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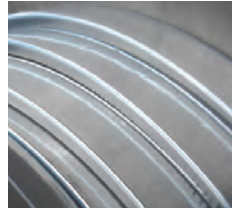
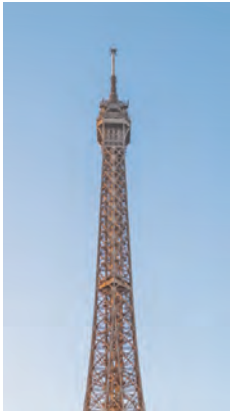
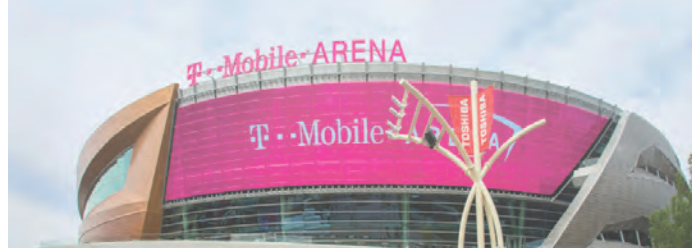
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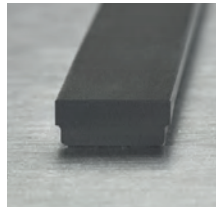
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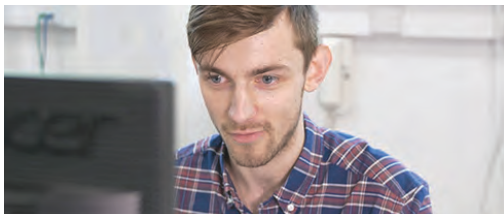
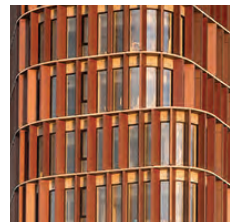
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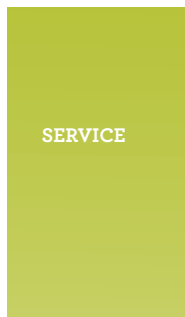
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THE RESILIENCE AND ADAPTATION OF THE INDUSTRY [DURING THE PANDEMIC] IS REMARKABLE. SO MANY PEOPLE HAVE JUST STEPPED UP CHANGED THEIR WHOLE BUSINESS, TO ADAPT AND GET THROUGH IT.

”

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On the cover: Pictured is the Denver Advance vertical CNC machine from Salem Flat Glass & Mirror. Industry companies continue to develop machinery that boosts efficiency and plant productivity, glass that stretches the imagination of what's possible, hardware that minimizes the spread of viruses, digital tools to help with business, and more. Take a closer look at the trends driving product development and innovation, beginning on page 40.



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BONUS ISSUE CONTENT

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DIGITAL SUPPLEMENT

Information and best practices for companies navigating COVID-19.

IDEA BOOK

These projects showcase how decorative glass can meet aesthetic and functional needs.

PROTECTIVE GLAZING

See how companies are pivoting to provide glass guards and similar products.

GLASSBLOG



DESIGN

How to Choose Material Surfaces that Support Healthier Environments

By Stephen Balik, GGI



GLAZIERS

Notes from the Field: Three Glaziers Offer Insights on Working During a Pandemic

By Norah Dick



FORECAST

Surprising Code Watch

By Max Perilstein, Sole Source Consulting



PROJECT NEWS

Featured in e-glass weekly and on GlassMagazine.com. To submit projects, write Norah Dick, ndick@glass.org. **Pictured:** The Jacksonville Regional Transportation Center at LaVillie, located in Jacksonville, Florida, opened for business. Crawford-Tracey Corp. supplied and installed 28,000 square feet of its Pro-Tech 45SG and 9SG curtain wall system. The façade glass pattern was provided by Viracon in Owatonna, Minnesota, with its Digital Distinctions line of custom digitally printed glass.

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NGA NATIONAL
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1945 Old Gallows Rd., Suite 750
Vienna, VA 22182-3931
P: 703/442-4890 F: 703/442-0630

EDITORIAL

Content Director

Jenni Chase • jchase@glass.org

Editor-in-Chief

Katy Devlin • kdevlin@glass.org

Managing Editor
Laurie Cowin

Production Director
Beth Moorman

Associate Editor
Norah Dick

Creative Lead
Cory Thacker

Senior Manager, Digital Media
Bethany Stough

Web Editor
Wendy Vardaman

Circulation Manager

Jo Ann Binz

jbinz@glass.org • 843/388-3808

ADVERTISING

Executive Publishing • 410/893-8003
Account Managers

Chris Hodges

chodges@executivepublishing.com • ext. 1#

Mike Gribbin

mgriffin@executivepublishing.com • ext. 4#

Tim O'Connell

toconnell@executivepublishing.com • ext. 3#

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A GlassBuild to Meet 2020 Challenges



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

My first GlassBuild America was in 2005. I was fresh out of college, new to the glass industry and absolutely stunned by the size and scope of the show. GlassBuild provided a three-day glass industry learning intensive like no other. I watched glass machinery run in person, I walked the floor with longtime industry experts who pointed out new and exciting product innovations, and I interviewed representatives from every facet of the glass industry supply chain.

I haven't missed a GlassBuild since that first one 15 years go. The show and its education and networking opportunities have made it the most important industry event each year for me personally and for Glass Magazine. It provides an opportunity to check out the new innovations, to sit down and connect with industry collaborators face-to-face, to learn about new trends and potential market headwinds and more.

COVID-19 has turned 2020 plans upside down for us all. It has asked us to adapt and change; to find new ways of connecting, working, collaborating, problem solving. Now it's forcing us to pivot once more when it comes to our industry's gathering place.

The National Glass Association, Glass Magazine's publisher, announced in late June that the in-person GlassBuild America 2020 has been canceled. "We are deeply disappointed by the COVID-19 impact on our trade show," said NGA President and CEO Nicole Harris.

I will greatly miss the in-person GlassBuild America this year. I will miss the connections—the crowded aisles and the accidental meetings they present. I will miss the after-hours celebrations and events. I will miss the discoveries of surprising and exciting innovations while walking the floor. And, I will look forward to coming back together in Atlanta in 2021.

In the meantime, of course, we're adapting. With this news came the announcement of a month-long glass industry event from the NGA, GlassBuild Connect. GlassBuild Connect, available at glassbuild.com, will present glass and fenestration industry innovations, education and product

introductions every weekday throughout the month of September.

While COVID has derailed so much for our industry, it hasn't stopped innovation, research and development, market trends and more. These are the stories GlassBuild exhibitors will be sharing to a global audience throughout September during GlassBuild Connect.

We offer a preview these stories from the industry in this issue of Glass Magazine, beginning with a major Industry Trends feature beginning on page 40. For the article, editors spoke with GlassBuild Connect exhibitors about the trends driving industry advancement across all segments, from machinery to hardware to software. The issue also presents an exclusive preview of GlassBuild Connect, with details on registration, daily schedules, education opportunities and more. We aren't able to gather in Las Vegas this year. But, we can still come together to learn, share and connect in a new way at GlassBuild.com throughout all of September. I hope to see you there. ■

“

COVID-19 HAS TURNED 2020 PLANS UPSIDE DOWN FOR US ALL. IT HAS ASKED US TO ADAPT AND CHANGE; TO FIND NEW WAYS OF CONNECTING, WORKING, COLLABORATING, PROBLEM SOLVING. NOW IT'S FORCING US TO PIVOT ONCE MORE WHEN IT COMES TO OUR INDUSTRY'S GATHERING PLACE.

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NEED-TO-KNOW INFORMATION
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NGA ADVOCATES FOR CROSS-BORDER TRAVEL OF GLASS INDUSTRY TECHNICIANS

Cross-border travel restrictions instituted due to the pandemic have disrupted essential operations of glass manufacturers and fabricators. In an open letter published in July, the NGA urged governments to continue to recognize the essential nature of glass and glazing, and to also recognize the cross-border travel of glass industry service technicians as essential.

“Glass plants were deemed essential businesses at the start of the pandemic and allowed to continue operations. Despite the recognition of the essential nature of glass production, cross-border travel of glass industry service technicians has been interrupted. As a result, glass plant operations are being interrupted and hindered when machinery and equipment requires service technicians from the countries where the technologies originate,” said NGA President and CEO Nicole Harris in the letter.

Harris continued, “To ensure glass companies can continue operations and provide glass for safe and healthy spaces, the NGA urges the extension of the essential designation of glass plants to the related travel of industry technicians.” ■



“
GLASS PLANT
OPERATIONS
ARE BEING
INTERRUPTED
AND HINDERED
WHEN MACHINERY
AND EQUIPMENT
REQUIRES
SERVICE
TECHNICIANS.”

NICOLE HARRIS

NGA PRESIDENT AND CEO,
FROM AN OPEN LETTER
ADVOCATING FOR THE
RECOGNITION OF THE GLASS
INDUSTRY AS ESSENTIAL

NGA REPORTS OVERWHELMING RESPONSE TO MYGLASSCLASS.COM OFFER IN MAY

Thanks to generous donations made to the National Glass Association Foundation by the Frieze Foundation and an anonymous donor, NGA was able to open up its online MyGlassClass.com training courses for the month of May at no charge to the glass and glazing industry.

NGA reports the overwhelming response to the offer amounted to a total of 12,381 courses being provided for free to the industry's workforce.

More information about the National Glass Association Foundation, a 501(c)(3) charitable organization, can be found at glass.org/nga-foundation. More information on training courses for the industry can be found at MyGlassClass.com. ■

TOP 10 PUBLICATIONS FROM THE NGA STORE

Since launching the online NGA Store last September as part of the new glass.org, NGA offers members instant access to nearly 120 technical and business publications created by NGA committee volunteers, many at no cost. In the period between Jan. 1 to May 31, 2020, there have been 1,500 downloads from the NGA Store.

The top 10 most popular resources in 2020:

1. Approximate Weight of Architectural Flat Glass
2. Heavy Glass Door and Entrance Systems Design Guide
3. Bird-Friendly Glass Design Strategies
4. Top 10 Items Commonly Missing from Fenestration System Shop Drawings
5. Bid Considerations for Contract Glazing Proposals
6. Design Considerations for Laminated Glazing Applications
7. Marking and Labeling of Architectural Laminated Glass
8. Flat Glass Industry Standards
9. Proper Procedures for Cleaning Architectural Glass Products
10. Describing Architectural Glass Constructions

Visit the NGA Store (glass.org/store) to take advantage of all the industry resources available. (Note: Site visitors must be logged in to the customer dashboard to purchase or download publications from the NGA Store. For assistance with login, contact Josh Lowe at 703/442-4890, ext. 127 or jlowe@glass.org.) ■



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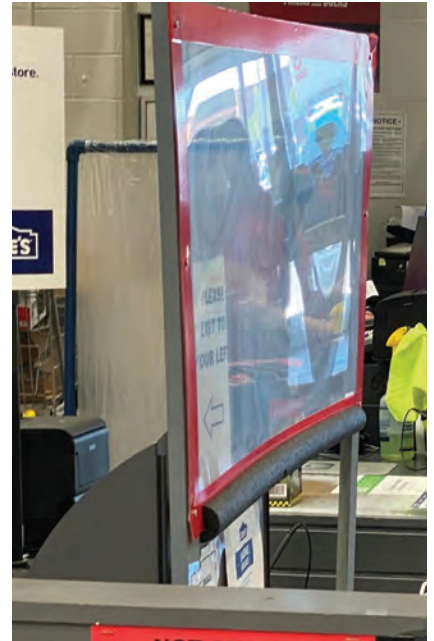
Glass for Personal Protective Barriers

Retail, medical, educational and manufacturing facilities are implementing changes due to the worldwide outbreak of COVID-19, a respiratory illness believed to spread primarily by droplets from coughs or sneezes of infected persons to those nearby. Many businesses are installing clear personal protective barriers to physically shield employees from each other and from consumers to reduce potential exposure to the virus. In many applications, the barriers will become a permanent fixture. Therefore, aesthetics and cleanability are important design considerations.

Barriers can be constructed of plastic sheet or glass. Glass has several advantages in physical barrier applications and may be preferred over plastic, especially for permanent and public-facing barrier installations. Compared to plastic, glass is easy to clean, transparent and aesthetically pleasing.

Cleaning physical barriers

It is important to routinely clean physical barriers using U.S. EPA-approved and CDC-recommended disinfectants, such as solutions with 70 percent isopropyl alcohol. Certain plastics used for



Left: Safety glass installed for personal protective barriers can provide a sleek, professional, sanitary, yet welcoming feel for consumers entering retail stores. **Right:** Plastic barriers present challenges of rough edges and hazy distortion combined with surface scratches that can detract from the consumer experience and collect dirt and potentially bacteria.



ONLINE

Visit glass.org/store for all Glass Informational Bulletins ready for download, and for other available NGA resources.

barriers, such as acrylic and plexiglass, can be susceptible to reaction with cleaning agents, so compatibility should be verified. Routine cleaning of plastic surfaces may damage the surface of plastic barriers, degrading the visible appearance by discoloration or crazing.

Plastic is susceptible to aging, becoming brittle over time and with exposure to UV. Scratched or marred plastic surfaces can harbor bacteria and retain moisture, including droplets from

coughs or sneezes of infected persons. The service life of plastic barriers is short due to their incompatibility with some cleaning agents and degradation over time, so they must be replaced often.

Glass has an excellent service life and consideration should be given to frequency of replacement of the chosen barrier material. With a smooth, non-porous surface that resists contamination, uncoated glass surfaces can withstand repeated cleaning by most cleaning agents without

GLASS INFORMATIONAL BULLETIN—GLASS FOR PERSONAL PROTECTIVE BARRIERS

discoloration or surface degradation. Relative to softer plastic surfaces, the harder, smooth surface of glass is more resistant to scratches and does not craze or discolor over time or with exposure to UV and is, therefore, appropriate for permanent protective barriers.

Cleaning instructions are detailed in the Proper Procedures for Cleaning Architectural Glass Products NGA Glass Technical Paper. Anti-glare and anti-microbial coatings can be applied to glass for barrier applications requiring additional considerations. Please contact a glass supplier for additional details.

Recommended glass types

The types of glass recommended for physical barriers are laminated or fully tempered glass, which meet ANSI Z97.1 Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test and/or CPSC 16CFR 1201 Safety Standard for Architectural Glazing Materials. Safety film that passes ANSI Z97.1 and/or CPSC 16CFR 1201 standards may be applied to some glass products. Please contact a fabricator for additional details.

Laminated glass comprises two or more lites of glass permanently bonded together with one or more interlayers. The benefit of laminated glass is that, if broken, the glass will stay adhered to the interlayer contained in the opening until it can be removed and replaced. Laminated glass can also meet ANSI Z97.1 and/or CPSC 16CFR 1201 safety glazing requirements. When laminated glass is used, compatibility of the interlayer with all materials used in the glazing system must be considered.

The process of heat-treating glass

involves uniformly heating glass close to its softening temperature and then rapidly and uniformly cooling it. This process results in the development of surface compressive stresses, thus increasing the strength of the glass. This increased strength allows for greater impact resistance and when fully tempered, can also meet safety glass requirements. When fully tempered glass meeting ANSI Z97.1 and/or CPSC 16CFR 1201 breaks, it will shatter into many small pieces rather than large shards, which reduces the risk of cut injuries.

Installation considerations

Glass is installed as part of an overall finished physical barrier product. It is important that the hardware and components, including the glass itself, are designed with the system in mind so the finished product works as intended.

Edge clamps and adhesives are examples of simple and efficient ways to mount glass panels without designing and drilling holes into the glass. Using this technique, the mounting components should support the glass along a minimum of two edges and bite depth of the edge clamping over the glass edge should be appropriate for the glass thickness, as specified in the Glazing Manual and Laminated Glazing Reference Manual. Hardware is readily available for glass guards to support the weight of the glass panel without crushing or locally stressing the glass surface.

An alternative mounting technique involves point-supported glazing, where glass panels are supported by through-hole or patch/clamp fittings. Typical hardware includes a bolt and patch plate system, a countersunk bolt, hardware

Material Considerations of Glass for Personal Protective Barriers

- Meets safety glazing requirements (ANSI Z97.1 and/or CPSC 16CFR 1201) when properly fully tempered or laminated
- Clear, transparent, non-yellowing, non-aging
- Smooth, non-porous surface is resistant to contamination
- Easy to clean and sanitize
- Durable; resists hazing or discoloration from most disinfectants
- If broken, tends to remain in the frame until removed (laminated and surface-applied film)
- Sleek, professional, sanitary, yet welcoming feel for the consumer

with flexible washers and gaskets within the supporting structure, and hardware with articulated bolts. Refer to ASTM C1048 Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass for requirements for fittings and hardware and placement of holes, notches and cutout fillets.

