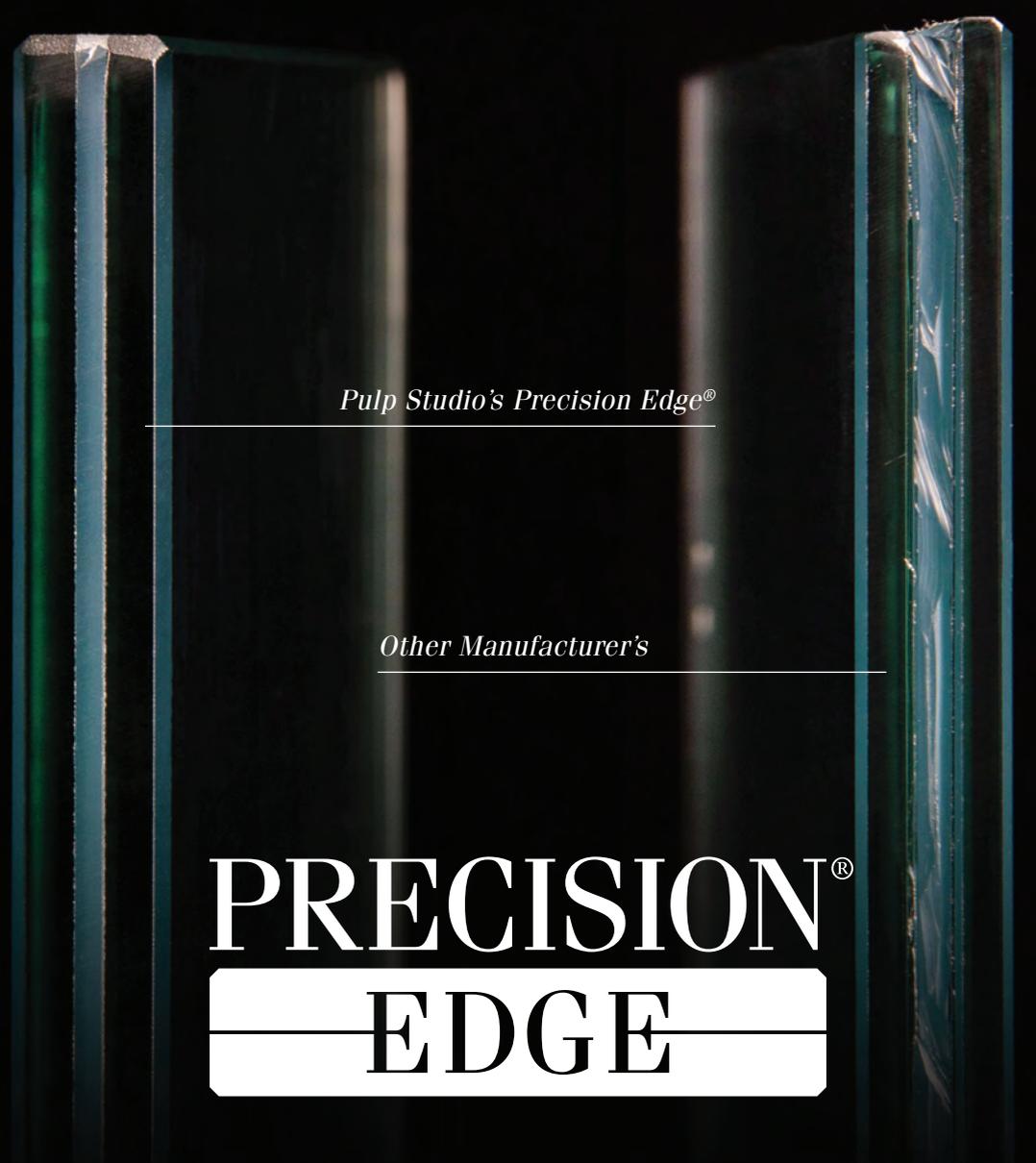
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ON THE COVER:

Two key challenges are keeping industry leaders up at night: the labor shortage and ongoing supply chain constraints. Hear from Top Metal Companies on the topic on page 30, and from GlassBuild America exhibitors and attendees on pages 8 and 44. Pictured is One Museum Square, Los Angeles, which features about 3,500 linear feet of C.R. Laurence's Unitized Glass Railing.



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By Max Perilstein, Sole Source Consulting



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MEDIA
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By Sara Barchak, EFCO Corp.

PROJECT SHOWCASE



Featured in Glass Magazine Weekly and on GlassMagazine.com. To submit projects or case studies, write Norah Dick, ndick@glass.org. Pictured: The Frazier History Museum in Louisville, Kentucky, features 140 linear feet of Trex Commercial Products' railing, delivering a modern aesthetic and unobstructed views. Cardinal Glass manufactured the glass, and KY Mirror provided installation.

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What Can Help with Labor and Supply Challenges?



KATY DEVLIN
Editor-in-Chief
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What's keeping the glass industry up at night? Exhibitors, attendees and speakers at GlassBuild America all pointed to two major challenges: the ongoing labor shortage and pandemic-related supply chain constraints.

Neither concern has a quick fix. However, during GlassBuild, my colleague Norah Dick, associate editor, and I chatted with dozens of industry representatives at the show, who discussed what they are doing, and what their customers are doing, to lessen the impact of the ongoing headwinds.

Labor

There is no silver bullet for attracting and retaining high-quality workers. But, glass industry companies can adjust management and hiring practices, and invest in new processes and equipment, to help. Exhibitors say automated solutions have become even more in demand during the year. "The pandemic may have put the industry over the edge in terms of automation. Getting more labor isn't an option," says Anthony Pigliacampo, CEO and chairman, Joseph Machinery Co.

Many automated solutions not only reduce the number of workers required for production, they also simplify tasks for the operators who remain. "We're simplifying the machine for the operator. Previously, it was a complicated process that required a lot of training. We've taken away 80 percent of what the operator has to do," says Joe Gates, vice president of Lattuada North America.

Additionally, companies can look to business practices to address the labor shortage. Speakers during the Personnel Issues Roundtable panel at the Glazing Executives Forum, held in conjunction with GlassBuild, said a strong company culture with employee-focused management and incentives is necessary to keep workers. It starts with fair compensation but can also include incentives and rewards such as tuition reimbursement, unlimited paid time off and flexible scheduling.

Supply chain

The pandemic upended global supply chains, leading to delays and material cost inflation. What

can help? When it comes to delays in building materials, communication is key among all players, says Ken Simonson, chief economist for the Associated General Contractors of America, during his keynote at the GEF. "For glaziers, let a contractor know if you're not going to be able to supply on time or with the quantity needed. Put that information in your documents," he says. AGC also developed supporting documents and resources to help communicate the ongoing supply and pricing challenges to owners and officials.

Suppliers have also been active in addressing customer needs. "We try to help our customers by reaching out to get them to purchase spare parts well ahead of when they think they will need them," says Derek Burkholder, vice president of sales/engineering, Casso-Solar Technologies. Officials from FHC say they have been paying to fly some products and parts instead of shipping, and Lisec officials say they have worked to keep inventory in North America. Similarly, Tim Minne, managing director of Mecal USA, says the company focused on providing parts reliability for its customers. "If we don't have a part for a customer, we order two for inventory. It's about service that goes above and beyond," he says.

Syndi Sim, vice president of marketing and business development for DFI, says she has seen companies step up to help one another. "The need for glass as well as hardware has been extremely hard on parts of the industry; however, I have seen so many positive conversations with competitors helping each other, doing whatever they can to fill orders and satisfy the end customer," she says.

There is light at the end of the tunnel when it comes to the supply chain, says Connor Lokar, ITR senior forecaster, speaking during the GEF. ITR anticipates the global economy is going to peak in the first quarter of 2022, then see a deceleration. As the pace of growth tempers and returns to more normal levels, supply will be allowed to catch up to demand, Lokar says. "You'll see gradual improvement as [2022] wears on," he says.

For more solutions and innovations from the show floor, see coverage on page 44 and visit GlassBuild.com. ■

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YOUR ASSOCIATION AT WORK



Immediate Past Chair Cathie Saroka welcomes Guy Selinske as new board chair

NGA ANNOUNCES NEW BOARD OFFICERS, NEW MEMBER

NGA is pleased to announce new board officers and a new board member, who took office for its 2021-22 term on Sept. 14, at GlassBuild America: The Glass, Window & Door Expo in Atlanta.

Board officers for the 2021-22 term are Chair, Guy Selinske, American Glass & Mirror, Prior Lake, Minnesota; Chair-elect, Brian Hale, Hale Glass Inc., Placentia, California; Treasurer, Doug Schilling, Schilling Inc., Galion, Ohio; and Immediate Past Chair, Cathie Saroka, Goldray Glass, Calgary, Alberta, Canada.

Joining the board is Jodi Martinez, AllStar Glass Co. Inc., Spokane Valley, Washington.

Returning board members are Denise Bardwell Baker, Spring Glass & Mirror, Spring, Texas; Ron Crowl, FeneTech, Aurora, Ohio; Chris Dolan, Guardian Glass, Auburn Hills, Michigan; Tim Kelley, TriStar Glass Inc., Catoosa, Oklahoma; Silas Koonse, Koonse Glass Co. Inc., Columbia, Missouri; Rick Locke, Montana Sash & Door, Bozeman, Montana; Courtney Little, Ace Glass, Little Rock, Arkansas; and Jim Stathopoulos, Ajay Glass, Canandaigua, New York.

Departing the board after six years of service is Chris Bole, Pikes Peak Glass Inc., Colorado Springs, Colorado. NGA appreciates his dedication and leadership. ■

NEED-TO-KNOW INFORMATION FROM THE NGA

NGA RECOGNIZES MFG DAY AND CAREERS IN CONSTRUCTION MONTH

During October, NGA announced support of two initiatives that are designed to help companies recruit the next generation to the manufacturing and construction industries: MFG Day, formerly Manufacturing Day, organized by the Manufacturing Institute and held Oct. 1, and Careers in Construction Month, or CICM, an initiative of Build Your Future and NCCER, held throughout October.

MFG Day helps show the reality of modern manufacturing careers by encouraging thousands of companies and educational institutions around the nation to open their doors to students, parents, teachers and community leaders. MFG Day empowers manufacturers to come together to address collective challenges to help their communities and future generations thrive.

Meanwhile, CICM was created to promote the wide range of successful and lucrative construction career paths and to enlighten the public's perceptions of construction. This year's focus is to encourage industry representatives and educators to make meaningful connections.

NGA shared a number of resources for the events, including a toolkit for recruitment and training. Visit glass.org to view and download the resources. ■

HIGHLIGHTS FROM NGA GLASS CONFERENCE: SEPTEMBER

NGA Glass Conference: September brought glazing industry technical leaders back together in person on Sept. 15 in Atlanta, in tandem with GlassBuild America. The conference included educational and informative presentations and discussions, with actionable takeaways for NGA Committees.

The meeting included a Glazing Industry Stakeholder Discussion that looked at bird-friendly glazing, discussions on sustainability and embodied carbon, a presentation on school security, an update on codes and standards, and a presentation on the new Frameless Shower Enclosure Design Guide.

NGA technical volunteers also provided updates on new resources, including a new glass technical paper on thermal bridging, and an updated glossary of decorative glass terms. Visit glass.org for complete event coverage. ■



GLASS INFORMATIONAL BULLETIN

Spontaneous Breakage

All heat-treated glass will break when the compression layer is completely penetrated. Surface or edge damage, which does not completely penetrate the compression layer, can be slowly propagated by thermal or wind cycling and result in breakage from no apparent cause. This breakage may occur days, months or even longer after the damage has occurred.

