ENGINEERED WOOD Journal

AUTUMN 2017

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About the Cover Photo:
EWTA's annual Info Fair supplier exhibition joins APA - The Engineered Wood Association's Annual Meeting in Huntington Beach, Calif., at the end of October. See story on page 32

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Looking at Workplace Safety in a New Way

When I heard the buzz about Weyerhaeuser's new safety plan, I was skeptical that it would warrant much more than a mention in our Industry Connections briefs. I've written about company safety programs in the past (most often those of commercial construction companies) and most involve the introduction of a new code of conduct, a flashy new mission statement, and some additional training for employees. Not that such changes aren't welcome or necessary – in most cases they result in a safer workplace and better employee awareness – but they don't warrant a feature story.

Once I spoke with Greg Ellisor, Weyerhaeuser's corporate health and safety manager, I knew the changes they were making in their company were different than typical safety upgrades. In the past, the company tracked lagging safety indicators, which are metrics of injuries that had already occurred. Now Weyerhaeuser is taking a proactive approach by tracking leading indicators to help prevent injuries. Weyerhaeuser's new approach to safety focuses on lowering the rate of serious injury – such as fingertip amputations, permanent eye injuries, and fatalities – even further than it already is.

For a company that already has an extremely low number of work-loss injuries or illnesses (resulting in a low recordable incident rate) their actions are commendable. While serious injury is rare, it's still unacceptable, says Ellisor. "We recognized that though we had driven down our RIR, we were still having too many serious injuries. We were also suffering an employee or contractor fatality every year or so, and one fatality is simply unacceptable, period."

Read more about Weyerhaeuser's safety program shift, starting on page 12.

Editorial Contributions

This issue of the *Engineered Wood Journal* includes several member- and industry-contributed features, including a story from Donna Meade of Matthews Marking Systems, a company that supplies marking and coding solutions to the engineered wood industry. Read about the array of solutions available to the industry, starting on page 16

Also, Adam Montgomery with SEMCO discusses the monetary savings associated with lighting choices (page 56), and Darrell Turner and Sergei Kuznetsov present a case study of a board plant that has learned some lessons that are relevant to the OSB industry (page 60).

EWTA Info Fair and APA Annual Meeting

This year's event will be at the Hyatt Regency Huntington Beach Resort & Spa in Huntington Beach, Calif., and those of us here at EWTA look forward to connecting with many of you Oct. 28-30. The event is a great place to network, share ideas and catch up with old friends and colleagues. With each passing year, I look more and more forward to reconnecting with our members. See you at the beach!

scain@engineeredwood.org

EPA Extends Formaldehyde Emission Compliance Rules

On September 1, the U.S. Environmental Protection Agency (EPA) announced that it will be extending the dates for implementing its formaldehyde emissions rules for producers and users of composite wood products. The date for emission testing, recordkeeping, and certification labeling of domestic products was extended from December 12, 2017 to December 12, 2018. The date for certification labeling of imported products was extended from December 12, 2018 to March 22, 2019.

This most recent ruling follows a July 11 EPA ruling that allows labeling of compliant composite wood products as soon as compliance can be achieved and allow panel producers, fabricators, distributors and retailers to roll out compliant inventory.

The legislation that directed the EPA to develop the regulation that addresses formaldehyde emissions from composite wood products sold in the United States was signed into law in July 2010 with bipartisan support and the support from APA and other wood trade associations. The resultant EPA rules were first published in the Federal Register on Dec. 12, 2016, following extensive study and discussions with wood product industry representatives and public comment.

The regulation is intended to ensure that all composite wood panels and the finished products containing them – both domestic and imported – meet the world's most stringent standards for formaldehyde emissions. The regulation defines composite wood products as particleboard, medium density fiber board (MDF), and hardwood (decorative) plywood. The regulation explicitly exempts structural wood panels, glued-laminated timber and other engineered wood products such as prefabricated wood I-joists and laminated veneer lumber.

APA Joins Health Canada Workshop on Emerging Formaldehyde Regulation

Health Canada, Canada's governmental health agency, held a stakeholder workshop Sept. 6 to solicit input related to development of regulations aimed at reducing emissions from composite wood products produced in Canada or imported into Canada. Staff from *APA - The Engineered Wood Association* and representatives from several member companies and allied wood associations participated in the meeting.