Care must be taken through all steps of the fabrication and installation processes to keep the glass free of edge damage. Bump-guard type gasketing or similar edge protection around the perimeter of exposed-edge glass barriers is recommended unless edges are ground and polished. ■



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MI Windows Closes Two Milgard Production Facilities

MI Windows and Doors plans to close the Milgard manufacturing facilities in Aurora, Colorado, and Grand Prairie, Texas, in response to the weakened economic conditions brought on by the coronavirus pandemic, according to a release from the company.

MI will continue to provide Milgard-branded products and services to customers in the Denver and broader Mountain West Region from its manufacturing facilities located in the Western U.S. The Milgard brand will no longer be available in Texas; however, a full line of MI-branded



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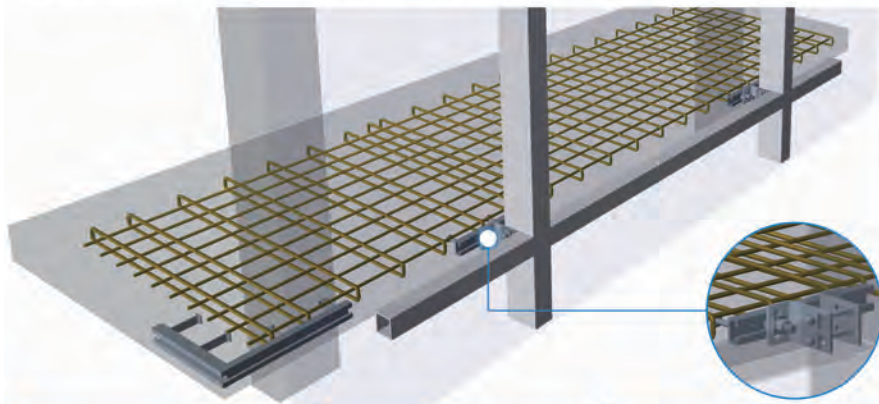
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products is available from the company's 400,000-square-foot facility in Flower Mound, Texas, says the company.

Organizers Postpone glasstec 2020 until June 2021

Organizers of glasstec 2020 postponed the tradeshow until June 15-18, 2021. In view of the continued uncertainties in terms of travel restrictions and quarantine provisions in the core target markets, Messe Düsseldorf, in coordination with the tradeshow's advisory board and all partners involved, opted in favor of these new dates, say officials. The show was originally planned to take place Oct. 20-23.

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“The economic crisis caused by the [COVID-19] pandemic has also hit the glass industry and its machinery and equipment manufacturers hard,” says Egbert Wenninger, chairman of the glasstec advisory board and chairman of VDMA’s Glass Technology Forum. “Many companies are forced to switch to crisis mode and put all investments—including trade fair participations—to the test to mitigate possible negative economic impacts. Potential travel restrictions and the protection of visitors’ and exhibitors’ health will have an impact on visitor numbers. A smaller glasstec 2020 with markedly fewer visitors would in our view not do justice to the trade fair.”

Lixil to Sell Permasteelisa to Atlas Holdings

Lixil Group Corp. entered into a definitive agreement to sell Permasteelisa S.p.A to Atlas Holdings LLC. Atlas and its affiliates own and operate a diversified group

of global manufacturing, distribution and construction businesses with an emphasis on safety and operational improvement. The transaction is subject to customary closing conditions and regulatory approvals. Terms of the transaction were not disclosed.

“We are pleased to have reached an agreement that will allow Permasteelisa, a world-class brand in the area of highly specialized curtain walls, to become part of the Atlas family of global businesses,” says Kinya Seto, CEO of Lixil Group. “We believe Atlas is the ideal owner for Permasteelisa, as they bring a strong record of delivering the human and financial capital necessary to strengthen businesses for the long-term.”

Saint-Gobain Sells Stake in Sika

Saint-Gobain sold its stake in Sika, worth \$1.69 billion, according to reporting in Reuters. The sale ends Saint-Gobain’s

disputed takeover of the company, which started in 2014.

Guardian Glass Partners with Merck to Produce Liquid Crystal Windows

Merck, a science and technology company, announced a strategic partnership with Guardian Glass to commission sales of eyrise dynamic liquid crystal windows. With this partnership, Merck aims to expand the customer base of its liquid crystal windows business by leveraging additional distribution channels, says the company.

**From April to press time, June 24. Read these stories, and others, in their entirety at glassmagazine.com.*



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YOUR PROFITS: FINANCE

SHOULD YOU REFINANCE YOUR COMPANY'S DEBT?

BY MARCO TERRY



Refinancing a company's debt can help if a company has a debt problem. However, determining if there is a debt problem is not always easy.

Some debt problems are obvious. In some cases, though, debt problems may be just one of many financial problems that the company is facing.

Each financial scenario often requires a different approach. The most important takeaway is that an owner should engage a CPA or the company's finance team to help determine the root cause of the issue. Hiring a CPA may seem expensive, especially if funds are short. However, not hiring one and going down the wrong path is more expensive.

Four questions for refinancing

An owner can often get a good idea if their company could benefit from refinancing by asking four targeted questions:

1. Are debt payments taking most of company revenues?

One sign that a company has a debt problem is when payments take up a significant portion of revenues. This situation affects cash flow and interferes with the ability to operate a company. It can also hinder the ability to pay expenses, take on new projects or build a cash reserve.

Having significant debt payments further exposes a company to seasonal or market fluctuations. While debt payments are fixed, revenues are not. A drop in revenues, for whatever reason, could trigger a cascade of financial problems.

2. Does a company have too many cash advances?

Merchant cash advances are short-term loans with very high interest rates. These advances have become popular in recent years because business owners can get them easily and quickly.

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Unfortunately, some companies misuse this type of financing. They apply a cash advance to manage situations that cannot be resolved with an advance. Misusing cash advances ultimately creates an even greater financial problem.

This unfortunate cycle can repeat itself if the company gets additional advances in an effort to fix its growing problems. Consequently, the company ends up with

multiple advances. Having multiple cash advances is called “stacking.” Stacking is a serious situation that often leads to a company’s downfall.

3. Is the company juggling debt or supplier payments?

Companies with debt problems often have to juggle payment dates, for both lenders and suppliers. They use this

tactic to ensure they have enough money on specific dates to make debt payments. Juggling payment dates is a symptom of cash flow problems. It could also indicate a debt problem. However, the problem could be elsewhere, for example, in accounts receivable. This type of situation requires a careful review to determine the root cause of the problem.

4. Is the company’s interest rate very high?

Lastly, a very high interest rate often indicates that refinancing could be beneficial. Keep in mind that the concept of a “very high interest rate” can be a matter of perception. Compare rates against market rates (for the same product) and determine if new financing is cost-effective.

Advantages and disadvantages of debt refinancing

The most important advantage of refinancing debt is that monthly payments will be lower. This is because the new loan will have a longer term, a lower rate or both. Lowering debt payment has an immediate, positive effect on cash flow.

Additionally, managing debt payment should be simpler, especially if a business consolidates multiple loans into a single loan.

There are also some potential disadvantages to refinancing. The main disadvantage is that the business could end up with a longer payment term. This outcome was listed as an advantage, but it may also be a disadvantage.

Extending the payment term affects the total amount of money paid for financing. This total is calculated by multiplying the amount of each payment by the total number of payments in the loan. In some cases, the total payment may be higher than it was for your previous loan.

Lastly, debt refinancing may be used for the wrong reasons. Refinancing can help fix past bad financial decisions. However, it cannot fix a broken business model.



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Refinancing options and processes

In principle, a company can refinance any kind of properly executed debt. The most common types of debt that can be refinanced are:

- Cash advances
- Term loans with balloon payments
- Equipment loans
- Shareholder loans
- Corporate real estate.

If a company needs to refinance up to \$5 million, the best option is to use a Small Business Administration-backed loan. Otherwise, the owner can also consider a conventional bank loan.

SBA-backed loans have very attractive rates and can be structured to meet most of a company's needs.

The only drawback of using this solution is that loans require some paperwork. Lower rates and better terms require significant due diligence by the lender. In turn, this effort requires more

information (documents) from the owner.

The first step in the process should be to meet with a lender to discuss the specifics of the situation. The lender should give a good idea of what they can provide.

If an owner decides to move forward, most lenders will ask for the following:

- Personal tax returns
- Personal financial statements
- Business tax returns
- Business financial statements
- Business debt schedule
- Projection of future sales (sometimes)
- Payment history for loans being refinanced.

As noted above, lenders will ask for personal financial information. This is done for two reasons.

First, lenders consider how owners manage personal credit as a proxy for how they will manage company

financing. It is not a perfect measure, but it works reasonably well. Fortunately, the SBA guarantees loans specifically to help folks with less-than-perfect situations. So, don't let that be discouraging.

The second reason lenders look at personal finances is because the owner will be a loan guarantor. Contrary to popular belief, SBA-backed loans require personal guarantees. The SBA is only the guarantor of last resort if the lender is unable to recover from the borrower. ■

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



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CRL Unitized Glass Railing installation on balconies at the Wilshire Curson Residential Tower in Los Angeles. Photo by Drone Snyder.

UNITIZED RAILING SYSTEMS

Considerations and benefits for the latest development in prefabrication

BY BRIAN CLIFFORD



Unitized glazing systems have been rising in popularity the past several years for good reason. Saving time, improving installation quality, and reducing field labor costs are all enticing benefits to both specifiers and contractors. Unitized curtain walls, window walls and storefronts are innovative solutions that pave the way to more effective project delivery. The latest entry into the prefabrication market is unitized glass railing systems.

Similar to their building envelope counterparts, unitized glass railings are factory assembled and shipped directly to the jobsite, typically on A-frame racks. For a unitized railing project to be successful, prefabrication must be decided on very early in the process by the developer or general contractor. It's best to work with manufacturers with wide distribution networks because local

jobsite delivery is required. Manufacturer collaboration is key because they can design the right unitized system that will comply with local building codes and meet aesthetic goals.

Unitized railing systems offer several benefits that can go a long way in maximizing construction efficiencies.

1. Improve quality with factory assembly

Unitized glass railing systems take advantage of optimized workflow processes that are specifically developed for prefabrication. A controlled factory environment allows close supervision and thorough inspection, which greatly improves product quality and performance. Unfavorable conditions associated with field assembly such as bad weather and congested jobsites are also avoided.

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Unitized glass railing systems can provide unobstructed views. Photo by Geoff Captain.

With a typical unitized glass railing assembly, glass panels are inserted into base shoe units and sealed on both sides. Cap rail rubber inserts are attached to the top glass edges, and steel anchors are fastened to the bottom of base shoes for insertion into core-drilled holes. Each process is performed under explicit quality control parameters.

Laminated or monolithic glass can be specified, as well as customized cap rail and base shoe features. Some current base shoe models feature a unique multiple-hollow design that makes them approximately 33 percent lighter than standard shoes for easier onsite handling.

2. Expedite project completion

Standardizing and simplifying installation procedures is one of the key benefits of unitized glass railing systems because it leads to faster

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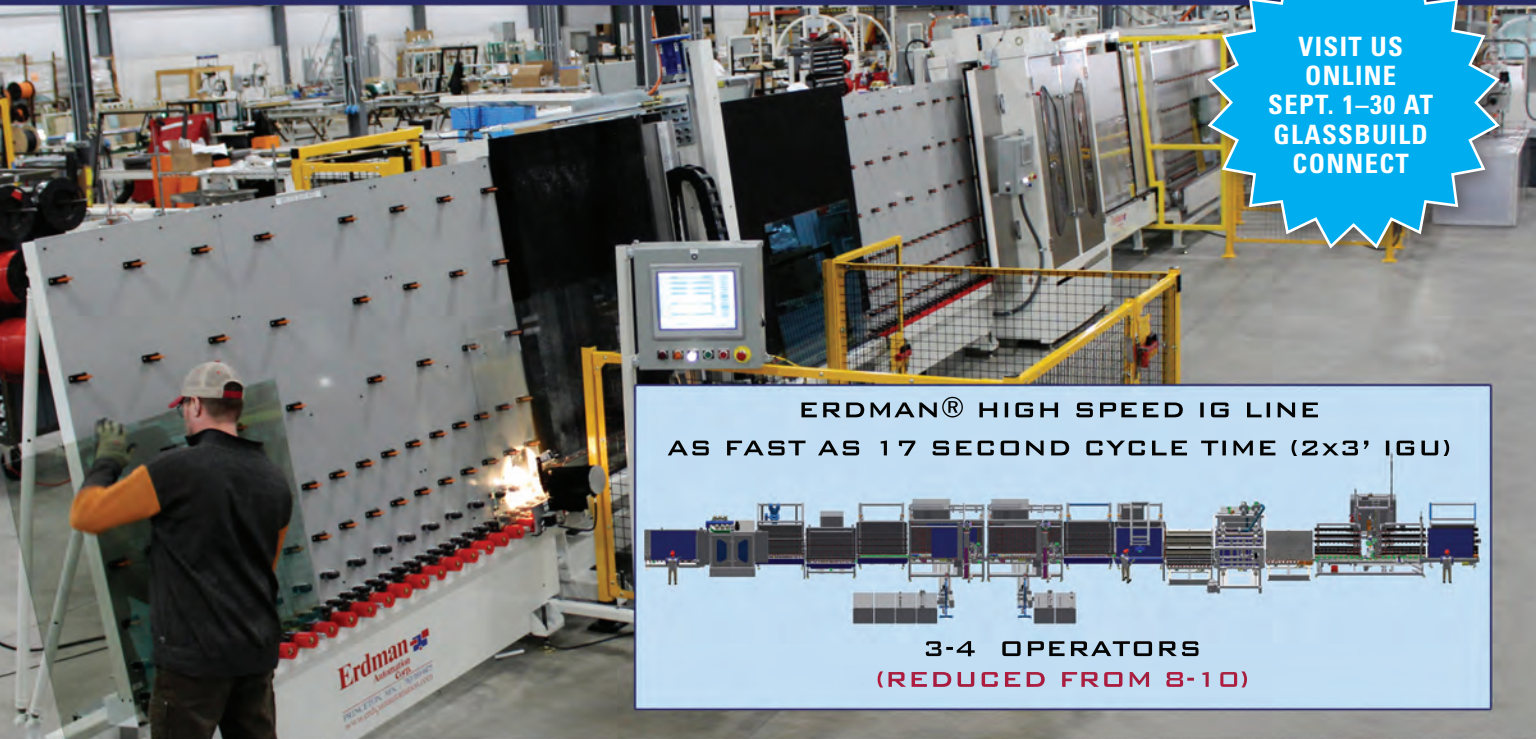
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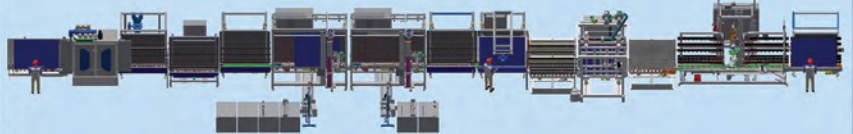


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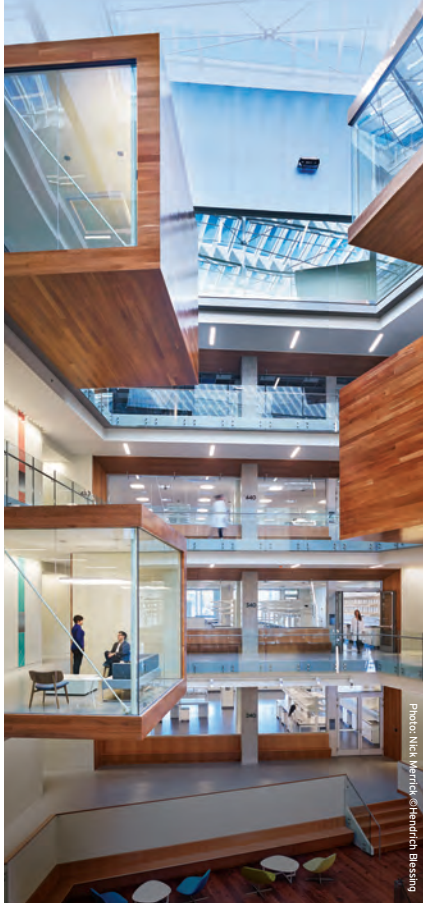


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project completion. This is particularly important in today's era of tight construction schedules.

The streamlined process of installing a unitized glass railing system typically takes three steps. The first involves drilling holes in the concrete for the glass railing units to be inserted. The holes can then be filled with anchoring cement. Second, the glass railing unit anchors are aligned with the core-drilled holes and lowered into place using vacuum cups. Finally, prefabricated cap rails are attached to the top of the glass.

This simplified method of installation lets contractors better manage their schedules and stay organized. Less time spent installing the railings means they can move on to the next phase of construction faster.