The majority of heat-treated glass spontaneous breakages are from one or a combination of the following causes:

- surface or edge damage
- deep scratches or gouges
- severe weld splatter
- missile/windborne debris impact
- glass to metal contact
- wind/thermal loading
- inclusions.

Inclusions

In the manufacturing of float glass, impurities may be introduced into the molten glass. Most of these cause no problems. Some may remain in a solid, opaque state and appear as dirt or other inclusions within the glass.

The size and frequency of allowable inclusions are listed in ASTM C1036 and similar international quality standards. With few exceptions, inclusions are considered to be appearance imperfections only and do not affect the performance of the glass. Nickel sulfide inclusions—and a few other extremely rare types—are an exception.

Nickel sulfide inclusions may be formed whenever nickel-rich contaminants, such as stainless steel and nichrome wire, are unintentionally introduced into the glass-melting

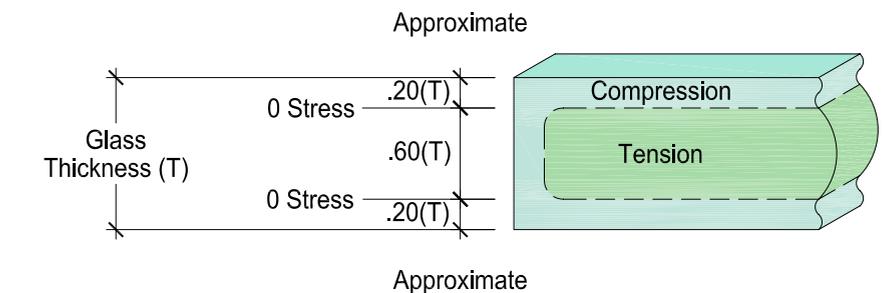


Figure 1: Heat-treated glass compression and tension zones

Glass manufacturers take extraordinary steps to minimize the potential for nickel sulfide inclusions. Considering a large glass furnace may produce up to 800 tons (726 tonnes) of glass per day, total elimination of contaminants is not possible.

furnace along with the desired materials. The nickel may combine with sulfur in the furnace fuel or the batch materials to form nickel sulfide inclusions. In annealed glass, these are harmless and are considered on the same basis as all other inclusions.

During the processing of fully tempered glass, the nickel sulfide inclusions are transformed into a state wherein they will expand irreversibly with time and temperature. If the inclusion is tightly held in the glass (i.e., not surrounded by a bubble) the expansion may produce sufficient stress to cause spontaneous glass breakage at a later point in time. The fracture caused by the expansion of the inclusion is quickly propagated in

fully tempered glass because of the high tensile stresses inherent in the thickness center of the glass (see Figure 1).

The expansion of the inclusions is very temperature-dependent. Glass that has a high time-weighted average temperature will experience breakage much sooner than glass that is generally cooler, all other items being equal. For glass on the exterior of a building, the period of time for the inclusion to reach its ultimate size varies.

Glass manufacturers take extraordinary steps to minimize the potential for nickel sulfide inclusions. Considering a large glass furnace may produce up to 800 tons (726 tonnes) of glass per day, total elimination of contaminants is not possible.



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GLASS INFORMATIONAL BULLETIN—SPONTANEOUS BREAKAGE

Figure 2: Glazing face, edge clearance and bite dimensions (see Table 1 for dimensions)

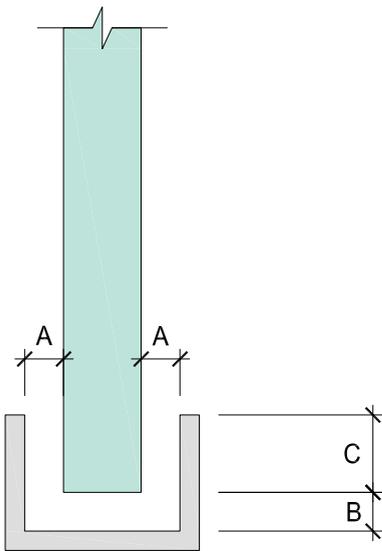


Table 1: Typical recommended minimum Face & Edge Clearance and Glazing Bite (from NGA with GANA Glazing Manual)

Recommended Minimum Face & Edge Clearance & Glazing Bite							
Thickness		Recommended Minimums					
		A=Face		B=Edge		C=Bite	
Monolithic Glass							
inches	mm	inches	mm	inches	mm	inches	mm
S.S.	2.5	1/16	1.6	1/8	3.2	1/4	6.4
1/8 - D.S. ¹	3	1/8	3.2	1/8	3.2	1/4	6.4
1/8 - D.S. ²	3	1/8	3.2	1/4	6.4	3/8	9.5
3/16 ¹	5	1/8	3.2	3/16	4.8	5/16	7.9
3/16 ²	5	1/8	3.2	1/4	6.4	3/8	9.5
1/4	6	1/8	3.2	1/4	6.4	3/8	9.5
5/16	8	3/16	4.8	5/16	7.9	7/16	11.1
3/8	10	3/16	4.8	5/16	7.9	7/16	11.1
1/2	12	1/4	6.4	3/8	9.5	7/16	11.1
5/8	15	1/4	6.4	3/8	9.5	1/2	12.7
3/4	19	1/4	6.4	1/2	12.7	5/8	15.9
7/8	22	1/4	6.4	1/2	12.7	3/4	19.0
Insulating Glass							
1/2	12	1/8	3.2	1/8	3.2	1/2	12.7
5/8	15	1/8	3.2	1/8	3.2	1/2	12.7
3/4	19	3/16	4.8	1/4	6.4	1/2	12.7
1	25	3/16	4.8	1/4	6.4	1/2	12.7

¹ Annealed Glass Only ² Fully Tempered Glass Only

NOTE: Typical clearances above may vary by manufacturer, particularly for some special products or applications. Follow the recommendations of the glass manufacturer, fabricator or sealant supplier for individual instances.

Heat-strengthened glass

The potential risk associated with nickel sulfide inclusions can be minimized by using heat-strengthened glass. Where fully tempered glass is not required by building codes (safety glazing, fire breakouts, etc.) and/or design loads, heat-strengthened glass is the preferred product. Heat-strengthened glass will withstand thermal stresses resulting from the absorption of solar radiation and other weather-related causes. Because the tensile stresses in the center of the glass are less than for fully tempered glass, breakage from inclusions is essentially eliminated provided the surface compression is below about 7500 psi (52 MPa).

Glazing guidelines

Glass, cushioned by resilient materials, must be free to “float in the opening” (i.e., it should have adequate clearance around all edges and laterally) so it does not directly touch the framing system during static or dynamic conditions. The glazing pocket must be sufficiently wide to allow for the attachment of the glass stop without placing stress on the glass (see Figure 2 and Table 1). Stresses are additive; a pressure point created by glazing, with thermal, wind or snow loads added later, can cause spontaneous breakage in the future. Refer to the NGA with GANA Glazing Manual for glazing guidelines to properly support the glass. ■

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FLOAT GLASS

NSG/Pilkington Plant in UK Manufactures Float Glass Using Hydrogen Power in World-First Trial

Pilkington United Kingdom Ltd, part of the NSG group, successfully manufactured architectural glass at its St. Helens facility using hydrogen power in a world-first trial.

The trial is a key step in the manufacturer's plans to decarbonize and could see a transition to using hydrogen to power all production at the site, which currently uses natural gas. The switch

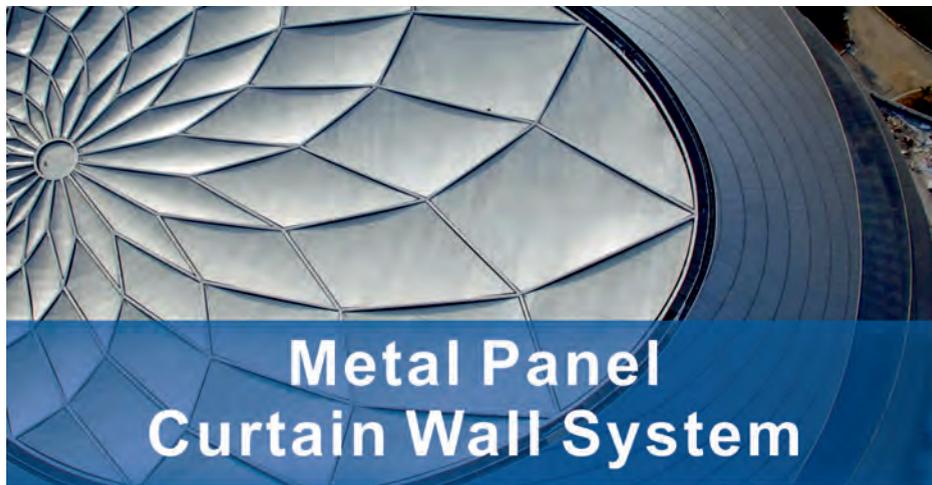
means that the float glass furnace—which accounts for the majority of the company's overall carbon emissions—would be able to run with hugely lower emissions, say officials.

Guardian Glass to Add Line at Russian Plant for Jumbo Laminated Glass Production

To support the increasing demand for laminated glass in Russia and the Commonwealth of Independent States, Guardian Glass is adding a new jumbo laminated glass production line at its

Ryazan plant in Russia. Laminated glass production is expected to begin in the second quarter of 2023.

"This investment illustrates our continued optimism and excitement about Guardian Glass' expansion in Russia and the CIS," says Guus Boekhoudt, executive vice president, Guardian Glass. "This project underwrites our vision to be a preferred partner to our customers, suppliers, employees and communities based on a foundation of mutual benefit."



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ACQUISITIONS + EXPANSIONS

FHC Acquires A. Geo. Diack Inc.

The Frameless Hardware Co. acquired the assets of A. Geo. Diack Inc. Originally started in 1953, the California-based company offers a complete line of architectural showcases, store fixtures, mirror frames, partition posts, pass-thru windows and extrusions. Through the sale, FHC has acquired all inventory, fabrication equipment and product designs for Diack's entire product portfolio.

Dynamic Glass Completes Acquisition of Colorado Window Systems

Dynamic Glass acquired Colorado Window Systems Inc. in a transaction that will expand Dynamic Glass' service capabilities in Colorado. CWS is a glass and glazing service provider to the greater Denver metropolitan area

with a focus on exterior curtain wall and storefront window systems for new construction as well as interior glass and door installation for commercial tenant improvements.

Assa Abloy Acquires Omni-ID, Capitol Door Service

Assa Abloy acquired Omni-ID, a manufacturer of RFID tags and industrial IoT hardware devices for passive and active tagging, tracking, monitoring and alerting applications, based in the U.S.

Assa Abloy also acquired Capitol Door Service, a pedestrian door distributor and service company in California, Nevada and Arizona.

8G Solutions Launches Denver Office

8G Solutions, a glazing contractor based in Kansas City, Missouri, is opening an office in Denver.

Craig Carson, vice president and general manager, will lead a hand-picked team, say officials. Carson has led design assist, budgeting and estimating procedures for, as well as the execution of, many projects in Denver over four decades. Randi Walters, project engineer, another industry veteran, will join as a solid experienced support to the operations team.

