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Volume 25, Number 2 | March/April 2017

the TOP 100

MANUFACTURERS
REPORT



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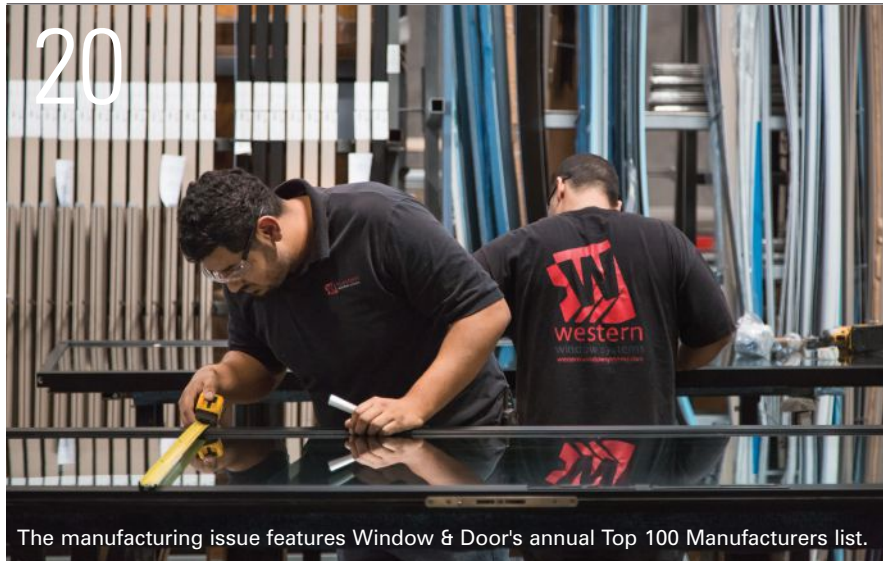


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On the cover: Thanks to one of our Top 100 Manufacturers, Pella Corp., pella.com, for this issue's cover, where employee Kelly Blackman gets hands-on at the Pella, Iowa window plant.

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National Glass Association and Glass Association of North America Appoint Joint Task Force

Task force seeks to work more collaboratively and explore combining the two organizations.

The National Glass Association, glass.org, and the Glass Association of North America, glasswebsite.com, have together appointed a joint task force to optimize service to members of both organizations, and to coordinate advocacy and technical support, along with education and training initiatives for the glass and glazing industry. This includes exploring a combination of the two organizations. The task force is charged with making a joint recommendation to the NGA and GANA boards within 90 days.

Jeld-Wen Goes Public

Jeld-Wen, jeld-wen.com, recently went public at the New York Stock Exchange, trading under the ticker JELD. Window & Door previously reported that the company filed a registration for an IPO last June.

The company raised \$575 million through its IPO in January 2017, pricing 25 million shares at \$23 per share—the high end of the offering range. Jeld-Wen has been backed by Onex since 2011. The company reported revenue of \$3.6 billion for the 12 months ended September 30, 2016.

Koch Industries Completes Acquisition of Guardian

Koch Industries Inc., kochind.com, completed the acquisition of Guardian Industries Corp., guardian.com, following the receipt of all regulatory approvals. Terms of the deal were not disclosed.

Koch initially invested in Guardian in 2012, acquiring a 44.5 percent minority interest in the company at the time.

“Guardian began in 1932 as a small windshield company in Detroit and has since become an established leader, proudly serving a global customer base in multiple industries,” says Ron Vaupel, president and CEO of Guardian. “The combination of Guardian’s expertise and Koch’s existing capabilities and infra-

structure provides a tremendous opportunity for all of us to create more value for our customers and the communities in which we operate.”

B.F. Rich Windows & Doors Closes

B.F. Rich Windows & Doors laid off approximately 130 workers when it went out of business after nearly 60 years.

The Delaware-based window and door manufacturer, a long-time presence on Window & Door’s Top 100 Manufacturers list, had struggled since the housing crisis and economic downturn that started in 2007, according to a statement published in The News Journal of Wilmington.

“Unfortunately, despite a long legacy of achievements, B.F. Rich has experienced financial setbacks dating back to the beginning of the Great Recession in 2007,” the company statement says. “This situation could not be sustained.”

Houzz Reports 2016 Strongest in Last 10 Years for Renovation

Houzz, houzz.com, released its 2017 State of the Industry report, providing an overview of 2016 performance and an outlook on 2017 for residential renovation and design businesses based on data reported by more than 4,800 professionals in the Houzz community. The report concluded that a majority of firms anticipate revenue and profit growth in 2017, following a very strong year in 2016.

“Houzz research finds that the steady growth of residential remodeling spending is driven by homeowners tackling multiple projects at a time, embarking on projects with a large scope, and/or installing high end finishes,” says Nino Sitchinava, principal economist at Houzz. “This trend is likely to continue into 2017.”

Houzz also released the Q4 2016 Houzz Renovation Barometer, which showed continued year-over-year and quarter-over-quarter market improvements across all industry groups.

Global Window and Door Market to Reach \$137 Billion by 2024

According to a report published by Global

Market Insights Inc., gminsights.com, the window and door industry, worth \$82 billion in 2015, will increase to \$137 billion by 2024. Demand for repair and raw materials across residential and commercial sectors will boost the industry, the report concluded, as will eco-friendly and recyclable products such as uPVC in new residential buildings. Spending on construction and renovation is also expected to boost window and door market size over the coming years.

March Marks Celebration of Women in Construction

The National Association of Women in Construction, nawic.org, celebrated Women in Construction Week, March 5-11, 2017, highlighting women as a visible component of the construction industry. NAWIC chapters across the nation celebrated with a variety of activities including community service projects, jobsite tours, membership drives, children’s activities, hands-on workshops, fundraisers and school programs.

WIC Week also provides an occasion for NAWIC’s members to raise awareness of the opportunities available for women in the construction industry and to emphasize the growing role of women in the trades.

More Headlines from WindowandDoor.com

LaCantina Doors Named Best of Houzz 2017

Soft-Lite Windows Expands Measure & Install Division

GPI Acquires Georgia Facility

Earthwise Group Expands in West and Southwest

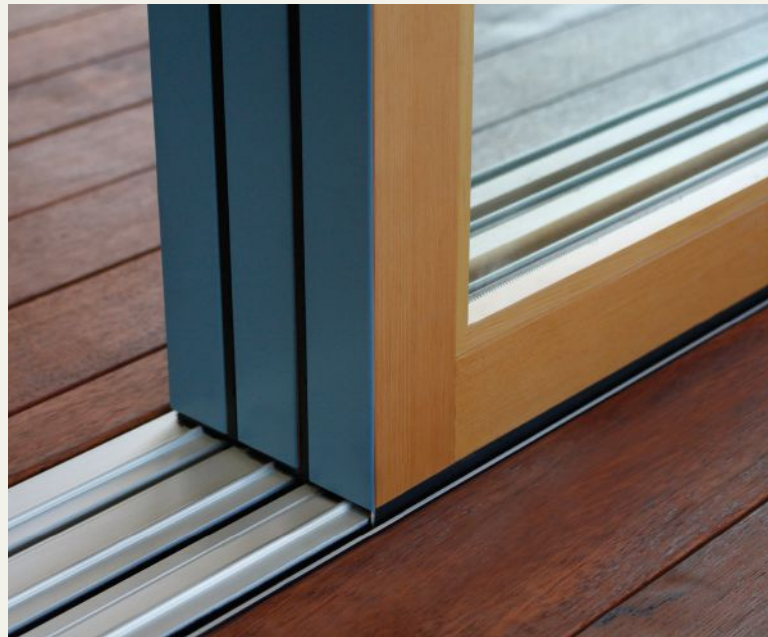
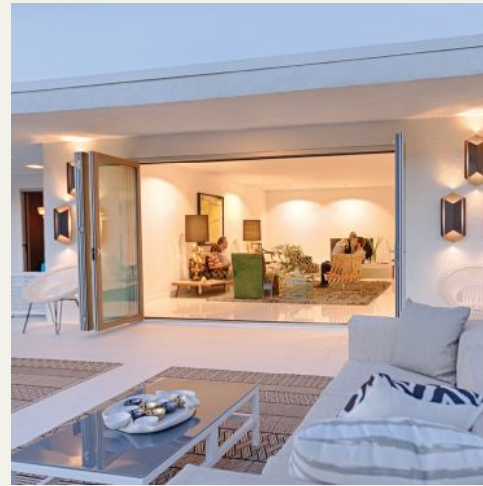
Vytex Windows Opens Cleveland Facility



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Code Arena

By Julie Ruth



The Online Governmental Consensus Vote could change how codes are developed

The Final Action for the International Code Council Group B Code cycle has finally been determined. It took longer than usual for the 2016 ICC Group B Code cycle because of the addition of the Online Governmental Consensus Vote after the conclusion of the Public Comment Hearings, but it did not take as long as it did for the 2015 ICC Group A Code cycle.

The OGCV after the 2015 ICC Group A Public Comment Hearings required reconsideration of some of the votes taken during the PCH due to glitches caused by relying upon electronic voting devices that were not used during the 2016 cycle. The first use of OGCV occurred during the 2014 ICC Group C Code Development cycle, which determined the content of the 2015 IgCC.

The ICC Online Governmental Consensus Voting Process

ICC developed the OGCV process to provide a means by which representatives of the ICC governmental members (code officials) could participate in the development of the codes they are charged with

enforcing, without the jurisdictions who employ them (ICC governmental members) having to incur the expense and inconvenience of attending code development hearings in person.

Initially, use of electronic devices at the hearings, as well as online voting after the hearings, was sought to generate a combined vote. Due to the delays experienced during the 2015 cycle, the final action results for any proposals that received public comments during the 2016 ICC cycle were determined entirely through the use of OGCV.

ICC's objective in implementing the OGCV process was to increase participation in the code development process by the code officials who enforce them and, therefore, the governmental members they represent. If you think of the ICC from a business perspective, its product is the I-codes; its customers are the governmental members who adopt them.

Yes, designers and contractors buy the I-codes also. But, they do so because they are being enforced by the jurisdictions

they build in. So, if the ICC can gain buy-in of the codes by the governmental members who adopt them, they will hopefully continue to adopt, update and enforce these codes going forward.

If the governmental members do this, the designers and builders will not have any choice but to continue to buy the I-codes. The implementation of the OGCV by the ICC can be viewed as a way of gaining more feedback from their customers. It is difficult to predict the success of this objective. Previous participation in the OGCV has been tepid. The actual number of votes cast on each item never exceeded 300.

A New Challenge

A great deal more fanfare was made of the OGCV for the 2016 cycle. Some ICC Chapters set up voting centers where their active members were able to come together, view the videos of the hearings, discuss them and vote in a real-time atmosphere.

The ICC proclaimed they saw a "significant increase in participation" in OGCV in the 2016 cycle, with as many as 162,000 votes cast. However, there were almost 600 items considered, meaning that, if the same number of people voted on each item, less than 300 people actually voted. It seems more likely that a higher number of votes were cast on certain items of greater interest than others. (Note: At the time of publication, the actual vote tally has not been made available, so this cannot be confirmed.)

What is definite is that the addition of OGCV will change how we develop codes. As an industry, we will need to reexamine the manner in which we convey to the code officials the message we need them to understand so that they can make better informed decisions that allow us to provide a product that effectively meets the needs of our customers. This will be a new challenge for us going forward. ☐

Code Arena is brought to you by the American Architectural Manufacturers Association. Julie Ruth may be reached through AAMA at 847/303-5664 or via e-mail at julruth@aol.com.

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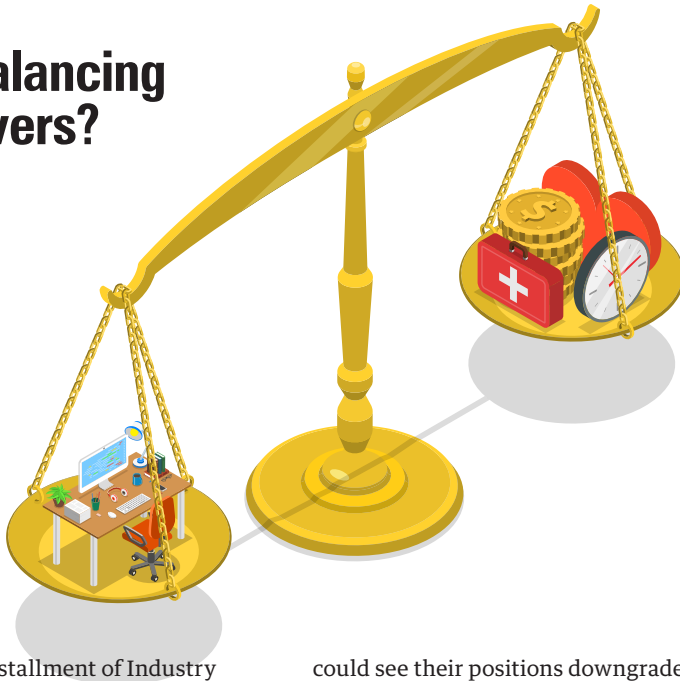
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Industry Watch

By Rich Walker, AAMA President and CEO

A Rebalancing of Powers?



In the last installment of Industry Watch, we looked at the Department of Labor's move to redefine overtime pay. As readers may recall, the new edict proposed last summer set out to essentially double the salary threshold under which employees would have to be paid overtime for hours worked beyond 40 per week from the current annual level of \$23,660 to \$47,476. If it became effective December 1, 2016, it would also have given DOL the authority to unilaterally adjust (i.e. increase) that threshold every three years.

The American Architectural Manufacturers Association, along with other major associations such as the National Association of Home Builders, National Association of Manufacturers, Associated Builders and Contractors, and the National Association of Wholesale Distributors, pointed out that such a dramatic increase would force employers to decide whether to reclassify an estimated 4.2 million executive, administrative and professional employees to nonexempt status or increase their salaries to keep them exempt. Business owners would either have to find millions of dollars to cover these new costs, or existing salaried employees

could see their positions downgraded (if not eliminated) while benefits and wages were cut.

This proposed rule would not boost employees' income as intended, but instead would likely force employers to reduce newly "protected" employees' flexibility as well as benefits, including substantive bonuses, paid vacation, flex time, paid holidays and health insurance. On top of that, NAM noted, rather than yielding positive results, the outcomes could engender more friction between employers and employees, more litigation, and a large economic deadweight loss without a discernible improvement in the compensation, employment and working conditions for workers. In short, it would actually result in fewer hours for workers.

