

# WINDOW+ DOOR

Triple-glazing and  
embodied energy

P. 16

High-speed  
machinery

P. 40

Transparent solar

P. 46

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Residential fenestration coverage, from source to sale // windowanddoor.com // Vol. 30, No. 2 // March/April 2022

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High-speed machinery can allow product to move through a facility in an expedited manner, but companies need to consider more than speed before investing in this equipment. *By Laurie Cowin*

## 46. Next-Gen Tech to Meet Energy Goals

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**On the Cover:** Automated and tech-enabled hardware is becoming more prolific as part of a larger trend toward whole-home automation. The Kwikset Home Connect 620 Z-Wave connected smart lock features a 10-button keypad with one-touch locking and 250 user codes and is designed to integrate with a variety of smart home systems.



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### Emerging Door Trends

Many homeowners are looking to replace their doors. To meet this moment and drive door sales, consider recommending one these three emerging door trends to your next customer.

### Video of Products in Action

Peruse the online versions of Trendhunter and High-speed Machinery to see videos of these automated products in action.

### Women in Construction Week

NGA recognized Women in Construction Week, March 6-12. Visit glass.org for profiles of women in fenestration and glass, and more recruitment and hiring resources.

## ➔ The Talk // Blogs of the Month

Catch up on all the latest industry "talk" at windowanddoor.com/blogs



### Embracing Continuous Improvement with the Right Technology

By Eric Thompson



### 5 Takeaways from the FGIA Hybrid Annual Conference

By Laurie Cowin



### Women in Fenestration: Why it Matters, How to Encourage Growth

By Robin Merrifield

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# WINDOW+DOOR

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## Editorial

**Jenni Chase** // Content Director  
**Emily Kay Thompson** // Associate Publisher  
**Laurie Cowin** // Editor  
**Norah Dick** // Associate Editor  
**Cory Thacker** // Creative Lead  
**Bethany Stough** // Senior Manager, Digital Media  
**Wendy Vardaman** // Web Editor  
**Beth Moorman** // Production Director  
**Jo Ann Binz** // Circulation Manager

## Advertising

Executive Publishing // 410/893-8003 // Account Managers:

**Chris Hodges** // chodges@executivepublishing.com // 410/459-8619  
**Mike Gribbin** // mgribbin@executivepublishing.com // 410/459-0158  
**Tim O'Connell** // toconnell@executivepublishing.com // 443/717-1425

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## Cornerstone Building Brands to Go Private in \$5.8 Billion Acquisition

Cornerstone Building Brands Inc. has entered into a definitive agreement to be acquired by affiliates of Clayton, Dubilier & Rice in an all-cash transaction with an enterprise value of approximately \$5.8 billion, including the assumption of debt. Cornerstone Building Brands includes window and door manufacturers Ply Gem Windows & Doors, Silver Line Windows & Doors, Simonton Windows & Doors, Atrium Windows & Doors, American Craftsman Windows & Doors, Great Lakes Window and Ply Gem Canada.

"We believe this transaction provides substantial value for our shareholders while also accelerating Cornerstone Building Brands' aspiration to become a premier exterior building solutions company," says Rose Lee, president and CEO of Cornerstone Building Brands. "We have grown our business and portfolio since 2018 when the company was created, delivering high-quality exterior building products with a strong focus on being a partner of choice for our customers. CD&R will continue to be an outstanding partner as we advance our operational improvements and innovation-driven growth to create many positive outcomes for our customers and employees."

The proposed transaction will result in the company becoming a private company and is expected to close in the second or third quarter of 2022, subject to customary closing conditions, including receipt of regulatory approvals. The transaction is subject to approval by holders of a majority of the shares not owned by CD&R and its affiliates.

## Weather Shield to Discontinue Vinyl Windows and Doors

Weather Shield Windows & Doors will exit production and sales of vinyl windows and doors as part of a corporate initiative to focus attention on the luxury window and door markets.

"This decision is a natural next step in our strategy to position the business toward the premium segments of the market," says Robert Foote, president of Weather Shield Windows & Doors. "Our new VUE Collection all-aluminum product, along with our wood clad product lines, represent the product portfolio best-suited to pursue the growing high end of the market."

With this announcement Weather Shield will be eliminating its Visions brand of vinyl windows and doors. The company has an order backlog to fulfill and doesn't expect to cease vinyl production until late summer.

## Industry Companies Introduce New Products

Therma-Tru, in partnership with Larson, introduced the Impressions integrated storm and entry door system. The storm door is integrated flush into the brick-mould portion of the door frame and comes with an interchangeable screen.

Pella Corp. unveiled a hidden screen for its 250 Series single-hung, double-hung and sliding vinyl windows that appears when the window is open and folds away when the window is closed. The Hidden Screen was tested to 9,400 cycles, which is equivalent to opening and closing windows once a day for 25 years.

Plus, Andersen Windows is expanding its legacy 400 Series casement to include a contemporary profile option.

### IN THE NEWS:

## Month in Review

### Fortune Brands Home & Security Inc.

acquired **Solar Innovations LLC**. Solar Innovations will be part of Fortune Brands' Outdoors & Security business segment, which also includes the Therma-Tru and Larson brands, among others. And, **Sherwin-Williams** acquired **AquaSurTech**.

The **REHAU Group** suspended operations in Russia and Belarus until further notice, citing a "war against humanity, the freedom of all of us and peace in Europe" that is "against the values for which we as a REHAU Group stand with all our subgroups."

**Design & Construction Week** in Orlando in February drew more than 70,000 attendees. The **National Hardware Show** will also join Design & Construction Week next year, Jan. 31-Feb. 2, in Las Vegas.

Several companies have been recognized with awards. **Endura** won Best Window and Door Product in NAHB's Best of IBS Awards for its Panolock Multi-Point lock, **PGT Innovations** secured a spot on Forbes' America's Best Midsize Employers list, **Andersen Corp.** earned a spot on Forbes' Best Large Employer list for the third consecutive year and was named one of the "Best Places to Work for LGBTQ+ Equality" on the Human Rights Campaign Foundation's 2022 Corporate Equality Index, **Renewal by Andersen** won a Manufacturing Excellence Award by Twin Cities Business for Workplace Culture; **Quanex** team members placed fifth in the large companies division for the Go365 National Step Challenge; and **Magid Glove & Safety** received a Top Workplaces USA 2022 award.



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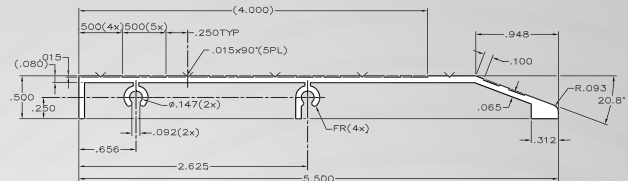
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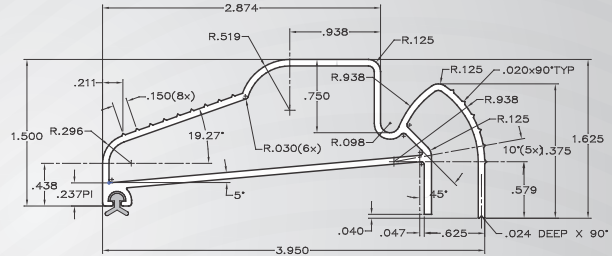


### THRESHOLD PRESS CAD DRAWINGS

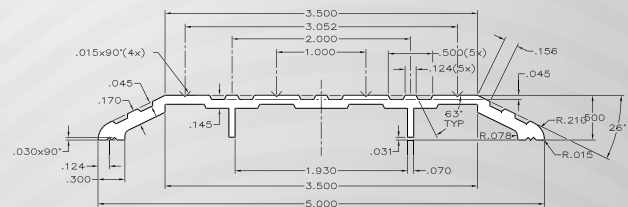
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## About Innovation

*As business travel resumes, conversations focus on how to propel the industry forward*



**By  
Laurie Cowin**  
EDITOR

After a nearly two-year hiatus from business traveling, I flew to Florida twice in February. First, for the International Builders' Show in Orlando and, second, for the Fenestration and Glazing Industry Alliance's Hybrid Annual Conference in Amelia Island, Florida.

Attendees at both trips were enthusiastic, business-minded and clearly ready to be back out doing business in person. As we discussed labor and supply challenges, product trends, manufacturing capabilities and more, I kept noticing the overriding theme of innovation. Innovation in how to mitigate labor and supply chain struggles, innovation in product development and innovation in manufacturing processes.

I've attended IBS for the better part of a decade, and am always impressed with the product solutions manufacturers bring to the table. Specifics have varied throughout the years in accordance

with trends and market demand, but the thing that never changes is that each product on display meets at least one market need.

Of note this year was the broad range of customization options and a focus on product aesthetics. When I attended my first IBS a decade ago, I remember a lot of neutral shades that could fit anywhere; this year, colorful booths abounded. Although neutral options are still popular, companies are showcasing all they can do with customization, whether it be color, digital printing or decorative glass.

As homes continue to become more connected, more companies showcased smart and connected products. Nowhere did this appear to be more pervasive than in door hardware. I saw numerous locksets that could be operated via a touch or keypad, through an app on a phone or even with the simple wave of a hand, giving a truly hands-free experience. There are even automated systems to power large multi-panel doors. As technology continues to improve and expand its reach, I anticipate seeing more and more smart products in the window and door space in the coming years.

This issue's Trendhunter, p. 36, focuses on smart and connected hardware. Hardware suppliers tend to agree that smart hardware is the future and we can look forward to seeing a lot of growth and innovation in that space in the coming years.

One of the more notable sessions for me at the FGIA conference was a panel about embracing innovation in the windows industry. Moderator Ray Garries said 90 percent of CEOs regard innovation as "critical" to an organization, yet only 10 percent

**"Innovation isn't just for engineers or technical people. Everybody can be an innovator."**





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### ➔ Observation Desk

are satisfied with their innovation progress. He recommends companies ensure their culture, commitment and focus is right and that a failure tolerance exists. "You have to fail a lot to get the right thing," he says.

He also said that "Innovation isn't just for engineers or technical people. Everybody can be an innovator. Everybody has great ideas. Following through on those ideas is important. Innovation is turning ideas into invoices."

Panelist Tim McGlinchy, executive vice president of engineering and R&D, GED Integrated Solutions, shared the company's new product development process of evaluate, prioritize, develop, launch and measure. Critical actions include justification (market need and financial ROI), customer involvement (validate the value proposition) and continual communication. "You need good ROI for you and the customer to make a win-win situation," he explained.

Likening the product development and innovation process to an exercise program, McGlinchy said, "You have to have a program to follow so you stay more disciplined, do the right things at the right time and follow up with it."