Roto North America Expands Warehouse Capacity

Roto North America expanded its warehouse capacity in Connecticut, where it acquired an 18,000-square-foot facility that the company will add to its current configuration. The new space has 16-foot-high racks, which Roto says will allow for product storage optimization. ■

**From July 1 to press time Aug. 31. Read these stories, and others, in their entirety at GlassMagazine.com*

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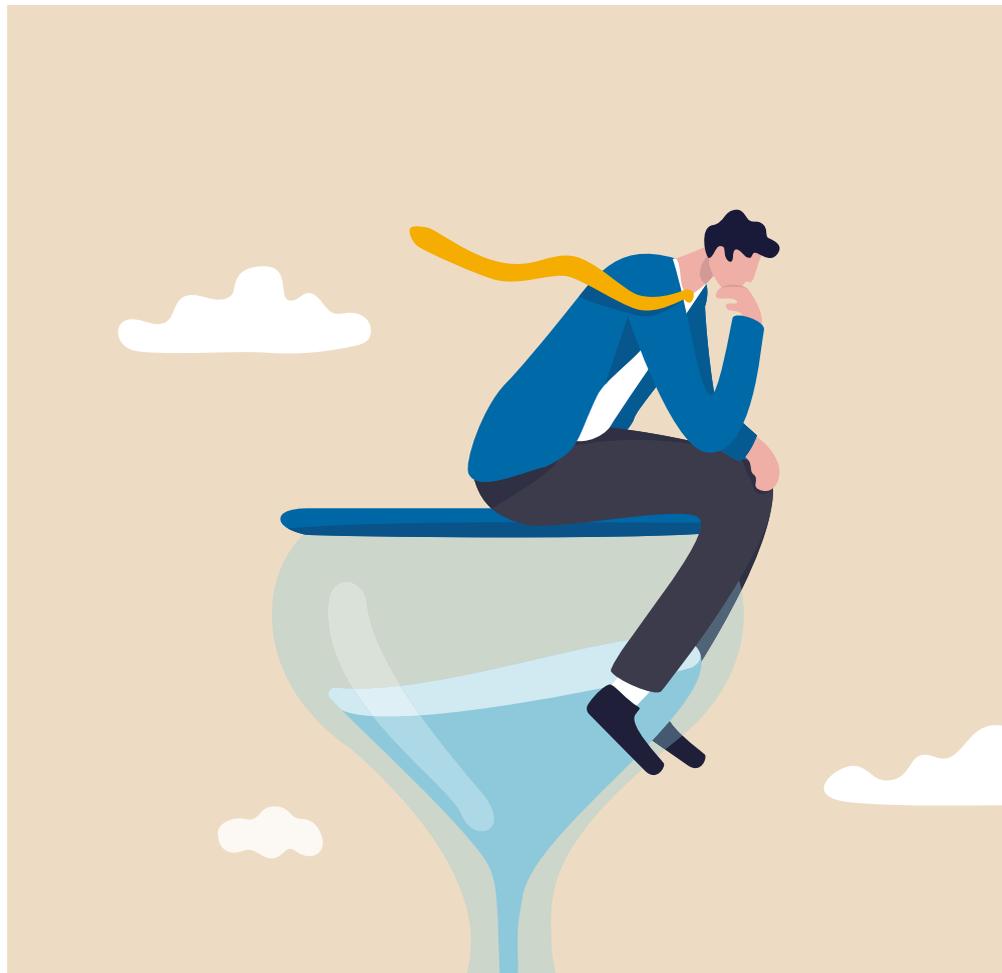


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ARE YOU PLANNING TO SELL YOUR COMPANY?

BY MARCO TERRY



Selling a good company is a complicated and trying process. It requires substantial effort and ongoing commitment that could last months or longer. One reason the sales process takes this long is that sellers aren't always ready for the sale.

Here are nine steps owners can take to ensure they are prepared to sell their business at the best possible price.

1. Make sure you want to sell

An easy way to derail the selling process is the owner attempting to sell a business they are not ready to sell. This scenario quickly scares away brokers and potential buyers.

Business owners have a strong attachment to their companies. This common situation can make selling a business very difficult. An owner must examine the reasons for selling and determine if they are willing to move forward.

If the owner does decide to proceed, they should consider changing their perception of your business. I recommend owners look at it dispassionately as the "asset" that it is—no different from a share of stock. This perception helps adjust the frame of mind about the transaction. It also helps negotiations because the owner's expectations are more realistic.



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2. Take the buyer’s perspective

Owners should look at the business objectively from the perspective of a potential buyer—that they were trying to buy the business from someone else. What would the owner need to see to encourage them to buy it? More importantly, what would discourage the owner from buying it?

This point of view allows the owner to focus on areas of the business that need improvement.

3. Get an accurate valuation

Most business owners overestimate the value of their company. This situation can create issues during price negotiations and is a common reason why deals fall through. To negotiate effectively, an owner must know the actual market value of their business.

Owners can get a quick estimate from the Business Reference Guide. It provides an idea of how similar companies in the industry are valued. The guide has no specific reference for

companies in the glass industry, but owners can look under “Construction–Specialty Trades.”

There are a few methods to value a business. The most common methods use Seller’s Discretionary Earnings (SDE) or Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) for the calculation. They are similar but have slightly different addbacks. These measures allow buyers to compare different businesses objectively. Most small companies are valued using SDE, while larger companies are valued using EBITDA.

The Business Reference Guide suggests the following valuations:

- 2 to 3.5 x EBITDA
- 2 to 2.5 x SDE + Inventory

The above methods provide an initial reference but are not perfect. Owners should also retain a professional appraiser. An appraiser can provide a more accurate representation of what your business could sell for in your market.

4. Put your financial records in order

Buyers want to acquire a good business and look for companies whose financial records are in order. Unfortunately, many small business acquisitions fall through because the seller’s financial records are disorganized and inaccurate.

Owners must ensure their accounting records are accurate and up-to-date before listing the business for sale. This step shows buyers that the business is well-managed. Financial reports also allow buyers to determine the EBITDA and SDE of the company and help them generate a valuation.

Company tax records must be well-organized and up-to-date as well. Unresolved tax problems can easily derail a transaction permanently. The best strategy is to work with a CPA to ensure financial and tax records are spotless. Sellers should be prepared to show a minimum of three years’ worth of financial records and tax returns. Having finances ironed out ahead of time

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increases a company's marketability and helps justify the asking price.

5. Get your operations in order

Potential buyers will examine a company's operations to determine if the business is well-run. Offices, warehouses and manufacturing areas should be clean and well-maintained. Employees must be professional and engaged.

Although not required, having an operations manual can help differentiate a business from others. This manual details how to operate the company and is used as a reference by employees. This can be a great tool if it is well-written and has enough details. Buyers will appreciate this manual, especially during the transition period.

6. Consider providing seller financing

Most buyers pay for acquisitions with a combination of their funds and Small Business Administration-backed financing. However, buyers usually ask

sellers to provide funding as well. This type of financing ties the seller to the business and gives the buyer confidence in the company's strength.

Offering seller financing can help the sale of your business, but it is optional. If an owner must offer seller financing, they should offer a token amount such as 5 or 10 percent. However, the owner may need to offer more to help the transaction close. It all depends on the circumstances. If an owner offers seller financing, they should have an attorney structure the note.

7. Speak to an experienced CPA

Retain a good CPA well in advance of placing a company for sale. The CPA can help fix and present the company's financial and tax reports correctly. Additionally, the CPA helps an owner structure the sale and handle any business and personal tax implications. It's best to partner with a CPA who is familiar with company sales and their tax implications.

8. Find the right attorney

Look for an attorney with experience in mergers and acquisitions before starting the sales process. An attorney with this kind of experience helps an owner navigate the transaction while ensuring the owner's interests are protected. Attorneys are expensive but necessary.

9. Speak to a financial planner

Selling a company may be the largest financial transaction in which an owner engages. Once the sale closes, the owner will have access to a large amount of money. Speak to a financial planner before closing the sale and plan how to handle the funds from the sale. ■

Marco Terry is managing director of Commercial Capital LLC, a factoring company and provider of invoice financing to companies in the glass industry.

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THE FUTURE OF METAL SYSTEMS

New developments in aesthetics, performance and design

BY MARK SUEHIRO



The glass industry is reaching new heights—literally—with modern doors and entrance systems being specified at 11 to 13 feet tall.

What brings these structures to life? New metal systems. The industry has been called on to produce innovative products that meet changing needs—almost in real time—in partnership with architects and glaziers.

Whether it's part of a new build or a thoughtful retrofit, we're seeing a few common themes in the metal systems of today: aesthetic variety, unitized and thermally broken solutions, and wellness-centered design.

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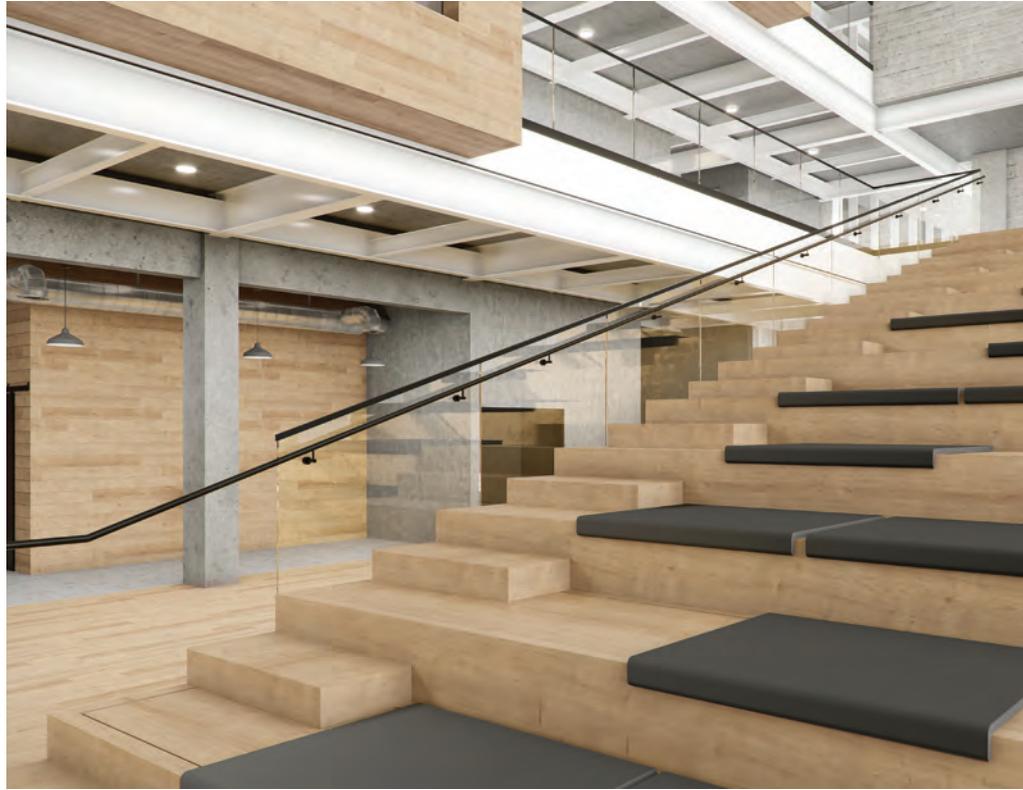
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Aesthetic variety and customization opportunities

To the eye, the beauty of hardware is in the finish; after all, it's what building occupants see and feel on a daily basis. It's also what makes product design exciting. Whether it's meeting a contemporary theme in a retrofit complex using matte black panic handles or updating an office with stainless steel freestanding glass partitions, the design flexibility of metal systems is limitless. The industry is seeing that more and more with custom requests that create unique visuals.

Unitization

Unitized systems—sometimes called prefabricated systems—will be in demand for years to come. Unitized systems are manufactured in a plant and can help combat the shortage of skilled labor, as well as speed up project completion times. Because



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unitized systems are assembled in a controlled factory environment, a consistent quality and aesthetic can be achieved.

