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Sustainable Slowdown

The 2023 Industry Pulse Report // As the supply chain stabilizes, the single-family housing market slows. Nevertheless, the industry charges forward with new sales, product innovation and investments

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The Industry Forecast Issue

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As the supply chain stabilizes, the single-family housing market slows. Nevertheless, the industry charges forward with new sales, product innovation and investments.

By Laurie Cowin

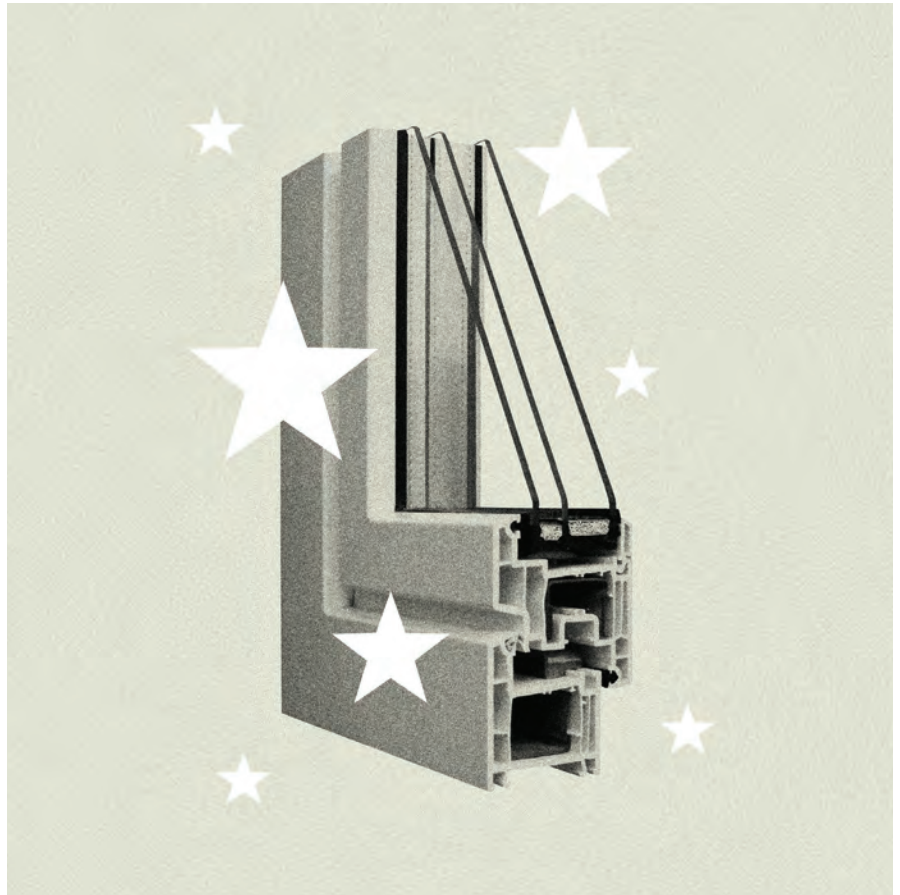
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On the Cover: The 2023 Industry

Pulse report surveyed dealers, suppliers and manufacturers to the residential fenestration industry about sales, product trends, supply chain, labor and more. Read the full report starting on p. 30.

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- Commentary on the benefits and options of garage door design
- Information to ensure color accuracy when ordering window and door finishes

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Are Software User Conferences Worth Your Time?

By Chris Kammer



High-end Garage Door Design Upgrades

By Tammy Schroeder



Manufacturing Considerations for Energy Star 7.0

By Eric Thompson

“Pairing a high-performance vinyl system with warm edge spacer in a high-performance IG unit will help get you to Energy Star 7.0. Making this kind of investment now can set you up for longer-term success. Eventually there will be an Energy Star 8.0 and taking advantage of high-performance technology today can better prepare you for even greater demands in the future.”

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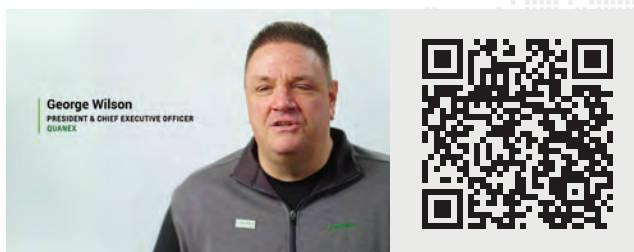
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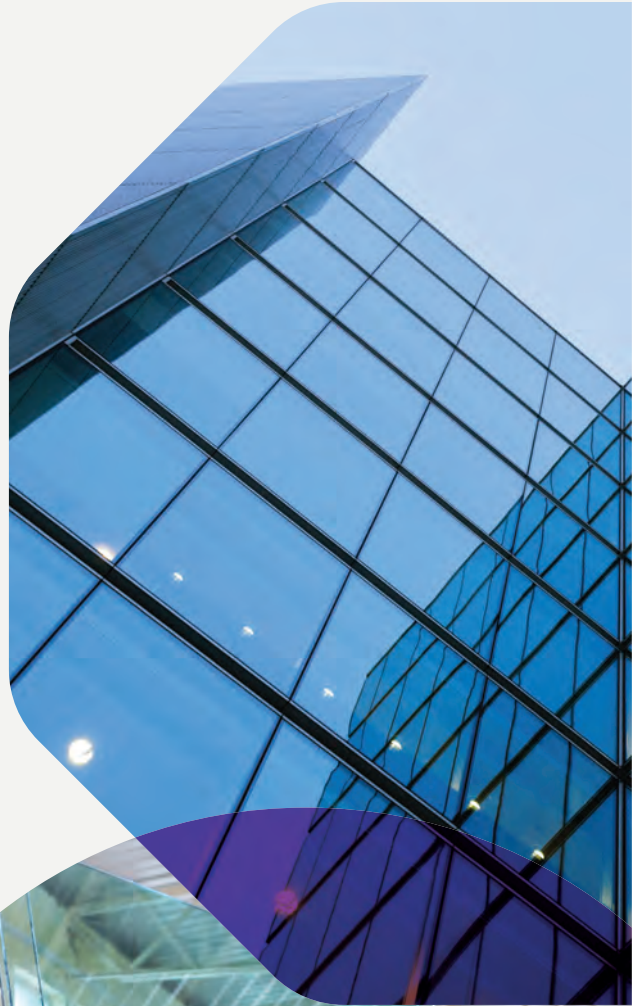
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U.S. EPA Finalizes Energy Star Version 7.0

The U.S. Environmental Protection Agency finalized the Version 7.0 Energy Star Specification for Residential Windows, Doors and Skylights. The new criteria will go into effect on Oct. 23, 2023, with products meeting the new criteria eligible for early certification starting immediately.

The Energy Star performance criteria for WDS are based on four different climate zones. Qualifying windows for the Northern zones must significantly lower the heat flow (U-factor) out of the house. Products made for the Southern zones must achieve a lower Solar Heat Gain Coefficient (SHGC).

In a note to Energy Star Residential Window, Door and Skylight partners and stakeholders dated Oct. 20, Doug Anderson, product manager for windows, doors and skylights, wrote, “The Energy Star Version 7.0 specification provides a significant jump in efficiency and savings and will recognize a good selection of types and styles of products offered by a variety of manufacturers at a range of price points.

EPA has established the following timeline:

- Effective immediately, manufacturers may elect to have their Certification Body (CB) certify their eligible products to the Version 7.0 requirements.
- On April 23, 2023, CBs will be instructed to stop certifying new product submittals to Version 6.0. Note, however, that existing certifications will remain valid for purposes of Energy Star certification until Oct. 23, 2023.

- Any residential windows, doors, or skylights manufactured as of Oct. 23, 2023, must meet Version 7.0 requirements to be Energy Star certified and bear the Energy Star label.
- Energy Star partnership as a manufacturer is limited to organizations that own and/or license a brand name under which they sell eligible products in the U.S. Partnership is not available to original equipment manufacturers that do not sell directly to consumers or end users. OEMs may certify products on behalf of the Energy Star brand owners/licensees; however, the brand owner must be the Energy Star partner associated directly with the certified product models because only partners are authorized to use the Energy Star certification mark.

Version 7.0 criteria revision will require that all partners update their product labels with a new map since the climate zones have changed. EPA has also updated the label layout, provided a bilingual Spanish-English label option, and updated the spine labels.

Industry Acquisitions

Pella Corp. acquired vinyl window and door manufacturer Win-Dor LLC, which specializes in multi-panel door systems. Pella plans to expand its business, increase production, hire new team members and improve processes and productivity. Win-Dor will continue to serve customers through the Win-Dor brand name.

Roto Frank Window and Door Technology acquired Ultrafab Inc. in late 2022. “Strategic acquisition remains an

important instrument in securing Roto’s future,” says Eckhard Keill, CEO of Roto Frank Holding AG, who elaborates that the company is particularly interested in businesses that operate in international markets for building elements and their components.

Quanex acquired LMI Custom Mixing LLC, an advanced polymer solutions provider, which Quanex says will complement and expand its polymer solutions expertise and enable the company to diversify into new markets. In other acquisition news, Santiago Investment Group LLC acquired a majority ownership in Sprouse Windows and Doors, Guardian Glass signed an agreement to acquire Florida-based Vortex Glass and Masonite completed the acquisition of Endura Products, which it will integrate into its North American Residential business segment.

Manufacturers Invest in Facilities

In other Masonite news, the company opened a door manufacturing facility in Fort Mill, South Carolina, which uses targeted automation and leverages the company’s operating system to identify and eliminate waste and non-value add activities.

Renewal by Andersen will invest more than \$420 million into a new manufacturing facility in Henry County, Georgia, that will create an estimated 900 jobs. The new plant will be the company’s first manufacturing facility in Georgia, joining an Andersen Logistics distribution center and an Andersen Windows and Doors office.




MFM Building Products completed its expansion, in which it added 48,000 square feet to the production area and acquired new production

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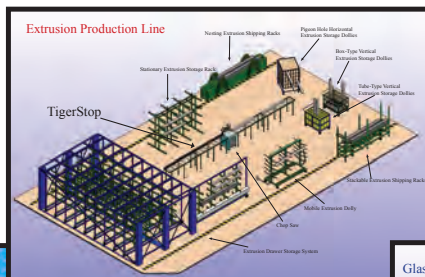
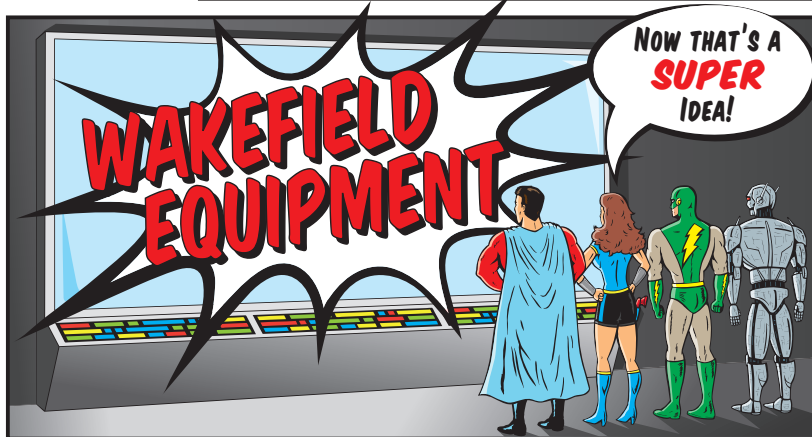
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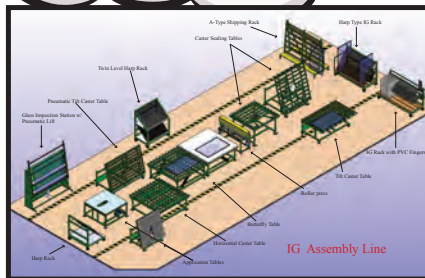
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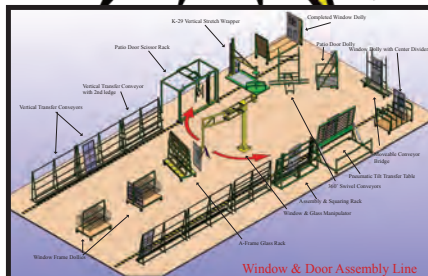


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News

equipment. Elevate Windows & Doors selected a 100,000-square-foot building in Hopkinsville, Kentucky, to expand its manufacturing and distribution footprint in the southern U.S., and Steves & Sons Inc. plans to invest in a 310,000-square-foot facility near Athens, Georgia, that will produce molded door skins. Plus, Woodgrain Inc. plans to invest \$7.5 million to expand its door-hanging facility in Rocky Mount, North Carolina. The expansion will relocate Woodgrain's existing operation to a 225,000-square-foot facility and create 42 new jobs.