Read more about what innovation is coming to the fenestration industry to bolster energy efficiency and building performance in the "Next-Gen Tech to Meet Energy Goals" feature on p. 46. ■





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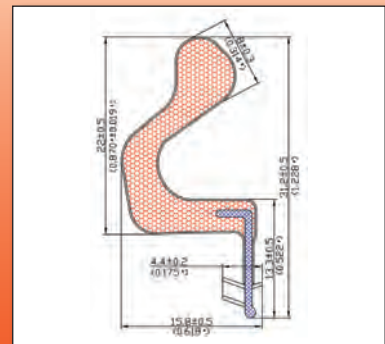
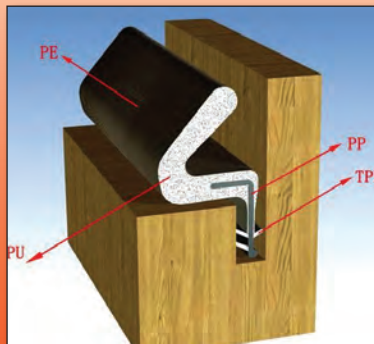
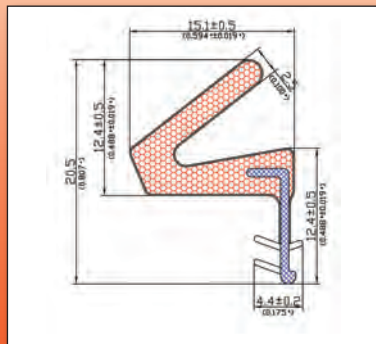


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# Triple Glazing and Embodied Energy

*Yes, the juice is worth the squeeze*



**By Thomas D. Culp**

As both national and local groups look for solutions to address climate change, decarbonize the buildings segment, and greatly increase energy efficiency, it is clear that high-performance fenestration has an important role to play. Is this the momentum that is needed to finally make triple glazing go mainstream in colder climates?

There are a number of considerations with moving to triple glazing, including cost, manufacturing changes, frame modifications, weight and more. Significant efforts are underway to ease the transition, whether that is using traditional triple glazing or the newer concept of “thin triples,” which use a thin glass middle lite. The numerous support initiatives include technical support from Lawrence Berkeley National Laboratory, ongoing field demonstrations across the country by Pacific Northwest National Laboratory, market assessments by Steve Selkowitz and the Northwest Energy Efficiency Alliance and the new Partnership for Advanced Window Solutions.

## The embodied energy question

In this article, I will just address one question that has been raised about embodied energy. Specifically, is the energy savings gained by moving from double to triple glazing outweighed by the extra energy used to make the third pane in the first place?

This is a fairly straightforward question to answer, at least in a simplified manner. First, the embodied primary energy associated with manufacturing the added third lite is easily calculated from the National Glass Association industry-wide environmental product declaration for flat glass, ASTM-EPD121. This will vary based on the thickness of glass, as shown on the chart on p. 18. Next, this is compared against the corresponding energy savings in a representative building from moving from double glazing to triple glazing, which will vary based on building type and location. The result can be easily understood in terms of the payback time—how long until the extra energy to





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## RESIDENTIAL ANALYSIS (all windows in model home)

### Embodied Energy

Embodied primary energy of flat glass	2.16E+04 MJ/MT	
Total window area in analysis home	356 ft <sup>2</sup>	
<b>Middle lite thickness</b>	<b>2.2 mm</b>	<b>1.1 mm</b>
Mass of 3rd lite (total for home)	184 kg	92 kg
Embodied energy of 3rd lite (total for home)	3.98 GJ	1.99 GJ

### Energy Savings – ENERGY STAR Northern Zone

**Code baseline** - U lowered from 0.30 to 0.22 Btu/hr ft<sup>2</sup> F, SHGC kept constant at 0.30

Site energy savings	6.59 GJ/yr	
Source energy savings	6.97 GJ/yr	

<b>Embodied energy payback period</b>	<b>6.8 months</b>	<b>3.4 months</b>
---------------------------------------	-------------------	-------------------

**ENERGY STAR v6 baseline** - U lowered from 0.27 to 0.22 Btu/hr ft<sup>2</sup> F, SHGC constant at 0.30

Site energy savings	4.04 GJ/yr	
Source energy savings	4.27 GJ/yr	

<b>Embodied energy payback period</b>	<b>11.2 months</b>	<b>5.6 months</b>
---------------------------------------	--------------------	-------------------

make the third lite is “paid back” by the energy savings.

### Measuring energy impacts

As part of the proposed update to the Energy Star program for Windows, Doors, and Skylights, LBNL has done an extensive analysis of the population-weighted energy savings in residential homes in the northern zone for different U-factors and SHGC levels. The energy savings is calculated for the proposed 0.22 U-factor compared to two different baselines: a code baseline with U-0.30, and the Energy Star version 6 baseline with U-0.27.

For an apples-to-apples comparison to the

primary embodied energy, the site energy savings at the home from both baselines are converted to source energy savings reflecting the actual primary energy use including power generation, transmission and delivery losses. The results are shown in the table above for the total home in units of gigajoules (GJ). As a point of reference, the embodied energy to make a typical smartphone, which gets replaced every two years and doesn’t save any energy, is about 1 GJ.

### The results

As shown in the above table, the embodied energy of the added third lite is paid back in just seven to

11 months for 2.2-mm glass in traditional residential triple glazing and only three to six months for 1.1-mm glass used in thin triples. This is quite minimal in consideration of the ongoing energy savings that will accumulate over the next 20 to 30 years.

This analysis is somewhat simplified, just answering the general question about adding the extra pane of glass. It does not include embodied energy associated with changes in the spacer edge assembly or the frame, and the specific energy savings and carbon impact for any specific building will vary based on building characteristics, location, local utility source and fuel types.

Nonetheless, the answer is clear: the embodied energy from the third lite is small compared to the energy savings, paid back quickly and the cumulative energy savings from triple glazing in northern climates will be significant over the life of the window, as well as deliver better comfort to occupants and resilience in the face of more extreme weather events. ■

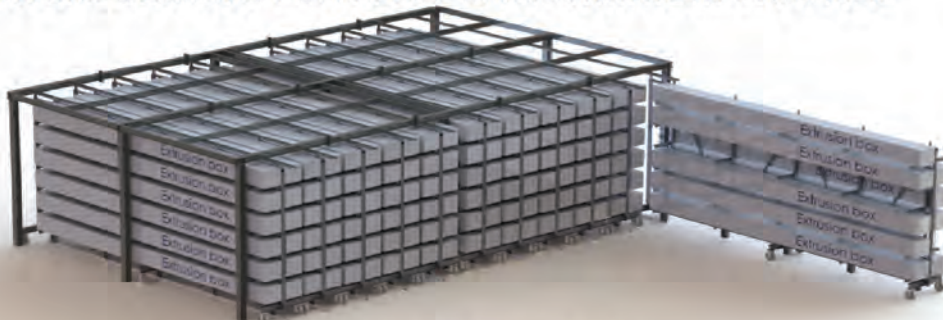
Tom Culp is technical code consultant for the National Glass Association and owner of Birch Point Consulting LLC.

## Resources

Read this article online at WindowandDoor.com for direct links to all resources.

- "Thin Triple Pane Windows: A Market Transformation Strategy for Affordable R5 Windows," by Stephen Selkowitz, available in the Northwest Energy Efficiency Alliance, Report #E20-310, April 2020.
- Flat Glass Environmental Product Declaration, National Glass Association, ASTM-EPD121, December 2019 (pdf).
- ENERGY STAR® Windows, Doors, and Skylights Version 7.0 Criteria Analysis Report, July 2021 (pdf).
- PNNL prototype buildings

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# WOCDs Explained

*What classifies as a window opening control device and how they fit into building codes*



**By Kathy  
Krafska  
Harkema**

The term Window Opening Control Device (WOCD) is widely recognized in the fenestration industry. But at times, there's still confusion about what hardware meets the requirements to be classified as a WOCD.

WOCDs are one type of fall prevention device, which are intended to help reduce the risk of accidental falls from windows and are tested, installed and labeled to comply with the ASTM F2090 Standard. Not all fall prevention devices, however, are considered WOCDs. For example, window guards are fall prevention devices, but aren't considered as WOCDs.

The 2006 editions of the International Code Council (ICC) I-codes introduced a requirement to provide window fall protection for operable windows where the lowest portion of the window opening is located greater than 72 inches above the exterior finished grade or surface below. Window fall protection is to be provided by one of the following:

- A minimum dimension from the finished floor to the lowest portion of the window opening of:
  - 24 inches for buildings governed by the International Residential Code (IRC), or
  - 36 inches for dwelling units within Group R-2 or R-3 buildings as governed by the International Building Code (IBC). (Note: the IBC originally had a 24-inch sill height but moved to a 36-inch height starting with the 2012 IBC.)
- Limit the sash opening to a less than a 4-inch dimension such as a vent limiter. Note that this option would not be allowed on an operable window that is required for emergency escape and rescue.
- Installation of a window fall prevention device that complies with the ASTM F2090 standard (WOCD, a specialized window screen or a window guard.)
- Under the IBC only, in Group R-2 and R-3



occupancies, applications where the lowest portion of the window opening is more than 75 feet from the exterior finished grade or surface below, installation of an ASTM F2006 (Specification for Window Fall Prevention Devices for Non-emergency Escape (Egress) and Rescue (Ingress) Windows compliant device (specialized screen or window guard).

So, what exactly constitutes a WOCD? ASTM F2090 provides guidance.

### Guidance per ASTM F2090-2021

WOCDs were first introduced officially as fall prevention devices in the 2008 version of ASTM F2090, Standard Specification for Window Fall Prevention Devices with Emergency Escape (Egress) Release Mechanisms. To meet ASTM F2090 requirements, a WOCD must:

1. Limit the sash opening to less than 4 inches dimension, and
2. Be able to be disengaged by either:
  - installation of two independent single-action devices (for example, a lever that can be flipped, with two such devices installed on the same window), or
  - one dual-action device that requires two separate, distinct and consecutive actions to release the WOCD, such as holding a button in while sliding a lever, and
3. Upon release of the WOCD, the sash must be able to be fully opened as may be needed for emergency escape or rescue. The WOCD device must then automatically reset when the sash is re-closed such that the device will again limit the sash opening to a less than 4-inch opening.

One of the key points of clarification in the latest version, ASTM F2090-2021, is that partial compliance to this standard is not permitted. To claim compliance to this standard, all of the

applicable requirements must be met.