Health Canada staff presented an overview of the proposed regulatory approach. Comments from workshop participants were unified in urging that the Canadian regulation align as close as possible with the EPA and CARB regulations for composite wood products. A draft of the regulation is scheduled to be published by fall of 2018.

Bill Supports Tall Wood Buildings

The U.S. Senate and House introduced a bill earlier this year that would establish a performance driven research and development program for advancing tall wood building construction in the U.S.

The bill, called the Timber Innovation Act, aims to find new and innovative uses for wood as a building material. If passed, the bill would accelerate the research and development of wood for use in construction projects, focusing on the construction of buildings over 85 feet in height.

The Act would incentivize investment through the National Forest Products Lab and American higher education institutions to conduct research and development of new methods for the construction of wood buildings. The bill further supports the ongoing efforts of the United States Department of Agriculture to promote the use of wood products as a building material for tall buildings.

At publication deadline, the bill had not yet been scheduled for a hearing.

Roseburg Forest Products To Build New Plant in S.C.

Roseburg Forest Products announced that it will expand its operations in the southeast U.S. with construction of a new engineered wood products plant in Chester, S.C. Groundbreaking on the planned manufacturing facility is expected in early 2018, with anticipated operation start-up in mid-2019. Once completed, the plant will create 148 full-time jobs.

Norbord Secures Allocation For Chambord OSB Mill

Norbord announced in a press release that the Quebec Minister of Forests, Wildlife and Parks, has granted the company a wood allocation for its curtailed Chambord, Quebec, OSB mill.

Norbord acquired the Chambord OSB mill in the fall of 2016. Production from the mill was indefinitely curtailed by its previous owner in 2008.

Tolko Announces Restart Of OSB Mill

Tolko Industries Ltd. announced recently that the company is restarting its OSB mill, located near High Prairie, Alberta, Canada.

The mill has been closed since 2008 when North American housing starts fell to a generational low, resulting in a loss of markets for OSB. With markets improving, the decision was made to restart the mill, with production expected to begin in the first quarter of 2018. When fully operational, the mill will employ approximately 175 people.

IN MEMORIAM

John B. Fery
Former Boise Cascade CEO John Fery died Feb. 11 at his home in Rancho Mirage, Calif. He was 86. Mr. Fery earned degrees from the University of Washington and Stanford, and moved to Boise, Idaho, to join the management team that created Boise Cascade Company in 1957. He became president and chief executive officer in 1972 and chairman of the board in 1978, remaining at the helm for 23 years. Throughout Mr. Fery's 37-year tenure at Boise Cascade Company, he played a key role in making the company a global force in wood products manufacturing and distribution, paper and paper products manufacturing, and office products distribution. Mr. Fery is survived by his wife of 63 years, Delores C. Fery; sons Brent, Bruce, and Michael Fery; daughters-in-law Sandy, Monica, and Patty Fery; and six grandchildren.

Diana Rassbach Glassman
Diana Rassbach Glassman of Tacoma, Wash., died August 19 at the age of 59. She worked at the help desk for APA – *The Engineered Wood Association's* technical services division from 2015 to 2017. Ms. Glassman graduated from Queen Anne High School in Seattle and attended Pacific Lutheran University in Tacoma before obtaining her Masters Degree in Education at the University of Puget Sound. She married John Glassman in 1979. Ms. Glassman is survived by her husband; children Katie and Tom; sisters Jan and Kathy and their children; sister-in-law Ann Glassman and her children Paul and Julia; and John's sister Carolyn Glassman and her children Olivia and Amelia.