Product Launches and Expansions

Masonite announced its M-Pwr Smart Doors will be available at retail in Home Depot stores later this year. The residential exterior doors incorporate power, LED welcome lights, a smart lock and a Ring Video Doorbell.

Wood-Mode introduced three door styles for its transitional design offerings. Each is available in inset and full overlay and can be customized with stains, colors and finishes. In other door news, Kolbe introduced multi-slide doors with its Forgent Series. "We are excited to add a multi-slide door offering to this high-performance product line," says Mark Harger, vice president of Kolbe's Manawa Division. "Adding an expansive door to the Forgent Series product offering really opens up the option for indoor-outdoor living and provides more solutions to our customers."

Halio partnered with Viracon to produce Viracon Plus Smart Glass powered by Halio, an electrochromic glass technology that aims to prevent solar heat gain and optimize daylight utilization to ultimately reduce a building's carbon footprint.

Other product news includes Roto North America's new HPD1 to its existing portfolio of swing patio door hardware and PBI's 100 percent warm-edge spacer, a composite spacer designed to ensure there are no thermal bridges in the glazing.



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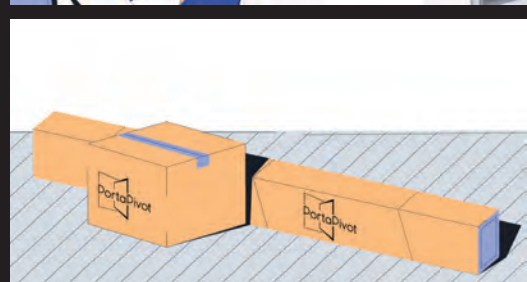
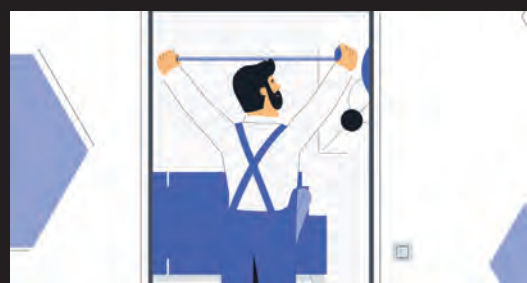
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The Turning Tide

The new year appears to be marking a new business environment for our industry



By Laurie Cowin
EDITOR

Happy 2023! I haven't had the opportunity to write on this page since last summer; I spent late summer and early fall on leave welcoming the arrival of our second child. Much has changed in the six months since I last wrote—certainly on a personal level, but also with the business conditions in which residential fenestration manufacturers and suppliers are operating.

The annual Industry Pulse survey and corresponding report is one of my favorite editorial projects of the year and this year's report was especially interesting. Although the past several years have been characterized by overwhelming demand amid supply chain and material disruptions, the responses told a different story this year.

Perhaps most notably, the supply chain is normalizing. Dan Gray, director of sales, North America, Roto Frank of America Inc., says that while shipping container costs escalated to nearly \$26,000 last year, they're back down to their historic levels of \$4,000 to \$5,000. Fewer companies are on allocation and materials aren't so elusive. "Supply from our raw material core suppliers has improved dramatically. It's not perfect yet, but it's improved," says Gray. Many other companies echoed similar sentiments in this year's survey.

Demand is also reducing to more sustainable

levels. Backlogs are healthy and, in most cases, it no longer takes a record amount of time to turn around window and door orders.

Rising mortgage rates and a limited housing supply also meant more homeowners decided to put off moving. People staying in their existing homes, coupled with the rising age of the home inventory, is a boon for the replacement window market. The Industry Pulse survey reflects this trend, with slightly more companies indicating a tendency toward greater replacement versus new construction activity compared to last year. "R&R is part of the cyclic nature that happens when people decide they're going to stay put," explains Mike Turner, senior vice president of sales and marketing, YKK AP America. "How do they improve their living environment and lifestyle? You'll see people change their windows out, remodel their kitchens and do additions—things they typically would have let the next homeowner do instead of them."

Despite operating under a dismal economic backdrop and fears of a recession, no one predicts it will be a repeat of the housing market crash of 2008. John Moore, vice president of marketing, GED Integrated Solutions Inc., explains it: "The banks and consumers are in a much better financial position than they were in 2008; defaults on loans are at record low levels. Home equity levels are high. Additionally, the housing inventory is significantly below potential demand. There are some projections we currently have two to two and a half months of inventory, whereas we had 11 to 12 months of inventory in 2008." Moore also predicts that as mortgage rates adjust to lower levels, buyers will be back.

See page 32 for the full Industry Pulse report and insights from leading companies.

The residential fenestration industry is a constantly evolving story, and this year may mark the beginning of a markedly different business environment than the one we've worked in for the past several years. ■



Welcome Tara Lukasik

Please help me in welcoming Tara Lukasik as managing editor for Window + Door and our sister publication, Glass Magazine! You can reach Tara directly at tlukasik@glass.org. Take a moment to introduce yourself, tell her your favorite thing about the industry and, as always, share any story ideas.



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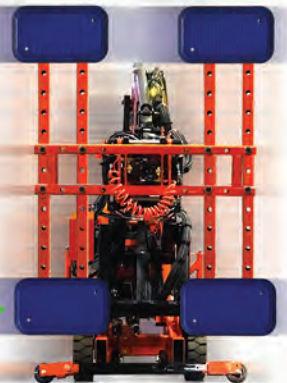
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Window Condensation Tells Many Tales

An exploration of thermal resistance in insulating glass units

By Christopher J. Barry

Condensation, whether wanted or not, can be a useful indicator of many physical processes. By observing the condensation trails of high-altitude jet planes, for example, one can easily estimate the speed, direction and stability or turbulence of air in the upper atmosphere. Hugely complex and expensive atomic accelerators use condensation trails in cloud chambers to identify the sub-atomic particles resulting from their tests. And the window industry can easily use condensation to observe many aspects of the performance of our now increasingly complex fenestration constructions.

An unusual circular clear spot (see photo below) in the condensation on the left side of the inner surface (#2) of the exterior storm window in front of a single clear glass casement window in the upper floor of my 100-year-old house in Ohio prompted investigation.

On examination I found the typical “stack effect” of warm air rising in a leaky old house and escaping out the equally leaky old windows. Loose-fitting exterior storm windows are excellent thermal and acoustic insulation when the inside window is tight fitting. In that sealed case, the air in the space between the lights is relatively dry coming from the outside, at least compared to the

inside air with added moisture from people. Therefore, condensation is seldom seen.

But in my case, the seal around the window catch is imperfect: a steady laminar flow of moist warm air is pushed past the catch. At first, the warm air hitting the storm window heats it, making a warmer circular spot with no condensation. But when that moving air cools, it adds its moisture to cooler surfaces in the form of visible condensation.



Condensation's harmful effects

In general, window condensation should not be allowed to happen. Lasting for a short duration it simply—and usually harmlessly—distorts the viewing optics, but if condensed water accumulates, it quickly starts to damage paint work and underlying wood framing. Left in place for a longer duration, that water can readily lead to mold growth. On the atmosphere side of float glass, a thin film of condensation can slowly start to leach out sodium ions, leading ultimately to faintly visible glass corrosion and permanent stain. The other, tin-side, surface of float glass is slower to stain.

Insulating glass double glazing with metal or glass spacers was the first attempt to improve window insulation and was about twice as good, with R-2 insulation in most of the vision area. If the frame was wood and not metal, then the condensation problem was reduced to a visible band near the edge of the glass caused by the thermal conductivity of the IG spacer.

My house had some fused glass edge sealed double glazing. That IG seal was absolutely airtight and was fully compatible with every possible glazing compound. Even when window sash leaks added to the condensation at the R-1 edge from the glass spacer and let the IG unit sit in liquid water, its seal was indestructible. But as can be imagined, condensation rotted the window sashes and, ultimately, they all had to be removed, even though the IG seals were still perfect.

The value of gas-fill

Long ago I saw Scandinavian window designs with deep pockets for double- and triple-glazed IG units. Thus, their conductive metal edge spacers could be buried deep in large dimension wooden frames so the perimeter area and IG edge condensation problems were avoided. But I wonder how often that design experienced cold weather breakage from the clamped edge effect of a deep glazing pocket.

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➔ In the Trenches

When a sealed air space cools and shrinks, the stress at the glass edge will be up to four times greater if the edges are “clamped” and prevented from the small rotation of typical “simply supported” edges. Such stress is often sufficient to cause breakage in relatively small size IG units.

I replaced the leaky frame single-glazed attic windows in my old house with smart-looking, true divided-light, low-emissivity, argon gas-filled IGs in sliding sashes. All arrived correctly, with low-E as checked by the colored reflection from the coated surface, but, surprisingly, a few of the units were perfectly flat on the coldest days. Those few units also remained flat when they warmed up on sunny days. Suspecting leaking IG units would have allowed the insulating argon to escape, while the active desiccant would still have kept the air space relatively dry for some time, I boiled kettles on a cold day and circulated the resulting humid air until condensation occurred only on the flat, leaking units. This showed the useful insulation value of argon when it is present. The window manufacturer was most obliging in honoring its warranty.

Window performance

Even with today’s high-performing low-E coatings and very low conduction foam silicone or other IG spacer material giving R-3 thermal resistance and greater, one can occasionally see a unit with an unexpected #4 surface circular patch of winter condensation in the middle of a unit. Further investigation might show that high-speed IG production can

inadvertently seal a hot IG unit when the glass has been washed with hot water. As the sealed air space cools to room temperature, it shrinks and, in the extreme case, larger sizes of thinner glass can end up with the glass touching at the center. This results in only R-1 insulation there.

Other factors such as trapped humidity being adsorbed by the desiccant, selective gas diffusion in and out through

the sealant, bowed heat treated glass being assembled with the convex surfaces (#2 and #3) toward each other, or altitude differences between sealing and installation locations can add to this center-touching process. While such condensation and the associated Newton Rings (see the photo example on the opposite page) are rarely seen today, it is noted that many residential,

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and some annealed commercial IG units, are all too often observed to be concave at room temperatures when they should be relatively flat.

A new design of IG with a vacuum gap and low-E coatings gives R-5 and more thermal resistance to the central area, which eliminates condensation there. Miniscule pillars between the lights support the glass inboard from

the rigid ceramic glass seal at the edge of the vacuum IG unit so no breakage stress occurs at the resulting clamped edges. But, as before, the thermal resistance at the very edge reverts to R-1 and that edge needs to be buried deep in an insulating frame to avoid perimeter condensation.

An irony of the condensation story is that it sometimes now tells us when



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our window performance is almost too good. A gas-filled, double- or triple-glazed, low-E coated IG unit insulates so well that on a still-air, cold winter night, with direct line of sight to a clear sky, surface #1 of the unit radiates more heat outward than it receives inward from the sky. With little or no heat coming from the warm house interior because of the super-efficient insulating glass layers, gas fill and low-E coatings, the #1 surface temperature can fall a few degrees below that of the outside air. If the outside air is humid, the glass temperature can fall below the dew point and temporary condensation harmlessly forms on surface #1, thus demonstrating the amazing improvements available in current window design. ■

Christopher J. Barry is a mechanical engineer from Dublin, Ireland. He worked in flat glass manufacture, fabrication, installation and customer service for 50 years with Pilkington, LOF and NSG. He is active in ASTM E6 glass strength and design and enjoys independent glass consulting work investigating glass fracture, fractography and breakage prevention.

Performance Standards are Key to Quality Fenestration Products

These updated standards keep up with the latest technology and performance demands



By Janice Yglesias

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WindowandDoor.com
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Fenestration products are made up of a multitude of components that all need to perform properly to achieve optimum performance in the finished unit. To achieve this, it's critical to have reliable and current standards by which component and whole unit product performance can be determined. And that's where trade associations like FGIA and NGA become an essential part of the process.

The North American Fenestration Standard accounts for the unique properties of today's different framing profile materials. The minimum performance requirements established by NAFS-referenced specifications are based on many years of research and testing, as well as accumulated field experience. Several important component standards FGIA developed have been updated in 2022.

Reinforced thermoset profiles

AAMA 305-22, Voluntary Specification for Fiber Reinforced Thermoset Profiles establishes performance requirements and references ASTM test procedures for dimensional stability, impact resistance, tensile strength, flexural strength, compressive strength, water absorption, thermal expansion, heat deflection temperature and color weatherability.