When properly designed, tested, specified and installed, appropriately configured WOCDs can help reduce the potential for falls from operable windows of various styles while allowing full opening of windows designated for emergency escape or rescue. WOCDs may be factory-installed, applied as a field kit or

applied as an after-market device.

In addition to the ASTM F2090 standard, other efforts to help better define, explain and specify the proper use of WOCDs continue.

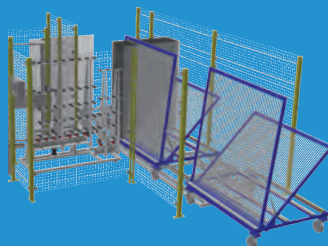
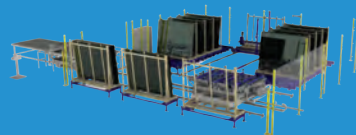
### Code revisions

The IBC, International Existing Building Code (IEBC) and IRC building

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codes have included provisions for window fall prevention since 2006. Now, FGIA and the Window and Door Manufacturers Association (WDMA) have jointly filed a proposed code change that, while not affecting current physical requirements, would clarify IEBC sections 505.2 and 702.4 to require that replacement windows incorporate WOCDs in installations otherwise covered by the IBC.

The Group B proposal by FGIA and WDMA is expected to be heard during ICC Committee Action Hearings March 27-April 6 in Rochester, New York. If the committee approves it, the proposal will next be heard in Public Comment Hearings Sept. 14-21 in Louisville, Kentucky. If the proposal prevails there, it advances to ICC's Online Governmental Consensus Vote for approval before it would be incorporated into future code language in the next cycle.

### Joint FGIA/WDMA Technical Bulletin

A new Technical Bulletin, Clarification of the Definition of a Window Opening Control Device (WOCD), created by FGIA to be jointly published with the WDMA, explains what qualifies as a WOCD and what distinguishes them from the other similar-looking hardware like night latches, vent stops or vent limiters, which are not governed by the ASTM F2090 or other standards and should not be used on windows designated for emergency escape and rescue.

ASTM F2090-21 is complete. Proposed code revisions are in progress for the next IEBC revision, and the new joint FGIA/WDMA Technical Bulletin will soon be available through FGIA's Online Store and through WDMA. The industry's work to promote a better understanding of WOCDs and their proper use is ongoing. ■

Kathy Krafa Harkema is the Fenestration and Glazing Industry Alliance's U.S. Technical Operations Director.

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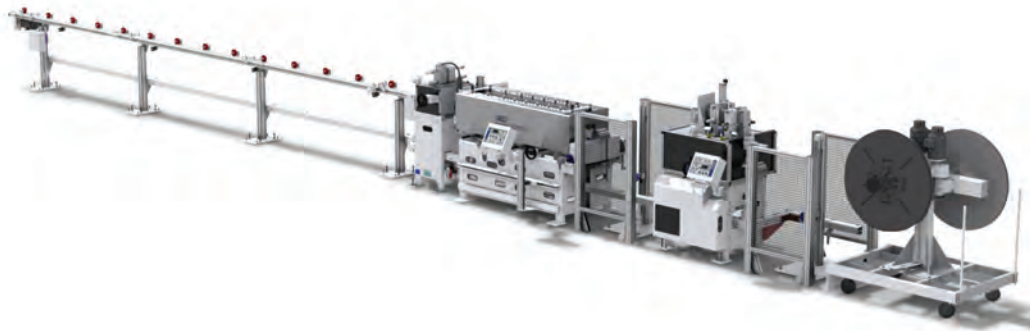
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# The Key to Honest Online Reviews

*The Federal Trade Commission published two new guidelines around online reviews. It all comes down to transparency.*



**By Susan  
MacKay**

Online reviews are here to stay. According to Forbes, 82 percent of U.S. consumers read online reviews before buying a new product and more than 63 percent indicate that they are more likely to buy from a site that has reviews or testimonials. Consumers read online reviews prior to making most purchases, but they are especially likely to mull over reviews for costly products or services, such as windows and doors.

As the reliance on online reviews continues to grow, the Federal Trade Commission (FTC) has taken notice. In January 2022, the FTC published two new guidelines aimed at marketers who post online reviews. The guidelines include many tips about the proper way to vet and publish online reviews, but it all comes down to transparency.

## Put processes in place

The first guideline is Featuring Online Customer Reviews: A Guide for Platforms. In short, it advises companies that have a website or other platform where online reviews can be posted to have processes in place that ensure the reviews are from real users and accurately reflect the users' actual experience with the product or service.

The FTC's platform guidance is the same whether the review process is "open," meaning anyone can submit reviews, or "closed," meaning reviews are limited to verified buyers or users. Companies are warned against only asking for positive reviews and discouraging consumers from leaving negative reviews.

Additionally, if a company incentivizes



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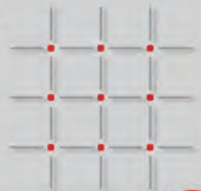
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## Companies that have a website or other platform where online reviews can be posted [should] have processes in place that ensure the reviews are from real users.

consumers to leave a review, receipt of the incentive cannot be conditioned on the review being positive. Despite that, because of a perceived bias in accepting an incentive for a review, the FTC reports that some online platforms do not permit incentivized reviews while others label the reviews to state that the reviewer received an incentive.

The FTC guideline also addresses the effort of some marketers who look through reviews in an effort to remove fake reviews or those that violate company policies (e.g., harassing or discriminatory reviews). This review process is done by individuals or by automated systems and can occur before or after the reviews are posted online.

No matter the system, the FTC recommends formalizing processes to identify fake, deceptive or manipulated reviews. It also advises against editing reviews to change the point of the review and cautions that positive and negative reviews should be treated equally and with the same scrutiny. Because technology is ever-changing, companies should also regularly examine and update the processes used.

### How to actively seek reviews

The second guideline, Soliciting and Paying for Online Reviews: A Guide for Marketers, is directed at companies that actively seek reviews, either by themselves or through third-party marketing agencies. The FTC advises that if reviews will be posted on a platform or website other than your own, make sure you understand that company's rules for reviews before you engage their services.

If solicited or incentivized reviews are permitted,

the FTC suggests refraining from asking for reviews from consumers who have not used the product or service. It also warns against asking staff, family or friends to write a review, unless the relationship and request is disclosed with the review.

The FTC warns against working with third-party marketing companies that operate in a deceptive manner. For instance, comparison websites may say they offer unbiased reviews, but actually offer better ratings, reviews and placement to companies that pay for it. This practice must be avoided. Another red flag is a review platform that collects customer reviews to increase a company's reputation and visibility but does not disclose to the public its relationship with the company.

Search engine optimization and reputation management companies that claim to be able to boost customer ratings should be vetted to make sure they are not boosting reviews by publishing fake reviews, whether positive reviews on your site or negative reviews on a competitor's site.

If you work with companies that post your reviews or solicit reviews on your behalf, make sure those companies are working above board to obtain and publish honest reviews. Publishing deceptive or fake reviews is a disservice not only to consumers, but also to your company.

### The bottom line

The key takeaway from the FTC guidelines is to make sure reviews are displayed in a transparent manner. This can be accomplished by:

- Publishing all real reviews, whether they are good or bad
- Refraining from displaying reviews in a misleading manner, such as placing the best ones up front
- Having processes to identify fake reviews
- Clearly and conspicuously disclosing if the reviewer received an incentive for leaving a review
- Clearly disclosing the processes used for collecting, processing and displaying reviews
- Being honest about how you obtain and display reviews

Transparency is the key. ■

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Susan MacKay is an attorney with The Gary Law Group, a law firm based in Portland, Oregon, that focuses on legal issues facing manufacturers of windows and doors. She can be reached at 503/620-6615 or [susan@prgarylaw.com](mailto:susan@prgarylaw.com).



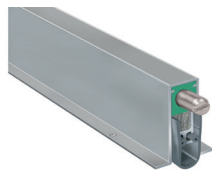
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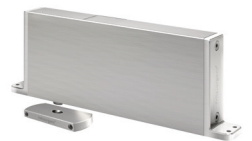
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## Software Selections

*This six-step approach will guide companies as they research, evaluate and ultimately select the appropriate software system*



By Chris  
Kammer

*Editor's note: The following piece is a condensed version of a three-part blog series on [windowanddoor.com](https://windowanddoor.com) about choosing the right software for your company. Read each blog post in its entirety on [windowanddoor.com/blogs](https://windowanddoor.com/blogs).*

Choosing software for your business can be a daunting task. Many business owners and managers know they need a new software system, but something is holding them back, including overwhelming choices, fear of making the wrong decision, and time needed to make the right decision and implement the change.

These are legitimate concerns. In an effort to help ease them, the following six steps will help plan your strategy for navigating the process and helping decide what solution is most appropriate.

### Step 1: Know your objectives

Define your criteria and know what you're looking for. You must know what the software solution needs to accomplish, know your pain points (problems the new software solution is solving), and know the

value of the solution (quantify the solution in terms of time, money or benefits to the organization).

It might be important to involve your team early on. They are the ones who use the current software system, know its failures, deal with the pain points on a daily/weekly basis, and must learn the new system. Furthermore, remember that change can be intimidating for most people. So, to help your team welcome in the coming change, involve them in the decision-making process, and add their needs to the list of requirements. Additionally, they should be involved in testing out the new system.

### Step 2: Prioritize your needs

No software solution fits all employees or companies. In some cases, multiple solutions are required to meet your needs. In this case, you might want to make sure these software systems can interface with each other. Keeping all of this in mind, prioritize the needs of your company by determining the most relevant features as either





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essential, conditional and your nice-to-haves.

**Essential:** These are the must-haves, such as optimization, cutting, scheduling/tracking, capacity planning, easy machine management, etc. If the system doesn't have these features, the system is not feasible for your company.

**Conditional:** These features aren't mission critical, but would enhance the productivity of your business, such as an e-commerce feature, shower door configurator or barcode scanning.

**Nice to have:** Company doesn't need this feature to buy the software, but this feature would be nice if it existed.

### **Step 3: Create a software vendor short list**

Right now, you should list every software system out there you know that services the glass, window and/or door industry. If you can afford it, this is a time to employ a research/consulting firm, which can help you develop a list of software providers, as well as criteria to grade potential software solutions, ask additional essential/conditional/nice-to-have questions, and eventually help you shortlist software suppliers.

As you search for a software supplier and narrow in on the specific software solution, keep in mind your company's hardware needs. You need to have a firm understanding of the technical components of your hardware, internet speed into your building and connection to other buildings, and the manufacturing machines you are interfacing into, on premise or cloud servers.

### **Step 4: Validate your short list**

In this step, you will whittle out unsuitable entries. A good place to start includes technological preference, budget and connection.