A motion for injunction filed last fall by 21 states, 15 trade associations of the sort mentioned previously, and various U.S. and state chambers of commerce claimed that DOL exceeded its authority by raising the salary threshold too high and providing the automatic updates without input from the businesses that would be affected.

In response to this motion, a federal judge in the Eastern District of Texas

blocked the overtime rule. U.S. District Judge Amos Mazzant agreed with the coalition that the rule is unlawful.

Although temporary, the injunction appears likely to stand on appeal to the Fifth Circuit Court. The entire issue could quickly become moot under the new administration. As NAM noted, the injunction is a step toward "curbing regulations that have resulted in \$80 billion in compliance costs and more than 25 million hours of paperwork."

The Administrative State

Perhaps more importantly in the long run, it has also been pointed out that measures such as the DOL salary threshold misadventure represent a burgeoning ascendancy of the "Administrative State," in which agencies legislate through rulemaking. Some of them also adjudicate disputes arising from their own actions, thereby endowing a single institution with legislative, executive and judicial power. Such agencies have effectively absorbed much of the "power of the purse," which is supposed to belong exclusively to Congress, by funding themselves through fees and fines that bypass a congressional budgetary vote. In essence, the Administrative State is increasingly operating beyond the balance-of-powers limitations imposed by our constitutional system.

The ongoing feud between strict constitutionalism and an unfettered Administrative State's autocratic unilateralism, cloaked in alleged concern for the wellbeing of the citizenry, as well as between classic and crony capitalism, is just gathering steam. It will be interesting to watch, especially given the new administration. ☐

Rich Walker is president and CEO of the American Architectural Manufacturers Association, 847/303-5664, rwalker@amanet.org.



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From the Field

By Jim Snyder



Onsite "manufacturing" of components requires precision workmanship and sometimes even special equipment like a portable thickness planer or a small router table. At a minimum, a portable table saw and some profiling tools are essential. (Image courtesy of the author.)

Onsite Manufacturing

Sometimes it's a necessity

In this annual manufacturing issue of Window & Door magazine, the focus is largely on the "conventional" fenestration manufacturing operations and facilities. Allow me to expand that focus to a lesser recognized manufacturing facility: the field.

If, in broad strokes, you consider manufacturing to be creating and assembling components into a completed unit, this also occurs on a smaller but equally important scale on the jobsite. There's simply less automation and predictability, making the challenge quite different.

For many commercial system applications, some field assembly is the norm—i.e. extrusion assemblies and onsite glazing installation. This is anticipated and fairly

consistent. Yet, for residential/light commercial installers equipped with fully-assembled fenestration units, you might think, "What else is left but to install?"

While I've recommended in the past to order products as factory-complete as possible, there are exceptions. For instance, due to extreme combination sizing, factory mulling is sometimes not a realistic option because shipping or delivery to the rough opening is unmanageable as one piece. Or, we might request that exterior casing be omitted.

Or, the case may be that the "installation" actually constitutes renovating an existing unit, which doesn't involve a manufacturer at all. In this case, restoring existing windows or doors may be limited

to onsite "manufacturing" of components such as exterior casings, sills and/or stops.

In each of these examples, installers venture in to a manufacturing role. These challenges call for proper equipment, knowledge and skill—or craftsmanship, some would say—in the following areas.

Field Mulling

Fenestration engineers will widely agree that the complexity of field mulling is under-recognized. The mull junction is a prime candidate for air and water leakage, as well as for structural failure, so it requires careful attention. When possible, factory mulling is usually the safer bet, as it may offer performance certification (always ask for clarification). Yet, when field mulling is the only choice, skilled installers know to seek mulling instructions and supplemental components from the primary manufacturer for successful results.

When field mulling instructions or components are not available, or if mulling to an existing unit in a replacement application, the installer makes every effort to meticulously fasten and seal the connection, and anchor the mulled ends to the rough opening. Installers know to seek advice from a professional engineer if there is any doubt. This is especially true for extreme wind/water applications.

Customizing Fit and Appearance

Particularly true when adapting to existing conditions, customizing fit and appearance in replacement applications can be a real challenge, especially when replacing with a different operator type or frame profile. This may require shaping and installing custom exterior casing and matching mull caps that aren't available from the fenestration manufacturer, or building out a custom sill nose to match a contour.

The flexibility is probably most adaptable, though not limited, to all-wood units. Other frame materials offer exterior trim-out components such as frame expanders and subsills cut and placed to fill voids left by the removal of the old unit. This adaptation to newer frame materials evolves with experience. Thorough installers are aware of trim-out accessories available from the manufacturer, even though they are customized on site.

The interior, on the other hand, may call for customized jamb extensions depending on the thickness of the sheathing and interior wallboard and on the wall framing dimension. This can even vary by room. Where a wainscot may exist, for instance, it may only reach partly up the vertical of a window or door. Or, special attention may be required to accommodate existing interior window treatments such as plantation shutters. Finally, sometimes the best fix is to build a cased return box to finish the inside.

Repairs

One component of restoring existing units is replacing decayed parts. While it may not be practical to replace every component, it is very common to replace

an exterior casing, blind stop, sill, or even a jamb. Sometimes the components can be purchased, but often these too need to be made on site from stock material.

This "manufacturing" of components requires precision workmanship and sometimes even special equipment like a portable thickness planer or a small router table. At a minimum, a portable table saw and some profiling tools are essential.

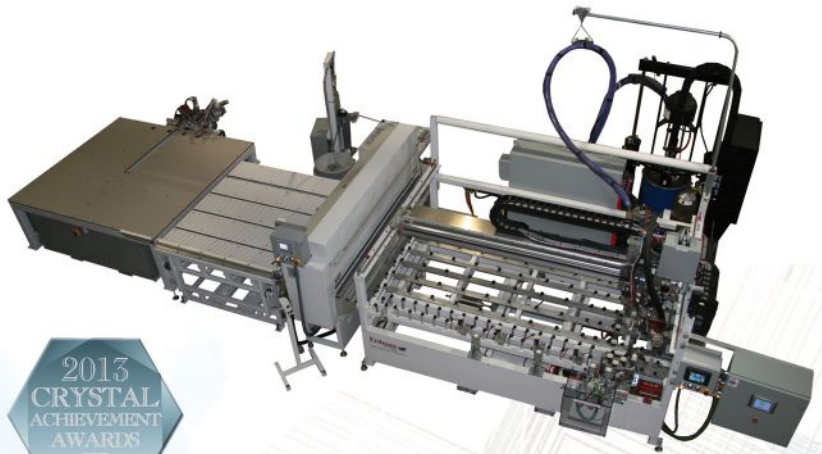
Manufacturing isn't always complete

when a product leaves the plant floor. On-site manufacturing, whether completing assemblies or literally making components, is a necessary element of fenestration installation and renovation. ☐

Jim Snyder is an AAMA certified FenestrationMaster and InstallationMaster. He shares his years of field experience with dealers and manufacturers. Contact him at jim@windowjim.com.

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Prop 65

Proposed changes could further over-labeling

California’s Proposition 65, the “Safe Drinking Water and Toxic Environment Act of 1986,” was recently amended by the California Environmental Protection Agency’s Office of Environmental Health Hazard Assessment. Prop 65 requires that businesses provide specific warnings to Californians for potential exposure to chemical toxicity, including products sold in California. The amendments follow OEHHA’s publication of its proposed changes and additions, and after the OEHHA’s consideration of public comments regarding the potential effects upon businesses, governmental agencies and the citizens of California.

After this amendatory process, the final changes impose new requirements on the content and methods of transmission of toxicity warnings, including new

confusion as to how the Prop 65 requirements might apply. In its responses to these comments, the OEHHA indicated that it would not commit to refine the definition of new terms or application of the new requirements. For the most part, it has left businesses to make their own determinations as to how the regulations may apply and, therefore, has allowed a level of uncertainty to remain. However, by juxtaposing the current regulations with the future requirements, we may be able to anticipate and be on guard as to at least some of the potential areas of uncertainty.

Background

Prop 65 will continue to be a part of the environmental regulation of California. As part of the Health and Safety Code,

level which presents a risk, a “clear and reasonable warning” must be given. This concept is the lynchpin of the statute. Both the current and future versions of Prop 65 provide guidance as to when a warning is needed and what constitutes a “clear and reasonable warning.”

The threshold determinations for application of Prop 65 are: doing business in California, exposing individuals to levels of listed chemicals and, if so, providing a clear and reasonable warning. More specifically, if a person or other entity employs 10 or more people and, if through activities “in the course of doing business,” employees are knowingly and intentionally exposed to a listed chemical at a certain risk level, a “clear” warning is required.

The warning is “reasonable” if it is reasonably calculated to make the warning available to the individual prior to exposure. Under the current regulations, this has led to ubiquitous labels and signage.

Further, the “in the course of doing business” language of Prop 65 has not been specifically interpreted by the courts. Given that Prop 65 is a fair warning statute, it is likely to be construed to contain a very broad definition to effectuate the purpose of warning as many potentially affected people as possible.

Chemicals and Risk Levels

Whether business activities or products pose an exposure risk must be considered in light of what chemicals have been identified by California to fall within Prop 65. Prop 65 expressly requires the governor to establish the list of toxicity chemicals and to publish an updated list once per year. The current list can be found at oehha.ca.gov/prop65/prop65_list/Newlist.html.

Currently more than 800 chemicals are listed. Listed chemicals are identified by

“The OEHHA has left businesses to make their own determinations as to how the regulations may apply, allowing a level of uncertainty to remain.”

language that requires businesses to disclose Prop 65-listed chemicals to which persons may be exposed.

To allow some time for products distributed pursuant to current Prop 65 warning regulations to make their way through the distribution and commercial stream, these changes are to take place by August 30, 2018. Because they are new and not yet subject to enforcement, there is some uncertainty in how the regulations will be applied given that the language and meaning of the amendments are yet to be clarified by the OEHHA or by judicial review within the court systems.

Numerous public comments submitted prior to adoption of the final amendment raised concerns about the lack of clarity in the language and foreseeable potential

it focuses on workplace environmental concerns, general public environmental concerns and consumer protection concerns. While Prop 65 is a part of the California Health and Safety Code, it is administered through the California EPA. Prop 65 required the governor to establish a “Lead Agency” for its enforcement. The Governor established the OEHHA within the CalEPA as that Lead Agency.

Prop 65 sounds and reads like a typical environmental pollution statute. However, it is referred to as a “Right to Know” statute, with its essential requirement being the provision of “clear and reasonable warnings” regarding exposure risks to listed chemicals.

Prop 65 has one basic concept: if you expose others to a listed chemical, at a

OEHHA committees but may also be added if “Authoritative Bodies,” such as the U.S. FDA, NIOSH, or U.S. EPA, have identified the chemicals as posing toxicity risks.

What is clear, however, is that even if a product contains a chemical on the list, it does not automatically follow that a warning is required. A warning is required where the product containing a listed chemical poses a risk of exposure *above a specific level*.

The OEHHA publishes a list of exposure levels. These levels create “safe harbor” exposure. While the “levels list” identifies what levels are acceptable for given chemicals, the list does not take into account all of the potential variables a particular exposure condition may present.

Prop 65 does provide for businesses to solicit Safe Use Determinations from OEHHA, however. Regulations for SUDs are set out in Title 27, Section 25204. An

SUD makes a conclusion based upon a specific set of facts as to whether a given exposure to a listed chemical falls within the safe harbor levels. However, a request for an SUD may result in significant costs to a business and create the potential risk of disclosure of private business or trade secret information related to the product or its distribution.

In the absence of specific determinations, the “defensive labeling” trend—labeling to make sure the product complies so as to ward off regulatory or private suits—is a phenomenon admitted to exist by CalEPA. And those defensive measures may be prudent under the current (and likely future) regulations. This framework has led to a perceived over-labeling phenomenon where everything from coffee mugs to cowboy boots contain the Prop 65 warning labels.

The way Prop 65 is written, it is the

“persons doing business” who have the obligation to prove that there is no risk of significant exposure. Given that marshaling the CalEPA to establish a no-risk determination is a time-consuming and expensive endeavor for businesses, it seems likely that continued defensive labeling will be the norm for the immediate future.

As the deadline for implementation of the new Prop 65 amendments approaches, bringing with it further and added obligations for safe harbor disclosures and warnings, businesses will need to continue to assess how best to comply with those warning requirements. ☐

John Nolan is an attorney with The Gary Law Group, a law firm based in Portland, OR, that focuses on legal issues facing manufacturers of windows and doors. Contact him at 217/526-4063 or John@prgarylaw.com.

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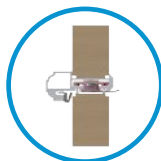
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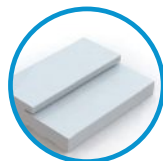
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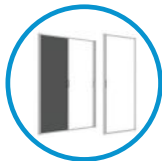
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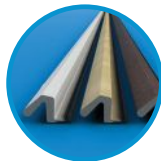
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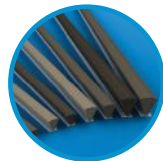
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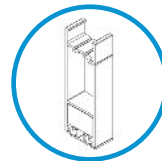
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By Emily Thompson

Top Tips from Manufacturers

In the spirit of this manufacturing issue, we asked our Top 100 and others outside the list for their best advice for dealers. Following are their tips on leads, sales, partnerships and more.

1 Chasing Leads

Just working to get today's and tomorrow's leads means you miss out on 97 percent of your potential market that is in various stages of research. Position yourself to capture those folks as well and you'll always have plenty of people to talk to about your products.—*Joe Mills, Sunrise Windows, sunrisewindows.com*

Repeat business is the most profitable. You will get more repeat business by being honest with your customers and not taking shortcuts in your product and service provision.—*Phil Lewin, The Window Design Group, vinylwindow designs.com*

2 Choosing Partners

When choosing a product or supplier, always look for those that can provide unique selling advantages. With products becoming more and more similar, look for suppliers that can offer programs and benefits that can help you to stand out from the crowd.—*Mark Davis, Earthwise Windows, earthwisewindows.com*

Take advantage of the marketing programs offered by manufacturers to promote your business, such as co-op advertising. Invest in training and/or working with your manufacturers to ensure your staff are knowledgeable about the products they sell and why they sell them. Customers are looking for experts to rely on and the more you can work with the manufacturer, the stronger your sales will be. Choose a supplier that wants to work with you to

grow your business.