The specification defines two different performance levels. Level I performance is adequate for most fenestration applications. For applications that require higher flexural strength and stiffness, an optional Level II sets forth test loading parameters up to seven times those of Level I.

PVC corner weld testing

The re-titled and updated AAMA 320-22, Standard and Guideline for Quality Welding, Bonding, and Ventilation of Thermoplastic (PVC) Extrusion Based Fenestration Products, provides guidelines for welded corners to reduce the risk of heat-induced deformation and malfunction of PVC framing profiles.

Aluminum finishes

Three updated documents describe test pro-

cedures and performance requirements for organic coatings: AAMA 2603-22, Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix), AAMA 2604-22, which covers the same for High Performance Organic Coatings, and AAMA 2605-22, for Superior Performance Organic Coatings, which is a "good-better-best" trio of increasingly stringent performance criteria for coatings of increasing minimum thickness.

All three standards test for color uniformity, specular gloss, dry film hardness, film adhesion, impact resistance, chemical resistance, corrosion resistance and resistance to color fading due to weathering.

Side-hinged doors

Two updated specifications cover the testing of side-hinged doors for key durability performance attributes: AAMA 920-22, Specification for Operating Cycle Performance of Active Side-Hinged Exterior Door Slabs, and AAMA 925-22, Specification for Determining the Vertical Loading Resistance of Side-Hinged Door Systems.

AAMA 920-22 describes cycle testing of door systems and their associated hardware under accelerated operating conditions.

AAMA 925-22 provides a method for evaluating a door for its ability to withstand a significant cantilevered load applied vertically down the lock stile. The applied load increases with the target NAFS Performance Class, varying from 150 lbf for R and LC class rating up to 500 lbf for AW class.

Documents can be purchased in the FGIA Online Store at FGIAonline.org/Store. ■

Janice Yglesias is the executive director of FGIA overseeing the full organization. She joined the association in 1999 and can be reached at jyglesias@FGIAonline.org.



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Rebounding and Rebranding

How a strong company culture and an open mind leads to growth and new opportunities



By
Laurie Cowin
EDITOR

The new year always brings with it discussions about where the industry has been and where it is going, as well as providing an opportunity for new beginnings and reinventions. Quanex rebranded in 2022 and President and CEO George Wilson took the time to sit down with Window + Door to discuss its rebranding, its focus on people, its goals going forward and the industry at large.

Window + Door: What are some of the overarching trends affecting the residential fenestration industry?

George Wilson: There's a significant economic backdrop that's impacting the entire industry. In addition to that, you have pressures now on energy costs. Our industry has a great opportunity to really help as energy costs continue to rise. Windows and doors are a big part of that energy scape and limiting the amount of energy needed in a home. For us, working on products and influencing codes and standards that improve energy performance is something that's going to be extremely key in the future on a macro level. Quanex is very active in

terms of pushing for greater thermal performance regulation, codes and standards in the industry, as well as developing products that meet that.

WD: How do you anticipate the economy will affect business and the industry?

GW: We expect a slight decrease in volume for window and door production. Although it may be a challenging 2023 and bumpy demand year, I think it will be relatively short-term. When you look at the macroeconomic conditions that exist today, we're still underbuilt in the housing market; there's not enough housing in the U.S. or Europe. The biggest challenge that's putting pressure on that is rising interest rates and the price of homes are at a high level. There has to be a rebound. We believe the housing market could lead an economic recovery. But I do think 2023 will be a challenging year for the industry. We're preparing for that.

WD: How have you prepared for anticipated business challenges?

GW: Even in a down year, we look at it as an opportunity to regroup and focus on ways to improve. Sometimes a breather in terms of demand allows you to reinvest time, energy and money back into your own business. Luckily, we're in very strong financial position. We've been focused on improving cash flow, safety metrics and operating metrics to be able to serve our customers. It's also positioned us to weather any sort of storm and reinvest in our people at a time when it is slow. Companies that haven't been able to prepare for that will be challenged.

WD: Quanex rebranded from Quanex Building Products to Quanex. Tell me how Quanex hopes to grow within the new branding.

GW: We're in the process of trying to get everyone



George Wilson, President and CEO, Quanex

to understand, both internally and externally, that Quanex is a manufacturing company. We're not a window and door company. We're not a cabinet company. We're a manufacturing company that has a unique set of core competencies that can serve many markets. Taking the "Building Products" off the Quanex name doesn't change anything core to our existing business, but what it does do is open our mindset to not narrowly focusing on certain areas. We're going to seek out opportunities based on our core competencies.

On a go-forward basis our growth strategy will be built on our existing manufacturing processes. We will look to expand organically and inorganically, through investment and acquisition. We're starting to invest a significant amount of money in research and development, such as in our R&D facility in Akron. We continue to invest in our R&D efforts expanding capabilities and adding resources in our Akron, Ohio, location.

My vision three years from now is that you'll see something really special. It's a process. It's important we empower our chemists, development experts and salespeople and let them create. It will take time. There will be wins and losses. Every opportunity is a learning experience and I think that's exactly what we're doing.

WD: Tell me about the people culture at Quanex and the importance of investing in your employees.

GW: Any successful business has to start with the culture and the people it employs. Over the past three years, I've tried to elevate culture as being a top priority, alongside safety. It's really built around principles of empowering our people, making sure that we tap into their energy and resources, making sure everyone in the organization understands what we're driving to and how we're going to get there, and probably most importantly, that it's okay to fail as long as we learn and grow from those mistakes.

When you're able to do that, it creates a special environment. It takes a long time; we're not where we want to be, but you can feel the difference in our culture. I don't think it's coincidence we've had three record years in almost every metric. That's truly because we have amazing people who are aligned and marching toward the same goal.

WD: That culture also extends into the communities in which you work. How does Quanex engage with the communities?

GW: The new generation of workers are more engaged in trying to do the right thing around the world. We as a company want to exhibit those same sorts of beliefs. Through the Quanex Foundation and volunteer activities at our facilities around the globe, we've become an even more

caring and giving company, and I'm proud of the progress we've made. It started a little bit during COVID. We donated almost \$1 million in 2020 back into all the communities in total from our Foundation and we have continued since then to focus on ways the Foundation can continue to help our communities through these tough times.

Our plants are located in many small communities where we have an opportunity to make a big difference. I often hear stories about our team members making big contributions of their time, their talents or their resources to help others. We challenge ourselves to consider how we can change the world. Why not Quanex? Why not now? I think it's becoming successful.

WD: This community service mindset also lends itself to Quanex's tagline "A Part of Something Bigger."

GW: When we put that message out there it really resonated to almost everything we do. Quanex can be a part of something bigger in how we serve our customers. The products we make are a part of something bigger.

Part of something bigger in terms of our shareholders: We've been able to add significant value in terms of the share price and will continue to push for that.

Part of something bigger with people: I'm just one employee in an organization of almost 4,000 people. You're always a part of a bigger team. That's so important. You're never alone; you're never on an island.

And then in our communities: We're so blessed to have what we have. Be a part of something bigger and make a difference. That's what we've been focused around. It is something that's near and dear to my heart and something we've made a priority at Quanex.

WD: What is the focus in 2023 and what can we anticipate from the company?

GW: In the past five years our focus has been more internal with developing systems and making sure our internal house was in order. We improved our safety, quality and delivery because you can't grow without those basic fundamental building blocks. You have to be able to serve your customers to be able to grow. We've stabilized our supply chain. We've localized everything. We've minimized risk to our customers. I think we've become a very safe pair of hands for our customers. Now the focus is on growth. You will see investment in growth, research and new product development, as well as looking and expanding our opportunities through acquisition. ■





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Sustainable

Slow down

As the supply chain stabilizes, the single-family housing market slows. Nevertheless, the industry charges forward with new sales, product innovation and investments

By Laurie Cowin

The past two years have been characterized by historical challenges and uncertainty, especially around material availability, supply chain and labor. Amid the challenges, demand kept climbing as the residen-

tial new construction and remodeling markets strengthened. Going into 2023, however, the single-family residential market is weakening. Housing affordability is at a 10-year low, builder confidence is at its lowest reading in more than a decade and hous-

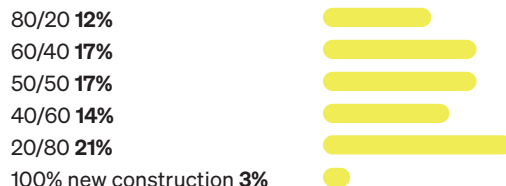
ing starts are posting a calendar year decline for the first time since 2011.

This year's Industry Pulse report reflects that waning confidence and hints at some new trials in the year to come. Although it appears as though supply chain and material challenges are

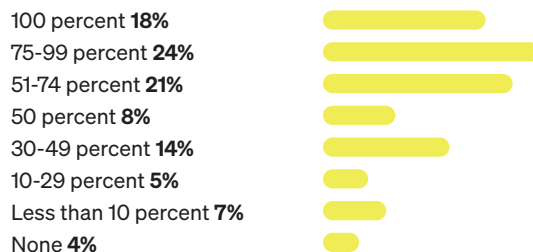
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Meet the respondents

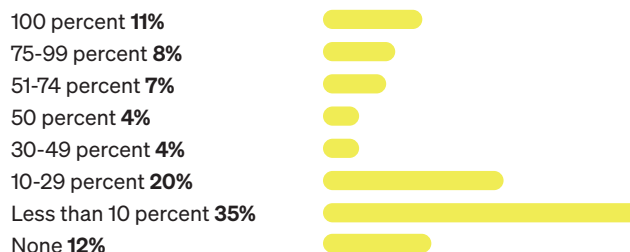
About what percentage of your business was replacement versus new construction in 2022? (replacement/new construction)



About what percentage of your business is in residential windows?



About what percentage of your business is in residential entry doors?



Biggest Opportunities for 2023

- Customer service
- Improve cash flow
- Improved supply chain
- Reduced material costs
- Sustainable products
- Better thermal breaks
- Quickly react to market disruptions
- Gain market share
- Refine and improve products
- Broaden sales area
- Lean manufacturing and process improvements
- Software
- Automation
- Employee retention and training
- Secure and grow backlogs

Biggest Challenges for 2023

- Reduced volume
- Sales growth
- Interest rate increases
- Finding and training employees
- Inflation
- Controlling costs
- Securing constant, quality suppliers
- Production capacity
- Increased energy costs
- Material shortages

easing, labor remains a struggle and many companies expect to put in extra work to have just a flat year of sales and avoid a negative year.

Uncertainty of the coming year colors most conversations and predictions. But amid that uncertainty is a near universal confidence that any recessionary period

and slowdown the industry hits will be temporary.

“There is no doubt that inflation and rising interest rates are negatively impacting our industry,” says Joe Peilert, president and CEO, Veka North America. “On the other hand, we know that market fundamentals and increasing home values are tail

winds that will eventually win out. For 2023, we anticipate that the renovation and replacement business will do better than new construction business, though not enough to sustain the elevated demand levels we have experienced in 2021 and the first half of 2022.”

Sales

Although sales remained strong in 2022, they didn't overwhelmingly exceed expectations as in 2021. While last year's survey indicated great optimism among companies for 2022 sales expectations (80 percent anticipated increased sales), not even 50 percent of this year's respondents anticipate increased sales in 2023. Just over half anticipate flat or decreases in sales.

"We're looking at about a seven- to 12-percent drop in volume with our core market and customer base," predicts Dan Gray, director of sales, North America, Roto Frank of America Inc. "We're actively in pursuit of new business to buffer a portion of that projected decline. We're finding what we did during the pandemic, our competition has done as well, such as bolstering internal production capacities and being aggressive in the market seeking new business. Customers are looking to reduce costs, which means a very competitive situation for pricing."

Larry Johnson, VP of sales, Quanex, predicts the industry to be down 16 to 20 percent, based on what he hears from his large customers. "We're hoping at least it's a flat year and not a down year," he says. "We're projecting a little bit of growth, but not any kind of serious growth. We want to be conservative going into this year."

Gray notes the changing sales landscape. Virtual meetings became the norm when the pandemic hit in 2020, but that's changing. "You cannot actively sell over Teams or Zoom in a

Did 2022 sales meet your projections?