3. Lower labor costs and address the skilled labor shortage

Installing standard glass railing systems can be a time-consuming and labor-intensive process, particularly in larger jobs or when using a wet-glazed system. With unitized glass railing systems, however, a substantial amount of field work is bypassed due to prefabrication benefits and superior installation efficiencies. This reduces labor costs because less time and less manpower is needed. This lets contractors better manage labor budgets and schedules.

A shortage of skilled labor has impacted the glazing industry in recent years. Unitized glass railing systems offer a practical solution to help mitigate its effects because of their fast and easy installation. This is especially true when used in conjunction with other unitized systems.

4. Improve installer safety

Normally, glaziers need to reach over a glass railing to roll in the exterior base shoe rubber seal. This action prolongs installation and increases the risk of injury at higher elevations since glaziers can fall over the railing. With unitized glass railing systems, both the interior and exterior rubber seals are

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WITH UNITIZED GLASS RAILING SYSTEMS, A SUBSTANTIAL AMOUNT OF FIELD WORK IS BYPASSED DUE TO PREFABRICATION BENEFITS AND SUPERIOR INSTALLATION EFFICIENCIES.

”

preinstalled, which bypasses this step.

Unitized glass railings also create a clutter-free environment. Units are delivered completely assembled and ergonomically packaged. Individual components—such as base shoes, glass panels, and anchors—no longer have to be spread about an active workspace, preventing accidental trips.

5. Enhance aesthetics

Precision engineering, quality components, consistency in production and meticulous inspection in a controlled factory environment together lead to enhanced aesthetics in unitized glass railing systems.

Once installed, unitized glass railings offer long, uninterrupted glass spans with minimal vertical breaks. The glass arrives perfectly plumb and leveled within the base shoe unit, which produces precise sightlines. A much smaller probability of error during installation also helps improve visuals. ■

Brian Clifford is vice president, architectural railings group, C.R. Laurence. He can be reached at brian_clifford@crlaurence.com.

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RAMPING BACK UP

Safety and automation considerations for companies during the time of COVID

BY LARRY JOHNSON



The year started with such optimism. Most in the building and construction industry were seeing upticks in sales and construction forecasts were on the rise. Then came March. The uncertainty. The pausing of projects. For some, shutdowns and supply issues.

Now, as the world steadily reopens with new rules, we're looking at a very different market than we were in January and February. While construction is down across many commercial sectors, there are still some areas of potential optimism, such as health care, industrial and education. Many forecasts also indicate that we will not hit the same level of decline as we did during the housing crisis, and that we will rebound more quickly.

Even though the outlook is different than what we expected, business must still go on. And if there's one bright spot in all of this, it's the incredible

creativity and adaptability I have seen from co-workers, colleagues and customers over the last few months. We've been so nimble as an industry that we might forever be changed by this—in a good way. We're seeking opportunities to work more safely and efficiently, while providing the utmost care to our employees and customers.

So, as we ramp back up, we must keep that fighting spirit going in how we serve our customers and take care of each other in this new world. To follow are a few tips to help you along the way.

Put safety first

While OSHA and the Centers for Disease Control and Prevention have provided guidelines for operating safely during the COVID-19 pandemic, there are other initiatives that should be considered to help continuously foster a culture of safety—now and into the future.

First, communicate and communicate often. There is no such thing as over-communication when it comes to safety, especially at a time when the narrative is constantly changing. Employees need to hear from leadership, understand the challenges and opportunities for the business, and feel safe and comfortable in their work environments. A commitment to safety must start from the top and there has to be follow-through.

And whether we're talking sales, forecasting, customer concerns, product production, supply chain management, or anything else, every communication should begin with how the company is prioritizing employee safety in relation to that subject. In short, it's one thing to put new policies in place, but it's another to talk openly about safety across all levels of the organization.

Second, encourage common sense. Sometimes it can be difficult for employees to express safety concerns,

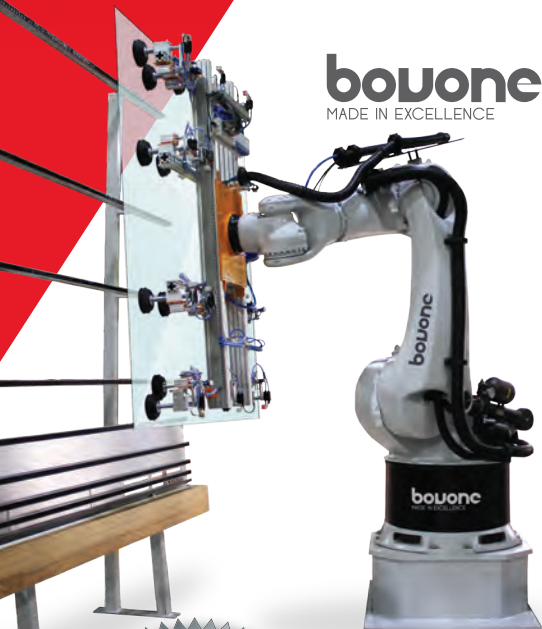


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especially when it means calling out co-worker behavior. This is an opportunity to treat any feedback employees have as a positive as we both listen and respond. It means they are looking out for the company and for each other.

Every employee should feel like they're able to stop unsafe behavior if they see it happening. Promote this kind of good common-sense decision-making, and it will soon become second nature to everyone.

Minimize human touchpoints

Another consideration when ramping back up is the role automation can play in safely operating. The benefits that fenestration manufacturers have sought in automated insulating glass lines—minimized human touchpoints and easier transport of units across the shop floor, for example—will also help as we work to minimize viral spread in our facilities.

New equipment and machinery also

can open new opportunities to rethink the flow of a plant.

Finally, an automated IG line can help bring significant return on investment and ultimately cost savings on fabrication, and organizations should be investigating all options to optimize their bottom line right now.

Manufacturing might forever be changed in the face of this crisis. I suspect we are just at the beginning, and automation will be a key part of ongoing strategies to protect workers and ensure optimal productivity and efficiencies on the plant floor.

Be flexible

Over the last several months, I think it's safe to say that we've learned some things about our businesses and ourselves. We were forced to be creative in ways we might not have thought possible before. We implemented new safety measures in record time, mobilized

to communicate with employees and our customers, and pivoted just about every aspect of our businesses. This crisis has shown us that we can be creative when we need to be, and personally, I'd like to see that flexibility and ability to be nimble carry on in our operations and as an industry going forward. We have opportunities to use what we've learned and plan for our futures.

Forward-thinking manufacturers are using this time to work on proactive strategies to boost safety and operational efficiency, and to ensure ongoing profitability. There was a place to act quickly, and now is the time to be playful about our futures and implement new safety protocols, maintain ongoing communications and revisit plant floors so we are ready for the rebound. ■

Larry Johnson is vice president of sales, Quanex Building Products. He can be reached at larry.johnson@quanex.com.

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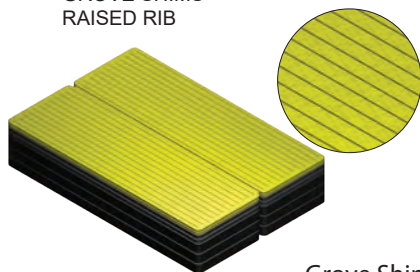
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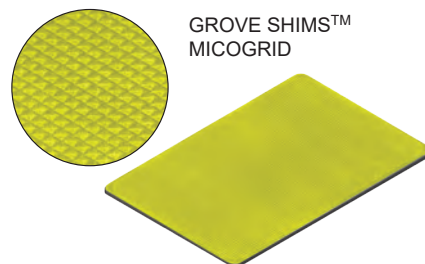
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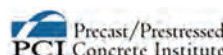
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MANAGEMENT

MANAGING BUSINESS METRICS DURING A PANDEMIC

BY TIM FINLEY



We own and operate a small business in the construction market that was started in Q1 2019. Given the sales cycle of the construction market, income generation on work done doesn't typically arrive for eight to 12 months and is at the mercy of a project schedule and payment for the services done. The business vision, mission and strategy were well planned and, for the most part, executing successfully in the first 14 months of business. A backlog was generated, pipeline created and promotional activities working. These factors coupled with a healthy economy have allowed us to see the pathway to a profitable business that would allow us to achieve the vision and mission.

Thirteen days after we celebrated our rookie season and first year in business, COVID-19 shut down the U.S. No preparation, research, due diligence, strategy or other resource in business can provide the right playbook on how to manage through a pandemic. Of course, a business utilizes the leadership, experience, lessons learned and good will of the team to get by safe and healthy, but as it relates to the company bottom line, there is no good way to fully forecast the consequence.

I challenge business owners to not hide from current economic factors and the overall health of the economy. Some industries are thriving, some are bankrupt, some are just holding on and some are just idle waiting to see day to day.



THE BOTTOM LINE

Even during the economic uncertainty surrounding the pandemic, business owners must continue to track key performance metrics to ensure their companies are operating in a profitable manner. Owners that sit idle are at biggest threat during the pandemic.



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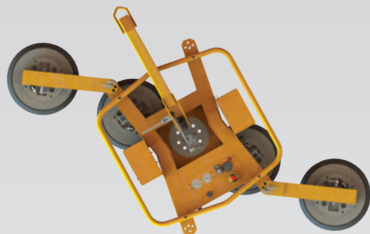
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IT IS CRITICAL THAT ANYONE IN BUSINESS MEASURES THE BOTTOM LINE AND ENSURES THE COMPANY IS OPERATING IN A PROFITABLE MANNER.

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It is critical that anyone in business measures the bottom line and ensures the company is operating in a profitable manner. Those that are just holding on or sitting idle have the biggest threat in a pandemic, because the future cannot be forecasted exactly with so many factors out of control.

So, I offer some simple points to consider, none of which are new to business, but good to hear from time to time to keep perspective.

1 Measure the business

What are your business performance metrics and how are you tracking them? Consider factors such as operations, sales, overhead, AP's, AR's, etc. What is the metric for each business function, and how are you tracking and managing those functions/teams? How have you adapted to the current situation, implemented process change if needed, and kept clear communication with those that need it? How are key performance indicators being altered to the virtual or work-from-home era?

2 Communicate with your team

Make sure you establish good communication channels with your internal team, clients and prospects. The way in which you communicate may have to change in the physical sense—you are not in person, so how do you invest in that? Make sure your team has the necessary resources and technology to be effective in their roles. There are many resources out there to

help coach on virtual communication, best practices and productivity. I foresee training budgets being increased with a focus on how to work in virtual world.

3 Check in with those around you

How is the safety, health and well-being of all those in your circle? How, as individuals, leaders or otherwise, are you affecting the people around you? Remember not everyone is conditioned to be online all the time. How are they doing?

4 Focus on today

With metrics communicated and implemented, work the plan. When folks ask, “How’s business?” I tell them, “As good as can be given the current situation.” I follow up with, “I’ve chosen to focus on the work for today and leave what’s next for the really smart people.” You can only control what you can control.

How we adapt, rally and support each other through this is crucial. COVID-19 is having a direct impact on the construction industry and built environment. For our business, we remain optimistic to win the short term work we have developed, and confident glass and glazing will have its place post pandemic, even if it’s in new environments and applications. ■

Tim is the principal and founder of T.Fin Building Solutions, a manufacturers rep firm specializing in high-performance glass and glazing products.

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Field/Factory - In Challenging Times:

You Must Make Every Order Accurately - The First Time!

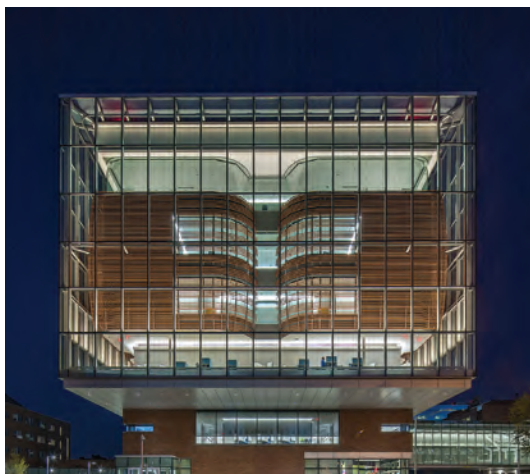


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INDUSTRY

INNOVATION AND ADVANCEMENT IN GLASS, METALS, MANUFACTURING AND MORE
BY LAURIE COWIN, NORAH DICK AND KATY DEVLIN

2020 has challenged glass companies across all segments of the industry. It has tasked industry leaders with re-thinking the products they supply, their production and installation processes, the way they communicate with customers, and more. But it hasn't stopped the pace of innovation and evolution across the industry.

"The biggest trends we see right now, right here in North America is the resiliency of the market itself," says Kevin Zuege, senior director of marketing and technical service, Industrial Products Business, for Tremco.

Companies continue to provide glass

that protects, performs and stretches the imagination of what's possible inside and out of a building, sleek and minimalist glazing systems that maximize views and daylighting, hardware that reduces spread of virus, machinery that improves quality and reduces labor demands, digital tools that reshape the way companies do business, and so much more.

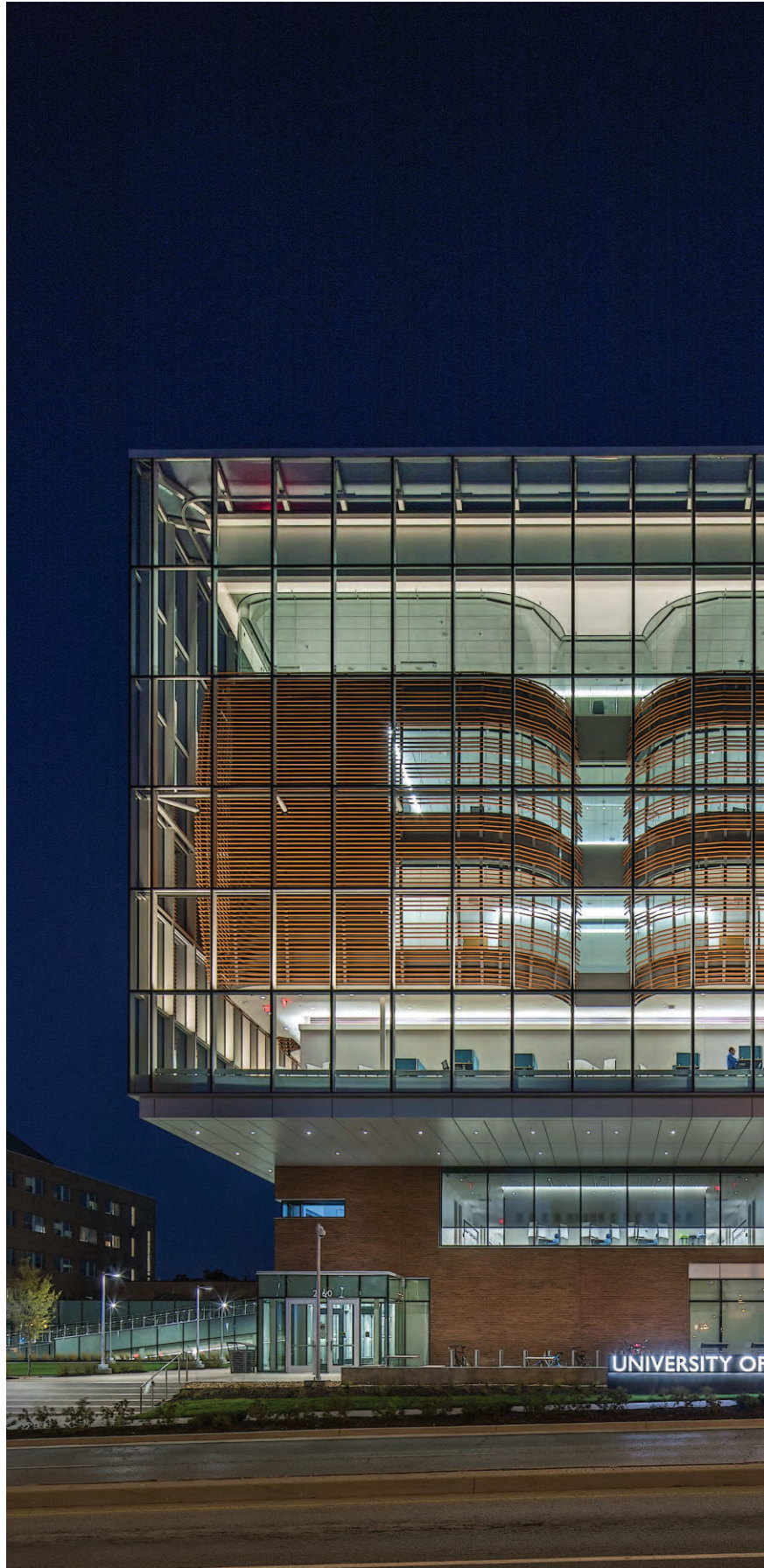
"The industry remains strong and an integral part of the overall residential, kitchen and bath, remodel and commercial construction markets," says Barbara Haaksma, senior vice president of marketing for C.R. Laurence.