—*Tracy Nadiger, All Weather Windows, allweatherwindows.com*

Create and nurture strategic partnerships, focusing on quality over quantity. Look at your business' long-term goals and align your company with specific partners who are leaders in the industry. Consider how a partnership can be mutually beneficial to each company, and remember that chasing short-term results often hinders a company's ability to achieve long-term goals.—*Kevin St. John, PGT Innovations, pgtinnovations.com*

3 Selling on Value

Building value in window products and trust with the consumer yields far better closing ratios and gross profits than selling on price. Consumers always pay more when the cost-versus-value benefit threshold is met.—*Eric Vidmar, Anlin Window Systems, anlin.com*

Customers are looking for a great value when purchasing large ticket items. This is an area of the house that should be treated with high regard concerning energy savings, functionality and workmanship. Saving 10 to 15 percent on a cheaper window may not offer the best value. Dealers should learn all they can about the windows they offer and understand what values and performance they offer to become an instructor, rather than a salesperson.—*Scott Gerkin, Gerkin Windows, gerkin.com*

The premium vinyl window niche is very strong and most dealers are not getting their share. Partner with companies who serve this niche well with product, delivery and customer/field service. Call backs can be dramatically reduced, thus improving both customer satisfaction and profit margins. The commitment required for training staff on the value of premium products and on identifying

premium opportunities is a very wise investment.—*Doug Cook, Thermo-Tech Windows LLC, ttwindows.com*

High-performance products will continue to strengthen as a category as more people begin to recognize the need for sustainability and how it benefits not only them but the world as a whole. Efficient glass, aluminum, vinyl-composite, and aluminum clad products will continue to grow in popularity.—*Eric Wanner, Solar Innovations, solarinnovations.com*

4 Differentiation

Always look to carry unique products that will set you apart from big box retailers and aim to provide your customers with excellent customer service and added value.—*Cally Dubrofsky, Stanley Doors, stanleydoorproducts.com*

Think strategically about how you want to grow your business. Look for opportunities in the market to sell products that are not readily available from your competition. This type of differentiation strategy not only will grow your margins, but will put you in a position to satisfy emerging needs from your customers.—*Scott Gates, Western Window Systems, westernwindow.com*

5 Education

A dealer's ability to educate their customer in order to identify their true needs rather than selling them stock windows they can buy at a "big box" store becomes a powerful differentiator.—*Bill Sifflard, Quaker Windows, quakerwindows.com*

Don't just sell products. Create value and differentiate by offering educational knowledge like new building code changes and new fashion options to

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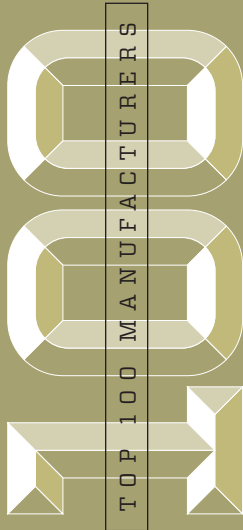
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Report

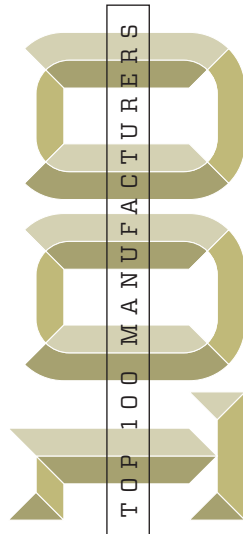
You asked... We listened.

The annual Top 100 Manufacturers Report is now presented as an Excel file!

The 2017 report includes:

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- Complete list of parent companies, subsidiaries, brands and product lines
- Searchable database of locations

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the 2017
Report

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your contractors to help them stand out. —*Jeff Ward, Durabuilt Windows & Doors, durabuilt.com*

Educate your employees to the max. Successful companies have knowledgeable people that can help walk an architect, designer, builder or homeowner through the selection process. Because of all the options available today, window and door salespeople have become design consultants on each job. Only educated product specialists can do this well. —*Steve Kahle, Lincoln Windows, lincolnwindows.com*

Consumers continue to be savvy with performance and product knowledge. However, the amount of information available is so vast that consumers often suffer from data overload. Keeping product information accurate and simple is vital in aiding consumers with product selection. —*Laura Doerger-Roberts, Vinylmax Windows, vinylmax.com*

Invest in the Future

Reinvest in your company's marketing strategies to get the next generation involved in fenestration. —*Douglas Gillin, Northeast Building Products, nbpwindows.com*

Get out and recruit installers at high schools and tech programs. Skilled, reliable crews are a competitive advantage more than ever and we all know our industry offers fantastic careers for smart and driven people who are good with their hands. Put together trade classes on becoming an installer and highlight the opportunities these young adults could have at running their own installation crews at a very young age. College is very expensive, and not for everyone. —*Matt Samson, Harvey Building Products, harveybp.com* ☐



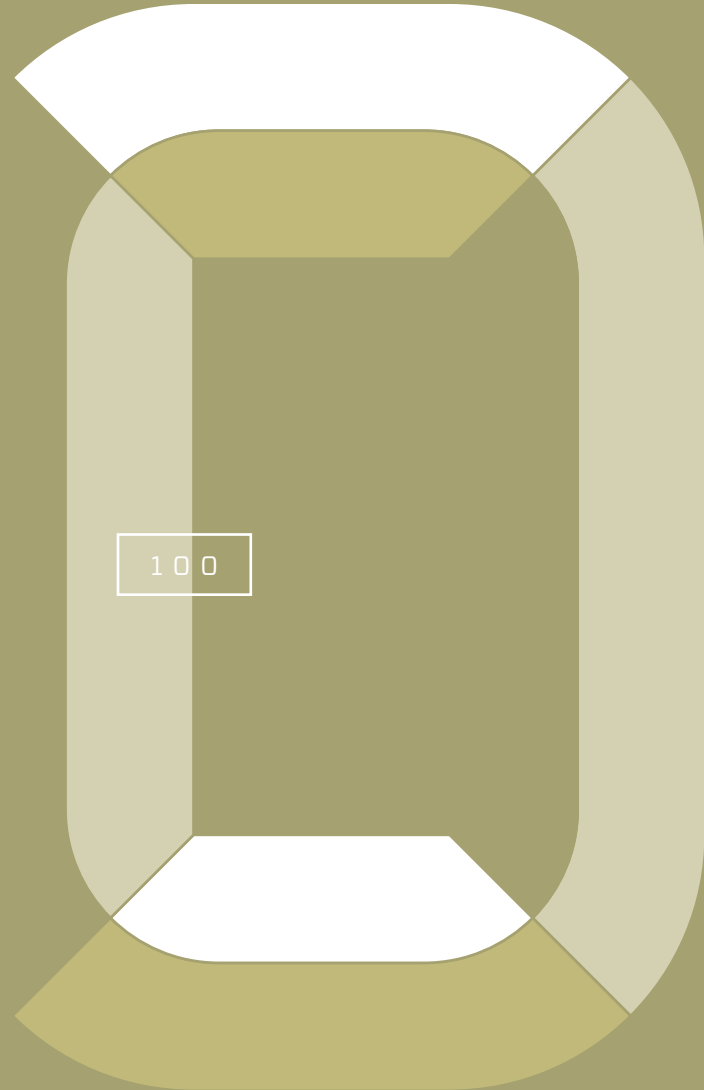
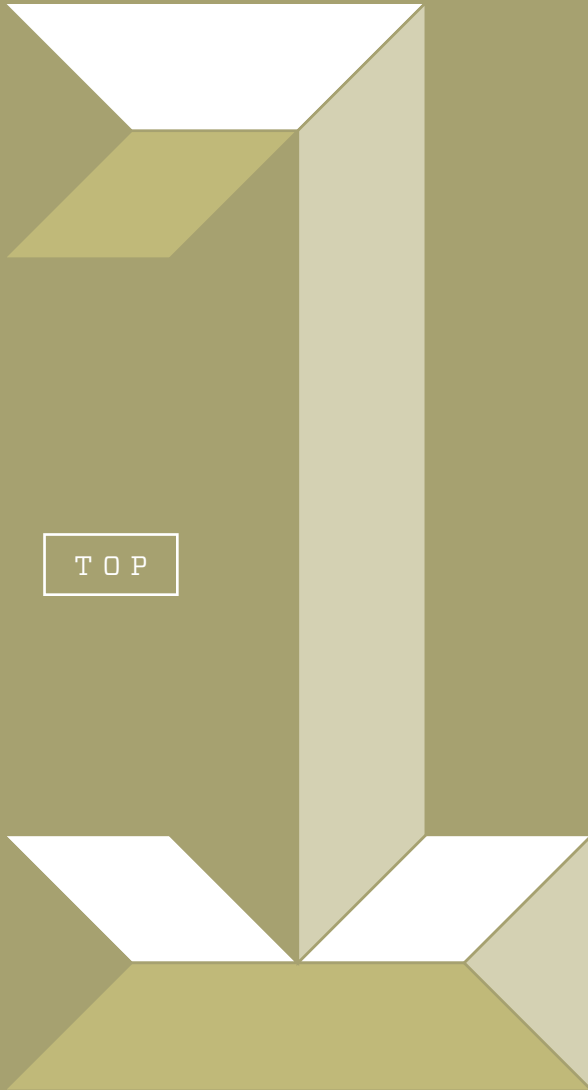
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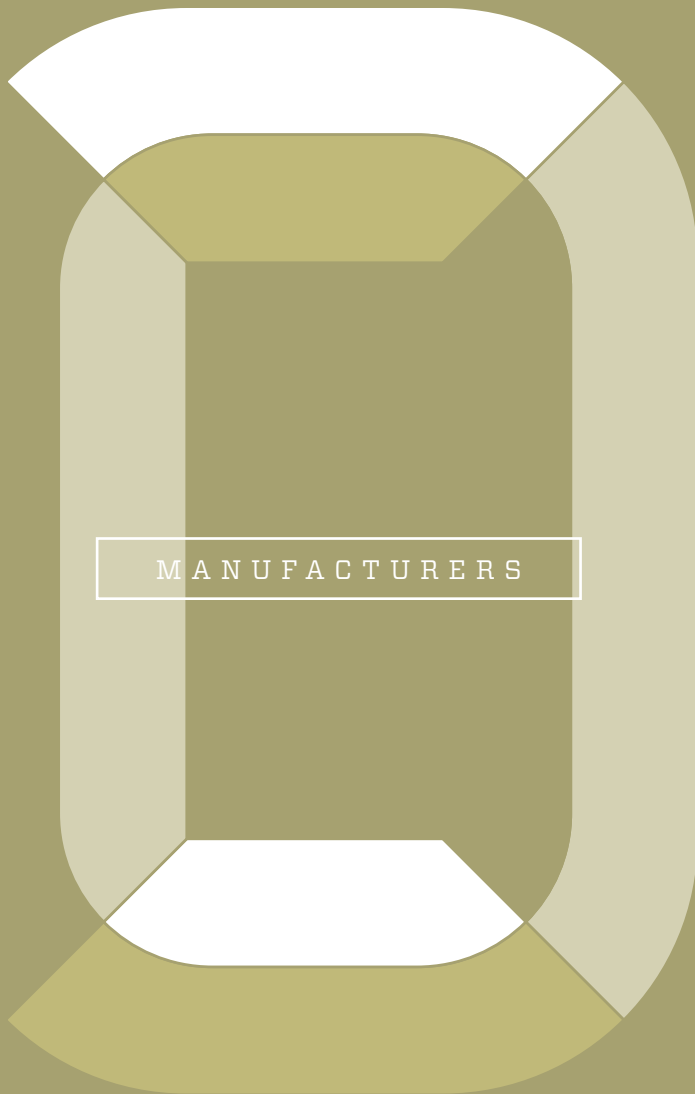
The top 100 manufacturers of window, door and skylight products for the residential market, listed by 2016 estimated gross sales

Window & Door's annual Top 100 Manufacturers report details North America's 100 largest manufacturers of residential windows, doors, skylights and related products, based on sales volume.

To provide a little more insight, of the surveyed manufacturers, 34 percent reported their gross sales are primarily

from the sale of products for the new construction market, 39 percent reported that the majority of their sales are from products for the replacement segment and about 27 percent reported their sales are pretty even between the two segments.

This report also represents manufacturers with various paths to market. Research indi-



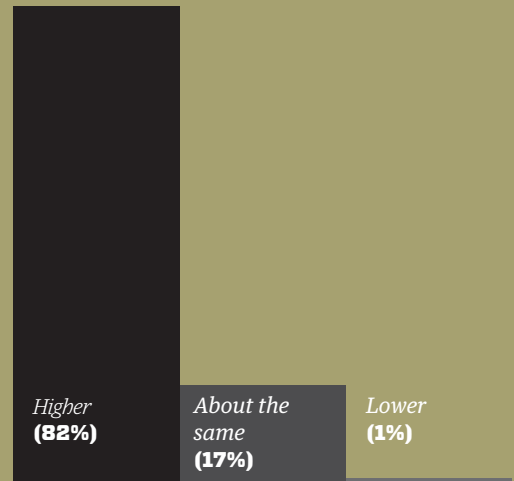
MANUFACTURERS

cates the majority utilize more than one distribution channel, though the focus is largely on specialty window and door retailers. Twenty-nine percent of the surveyed manufacturers sell directly to homeowners, 24 percent indicated they sell via large commercial retailers (i.e. “big box” stores), and 46 percent reported they sell directly to builders and remodelers.

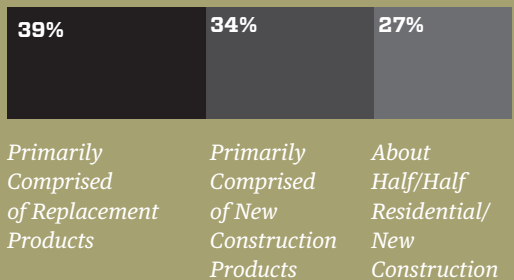
Finally, 80 percent indicated they are looking to expand their network of dealers.

Also, as an indicator of industry health, 82 percent of surveyed manufacturers reported higher gross sales in 2016 over the previous year, and only about 1 percent of the remaining 18 percent indicated a decrease in gross sales.