Overall

- Sales were as projected: **38%**
- Sales were lower than projected: **31%**
- Sales were higher than projected: **31%**



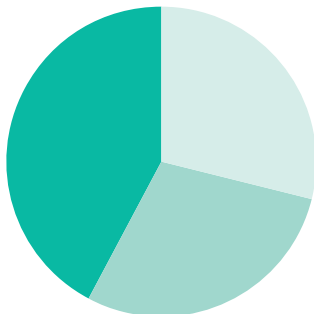
Suppliers

- As projected: **47%**
- Lower: **31%**
- Higher: **22%**



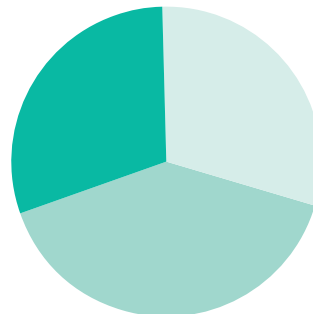
Manufacturers

- As projected: **29%**
- Lower: **29%**
- Higher: **42%**

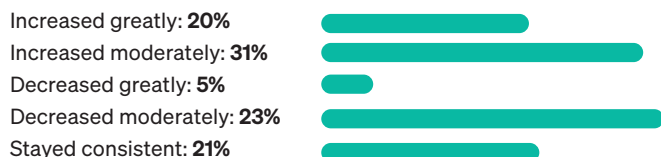


Dealers

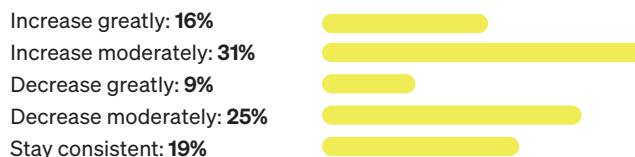
- As projected: **30%**
- Lower: **30%**
- Higher: **40%**



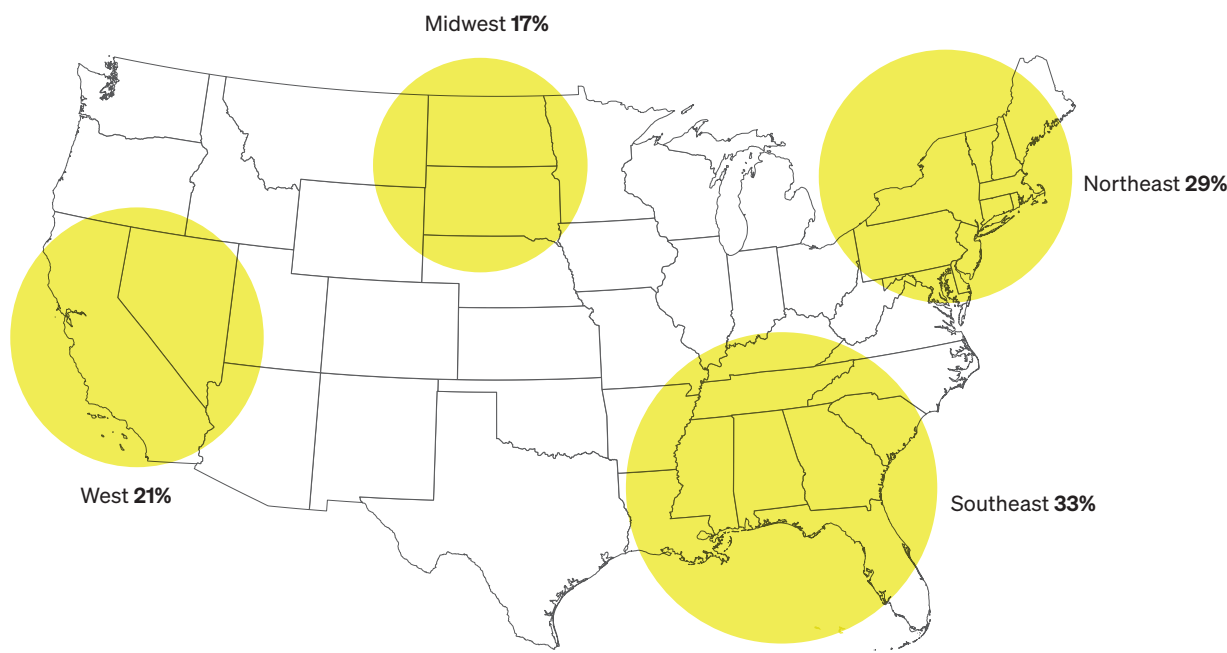
How did profit margins in 2022 compare to 2021?



What are your sales expectations for 2023?



Which geographic area do you expect to see the most growth in 2023?



virtual world,” he says. “You can retain business with existing customers, but to foster new relationships and sell new programs you need to be face-to-face.”

Darlene Aldred, residential segment marketing manager, Guardian Glass Americas, also observes the changing sales landscape. “Our customers’ needs are evolving from wanting a straightforward sales relationship to seeking a strategic business partner. They want us to provide products plus the technical expertise to help them with immediate needs, as well as long-term to help them determine how far they can go.”

Companies with North American manufacturing locations may also have an advantage. “A lot of customers prefer to have North American manufacturing in their supply network today [after the extended lead times during the pandemic when you brought goods from overseas],” explains Gray. “If you can get your product closer to the hands of the customer, the more positively it will be received.”

“Any time a market retracts, you’re always looking for potential new business relationships,” says Mike Turner, senior vice president of sales

and marketing, YKK AP America. “Supporting our core customer base is our priority, but to continue growth mode in a declining market we have to cast a wider net and look for new relationships that can help us continue to meet our sales objectives.”

The slowdown is giving companies a welcome respite from a hectic few years. “As of now, our customers appear to be welcoming the chance to catch up on their backlogs,” says John Moore, vice president of marketing, GED Integrated Solutions Inc. “Builders appear to be simplifying their offerings, including windows and doors.”



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Product Trends

Trends

Vinyl windows remain the dominant in-demand product, according to the survey results, with multi-slide and multi-panel doors coming in a distant second. Those doors grew in popularity compared to last year, following the industry trend of indoor-outdoor living spaces and customers asking for ever-increasing expanses of glass in their homes.

As always, though, customers drive product development. “It is always and forever our customers,” says Moore. “We meet with customers on a regular basis and listen to their feedback on productivity, labor savings, costs and quality.”

Finished product manufacturers also aim to innovate and meet customer needs. Pella, for example, launched a hidden screen in its vinyl window line that Nicolle Picray, public relations and brand communications manager for Pella, describes as a “homerun for us.” The reported success of that product piggybacks on Pella’s easy-slide operator for casement and awning windows.

Design-wise, Pella plans to invest

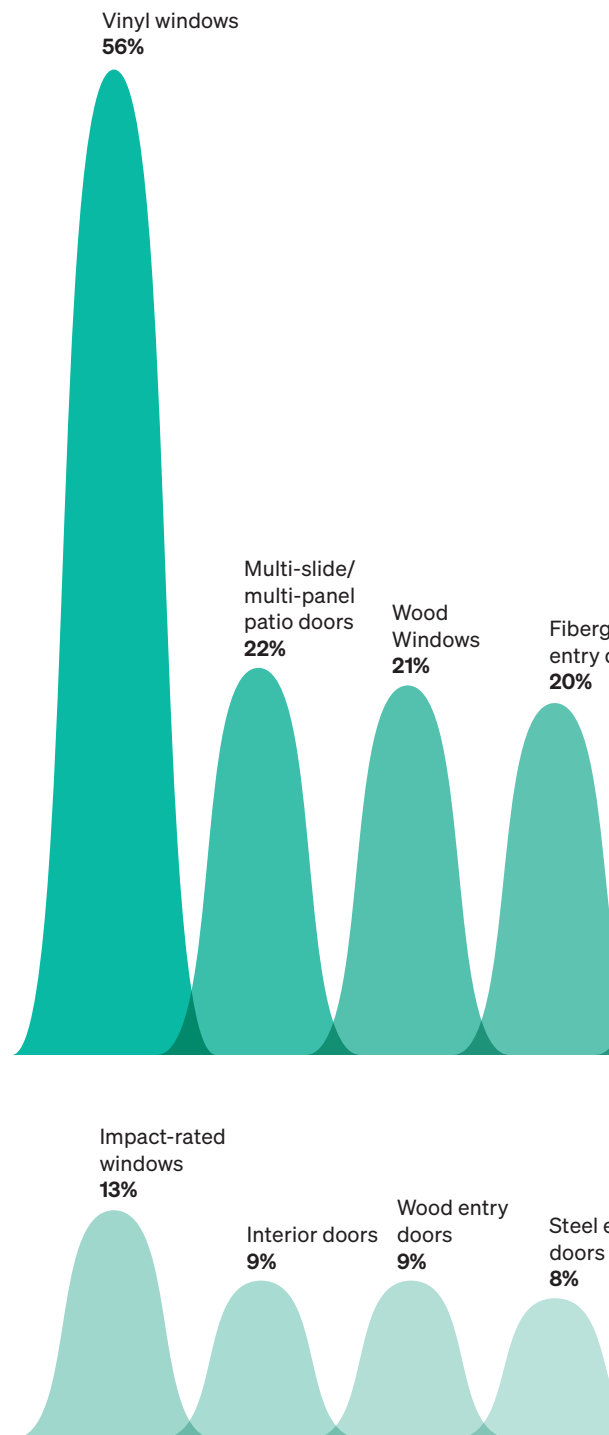
in its wood product lines. “We’re starting to see trends that have expanses of glass and wood, which is great for expansive glass and high-end design,” says Picray.

Those larger sizes impact products in every part of the supply chain. “As windows and doors continue to be specified for larger, taller, wider, heavier sizes, you need hardware that keeps pace with those trends in the marketplace,” explains Gray. He also says customers are looking for new solutions to give them a competitive advantage. “A lot of expectations are being put on hardware suppliers today,” he says.

Suppliers also often need to develop products that can meet multiple goals. “Developing products that support ever-changing codes and standards are at the forefront of AmesburyTruth’s design process,” says Michelle Nissen, VP of product management, AmesburyTruth. “We are also focused on enhancing our product offering that addresses housing affordability by providing solutions at various price points. Finding solutions that meet both objectives are driving our new product development efforts.”

Which products were most in demand in 2022?

**Respondents could select more than one option*

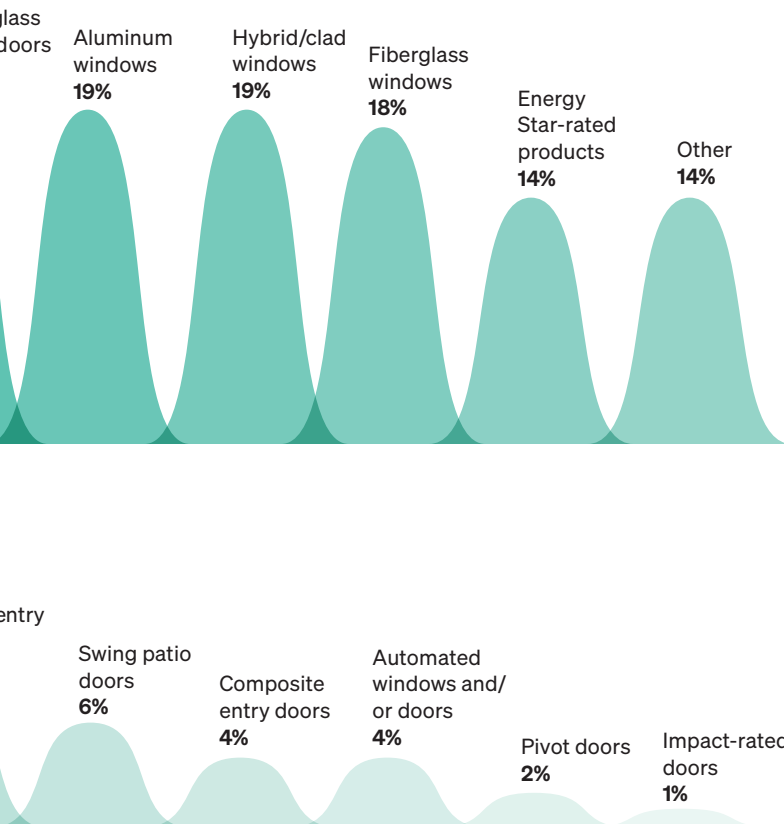


64%

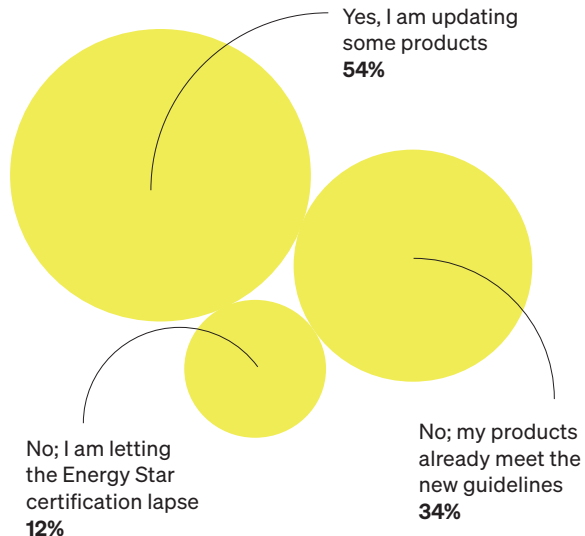
of companies offered new products in 2022

82%

of companies plan to offer new products in 2023

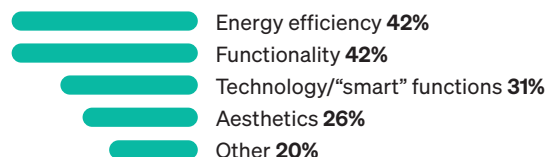


Are you updating any Energy Star-certified products to ensure they remain Energy Star certified?