For example, unitized glass railing systems only require setting pre-glazed railing panels into core-drilled holes and then attaching the top rail to the glass. Prefabrication is an ideal solution for saving time and money on the jobsite while achieving a consistent and beautiful install.

Thermal performance

Thermally broken fenestration systems have also been on the rise this year because they meet important, nationwide building codes for energy efficiency, including California Title 24.

Thermally broken systems are essentially the new standard. Storefronts, entrance systems, doors and windows all create opportunities for warm or cool air to escape. Systems designed with these thermal concerns

in mind help maintain comfortable interior temperatures, reducing cooling and heating loads, thus improving energy efficiency. This saves building owners money in the long run while creating a more sustainable building.

Wellness-centered design

Commercial design continues to imitate residential design in that more spaces have a warm and welcoming feel. Rooftop terraces and indoor/outdoor dining spaces take shape in both retrofits and new builds as fresh air and expansive views are now more than a luxury—a need.

These environments call for myriad metal systems: oversized sliding and bi-folding doors, windscreens, railings and narrow-frame windows. Glass is the perfect, transparent building material to create seamless transitions from interior to exterior spaces without obstructing striking views.

Furthermore, the industry is exploring

antibacterial metals for pull handles, sliders and more where hand operation is required to open and close fenestration systems.

Between new design trends, updates to building codes, and a world with ever-changing needs, the only constant in glazing is that there is no constant. And that’s something the industry is excited to address, as it calls for more innovations in metal systems. ■

Mark Suehiro is the technical director of architectural hardware at C.R. Laurence, with more than 25 years of industry experience.

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GREAT GLAZING: PRAIRIECARE MEDICAL GROUP ROCHESTER

The basics: PrairieCare Medical Group specializes in behavioral and mental health services, with an emphasis on children and adolescents. A primary focus of the design of PrairieCare's new building in Rochester, Minnesota, is providing plentiful natural daylight, made evident from the front façade's extensive glazing.

To frame the glazing and add a calming counterpoint to that elevation's pattern and color, designers opted for neutral-toned metal flush and relief wall panels installed in a vertical arrangement that echoes the curtain wall's mullions. A combination of lightness and solidity reflects the need for the space to be warm and welcoming, while also safe and secure.

The players: architect, HGA, Minneapolis (Seth Behrends, AIA, senior associate with HGA, was the project architect);

general contractor, Knutson Construction, Rochester, Minnesota; installation contractor, Innovative Building Concepts, Burnsville, Minnesota (Pat Sweeney, co-owner, was the field superintendent for the project); metal wall panel supplier, PAC-CLAD | Petersen, Elk Grove Village, Illinois; material distributor, ABC Supply, Savage, Minnesota.

The glass and systems: The vertical metal panels are .032-gauge aluminum PAC-CLAD Flush and Reveal Wall Panels in 7-inch and 11-inch widths. The finish is Weathered Zinc. Panels were installed in a double-height arrangement to add visual depth and eliminate any feeling of flatness or thinness. Architect Seth Behrends adds, "We ran through a series of studies looking at different ways to deploy the different widths and how those patterns would transfer from the top portion and bottom portion.

LOCATION: ROCHESTER, MINNESOTA
METAL SUPPLIER: PAC-CLAD | PETERSEN
ARCHITECT: HGA

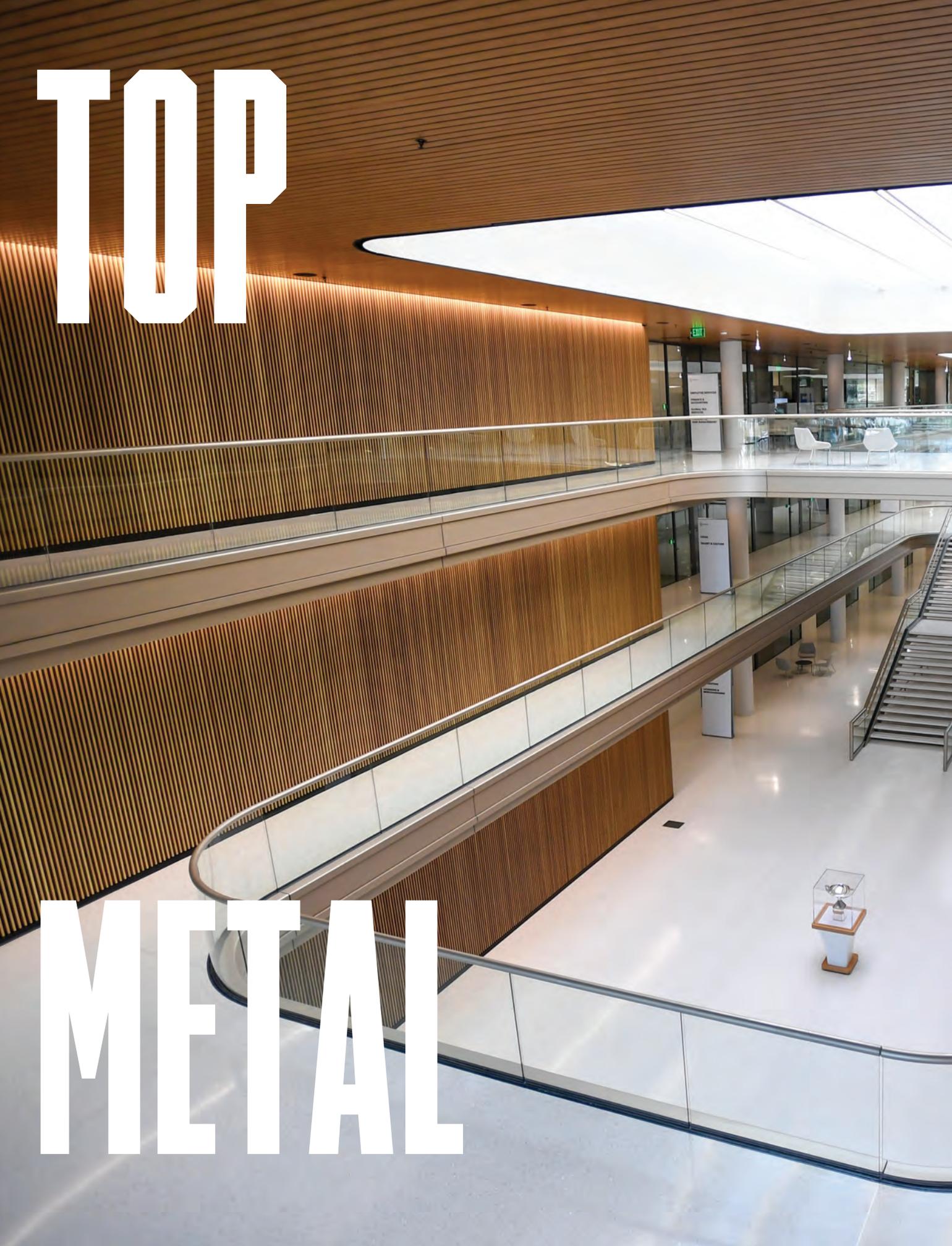
Ultimately we landed on a repeat that appeared to be random but could be communicated to the installers."

Behrends explains his team worked through some of the design details in-house, then reached out to Petersen's experts and the installation pros with installation firm Innovative Building Concepts. "We had a couple rounds of shop drawing reviews to be comfortable with the width and edges of the two profiles. Throughout, all parties involved were on a very tight timeframe. It was a very positive, collaborative process, with the contractors and subs and companies like Petersen."

The building also features horizontal aluminum panels in a woodgrain finish and fiber cement panels in neutral grays and creams, neither of which are PAC-CLAD products. Despite extreme winter weather, panels were able to be installed on schedule.

TOP

METAL



PGA Tour, Global Home, Ponte Vedra Beach, Florida. The interior includes several Trex products, including both straight and curved glass railing. Photo by PGA Tour.



COS.

LEADING GLASS AND METAL COMPANIES WEATHER THE NEXT NORMAL'S SUPPLY CHAIN AND LABOR HURDLES

By Norah Dick

Like the rest of the building industry, Top Metal Companies are weathering the unpredictability of the Next Normal. Though over 80 percent of responding companies reported higher sales for 2021 based on survey results collected in September, leading companies also shared experiences of ongoing struggles with the current business environment, largely due to sustained instability from COVID-19.

Given the unpredictability of the pandemic, circumstances could certainly have changed when this is published. As of this writing, architectural metal companies report that everything is in short supply: labor, materials and time to complete projects.

"All of our facilities have current openings for production workers. All of our customers are complaining that they are unable to properly staff their projects," says Doug Penn, vice

president architectural products group, Trulite Glass & Aluminum Solutions.

In addition to the exacerbated issue of the already-existing labor shortage, rising raw material costs are also changing how companies do business. "The increase in the cost of building products, including aluminum, has resulted in many projects being put on hold as the owners hope for lower prices in the future," says Penn.

"As the issues continue with rising cost and material and labor shortages it is causing companies to be more selective on the projects they are bidding and selecting," says Steve McCulloch, commercial division/louvers and grill division manager, WinTech. "We have been in a good place for the majority of 2021; however, as this trend continues, it is putting a strain on some of our current customer base."

Unpredictable lead times, due to cascading supply chain blocks, are also affecting project schedules. "Inconsistent project schedules are due to other trades not completing their schedules on time, which in turn is often due to supply chain labor shortages. This results in spot schedule openings that leads to tighter lead times," says Andrew Russo, vice president, Glass and Metal Craft.

The following pages provide an in-depth market report, based on survey results provided by leading metal companies. For a snapshot of current market challenges, see pages 32-33, and for a comprehensive look at current and future product trends, see pages 34-35. An industry ranking, organized by total number of employees, can be found on pages 41-42. Standout projects are showcased on pages 36-40. To see all projects, visit GlassMagazine.com.

1. What are the major market headwinds that you think will affect productivity in 2021 and 2022?

Supply chain issues

100%

Raw material cost/availability

90%

Labor shortages

81%

COVID-related work stoppages or slowdowns

52%

Transportation

38%

Tariffs

29%

2. What kinds of challenges did your customers face this year?

- Material price increases
- Supply chain shortages
- Tight lead times
- Worker shortages

CHALLENGES

Bracing for the future

● Last year's report found Top Metal Companies facing unstable market conditions, as businesses adjusted to life and work toward the end of the first year of the pandemic. Now, approaching almost two years of COVID-19, industry leaders predict prolonged fallout as the pandemic continues to rock global business.

"We continue to see the COVID Delta [variant] create apprehension in the market, and there is not an end in sight to turn around the labor shortages we have seen over the past few years," says Josh Wignall, director of commercial marketing, Quaker Windows & Doors.

"The challenges regarding the labor shortage that existed prior to COVID-19 have only become exacerbated by evolving societal conditions," says Steve Schohan, marketing and communications manager, YKK AP America. "We do see that these will continue on into 2022, as

the pandemic continues to affect the U.S."

Part of the reason for these tempered predictions is the more recent, and troubling, issues with supply chain. While only a little over half of survey respondents in 2020's report named supply chain issues as a major disruption, fully 100 percent of this year's respondents marked it as the major market headwind to contend with in 2021 and 2022.

"Some of the raw material has seen historical [price] increases which was a surprise to most clients and fabricators," says Malvina Major, business development manager at RPM Rollformed Metal Products. "For us, this meant managing the purchasing, and leveraging our relationship with suppliers so our pipeline was predictable. This also meant repricing at the time orders were placed."