Based on these three criteria, you can possibly narrow your search quickly, but these criteria can also help open your eyes to flaws in your own search methodology. Be open to feedback from outsiders, including customers, suppliers and software suppliers. Making a connection with team members on the software supplier side is undervalued but highly important in your search.

At this time, you could ask for virtual or in-person demonstrations, which is vital to make the best decision possible.

### **Step 5: Evaluate your choices**

Now is the time to narrow down your contenders by assessing each software solution against the criteria you created in steps three and four.

When you narrow your search down to two to three final competitors, you can compare, filter, gauge and evaluate features more easily between each competitor. This could be where a consulting firm can help you narrow down your candidates.

When you watch demonstrations or see the software live, you should keep your list handy, keep an open mind, ask questions and anticipate mistakes. Ask the software supplier to refer you to some of their customers and ask to tour one to three facilities. By touring a company similar to yours, you can ask questions of real users and watch the process in action.

As you progress through the demonstration and into the plant tour, start focusing on product usability.

- How easy is it to learn the software?
- What options are available for training?
- How efficiently can your employees perform tasks essential to your business?
- How easy is it to remember how to perform tasks?
- How thorough is the software solution in detecting and avoiding errors?
- How happy were you with the demonstration, plant tour and/or company you're working with? Trusting your gut is vital on both sides.

### **Step 6: Make the decision and negotiate**

Making the assumption you found a "winner," almost all of your work gathering the finer details will have happened in step five. Now is a time to determine any additional modules, negotiate payment and the structure of the payment, clarify support/training/implementation requirements for your staff, and much more.

This is the time to ask what the best deal is for you and your team. If you've built up a good rapport with the company along the entire process, you should be able to negotiate at least some aspects of the software solution.

In the end, choosing the right software solution for your company is no guarantee of success. Your chosen software solution will be most successful when you and your team put in the time and effort to learn, implement and manage the installation based on the needs of your company as outlined in the first two steps. ■

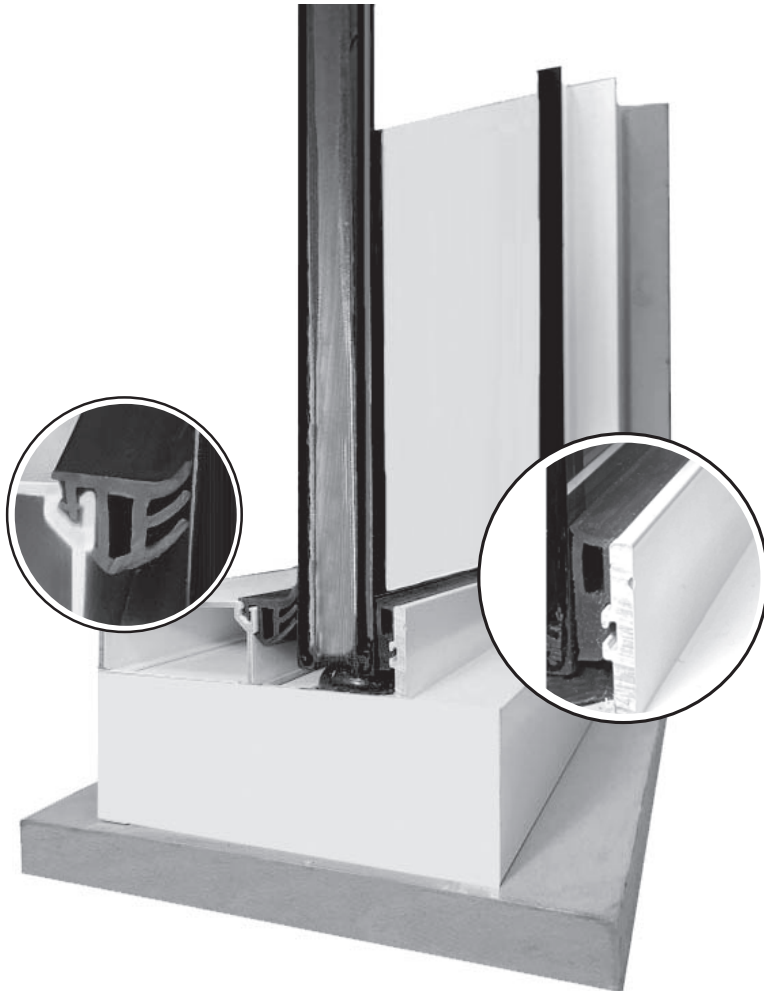
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Chris Kammer is the marketing lead for A+W Software North America. Kammer can be reached at [chris.kammer@a-w.com](mailto:chris.kammer@a-w.com) and 847/220-5237.

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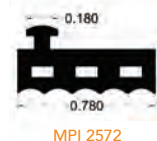
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## Care, Act, Grow

*Companies that turn corporate social responsibility into action have a real impact on the communities they serve.*

**By Emily Kay Thompson**

ASSOCIATE  
PUBLISHER

A widely held tenet of this industry is that ours is a people business. Relationships are the most valuable asset for all companies, especially in the current climate. The industry runs on this premise, with suppliers working with each other and their common customers to build and innovate product. But this sense of duty, of responsibility to one another, extends beyond the ties that bind the fenestration market. Through efforts in

corporate social responsibility, fenestration companies have an opportunity to make a real impact on not only their staff, partners and customers, but also on their communities at large.

Window + Door sat down with one such company in our industry that has made CSR a common and uniting focus for its staff. VEKA Inc.'s President and CEO Joe Peilert and Corporate Marketing Director Steve Dillon share their insights on why CSR is important and the implications of making CSR a reality and priority.

### **W+D: Why is it important for companies to engage in corporate social responsibility?**

**JP:** In order to live up to its full potential, a company needs to make an impact on employees, customers and the community, beyond just offering a paycheck, making quality products and paying taxes.

**SD:** Companies need to lead by example while empowering others to act. The goal of a business should be to get buy-in from its workforce on its initiatives and on the local community and/or marketplace while encouraging others to engage in initiatives within these same groups.

While individuals seem to view CSR differently, there are a lot of common interests from person to person—whether it's donating to a cause, supporting local fire or police departments, or engaging in the education or growth of children within a community's school district.

Companies need to set core values and make sure all know and understand them. I believe such positive messaging and behavior inspires the same in others.

### **W+D: Makes sense. Now, why does VEKA value its social responsibility values and practices?**

**JP:** We are a family-owned business with multi-generational owners, customers and employ-



CSR initiatives not only have an impact on local communities but have a unifying effect for staff members as well. (Image courtesy VEKA Inc.)



ees. It all starts with our shareholder family: they believe that success is defined in more ways than just sales and profits. We tend to operate in smaller communities, which gives us an opportunity to make a real difference.

**W+D: And what is the impact on employees, customers, the market at large?**

**JP:** The answer is spelled out in our mission statement: We Care, We Act, We Grow—and *everybody* is We. More than a brilliant strategy, a company needs people who care. If we care and act on it, good things happen for all stakeholders: team members develop personally and professionally, and we grow together with our customers.

**SD:** The impact for an employee can be great. But it takes managers at all levels to engage in CSR one-on-one or in a group while inspiring peers to do the same. People want to work for great leaders and companies. Customers want to partner with other companies that lead in all facets of their activities and communication. They want to work with partners that are best in class. Communities support companies that give back. The result is a complete 360-degree positive perception at a high level and employees who are proud to say, 'I work for that company' or customers that say, 'I do business with that company.'

**W+D: That is powerful. So, how exactly is VEKA addressing CSR for its employees, customers and community?**

**SD:** We Care, We Act, We Grow is our global mission. We care is three-prong, about our customers, employees and partners. We act with appreciation, with care, with courage and entrepreneurship. We grow, by building long-term partnerships, developing talent and being environmental stewards across all facets of our activity.

Individual VEKA business units are challenged to find the best ways to bring our mission to life. For VEKA North America, We Care, We Act, We Grow is the foundation and driver behind several major initiatives such as our CSR program and our serving leadership training.

**W+D: On that note, how does VEKA encourage its employees to participate in socially responsible practices?**

**JP:** Our VEKA Days are a great example: every year a team of employees select local charities to support. To say thank you for our team members' support of these charities, VEKA offers

three additional vacation days—over 22,000 hours per year! Charities we have frequently supported are the Yellow Ribbon Girls, local Food Banks and Animal Friends. We are currently fundraising through this program for the over 100 VEKA Ukraine families that have been displaced. The generosity of our team members has been overwhelming in support of all of these charities every year.

**SD:** This year, in addition to VEKA Days, we will be engaging in an effort to bring attention to teen suicide prevention and mental health awareness. We are partnering with individuals and organizations in Europe and North America to accomplish what will be a pretty inspirational event and are giving every employee within both groups an opportunity to contribute in different ways. More details will follow in Q2.

**W+D: I can't wait to hear about it! In that sense, how does VEKA gauge what to do to address social responsibility?**

**JP:** We use external and internal KPIs to gauge our activities. To give you a few examples: we are engaged with FGIA on product life-cycle analysis studies. For background, since early on, VEKA has taken an industry leadership role in recycling. VEKA Europe has three post-consumer window recycling plants in Germany, France and England. In North America, we operate as a net user of recyclables, processing start-up scrap and customer cutoffs as substrate for our Outdoor Living Products division.

In our plants, we have made tremendous strides in reducing our energy consumption, reducing our carbon footprint. We offer a benefit package for team members that exceeds industry standards and provides for a secure retirement. We monitor our retention rates, which are over two times longer than the average for U.S. manufacturers. We conduct team member surveys, but there are other great ways to track employee satisfaction: the level of employee referrals is very telling. More than half of our new hires are based on recommendations by family and friends employed at VEKA.

**SD:** From basic awareness to full out charitable events or activities, what goes on in my own community has been a great asset in being able to offer opportunities for VEKA to also get engaged. I encourage everyone to do the same if they work for a company that has the wherewithal to give back. ■



For more on VEKA Inc. and its practices, visit [vekainc.com](http://vekainc.com).



## THE FUTURE OF

# Hardware

AUTOMATED HARDWARE IS PART OF A LARGER TREND TOWARD WHOLE-HOME AUTOMATION **BY LAURIE COWIN**

**t**he global door and window automation market is valued at \$14 billion in 2022 and is forecast to reach \$20 billion by 2032, according to research company Fact.MR. Plus, the demand for window and door automation services, which grew at a positive 4 percent compound annual growth rate from 2017-2021, is now growing at 5 percent CAGR during 2022-2032. Hardware suppliers to the window and door market can expect a busy, innovative decade to come.