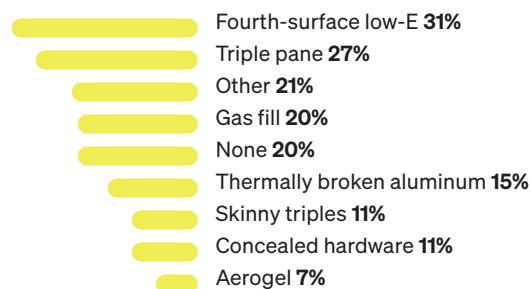
Where will you focus product-development dollars in 2023?

**Respondents could select more than one option*



What technologies are you considering to enhance the efficiency of your products?

**Respondents could select more than one option*



What drove innovation in product development in the past year?

- Efficiency
 - Consumer demand
 - Color
 - Changing aesthetics
 - Unreliability of component supply
 - Code compliance
 - Affordability
 - Ease of installation
 - Thermal and structural performance
 - Automation
 - Market expansion
-

Energy efficiency

Energy efficiency is top-of-mind for many companies, especially as the October deadline for the implementation of Energy Star Version 7.0 approaches. These guidelines are causing companies in every sector to consider their product offerings. “Energy Star 7.0 will disrupt the industry in 2023,” predicts Moore.

Johnson expects the cost of upgrading products to meet Energy Star Version 7.0 criteria will cause some companies to allow their certifications to lapse or have just one window system be Energy Star certified with the remaining systems having standard thermal values.

Picray notes Pella’s involvement with industry organizations to help set the standard for what energy efficiency should look like. “What our team is always trying to understand is that as energy standards evolve, where is the right place for that energy efficiency to live in the market,” she queries. “There’s only a certain level of energy efficiency achievement in our products that is also cost-effective for us and the customer. The customer will pay only so much for energy-efficiency improvement; anything we create that is better efficiency outside of that will have a hard place finding a place in the market.”

Greg Koch, vice president of sales and marketing, Deceuninck North America, says its new product development is driven by one word: sustainability. “Everything we’re doing is with a focus on sustainability and our commitment

to a greener built environment,” he says. “Within that larger mission is a staunch commitment to product performance, energy efficiency, and hurricane and impact resistance.” He also notes the need to effectively recycle products within customers’ and their own waste streams.

“Energy Star 7.0 will disrupt the industry in 2023.”

—John Moore, GED Integrated Solutions

Complying with Energy Star Version 7.0 is also a big focus for the company, Koch says. Deceuninck has several product lines designed to enhance thermal performance in window and door systems and curtain walls. Opportunity also exists to marry high-performance PVC products with trendy dark colors. “Our R&D efforts are focused on high-performance PVC products extruded in dark colors,” he says.

Koch also explained Deceuninck’s carbon zero commitment. “Globally, Deceuninck Group has committed to

reducing our carbon dioxide emissions by 60 percent by 2030,” he says. “Factoring in the anticipated growth of the business, this equates to a reduction of up to 75 percent in carbon dioxide for each ton of material produced. We are taking these steps now with the goal of operating at net zero by the year 2050.”

Embodied carbon in products is also on the industry’s radar. “In general, less carbon is better, but you have to consider the use phase when talking about windows,” explains Kevin Seiling, VP engineering, Veka North America. “If you only consider glass, for example, all windows would be single-glazed because it would double the carbon if you go from single- to dual-glazed. If you consider the use phase, a dual-glazed window would certainly cut the U-value in half and lower the SHGC substantially. Depending on the climate zone, orientation, size, etc., the use phase can easily make up for the added carbon from the extra layer of glass.”

Aldred also distinguishes between embodied and operational carbon. “Manufacturers have to look at carbon through two lenses,” she explains. “We can help reduce embodied carbon in building products via researching and developing ‘lower’ carbon materials; however, we must also ensure our products support the efforts of the building design and construction team to reduce the operational carbon of the building in a manner that still provides aesthetics and comfort and contributes to the overall wellbeing of the occupants.”

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Materials & Supply Chain

Material prices increased last year and will likely continue their upward trend this year, according to the survey results. Despite the pain points of increased costs, companies indicate supply chain and shipping constraints are easing and no longer is it so difficult to acquire the necessary materials to manufacture products.

“Materials procurement challenges are decreasing, and availability is improving across all commodities with metals improving the fastest,” says Bob Burns, president, AmesburyTruth. “Lead times are reducing as well. The challenges are primarily in very specialized materials or components and a few materials originating in Asia.”

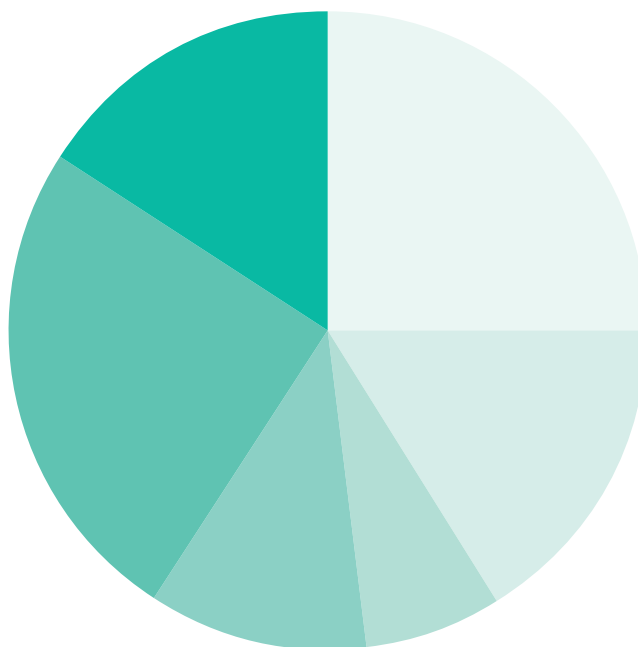
Supply chain disruptions have eased considerably compared to 12 months ago. “Most manufacturers have broadened their vendor family and partnerships so there’s broader access to what you need,” says Turner.

Gray cites dramatic improvements in the supply chain, including getting materials from raw material suppliers and reduced transit costs. Between the calming of the supply chain and internal investments, Gray says Roto has been able to “greatly reduce our lead times to the market.”

Quanex expanded its supplier base so it’s less reliant on freight from China and Johnson also notices container and raw material prices easing. However, he notes Quanex, like many companies, purchased material in bulk in the past year to ensure it had sufficient materials and it is still working through that high-priced inventory.

How far out is your backlog?

1–2 weeks **16%** 2–4 weeks **25%** 4–6 weeks **11%**
6–8 weeks **7%** 8–12 weeks **16%**
Longer than 12 weeks **25%**

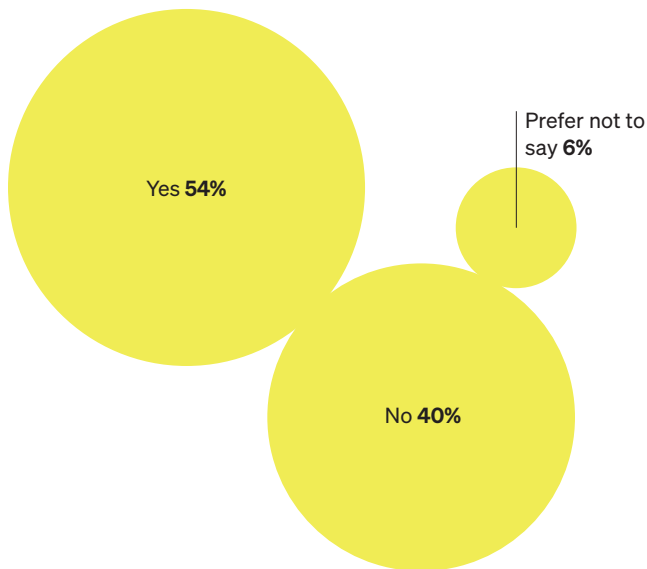


Almost half (49 percent) indicated their backlogs are higher than last year, while 36 percent are lower than last year and 14 percent are about the same.

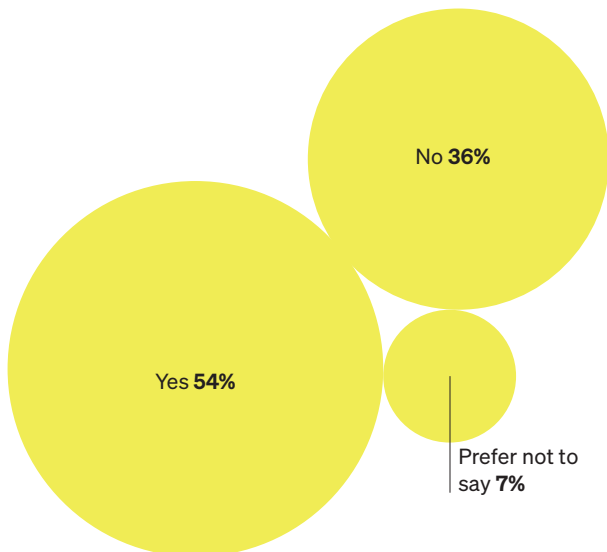
How much did material prices increase?



Have you been put on allocation for materials?



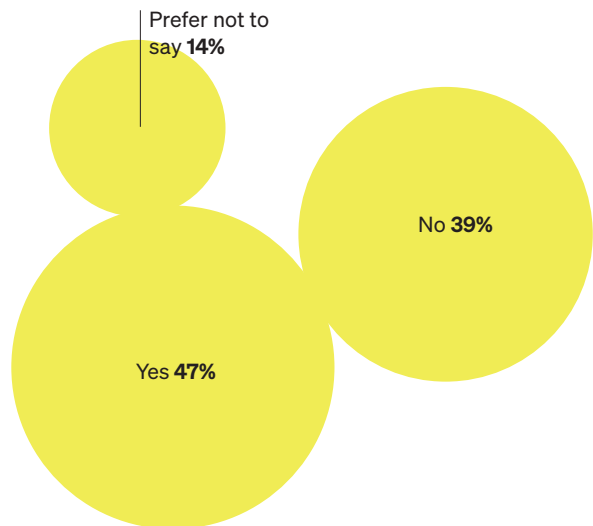
Have you put your customers on allocation for materials?



96%

of companies saw prices increases in 2022

Has material availability caused you to re-engineer products or change product offerings?



Companies have had to substitute materials or revise the design to fit available hardware. One respondent stopped making an aluminum window line because of steep price increases and material availability and another designed internal manufacturing processes for assembled products previously bought from second parties. Yet others dealt with the discontinuation of raw materials and had to find replacements to meet performance goals.

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65%

tried a new supplier in 2022. The same percentage plans to try a new supplier in 2023.

72%

have strategic alliances in the supply chain. Respondents cited top benefits to include shorter lead times, inventory, quality and availability, consistency, honesty, loyalty, communication, and order fulfillment.

How have you kept your supply chain healthy and moving?

- Bulk ordering far in advance
- Increase inventory holding
- Prompt payment
- Adding vendors
- Qualified new suppliers
- Adding vertical businesses
- Communication with customers and vendors
- Diversification of the supply chain
- Maintain machinery
- Leverage global resources

Burns explains that AmesburyTruth continues to invest in redundancy in its own manufacturing and supply chain so key products are tooled in multiple locations. “To mitigate risk with raw material shortages, we are evaluating alternative options, including leveraging our own re-use materials. Long-term we are committed to shorter supply chains. That implies less reliance on overseas sources for both commodities and components.”