"In our 45 years of business, we have never seen our supply chain in such bad shape," says Joshua Leets, plant engineer,

Cross Aluminum Products. "As our supply chain gets further behind, all we see are the exponential growth of lead times, and price increases. We have exhausted all short-term solutions. Now is the time to brace for the future and hope that our suppliers have the strength and willpower to dig themselves out of the mess they are currently in."

Supply chains superseded labor shortages as a dominant issue, but lack of workforce remains a challenge facing companies, integral as it is to making supply chains work.

"Labor shortages are by far the most serious struggle, and I believe a main contributor to supply chain and transportation issues," says Mary Avery, vice president of marketing, Tubelite Inc.

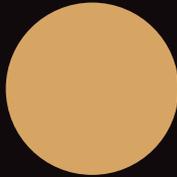
"The critical shortage of truck drivers has resulted in longer lead times for material," says Doug Penn, vice president architectural products group, Trulite Glass & Aluminum Solutions.

1. Which products were most in-demand in 2021?

Curtain wall **48%**



Entrance systems **48%**



Thermally broken systems **48%**



Commercial windows **39%**



Window wall **39%**



Storefront **35%**



Railings **35%**



Metal panel systems **30%**



Unitized/prefabricated systems **26%**



Sun-control systems **17%**

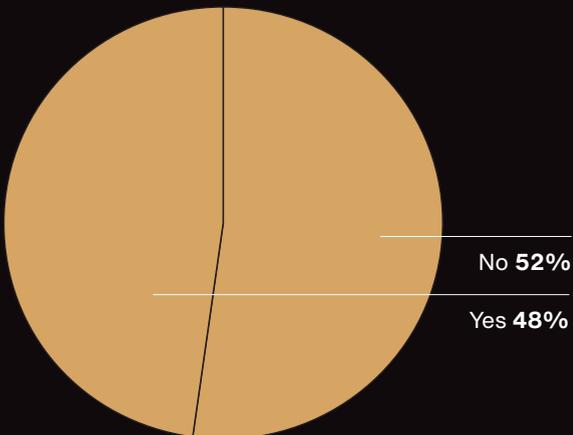


Other* **17%**



*Vinyl windows, windscreens, IG spacers, garage screening

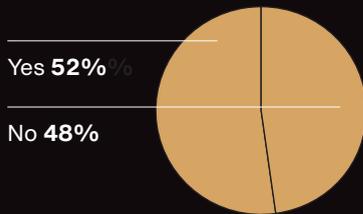
2. Did you introduce new product lines in 2021?



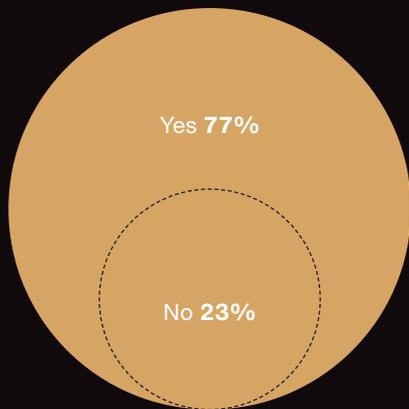
3. If yes, what kind of product lines did you introduce?

- Thermally enhanced curtain wall systems
- New storefront and entrance systems
- Window wall systems
- Historical windows
- Prefabricated systems
- Glass railings
- Windscreens
- Bi-folding and sliding glass doors
- Panic devices
- Wood grain and metal ore finishes

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



5. Do you have plans to introduce new product lines in 2022?



6. If yes, what kind?

- Unitized systems
- Thermally efficient/broken systems
- Panel systems
- Storefront systems
- Entrance systems

7. What product areas/trends offer the most potential for growth in 2022?

- Unitized systems
- Thermally efficient/broken systems
- Acoustically rated systems
- U.S.-sourced products

PRODUCT TRENDS

Offsetting costs and streamlining

● As metal fabricators and suppliers face pandemic-related challenges in 2021, they reported the same of their customers. “Our customers were hit with long lead times and price increases in every sector of our industry—glass, metal products, panels, labor. The list goes on,” says Joshua Leets, plant engineer, Cross Aluminum Products.

Metal companies described several tactics they used to provide solutions to customer challenges, through products and services. Leading companies reported prefabrication as a way to reduce lead times and mitigate workforce shortages.

“To address the shortage of [in-house] fabricators, we are fabricating and assembling more storefront projects for our customers,” says Doug Penn, vice president architectural products group, Trulite Glass & Aluminum Solutions.

“We have ... 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, YKK AP America Inc.

Though only 26 percent of respondents named prefabricated systems as in-demand for 2021, unitized and prefab systems were named as a product area of growth in 2022.

Prefabrication may be part of a larger trend of vertical integration, bringing processes in-house to avoid delays and tighten lead times. “By producing our own custom hardware, we have been able to react more

quickly and turn product around faster than solutions procured from overseas, avoiding delays and resulting in a lower total cost,” says Andrew Russo, vice president, Glass and Metal Craft.

Respondents from leading companies also say that planning far ahead is key.

RPM Rollformed Metal Products uses software to streamline the stocking process. “We worked with our ERP system to identify clients’ purchasing patterns,” says Malvina Major, business development manager. “This data allowed us enough foresight to adjust our buying pattern and be more proactive in predicting the raw material requirements and optimize any stocking programs.”

Clover Architectural Products works to secure raw material early in the project schedule. “We have been trying to be proactive and getting material released very early in the job, sometimes before drawings are even done,” says Tom O’Malley, partner.

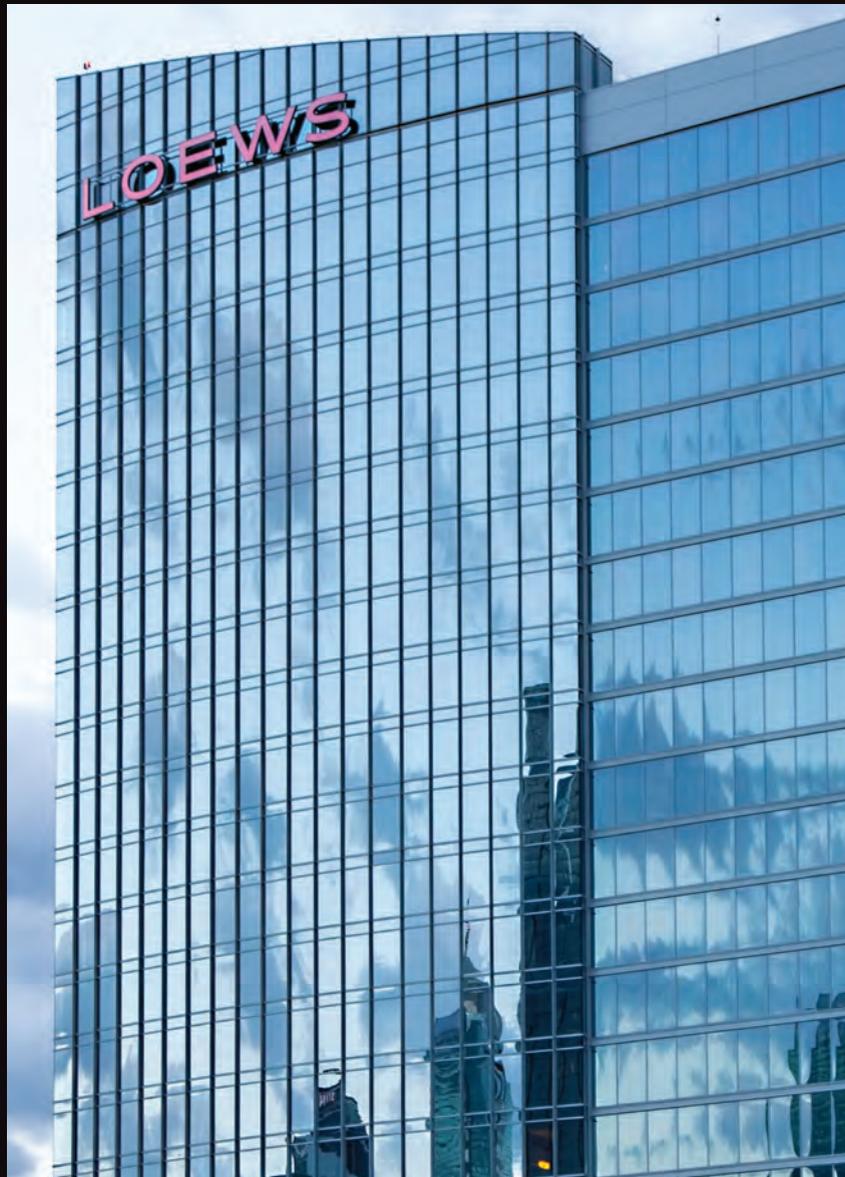
Sourcing within the U.S. has also become a necessary way to reduce delays. “Lead times on metals are extremely tight, with the largest metal hardware producers sourcing product from overseas, including China and Europe, and the demand for locally made metal products has skyrocketed,” says Russo.

Communication between company and supplier remains vital. Nathan Seaman, national sales manager, Architectural Grilles and Sunshades, says that it’s important to talk about timelines with clients at the start of a project, “so we can plan accordingly in advance and be as transparent as possible about potential delays.”



PROJECTS





Left: Planet Play at the Kennedy Space Center, Cape Canaveral, Florida. Morse Architectural provided metal systems for the project. Photo by RDS Industrial. **Opposite:** Ottawa LRT stations, Ottawa, Canada. Flynn Group of Companies installed 95,000 square feet of its Acumet rainscreen, and 82,000 square feet of its STX rainscreen. **Above:** Loews Kansas City Hotel, Kansas City, Missouri. Tubelite supplied 1,220,000 square feet of its systems, with aluminum framing finished by Linetec in Arcadia Silver on the exterior. Photo by Eric Bowers Photography.





Left: One Museum Square, Los Angeles. This new multifamily building features several of C.R. Laurence's systems, including its Metropolis Post Windscreen System. **Above:** Highlands Oncology, Springdale, Arkansas. Kawneer supplied several systems to this new oncology clinic, including 1600 Wall System 1 Curtain Wall, 350 Medium Stile Standard Entrances, Trifab VersaGlaze 450 Framing System for the interior frames, and Trifab VersaGlaze 451T Framing System. Photo by Bob Perzel.



Top left: Denton County Administration Building, Denton, Texas. Oldcastle BuildingEnvelope supplied its FG3000T framing system, Reliance curtain wall, as well as its 30P Zero Sightline windows for the dome of the building. **Bottom left:** JST Production Engineering Center, Swatara Township, Pennsylvania. This new electrical connector facility was built with YKK AP's new hybrid 750 XT Veneer Wall System, as well as its YCW 750 XT Curtain Wall, YES SSG TU Vent and MegaTherm XT thermal entrance doors in a champagne painted finish.

THE LIST

● Like last year, this year's industry ranking represents the largest employers and leading companies in the architectural metals space. Companies are ranked in order of number of total employees, and include metal fabricators, extruders, and companies that fabricate both glass and metal.