"The resilience and adaptation of the industry [during the pandemic] is remarkable," says Tyron Ball, CEO of Soft Tech. "So many people have just stepped up changed their whole business, to adapt and get through it."

The following pages present Glass Magazine's complete Industry Trends report. It takes a closer look at the trends across all product segments, from glass to equipment to software. In it, industry leaders offer insights on top customer challenges and how suppliers are working to address those concerns. And, it looks at how COVID-19 has begun to alter the market.

GLASSMAKERS DELIVER
MULTIFUNCTIONAL,
HIGH-PERFORMANCE
SOLUTIONS
BY NORAH DICK

ARCHITECTURAL GLASS





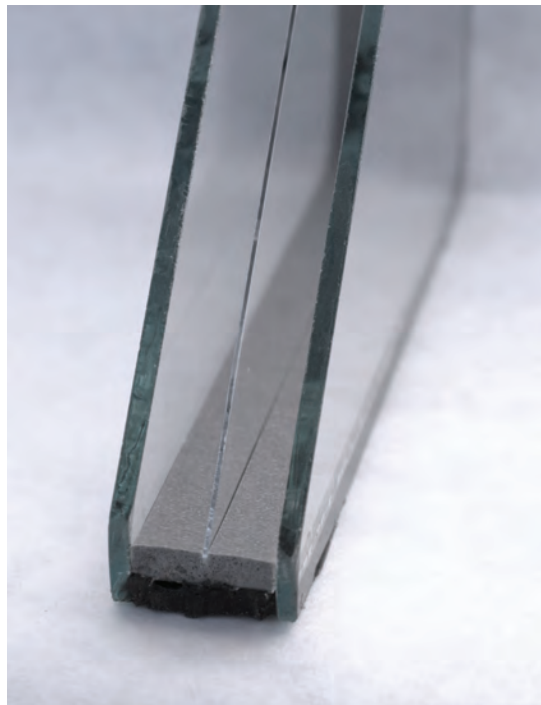
Left: Vitro Architectural Glass, Solarban Acuity in use on the exterior of the University of Kansas Health Education Building. Photo by Tom Kessler.
Below: Qualex Building Products' thin-triple insulating unit.

Architectural glass continues to expand in size, and since the pandemic, in applications. Industry leaders see continued relevance for the aesthetic, and protective, qualities of glass in architectural building. “We know how people respond to light and interaction, and that’s the real value of glass,” says Tim Nass, vice president of national sales, Safi First. Glass allows people “to have a level of privacy

and security from a spatial standpoint, but the transparency allows people to feel a level of connection.”

Jumbo glass

Large glass continues to be a major product trend, as the material expands on the building envelope. “Unmistakably, over the last decade [have] been the design trends toward more glass, bigger glass and transparent glass,” says Nathaniel McKenna, manager of marketing, Vitro Architectural Glass.



Due to the major presence of larger glass, the material has become critical to a building’s aesthetic success. “Glass is trending toward large glass lites, and minimizing impacts of framing, large expanses of glass allowing for clear views, integrated into the building design, on the envelope or in the interior. Glass creates a more inviting environment rather than closed-off, compartmentalized construction,” says Nass.

Rob Botman, general manager, Glassopolis Specialty Glass, emphasizes the importance of even further increasing sightlines through reduced framing, made possible by technical achievements



Left to right: Safti First's SuperLite II-XLB 60. Tempered vacuum insulated glass from VIG Technologies. Unelko Antimicrobial Glass versus non-treated glass.

in fabrication. "People want the ratio of visible glass to frame to be minimized," he says. "If you make the glass stronger, you can do more with less frame."

Performance

Demands for sustainability, thermal performance and energy efficiency continue to drive innovation, says Yariv Ninyo, head of business development, Dip-Tech. "Heat reduction, light control and shading, bird-friendly features and other environment-friendly applications that can be implemented in glass are becoming more and more important when designing any space or building," he says.

"We're continuing to see increasing demand for high-performance glass. Building codes are getting more stringent, demanding lower and lower U-factors," says Larry Johnson, vice president of sales, North American

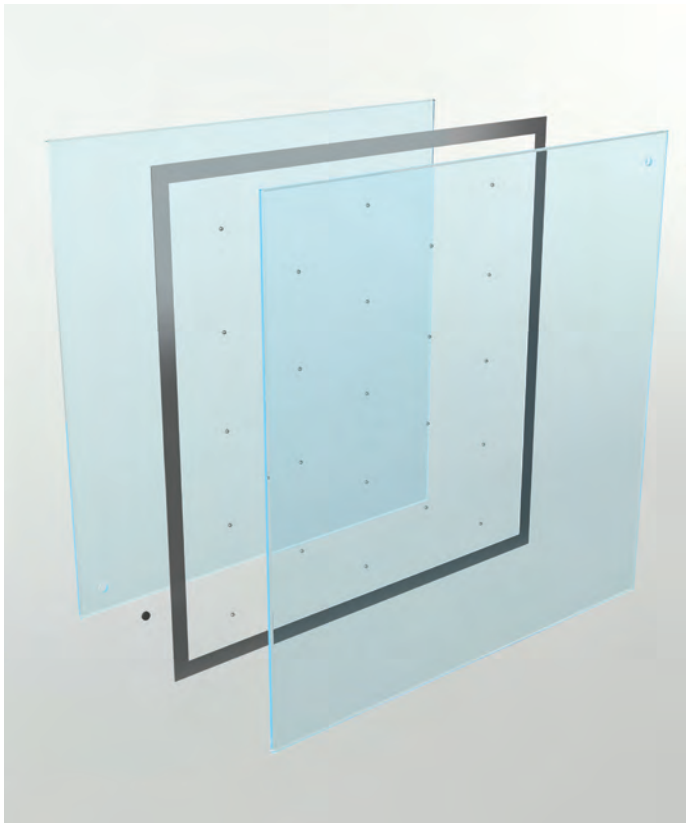
Fenestration, Quanex Building Products. "Warm-edge spacer systems like Quanex's Super Spacer TriSeal, combined with other performance-improving measures, are one way that glass manufacturers can continue meeting these evolving demands."

These trends are driving interest in specialty high-performance products, such as electrochromics, says Catelyn Herman, senior product manager, Glass Solutions, Assa Abloy. "Electrochromic glass, or 'smart glass,' is emerging as a clear alternative to traditional," says Herman. "Electrochromic glass uses electricity to change glass from opaque to translucent and can be controlled manually or programmed to adjust according to the position of the sun. Aside from the obvious reduction in energy costs from limiting the use of electrical lighting, automatic shading and design in glass curtain walls help reduce the

load on a building's HVAC unit, further reducing energy use and costs."

Quanex's Johnson says the company's thin-triple insulating units have gained traction as customers look to further boost energy performance. "We've generated a lot of interest in [thin triple] technology in the past year, which utilizes an ultra-thin middle glass layer to create a highly efficient, lightweight triple-glazed unit," he says.

Another emerging performance glass product is vacuum insulated glass, which offers improved thermal insulation. "Helping accelerate the trend toward [tempered] VIG is the stricter codes being introduced in North America," says Michael Spellman, president, VIG Technologies. VIG Technologies and LandVac have developed an SGCC-approved tempered VIG with an R-value of 15.4 and U-value of 0.07, according to Spellman. "With buildings adding tVIG



Units to windows and doors, the world's glass and building industry will see a major step in change which has not been seen since low-E glass entered the world several decades ago," he says.

In addition to energy and thermal performance, daylighting and access to views continue to be a priority for the design industry, in part due to their benefits to occupants. Employers seek office spaces with glass, says Catelyn Herman, senior product manager, glass solutions at Assa Abloy, referencing studies that show natural light's ability to boost productivity, moods and overall well-being. "It's a misconception that glass offers only aesthetics and design enhancements," she says. "The use of glass has many benefits in the workplace, from the layout and functionality of the space, to the energy and mood it provides its occupants."

To maximize daylighting, designers

are looking for glazed solutions beyond traditional exterior applications. "We're starting to see the incorporation of [fire-rated glass] horizontally," says Safti First's Nass. "Transparent floors are becoming more commonplace."

Multifunctionality

Glass is also being asked to grow in complexity, to meet demands for multiple functions, according to industry leaders. "We're moving away from uni-functional to multifunctional [glass]," says Botan. He says the trend toward complex, efficient glass continues. "We're seeing requests for multifunctional glasses, glass that has requirements for thermal, but also maybe bullet and blast performance. For specialty fabrication, we've had requests to protect against high heat loads and X-ray radiation. We're seeing more and more combinations of protection against radiation, but the

glass also needs to be fire-rated."

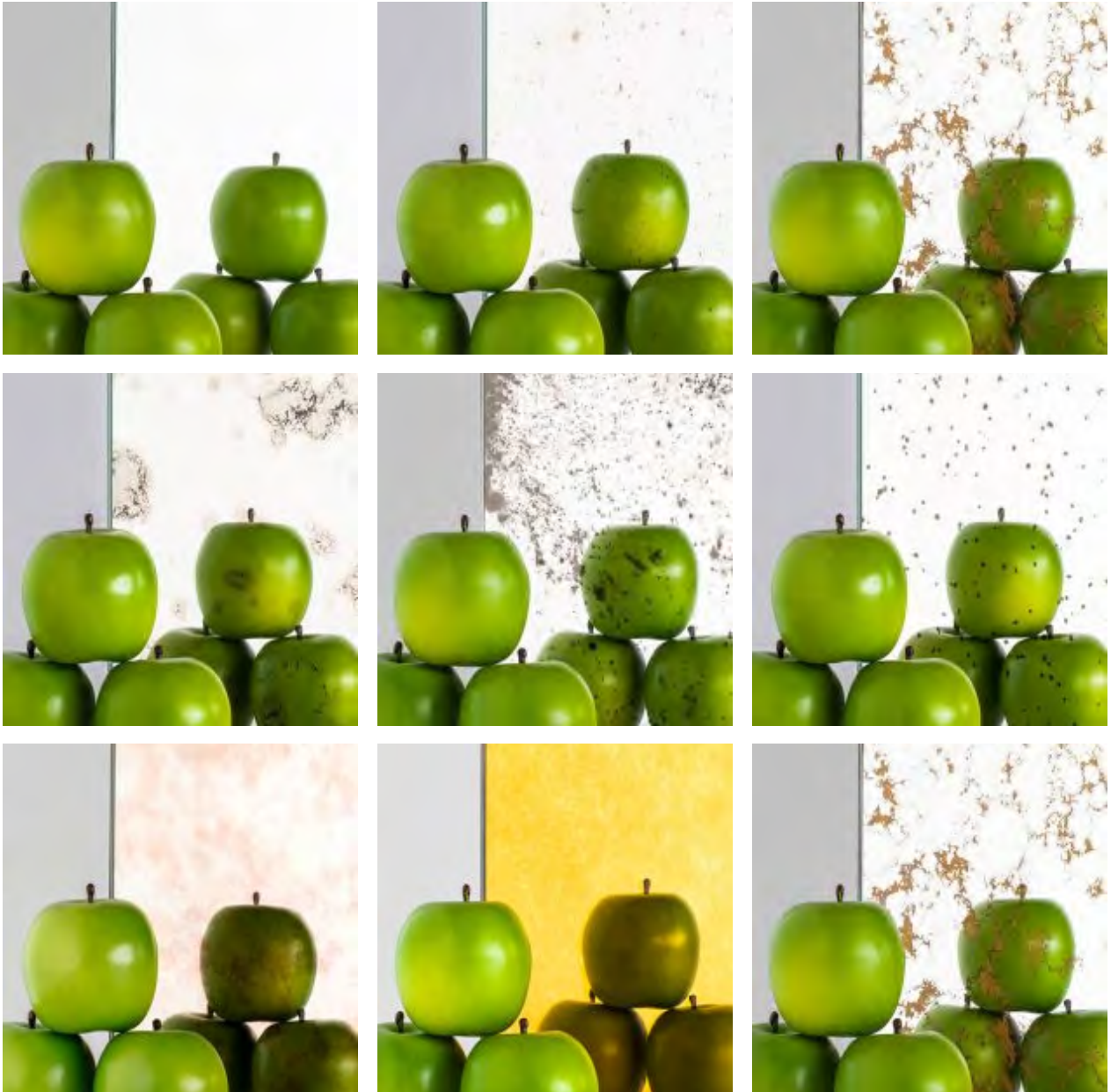
Nass says that he's seeing more fire-rated applications on the exterior of the building, largely driven by code changes. "A big trend is that we're seeing the implementation of our products as part of the building envelope in densely populated areas," he says.

In addition to fire-rated properties and traditional protective properties, workspaces will also require glass to offer further protection, says Dip-Tech's Ninyo. "Current major drivers in architecture are information vulnerability and data privacy, which create a need for glass applications that provide protection within the architecture."

Virus protections

Glass can offer bullet and blast protection, and during the pandemic, is also being asked to protect against the spread of COVID-19 by expanding

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Glass coatings will also offer protection and resistance for COVID-19, says Syndi Sim, vice president, marketing and business development, Diamon-Fusion International. “Surfaces such as windows, glass railings, retail glass barriers, interior hospital glass, and glass partitions are all benefiting from the use of protective glass coatings,” she says. “This anticipation will continue to rise in the face of COVID-19. Benefits and features such as easy-to-clean, stain-resistant, and microbial-resistant, which were only once thought of as important for shower doors, will now extend down the pipeline to a myriad of other glass surface types, creating new opportunities for fabricators.”

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MACHINERY REACHES A NEW LEVEL OF MATURITY TO FURTHER MEET DEMANDS FOR AUTOMATION, FLEXIBILITY AND EFFICIENCY
BY LAURIE COWIN



EQUIPMENT &

Machinery has gained more time in the spotlight in recent years thanks to automation and its increasing capabilities, especially in light of the industry's chronic workforce shortage. Since the coronavirus pandemic altered the world earlier this year, advanced machinery solutions are even more important for manufacturers, as they strive to keep up

with demand while adhering to social distancing and other safety measures to protect their human bandwidth.

The product category has spent the past years in rapid development. Today's factories are hyper-focused on high-performing machinery that delivers accurate results and has the flexibility to produce exactly what their customers request.

"The trend is to consolidate well-known technologies and turn them into direct revenue for the final user," say Gino S. Gramaglia, sales manager, and Joe Gates, technical services manager, Lattuada North America. "There is very little space for 'nice-but-useless' novelties; the feeling is the market is becoming more 'mature' regarding machinery. All those solutions (automation solution, robotics)



Left: Salem Flat Glass & Mirror's Denver Advance is a vertical CNC that the company says has a good ratio of the space it takes on the floor to the size of piece it can produce. It also allows for zero suction cup setup time and the continuous operation of pieces such as shower doors and railings. Machinery such as this is indicative of a move toward more efficiency in machinery. **Above:** Softsolution's LineScanner is built to check surface quality, dimension control, anisotropy, edge stress and more. Among other benefits, this helps stop the production of bad glass at the earliest stage possible, as well as ensuring a bad product doesn't make it to customers, according to the company.

Credit: Softsolution GmbH

AUTOMATION

that can effectively reduce dependability on human skills are welcome in glass processors of almost every size, given that it is becoming more and more difficult to find qualified operators, and processors are growing reluctant in investing in training."