Certain materials, however, still present challenges. Picray notes glass in particular continues to be difficult to acquire, in part because of difficulty in the glass supplier obtaining raw material and in part because of the labor shortage. “It all adds up to us not getting glass as quickly as we used to, especially as these huge expanses of glass really start to take hold in the design space. It takes longer than other types of window sizes to get.” She says they’ve largely exited the lumber and aluminum shortages.

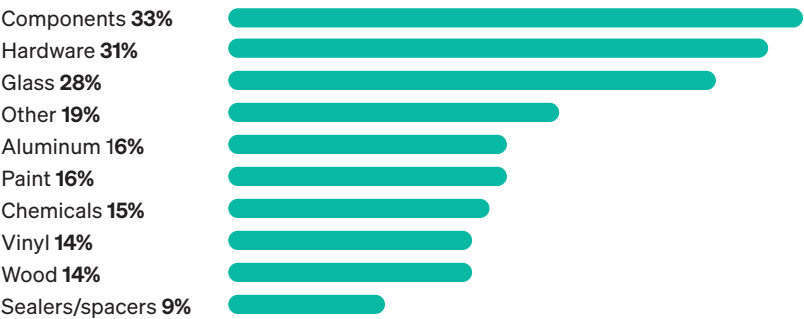
With easing materials shortages comes an increased expectation for companies to perform even better than before. “With lead times getting back in line, we are working with our customers on supply chain efficiencies,” says Peilert. “Especially with the lessons of the pandemic years fresh on their minds, they expect us to become a much more integrated part of their business. Quality, delivery and value remain the most critical expectations.”

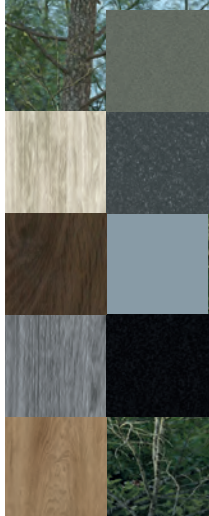
Why are you planning to try a new supplier in 2023?

- Redundancy and cost
- New products and shorter lead times
- Increase supplier reliability
- Diversify
- Market expansion
- Lower backlogs
- Availability

What materials are most difficult to acquire?

*Respondents could select more than one option





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Labor, Production and Investments

For most companies, labor remains a top business challenge. Not only is it difficult to hire any new employees—let alone employees with existing industry knowledge—but retaining them is also a challenge.

In fact, 43 percent of survey respondents indicate they will invest in employee recruitment and retention and 37 percent plan to invest in training and education this year.

Employee engagement

Gray predicts the recruitment and retention difficulties may lessen as the economy pauses. “Hopefully that will be an upside where we can retain good people,” he says.

Johnson echoes that sentiment: “The slowdown will make it so it’s less of a struggle,” he says, specifically mentioning Quanex still working five days a week when others are slowing down or laying off workers, as well as boosted salaries and benefits.

“The key is to have a robust HR team and updated policies,” says Koch. “Over the past several years, we have bolstered our human resources team. We have a much larger and more capable department, which allows us to have HR professionals with very focused missions to meet the larger organizational demand for talent. For example, we have individuals who specialize in recruiting, onboarding, training, benefits, safety and more.”

What is your biggest staffing challenge?

Hiring 51% Retention 29% Training 13% Other 7%



How will your staffing levels change in 2023?

I will hire more staff 45%
Unsure 36%
I will eliminate staff 19%



68%

of companies added staff in 2022



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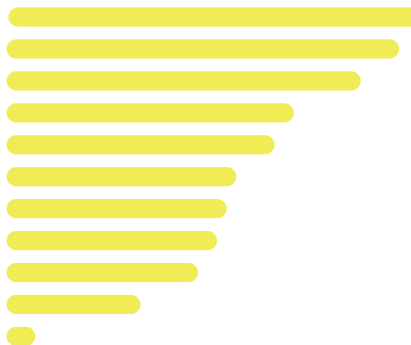
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Where do you plan to focus your investments in 2023?

Employee recruitment and retention **43%**
Expand production capacity **41%**
Training and education **37%**
Marketing **30%**
Machinery purchases/upgrades **28%**
Software integration **24%**
R&D and testing **23%**
Expand locations **22%**
Business management software programs **20%**
Lean manufacturing **14%**
Other **3%**



78%

added production
capacity in 2022

Koch also notes expanded marketing efforts in the community and engaging with local schools to educate students about careers in manufacturing. Retention efforts include comprehensive training and revisiting shifts, working hours, and PTO policies to optimize work-life balance, as well as addressing compensation that meets workforce demands.

Roto invested in a Gallup survey for its employees and has analyzed the data and created teams internally to discuss what areas should be strengthened. The benefits of employee engagement, Gray explains, go beyond the employees—it also benefits the company itself and its customers. “If you have a highly engaged internal team, you have a much higher engagement and retention value with your customers.”

Peilert shares that the starting point for hiring and retaining is to “have a compelling vision and embed it in every phase of the employment lifecycle.” He points to Veka’s dual apprenticeship program, where Veka apprentices can obtain a fully paid-for associates degree while getting hands-on operation experience. Peilert also says Veka has more than 100 worktime options to optimize flexibility.

Pella hired more than 4,000 people last year—a combination of attrition and growth—and currently employs over 10,000. Bringing in so many new people at one time can impact company culture,

and Picray says it was imperative to find a way to ensure everyone, from the new members to tenured team members, felt appreciated and engaged. As such, they launched the “We are Pella” campaign, which recognizes team members to keep their company culture alive and show others that manufacturing is a worthy and rewarding career path.

Investments

Nearly half of companies indicate they will expand production capacity. Some have already done so in the past year—and plan to continue doing so—by expanding their physical facilities. YKK AP America, for example, broke ground in October on a residential window and door manufacturing facility in Georgia, which will include modern equipment, increased production capabilities and some evolution of product quality attributes, according to Turner. “Setting up the new facility will help us create a new platform to reach higher market share and more customer satisfaction,” he says.

Veka has spent more than \$50 million in the past two years to boost capacity at its North American sites, says Peilert. “Moreover, we have also ensured our supply chain and staffing plans are aligned. We are well-positioned to support the growth needs of new and existing customers.” Energy Star Version 7.0 products, color strategies and impact windows are among the

areas Veka anticipates helping its customers grow. “If the market pie shrinks, our goal is to help them secure a larger slice of market share,” he says. “The right product and service solutions are critical.”

Gray anticipates stronger merger and acquisition activity across the industry in the coming year. “Any time you have a downturn, those who are cash-rich tend to have opportunities,” he explains. “Some companies that maybe didn’t navigate well through the pandemic might be in an over-leveraged state today, whereas some companies that have done really well might be heavy on cash and looking for investment opportunities to strengthen their footprint in the market.” In late 2022, Roto announced it acquired sealing products supplier Ultrafab.

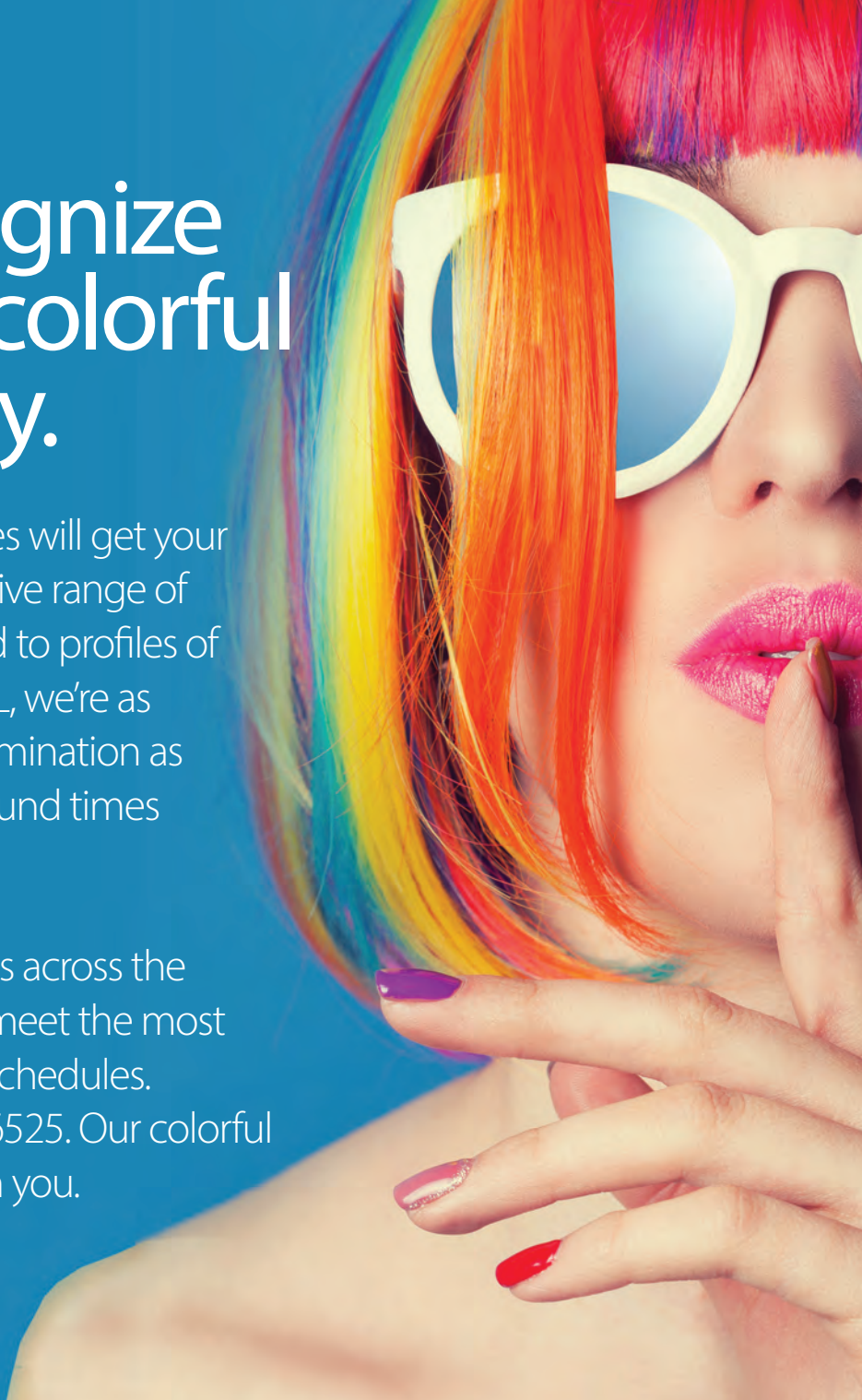
Other acquisition activity in 2022 included: Quanex acquiring LMI Custom Mixing, Masonite acquiring Endura Products, PGT Innovations acquiring Martin Door, Centra Windows acquiring Supreme Windows Calgary and Assa Abloy acquiring four companies, including Caldwell, Alcea, VHS and Bird Home Automation. And those are just a fraction of the late 2022 industry acquisitions.

Veka plans to support its laminated offering by investigating more durable protective films, as well as adding lamination lines at two of its locations. “Another area we continue to invest

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in are our sales, order and planning capabilities,” says Seiling. “Having an integrated production and inventory approach with our customers pays dividends for everybody.”

Companies will continue to invest in automation. “With labor being where it is, more companies are going to automation,” explains Johnson. Not only does it reduce scrap, he says, but it also improves quality, reduces failures, and saves on glass, labor and materials.

GED predicts its biggest business opportunity will be replacing old, obsolete equipment and providing more automation solutions, says Moore. Especially as business slows to more sustainable levels and companies are working on their businesses—rather than just in them—there’s increased demand for new and upgraded machinery and software.

Those software upgrades can help

companies optimize materials as well. GED’s Lookahead software, for example, coupled with the company’s CleanCut cutting tables allows companies to buy only what they need, says Moore. It also launched the GED Productivity Improvement Program last year, which is designed for Intercept customers that want to get more out of their existing equipment.

AmesburyTruth also invested in its internal operations in the past year, including new roll mill machines for its balance business, a new urethane line for the door seal market, and new die cast and injection molding capabilities, says Burns.