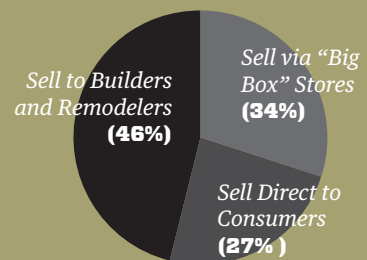
GROSS SALES FROM 2015-2016



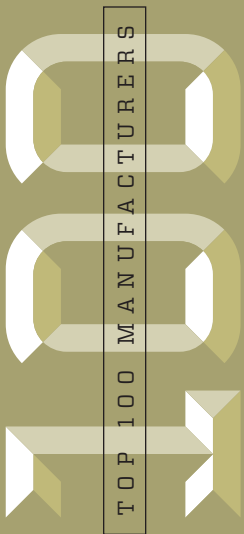
GROSS SALES BY SEGMENT



DISTRIBUTION INSIGHT



80% of Surveyed Manufacturers are Looking to Expand Dealer Network



the
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Masonite*
Pella Corp.*
Velux USA
YKK AP America

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Marvin*
Milgard*
Ply-Gem*
Therma-Tru Doors

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PGT Innovations
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Champion*
Custom Windows Systems
Earthwise Group LLC
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Sierra Pacific Windows
Steves & Sons Inc.
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Northeast Building Products
Robert Bowden*
Simpson Door Co.
Soft-Lite LLC
Sunrise Windows and Doors
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Wallside Windows
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Amerimax Windows & Doors*
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Lincoln Windows
Midway Windows & Doors
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Novatech*
Okna Windows and Doors
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Semco Windows
Stanley Doors
Starline*
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Vinylmax Windows*
Vista Window Co.*
Viwinco Inc.
ViWinTech Window & Door Inc.
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Air Master Windows and Doors
American Exteriors
Avanti Industries LLC
Comfort Windows
Gilkey
GlassCraft Door Co.
Hayfield Window & Door Co.
Ideal Window
Kensington HPP Inc.
Kasson & Keller
Lux Windows and Glass Ltd.
Mathews Brothers Co.
Moss Supply Co.
North East Windows USA Inc./
Quality Lineals USA Inc.
NT Window Inc.
SIW Windows and Door Manufacturing
Solar Innovations Architectural Glazing Systems
Sun Windows Inc.
Thermal Windows & Doors LLC
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AJR Window Technologies
Climate Solutions Windows & Doors
Euro Vinyl Windows
Glass-Rite
Seaway Mfg. Corp.
Solaris International
VantagePoint Industries LLC

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TOP 100 MANUFACTURERS

the List



A Thompson Creek employee works the welding machine. (Image courtesy of Thompson Creek Window Company, thompsoncreek.com.)

OVER \$1 BILLION

ANDERSEN WINDOWS & DOORS*

Bayport, Minn.
 andersenwindows.com
 800/426-4261

Product Lines: Wood, composite, vinyl, aluminum and fiberglass windows, entry doors, and patio doors sold under the Andersen Windows and Doors, Renewal by Andersen, Silver Line (silverlinewindows.com), American Craftsman (americancraftsmanwindows.com) and Weiland (weilandslidingdoors.com) brand names.

JELD-WEN

Charlotte, N.C.
 jeld-wen.com
 800/535-3936

Product Lines: Wood, vinyl, and aluminum windows and patio doors; wood, steel and composite entry doors.

Brands include Aneeta Window Systems (aneetawindows.com), Breezway (breezeway.com), Dooria (doria.se), Karona (karonadoor.com), LaCantina (lacantinadoors.com), and Trend Windows and Doors (trendwindows.com).

MASONITE*

Tampa, Fla.
 masonite.com
 800/663-3667

Product Lines: Fiberglass and steel entry and patio doors; interior doors.

PELLA CORP.*

Pella, Iowa
 pella.com
 515/247-2833

Product Lines: Wood, vinyl and fiberglass windows and patio doors; wood, fiberglass and steel entry doors.

Subsidiaries include: EFCO Corp. (effcocorp.com), Grabill Windows & Doors Inc.



The Quaker Window Products crew outside the Freeburg, Mo. facility. (Image courtesy of Quaker Window Products, quakerwindows.com.)

(grabillwindow.com), Reilly Windows & Doors (reillywd.com), and Duratherm Windows Corp. (durathermwindow.com).

VELUX USA

Fort Mill, S.C.
veluxusa.com
803/396-5700

Product Lines: Skylights, sun tunnels and roof windows.

YKK AP AMERICA

Atlanta
ykkap.com
678/838-6000

Product Lines: Vinyl windows and sliding patio doors; commercial aluminum fenestration products.

\$500 MILLION TO \$1 BILLION

HARVEY BUILDING PRODUCTS

Waltham, Mass.
harveybp.com
781/398-7737

Product Lines: Vinyl and wood windows, acoustic windows, vinyl patio doors, aluminum and vinyl porch-enclosure systems.

MARVIN*

Warroad, Minn.
marvin.com
888/537-7828

Product Lines: Wood, clad-wood and fiberglass windows and patio doors; exterior doors.

Subsidiaries include Integrity Windows and Doors (marvin.com/integrity), Infinity from Marvin Replacement Windows (marvin.com/infinity), and TruStile Doors (trustile.com).

MILGARD*

Tacoma, Wash.
milgard.com
800/645-4273

Product Lines: Wood, fiberglass, vinyl and aluminum windows and patio doors.

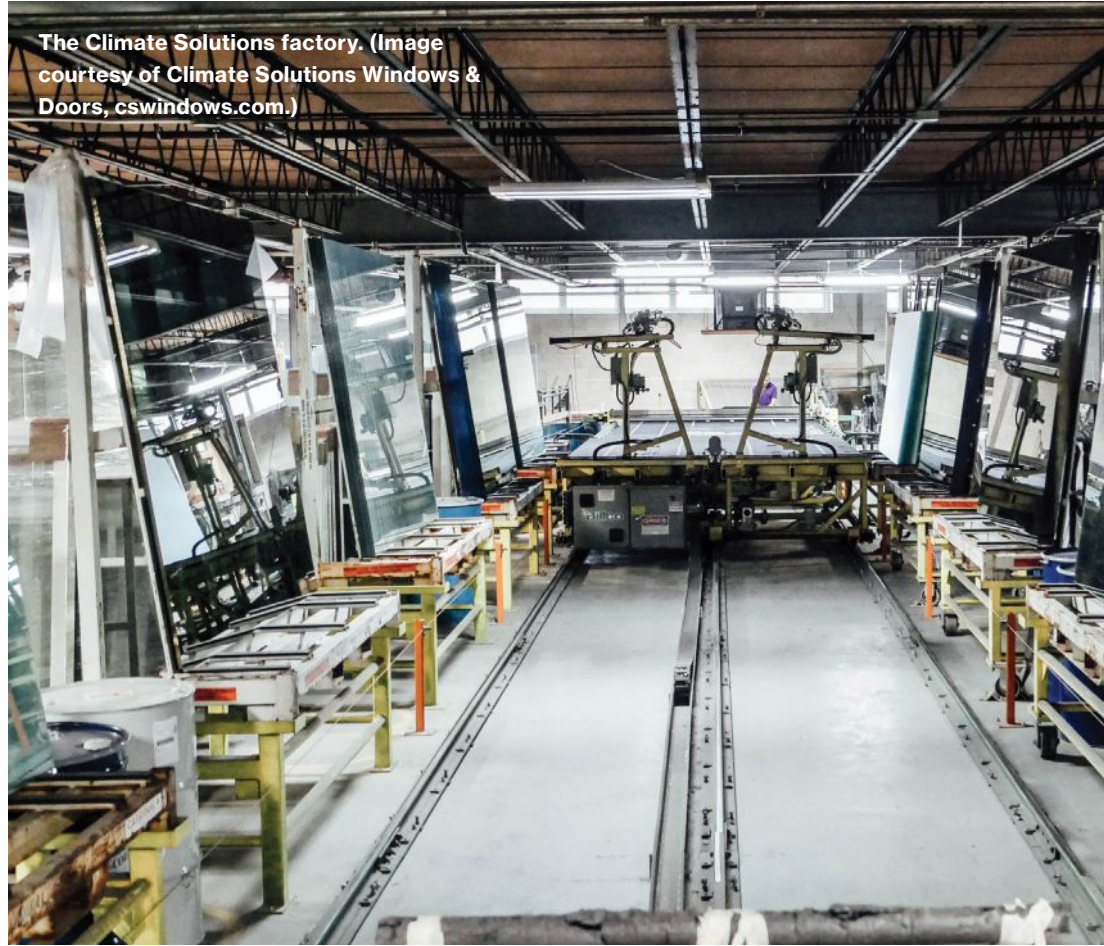
Milgard is part of Masco Corp.

PLY-GEM*

Cary, N.C.
plygem.com
888/975-9436

Product Lines: Vinyl windows; vinyl, vinyl-clad wood, wood, aluminum-clad wood and aluminum patio doors. Sold under the Ply Gem, Simonton Windows & Doors (Simonton.com), and Great Lakes Windows (greatlakeswindow.com) (Continues)

TOP 100 MANUFACTURERS



The Climate Solutions factory. (Image courtesy of Climate Solutions Windows & Doors, cswindows.com.)

brand names. In Canada, Ply Gem's subsidiary, Gienow Renovations (gienow.com), manufactures vinyl, aluminum clad vinyl and aluminum clad wood windows and patio doors, as well as fiberglass and steel entry doors.

THERMA-TRU DOORS

Muamee, Ohio
thermatru.com
800/843-7628

Product Lines: Steel and fiberglass entry doors, vinyl patio doors and impact-rated doors.

Therma-Tru's parent organization is Fortune Brands Home Security.

\$300 MILLION TO \$500 MILLION

ALSIDE*

Cuyahoga Falls, Ohio
Alside.com
800/922-6009

Product Lines: Vinyl windows and patio doors.

Alside is a division of Associated Materials Inc.

ATRIUM CORP.

Welcome, N.C.
atrium.com
336/731-9550

Product Lines: Aluminum and vinyl windows and patio doors,

vinyl impact-resistant windows and doors, acoustic windows. Vinyl windows and doors in Canada sold under the North Star Windows & Doors (northstarwindows.com) brand name.

MI WINDOWS AND DOORS

Gratz, Pa.
miwd.com
717/365-3300

Product Lines: Aluminum and vinyl windows and patio doors; entry doors.



PGT INNOVATIONS

North Venice, Fla.
pgtinnovations.com
941/480-1600

Product Lines: Vinyl and aluminum windows and patio doors; impact-rated products.

Subsidiaries include CGI PGT Custom Windows + Doors (cgindows.com) and WinDoor (windoorinc.com).



NBP expanded and moved half of its operations into a much larger facility in a different location, which required the company to update its ordering systems and increase workloads. (Image courtesy of Northeast Building Products, nbpwindows.com.)

TOP 100 MANUFACTURERS



Thermal Windows Inc.'s sprawling manufacturing facility in Tulsa. (Image courtesy of Thermal Windows Inc., thermalwindows.com.)

WOODGRAIN MILLWORK

*Fruitland, Idaho
woodgrain.com
888/783-5485*

Product Lines: Wood-clad, wood, aluminum-clad, composite and vinyl windows; wood-clad and vinyl patio doors; wood-clad, wood, aluminum-clad, and fiberglass entry doors via the Windsor Windows & Doors (windsorwindows.com), Ashworth (ashworthdoors.com) and Monarch Windows and Doors brand names.

\$200 MILLION TO \$300 MILLION

ALL WEATHER WINDOWS

*Edmonton, Alberta
allweatherwindows.com
780/451-0670*

Product Lines: Aluminum-clad and vinyl windows; wood, fiberglass and steel entry doors; vinyl and metal-clad patio doors.

CHAMPION WINDOWS MANUFACTURING INC.*

*Cincinnati, Ohio
championwindow.com
877/424-2674*

Product Lines: Vinyl windows, steel and fiberglass entry doors, and vinyl patio doors.

CUSTOM WINDOWS SYSTEMS

*Ocala, Fla.
cws.cc
352/368-6922*

Product Lines: Vinyl windows and patio doors; impact-resistant vinyl and aluminum windows and patio doors; aluminum, non-impact windows.

EARTHWISE GROUP LLC

*Liberty Township, Ohio
earthwisewindows.com
513/755-6707*

Product Lines: Vinyl windows and patio doors.

The Earthwise Group is a national network of locally-owned, independent manufacturers, including EW7 Products (ew7products.com), Advanced Window Products (advancedwindowsusa.com), Sprouse Windows and Doors (sprousewindows.com), Eastern Architectural Systems (easternarchitectural.com) and 18 other manufacturers.

POLARIS WINDOWS & DOORS

*Youngstown, Ohio
polariswindows.com
800/783-2179*

Product Lines: Vinyl windows and patio doors, and steel and fiberglass entry doors.

Polaris is part of Modern Builders Supply.

*Company did not confirm sales estimate.

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TOP 100 MANUFACTURERS



SIERRA PACIFIC WINDOWS

Red Bluff, Calif.
 sierrapacificwindows.com
 800/824-7744

Product Lines: Wood and aluminum-clad wood windows and patio doors.

STEVES & SONS INC.

San Antonio, Texas
 stevesdoors.com
 800/627-5111

Product Lines: Steel, fiberglass and wood entry doors; interior doors.

WEATHER SHIELD MFG.*

Medford, Wis.
 weathershield.com
 800/222-2995

Product Lines: Wood, aluminum clad wood, aluminum, vinyl clad wood, vinyl, fiberglass, and fiberglass clad wood windows and patio doors.

\$100 MILLION TO \$200 MILLION

ATIS GROUP INC.

Longueuil, Québec
 atisgroup.ca
 450/928-0101

Product Lines: Wood, aluminum-clad and vinyl patio doors; steel and fiberglass entry doors; and wood, vinyl, composite and aluminum windows via LaFlamme Doors and Windows (laflamme.com), Solarcan (solarcan.com), ViMat Windows & Doors (vimat.com), Melco (melcopf.com), VinylBilt (vinylbilt.com), Allsco (allsco.com), and Altek (fenetresaltek.net).

CASCADE WINDOWS

Spokane, Wash.
 cascadowindows.com
 503/679-9357

Product Lines: Vinyl windows and patio doors.

FOUR SEASONS SOLAR PRODUCTS*

Holbrook, N.Y.
 fourseasonssunrooms.com
 888/270-3546

Product Lines: Sunrooms, conservatories, patio rooms and screen rooms; vinyl windows and patio doors.