Company	HQ	Employees	Locations	Company	HQ	Employees	Locations
Oldcastle BuildingEnvelope obe.com	Dallas	7,000	81	Quaker Windows & Doors quakerwindows.com	Freeburg, MO	1,300	6
Flynn Group of Companies flynncompanies.com	Mississauga, Ontario, Canada	6,000	7	EFCO Corp. efcocorp.com	Monett, MO	1,200	1
Tecnoglass tecnoglass.com	Barranquilla, Colombia	5,500	6	YKK AP America Inc. ykkap.com	Austell, GA	1,000	4
Kawneer Co. kawneer.com	Norcross, GA	3,000	27	Aldora Aluminum & Glass aldoraglass.com	Coral Springs, FL	440	6
Trulite Glass & Aluminum Solutions trulite.com	Peachtree City, GA	2,500	31	Tubelite Inc. tubeliteinc.com	Walker, MI	400	3
C.R. Laurence crlaurence.com	Los Angeles	1,300	5	MillerClapperton millerclapperton.com	Austell, GA	180	2

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Company	HQ	Employees	Locations	Company	HQ	Employees	Locations
WinTech wintechinc.com	Monett, MO	165	2	RPM Rollformed Metal Products rpmroll.com	Concord, Ontario, Canada	50	3
Trex Commercial Products trexcommercial.com	Minneapolis, MN	160	1	Morse Architectural morsearchitectural.com	Kent, WA	40	3
PAC-CLAD Petersen pac-clad.com	Elk Grove Village, IL	160	5	Reynaers Aluminium reynaers.us	Phoenix	40	1
Glass and Metal Craft glassandmetalcraft.com	Wixom, MI	125	2	Architectural Grilles & Sunshades Inc. agsshade.com	Frankfort, IL	30	1
Americlad LLC americlad.com	Rogers, MN	75	2	Cross Aluminum Products crossaluminum.com	Niles, MI	22	1
Livers Bronze Co. liversbronze.com	Kansas City, MO	70	1	Clover Architectural Products cloverarchitecturalproducts.com	Palos Heights, IL	11	1
Gamco Corp. gamcocorp.com	Flushing, NY	62	1				
Spectrum Metal Finishing spectrummetal.com	Youngstown, OH	60	1				

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GLASS INDUSTRY TREND WATCH





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BY KATY DEVLIN AND
NORAH DICK

GlassBuild America: The Glass, Window & Door Expo returned to Atlanta Sept. 13-15 for the first time since 2019. The largest annual industry tradeshow in the Americas drew 5,100 participants to its 114,874-net-square-foot exhibit floor. The event attracted attendees from 47 states, plus Puerto Rico, and from 35 countries.

With fewer exhibitors than usual due to the global pandemic, and pre-registrations tracking lower than normal, officials from the National Glass Association, organizer of GlassBuild America, and exhibitors report they were still pleased with the final participation. “The attendance and energy on the show floor exceeded our expectations,” says Nicole Harris, NGA president and CEO. “We are grateful to everyone who made the extra effort to show up in person to see each other, their suppliers, and the most exciting products and services our industry has to offer. Having such a good turnout is a testament to this industry’s resilience and forward-thinking attitude.”

“Even if it was a smaller scale, all attendees were absolutely focused on improving their business and business relationships,” says Florian Doebbel, business development manager, Facades, from exhibiting company Sika Corp. “All of them showed up with specific interest and demand. It was very effective and exciting for our team.”

“Even during the pandemic, we never stopped innovating or providing the machinery and resources our customers relied on to meet production demands,” adds Laura Fiegelist, marketing communications coordinator, GED. “GlassBuild 2021 showed the strength of the window, door and glass industry, and the commitment to customer service and product advancements during difficult times.”

The in-person advantage

After the pandemic forced events online for much of 2020 into 2021, GlassBuild America offered an important opportunity to get back in person for face-to-face connections with customers, suppliers, colleagues and friends. “GlassBuild America is a chance to meet and learn something from other people. The last two days I met many good people with something to say about our industry and the current business environment,” says attendee Tom Whitaker, president and owner of Mr. Shower Door.

“The energy and enthusiasm of the attendees was palpable,” says Chris Kammer, vice president of marketing for A+W marketing coordinator, A+W North America. “People were happy to be meeting in person again and ready to socialize and engage. It seemed that this energy fed people’s drive to be there and execute on business.”

The face-to-face interactions put investment top of mind for many attendees, according to a number of exhibitors. “If you came to the show as an attendee, you obviously were there to conduct business,” says Mark Imbrok, vice president of EDTM. “Many of the attendees came to our booth with a mission, to either place an order for a product they had been researching, or to gather the information they needed to take back to their business to make a purchase decision.”

“Everybody who has come to our booth has had an intention, a reason. It has blown our expectations,” says Syndi Sim, vice president of marketing and business development for Diamon-Fusion International.

SHOW HIGHLIGHTS

Attendance: 5,100 attendees from 48 U.S. states and territories and 35 countries

Exhibit floor: 114,874 net square feet at the Georgia World Congress Center in Atlanta

Education: GlassBuildTV featured more than 3.5 hours of industry programming from about 20 glass and fenestration industry associations; 15th Annual Glazing Executives Forum; NGA Glass Conference: September

Glass product trends: Larger glass sizes, higher thermal performance, protective glazing, custom offerings

Equipment trends: More automation, integrated machines, safer handling, ease of use, labor-saving solutions

Industry headwinds: Labor shortage, supply chain delays, freight and other material costs

Next up: GlassBuild America 2022, October 18-20 in Las Vegas

WHAT'S TRENDING?

01 Supply disruptions + vertical integration

“The need to diversify products to protect against supply disruptions is on the top of most of our minds. This will lead to some interesting shifts in how people approach vertical integration in an organization.”
—*Morgan Donohue, vice president, sales and marketing, Erdman Automation.*

02 All things automation

“Customers are looking for all things automation: loading, cutting, sorting, line utilization and solutions that bridge island processes to eliminate unnecessary handling, quality issues, and streamline overall process flow are at all-time highs and in more demand than ever before.” —*Tom Bechill, sales manager, Hegla.*

03 Equipment sales

“Last year was an incredible year for equipment sales. People are buying equipment.” —*Carey Brayer, vice president of sales, Intermac America.*

04 In-house tempering + faster lead times

“We’re seeing vertical integration for mid-size fabricators. More are bringing tempering in-house. Part of the reason for this is glass quality—they can fix errors themselves—and lead times, getting product out the door faster.” —*Rick Dominguez, president, Jordon Glass Machinery.*

05 High-speed, automated systems

“The future of IG and vinyl equipment is in high-speed, automated systems that offer labor savings while maintaining great quality and precision. In software, immediate data feedback and analysis of manufacturing processes, as well as web-based software, offer flexibility and reliability to manufacturers in fast-paced production environments.” —*Laura Fiegelist, marketing communications coordinator, GED.*

06 Cloud capabilities

“Companies now expect cloud capabilities from providers, much more

so than before the pandemic.” —*Darryl Huber, vice president, global customer strategy, Soft Tech.*

07 Heavier glass

“The major trend is heavier glasses—double or even triple-laminated glasses becoming more common. This poses safety issues for workers trying to lift it manually.” —*Flemming Storm Nielsen, president, SmartLift US.*

08 Jumbo glass

“The biggest trend we’re seeing is the evolution of jumbo glass. The demand is there. Architects want better sightlines, more light.” —*Alan Kinder, regional architectural manager, Guardian.*

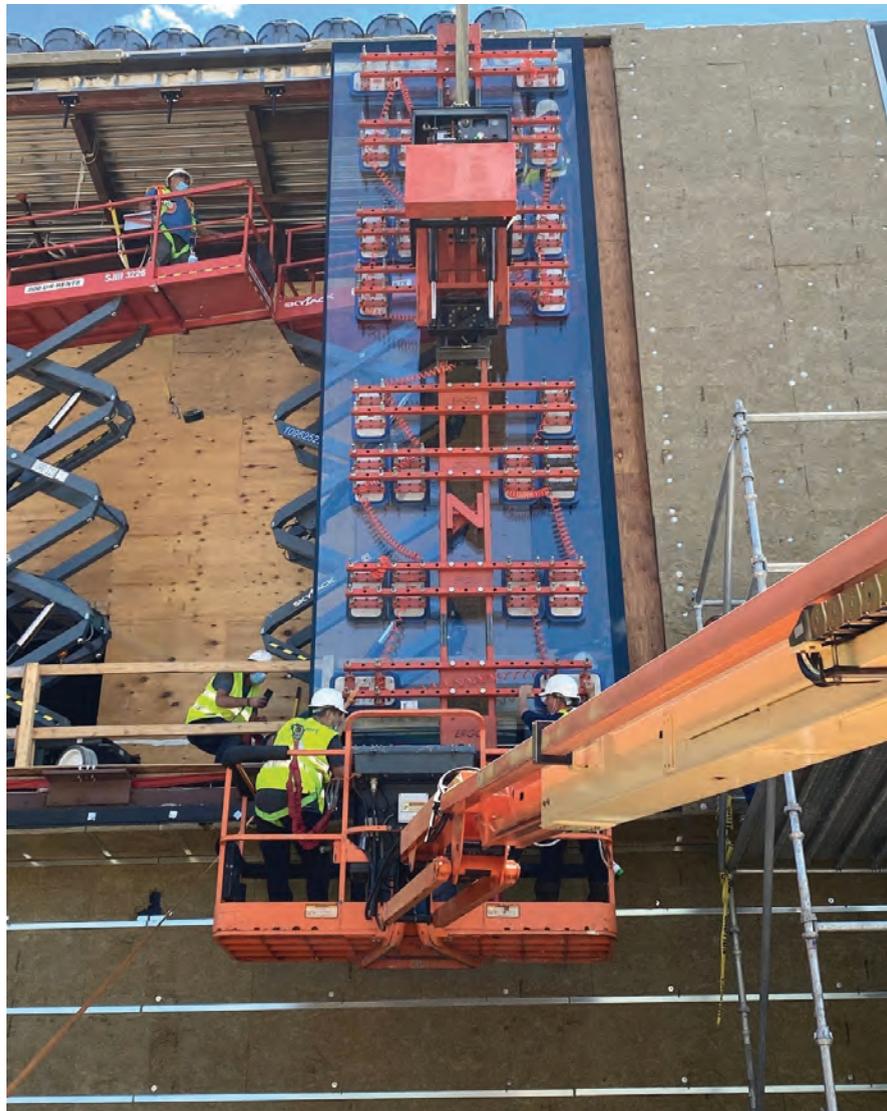
09 Intricate installs

“Over the past year, we have seen an increase in architects endorsing glass a lot more as an intricate design feature. We are also seeing an uptick in glass canopies, interior glass walls, skylights, and glass railing on new building structures.” —*Syndi Sim, vice president of marketing and business development for Diamon-Fusion International.*



Above: The Winlet 915 from Ruthmann ReachMaster.

Right: Plumblines from Ergo Robotic Solution, lifting a jumbo glass lite.



NEXT-LEVEL LIFTS

EXHIBITORS DISCUSS TRENDS IN GLASS HANDLING

The glass lifting and handling market is booming, driven by a need to handle larger and heavier lites, to keep employees safe, and to accomplish more with fewer workers. During GlassBuild America, Glass Magazine editors spoke with a number of lifting and handling equipment companies about the big trends driving technology evolution in the sector.

01 Larger, heavier glass

“Everything is getting bigger and bigger,” says Chip Olson, head of U.S. sales, Quattrolifts.

“This trend hasn’t changed. Lites keep getting larger,” agrees Alan Nudi, director of sales and marketing, Ergo Robotic Solutions. “We just did a job where they

have an 8,000-pound piece of glass. We’re in constant need for machinery to lift larger and larger units.”

Glass is also getting heavier, in part due to increasing sizes, but also due to market trends toward more laminated units. “A lot of this is impact requirements,” says Tom McKendree, vice president of sales for compact lifts and material handling equipment, at Ruthmann ReachMaster North America.

Flemming Storm Nielsen, president of Smartlift US, agrees. “The major trend is heavier glasses. Double or even triple-laminated glasses becoming more common. This poses safety issues for workers trying to lift it manually.”

Handling equipment accommodates the larger and heavier loads while

protecting workers. “Glaziers are being proactive in getting equipment that helps employees,” says McKendree.