Automation and interconnectivity

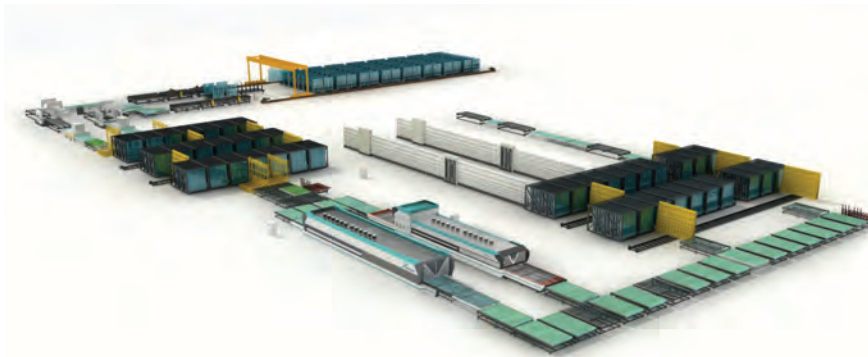
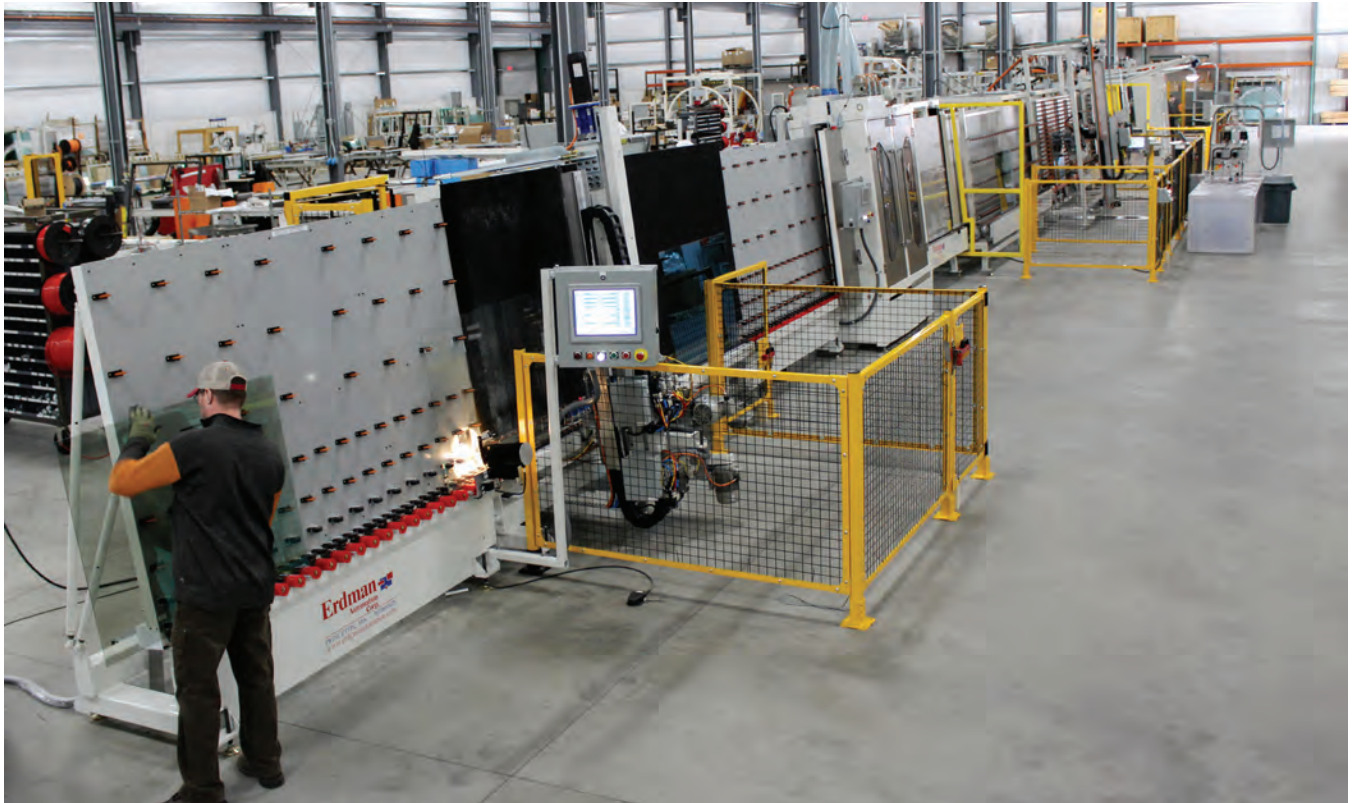
Factories across the world are evolving

to become smarter, more connected facilities where glancing at a single user dashboard can tell an operator the status of nearly any item processing at a given moment.

"Currently, there is much more focus on the integration of work cells on the shop floor to eliminate islands of automation," says Dave Miller, group manager – business development executive at

FeneTech. "In many cases, this automation was first designed to reduce manual movement of glass for various reasons, including employee safety and reduction of breakage and scratching. Today's factory is much more integrated. Tighter communication between systems and well-defined workflow rules are becoming even more critical."

Nate Huffman, president of Softsolu-



Top: High-speed machines have been enjoying a boom in popularity in recent years. Erdman Automation says high-speed machines are among the innovations helping companies recognize increased units per person, social distancing, lower head count, safer application, quality improvements and reduced floor space. **Above:** IGE Solutions shares how a fully automated custom glass fabrication facility can be set up. Machines can be paired together to create larger islands of automation that include horizontal machines that combine several steps into one custom glass fabrication line. Tasks such as polishing, drilling, milling and rounded shape glass fabrication, for example, can be made into one production cell.

tion North America, says nearly all equipment is designed to handle the Internet of Things and Industry 4.0. “Automation seems to be the driving force in most of the technological advancements we see on the floor,” he says. “The future of IoT will hopefully start tying together all the different machinery that can be found on the shop floor. The more communication between the production islands in the process, the better feedback and traceability the manufacturers will be able to see in real time.”

Josh Rudd, sales executive at A+W Software, says it’s imperative to be able to tie machines together for greatest efficacy. Without proper supportive software that feeds machinery the proper data and sequence, he says, a machine won’t be able to live up to its full capability. “Technology can maximize a machine or a particular set of flows—different operations from machine to machine and through logistics.”

“We maintain that any job that can be automated must be automated,” says Mi-

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HHH Tempering Resources's 4-Edge Horizontal Glass Grinder. The equipment removes edges and coatings using the four-edge horizontal glass grinding machine, and features a servo motor control system.

chael Spellman, president, IGE Solutions. “We have now connected all the custom fabrication work areas to islands of automation, and from islands of automation, to full custom glass fabrication facilities.”

Automation also presents an opportunity for companies to set themselves up for long-term success and stability. “The need for automation may be depressed slightly in the short term due to the unemployment numbers, but in the long run it will be critical to compete with foreign labor prices and also the next pandemic,” says Morgan Donohue, president of Erdman Automation. “Those who are the most automated will have the advantage over the competition.”

“Customer requirements and markets are rapidly changing, which is why products and services will become more ‘digital’ and will be brought to the market faster in the future,” says Claudia Guschlbauer, head of corporate communications and marketing, Lisec. “Companies will be required to adapt

faster and to continuously re-think their business models. Satisfying customer needs will be a more dynamic and creative process in the future. Anyone who fails to catch the digitalization train will lose out in the long run.”

Flexibility

More machinery manufacturers have requests for machines that can switch gears if need be. “We have recently seen a push from prospective buyers for equipment that is more flexible (can produce a wide variety of parts) and more automated,” says Derek Burkholder, vice president of sales/engineering, Casso Solar Technologies. “Historically, we have seen most U.S. customers make cost-based decisions when choosing a supplier, but the current trend is toward making capability-based decisions.”

“Even larger companies want to be ready to deliver big, medium but also small batches of glass if the added value to them is worth the effort,” say Gramaglia and Gates.

Mike Synon, president and CEO of HHH Tempering, has seen tempering and laminating striving for bigger sizes and as such sees furnaces shift from 60 inches wide to 130- to 150-inch-wide furnaces. “Because the glass is so large, there is more automation on the fabrication side,” he explains. “They try to grind, polish and drill holes without people touching it.” He also references architects driving the trend of bigger, longer, wider pieces of glass, sometimes up to 20 feet.

Digital printing also is gaining momentum in its popularity and offerings. Faster, more flexible machines allow for a wider range of ink colors and enable job switching with minimal setup time, according to Yariv Ninyo, head of business development at Dip-Tech. Ink portfolios also are expanding to include precious metal inks like gold and rose gold, and conductive ink for automotive and architecture applications.

“We also notice a growing demand for a full, 360 solution rather than just



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Top: The technology behind automated machinery, such as FeneTech's FENml, can implement better communication up and down the supply chain, ultimately leading customers toward evolving into a digital factory. Integration and communications improve not only within the building, but also by providing notifications to outside resources, mobile apps for tracking deliveries and tighter integration with vendors. **Bottom:** Automated machinery for applying protective coatings to glass, such as Diamon-Fusion International's offerings, can help reduce small inefficiencies and human error.

the actual printers, meaning companies are required to provide an enveloping offer—machine, ink, relevant software and special services that support the machine and its production,” says Ninyo, who anticipates single-pass machines that allow for a high-quality print combined with fast, mass production capabilities coming to fruition.

Machinery innovations

Beyond automation and flexibility, machine manufacturers have focused efforts on developing equipment to meet demand for various glass product trends. Several sources mention the rising demand for extra-jumbo capable machinery, as well as machines that can run thicker glass. Others note that customers in laminated glass are moving away from strictly using PVB to using a wider variety of interlayer materials, while other customers are using more advanced products such as electrochromic glass and are seeking technologies to produce these products at a lower cost.

Additional machine improvements look at quality and safety, says Erdman's Donohue, but speed and production barriers are being broken as well. “We are seeing off-the-shelf 6-axis robots being used for what would have been a dedicated 3- or 4-axis application in the past,” he says, citing the competitiveness of 6-axis robots.

Vertical CNC machines are enjoying a



rise in popularity, according to David Anderson and Mike Rosato, directors of machinery sales engineering at Salem Flat Glass & Mirror. One of its machines, the Denver Advance, has what they describe as “a good ratio of the space it takes on the floor to size of piece it can produce. It also allows for zero suction cup set-up time and the continuous operation of pieces such as shower doors and railings. This type of machine is evolving to meet customer demands and is becoming prevalent throughout the industry.”

The next generation of manufacturing equipment also may be on the horizon. “The most exciting trend we’ve seen is the increase in companies working to develop new technologies and branching out from the tried and true methods of production that have been around for decades,” says Burkholder. “We have been spending a lot of time talking to companies recently about providing them with equipment for R&D rather than full-scale production.”

Efficiency

Time is money, and this is especially true on the manufacturing floor. Efficiency gains often translate directly into increased revenue. “At the end of the day, it’s about making money, and you need to be efficient to make money,” says A+W’s Rudd. “With the labor pool the way it is, you better make your employees as effective and efficient as possible, and that’s what technology and equipment does.”

“Overall, there is a real move toward efficiency,” say Anderson and Rosato. “Efficiency of order entry, efficiency of part programming, efficiency of CNC tool application and sequencing. There is a strong movement in the direction of reducing inputs and processing steps, handling, and the ability to produce precise and repeatable efficient processes.”

Not only does automation enhance efficiency internally, but it also provides transparency for customers and a 360-degree overview of production, says Guschlbauer, so that customers also can track

the entire status of their orders online.

Moreover, continue Anderson and Rosato, robotics and automation “tend to grow production output exponentially as well as decrease rejects, reworks and lates, which, in turn, increase customer satisfaction and profitability.”

Rudd also sees lean manufacturing as an important element of efficiency and having the proper equipment and software in place to be able to reduce breakage or errors in the shop, and be

able to bounce back quickly in the event of one. “When you tie design directly into a machine where you can steer machines, not re-keying, you eliminate mistakes,” he says. “A big part of lean manufacturing is reducing footsteps and eliminating mistakes.”

Fabricators demand efficiency improvements for specialty equipment as well. Fabricators often ask up front if protective glass coatings are applied using automated machinery—a drastic

THE NEXT BIG THING

“Large insulated glass units, lamination and, moreover, a combination [of] tempered/laminated units for safety.” —David Anderson and Mike Rosato, directors of machinery sales engineering at Salem Flat Glass & Mirror

“For sure the next big thing will be to translate the enormous amount of highly developed technologies we already see in other sectors like consumer electronics, data management, etc., in reliable solutions for the many problems glass working has; cross-contaminations will become more and more frequent and some solutions which are already latent in the mind of both manufacturers and final users because already experienced in different aspects of everyday life, will start to take form in glass machinery.” —Gino S. Gramaglia, sales manager, and Joe Gates, technical services manager, Lattuada North America

“The next big thing will be a more closed loop system that uses the information from quality inspection systems (and other equipment) to send feedback to other machinery in the process. The different production machinery will then start to use the data to self-adjust and learn to react accordingly.” —Nate Huffman, president, Softsolution North America

“There is a lot of interest in thin film coating technologies with a focus on making electrochromic glass cheaper to produce.” —Derek Burkholder, vice president of sales/engineering, Casso Solar Technologies

“In addition to increasing communication on the shop floor, our customers want to improve integration and communication beyond the walls of the building. This includes notifications to outside resources, mobile apps for tracking deliveries, and tighter integration with vendors.” —Dave Miller, group manager – business development executive, FeneTech

“We have to continue to not only produce at greater speeds but with fewer people. Those with the best units-per-person numbers will be the winners. We are working on making highly automated solutions using just one person in a small space.” —Morgan Donohue, president of Erdman Automation

“Definitely a bigger push toward robotics and full automation as much as possible. Finding people is getting harder and harder.” —Mike Synon, president and CEO, HHH Tempering

“Single-pass machines are a good bet. They allow for a high print quality combined with fast, mass production capabilities.” —Yariv Ninyo, head of business development, Dip-Tech



difference from only five years ago when many coatings were still hand-applied, observes Syndi Sim, vice president of marketing and business development at Diamon-Fusion International. “Fabricators are realizing that to stay competitive, they can no longer afford small inefficiencies, human error and, conversely, they need to maximize their dollars spent,” she says. “Implementing automated machinery accomplishes that.”

Market pressure and the challenge to do more with less are top-of-mind for many, as well. “Our customers realize that automating processes improves speed and quality for an on-demand world that prioritizes individuality,” says FeneTech’s Miller. “By building configurable systems that can easily adapt to thousands of product configurations and still guide orders through a streamlined production workflow, fabricators can rise to the top with best-in-class service levels.”

Labor pains

“The main ‘pain points’ for the glass fabricators remain the same, and include deep concerns with regards to the labor



Top: Dip-Tech's Nera D digital printer. The technology's printing carriage allows for a multi-application process. **Bottom:** Jordon Glass Machinery's Lami-Cut machine for the small to medium sized fabricator of laminated glass.

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HOW THE CORONAVIRUS LEGACY INFLUENCES AUTOMATION TODAY

One of COVID-19's longer-term effects appears to be that of continued social distancing. Dave Miller, group manager – business development executive at FeneTech, says: “Now that companies are beginning to open back up, the conversation is shifting to how to maintain social distancing on the shop floor while not losing gains that have been made in efficiency. Work cell automation certainly helps in this area; however, advanced systems are required to deliver the appropriate processing information, unit by unit, to the automated work center. Additionally, the ability of these automated work centers to send data back to the production system provides opportunities for more flexibility and better management in the workflow.”

Erdman Automation also pointed to social distancing as a driver for automation, alongside quality and safety. “Our workforce is more vulnerable and less stable than in years past and, in order to insulate the factory production from that reality, automation is required,” President Morgan Donohue says.

Knowing a factory uses automation also may give the customer more confidence. “When it comes to automation, limiting touches is the name of the game,” says Syndi Sim, vice president of marketing and business development at Diamon-Fusion International. “Since COVID-19, the need for automation has become even more imperative. Promising customers a safer, hands-free assembly—from building to installment—will build confidence among your customers, whether it's the glass shop, architect, building owner, designer or homeowner.”

The service space also benefited from technology during the pandemic. “Products like the Lisec.eye help solve machine errors quickly online and via video function,” says Claudia Guschlbauer, head of corporate marketing and communications at Lisec. “Thus, no man is needed onsite in the first step or repairs can be carried out independently.”

Automation, already in a growth mode prior to COVID-19, will see significant growth, according to Michael Spellman, president, IGE Solutions. He points both to automation's ability to help with the labor shortage, but also for human resource-related concerns, including associated potential legal actions against employers in light of COVID regulations. “The pandemic has brought to the surface more HR pain, as well as more pressure for profitable production,” he says.

Another trend during COVID-19 that some sources expect to continue is that of the need for local service and parts. “The trend we see from fabricators is service and maintenance has become a big issue due to COVID-19. People need local service,” says Mike Synon, president and CEO of HHH Tempering.

Erdman's Donohue agrees, citing the pandemic bringing to light North America's “vulnerable” supply chain, not only with components, but also with machinery and supporting services. “It is easier to support machinery that is produced here in North America because all the parts are typically sourced locally,” he says. “The technicians who assemble and support the machines reside in the same relative time zones and there are no language barriers.”

(employees) required to do the work,” says IGE's Spellman. “It has been, and continues to be, a major challenge finding employees that are capable and responsible, as well as ensuring the safety of those employees.”

Automation gives companies much-needed flexibility to distribute limited human capital where it's most needed. “The good thing about robotics is they punch in and never punch out. It fills up that gap when you have an employee shortage, or a manpower shortage,” says Synon.

Much of today's modern machinery can also excel where humans don't perform as well, such as glass quality inspection, says Huffman of Softsolution, which is currently working on a new tempering quality inspection. “The level of inspection required now can no longer be performed by a human being,” he says. “Recent developments in quality checks, such as anisotropy and edge stress, cannot be manually performed at all and now special equipment is needed.”

“What is unique about the automation and integration movement is, it does not eliminate jobs, it actually redistributes the labor force,” say Anderson and Rosato. “When a company moves to automation, efficiency and production increases. As a result, more output is needed upstream in the cutting department, which creates a need for more employees to process the glass lites. Also, with exponentially higher production rates, more glass is being fed downstream, which creates a need for more processing to get the glass on the trucks and out the door. ... Even though facilities are becoming more automated, it is not really eliminating jobs; it increases efficiency and production output, allowing a redistribution and education of the workforce.”