KOLBE & KOLBE MILLWORK CO.*

Wausau, Wis.
 kolbewindows.com
 715/842-5666

Product Lines: Wood, vinyl and aluminum windows and patio doors; wood and fiberglass entry doors.

PLASTPRO

Los Angeles, Calif.
 plastproinc.com
 310/693-8600

Product Lines: Fiberglass entry doors and patio door systems.

*Company did not confirm sales estimate.

Bending the Possibilities at T-Mobile Arena

An enormous, curved glass façade greets entrants of the gleaming new T-Mobile Arena in Las Vegas. A striking sight to behold, more than 30,000 square feet of cold-bent insulating glass units (IGUs) is a marvel of modern architecture and the first known project of such scale to be completed in the United States. Not just glass, the façade incorporates a state-of-the-art LED overlay, enabling the structure to not just make for a glamorous addition to the city, but to complement its striking mountain backdrop.

The design was brought to life by the New Jersey-based architectural glass fabricator J.E. Berkowitz, now a part of the Consolidated Glass Holdings (CGH) group, together with Crown Corr and glass supplier Guardian, among other partners. To help increase efficiency on this major, high-profile job, Crown Corr used an on-site, IG cold-bending technique while installing the glass.

It took planning, expertise and confidence to execute this large-scale project using this unique method, and it was accomplished, in part, with the inherent flexibility and performance provided by the Super Spacer® TriSeal™ warm-edge spacer technology from Quanex Building Products, implemented in J.E. Berkowitz's JEB 3Seal™ spacer system.

A Plan in Place

Traditionally, float glass is heated and formed into a curved mold to create most of the curved glass you see in buildings today. But with a history of innovation stretching back to 1920, J.E. Berkowitz worked with Crown Corr to implement the on-site cold-bending technique to realize the complex, unique design for a number of reasons.

"Our customers come to us looking for high-quality fabricated products that not only look great, but meet evolving energy codes and quality standards," said Gary McQueen, architectural design manager, J.E. Berkowitz. "We have state-of-the-art machinery and technology to meet the tight tolerances demanded today, and we work with the right industry partners to make that happen."

Wanting to bring the right approach to the T-Mobile Arena job, J.E. Berkowitz knew that the traditional heated bending method would drive up the total cost of the project considerably, so they moved forward confidently with Crown Corr's cold-bending approach. The firm knew that a robust plan would be necessary to accomplish the job correctly.

For the entirety of the façade, Crown Corr worked with J.E. Berkowitz Winduo™ IGUs that arrived at the

job site in flat, trapezoidal shapes. To work with the building and its designs, each piece needed to be cold bent individually, by hand. Every single IGU used was unique, which took careful planning at every stage of the project.

That planning included an examination of the long-term impact of cold bending on each IGU, and J.E. Berkowitz relied on Quanex to make sure every piece would stand up to the necessary performance standards. Having worked with Quanex for more than eight years, J.E. Berkowitz knew it had a helpful and reliable supplier by its side.

J.E. Berkowitz has utilized Quanex's warm-edge spacer technology for many of its high-performance products, including Super Spacer TriSeal/JEB 3Seal, as part of its newest

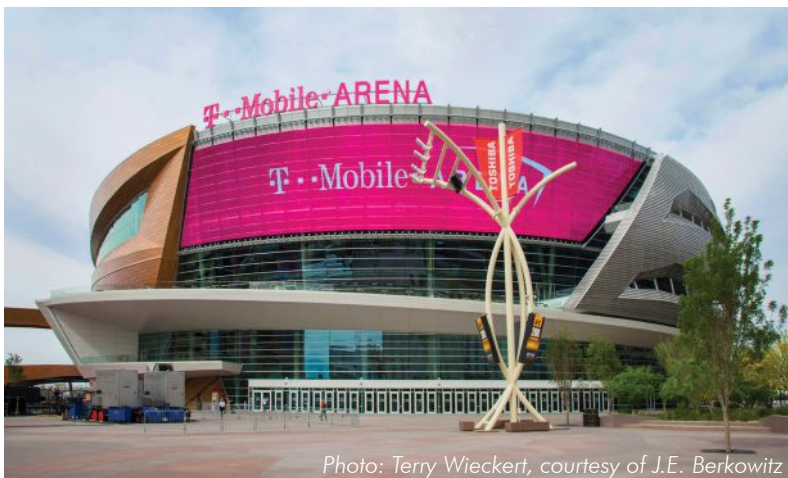


Photo: Terry Wieckert, courtesy of J.E. Berkowitz

continued on page 2



Bending the Possibilities at T-Mobile Arena continued from page 1



and largest IG line installed over two years ago. The firm knew that quality was a top priority for the T-Mobile project, and that TriSeal would help achieve that mission. McQueen added that the 3Seal spacer system was a key contributor to the overall wall performance and aesthetics, offering sharp sightlines for each IGU, all while increasing thermal performance.

A Team Effort

Overall, the completion of the T-Mobile façade was a true team effort, with J.E. Berkowitz relying upon its strong relationships within the architectural community, its customers and its suppliers. Quanex offered a significant contribution through superior technology and product support—and now, the city of Las Vegas adds another must-see structure to an already long list.

“Working closely with Quanex is one of the ways we stay committed to bringing quality to our customers over everything else,” McQueen said. “Using Super Spacer TriSeal on projects such as the T-Mobile Arena helps us improve our quality while optimizing the fabrication efficiency of each IG unit, and the support we receive from Quanex is exceptional. Any question we have, any challenge we must overcome, Quanex is there to offer their help and much more.”

For more information on Super Spacer TriSeal/JEB 3Seal and the T-Mobile Arena project, visit www.Quanex.com and www.JEBerkowitz.com.

How Close Is the Fully-Automated Home?

There's optimism in the air in the building and construction industry. At January's International Builders' Show (IBS) in Orlando, that feeling held true. An estimated crowd of 80,000 showed up to check out the latest innovations—up approximately 20,000 attendees from last year's show.

And just a week prior, the Consumer Electronics Show (CES) descended upon Las Vegas, where hundreds of thousands of attendees annually gather to see the latest new product technologies. What does it have to do with building and construction? Many of the most talked about technologies showcased at CES revolved around one thing: the increasingly connected home, a trend also heavily represented at IBS.

And it means all residential building and construction professionals should be paying attention to how increasing connectivity could be impacting their business.

Connected Everything

The “Internet of Things” has been a buzzword for a few years now, and it's not going away. New technologies showcased at CES ranged from a “smart” refrigerator that will text you when you are running low on yogurt to a “smart” trashcan.

Connectivity was a running theme at IBS, too. Attendees witnessed remotely locking doors and windows; custom, variable tinted windows that change depending on the day's weather; windows with internal, automatic blinds; and software that integrates throughout an entire home.

These technologies aren't brand new in themselves—commercial building operators have taken advantage of Building Automation Systems for more than a few years. But now, we're seeing automation and connectivity begin to proliferate in everyday living spaces. Consumers are demanding total connectivity for a variety of reasons: increased control over energy use and cost, better convenience among busy schedules, and more.

Adaptability in a Changing World

Of course, it could be a while before many of the technologies highlighted at IBS and CES become commonplace. But for building and construction professionals wishing to stay on the leading edge of their industries, it's worth thinking about now.

Within fenestration, we've seen how high-speed automation has enabled us to increase production and boost quality. Many in our industry continue to hone operations for maximized efficiency, quality and labor usage with new automated lines. And when we think about the window manufacturing plant of the future, we must also consider homeowner desires of the future.

It might be some time before everyone has fully connected, responsive, automatically adjusting windows and doors. But it might also be sooner than we think, and it's those manufacturers who have stayed up on trends, technologies and changing consumer preferences who will reap the benefits.

Keep up on the latest at www.Quanex.com/InFocus.

Technologies Converge for Innovative 7 St. Thomas

Standard Bent Glass' unique technological qualifications helped bring to life a complex curved glass façade, merging old with new at a well-traversed intersection in Toronto.

Not long ago, it would have been near impossible to complete a job like the one recently completed at the intersection of St. Thomas and Sultan Streets in the heart of Toronto's leading commercial district. The luxury office and condominium space is a marvel, with a nine-story fritted glass curtainwall stretching above a row of restored, original 19th century townhomes, creating a striking contrast between old-world architecture and the new possibilities of glass-bending technology.

But you wouldn't know the project's complexity to simply look at it. Standard Bent Glass, the curved insulating glass (IG) supplier for the job, was uniquely positioned to bring the designs to life thanks to a convergence of several in-house manufacturing advantages—and a flexible spacer solution in Super Spacer® TriSeal™ Flex from Quanex Building Products.

"The requirements for this project—incorporating high-performance coatings and ceramic frit patterns to curved IG surfaces in both convex and concave elevations, all within the limitations of bending and tempering glass—posed a real challenge, and we were able to tackle it because we have all the necessary resources under one roof," said Jeff Nichols, vice president of sales and marketing, Standard Bent Glass. "It also required a flexible silicone spacer, and TriSeal Flex offers an ideal solution for curved glass."

Bending the Limitations

The undulating glass structure, designed by Hariri Pontarini Architects, required close collaboration and problem-solving from all involved, including Standard Bent Glass, Quanex and BV Glazing Systems.

The nature of the building's curvature posed a significant challenge, as the

necessary high-performance coatings could only be fabricated on the concave surface of the glass. Likewise, the decorative white ceramic frit patterns were only able to be coated on the concave surface.

But both concave and convex surfaces are prominently featured, requiring Standard Bent Glass to think outside the box.

"Figuring out how to satisfy the desired aesthetic with the structural necessities required brainstorming from all involved," said Nichols. "Developing our strategy and how to best put the glass together to satisfy the design criteria wasn't simple."

The best way to feature the decorative frit was to incorporate the frit on the exterior surface of the glass coating—a high-performance Low-E coating applied to a low-iron glass substrate to eliminate the tint in clear glass from compromising the color of the white gradient frit lines. As a fabricator to work with the Low-E coating, Standard Bent Glass worked confidently, giving the project remarkable visual consistency across the curtainwall's concave and convex surfaces.

A Flexible Spacer Solution

To meet the demands of the curved units, each of which are in excess of 50 square feet, Standard Bent Glass worked with Quanex and its TriSeal Flex spacer system, a warm-edge flexible silicone spacer. The TriSeal systems were hand-applied to the curved glass units, along with a secondary silicone for additional structural strength. The final units were filled with argon for increased thermal performance.



"TriSeal was an essential part of the success of the final project," Nichols said. "When we decided to work with the product, Quanex offered our teams multiple-day training, providing all the necessary technical information we needed to successfully incorporate TriSeal into the job. We went right from those days of training to high-volume production of IG units with TriSeal, and the transition was seamless."

As technologies like TriSeal and bendable high-performance coatings continue to gain traction in the marketplace, curved IG is poised for continued growth. Architects can continue to push the boundaries with their designs, confident that available glass technologies can meet the necessary performance demands. The 7 St. Thomas building is proof.

"Our company has succeeded in meeting some unique demands with our highly custom glass products," said Nichols. "Curved IG is a growth market, as it can now deliver the same performance as flat IG—and Quanex flexible spacer systems are a critical part of that equation."

To learn more about Standard Bent Glass and its custom insulating glass solutions, visit standardbent.com.

Mikron AW-rated Windows and Doors: A Prime Opportunity

The Colorado-based Prime Window Systems, LLC, is growing its business with larger, high-rise builders as the market continues to seek energy-efficient, high-performance alternatives to aluminum windows for commercial applications.

Optimism for a healthy 2017 in the housing market continues, and that means builders are seeking new, energy-efficient building materials as they take on new projects—and Colorado-based Prime Window Systems is seizing the opportunity to deliver on that need.



"We've built our business around light-commercial and multifamily projects," said Prime COO Bill Rice. "And as that's happened, we've built some critical relationships with larger builders, and now we're growing our business to deliver the necessary, high-performance solutions they need."

Why alternatives to aluminum? Rice notes the desire of many architects and builders to enhance thermal performance by moving away from mechanically assembled aluminum window systems, where heat can more easily escape, as well as a greater desire for versatility in the residential and commercial high-rise market.

Prime is seizing that opportunity with the Mikron AW-Rated System C3-11300™ from Quanex Building Products, the only operable PVC non-metallic window system on the market today that satisfies the Architectural performance class (AW) in the North American Fenestration Standard. With its thermal performance, design versatility and structural strength, Prime is positioned to better help meet the increasing stringency of the commercial market in a variety of applications—bolstering its core business while breaking into new markets.

Versatility in Action

Rice notes versatility is in demand among builders, and working with the Mikron AW-Rated system will better enable his team to help meet those demands.

"We've had customers who have run into sizing issues, for example, where the architects' objectives couldn't have been accomplished with a traditional light commercial rated vinyl product," Rice said. "We're hearing significant interest in using this system as an alternative. Being able to offer those customers a cost-effective PVC solution that readily meets all of the necessary design and performance requirements is something we're very excited to be able to bring to our customers."

Prime has also built part of its competitive advantage upon its ability to deliver acoustically rated windows for environments where noise pollution can be troublesome. In urban high-rise residences, for instance, the Mikron AW-Rated system provides Prime a supplemental advantage, helping keep the sound of busy city streets out along with the company's sound-deadening glass components.

The Mikron SuperCapSR™ exterior color technology is another area where the AW-Rated system helps Prime offer new flexibility to its customers. Where painted PVC solutions can fail to withstand the rigors of manufacturing, installation and solar elements, SuperCapSR offers durable, extended color selection through its molecularly fused, co-extruded technology equaling the industry's current high-performance aluminum-coated products.

"There tends to be a bit of skepticism around painted vinyl," said Rice. "SuperCapSR answers all these issues, and once we demonstrate the difference between painted vinyl and SuperCapSR technology, our customers are excited to use it."

New Frontiers with Higher Performance

In addition to bolstering competitiveness in markets where the company has built its name, Prime Architect Representative Chris Solari notes that working with the Mikron system has the potential to open new avenues for additional business.

"I think we've only scratched the surface in terms of how we can extend our capabilities working with the Mikron AW-Rated System," Solari said. "There's a lot of new opportunity here—the efforts we've made and the conversations we've had so far indicate a lot of interest from the architectural community, and we're hoping to maintain that momentum as we begin production later this year with the Mikron system."

"We know the benefits of the Mikron system, but Quanex has done a great job of helping our team develop a deeper understanding of the product, its features and benefits, and the markets where it's best suited for success," Rice said. "So far the relationship has been beneficial, and we're excited to see where we can go with this product."