This trend toward automated windows and doors is part of a larger trend toward whole-home automation or the “smart home,” which is a rapidly expanding market that’s already relatively mature in certain areas and up-and-coming in others. “Southern California and Arizona have

been heavily involved in automating doors for 20 years while other markets are only now embracing the technology,” says Patrick Gruetzmacher, president and CEO of Summit Automation, which sells its automation systems globally but is heavily concentrated in North America.

Widespread Wi-Fi connectivity is one of the driving forces behind tech-enabled hardware. “Because of the accessibility and ease of use, having building products that support Wi-Fi provides easy, convenient function and capability that no one had in the past,” explains Ali Atash, electronics product marketing, Kwikset.

### Design considerations

Gruetzmacher notes several product types that are especially effective to add motorized function to.

- Multislide doors, which bring the outdoors inside and vice versa. He especially notes if it’s nice for only a couple of hours a day that the ease of motorized function “prevents a door from becoming a window.”
- Windows, which can develop a room solution when one button can handle all





Photo courtesy of Kolbe Windows & Doors



Photo courtesy Ralph C. Frey, AIA Architects | © Juan Vidal Photography

re

windows in a room, or pass-through bar windows.

- Pivot doors. “A pivot door without a motor can be dangerous, especially if there is no backstop to prevent a door to become a large sail,” he says. This is an area ripe with opportunity to couple automation with a hidden closer for smooth operation.

“As doors are getting bigger and bigger, regardless of how easy it may or may not be to manually open your doors, the key factor is that it needs to be an elegant, convenient and easy-to-use system that will work flawlessly,” says Gruetzmacher.

Smart locks are another relatively simple, in-demand area for tech-enabled hardware. Whereas the market once was relegated to punching a code into a keypad, today’s smart locks can be operated with fingerprint technology and through mobile apps.

### Power options

Hardware can be powered in a number of ways, including battery power and hardwired into the home’s existing system.

“Most systems on the market today are

battery-operated,” says Tom Kaiser, president and CEO, HOPPE North America Inc. “The benefit is simplicity. It’s fairly easy to install a few AAA batteries into a component and have it operate. The negative is batteries can only do so much.” For example, although batteries can fire a deadbolt, they generally cannot generate enough power to operate automated devices that move windows and doors.

Wired systems, on the other hand, produce enough energy for more advanced function. Atash explains, however, that wired solutions require a new-home build, pre-wiring of the door itself and electric that is accessible to the door. Those considerations make wired solutions harder to adopt, he says, though growth is happening slowly. He predicts that growth to continue as more people use these doors and door manufacturers look at such solutions as an added-value opportunity.

When applicable, motors also must be strong enough to handle the weight of doors and windows, which are increasingly growing in size and weight. “As manufacturing techniques have changed to allow for larger and larger panels of



Featuring a 10-button keypad with one-touch locking and 250 user codes, Kwikset's Home Connect 620 Z-Wave connected smart lock is designed to integrate with a variety of smart home systems.



Summit Automation's control option remote fob kits are among its touchless device options.

glass, our motors must handle the weight,” explains Gruetzmacher, who says a dedicated staff of engineers supports constantly evolving design and weight requirements.

“Conversely,” he continues, “our customers have also asked us for more hidden, quieter and stronger motors in smaller packages, which we have developed and continue to develop motors for all weight classes and applications. While our core technology hasn’t changed, our customers’ applications of that technology changes daily.”

### Safety

The COVID-19 pandemic also brought more awareness to homeowners about the benefits of automated hardware—most notably, its touchless nature.

“COVID has brought a sense of awareness to our customers to go touchless,” says Gruetzmacher, who goes on to describe a new voice command module, as well as systems that can be controlled via phone, voice proximity, key fob or motion, as being among its touchless device options.

Atash says “touchless will be something of the future” and noted it’s already happening through app functionality and one-touch solutions, such as fingerprint-enabled locks. The company is also exploring adding Microban as a feature. Both tactics achieve goals of protecting the consumer and making it more convenient to get in a locked door, he says.

### The Future

“IoT [Internet of Things] is the new approach to whole-home automation,” says Kaiser. “That’s critical for the window, door and skylight market and will dictate what happens going forward.”

Kaiser attended the Consumer Electronics Show in 2019 and again this past year, and says the industry should keep an eye on Matter, a smart home standard in which major companies such as Apple, Microsoft, Amazon, Google, Samsung, LG and others have agreed to have a uniform system license- and royalty-free.

What this means for the industry, says Kaiser, is that window companies won’t need to choose between Bluetooth, Zigbee, Z-Wave or other connectivity options; there will be one uniform system that’s able to communicate with other smart

### ONLINE EXCLUSIVE:

VISIT [WINDOWANDDOOR.COM](http://WINDOWANDDOOR.COM) FOR VIDEOS OF AUTOMATED SYSTEMS IN ACTION.

## **Perspective: Kolbe Windows & Doors**

AUTOMATED HARDWARE DEMAND  
WILL ONLY GROW **BY NICK PESL**

Full-home automation, ease of use and security are the main factors driving the desire for more automated hardware options.

Kolbe currently offers automation on our TerraSpan Lift & Slide Door and Multi-Slide Doors. For large, heavy door panels, a touch pad operating system is available with features such as adjustable opening/closing speeds. Also included are several safety features that provide immediate feedback to the user for troubleshooting and service recommendations. Recent innovations even allow the automated systems to be operated via a mobile phone app or via a wave sensor, in

which the automated door system is activated by waving your hand in front of the sensor.

The most popular automated hardware options among our customers are automation of large sliding door systems, electronic multi-point locking systems for entrance doors, and automated casement and awning windows. The multi-point locking systems are factory-installed and connect to various control integration devices, such as biometric, keypad or touch screen technology. In addition, the doors can automatically lock when closed and after a three-second delay.

Electronic operators are a convenient solution for casements and awnings, and can help provide ventilation for hard-to-reach applications. With onsite wiring, this system operates on standard 110-volt electricity

and can be integrated with various operating systems (push button, toggle switch, etc.).

We are certainly seeing an increased interest from our customers for automated hardware options. In an age where home automation is becoming the new normal, consumers want to operate their windows and doors with a touch of a button. They don't just want to know whether the door or window is locked; they want to actually operate the units. Whether the determining factors are technology-savvy consumers, ease of use, aging-in-place or simply just a wow factor, automated hardware is something we are going to see for years to come.

*Nick Pesl is displays and product information manager at Kolbe Windows & Doors.*

components in a home. The lock on a door could communicate with a light, which can communicate with the garage door, thereby creating a mesh within the home, explains Kaiser.

"I think the window and door market will see how the supply chain reacts to this and what shows up," says Kaiser. He predicts it'll move at a "fast and furious" pace because Matter eventually means everyone will have to change to create a system that works with it. Kaiser references a wired system HOPPE currently has that he describes as "sophisticated" and that requires an integrator, which is a method to control it. He anticipates redoing the system at some point to speak Matter. Although it will be a labor-intensive process, the system's ability to speak Matter means it will no longer require an integrator.

Atash likens Matter to Rosetta-Stone, whereby it's a language that allows for communication to happen on different platforms. Hubs such as Google Assistant, HomePod, Amazon Echo and more will eventually be Matter-supported products. "We're going to see an onslaught of Matter-supported products over the next two years," he says. Rather than everyone adopting Matter immediately, though, he anticipates "futureproofing" Matter, then ensuring products are

compatible with that language.

Kwikset, he says, is also exploring Matter for its products, and Atash is excited about its possibilities, such as the ability to create routines. For example, if a smart lock opens the door, it could also trigger a sequence that turns on the oven, initiates lights, adjusts the thermostat or other functions the homeowner dictates. "It's going to automate things and totally change the way people look at their home going forward," he says.

Atash notes technology becomes more sophisticated each year and is encouraged to see more door manufacturers getting involved. "It's a great way to see that technology get built into the door pre-fab and once that gets more sophisticated, we'll see more capability at the front door," he predicts. "It won't stop at the front door, either. It may get into the garage door, side doors and even internal doors in some cases."

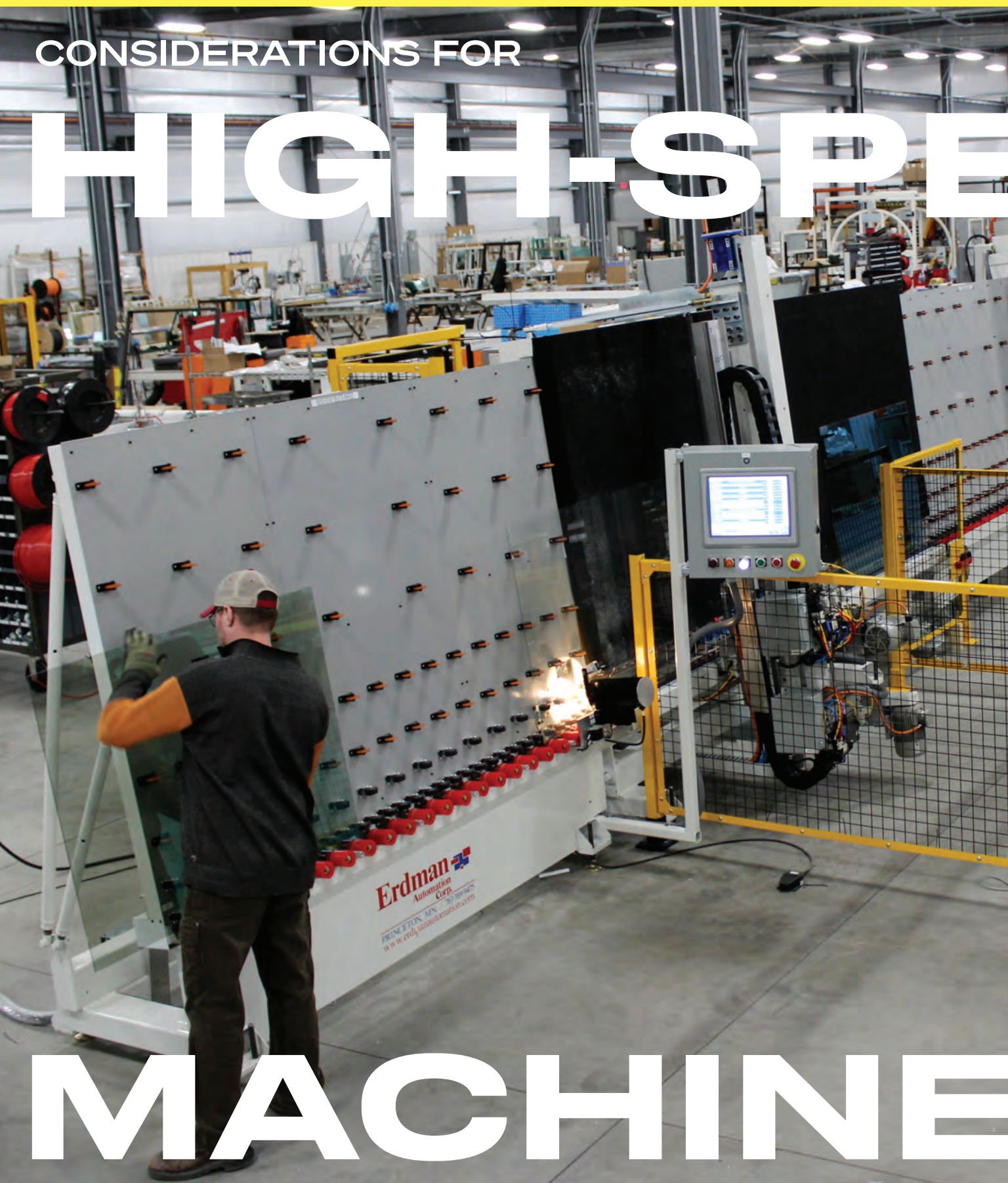
Of the hardware industry, Kaiser predicts "it will look different in two years than it does right now. The market won't wait."