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DEMANDS FOR SAFETY,
DAYLIGHTING AND VIEWS, AND
CUSTOMIZATION DRIVE TRENDS
IN METAL SYSTEMS
BY LAURIE COWIN AND
KATY DEVLIN

METALS & HARDWARE





Opposite: American Shower Door describes the opportunity today to be creative with glass patterns through carved, painted or etched art patterns, for example, the decorative glass installation at the University of Iowa pedestrian bridge. **Above:** Tall, wider expanses of glass with slimmer profiles are infiltrating the market, according to C.R. Laurence. Pictured is the Entice Series Entrance System.

Trends in glass industry metal systems—from curtain wall systems to railings to interior hardware—continue to move toward maximizing views and sightlines. Customers seek greater access to natural daylighting and a sense of openness in the built environment, made possible with larger expanses of glass and more minimal framing and hardware, according to industry sources.

Beyond the aesthetics is a push toward systems that allow for quick and efficient installation and, in the face of COVID-19, demand for systems that help to prevent the spread of viruses among building occupants.

Visual considerations

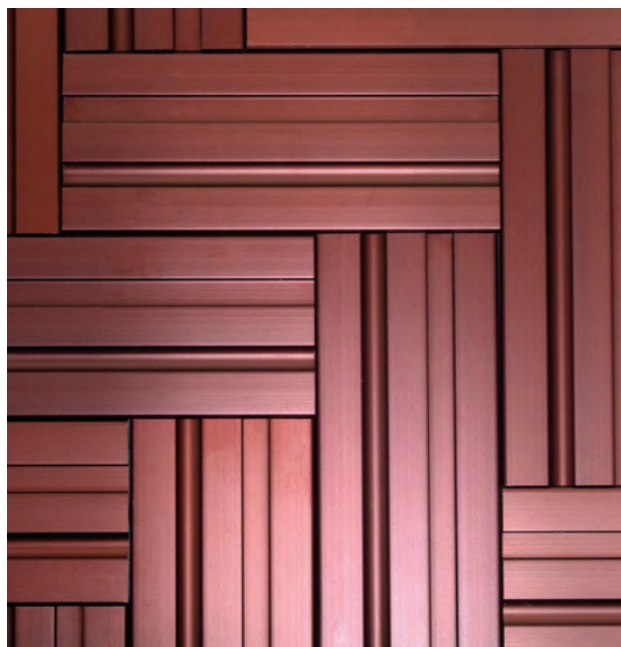
Taller, wider expanses of glass with slimmer profiles are infiltrating the market. Barbara Haaksma, senior vice president of marketing for C.R. Laurence, says slim profiles in door and window frames, particularly those in today's residential indoor-outdoor living spaces, influence commercial, hospitality and office design. "We're building even larger expanses of glass as floor-to-ceiling glass entrances, window and curtain walls gain popularity as a sought-after design element," she says.

American Shower Door currently has high demand for true divided lites, which Carol Perry-Sturgill, president, says are individual pieces of glass inserted in architectural brass or aluminum rails. The company also manufactures the popular barn door styles with flat or tubular bars in any metal, glass or finish for commercial and residential settings. "The concept is to be creative on every unit you make," she says. "Art patterns on glass whether carved, etched or painted are also popular to create a décor of choice in the home or business."

Speed of installation

The market is also moving toward systems that reduce labor requirements. "General contractors and glazing contractors continue to strive for faster façade enclosure," says Stewart Jeske,

METALS & HARDWARE



Above: Assa Abloy's Rockwood Architectural Hands-Free Door Pull was reimagined to add length to create an arm pull that helps mitigate the spread of germs. Credit: Assa Abloy Glass Solutions and Rockwood Products **Left:** Linetec's eco-friendly Bordeaux Anodize provides a multifunctional anodizing solution for both exterior and interior applications.

president of JEI Structural Engineering.

One popular solution is unitized or prefabricated systems. Unitized systems can provide “endless opportunities,” says CRL’s Haaksma. “The need for prefabricated products is integral to easier installs for glaziers. Unitized systems enable expedited construction timelines, higher quality installations and lower labor costs. ... It’s a sort of more-for-less scenario with unitized systems: higher quality and less labor.”

To meet demand, CRL offers ready-to-go glass railing systems, unitized entry systems and prefabricated window wall units, Haaksma says.

The industry is also developing solutions for faster installation that extend beyond prefabrication. J-Edge Anchor Systems, for example, announced a product that will enclose façades faster with a new continuous pour stop and anchor system. The J-Edge Anchor System, developed through collaboration between a façade engineering company and a steel fabricator, replaces the old wavy bent plate slab edge with a high tolerance, straight edge design, allowing bolted connections in place of field welding.

Health and safety

Glass and metal systems play a key role in health and safety considerations for buildings. “Safety can mean many things to many people,” says CRL’s Haaksma. “For us, it means designing for the new era we live in, especially in a time of COVID-19, to keep people safe while also helping them enjoy the space they’re in. Architects, glaziers and providers are adapting the way we look at architectural systems to keep people safe from natural and human threats.”

Designing for health safety has evolved throughout this year and likely will continue to do so, making building layouts very different in the next decade. “Will open offices become less popular? Will business owners need different solutions? These are the questions we’re exploring with our customers,” Haaksma says.

Assa Abloy currently is working on developing new products and re-imagining existing ones to reduce germ spread through touchpoints on highly trafficked openings, says Catelyn Herman, senior product manager, glass solutions. Completely touchless environments can consider solutions such as wave-to-open sensors, door operators, panic devices and electric strikes for hygienic solutions for hands-free access and egress, she says.

More budget conscious solutions can include options like Assa Abloy's Rockwood Architectural Hands-Free Door Pull, which Herman describes as being reimagined to add length, creating an arm pull that helps mitigate the spread of germs. But, she says, "There isn't a one-size-fits-all solution to this environment—every building or business has their own unique challenges."

Safety and health protections also extend to metal coatings. Linetec, for example, offers high-performance architectural coatings with Microban technology, "available in nearly any imaginable color with antimicrobial protection that exceeds other conventional finishes on metal building products' surfaces," says Tammy Schroeder, marketing manager. "This can be especially important for high-traffic public buildings including health care facilities, educational campuses, apartment buildings and senior living facilities, where the growth of stain- and odor-causing bacteria is a concern."

Other glass safety facets include impact- and bullet-resistant qualities in doors, fiberglass panels, sliding windows and the accompanying glazing materials and doorframes, and panic devices that can allow for "high-design alternatives for emergency exit systems," says Haaksma.

Customization

A final trend in hardware and glazing systems is customization. Customers increasingly seek multifunctional solutions that allow for aesthetic and performance flexibility. "With glass, many buyers don't know the extent of decorative options and customizations they can choose from to fit branding standards, their space or specific needs. Designers can use electric swipes for a hands-free solution to access spaces, incorporate custom powder coat colors for a wayfinding approach within a building or incorporate glass railing systems, cubes or frosted glass based [on] what works for their space and its occupants," says Assa Abloy's Herman. "Incorporating glass is no longer an all or nothing solution. It's a sliding scale that comes with complete customization."

Linetec's Schroeder agrees. "Building designers choose to differentiate their projects whenever possible," she says. "Linetec continually strives to create nontraditional, high-performance finishing options for aluminum building products. Minimal cleaning and maintenance with exceptional durability, UV resistance and weatherability have become the expectation."

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HANDLING & TRANSP



Handling and transportation equipment suppliers closely track wider industry trends to ensure solutions that meet evolving labor, product and safety demands, they say. Design trends seeking larger, heavier glass lites lead to equipment with higher load capacity and increased flexibility. Ongoing labor shortages and demand for fewer touches on the glass translate to automated racking solutions on the factory floor.

In 2020, suppliers say they are

responding to trends for larger and more complex glass products and demand for increasingly touch-free solutions in the factory. They are also pivoting to address health, safety and supply challenges during COVID-19.

Complexity and customization

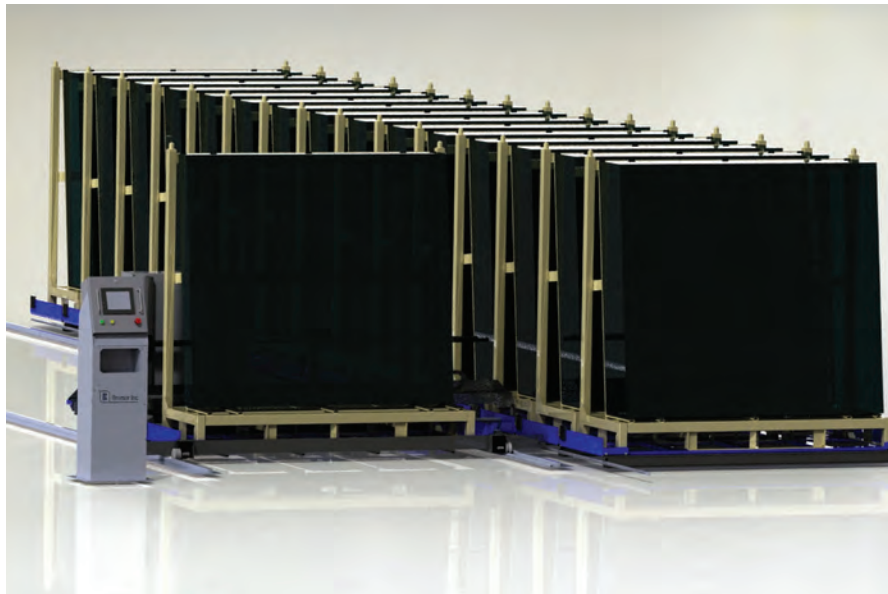
The design industry continues to push for larger expanses, façades with complex geometries, glasses with new performance coatings and more. In response, equipment suppliers have developed

handling and transportation solutions that work with in-demand products.

“As has been the case for several years, we continue to see demand for handling larger and heavier glass,” says Bryan Strobel, product engineering manager, Wood’s Powr-Grip Co. “The creativity of architects and the ingenuity of glass manufacturers continues to introduce new curved and 3-dimensional profiles that we have never seen before. It seems as if there is never a lack of new challenges and opportunities. On the

TRANSPORTATION

LARGER SIZES, COMPLEX PRODUCTS AND DEMAND FOR EFFICIENCY DRIVE DEVELOPMENT IN GLASS HANDLING AND TRANSPORTATION
BY KATY DEVLIN



Opposite: Glass cart from Groves Inc.

Left: The Returnable Steel Rack Shuttle System from Bromer.

glass manufacturing side, there seems to be an increased demand for handling coated surfaces and laminated glass that isn't fully set yet."

Complex, custom projects often require custom handling solutions, Strobel says, and those custom solutions can be developed into new product lines. "We continue to offer custom vacuum lifter fabrication as a key method to address unique handling requirements," he says. "As we see trends in the market, those custom lifters often become the springboard for standard designs. Our engineering department dedicates resources to improving existing standard lifter and hand cup designs, providing custom solutions, and developing new standard designs. It is exciting to see each new development in the industry and we look forward to each opportunity to design and manufacture products that continue

to redefine the possibilities."

Groves Inc. also looks to provide custom products depending on demand, says Candace Arends, media manager. "Over the past several years, we've noticed more demand for larger, more custom transportation products. In working with some manufacturers, we've noticed more focus on improved designs and efficiencies as well. We see this as an encouraging sign. The industry continues to pursue improvements to keep up with end user demands," she says.

While the glass may be getting heavier and more complex, glass rack suppliers continue to strive for lighter, more simplified solutions for transport.

"We are always focused on simplifying designs," says Arends. "To the extent we can make a product lighter, stronger and position it to serve more than one purpose, we do."

"The industry is evolving," says Michael Frett, account executive, MyGlassTruck. "Vehicles are being made of thinner and lighter materials, while glass payload demands are increasing. Lighter aluminum glass racks are required to meet this need. They must be strong enough to transport the added weight without any damage to the vehicle."

Frett says that MyGlassTruck van and pick-up racks can transport 1,000 pounds of glass per side of vehicle. "The benefit of added payload capacity is making aluminum racks more desirable to glaziers than steel or stainless-steel racks," he says.

Automation

Looking at handling solutions on the factory floor, demand for automated solutions is driving product innovation. Jeff

HANDLING & TRANSPORTATION



Top: MyGlassTruck's Patriot LT lineup allows for more flexibility and higher weight capacity. **Above:** Wood's Powr-Grip relaunched its Hand-Held Vacuum Cups to address supply chain issues during COVID-19.

Perron, sales and purchasing for Bromer Inc., says automated and motorized glass racks are the next big thing in the market.

Customers demand racking systems that are “fast, safe and easy to use,” Perron says. Automated solutions offer productivity benefits, while optimizing floor space, he says. Additionally, in the time of COVID-19, they limit touches to the glass.

To respond to such demand, Bromer recently introduced the Returnable Steel Rack Shuttle System. The inline

shuttle system feature 25 returnable steel racks and three pick-up stations. The system allows fabricators to add glass variety to the cutting line, provides fast access to different types of glass and reduces downtime, according to company officials.

Post-COVID-19 demands

Suppliers are already making adjustments in the wake of COVID-19.

Fabricators want solutions to limit the number of employees handling glass in

the plant, while installers are looking for ways get glass to the site and installed as efficiently as possible, they say.

“With more people working from home, glaziers must be more conscious of protecting others, and themselves, when working inside customers’ homes or businesses,” says MyGlassTruck’s Frett. “Many are trying to adapt quickly and do business in an environment with changing rules and information. Some homeowners are working from home and getting around to improvement projects that require glaziers. Glaziers are focusing on new revenue streams such as installing partitions to protect patrons and employees when businesses re-open.”

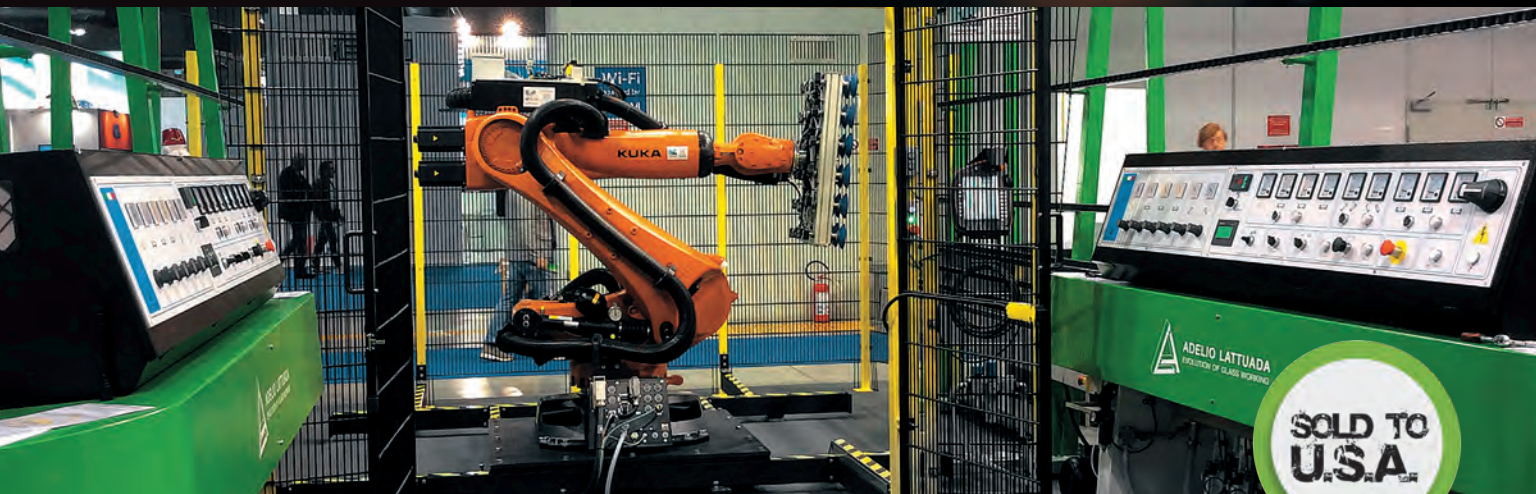
Additionally, COVID-19 has also presented supply challenges for some customers. Wood’s Powr-Grip relaunched its Hand-Held Vacuum Cups to help address the challenge. “The recent disruptions in global supply networks and related material cost increases have revealed a need to future-proof the Hand Cups so many people have come to trust and depend on,” according to WPG officials. Aluminum plungers will replace brass plungers to help avoid disruptions in material supply. Additionally, the re-launched cups offer new vacuum pads for better grip on lightly textured surfaces and a more secure hand hold.

Suppliers are also closely watching the impact of the coronavirus on product trends. “We think one of the bigger challenges is going to be seeing how the market responds to COVID and its longer-term impacts,” Groves Inc.’s Arends says. “As people and businesses change their direction, staying out in front of design needs becomes more challenging. Keeping a close eye on how the industry is impacted and how it adapts will be key to future design efforts.”