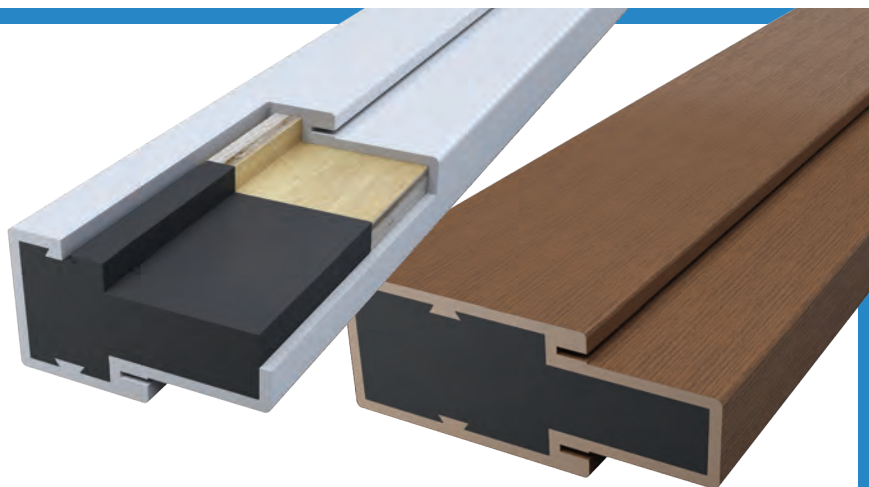
Picray predicts as the market slows, companies will focus more on what customers need, such as increased transparency in delivery times. As such, the digital space is a key area of investment for the company.

“Customer expectations in the past two and a half years have leveled up,” she explains. “People want real-time information at their fingertips for every kind of purchase you can imagine.” She references a popular pizza chain app where customers can see what step of the pizza-making process their order is in. “Customers are demanding that across the board in all types of categories,” she says. “Customers want to know and understand what step of the journey their orders are on.”

This is a continuation of Pella’s investment in its digital space, including its online pricing transparency. “Customers are using digital assets or tools for every kind of purchase they make today. Windows and doors are very complex strategies, but we need to be able to answer how customers want to shop,” she says. ■

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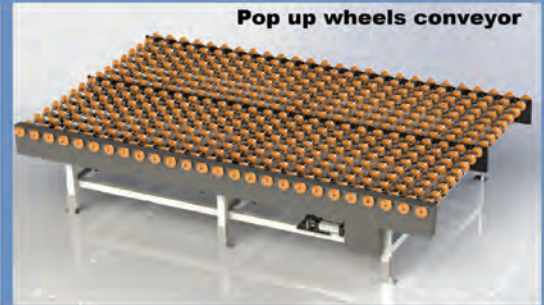
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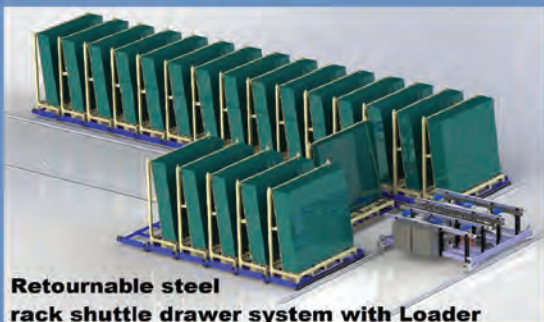
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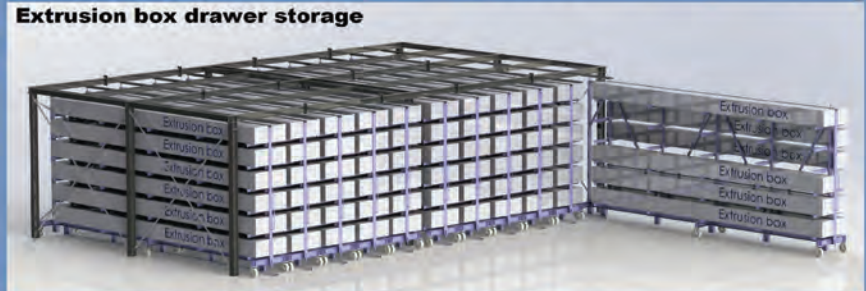
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A Weakening Residential Market

Stagnation will not be felt evenly across the industry, with declines in residential, a softening in multifamily development, and a slowing in commercial activity offset by growths in manufacturing and infrastructure, according to Dodge Data & Analytics

By Tara Lukasik

Visit [WindowandDoor.com](https://www.windowanddoor.com) to read this forecast in its entirety.

An in-depth examination of whether the U.S. economy will enter a recession and how construction starts will respond in 2023 was covered by Richard Branch, chief economist at Dodge Data & Analytics, during the Construction Outlook 2023—“On the Razor’s Edge: Will the U.S. Economy Enter Recession and How Will Construction Starts Respond in 2023”—via a webinar on Nov. 15, 2022. The analysis was based on several data categories Dodge Construction Network tracks throughout the year. Some of that outlook was based on historical data through the end of September.

The Dodge forecast signals a slowdown across many sectors. Overall construction starts are expected to be flat in 2023, following a 17 percent increase in 2022 that will bring total starts to \$1.086 billion, but \$1.083 billion is predicted for 2023. When adjusted for inflation, total construction starts will dip three percent. “The economy is slated to significantly slow, unemployment will edge higher and for parts of the construction sector it will feel like a recession,” explains Branch. The analysis further suggests the stagnation will not be felt evenly

across the industry, with declines in residential and commercial activity offset by growths in manufacturing and infrastructure.

Inflation is calling the shots

The collision of housing demand and an imminent recession due to the U.S. Federal Reserve’s ongoing battle with inflation has Dodge predicting that while there is no guarantee of a recession, avoiding one will require taking a “narrow road.” Inflation is calling the shots when it comes to the risk of recession, Branch stresses. “We’re walking the razor’s edge here,” he says.

“The key thing to remember, is we view this as fairly V-shaped; we don’t view this as anything similar to what happened during the Great Recession or any cyclical periods in the past,” he continues, crediting a strong U.S. banking system and a “woefully undersupplied” housing market with lessening a potential recession’s severity.

Despite ongoing inflation, the U.S. economy has experienced many bright spots in 2022. That includes the construction industry, which has seen record-low, single-family vacancy rates this year.

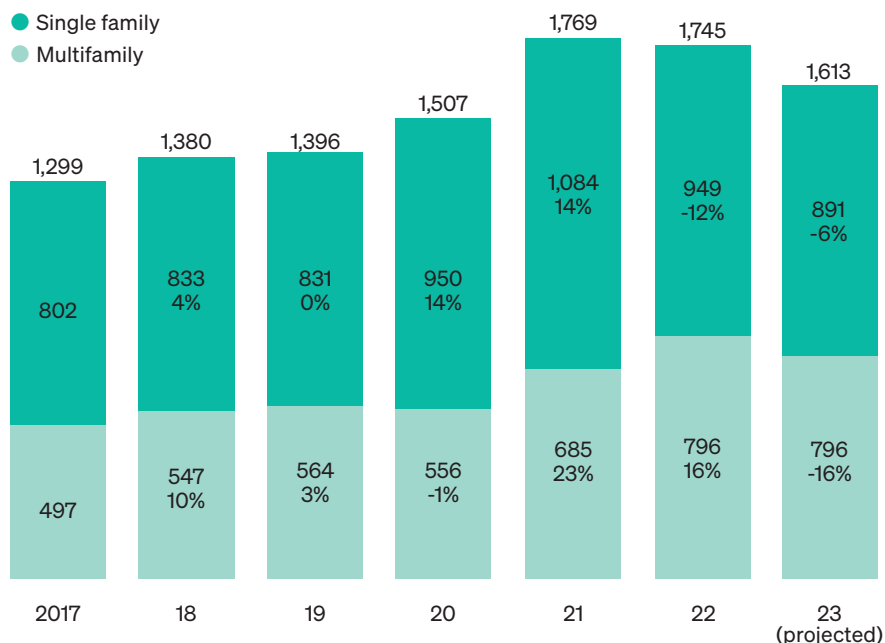
Residential outlook: small improvements expected

Rising interest rates have weakened the residential market, with single-family housing, measured in number of units, expected to decline 12 percent by the end of 2022. Dodge predicts a decline of six percent to follow in 2023. “Next year, residential construction, already reeling from rising mortgage rates, will continue to contract and will be joined by non-residential construction as the commercial sector retrenches,” says Branch.

Branch noted that residential building leads to commercial construction. “There’s a strong linkage here. I’ve always viewed the construction cycle here as a train with residential single-family construction as the engine

U.S. Residential Housing Starts

(Units, Thousands)



At-a-glance Insights

Total U.S. construction starts will drop three percent when adjusted for inflation to clock in at \$1.08 trillion in 2023, according to the 2023 Dodge Construction Outlook.

A slow economic growth environment will weigh heavily on the residential sector.

The report pegs single-family starts to drop about five percent next year when adjusted for inflation.

Demand for apartments, condos and townhomes has led to increased multi-family construction, in part because single-family homes have become more expensive and less available.

of that train. Single-family leads the construction sector into decline, and it leads it in recovery.”

Branch expects increased material pricing to impact the residential market in 2023. “The labor market is very solid; income growth is okay. The millennial age bracket is in the prime homebuying years, but that lack of supply has pushed home prices higher and with higher mortgage rates, that has pushed housing affordability to the worst it’s been in almost 15 years.”

After March, Branch expects mortgage rates will stabilize, although supply will remain limited, keeping prices high. The value of single-family homes starts is expected to hold steady in 2023 versus 2022, which, when adjusted for inflation, represents a decline of five percent. The number of single-family housing units is expected to decline by six percent to 891,000 units, a fall stoked by higher mortgage rates and continued high construction costs.

“This is still a pretty robust market; it’s just a lot weaker than we saw in 2021,” he said. “Assuming the world follows our script, the bottom of that trough of the single-family market is probably in late first quarter, early second quarter. We’ll see mortgage rates stabilize; we think that allows the housing market to stabilize in the second quarter, and then there will be fairly small improvements as we get through the end of the year. We’re still looking at another six percent decline in the housing market, but we do think that by the time we’re at this point next year we’ll start to see some improvements in the construction side.”

Labor shortage will likely ease recession

Finally, one factor that will help the U.S. avoid a severe recession is the ongoing labor shortage, says Branch. “There’s a significant shortage of skilled labor in the construction sector and it’s no

surprise to anyone that we’re in dire straits here. While it’s been volatile over the last couple of months, if you draw a trend line it meshes with the fact that the single-family market has slowed down considerably in a cyclical decline. But when the single-family market starts to recover, we’re going to be right back in the same situation of skilled labor shortages. Over five years, I don’t see a real significant improvement here in attracting skilled labor into the industry. This is going to continue to put a ceiling on the amount of work we can get done in the industry.”

The U.S. construction industry is short roughly 440,000 workers, according to McKinsey & Company, and this labor shortfall demands tailored solutions. Workforce challenges have become a common theme in most industries over the past few years, including the construction, glass, glazing and fenestration industries. ■

State of the Market



Economic uncertainty didn't dampen the M&A market in 2022, but the market will move more cautiously in the year ahead **By Andrew K. Petryk**

Macroeconomic uncertainty did not seem to stall mergers and acquisitions in the window and door industry in 2022, where deals continued at a steady pace, pointing to positive sentiment in underlying long-term market fundamentals.

A steady 2022

In November 2022, Masonite International announced the purchase of Endura Products for \$375 million in an all-cash deal. The manufacturer reported net sales of approximately \$270 million for the 12 months ended September 2022. Howard Heckes, president and CEO of Masonite, says, "The combination of our two companies is a natural fit that will allow us to accelerate our Doors That Do More strategy and maximize our growth potential."

PGT Innovations acquired Martin Door Manufacturing in October 2022 from Black Oak Capital Partners for \$185 million. With the acquisition, PGTI enters a new market of garage doors and broadens its geographic footprint and brand presence in the Western region, complementing window and

door brands Western Window Systems and Anlin Windows & Doors. CEO Jeff Jackson commented on PGTI's geographic and product portfolio expansion over the past several years with Martin continuing that trend. "As we looked to expand beyond our existing window and door market, we wanted to ensure we could leverage our team's extensive knowledge in the area of protecting the envelope of homes and buildings. The garage door entry market aligns extremely well with that strategy," said Jackson.

Private equity has made substantial investments in the window and door industry, underscored by the take private of Cornerstone Building Brands. Acquirer Clayton, Dubilier & Rice completed the \$5.4 billion transaction in July. Commenting on the deal, J.L. Zrebiec, partner at CD&R, said, "We firmly believe that the company is uniquely positioned to expand on its position as the largest manufacturer of exterior building products in North America, and we look forward to working together to build on the significant momentum underway."