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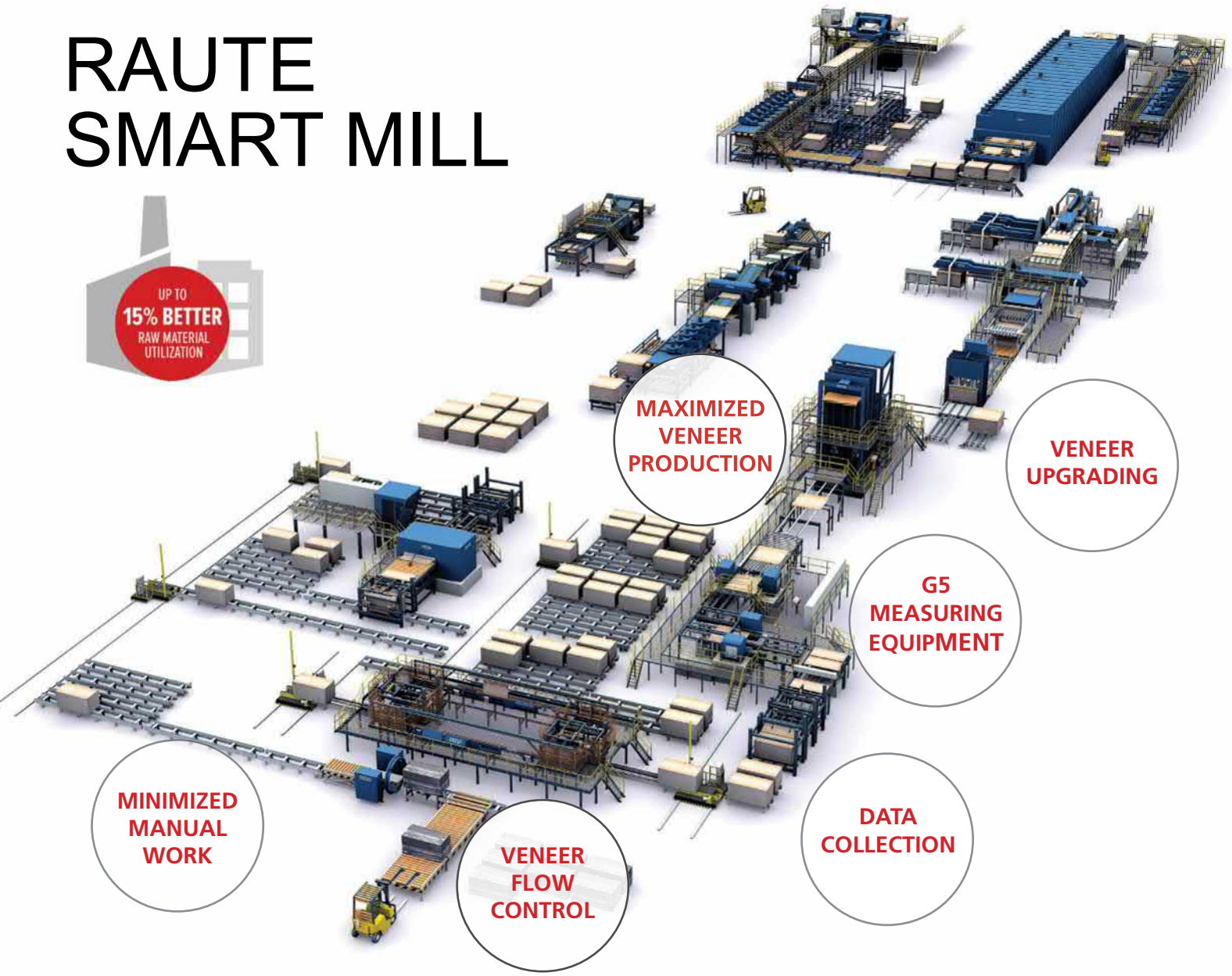

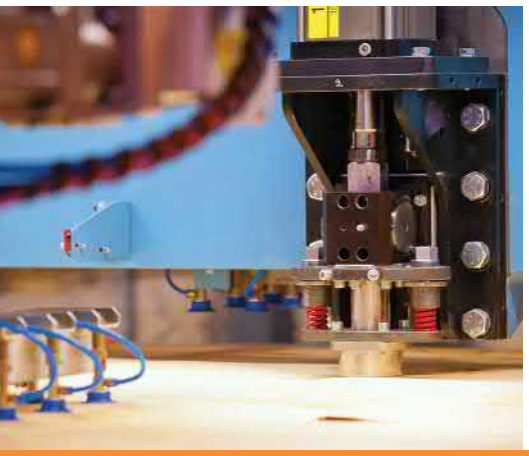

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Weyerhaeuser's New Safety Program Strives to Further Minimize Serious Injuries

by Sheila Cain

Weyerhaeuser has long been recognized as an industry leader in safety. The company's injury rate has consistently dropped and remains extremely low, and a number of its safety processes have been adopted or modeled extensively throughout the industry.