For example, Arends says demand for larger capacity transportation solutions has decreased since COVID-19. “It will be interesting to see if the market bounces back or if changes to the overall real estate landscape leads to smaller scale projects over the next several years,” she says.



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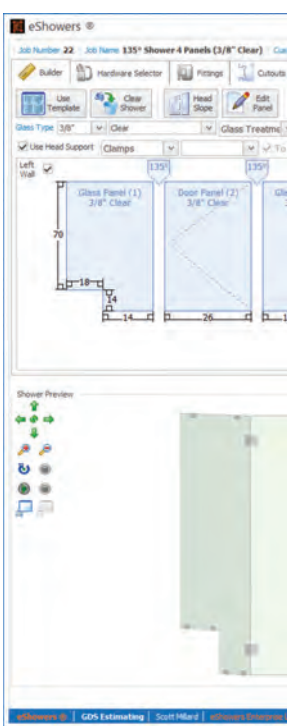
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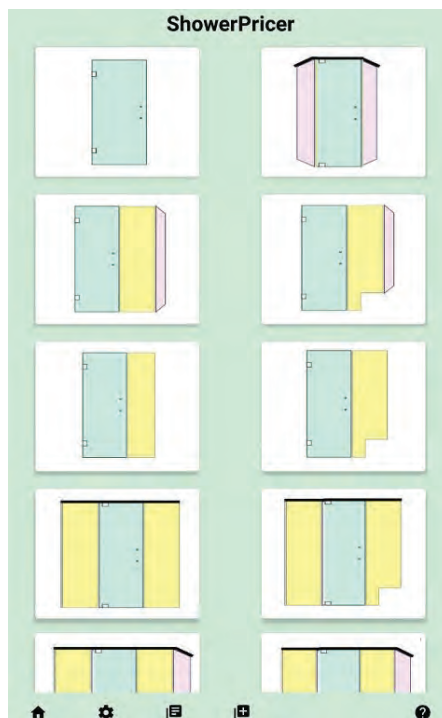
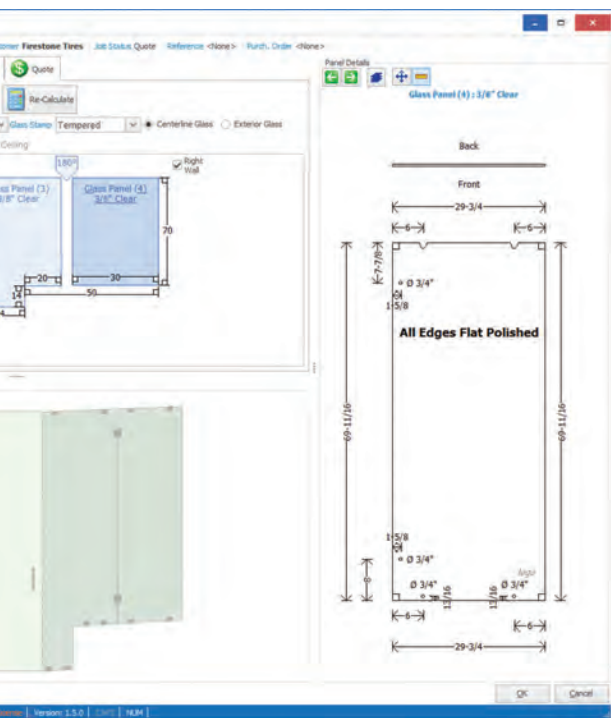
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PANDEMIC PUSHES GLASS
INDUSTRY INTO DIGITAL SPACE,
CONNECTING SYSTEMS AND
MANUFACTURING



Left to right: Dashboard for the Soft Tech Dealer Module. GDS Estimating is providing sales and technical services to eShowers. Mainstreet Computers' shower door application.

One of the immediate results of the pandemic appears to be the rise in digital spaces and tools, and the increased adoption of software. Still, the industry has further to go in terms of getting equipment—and people—online, say industry leaders.

“There [are] still a lot of great opportunities companies are missing out on,” says Tyron Ball, CEO of Soft Tech. “Many are still grappling with a lot of the fundamentals [of software], including getting off of the legacy systems, and setting up core business processes and basic data integration processes.”

“I still believe there is much progress to be made in seamless communication between manufacturers and independent software companies like ours,” says Scott Millard, owner, GDS Estimating. “We don’t see this as a trend yet, but it needs to be. We should be able to readily connect with manufacturers to

streamline the process of quoting and ordering material.”

It’s possible that the next generation may also be spurring further and wider adoption of IT and software. “A lot of times, whether it’s a glazing shop, or even manufacturing, you have the owners’ kids that are now coming into the business that grew up with technology, grew up using AutoCAD and have plenty of technology in their life and want to bring that into the factory,” says Josh Rudd, sales executive, A+W Software.

Integration

Companies continue to integrate and streamline processes on the shop floor and beyond, eliminating “islands” of connectivity, say industry leaders. “Today’s factory is much more integrated. Tighter communication between systems and well-defined workflow rules are becoming even more critical,” says Dave

Miller, group manager, business development executive at FeneTech.

The need for interconnectivity also exists for external processes, such as connecting bidding and estimating software for installers and fabricators. “Many great stand-alone programs already exist to do one or a few things very well. Instead of rewriting that same functionality into new programs or, every supplier’s worst nightmare, using new or different software, it is normally much easier to make existing systems talk to each other,” says Shaun Podenack, integration coordinator, BidUnity. “This happens through an Application Programming Interface. ... APIs define what data can be exchanged, how it should be labeled, and where it should be sent.”

Further integration will also help streamline, and even partially automate, material quoting, says Podenack. “Right

SOFTWARE & DIGITAL TOOLS



Top: The Proliner digital templating device from Prodim International.

Bottom: BidUnity estimating software.



now, contractors and suppliers ‘double handle’ some of the same information in the quoting process, which has been necessary in consideration that yields on glass material need to be determined by the fabricator’s software. We think that a streamlined quoting process, eliminating duplicate efforts, will make contractors and suppliers more likely to be successful in terms of winning bids.”

Mainstreet Computers has also been using APIs to integrate digital tools and software with its own systems, says Diane Hughes, sales and marketing

representative. “We are looking at partnerships that can offer some integrated tools that work back and forth between different platforms, using API,” says Hughes. “We don’t have storefront estimating with our software, so we’re working with another company to incorporate their value from one platform into our software. In the past, we would have had to rewrite it into our own program, but now we have a different solution.”

Expanding the reach of software also includes connecting software systems to hardware, expanding the Internet of Things. Soft Tech’s Ball says that this connectivity is accelerating. “The hardware space has picked up its game,” he says. “[We’re now seeing] integration with hardware, self-driving trucks, and next generation robots, all driven by software. The relationship with devices and tangibles is exciting.”

Rudd says A+W Software is already adapting existing popular mobile devices and equipping them to do a variety of functions, such as barcode scanning. “[The program] uses an

existing technology everybody has in their hands—a cell phone—to be able to perform certain factory functions.”

Remote access

The pandemic forced much of the labor force to work from home, pushing many companies to move processes online to be available remotely. Podenack says the company’s software is in demand because it is cloud-based, offering remote accessibility. “People can work from home, or anywhere with an internet connection. This feature is in much greater demand in consideration of the pandemic. We have ... seen an increase in the number of suppliers reaching out to us,” he says.

A+W’s Rudd also says that online versions of tools have been useful during this time of separation. “I’ve been doing a lot of demos on our iQuote program, which is a web-based order entry and order updating system that’s attached to our ERP. It allows for customers or salespeople to use the web from wherever they are to place orders and build their own quotations.”



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SOFTWARE & DIGITAL TOOLS

Mainstreet Computers' Hughes says that several customers have moved to the company's cloud-based software, due to the remote access needed for employees working from home. "Some of our customers were still on desktop instead of on our cloud software [at the beginning of the pandemic]. During these times, it became increasingly difficult, because they were tied to their office, and they saw the great value of being able to log in from home without having a VPN set up, so the cloud access has been very valuable. We've had multiple people convert from desktop to cloud."

The company's products are also moving from a cloud-based system, where information must be stored on a server, to a browser-based system, which allows users to login through a web browser. "The ease of access is enhanced through [the] browser-based

version, and it allows us to update the software's language, allowing it to interface with different APIs," in addition to allowing for easier mobile access, says Hughes.

Data-driven systems

Increased connectivity, and the automation of processes through software, can also improve efficiencies by tracking data that employers can then use to make business decisions. "The ability of these automated work centers to send data back to the production system provides opportunities for more flexibility and better management in the workflow," says FeneTech's Miller.

Part of the motivation comes from increased competition, including from abroad. "A lot is driven by the labor skill shortage, and increased competition from overseas," says Ball.

"There's a need to capture that data and automate those processes to make things faster and more accurate."

Using software, companies can analyze outcomes to improve business processes, says BidUnity's Podenack. "Once a project has been completed, the software can compare the hours that were actually worked to the hours that were estimated. Going forward, that information can be used to inform estimators' anticipated labor activity durations," he says.

Zach Harris, managing director at Prodim International, also anticipates a rise in digital processes on the jobsite, due to an even further need for efficiency and accuracy. "[There will be] even more focus on the digital process, as every waste counts double. Everything has to be right the first time, with the least amount of site visits."

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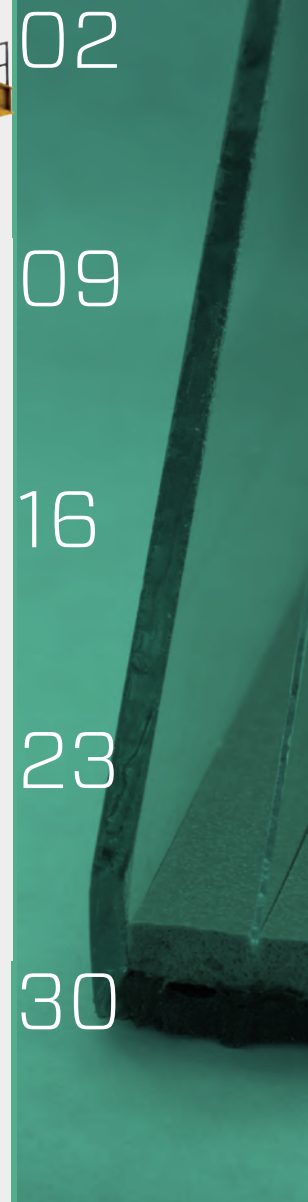
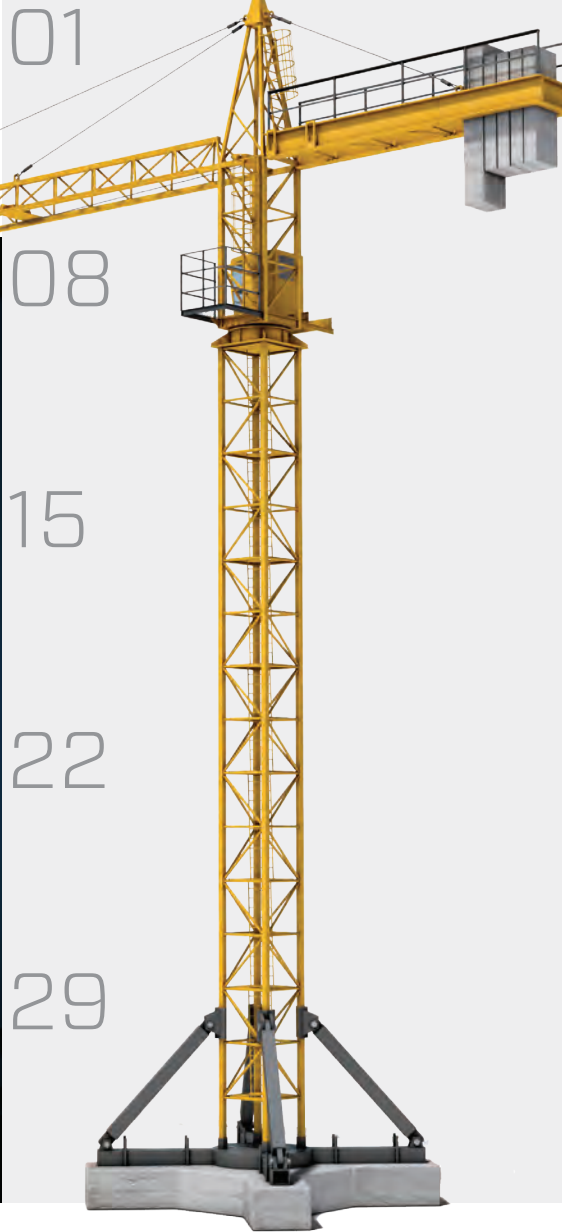


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The glass and fenestration industry’s foremost annual trade show, GlassBuild America, moves online in September 2020 for a month of industry interaction, innovation and education. Even in the face of the economic and health challenges of COVID-19, when an in-person show is not possible, the glass industry will have an opportunity to come together for essential learning, problem solving, connecting, purchasing and more.

For its 2020 reimagined gathering, organizers at the National Glass Association announced GlassBuild Connect. The event, available on GlassBuild.com and its range of email and social platforms, will feature programming every weekday from Sept. 1 to Sept. 30.

Highlighted by day-of-the-week themes, GlassBuild Connect will spotlight each industry segment regularly throughout the month of September. Every type of industry company, from glass shops and glaziers to fabricators and suppliers, will be provided with targeted education, product and trend information.

“GlassBuild America has been connecting buyers and sellers for decades, and we’re not letting COVID-19 break that connection,” says Nicole Harris, NGA president and CEO. “As the trade show moves online in 2020, the leading glass and fenestration industry suppliers from around the world showcase their innovations and solutions in the midst of rich education and trends programming from NGA’s content experts.”

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That “crystal ball” is fuzzier than ever with changing COVID-19 prescriptions. GlassBuild Connect will spotlight the latest industry forecasts, leading indexes, major market trends and more that will shape 2021 and beyond.

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The design and construction industry continues to seek better performing glass and glazing solutions. Performance Wednesdays is a deep dive into the products, systems and solutions that will help companies respond to challenges and opportunities.

#InstallationThursdays

The role of glazing contractors continues to evolve and advance as glass sizes are getting larger, building envelopes are becoming more complex and construction processes more digital. Installation Thursdays will keep glaziers up to date on trends, and help company leaders address challenges in the field and in the office.

#FenestrationFridays

Fenestration Fridays provides content and learning opportunities for the residential window and door marketplace. Education and other programming will target companies ranging from installers working in the home to companies manufacturing fenestration systems.

Daily content will be presented through a variety of content types, including unique articles and blogs, webinars, videos, recorded demos, product highlights, town hall and panel discussions, interviews and people highlights and more.

FOR SOLUTIONS.

panies from all over the world in every glass and fenestration industry segment will present new product solutions in GlassBuild Connect’s sortable and searchable product database. Beginning on Sept. 1, registered visitors to GlassBuild.com will be able to access hundreds of product features, with photos, videos and additional downloadable documentation, such as spec sheets.

Registered site visitors will be able to check out Daily Demo videos, available on the homepage. The videos will offer users a closer look at emerging technologies and new product offerings.

The site will also feature listing pages

for all exhibiting companies. The pages will provide registered visitors with essential information about companies, direct contact information and links for the companies with products visitors want to know about. Users can communicate with exhibiting companies as they see fit, rather than using formatted virtual “rooms.”

Registration

The NGA offers free registration and access to GlassBuild Connect for all industry visitors. To register, visit GlassBuild.com.

Users will be asked to login and

register if they already have an account for NGA’s customer dashboard on glass.org, or they can create an account to register. The free registration will unlock the GlassBuild Connect marketplace and programming throughout the month of September.

Access to an exclusive glass industry economic forecast from ever-popular presenter, Connor Lokar, program economist at ITR Economics, valued at \$75, will be available through a special promo code provided to customers by GlassBuild Connect exhibitors.

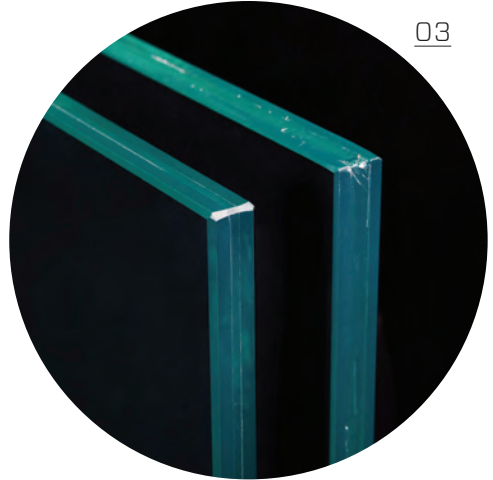
Visit GlassBuild.com to register for this event.

PRODUCTS

01



03



02



01. Glass barrier

Carvart expanded its line of glass barriers, glassScreens>Shield, with new frameless and benching variations. Carvart glass screen solutions can be customized to fit any business environment, allowing users to prioritize health and safety. Screens are manufactured from non-porous, scratch-resistant and tempered glass. Easy to mobilize and clean, the product's polished edges and transparent quality provide a seamless design and ensure views remain unobstructed.