02 Micro movements

Glass manipulators must be able to tackle small movements on the jobsite, such as a turn around a corner, passage through an entry way, or a tight squeeze into an elevator.

To address maneuverability concerns, Quattrolifts developed systems that can pivot around corners. “We’re trying to make it as nimble as possible. The glass rounds the corner thanks to a floating head, then the rest of the machine rounds the corner,” says Olson. Additionally, the company offers 3D modeling to ensure their machines can fit into freight elevators. “This is something we will do for a lot of customers,” he says.

Ergo Robotic Solutions developed a Crab Crawl feature for its lifters, which allow the machine to be moved sideways on smaller wheels. Additionally, the company uses hydraulic controls. “This prevents users from making jerky movements,” says Nudi.

03 Feedback

Top of mind for many users is machine feedback. “Customers want to know what the machine is doing,” says Nudi. To meet demands, Ergo designed new indicator lights for its system, allowing operators to easily check on machine function while in operation.

Woods Powr-Grip released an app that displays the current status of each piece of equipment in use. It provides complete details on the current system performance for the operator, allowing users to rely on remote operation without sacrificing safety. “The crane app gives all the same warnings that the equipment provides. If there’s a leak in the system, the app will notify the user before it’s too late,” says Barry Wood, vice president of marketing and commercial development, WPG.

04 Complex surfaces

Glass and glazing systems are becoming more complex, incorporating multiple materials, shapes



Top: Smartlift lifters, on display at the show. **Above:** Wood’s Powr-Grip vacuum lifter at GlassBuild.

and sizes, according to handling equipment providers.

“One big trend we see is curved glass,” says WPG’s Wood. WPG works with clients to develop custom solutions to handle the challenges of installations with curved glass or other complex façade products.

Nudi says Ergo is seeing more textured products. “People come in wanting to

install textured products, but they can’t be lifted with vacuum cups. It’s not just glass. It’s so much more. It’s metals; it’s the full enclosure. We’re building machines to accommodate this, with special cups or clips with a hook to hang the unit,” he says. ■

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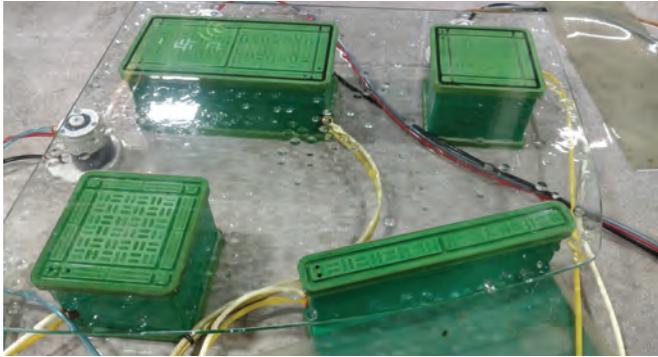
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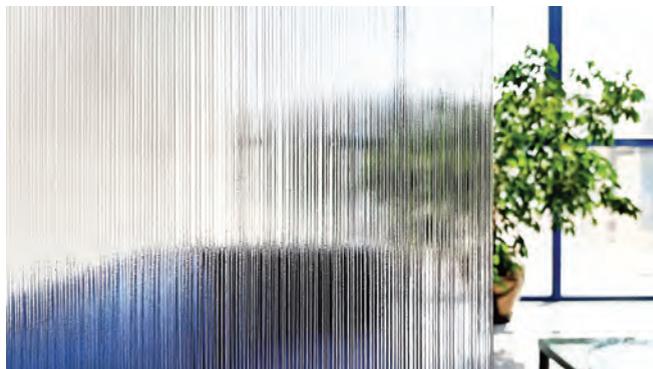
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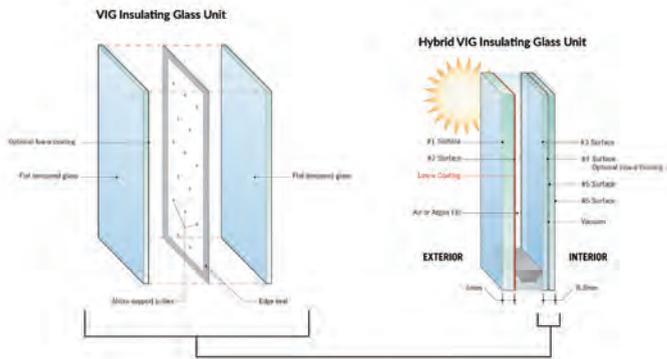
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PRODUCTS



01



02



03

04

01. VIG

Vitro Architectural Glass acquired exclusive rights from LandGlass and VIG Technologies to sell their tempered vacuum insulating units in North America, and plans to begin manufacturing VIG units in its North American facilities as the market for VIG products develops. The 8.3-millimeter tempered VIG units consist of two fully tempered lites of glass separated by a non-lead metal seal and a vacuum space.

855/887-6457 | VITROGLAZINGS.COM

02. Glass coating

Microban International partnered with HMI Glass to develop specialty glass products. HMI's C.10 Glass Protectant is the first clear coating for shower glass that is formulated with Microban technology for invisible product protection against the growth of microorganisms, say officials. C.10, powered by Microban, creates a long-lasting bond with glass and works to actively help reduce the growth of microbes, for less mold, mildew and early product deterioration.

800/767-5954 | HMIGLASS.COM

03. Curtain wall

Gamco Corp.'s new CW250P, the improved version of its 2 1/2-inch sightline aluminum curtain wall system, provides significantly better thermal performance than its predecessor, say officials. Utilizing a state-of-the-art polyamide structural pressure bar that creates an effective thermal break, the new curtain wall delivers 20 percent U-value improvement and, with certain insulating glass packages, is capable of U-values as low as 0.34 or 0.21. 718/359-8833 | GAMCOCORP.COM

04. Electronic lock

Inox debuted the PD97PT, an advanced alternative in its PD97 series of commercial-grade, motor-driven mortise locks for sliding doors that provides health care facilities and other commercial buildings with another security option for high-traffic areas. The power connects directly through the strike and into the lock motor, activating the latch and lock as soon as the door is closed. The PD97 and PD97PT can be integrated as part of a touchless opening solution.

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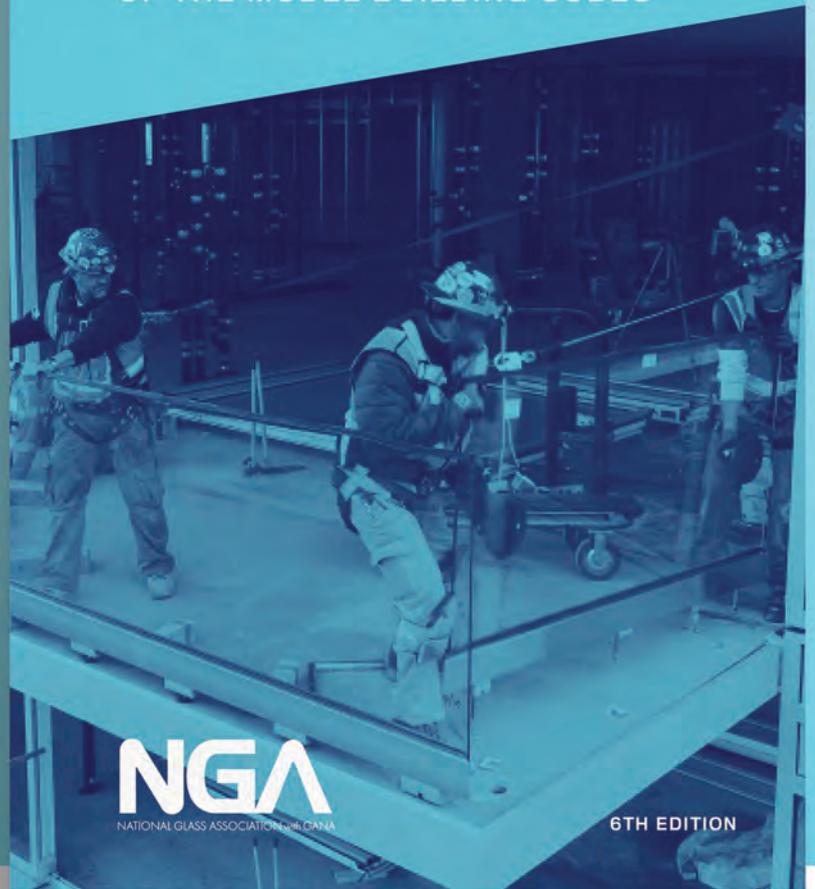
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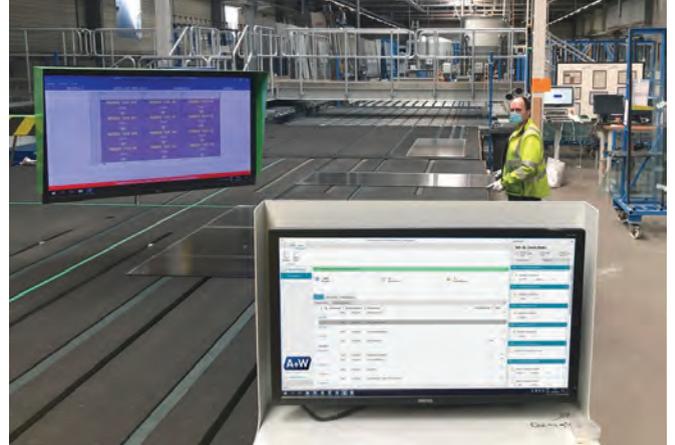
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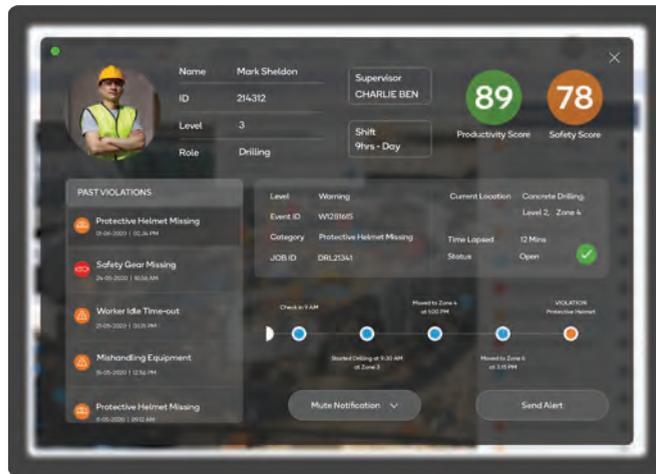
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PRODUCTS



01

02



03

01. Multi-axis system

Engineers from DeMichele Group and Tolomatic Inc. collaborated on a new multi-axis linear actuator system, the new 9-axis RhinoFab glazing machine. The machine moves nine different axis points: three each on the top, bottom and front—each accommodating up to three different tool sets—to fabricate storefront and curtain wall material. The machine can fabricate from the top and bottom at the same time.

480/985-4926 | DEMICHELEGROUP.COM

02. Automation system

A+W Software released A+W SmartFactory, a production system that coordinates the process flows for an optimized glass flow. The system is in a position to responsively control all coupled machines and software modules with the production data provided. Machines communicate constantly with the system via so-called A+W SmartFactory clients. Planning is done in real time and can be adjusted at any time in the future.

847/374-3620 | A-W.COM

03. IoT platform

Zyter Inc. launched Zyter Smart Factories, an end-to-end intelligent solution that connects factory floor machinery, workers and building systems using the latest Internet of Things technology devices on Zyter’s digital transformation platform. The product gives manufacturers a 360-degree view of the entire factory floor. IoT sensors send alerts and notifications on worker safety issues, authorization breaches, machinery utilization and asset monitoring to the dashboard.