"Automating all doors and windows in a home fully integrated into home automation systems is the future, if not already present," summarizes Gruetzmacher. ■



CONSIDERATIONS FOR

# HIGH-SPEED



# MACHINE





The Erdman High Speed Parallel Process Dura Spacer IG Line is a vertical line that requires three to four operators, rather than the seven to nine operators a traditional line may require. Photo courtesy of Erdman Automation

HIGH-SPEED MACHINERY CAN ALLOW PRODUCT TO MOVE THROUGH A FACILITY IN AN EXPEDITED MANNER, BUT COMPANIES NEED TO CONSIDER MORE THAN SPEED BEFORE INVESTING IN THIS EQUIPMENT **BY LAURIE COWIN**



**ONLINE**

VISIT [WINDOWANDDOOR.COM](http://WINDOWANDDOOR.COM) FOR VIDEOS OF HIGH-SPEED MACHINERY IN ACTION.

**A**s window and door manufacturers seek to increase production, some are looking at high-speed machinery as a potential solution. Although high-speed machinery doesn't have an official definition, Morgan Donohue, vice president of sales and marketing, Erdman Automation, says he defines it as machinery that is faster than traditional machinery.

When Erdman developed its first high-speed line, he explains, the company described it as high-speed because it was a line that used the same number of people in a similar footprint but could produce a unit in about half the time. A traditional line could run about 35 seconds, whereas the high-speed line is between 17 and 20 seconds, explains Donohue.

"High-speed automation can also be about efficiency, or the ability to recover quickly," says Tim McGlinchy, executive vice president of engineering and R&D, GED Integrated Solutions. "How do you recover from chaos? For

example, we have software features that allow a single component to be re-made, or the entire window." That functionality, he explains, saves time, which is of particular importance when an entire order is waiting for shipment based on the completion of one piece.

The idea of running a unit through machinery in half the time is appealing, but speed is only part of a complex equation companies need to consider.

#### **When to consider high-speed equipment**

Donohue says high-speed might mean different things for different manufacturing categories. But it all comes down to if it makes sense to have high-speed for a particular customer.

For example, a machine that has a one-minute process will produce 420 units in a normal shift (assuming one normal shift equals 420 minutes). "If someone needs 420 units or less in a shift, then that process would be sufficient," says Donohue.





The Parallel Process High Speed IG line runs two glass lites parallel to each other by shuttling the topping lite to a back lane. This, and other features, lead to an increased speed compared to other lines. Photo courtesy of Erdman Automation

If, however, a company needs more, it might consider investing in a high-speed unit that could produce one every 30 seconds for 840 units in a shift using the same amount of people. “But if you don’t need 800, why would you buy a line that’s capable of that?” questions Donohue. “It’s a system of understanding what the throughput is, what the capabilities are for a space and people and if it makes sense.

“There’s certainly an attractiveness to the ability to do more in the same footprint with the same number of people, even if you don’t need all of the throughput,” he continues. “Maybe you only need 30 or 50 percent more, but rather than put on another shift or

buy another complete line, you decide to invest in high-speed.” Again, it’s up to an individual company to determine whether the investment is worth it for what benefits they hope to achieve.

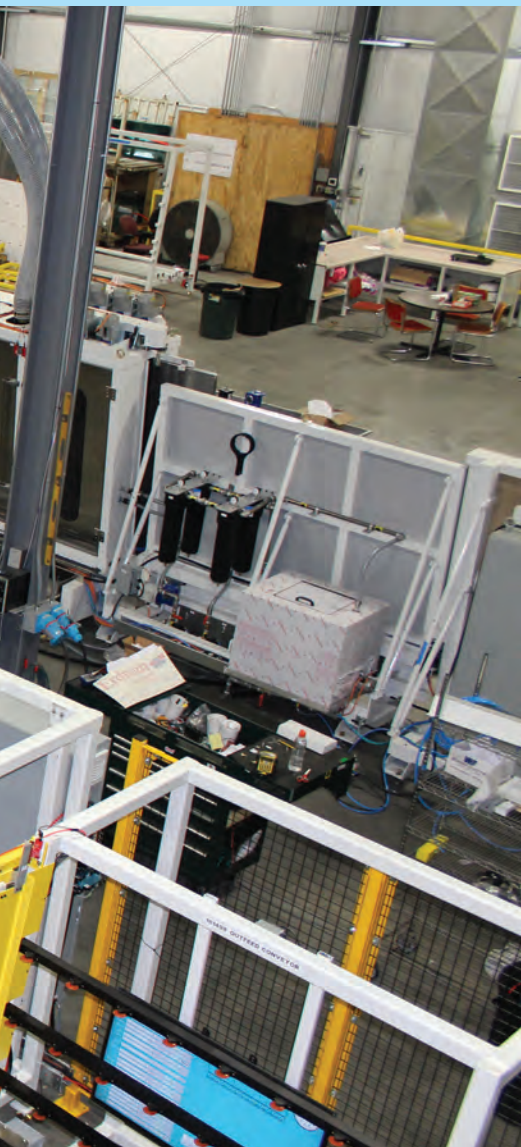
McGlinchy says many of its customers target making one window per minute, though anywhere from 45 to 90 seconds seems like the “sweet spot.” “That means a frame, two sashes for a double-hung, then assembly with hardware and balancers,” he says.

Yet another consideration is seasonality, says McGlinchy. “Right now, everyone is busy all the time, but that wasn’t always the case,” he says. “Do you want a plan for your peak capacity, or for average capacity throughout the

year?” Many window and door manufacturers prefer to go into overtime mode during peak capacity rather than over-automate, he explains.

However, sometimes that extra capacity and ability to accelerate is of value to a manufacturer. “If they run fast, then they don’t need two shifts,” he says, which means fewer people to train and more time to maintain equipment.

Priorities shift over time, though. “What’s important today wasn’t important five years ago,” says McGlinchy. “The difference between then and today is supply chains have caused a lot of reactionary production. When companies have the materials, they want to make things. Plus, demand is higher than it



## COMPANIES MUST UNDERSTAND THEIR UPSTREAM AND DOWNSTREAM CAPABILITIES TO DETERMINE IF THEY CAN FULLY UTILIZE A PIECE OF HIGH-SPEED MACHINERY.

was two years ago.”

Companies that invest in automated machinery, whether or not it's high-speed, need to consider the payback for the benefits that machinery can bring to the factory, whether it be through speed, labor, efficiency or a combination of all of those. “The rule of thumb for ROI used to be two years or less,” McGlinchy says, but notes that some customers now are okay with longer paybacks than that. “People didn't want to invest if they couldn't get the quick payback; they wanted instant success. But it's really the long-term success that's important.”

The ability to get and retain good-quality labor is another factor to

consider with high-speed, says Larry Johnson, VP of sales, Quanex Building Products. Johnson references the need for less labor as a benefit of high-speed. He typically sees a reduction of about five to six workers per high-speed line to get the same type of output as a traditional line. He says a high-speed line typically requires two workers: one to load the glass and one to unload the glass. A third worker may be required for muntins. Semi-automatic horizontal lines, on the other hand, may require seven to nine people, he says.

Johnson also says the transition to a high-speed line takes a mental shift. “Automated equipment eats so much of the raw material so much faster that

the process sometimes can be different. Typically, a high-speed automated line everything flows through one way versus when it's manual, it flows to different stations. It takes a little bit different of a mindset.”

### Problems and solutions

As with any new investment, companies must be aware of several potential pitfalls when investing in high-speed machinery.

#### 1) Problem: Product traffic jams

If the process isn't managed correctly, factories might find themselves with product buildup at one point or another in the manufacturing process. Donohue



**“AS MORE MACHINE SUPPLIERS SEE OUR CUSTOMERS’ NEEDS, INVENTION AND INNOVATION WILL HAPPEN IN MANY MORE AREAS OF THE PLANT.”**



frequently sees companies eliminate one bottleneck but create another one. “There will always be inadequacies between different processes that you can solve through labor, more automation or larger footprints,” he says.

**Solution:** Donohue says companies must understand their upstream and downstream capabilities to determine if they can fully utilize a piece of high-speed machinery. Each company needs to look at its individual processes to determine capabilities at each step. “It’s a decision point where if you need to go faster, how do you want to go faster,” he says. This can be through high-speed machinery, but it can also be through adding another line, which of course requires a larger footprint and more labor to operate the machinery.

“Ideally, the vinyl and IG lines will run at the same speed and put them together out the door,” says John Moore, vice president, marketing, GED Integrated Solutions. “It’s balancing

that process.” Software can also help organize the proper flow of materials and will help have the proper components prepared and joining at the appropriate time.

#### **2) Problem: Maintenance**

There’s always a learning curve with new machinery, whether it’s high-speed or not, says Donohue. “The higher the expectation, the faster the difference, the more of a learning curve there tends to be,” he says. The faster machinery requires not only proficiency from the operators, but also from the maintenance perspective.

**Solution:** Looking at it from a production standpoint, maintenance likely drops, says Donohue. The lines Erdman builds for high-speed are built to have a high-duty cycle and run quickly. “You’re producing more before you have to maintain it, but there’s more of it, so therefore there’s more maintenance required in terms of volume because

you’re producing more volume,” he explains. Donohue has conversations with customers about what they could be spending on maintenance, how frequently and what skill sets maintenance staff should have.

McGlinchy also notes operator positions typically have a high turnover, so using a simple, intuitive human machine interface can help expedite operator training, especially if a factory employs multiple machines from the same manufacturer, many of which use similar layouts. “If it all looks the same and feels the same, it’s more comfortable,” he explains.