212/675-0030 | CARVART.COM

02. Spandrel glass

AGC introduced Lacobel T Warm Grey Spandrel, the latest addition to the company's portfolio of back-painted decorative glass. Lacobel T Spandrel will never fade, say officials, as its temperable paint is fused into the glass. The product is a fully opaque, neutral-colored spandrel that can complement most low-emissivity coatings. Lacobel T Warm Grey Spandrel is designed to withstand thermal shock and resist impact and scratches.

404/446-4200 | AGCGLASS.COM

03. Glass handrail

Pulp Studio introduced Precision Edge technology, a process delivering a high-quality, zero-tolerance finish with perfect alignment for both tempered and annealed laminated glass handrails. Pulp Studio offers a warranty on its edge work for post-tempering fabrication.

310/815-4999 | PULPSTUDIO.COM



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04



04. Fire-resistant glass

Safti First offers new, larger sizes for its fire-resistive glazing products. SuperLite II-XLB 60 passed ASTM E-119/UL 263/ULC S101 testing and is listed by Underwriters Laboratories with a maximum clear view area of 10,000 square inches—125-inch maximum clear view width or height—in both fully captured and butt-glazed wall applications. SuperLite II-XLB 120, also with butt-glazed wall capabilities, has a maximum clear view area of 7,980 square inches—133-inch clear view height or width. 888/653-3333 | SAFTI.COM

05. IG spacer

Swisspacer, in collaboration with Veka, developed a new set of applications for the Swisspacer Air. The use of the window component can lead to very large spaces between the panes of glass, without the risk of damage caused by climatic stresses; this results in a large number of new possibilities for system configurations, including sound insulation, heat insulation and sun protection. The component makes the use of thinner glass possible, which leads to a lower weight. +[41] 0716-8692-70 | EN.SWISSPACER.COM

05



Glass railing (not pictured)

Viewrail now offers an expanded line of glass railing for indoor and outdoor locations designed to hide every piece of hardware and fastener, says the company. The solid glass panels provide safety and a windbreak. Frameless side-mount, base rail and standoff pin glass systems utilize ½-inch tempered and ⅝-inch laminated glass, while framed systems, with posts, accept ⅝-inch and ½-inch tempered or ⅝-inch laminated glass.

866/261-8013 | VIEWRAIL.COM

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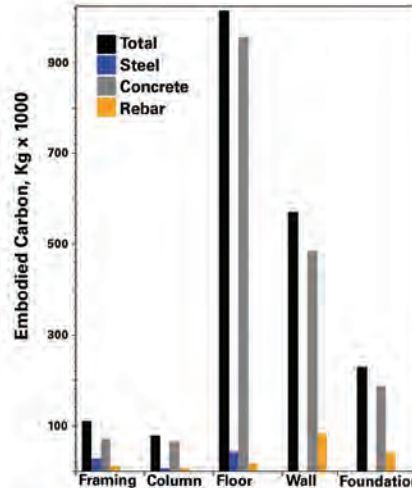
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PRODUCTS



Window film application

Beckhoff Automation collaborated with PDS IG Equipment on the latter company's new window film application system. Through the use of EtherCAT and PC-based control technologies, the system was able to double throughput for film application compared to industry standards; increase control capabilities, including for additional robotics; offer a window film cutback of +/- 1/8 inch; and support a customizable modular design. 952/428-7321 | BECKHOFFAUTOMATION.COM



Carbon measurement tool

Thornton Tomasetti launched Beacon, an embodied carbon measurement tool. The tool is an Autodesk Revit plugin that generates a comprehensive data visualization of a project's embodied carbon by material type, building element and floor levels. It also grades the model's embodied carbon levels against the Carbon Leadership Forum's database of models by building type. 917/661-7800 | THORNTONTOMASETTI.COM

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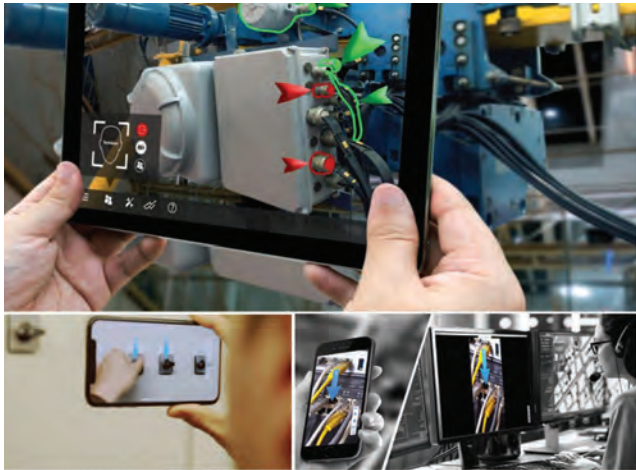
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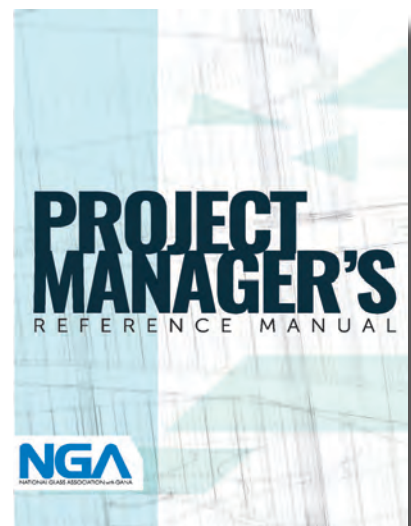
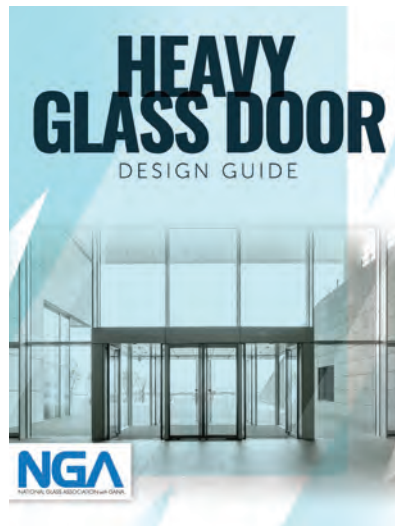
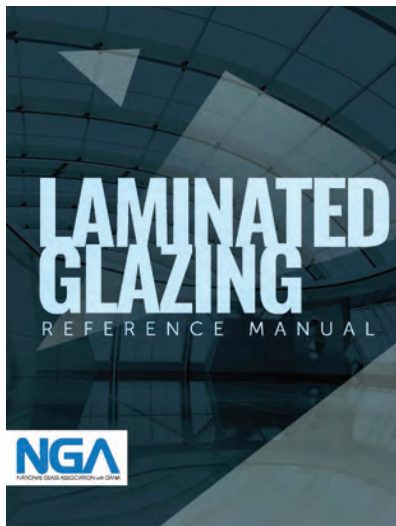
Adelio Lattuada's augmented reality program for service provides technical assistance to customers. The program uses the camera of a smartphone/tablet and observes problems, errors, faults or alarms on machines, and solves them more intuitively thanks to 3D icons and indications applied to the real environment, say company officials. This faster service can reduce downtime caused by machine stops, according to the company. 567/249-4486 | ADELIO.LATTUADA.COM



Simulation tool

MicroShade updated its free online simulation tool, SimShade. The original version evaluated the impact different shading and glazing solutions have on the overall performance of façades. The second edition of SimShade is available on its own website, Simshade.dk, where users can generate reports that provide an extensive overview of technical data, economics and environmental specifications on both component and building level. +(45) 2712-6525 | MICROSHADE.NET

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Bracamonte

Vitro Architectural Glass

Vitro Architectural Glass named *Martin Bracamonte* as vice president, operations.

In his new post,

Bracamonte will oversee operations for four U.S. plants operated by Vitro Glass in Carlisle, Pennsylvania; Wichita Falls, Texas; Fresno, California; and Salem, Oregon. His primary responsibilities will include increasing operational efficiencies, production output, product quality and overall customer satisfaction.



Donahue

EFCO Corp.

EFCO promoted *Marc Donahue* to vice president of sales. Donahue brings experience and industry knowledge to this role,

say officials, and was most recently the senior sales manager for EFCO's Eastern Region.

Donahue founded MJD Associates in upstate New York, where he and his team were consistently one of the top-producing sales agencies for EFCO. In the last year he sold MJD. Prior to starting his business, he held roles as a project manager and estimator at B&M Glass in Syracuse, New York.



Lanham

The Glass Guru

The Glass Guru added the organization's newest franchise location in Tennessee.

Franchise owner *Brant*

Lanham completed the company's initial franchise training. This milestone marks the completion of preparation and education conducted by Lanham in the preceding weeks and months, in preparation for the launch of his new small business.

Trex Co.

Trex Co.'s board of directors elected *Bryan H. Fairbanks*, currently executive vice president and chief financial officer, to the positions of president and CEO and

board member. Fairbanks assumed his new roles on April 29, coinciding with James E. Cline's planned retirement from the president and CEO positions. Cline also assumed the position of chairman of the board and Ronald W. Kaplan moved to vice chairman.

Fairbanks joined Trex in 2004 as director of financial planning and analysis. In 2006, he moved into operations as the senior director of supply chain and was promoted to executive director of international business development in 2012. In 2015, Fairbanks was named vice president and chief financial officer and became executive vice president in July of 2018.

Frameless Hardware Co.

The Frameless Hardware Co. appointed *Gary Sprague* to the position of vice president of design and development. Previously, Sprague served as vice president of design and engineering at C.R. Laurence for 20 years, and 14 years



Sprague

prior as a manufacturer and designer of products supplied to the glass and glazing industry. Across his 30-plus-year tenure in the industry, Sprague has designed and developed more than 70 glass industry installation tools and architectural systems.

Cricursa

Cricursa welcomed *Michael Reiman* as sales manager in New York to serve the North American market, as the company advances further into North America. Reiman, based in New York, will head up sales and offer North American partners a local touch point and resource with a particular focus on the U.S. Reiman comes from a decade of practicing architecture in New York and sales experience resourcing building products for architects, designers and developers.

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dormakaba

dormakaba made changes to its executive committee. *Steve Bewick* took over as chief operating officer for the segment AS EMEA in January.

Michael Kincaid, chief operating officer AS AMER, and Jörg Lichtenberg, chief manufacturing officer, will step down from their respective positions and as members of the executive committee as of June 30 at the latest, say officials. Kincaid will continue to support dormakaba in a senior management role while Lichtenberg will step outside of dormakaba.



Kriewald

Linetec

Linetec promoted *Jake Kriewald* from inside sales lead to outside sales manager for the mid-central states of Michigan, Illinois, Indiana and Kentucky. He reports directly

to Linetec's vice president of sales and marketing, Jeff A. Fochs Jr., who previously managed the territory.



Bastien

Glass for Europe

Philippe Bastien, regional president, building & industrial division of AGC Glass Europe, was elected chairman of the board of directors of Glass for Europe. After joining AGC Glass Europe, formerly Glaverbel, in 1992, Bastien covered several managerial positions from financial control to general management, through to marketing, business development and R&D.



Meaden

A+W Software

A+W Software welcomed *George Meaden* as an operations coordinator. In his new position,

Meaden will assist with the management of daily business activities and administrative tasks with particular focus on project tracking, scopes and plans. He will coordinate with the various project teams to ensure project delivery within allotted budget and timelines.

YKK AP America

YKK AP America appointed *Yassir Chbouki* to the position of controller. He will be responsible for ensuring the highest quality of internal efficiencies and integrity in YKK AP's financial reporting. Chbouki will report to Toby Gould, vice president of finance. He comes to YKK AP with a strong financial background in the manufacturing environment, say officials. Most recently, he spent 13 years at Blue Bird Corp. in Macon, Georgia, where he managed capital budgeting, cost accounting, financial reporting and forecasting.

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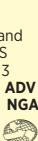
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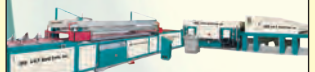
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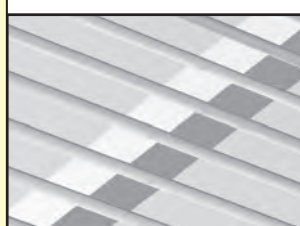
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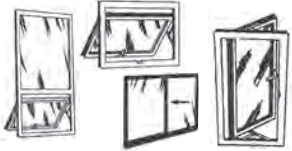
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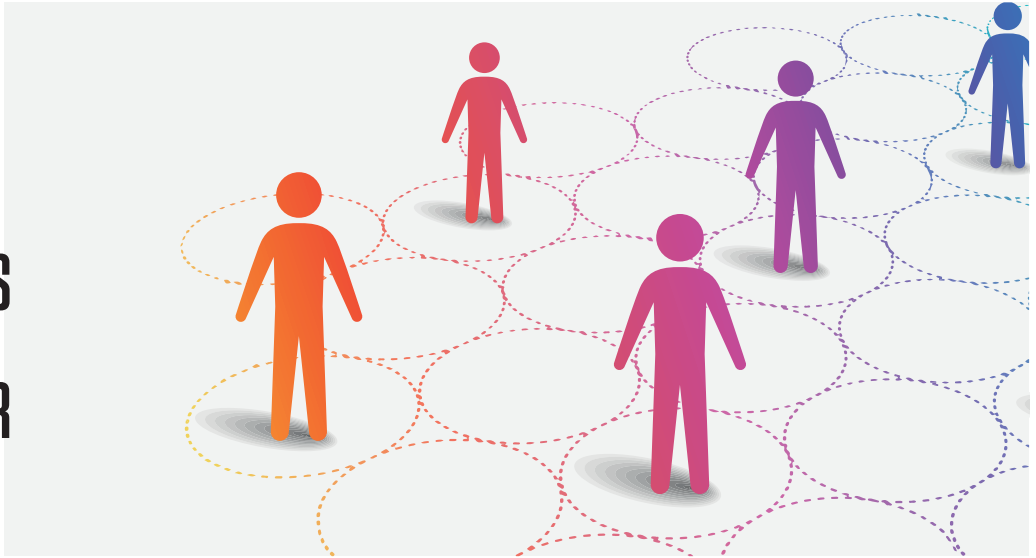
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Companies from all parts of the glass and glazing industry have implemented innovative, out-of-the-box ideas to improve business from the ground up. Here's an Idea showcases these sometimes small behind-the-scenes ideas that can make a big impact on a company's bottom line. If you have an idea that you would like to share, contact Norah Dick, ndick@glass.org.

TECH PROVIDES SMART SOLUTIONS FOR THE COVID-19 WORKPLACE



As industries continue to negotiate reopening and returning to workplaces, all companies are navigating the new safety concerns brought about by the coronavirus.

In response to these new difficulties, tech companies are developing several potential solutions for the enforcement of social distancing, as well as contact tracing for sick employees.

The Centers for Disease Control recommends that everyone, including workers, maintain a distance of six feet, or about two arm lengths, apart. Workplaces should also have a plan for if/when employees become sick—contact tracing, or finding which employees a sick worker has come into contact with, is an important component of this plan.

Here are just a few examples of the tech solutions that developers are creating to meet the new safety requirements of the jobsite and/or factory floor:

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The company has adapted its safety-focused software solutions to account for social distancing on the jobsite. Its artificial intelligence platform, “Vinnie,” is designed to act as a “virtual safety

manager,” and can detect risk factors, including lack of PPE, and now, the proximity of workers. Vinnie reviews and analyzes photo and video recordings to identify these hazards.

Weever

On its website, this developer identifies potential risk factors in the factory, including the exchange of paper records and face-to-face communication during shift huddles. Weever creates software that is accessible on tablets or mobile devices, which can then be placed strategically along the manufacturing line, say officials, connecting workers through devices that can be sanitized, unlike paper. The company’s software also offers messaging, workflow management and video calls that facilitate socially distanced organization and collaboration.

Genda

This construction-focused software solution is designed to help companies navigate both social distancing and contact tracing on the construction jobsite. The process relies on smartphone-based applications installed on worker phones

and IoT sensors that allow companies to create a real-time location system for employees. Other features include a daily personal symptom assessment and location documentation, facilitating contact tracing.

OxBlue

A tech company offering construction camera services, OxBlue expanded the use of its technology to provide AI-enabled social distancing capabilities. The technology provides proximity warnings for employees on the jobsite when they come within six feet of each other. Its camera services include time-lapse still images of the jobsite, or video streaming.

Proximity Trace

The platform is offered by Triax, which creates IoT solutions for construction and industrial sectors. Social distancing and contact tracing is accomplished through wearable tech, called a TraceTag, that can be affixed to hard hats or worn on the body, and will emit alerts in real time if workers become too close. The tag also passively collects information on worker interaction to allow for contact tracing. ■

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