For more information on Prime Window Systems solutions for light-commercial and multifamily high-rise applications, check out primewindowsys.com or Prime's architectural website at silent-guard.com.

To receive Fenestration Focus electronically, please visit www.Quanex.com/register.

TOP 100 MANUFACTURERS

PROVIA

Sugarcreek, Ohio
 provia.com
 800/669-4711

Product Lines: Fiberglass and steel entry doors; vinyl and wood/vinyl windows; vinyl, wood/vinyl, steel and fiberglass patio doors.

QUAKER WINDOW PRODUCTS

Freeburg, Mo.
 QuakerWindows.com
 800/347-0438

Product Lines: Wood, vinyl and aluminum windows and patio doors.

\$50 MILLION TO \$100 MILLION

AMSCO WINDOWS*

Salt Lake City
 amscowindows.com
 800/748-4661

Product Lines: Vinyl and composite windows and patio doors.

ANLIN WINDOW SYSTEMS

Clovis, Calif.
 anlin.com
 800/287-7996

Product Lines: Vinyl windows and patio doors.

CROFT LLC*

McComb, Miss.
 croftllc.com
 800/222-3195

Product Lines: Aluminum and vinyl windows and patio doors.

CRYSTAL WINDOW & DOOR SYSTEMS

Flushing, N.Y.
 crystalwindows.com
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Product Lines: Aluminum and vinyl windows and sliding doors; aluminum swing doors.

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PGT Innovations recently brought CGI Windows and WinDoor into its fold. (Image courtesy PGTi, pgtinnovations.com.)

DURABUILT WINDOWS & DOORS

Edmonton, Alberta
durabuiltwindows.com
 780/455-0440

Product Lines: Vinyl windows and patio doors; aluminum-clad PVC, aluminum/PVC/wood hybrid windows.

FENPLAST INC.

Candiac, Quebec
Fenplast.com/en
 514/990-0012

Product Lines: Aluminum windows, vinyl patio doors, steel entry doors.

LOEWEN WINDOWS AND DOORS

Steinbach, Manitoba
loewen.com
 204/326-6808

Product Lines: Wood, impact, copper and bronze clad windows and doors.

NORTHEAST BUILDING PRODUCTS

Philadelphia
nbpwindows.com
 215/535-7110

Product Lines: Vinyl windows, fiberglass and steel entry doors, sliding glass doors, aluminum storm doors, glass block, prefab windows, and contractor accessories.

ROBERT BOWDEN

Marietta, Ga.
robertbowden.com
 770/429-9285

Product Lines: Wood and vinyl windows; wood entry doors; custom millwork.

SIMPSON DOOR CO.

McCleary, Wash.
simpsondoor.com
 800/952-4057

Product Lines: Wood and glass interior and exterior doors.

SOFT-LITE LLC*

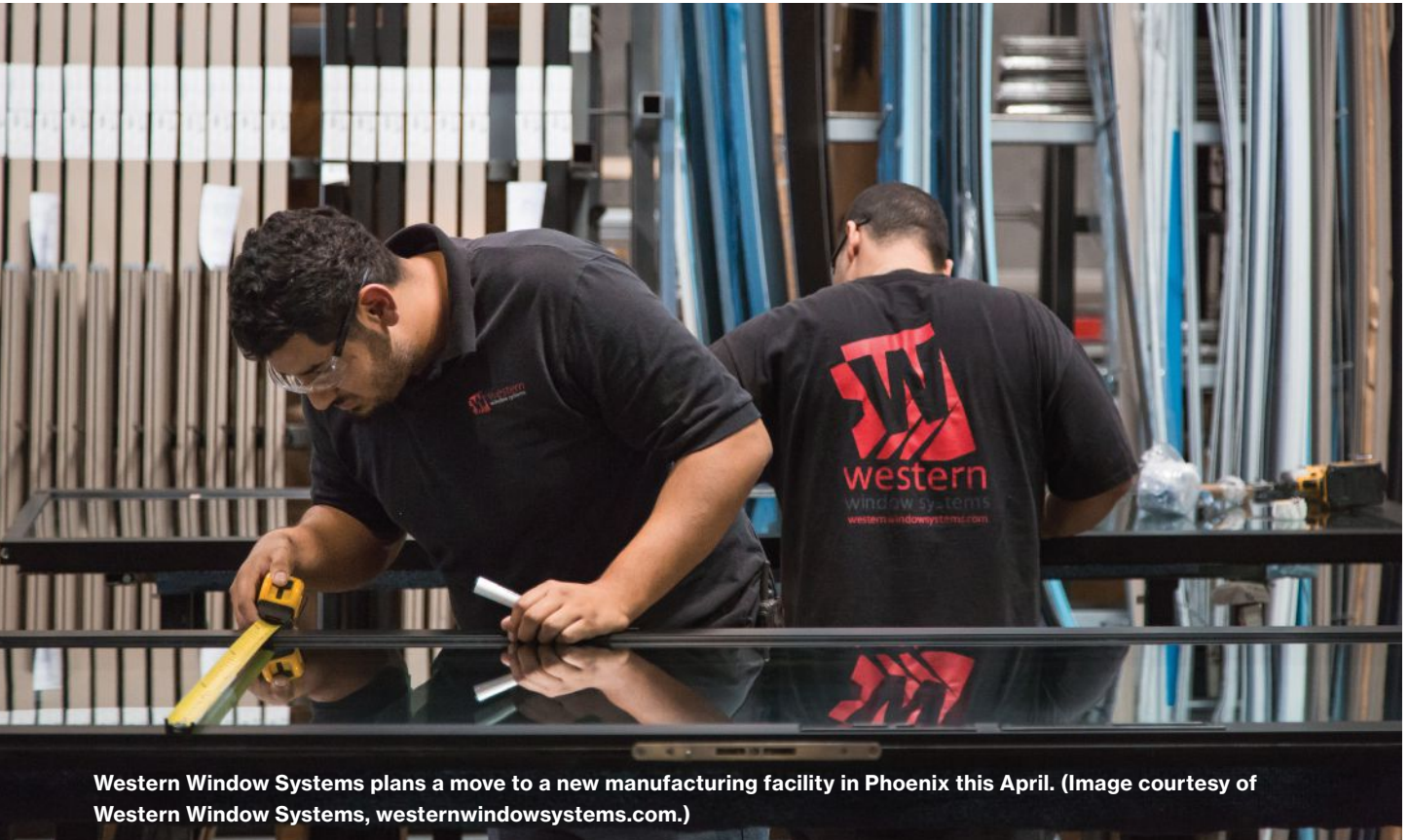
Streetsboro, Ohio
soft-lite.com
 330/528-3400

Product Lines: Vinyl windows and sliding patio doors.

SUNRISE WINDOWS AND DOORS

Temperance, Mich.
sunrisewindows.com
 734/770-1841

Product Lines: Vinyl windows and composite patio doors; fiberglass and steel entry doors.



Western Window Systems plans a move to a new manufacturing facility in Phoenix this April. (Image courtesy of Western Window Systems, westernwindowssystems.com.)

THE WINDOW DESIGNS GROUP

Toronto, Ontario
vinylwindowdesigns.com
 905/850-3222

Product Lines: Vinyl windows.

THERMAL WINDOWS & DOORS LLC

Murrysville, Pa.
thermalwindowsanddoors.com
 800/245-1540

Product Lines: Aluminum and vinyl windows and patio doors.

UNITED WINDOW AND DOOR MFG.

Springfield, N.J.
unitedwindowmfg.com
 800/848-4550

Product Lines: Vinyl windows and patio doors.

WALLSIDE WINDOWS

Taylor, Mich.
wallsidewindows.com
 313/292-4400

Product Lines: Vinyl windows and patio doors.

WESTERN WINDOW SYSTEMS

Phoenix, Ariz.
westernwindowssystems.com
 877/268-1300

Product Lines: Multi-slide doors, bi-fold doors, window walls, sliding glass doors, hinged windows, pivot doors.

WINCORE WINDOWS AND ENTRY DOORS

Parkersburg, West Va.
wincoreqindows.com
 304/482-7236

Product Lines: Vinyl windows and patio doors; fiberglass entry doors.

\$30 MILLION TO \$50 MILLION

AMERIMAX WINDOWS & DOORS*

Norcross, Ga.
Norcrossamerimaxwindows.com
 214/215-2434

Product Lines: Vinyl windows and patio doors.

ARCADIA CUSTOM*

Tucson, Ariz.
arcadia-custom.com
 520/284-2070

Product Lines: Wood and aluminum windows, entry doors, and patio doors.

ASSURA WINDOWS AND DOORS

Pompano Beach, Fla.
assurawindows.com
 888/574-0367

Product Lines: Vinyl and aluminum windows and patio doors, and impact windows and doors under the TM Windows (floridasbestwindow.com) and AWP Windows & Doors (awp-windowsanddoors.com) brands.

TOP 100 MANUFACTURERS



Euro Vinyl Windows provides updates on product enhancements to its dealers via an email newsletter. (Image courtesy of Euro Vinyl Windows, evw.ca.)

GERKIN WINDOWS AND DOORS

South Sioux City, Neb.
gerkin.com
402/494-6000

Product Lines: Vinyl windows and patio doors, aluminum windows for modern residential homes, and storm doors.

INLINE FIBERGLASS LTD.

Toronto, Ontario
inlinefiberglass.com
866/566-5656

Product Lines: Fiberglass windows and patio doors.

LINCOLN WINDOWS

Merrill, Wis.
lincolnwindows.com
800/967-2461

Product Lines: Aluminum clad, vinyl clad, and wood windows and patio doors.

MIDWAY WINDOWS & DOORS

Chicago
midwaywindows.com
708/594-2600

Product Lines: Alliance Window Systems vinyl windows and patio doors.

NEWSOUTH WINDOW SOLUTIONS LLC

Tampa Bay, Fla.
NewSouthWindow.com
813/626-6000

Product Lines: Vinyl windows, fiberglass entry doors, patio doors and impact-rated products.

NOVATECH*

Sainte-Julie, Quebec
novatechgroup.com
844/986-8001

Product Lines: Steel and fiberglass entry doors; vinyl patio doors; door glass.



OKNA WINDOWS AND DOORS

Bristol, Pa.
oknawindows.com
215/788-7000

Product Lines: Vinyl and composite windows and patio doors.

RSL

Egg Harbor Township, N.J.
RSLinc.com
800/257-8641

Product Lines: Vinyl sliding patio doors, door glass.

SEMCO WINDOWS

Merrill, Wis.
semcowindows.com
800/933-2206

Product Lines: Wood and aluminum clad windows and patio doors.

STANLEY DOORS

Joubert, Montreal
stanleydoorproducts.com
514/355-4877

Product Lines: Fiberglass and steel entry doors and patio doors.

General information: Stanley Doors is a subsidiary of Dusco Doors (duscodoors.com).

STARLINE*

Surrey, British Columbia
starlinewindows.com
604/882-5100

Product Lines: Vinyl windows and patio doors; commercial thermally broken aluminum windows, doors, and window-wall systems.

THERMAL WINDOWS INC.

Tulsa, Okla.
thermalwindows.com
918/663-7580

Product Lines: Aluminum and vinyl windows and patio doors.

THOMPSON CREEK WINDOW CO.

Lanham, Md.
thompsoncreek.com
866/572-7335

Product Lines: Vinyl windows and patio doors; steel and fiberglass entry doors.

VINYLMAX WINDOWS

Hamilton, Ohio
vinylmax.com
800/847-3736

Product Lines: Vinyl and wood windows and patio doors.

VISTA WINDOW CO.*

Lordstown, Ohio
vistawindowco.com
330/2559-4700

Product Lines: Vinyl windows and patio doors.

VIWINCO INC.

Morgantown, Pa.
viwinco.com
610/286-8884

Product Lines: Vinyl impact-resistant windows.

VIWINTECH WINDOW & DOOR INC.

Paducah, Ky.
viwintech.com
800/788-1050

Product Lines: Vinyl windows and patio doors.

VYTEX WINDOWS

Laurel, Md.
vytexwindows.com
301/362-1000

Product Lines: Vinyl windows and patio doors.

\$15 MILLION TO \$30 MILLION

AIR MASTER WINDOWS AND DOORS

Barceloneta, Puerto Rico
airmasterpr.com
787/623-1800

Product Lines: Aluminum windows and doors.

AMERICAN EXTERIORS

Greenwood Village, Colo.
amext.com
800/794-6369

Product Lines: Vinyl windows.

AVANTI INDUSTRIES LLC

Glendale, Ariz.
avantiwindow.com
602/559-9900

Product Lines: Vinyl windows and patio doors.

COMFORT WINDOWS

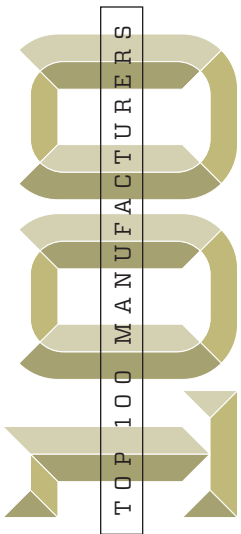
Syracuse, N.Y.
comfortwindows.com
315/457-0022

Product Lines: Vinyl replacement windows and patio doors; fiberglass entry doors.

GILKEY

Cincinnati, Ohio
gilkey.com
513/769-4527

Product Lines: FRP composite, vinyl and aluminum windows; FRP composite patio doors.



GLASSCRAFT DOOR CO.

Houston, Texas
 glasscraft.com
 713/690-8282

Product Lines: Composite, steel, and wood entry doors; interior rolling doors and hardware; decorative inserts.

HAYFIELD WINDOW & DOOR CO.

Hayfield, Minn.
 hayfieldwindows.com
 507/477-3224

Product Lines: Wood and vinyl windows and patio doors.

IDEAL WINDOW

Bayonne, N.J.
 idealwindow.com
 201/437-4300

Product Lines: Vinyl windows and patio doors.

KASSON & KELLER

Fonda, N.Y.
 ecoshieldwindows.com
 800/452-7535

Product Lines: Vinyl windows sold under the EcoShield Window Systems brand name.

KENSINGTON HPP INC.

Vandergrift, Pa.
 kensingtonhpp.com
 724/845-5300

Product Lines: Vinyl windows and patio doors.

LUX WINDOWS AND GLASS LTD.*

Calgary, Alberta
 luxwindows.com
 403/276-7770

Product Lines: Aluminum clad, hybrid and vinyl windows; aluminum clad and vinyl patio doors; fiberglass entry doors.