Donohue cautions about being aware of when a company might reach the point of diminishing returns. This could happen, for example, if there is value-added work to the manufacturing process such as adding grids, which would require more people. There are also scenarios in which more people are required to



The Intercept 2.5 for Glass Window Spacers can produce spacers at up to 85 feet per minute and 8 spacers in one minute without muntins. Photo courtesy of GED Integrated Solutions

load and unload the glass. All of these can rapidly add up necessary labor. In such cases, Donohue says some companies may be better off going with two lines rather than heavily staffing one high-speed line.

Johnson recommends companies considering high-speed line invest time in researching and picking the machinery supplier that best meets their needs in the price range they want. “Be careful and do your homework about who you’re partnering with,” he recommends. “Make sure they have a good service record. Go visit plants that have the machinery if you can. It’s a huge investment, and a good investment, but you need to do your homework on it.”

### In praise of high speed

Quanex installed 11 high-speed vinyl lines in its Kent, Washington, facility and is looking at installing more in the “near future,” says Johnson. The com-

pany also has several extrusion lines on the IG side of business that extrude for foam spacer and run products for the Dura line. “Typically, one person runs two lines on the Dura side and two people run one line on the Super Spacer side,” explains Johnson.

The 11 lines in the Kent facility eliminated 26 other lines, some of which were older. “We were able to get the same output on 11 lines that we got on the 26 before,” says Johnson. He also says the old lines required more experienced workers, but the new, more automated lines are user-friendly for newer employees. “The kids walking in the door seem to embrace the lines a lot faster than the older people because it’s more like a video game,” he says. “You walk up and hit the numbers and the machine does its job, whereas the older lines had a lot of dials and gauges to operate. That’s what’s really nice about it; it doesn’t take weeks and months of training like the older lines do.”

High-speed lines in Quanex’s screens facilities not only have reduced labor, but have improved worker health and safety by eliminating repetitive motions, which helps prevent afflictions like carpal tunnel syndrome. “It’s more precise, less labor-intensive and less stress on a person’s body rolling screen frame. The quality is much higher,” says Johnson.

### Beyond high-speed

Automation isn’t just about capacity. McGlinchy references an SQDC (safety, quality, delivery, cost) approach, with safety sitting at the top of that list. Automation also makes things more repeatable, thereby increasing quality and operator safety. More efficiency generally means lower costs. “Material, labor, less defects, less remakes ... that’s the whole goal,” he says.

Speed can be a reason to move to automation, but McGlinchy says automation is also a way to organize production volume to get out the door, optimize materials and sort processes, which could include batching materials like glass or vinyl. “At the end of the day, they’re trying to produce for the lowest dollar,” he explains. “Today it’s about materials savings. We never had this complication of getting materials, so manufacturers really need to utilize materials to the best degree because they may not be able to get enough material.

“Automation,” McGlinchy explains, “has to solve the business issues. You don’t just automate for the sake of automation.”

Donohue expects more improvements to come to fruition in the coming years. “Necessity is the mother of invention,” he quotes. In other words, “You invent things because you need them. Sometimes people don’t know that they have a need until you invent it. As more machine suppliers see our customers’ needs, invention and innovation will happen in many more areas of the plant simply because of necessity.” ■



# TO MEET ENERGY GOALS





TRANSPARENT  
SOLAR AND VIGS ARE  
AMONG THE WINDOW  
TECHNOLOGIES  
POISED TO TAKE  
THE FENESTRATION  
INDUSTRY TO THE NEXT  
LEVEL OF ENERGY  
EFFICIENCY

**BY LAURIE COWIN**

**A**ccording to this year's Industry Pulse report, published in the January/February issue, companies are taking more note of and plan to invest in technologies that will enhance their products' energy efficiency. The industry is rapidly developing and testing new technologies that can make windows and doors tighter and more functional elements of a home's envelope.

**Transparent solar**

Aesthetics have long been a limitation to traditional solar's application, largely relegating the panels to rooftops. Ubiquitous Energy is seeking to disrupt the solar market by pioneering a transparent photovoltaic glass coating that captures the sun's invisible rays and converting them to power, thereby allowing all visible light to still pass through a window.

Ubiquitous Energy CEO Susan Stone explains the company developed a low-emissivity coating that can be applied to any window. The company designed its technology to fit into the existing supply chain. For example, a window manufacturer will purchase its IGUs, which will be manufactured to the correct size and with the transparent solar coating already applied. Then, the IGU would ship

to the window manufacturer, who would frame the window before installing it in a home. There are just a couple pigtail wires coming off the corner of the IGUs that harvest the electricity, she says.

Stone notes how the company sees it as "critical" to ensure the window is installed the same way as any other window and doesn't disrupt the trades. "Everybody gets to do everything the same way they've always done; we're just another piece of the chain," she says.

This technology could enable greater smart window applications, says Stone, since the glass is making the electricity, which is stored in a small battery the homeowner can't see. "Our windows have been our apertures to the world," she says. "There are so many features that should be at our windows. This opens up a

**ANDERSEN INVESTS IN  
UBIQUITOUS ENERGY**

In January, Andersen Corp. announced a strategic investment in Ubiquitous Energy. "Ubiquitous Energy's transparent photovoltaic technology is revolutionary and represents a new horizon for the fenestration industry," says Jay Lund, chairman and CEO, Andersen. "Andersen is excited to support the work of Ubiquitous Energy to bring solar power into homes and commercial buildings through windows and doors, creating new opportunities for energy efficiency, cost savings and smart home integrations that will both delight homeowners and contribute to a healthier planet."

Read more from Window + Door's conversation with Ubiquitous Energy on [windowanddoor.com](http://windowanddoor.com).





Diagram of a typical VIG unit



Diagram of a typical hybrid VIG unit—a standard double glazed IGU with air or gas-filled space combined with VIG.



Diagram of a typical laminated VIG unit—a standard VIG unit bonded with an interlayer to an additional glass lite.

new world of what a window can do for us instead of just letting us look through it and giving basic thermal benefits.”

Veeral Hardev, vice president of strategy, explains that even a few percentage points of power conversion efficiency could enable power for functions like automated venting, closing, opening, security cameras, motion detection, etc. Right now, he cites efficiencies of about 3 to 5 percent. Traditional solar has about 15 to 20 percent efficiency, but Hardev notes they aren’t trying to compete with traditional solar; rather, this technology is complementary.

Transparent solar efficiency will only grow, however. “We have a pretty long pipeline in terms of our R&D where performance will be much higher,” he says, noting some testing has resulted in efficiencies close to 10 percent.

Stone says now is an “exciting, pivotal moment for climate tech overall, but especially for increasing the efficiency of our homes and buildings.” She notes a “real shift in action from talk” in regard to actionably increasing energy efficiency. “There’s been a really dramatic shift in focusing on building with more

efficient materials, making our homes smarter and working for us, and decarbonizing our commercial portfolios.”

### Thermal performance through VIGs

Vacuum insulating glass provides similar or superior thermal performance to conventional double glazing in the thickness of a single glass lite. The gas in the space between two lites of glass is extracted to create a vacuum, rather than filled with air or argon. The thin profile can be installed in new construction, or restoration projects.

VIG comprises two glass lites, typically 0.12 to 0.23 inches thick, that are hermetically sealed around the edges. The air between the two lites is extracted, either through a small pump-out tube or by using a vacuum chamber. The glass lites remain separated by pillars (also called microspacers), which

are made of high-strength material such as metal or ceramic and may be arranged in various patterns across the surface of the glass. The pillars may be glued in place or held in place by the glass.

Once a vacuum is made, the edges (and the pump-out tube, if applicable) are sealed to create a permanent vacuum. Some VIG units may include a getter, a component in the VIG that continually removes residual outgas molecules to help maintain vacuum over time.

To reduce radiative heat exchange, a low-e coating can be used on one of the internal surfaces of the VIG, typically surface 2.

Matching flatness on both lites of glass is critical to successful VIG fabrication to keep the array of pillars in place. Keeping the pillars in place prevents the lites from touching to avoid creating a thermal conduction pathway that could reduce the performance of the VIG.

VIG can be installed as a monolithic lite or as part of an IGU. Other applications include hybrid VIG and laminated VIG. Double or triple insulated units using VIG to replace individual glass lites is also possible for future development. ■



Download the National Glass Association’s Glass Technical Paper about vacuum insulating glazing at [glass.org](http://glass.org) or by scanning the QR code.



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# Products

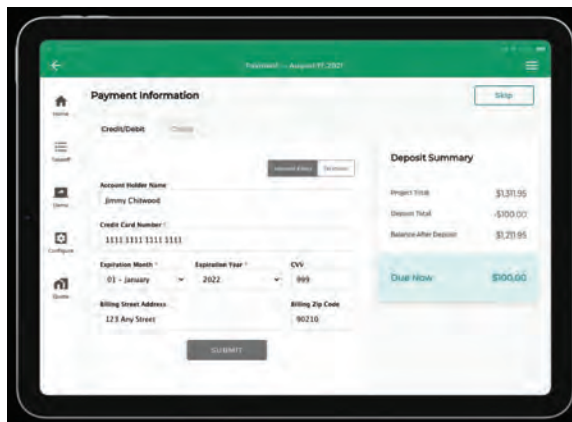


FIND MORE PRODUCTS ONLINE // See all the latest products and trends online at [WindowandDoor.com](http://WindowandDoor.com)



01

02



03

## 01 / Magid

Magid unveiled its new line of personal protective equipment specially engineered to serve the glass industry. Offerings include Magid's M-GARD cut-resistant line with AeroDex technology. Garments with AeroDex technology integrate new fibers and yarn wrapping techniques for lighter-weight PPE that won't trap heat. These cool, comfortable tops, chaps, aprons and neck guards are designed to protect especially vulnerable areas like neck, underarms, upper inside legs and wrists.

800/867-1083 | [MAGIDGLOVE.COM](http://MAGIDGLOVE.COM)

## 02 / Roto North America

Roto North America introduced its ELA special opening restrictor as a safety feature installed on large turn-only aluminum windows. The device locks in the end position and is controlled by the handle. Using Roto TiltFirst technology, the user can only open the sash as far as the defined end stop position. Available in screw-in and clampable versions, it can limit the opening angle to 3 ½ inches and can be installed in windows that weigh up to 400 pounds.

800/243-0893 | [ROTONORTHAMERICA.COM](http://ROTONORTHAMERICA.COM)

## 03 / Paradigm Payments

Paradigm Payments payment processing service allows contractors, distributors, dealers and manufacturers to securely accept credit or debit cards and process checks in the field or in-store. It is available through a partnership with Paya, which can provide integrated payments and commerce solutions including billing services, payment acceptance, data management and automated back office reconciliation.