301/355-7760 | ZYTER.COM

Scanner (not pictured)

Faro Technologies Inc. released the Freestyle 2 Handheld Scanner. For the construction industry, accurate dimensions and locations are needed when coordinating with scope done earlier in the project, such as underground stub-ups. The new scanner addresses these challenges. The scanner is compact, so it can be used in tight areas. It’s also fast, able to capture color scans of targeted areas or objects in as little as one-third of the time as with tripod scanning, say officials.

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Giroux Glass

Giroux Glass Inc. promoted several long-term employees into positions with increased responsibility in California, and has hired an industry veteran into a new role in Nevada.

Working out of the Las Vegas office, *Henry Jojola* joined Giroux Glass as an experienced quality control/quality assurance manager. Before filling this role, he worked for many years with The Penta Building Group. Jojola's construction career began in glazing, where he achieved the level of journeyman glazier and

worked over many years for various Las Vegas-based glazing companies.

Company officials also announced that the following longtime partners have assumed new roles:

Rob Carter started with Giroux Glass as an estimator in 2008. As the company's chief estimator in 2019, Carter was bestowed the honor of "Best Estimator of the Year" by the American Subcontractors Association.

John Cox was hired as a seasoned project executive in 2015 before accepting this new position as director of California project operations. Cox currently oversees project management activities across four Giroux Glass locations in California.

Kelly Edwards has been a certified union glazier since 1980, and joined Giroux Glass in 1997 as general field superintendent. An industry expert, Edwards is now responsible for

operations within the field, shop and facilities in the California locations comprising Los Angeles, Orange County, Fresno and San Bernardino. He oversees all California construction projects' progress and procedures, including quality assurance and quality control practices.

YKK AP America

YKK AP America appointed *Tomohisa Kato* as its first-ever chief sustainability officer.

In this new role, Kato will oversee the company's sustainability strategy. He will focus on advancing and accelerating efforts in North America to promote sustainability in business and corporate practice. Kato will lead YKK AP's materiality-based strategic planning processes to enhance the company's continuous growth and society's sustainable growth through corporate



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Kato

development, technology innovation and process improvement.

The company also appointed *Ayako Fujiwara* as compliance manager, where she will oversee auditing and regulatory compliance for the company. This appointment reflects

YKK AP's commitment to excellence and to ensuring a safe, healthy workplace for its employees, customers and the communities in which it works, say officials.



Fujiwara

United Architectural Metals



Gaddis

United Architectural Metals in North Canton, Ohio, promoted *Jacob Gaddis* to the role of vice president of pre-construction services.

Gaddis has held several roles at UAM over the past decade and now will oversee the entire pre-construction team and still be heavily involved in the continuing product innovation that UAM is known for in the custom unitized curtain wall world.



Harenberg

Erie Architectural Products

Erie Architectural Products, a YKK AP company, appointed *Rich Harenberg* as technical sales

consultant for the Midwest region, serving states from Nebraska and Kansas to Michigan and Ohio. Harenberg will be integral to growing Erie AP's partnerships with glazing contractors throughout the region.

Harenberg's 20-year career in sales and estimating has equipped him with the skills and industry knowledge to ensure his success in this new role. ■

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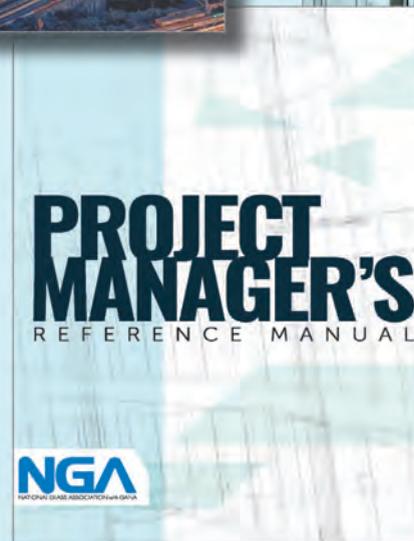
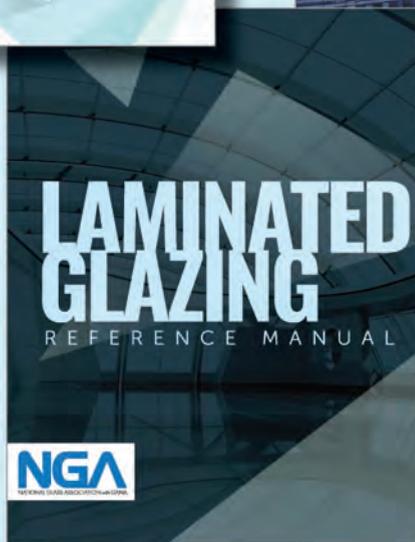
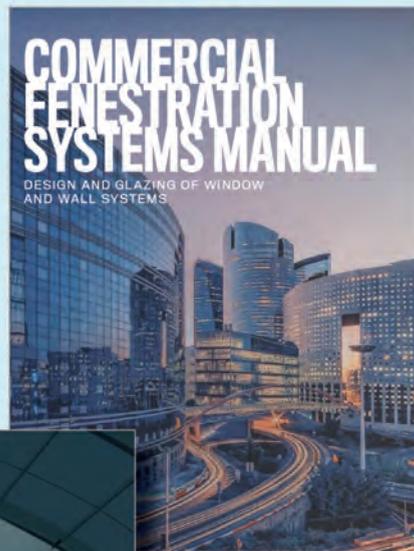
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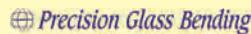


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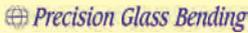
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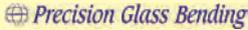
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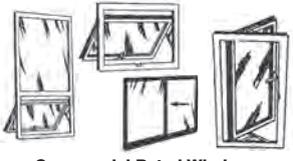
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Statement of Ownership, Management and Circulation

1. Publication: Glass Magazine. 2. Publication Number # 0747-4261. 3. Filing date: September 30, 2021. 4. Issue frequency: Jan/Feb, Mar/Apr, May/June, July, Aug, Sept/Oct, Nov/Dec. 5. Number of issues: 8. 6. Annual sub price: \$34.95. 7. Complete mailing address of known office of publication: Glass Magazine, 1945 Old Gallows Rd, Ste 750, Vienna, VA, 22182-3931; Contact Person: JoAnn Binz, Circulation Manager; Telephone: 843-388-3808. 8. Complete mailing address of company headquarters: Same as above. 9. Full name and complete mailing address of publisher: National Glass Association, 1945 Old Gallows Rd, Ste 750, Vienna, VA, 22182-3931. Publisher: Katy Devlin, Associate Publisher, Glass Magazine, 1945 Old Gallows Rd, Ste 750, Vienna, VA 22182-3931. Editor: Katy Devlin, Editor in Chief, Glass Magazine, 1945 Old Gallows Rd, Ste 750, Vienna, VA 22182-3931. Managing Editor: Norah Dick, Associate Editor, Glass Magazine, 1945 Old Gallows Rd, Ste 750, Vienna, VA 22182-3931. 10. Owner: National Glass Association, 1945 Old Gallows Rd, Ste 750, Vienna, VA 22182-3931. 11. None. 12. Has not changed during preceding 12 months. 13. Publication Title: Glass Magazine. 14. Issue date for Circulation data below: Avg. Oct/Nov 2020–Sept/Oct 2021; Actual Sept/Oct 2021. 15. Extent and Nature of Circulation. 15a Total Number of Copies: Avg. 23,360; Actual 22,527. 15b.1. Paid/Requested Mail Subscriptions: Avg. 12,001; Actual 11,807. 15b.4. Requested Copies Distributed by Other Mail Classes: Avg. 835; Actual 818. 15c. Total Paid and/or Requested Circulation: Avg. 12,836; Actual 12,625. 15d.1 Non-requested Copies: Avg. 8,729; Actual 8,770. 15d.4. Non-requested Copies Distributed Outside the Mail: Avg. 241; Actual 75. 15e. Total Non-requested Distribution: Avg. 8,969; Actual 8,845. 15f. Total Distribution: Avg. 21,805; Actual 21,470. 15g. Copies not distributed: Avg. 1,555; Actual 1,057. 15h. Total: Avg. 23,360; Actual 22,527. 15i. Percent Paid and/or Requested: Avg. 58.9%; Actual 58.8%. 16a. Paid/Requested Electronic Copies: Avg. 7,153; Actual 7,100. 16b. Total Paid/Requested Print + Req/Paid Electronic Copies: Avg. 19,989; Actual 19,725. 16c. Total Print Distribution + Req/Paid Electronic Copies: 28,959; Actual 28,570. 16d. Percent Paid/Request (Print + Electronic Copies): Avg. 69.0%; Actual 69.0%. 17. Publication of Statement of Ownership for a Requester Publication will be printed in the September/October 2021 issue. 18. Signature and Title of Editor, Publisher, Business Manager: Katy Devlin, Associate Publisher. Date – 10/01/2021 - PS Form 3526-R.

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HERE'S AN IDEA

Here's an Idea showcases the sometimes big, sometimes small, ideas that can have a major impact on the glass industry, its companies and its workforce. If you have an idea that you would like to share, contact Norah Dick, ndick@glass.org.

6 REASONS TO LOVE ARCHITECTURAL GLASS

How can manufacturers effectively reach young people and recruit them to the industry? According to the Manufacturing Institute, one of the most effective methods of attracting the next generation of workers is demonstrating how an industry's products improve the world. For our industry, the messaging is easy; glass benefits people, and the environment.

1. Glass improves learning, work and healing.

Glass windows can provide valuable access to daylight and views to the outside, which are important to our general well-being. Daylight has qualities that cannot be replicated by electrical light. The changing intensity, direction and color of natural light connect building occupants to the weather, season and time of day, and can stimulate well-being and productivity.

2. Glass contributes to energy efficiency of buildings.

The glass industry has a wide range of solutions for energy-efficient buildings. Insulating glass can play a significant role in energy performance. Low-emissivity coatings have been developed to minimize the amount of ultraviolet and infrared light that can pass through glass without compromising the amount of visible light transmitted.

3. Glass is recyclable.

Over one million tons of architectural glass are recycled annually throughout



North America. Many products originate from recycled architectural glass. The primary end users are fiberglass insulation and highway glass bead, which use crushed glass as part of their raw materials. The use of cullet (furnace-ready, recycled glass) in manufacturing fiberglass insulation reduces raw material consumption, saves on energy costs, extends furnace life and improves air emissions.

4. Glass is a critical component of building security.

Specialty security glazing in windows can play a critical role in protecting building occupants, such as protecting students during an active shooter incident. Windows in schools and other buildings can increase awareness and alert occupants of the approach of suspicious or threatening people. Well-lit classrooms are safer, and natural light from windows does not depend on a power source, which could fail during emergencies.

5. Glass can help protect birds, sea turtles and other wildlife.

Research on bird-glazing collision prevention has guided the development of bird-friendly building design, informing us how to transform clear and reflective architectural glass into barriers that birds will see and avoid. Similarly, glass can help protect sea turtles. Coated glass can reduce the transmittance of light from buildings onto the shoreline, protecting turtles that might otherwise be disoriented by the light.

6. Glass can convey a message or feeling of artistic or decorative expression.

Decorative glass can satisfy design goals and occupant comfort. Different surface treatments help diffuse light, allowing daylight into a space while managing glare and direct sunlight. Privacy is also a key benefit that decorative glass products can offer. Decorative glass can offer depth or visual effect and can be enhanced with color or texture. ■



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