*Company did not confirm sales estimate.

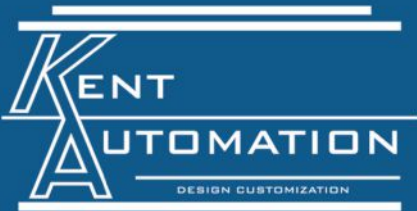
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ProVia reports it has intensified its focus on the window business. (Image courtesy of ProVia, provia.com.)

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Belfast, Maine
 mathewsbrothers.com
 207/505-0585

Product Lines: Vinyl and composite windows.

MOSS SUPPLY CO.

Charlotte, N.C.
 mosssupply.com
 800/438-0770

Product Lines: Vinyl and aluminum windows; impact patio doors.

NORTH EAST WINDOWS USA INC./ QUALITY LINEALS USA INC.

Merrick, N.Y.
 northeastwindowsusa.com
 516/378-6577

Product Lines: Vinyl and aluminum windows; aluminum storm doors and windows; glass block windows.

NT WINDOW INC.

Fort Worth, Texas
 ntwindow.com
 800/969-8830

Product Lines: Vinyl and aluminum windows and patio doors; storm doors.

PETER KOHLER*

Debert, Nova Scotia
 peterkohler.com, kohltech.com
 800/565-4396

Product Lines: Vinyl and wood/vinyl windows; vinyl patio doors; steel and fiberglass entry doors.

SIW WINDOWS AND DOOR MFG.

Delray Beach, Fla.
 siwimpactwindows.com
 877/274-8283

Product Lines: Aluminum windows and patio doors; impact-rated products.

SOLAR INNOVATIONS ARCHITECTURAL GLAZING SYSTEMS

Pine Grove, Pa.
 solarinnovations.com
 570/915-1500

Product Lines: Wood, aluminum and vinyl windows; skylights; operable glass walls and doors; greenhouses, sunrooms and conservatories.

SUN WINDOWS INC.

Owensboro, Ky.
sunwindows.com
270/684-0691

Product Lines: Aluminum clad wood and vinyl windows, wood clad sliding, bi-fold and French doors.

THERMAL WINDOWS & DOORS LLC

Murrysville, Pa.
thermalwindowsanddoors.com
800/245-1540

Product Lines: Vinyl windows; fiberglass and steel entry doors.

TRU TECH DOORS*

Vaughan, Ontario
trutechdoors.com
888/760-0099

Product Lines: Steel and fiberglass entry doors; aluminum garden doors; decorative wrought iron and door glass.

VINYL KRAFT

New Boston, Ohio
Vinylkraft.com
740/456-4949

Product Lines: Vinyl windows and patio doors.

WIN-DOR INC.

Brea, Calif.
windorsystems.com
714/385-1202

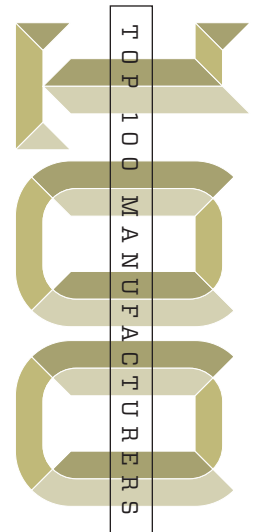
Product Lines: Hybrid vinyl/aluminum folding and multi-slide doors; folding windows.

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AJR WINDOW TECHNOLOGIES

Toronto, Ontario
ajrwindows.com
416/455-4672

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cswindows.com
 847/233-9800

Product Lines: Vinyl windows and patio doors; fiberglass entry doors.

EURO VINYL WINDOWS

Woodbidge, Ontario
evw.ca
 905/851-9711

Product Lines: Vinyl windows and patio doors.

GLASS-RITE

Albuquerque, N.M.
Glass-Rite.com
 505/764-9899

Product Lines: Vinyl, aluminum and clad windows and patio doors.

SEAWAY MFG. CORP.

Erie, Pa.
seawaymfg.com
 814/450-6315

Product Lines: Vinyl windows; sliding patio doors; sunrooms and patio rooms.

SOLARIS INTERNATIONAL

L'Ange-Gardien, Quebec
solaris-intl.com
 418/822-0643

Product Lines: Vinyl windows and patio doors.

VANTAGEPOINT INDUSTRIES LLC

Ontario, Calif.
vantagepointindustries.com
 909/786-0629

Product Lines: Wood and fiberglass entry doors, patio doors, interior doors. ☐

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Until now a well performing, true black color solution has been problematic in the vinyl window market. New Pinnacle Black Onyx from VEKA has solved this mystery with the introduction of a black color laminated window profile that has improved UV reflectance over other dark colors. In comparison to existing methods, Pinnacle laminates achieve a 10% lower predicted heat buildup in the vertical when compared to other dark color solutions. This unique material property qualifies Pinnacle for use in all of North America. Presto! Like magic you can expand your product platform to include the new Pinnacle Black Onyx laminate.


Pinnacle
Performance Color Solutions by VEKA



PLANT *Transformation*

MAXIMIZE LABOR AND GAIN A COMPETITIVE EDGE WITH AUTOMATION

By Larry Johnson

The residential window and door market is poised for real growth throughout 2017. As the housing market continues to regain health, and the Federal Reserve hiked its benchmark interest rate for the second time in 10 years, mortgage rates are on the rise. Market watchers also anticipate that the new presidential administration will be conducive to additional growth. For residential window manufacturers, volumes are on the rise. All good news—and it means that many in our industry are considering new investments that, just a year or two ago, appeared out of reach.

Automated manufacturing technology, particularly high-speed automation, has been a topic of conversation for insulated glass manufacturers in particular for the past few years and it continues to proliferate across both the residential and commercial sectors of the glass space. Of many implications, high-speed automation enables manufacturers to tackle new challenges at a critical time.

Volume and Labor

At a stage when our industry is staring down several labor challenges that do not

appear to be waning, high-speed automation offers a path to increase volume and reduce labor. It is estimated that automation may enable an IG fabricator to get 1,200 units off the line with just three workers per shift—compared to up to 12 people accomplishing the same without automation.

As skilled workers across the broader building and construction industry age out of the workforce, it has been difficult for manufacturers to find and retain quality workers to replace those headed for retirement. High-speed automation indeed helps address some of those challenges but, to be clear, automation doesn't eliminate jobs. Rather, it enables manufacturers to focus on their best people. Plant managers can shift workers to high-value tasks to boost quality, service and profit.

Why Now?

What's happening in 2017 that makes this shift in thinking about how we manufacture more attractive and, perhaps, more necessary? High-speed automation has proven itself. It's no longer a new, futuristic technology; we're actually seeing the benefits.

“Manufacturers utilizing automation today are producing high-quality, high-performance units that will prove themselves in the field and are likely to result in a reduction of warranty claims.”

Automation



A high-speed IG automation line offers a path to increase volume and reduce labor. (All images courtesy of Erdman Automation, erdmanautomation.com.)

Manufacturers utilizing automation today are producing high-quality, high-performance units that will prove themselves in the field and are likely to result in a reduction of warranty claims. Also, as federal and state energy codes continue to change and demand higher performance, automation can help manufacturers meet increasingly lofty benchmarks.

Simultaneously, the residential window market is perhaps more competitive than ever before. Price has become more of

an issue for some manufacturers. As sale prices dragged down during the housing crisis, some manufacturers seized the opportunity to utilize additional manufacturing capacity to be more competitive and to offer more features and benefits that command a higher margin.

Staying Ahead

High-speed automation is, in many ways, a great equalizer. But the next challenge for manufacturers is to discover other

ways to transform operations and sharpen their competitive edge. In my experience, this takes dedication to optimizing operations based on an investment in automation-enabled capabilities. And it means prioritizing the high-value parts of a business.

Easier said than done. But, for the average residential window manufacturer, here's one example of how that could work. Consider other parts of the finished window besides the IG unit, such as the

“ High-speed automation helps address some of the labor challenges in the industry, but it doesn’t eliminate jobs. Rather, it enables manufacturers to focus on their best people.”

screen. The overall thermal performance of the window greatly depends on the IG—a true high-value and high-margin component. Screens add essential functionality for the end user but deliver lower margins for manufacturers.

Window manufacturers may stand to benefit by focusing on the IG units with automated lines and outsourcing other lower-margin components to a trusted third party. Maximizing labor comes into effect again—dedicating skilled workers to high-value products and processes only makes sense given the increasingly competitive nature of the market.

It doesn’t end with prioritizing IG over lower-margin components, either. Automation remains a new and budding technology relative to the history of the window and door industry and to the age of many manufacturing plants. Consider whether your plant floor layout is optimized for efficient workflow, given the high volumes automation can produce. Can you source the right amount of raw materials to keep up with production? Are shipping operations equipped to handle greater volumes?

Bottom line—automation is not an end in itself. It is, however, the foundation on which innovative and forward-thinking window and door manufacturers can continue to differentiate themselves in the marketplace. We’re just beginning to realize the benefits and seize the possibilities. ☐



Larry Johnson is the vice president of IG sales for Quanex Building Products, quanex.com.



Automated processes require maintenance, care and attention to detail to make the most of the investment.

Turbocharge Your Production!

Stürtz Hi-Performance Welding

Horizontal Turbo Welder



Stürtz **Four Point Turbo Welders** feature our state-of-the-art TurboWeld technology, combining precision servo controlled head motion with higher temperatures and controlled joining pressure to provide strong, consistent welds with tighter tolerances than conventional welding machines.

- Available in both horizontal and vertical configurations
- Fully programmable welding parameters for each profile, allowing melting and joining times to be optimized for different product requirements
- Simple yet powerful user interface
- Reduced head travel
- Improved accuracy compared to conventional designs
- Double stack welding is standard
- Cycle time reduced by approximately 30%
- Notched welding is an available option
- Optional bar code scanning to eliminate production files
- Optional networking capability to a Stürtz corner cleaner
- Can be configured as a standalone machine or as part of an automated welding and cleaning line



Vertical Turbo Welder



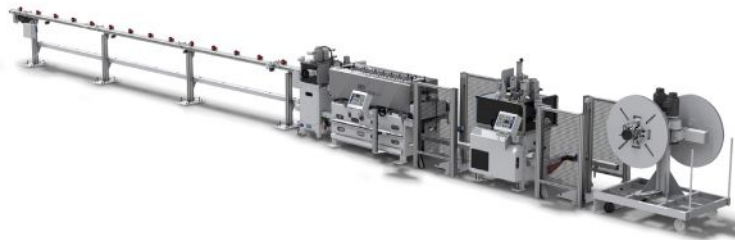
MANUFACTURING EQUIPMENT *Showcase*

CHECK OUT THE LATEST TECHNOLOGY FOR THE MANUFACTURE OF RESIDENTIAL WINDOWS AND DOORS

High Performance Turbo Welders by Sturtz Machinery Inc.

Sturtz Turbo Welders provide high speed, accurate welding to increase throughput in a standard machine footprint, according to the company. These high-performance machines are said to reduce overall welding cycle time by approximately 30 percent by utilizing high-speed servo motors in place of cylinders and by increasing the welding temperature from what is seen on conventional welders. They are available in horizontal and vertical configurations. The horizontal machines can be used as standalone welders or as part of a high-speed automated welding and cleaning line.

330/405-0444 | sturtz.com



Intercept 2.5 by GED Integrated Solutions Inc.

GED's new Intercept 2.5 replaces the GEN I and GEN II Warm Edge Spacer Technology Frame Machines. The 2.5 combines the attributes of the former Intercept GEN II with technological advances of the i-3 Intercept. Incorporating state-of-the-art technologies and enhancements enables the machine to now switch between Intercept Ultra Stainless, ThinPlate and Blackline materials, according to the company. The newly designed servo corner crimper reportedly ensures consistent corner spacer folding and the system is said to perform 15 percent faster than previous generations.

330/963-5401 | gedusa.com

**VersaPail/VersaDrum Bulk Melters
by Nordson Corp.**

VersaPail melters support material processing from 20-liter or 5-gallon pails. VersaDrum melters process material from 200-liter or 55-gallon drums. Both the pail and drum melters can be used alone or can use an automatic changeover system that links two bulk melters together to reduce or eliminate the downtime associated with pail or drum changes. The hydraulic passages in these bulk melters are designed to eliminate dead spaces where undesired curing could occur.

800/683-2314 | nordsonadhesive.com



CNC Drilling Center by Kent Automation

The servo-controlled single-axis CNC drilling center is designed for multi-lane drilling of window profile installation and anchor holes. All holes spacing and drilling are completed automatically, according to the company, and the machine's HMI touchscreen allows the operator to select the correct height and width of window for drilling. A two-hand control automatically starts the machine and the servo motor positions the drills in the correct location and drills a double diameter hole as required in each profile. With four drills on a servo-driven carriage, the machine features THK bearing and linear rails, rack and pinion drive, and an Allen Bradley electrical cabinet, servo and PLC control.

330/678-6343 | kentautomation.com



FLEXset Window Cutters by Rangate

The FLEXset contains a complete set of cutter heads needed to produce a 68-millimeter tilt-and-turn window, with optional cutters for casement window capacity available. Engineered by Zuani for accuracy and precision, the set ships with carbide insert knife cutters which assure both longevity and cut consistency, according to the company. Each set includes the shims, spacers and bushings to achieve all profiling and tenoning cuts. Full range of bore sizes are available, starting at 1¼ inches.

888/810-2522 | rangate.com



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501 Pheasant Ridge Drive
Watertown, SD 57201
sales@dakotaautomation.com



Pneumatic Punching Tool by Shoham Machinery Ltd.

Shoham's punching tools offer an optimal solution for secondary processing of aluminum and vinyl extrusions before assembly, according to the company, which says a typical punching cycle only takes a few seconds. Shoham also makes a tool with multiple dies around the press, utilizing all sides of the machine. + (972) 3679-7600 | shoham-machinery.com



Crafter Machining Center by Soukup America

The Crafter is an NC angular machining center designed specifically for custom precision window and door joinery. The Crafter is said to be able to fabricate up to 25 complete sash window components per eight-hour shift, and the company reports that users can switch between window or door styles with minimal changeover times. The outside squaring of clamped sashes is done using the tenoning spindle. The last corner of the sash is partly profiled on a tenoning spindle in order to avoid any splitting of the last sash corner during storm-proofing.