In November 2022, Santiago Investment Group acquired a majority interest in vinyl window and door manufacturer Sprouse Windows and Doors. The partnership is expected to fuel growth with investment in modernizing equipment and employee engagement.

Softening ahead

We are closely monitoring the macro environment, which has been impacted by softening in the housing market and the broader economy.

After weak performance in 2022, the National Association of Home Builders projects housing starts to decline again in 2023 (9.4 percent decrease in single-family starts) before rebounding in 2024, with forecasted growth of 16.8 percent, according to October estimates. Interest rates continue to pressure affordability with the 30-year mortgage rate rising to 6.9 percent in October, up from 3.45 percent in January 2022.

While the repair and remodeling market is seeing slowing expansion, growth will remain positive through much of 2023. The Harvard Joint Center for Housing Studies revised its estimates downward in July with the growth rate decelerating from 15 percent in Q1 2023 to 6.5 percent in Q3 2023. "While beginning to soften, growth in spending for home improvements and repairs is expected to remain well above the market's historical average of 5 percent," said Abbe Will, associate project director of the Remodeling Futures Program. "In the first half of 2023, annual remodeling expenditures are still set to expand to nearly \$450 billion."

Valuation multiples have contracted given the recent volatility in the public equity markets. The BGL Window and Door composite has seen the median EBITDA decline from 10.5x in Q4 2021 to 6.8x in Q3 2022.

Notwithstanding these obstacles, public industry players are reporting strong performance and a favorable demand outlook with positive trends in new orders and backlog. Labor and supply

chain present near-term headwinds.

PGT Innovations reported organic growth of 17 percent in its FQ3 2022 quarter, supported by outsized growth (38 percent) in its Western segment, which is seeing the benefits of the Anlin acquisition. The combination of pricing actions that have successfully offset inflationary pressures and manufacturing process enhancements resulted in significant margin gains.

In its FQ3 2022 earnings call, Jeld-Wen reported 13 percent revenue growth over 2021 with all segments positive in core revenue growth. North America led its regions with a 23 percent increase in core revenue in the third quarter. The window and door space has “attractive and durable drivers of long-term growth,” according to Jeld-Wen Chairman David Nord. Interim CEO Kevin Lilly stated, “We are positive on the intermediate and long-term demand potential in each of our

end markets that remained underbuilt for both new residential homes and existing homes that are increasingly in need of renovation.”

“We remain strong believers in the medium- to long-term market opportunity, underpinned by attractive demographics and a significant shortage of U.S. housing,” said Nicholas Fink, CEO of Fortune Brands Innovations, in the company’s FQ3 2022 earnings call, in which the company also reported a “very strong third quarter” with 20 percent EPS growth and improved margins across all segments.

Masonite International reported strong year-over-year growth in the third quarter with net sales up 12 percent; net sales for the North American Residential segment grew 19 percent year-over-year.

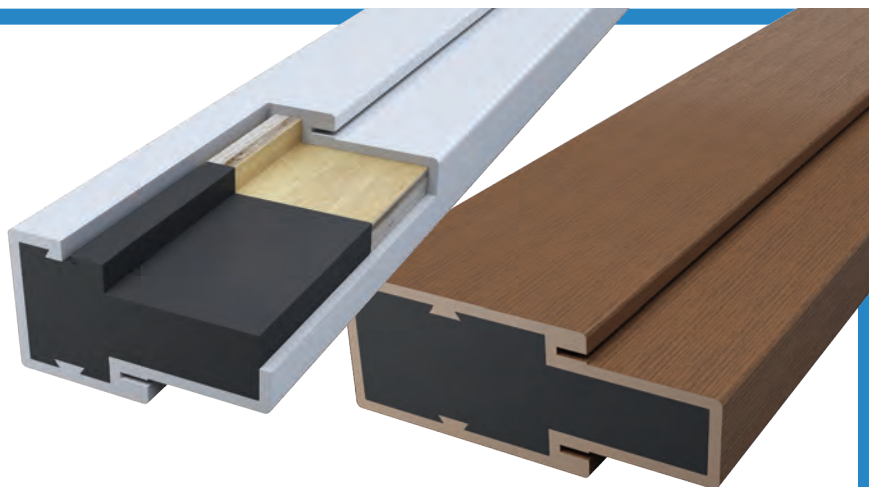
Looking ahead, we expect the M&A market to exhibit caution particularly in cyclical industries like building products, which has seen the pressures of a

near-term housing market slowdown exacerbated by rising mortgage rates, inflation, declining consumer confidence and difficulties within the supply chain. Many of the publicly traded building products companies have seen their trading values decline and have adjusted their views on valuations for acquisitions. While industry players continue to pursue acquisitions that are in line with their long-term strategies, there is downward pressure on valuations. Some of the larger strategic acquirers are nearing the final stages of integration on transactions completed in 2021 and 2022, which could free resources to aggressively focus on new deals. ■

Andrew K. Petryk is a managing director and leads the Industrials practice at Brown Gibbons Lang & Company, an independent investment bank serving the middle market. Contact Petryk at 216/920-6613 or apetryk@bglco.com.

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Products



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01



01 / Andersen Windows & Doors

Andersen Window & Doors' white oak species option allows consumers to choose from a variety of factory finishes, including a clear coat option to achieve a neutral, natural interior. Available in white oak, Andersen Big Doors match the new E-Series species option. **800/426-4261 | ANDERSENWINDOWS.COM**

02 / Magid

Magid has partnered with flame-resistant PPE and apparel company CarbonX to co-brand a line of fire resistant garments that they're calling Magid FR by CarbonX. The apparel line will protect against heat, flame, molten metal splash, arc flash hazards, and will be available in a variety of styles, which include the Balaclava (CXH31), 7.7oz Shirt (CX54), 6 oz. Shirt (CX06), and 6 oz. Pants (CX16). Manufactured to be ideal for protecting against molten metal hazards, Magid FR by CarbonX garments can withstand direct flame up to 20 times longer than competing FR garments without melting, igniting or burning.

800/203-0414 | MAGIDGLOVE.COM



02

03

03 / HydAway

HydAway doors and walls offer fully concealed hydraulic systems when closed for a clean, smooth appearance for any door or window made today. The HydAway feature is its 'Cushion Close' cylinder design. Its cylinders reduce speed over the last few degrees of travel when closing. HydAway manufactures, delivers and installs each door, with HydAway manufacturing locations found across North America. **844/933-1091 | HYDAWAYWALLS.COM**

Product/Solution

BEST OF
IBS 2022

PanoLock® // Endura Products

Challenge

Many multi-point locks on the market require specific, expensive hardware not readily available for purchase and most are extremely unforgiving during door installation. Almost every multi-point lock on the market today requires unique hardware for operation that can only be provided by the lock manufacturer.

Solution

PanoLock®—Winner Best of IBS 2022 Window and Door Component—is unlike any other multi-point lock on the market. PanoLock was designed to work with a

variety of off-the-shelf hardware from nearly every major brand of locks on the consumer market today. Adapter guides and suggestions are available on the PanoLock page of the Endura Products website.

PanoLock's unique security fins and roller strikes allow for a more forgiving install. Moreover, the design of the strike points allows for a smooth locking experience when the homeowner throws the deadbolt.

And, due to PanoLock's patented design, it is available at more approachable price point than other multi-point locks on the market, bringing the features of a multi-point lock to more projects and budgets.

PanoLock does not greatly increase the cost of a finished pre-hung door unit and allows every homeowner to find a style of hardware and locksets that matches their unique style. This flexibility at an affordable price is a gamechanger for the industry.

For more information, go to enduraproducts.com or call 336/413-3662.

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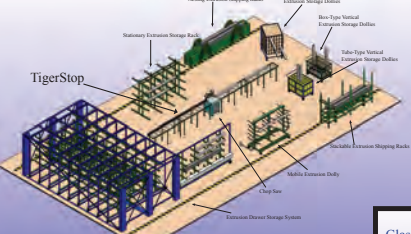


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WORKFLOW

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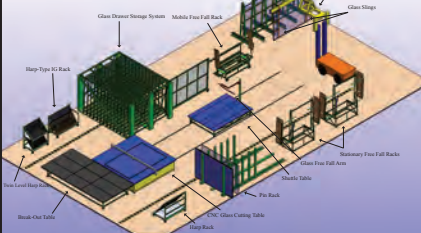
PRODUCTION

Ergonomically-friendly equipment makes for a more productive and safer process.

PACKAGING & SHIPPING

The right equipment to ensure your product arrives at its destination in perfect condition.

Glass Free Fall Equipment

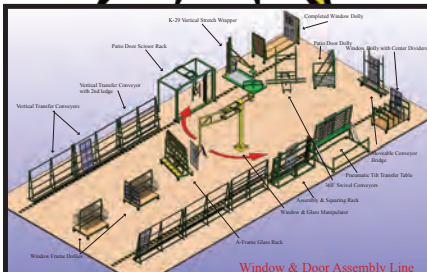


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Products



UAP

UAP's Fullex Key Wind Lock is designed specifically for doors with fixed handles and is suitable for composite and timber doors. It uses a key or thumb turn to engage and retract the bolts and latch. Once the door is closed, the latch can't be operated without the key. In addition, UAP has developed a matching escutcheon, providing the option of a full, cost-effective system, including a pull handle, Key Wind Lock, high security escutcheon and 1 Star cylinder.

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Market Data

OUTSIDE
VIEW



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2023 Residential Remodeling

Outlook: Slight Gains Despite Steep Deceleration

The Leading Indicator of Remodeling Activity from the Remodeling Futures Program at the Joint Center for Housing Studies of Harvard University projects a steep deceleration in annual gains of home renovation and maintenance spending from 16.3 percent at the close of 2022 to just 2.6 percent by year-end 2023.

Leading Indicator of Remodeling Activity – Fourth Quarter 2022



Manufacturing jobs

779,000

manufacturing job openings were recorded for the month of November, up from 722,000 in October, with increased postings for both durable and nondurable goods firms. *Source: U.S. Department of Labor's Job Openings and Labor Turnover Survey*

New Home Sales

5.8%

to a 640,000 seasonally adjusted annual rate, is how much sales of newly built, single-family homes in November increased. *Source: U.S. Department of Housing and Urban Development and the U.S. Census Bureau*

Single-Family Housing Starts

32%

is how much the pace of construction went down for single-family housing starts in November. *Source: National Association of Home Builders*

Builder Confidence Declines

31

31 was the Housing Market Index for the month of December, marking the 12th straight monthly decline, dropping two points from November. *Source: National Association of Home Builders/ Wells Fargo*

Single-Family Production

31.9%

The growth rate in the third quarter of 2021 to a -4.4% rate in the third quarter of 2022 is how much single-family production declined in large metro outlying counties and exurban areas. *Source: National Association of Home Builders Home Building Geography Index.*

CELEBRATING



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Through the years we have developed a passion for innovation by having a vision and following through on it, even if it means pushing the boundaries. Our eyes are on the future of automation in North America as we provide solutions that best fit your manufacturing needs. Let us help you to realize your vision for a more automated production process.

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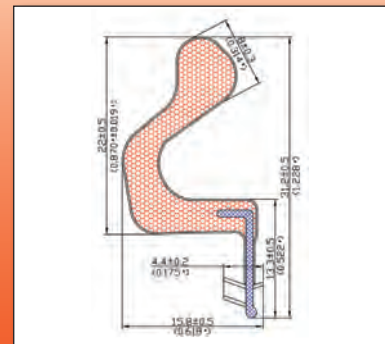
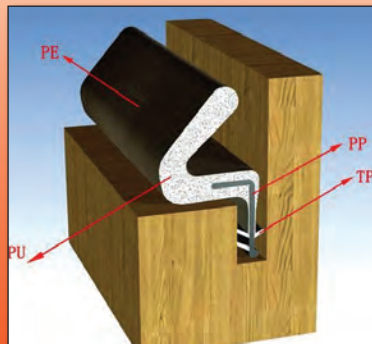
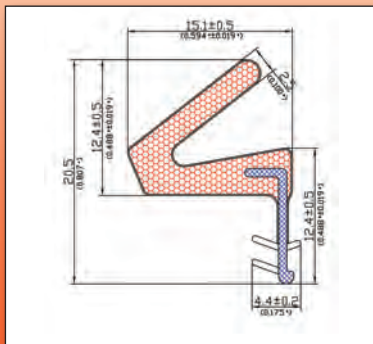


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