608/664-9292 | [MYPARADIGM.COM](http://MYPARADIGM.COM)



# Product/Solution



## 8/0 Shaker Door // Plastpro

### Challenge

Customers are asking for timeless, simple designs that are high-performing and have weatherproofing attributes and durability.

### Solution

Shaker doors have become a popular choice in recent years. Plastpro's Craftsman Series Shaker Doors, now

available in an 8/0 height, offer the weatherproof benefits of its HydroShield Technology in this design option, which Plastpro says offers performance superior to that of wood Shaker doors.

These new doors blend the company's advanced, fiberglass exterior with traditional, Shaker-style elements. Based on the clean lines and simple designs seen in 19th-century Shaker furniture and architecture, the Shaker models provide an updated take on a timeless classic design and have become even more widely available with the addition of this new size.

The 8/0 Shaker Doors feature clean lines and the selection of a square framed one- or two-panel design with a minimal,

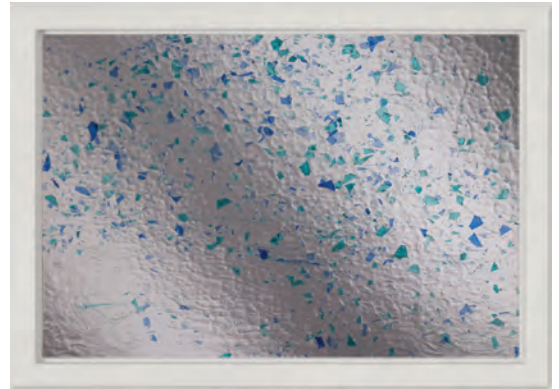
smooth skin. This pre-pigmented, white exterior is designed to give a modern look and feel to any home and can be painted.

The doors are part of the Craftsman Series, which pulls design inspiration from 19th- and 20th-century architecture, featuring flat panels and traditional styles, as well as offering direct glazed options.

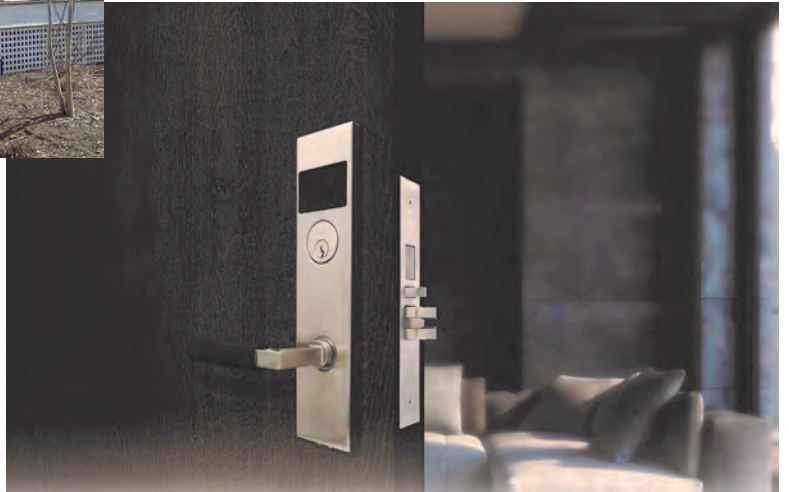




01



02



03

## 01 / Custom Window Systems

CWS's WeatherLite Collection of porch enclosures includes vertical sliders, horizontal rollers, sliding doors, hinged doors and garage sliders. Products include acrylic pane multi-vent sliding door panels, glass pane horizontal sliders and glass pane sliding doors, and vinyl pane four-track vertical sliding panels and horizontal sliding panels, among others.

800/327-3086 | [CWS.CC](http://CWS.CC)

## 02 / ODL Inc.

ODL's fused doorglass, Celebration, is handcrafted by fusing clear glass with pieces of colored glass. Celebration is available for small residential doorlight applications and in two color palettes: Earth and Ocean. Earth features shades of green and brown while Ocean blends blue and teal. Each piece is handcrafted; no two pieces are the same.

800/253-3900 | [ODL.COM](http://ODL.COM)

## 03 / Inox

The ISM700 series smart entry lock is a commercially rated smart lock available in any trim, lever and finish. Suitable for multifamily applications, the lock is available in an entrance function and can be incorporated with a passage mode and do-not-disturb privacy mode that can be activated at the lock or through a mobile app. The app also allows for multi-level user roles and permissions, scheduled access, remote locking and more.

916/388-1888 | [INOXPRODUCTS.COM](http://INOXPRODUCTS.COM)





04



05



06

#### 04 / Eko-Okna

The BluEvolution 82 uPVC system uses technology designed to boost thermal properties. It includes three gaskets and multi-point hardware, and is available in a variety of colors. Glazing packages are available in widths from 23 to 53 mm.

**+48 664 051 326 | [EKOOKNA.US](http://EKOOKNA.US)**

#### 05 / Waudena Entrance Systems

Waudena's grand entrance includes an outswing double door unit with a transom with vinyl-wrapped jambs stained to match the door panel. The entrance also features an ADA-compliant sill and Trilennium multi-point hardware.

**800/236-1528 | [WAUDENA.COM](http://WAUDENA.COM)**

#### 06 / Simpson Door Co.

Simpson expanded its Redi-Prime collection of interior doors to include clipped corner doors, in which the top corner of a door ships pre-cut at an angle for a custom fit. The doors are constructed of MDF veneers on classic stile and rail surfaces and are factory double-primed and sanded.

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# People ON THE MOVE



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**Davis**

**Jeld-Wen's Bonnie Davis** received the Women in Manufacturing STEP Ahead Award from Women in Manufacturing, which honors women

who have demonstrated excellence and leadership in their careers. Davis, vice president of Jeld-Wen Excellence Model transformation, oversees leadership teams that develop and implement lean strategies and has developed and deployed A3 problem solving to a global audience of 25,000 associates. She was honored not only for her contributions to Jeld-Wen, but also the Charlotte community, and for developing future generations of talent in manufacturing.

**The Window and Door Manufacturers Association** appointed *Cesar Lujan* director of codes, standards and technical activities. Lujan comes to WDMA from the National Association of Home Builders, where he served as program manager for codes and standards for the past four years and worked closely with Craig Drumheller, WDMA's new vice president of technical activities. He has extensive experience with ICC, NFPA, ASTM and ANSI committees.

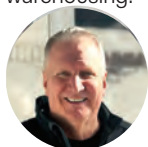
*Jeff Inks*, senior vice president for advocacy at WDMA, retired Feb. 15 after nearly 13 years of service. Inks joined WDMA in 2009 as vice president of code and regulatory affairs. Inks' contributions to the association helped build WDMA's advocacy capabilities, promoting and protecting WDMA's interests in the code arena and advocating on behalf of WDMA before numerous federal and state regulatory agencies.



**Born**

**Jeff Born** has been named director of procurement and supply chain solutions overseeing North American activities for **Tubelite Inc., Alumatic**

**Ltd. and Linetec.** Born draws from more than 20 years of multi-functional, multi-national experience leading supply chain planning, scheduling, capacity management, logistics, distribution, procurement and warehousing.



**Dillon**

**Veka Inc.** onboarded two new technical account managers, *Matt Dillon* and *Jeff Scanlon*, to support its North American customer base. Dillon started at Veka in 2021 in the quality assurance department. He brings 35 years of experience in the areas of research, technical



**Scanlon**

analysis, strategy development, program and project management, engineering consulting and cost estimating.

Scanlon, who has a strong background in equipment installation and operation and troubleshooting, was a former regional sales manager with Axalta Coatings, where he covered portions of the Midwest and Northeast.



**Podbelski**

**Halio** added *Lou Podbelski*, AIA, to its leadership team as senior vice president, business development. Podbelski is responsible for Halio's sales and marketing, bringing with him experience and relationships in dynamic

glass, commercial glazing and curtain wall, architecture, and building and products services industries.



**Hébert**

**Mathieu Hébert**, owner of Lolex Sales Agency, is **Lamatek's** newest sales rep. Hébert specializes in fenestration sales for the French Canadian market

and will lend bilingual sales support to window and door manufacturers and more in the Eastern provinces of Québec, New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland.



**Seals**

Florida Structural Technical Advisory Committee, a 12-person committee that helps shape the Florida Building Code, appointed *Jason Seals*, **Fenestration**

**and Glazing Industry Alliance** certification services manager, as a voting member.



**Webb**

*Marg Webb* retired from the **Fenestration and Glazing Industry Alliance** after 22 years in the glass industry. Webb began her time at the

Insulating Glass Manufacturers Association of Canada in 2000, prior to the organization's transition into the Insulating Glass Manufacturers Alliance, where Webb led as executive director for nearly two decades. At the beginning of the year, she resigned her post as FGIA's glass products and Canadian industry affairs director. *Amy Roberts*, FGIA director of Canadian and technical glass operations, will succeed Webb.



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# Market Data

OUTSIDE  
VIEW



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## Single-family Peaked in Q2 2021 // Expansion Has Cooled; Growth Remains Solid

The rate of year-over-year single-family growth in all small and large metro urban, suburban and rural regional submarkets peaked in the second quarter of 2021, according to the National Association of Home Builders Home Building Geography Index. While that expansion has cooled somewhat, growth rates in all markets remained in double-digits in the final quarter of 2021. In contrast, multifamily growth in all of these markets has been surging since the second quarter as some housing demand returned back to higher density markets.

### Canadian Residential Construction Output

4.8%

projected growth in Canada's residential construction output for 2022, following an expansion of 15.4 percent in 2021. *Source: GlobalData*

### Single-family Homes Under Construction

785k

single-family homes are under construction, a 26.8 percent year-over-year gain. *Source: U.S. Department of Housing and Urban Development and the U.S. Census Bureau*

### Manufacturing Job Openings

152k

single-family units are authorized but haven't started construction because of supply chain effects. *Source: U.S. Department of Housing and Urban Development and the U.S. Census Bureau*

February 2022 window and door stock decrease **-10.8%**

February 2022 S&P 500 decrease **-3.8%**

12-month window and door return **23.3%**

12-month S&P 500 return **12.2%**

Building products stocks and the broader market sharply pulled back in February as Russian aggression in the Ukraine were coupled with muted annual same store sale growth guidance for 2022 from the Home Depot (the largest constituent in the index). Continued supply chain stress and inflation reports have left investors nervous that the Federal Reserve has little room to operate, especially if aggression in the Ukraine continues. Building products investors, however, continue to expect a strong 2022 outlook driven by double-digit growth in both new construction and repair and remodeling spending. *Source: Lincoln International*



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