855/476-8587 | soukupamerica.com

Vertical Glass Washer by CRL Glass Machinery

The CRL Glass Machinery model VEW63 is ideal for insulating glass and general glass cleaning. Using power-driven conveyors in all sections, it moves multiple or large glass lites up to ½-inch thick through the cleaning process at speeds of up to 22 feet per minute, according to the company. It can clean and dry capacities of up to 63-inch glass height in one pass and 126-inch in two passes. The washer features recirculating wash and rinse compartments with four low-emissivity brushes to provide a reportedly fast and quality wash. Other features include fluorescent glass inspection lights on the outlet conveyor and sound-reducing enclosures around the drying knives and air blower. To minimize corrosion and increase longevity, all frame components in contact with the washing areas are made from stainless materials. The unit utilizes an electric automatic solenoid valve to connect fresh water for final rinse.

708/863-5446 | crlaurence.com



Precision Sealant Application Table by CSE Automation LLC

The Precision Sealant Application Table is designed and manufactured to meet specific production applications from the size of the table to the type of material being applied. The CSE PSAT includes an Allen Bradley controls package that automatically applies a consistent bead of sealant utilizing the company's non-contact edge detection system. Four servo axis offer the ability to process multiple product types on the same table with automatic changeover. The CSE PSAT offers true-divided-light tracing capabilities with powered in-feed and out-feed conveyors for material handling. It can also be developed for use with processing special shapes, units and/or include a rotating nozzle mounted at an angle to avoid any hardware that is attached to the frame or sash as it enters the table.

402/861-6104 | cseautomationllc.com



Anny CN-X Doorjamb Machine by EuGenie Door Solutions

The Anny CN-X door jamb solution can machine hinges, dados, locks, astragal, T-posts, heads and sills. It is the top model of the company's jamb machinery series. The three-axis numerical control door jamb machine is built for increased ergonomics and safe manipulation, according to EuGenie, and can machine into wood, PVC, composite materials and aluminum.

855/384-3643 | eugeniedoor.com





Inline Automatic with Side Sealers by EDL Packaging

The Inline Automatic with Side Sealers provides window and door manufacturers the ability to wrap random product in a LDPE film. The Inline Automatic wrapping machine includes a product-centering device, continuous rotary hot air side sealers and an automated moving film cradle. This design is said to enable the system to identify the window size and move the appropriate sized film into place for wrapping.

920/347-0144 | edlpackaging.com

Pro-Clean CNC-6100 by Proline

The Pro-Clean CNC-6100 is a twin-head cleaner and fabrication center designed for sash processing. In addition to complete interior and exterior cleaning, the machine is also capable of performing fabrication steps usually done in pneumatic punch dies. Typical fabrication steps performed include tilt latch routing, pivot bar installation openings and attachment holes, drainage, lock and keeper installation holes, interlock and lift handle cutbacks, and night latch routing.

905/264-6230 | prolineautomation.com



2000 Series Automated Glazer by Erdman Automation Corp.

The Erdman 2000 Series Automated Glazer is an unmeted applicator that provides adjustable sealant diameter with speed and flow control instead of gear-pump metering. The company reports the machine can reduce waste up to 85 percent and clean up as much as 95 percent. Mechanically driven and electronically controlled, the machine is also said to reduce rejections due to improper bedding/glazing. Heated or ambient models are available. ☐

763/389-9475 | erdmanautomation.com



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FeneTech Inc.

FeneVision ERP operates on a graphical user interface that allows users to see what is happening on the production floor in real time. Tools include web- and client-based quotation and order handling, pricing and costing, the dynamic creation of bills of materials, capacity planning, production scheduling, dynamic or batch glass cutting opti-



mization, lineal optimization, machine interfaces, tracking control, and mobile delivery using an iPad. It also offers invoicing, return merchandise authorization and reporting through FeneVision Business Intelligence. 330/995-2830 | fenetech.com

improveit 360

improveit 360 helps manage leads, marketing, sales, projects, scheduling, call center functionality, quoting, and reporting in one centralized location. The program is said to offer efficiency,



reduce day-to-day chaos and help grow business. Users can track and manage relationships, automate

communications, increase conversions, and manage projects from contract to completion. The enterprise system is scalable and the company offers customization and integration services. 866/421-3360 | improveit360.com

WTS Paradigm

WTS Paradigm launched its cloud platform and the Web CenterPoint product,



allowing users to experience the features of CenterPoint in a browser. It is compatible with all mobile devices and does not require users to manage any hardware. 608/664-9292 | wtsparadigm.com

Ply Gem

Ply Gem offers Sound Transmission Class Glass Packages with ratings up to STC 35 across several of its vinyl window lines.



The technology features variant glass thicknesses, laminated glass or asymmetric laminated glass, which helps to reduce unwanted sound and outdoor noise. 888/975-9436 | plygem.com

WinDoor Inc.

The new 8100 Series Sliding Glass Door from WinDoor Inc. offers a contemporary style with a new 2-inch wide narrow interlock that achieves the same overall performance as the original 8100 series



with a 4 5/8-inch interlock. Featuring one through five track capabilities, it can reach up to 12 feet high in pocket, multi-configuration bypass, and 90-degree and 135-degree systems. Impact or non-impact rated versions are available. 407/481-8400 | windoorinc.com

MI Windows and Doors

The 1630 Vinyl Single-Slider window from MI Windows and Doors incorporates dual-pane insulated glass packages to offer thermal performance qualities. It meets Energy Star requirements in North-Central, South-Central and Southern climate zones, and features a slim profile with clean, continuous lines. Available in



two- and three-lite configurations with a DP-50 option, the window is available in white, clay or almond with beveled exterior edges, an integral pull rail and decorative mortise recessed locks. It incorporates a warm-edge spacer system, a welded, multi-chambered frame and sash, heavy-duty weather stripping and a dual adjustable roller system. 717/365-3300 | miwindows.com

Pella Corp.

Pella offers the new Architect Series Reserve line in hung, casement and awning windows, and hinged patio doors. The Architect Series Reserve incorporates design elements from historic homes and buildings, including putty glaze profile



grilles and sashes, archival butt joinery, engineered vertical through-stile construction, thick sash and grille profiles with authentic sightlines, and wash lugs that turn and tilt to maintain the wash feature of windows. 888/847-3552 | pella.com

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Enduron



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Glazes up to 4 sashes or frames per minute

Radius or square bead placement in corners

The **Meridian** is a fully automated four-sided screening machine. The operator places a frame, draws across the material, and with the press of a button, the frame is automatically sized and screened.

Standard machine screens frames from 12"x14" to 36"x80"

Automatic size detection and clamping

Processes up to 600 screens per 8 hr shift

The spline is automatically inserted and trimmed in one operation

Four screen roll holders



Meridian



Tel: 732.356.6906

www.spadixtechnologies.com

Please review our website for additional product reviews and sample videos.



Godwin

battenfeld-cincinnati USA

Paul Godwin assumed the position of president and CEO of battenfeld-cincinnati USA, battenfeld-cincinnati.com. Godwin

brings extensive experience in extrusion processes, materials and equipment. He started his career with Dow Chemical in 1979 and held professional assignments with Bayer, HPM and Maag prior to joining battenfeld-cincinnati USA, where he led sales and marketing and, most recently, the engineering department.



Sridharan

TigerStop LLC

TigerStop LLC, tigerstop.com, hired *Rakesh Sridharan* as the company's new CEO of worldwide operations. Sridharan comes to TigerStop

from Leatherman Tool Group where he was vice president of operations. He most recently served as president of Germany-based LED Lenser.

Keystone Certifications Inc.

Keystone Certifications Inc., keystone-certs.com, named *Tracy Rogers* to the newly created position of vice president of sales and marketing, and *Jon Martini* as the new validations manager.

Rogers has 30 years of experience in the fenestration industry, most recently with Quanex Building Products. Rogers' responsibilities include developing sales and marketing programs to the fenestration industry.

Martini is a former senior project engineer from Intertek/ATI's evaluation services department. A licensed professional engineer, his experience includes code compliance certification, testing and engineering evaluation in accordance with building codes and standards.

Deceuninck North America

Deceuninck North America, deceuninckna.com, hired *Frank Perna* as vice president of operations for its Monroe



Perna

and Fernley facilities. In this role, Perna is responsible for manufacturing activities. He brings more than 25 years of experience in the industry, including extrusion, window fabrication and all phases of operations and plant management.



Card

Quanex Screens

Quanex Screens LLC, quanex.com, named *Jim Card* as product sales specialist. Card is responsible for helping to develop client relationships,

working with territory sales managers to support customer needs and grow their businesses. Card has more than 22 years of experience working within the fenestration industry.



Junker

Brio USA

Brio USA, briousa.com, appointed *Patrick Junker* as national sales manager. In this newly created position, Junker will lead the sales team

for the folding and sliding hardware and retractable insect screen offerings of Brio USA in both residential and commercial market segments.



Heinaman

Consulting Collaborative

John Heinaman was named managing principal of the West Coast office for Consulting Collaborative, consulting-collaborative.com. He has over four decades of career experience, including sales and management positions with PPG Industries, executive positions with Model Glass Co. and he served as president and CEO of Heinaman Contract Glazing. Heinaman also served as chairman of the National Glass Association Board of Directors.

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Windows on Wall Street

From Lincoln International

Stock prices and valuations of publicly traded window and door companies outperformed the broader market in January as the W&D Stock Index increased 3.1 percent as compared to a 2.1 percent increase for the S&P 500. Stock prices continue to rise as a result of positive construction activity. The National Association of Home Builders reported December housing starts increased to 1.23 million units on a seasonally adjusted basis. Single-family housing starts fell in December but overall were up 3.9 percent for the year. Investors have pointed to the rise in single-family housing starts as a signal that overall construction activity will continue to recover. Overall, recent residential construction data continues to give investors comfort that construction activity will maintain its positive momentum in 2017.

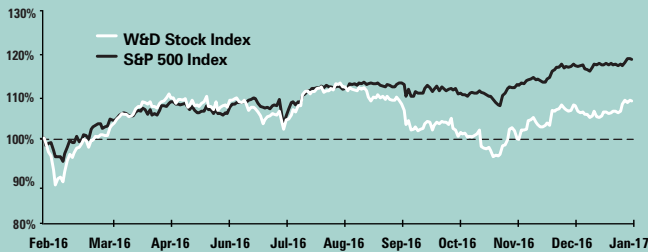
WD Stock Watch

As of December 30, 2016

Company	Current Price (\$)	52 Week		*EV/EBITDA
		High	Low	
Builders FirstSource (BLDR)	\$10.97	\$14.14	\$6.50	9.2x
LCI Industries	22.05	40.66	51.67	11.5x
Fortune Brands Home & Security Inc. (FBHS)	53.46	64.47	44.19	12.3x
Home Depot Inc., The (HD)	134.08	139.00	109.62	12.2x
Huttig Building Products Inc. (HBPI)	6.61	7.00	3.01	9.1x
Lowe's Cos. Inc. (LOW)	71.12	83.65	62.62	10.1x
Masco Corp. (MAS)	31.62	37.38	23.10	10.3x
Masonite International Corp. (DOOR)	65.80	72.75	45.14	10.7x
PGT Inc. (PGTI)	11.45	12.49	8.69	11.3x
PPG Industries Inc. (PPG)	94.76	117.00	88.37	11.3x
Ply Gem Holdings, Inc	16.25	16.90	8.58	8.7x
Quanex Building Products Corp. (NX)	20.30	21.90	15.33	9.1x

The WD Stock Watch includes a select list of publicly-traded companies involved in the window and door industry. For *EV/EBITDA: EV (enterprise value) = Market value of stock plus debt outstanding minus cash, and EBITDA = Earnings before interest, taxes, depreciation and amortization. Data provided courtesy of Lincoln International.

WD Stock Index



Note: Local currency converted to USD using historical spot rates. The WD Stock Index consists of the above stocks weighted by market cap. Data provided courtesy of Lincoln International.

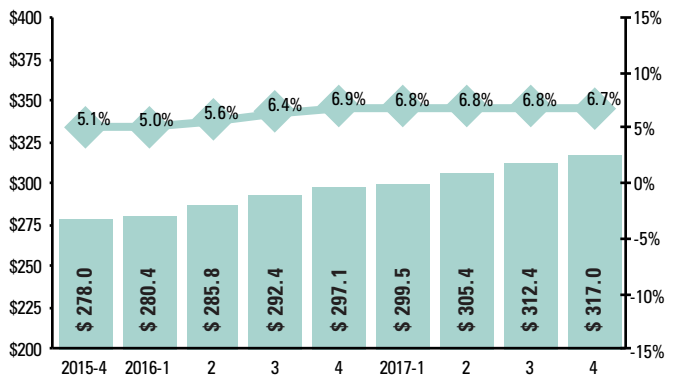
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Market Snapshot—Remodeling Activity

The coming year is expected to see sustained momentum in home remodeling and repair spending, according to the Leading Indicator of Remodeling Activity released in January by the Remodeling Futures Program at the Joint Center for Housing Studies of Harvard University, jchs.harvard.edu. The LIRA projects that annual growth in home improvement and repair expenditures will remain elevated throughout 2017 with spending levels ending the year up 6.7 percent at \$317 billion, on par with the 6.9 percent growth estimated for 2016. "Growth in home prices is continuing at a healthy pace and encouraging homeowners to make remodeling investments," says Chris Herbert, managing director of the Joint Center for Housing Studies. "Home sales are remaining on an upward trajectory, as well and this, coupled with continued growth in remodeling permit activity, suggests another strong year for home improvements."

Leading Indicator of Remodeling Activity—Fourth Quarter 2016



Source: Joint Center for Housing Studies

The Talk on WindowandDoor.com—What Dealers Want

"It's important for manufacturers to be aligned with the industry trends their dealers see," noted Brian Waldman, Renoviso Inc., renoviso.com, in a recent Talk on windowanddoor.com. "Manufacturers who understand and communicate their potential value proposition and align their capabilities with where the industry is going are great partners for specialty retailers." In a related reader poll, nearly 55 percent of respondents declared that local service and product support was the most important aspect of the dealer/manufacturer relationship.

The Last Word—On Automation and Labor

"As skilled workers across the broader building and construction industry age out of the workforce, it has been difficult for manufacturers to find and retain quality workers to replace those headed for retirement," says Larry Johnson, Quanex, quanex.com, on page 46. "High-speed automation indeed helps address some of those challenges but it doesn't eliminate jobs. Rather, it enables manufacturers to focus on their best people."

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