But company leaders were not satisfied. Minor "recordable" incidents had been significantly reduced, but serious incidents, though infrequent, were still occurring. Those numbers were not changing at a pace acceptable to the company.

"We had made great safety progress in the company in the last 20 years and achieved a recordable incident rate (RIR) of less than one by 2009, but we stalled there," says Greg Ellisor, Weyerhaeuser's corporate health and safety manager and safety liaison team leader. "We recognized that though we had driven down our RIR, we were still having too many serious injuries. We were also suffering an employee or contractor fatality every year or so, and one fatality is simply unacceptable, period."

Though it strives for zero injuries like most companies, Weyerhaeuser's business and safety leaders determined in 2015 that they could accept an RIR of around one, at least for the time being, recognizing that most of their recordables were minor in nature. At the same time, they agreed they needed a clear, actionable plan to prevent more serious injuries – such as fingertip amputations, permanent eye injuries, and fatalities – both in the mills and in the woods.

"We determined that we can accept the few minor recordable injuries, but we can't accept and allow life-altering injuries and fatalities," Ellisor says.

To address the issue, Weyerhaeuser – which owns more than 13 million acres of timberland in the U.S., manages 13 million acres in Canada, and operates 38 lumber and engineered wood product mills and 17 distribution centers throughout North America – turned its safety program on its head. The new program, phased in company-wide over several months last year, completely shifted the way injuries are tracked and placed its focus on preventing serious injuries and fatalities.

"Leading Indicators" Leading the Way

In safety speak, Weyerhaeuser's new program can best be described as a "risk-based" safety plan. In the past, the company tracked lagging safety indicators, which are metrics of injuries that had already occurred. Now Weyerhaeuser is tracking leading indicators, which are proactive measures to help prevent injuries. In a nutshell, Weyerhaeuser is implementing a revamped safety toolkit that streamlines processes and tools associated with higher-risk tasks and activities such as significant, non-routine upset conditions. While the implementation might vary depending on location (woods or mills), the end goal remains the same: drive the number of life-altering accidents down even further and eliminate fatalities.

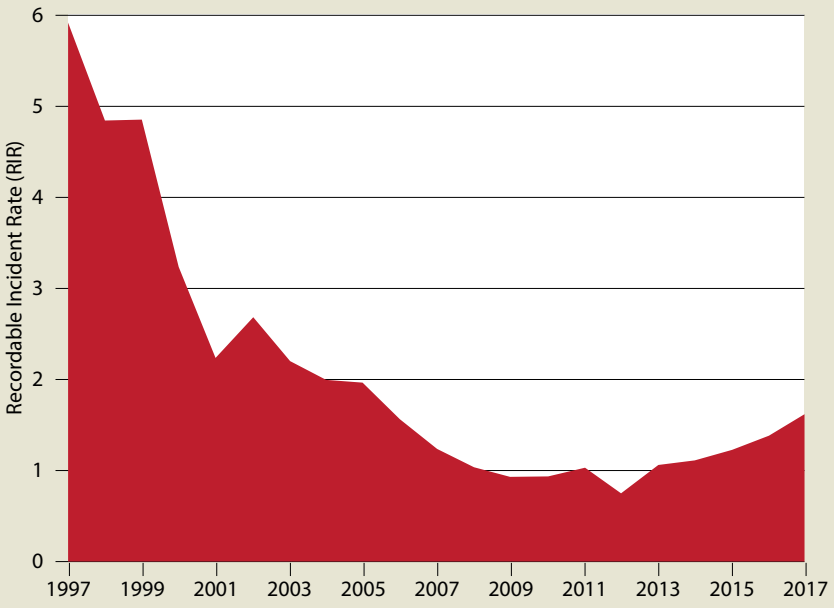
In the past, employees in Weyerhaeuser's lumber and engineered wood product mills followed a safety plan unique to each site.

"Many were too broad and not focused on serious injury," says Ellisor. "For example, they may have been focused on a new safety initiative or a type of safety training they were planning to do that year."

Now, mills are expected to compile a risk-based safety plan that lists its riskiest activities and implements a detailed plan to mitigate or eliminate those risks.

One example of such a risk in a lumber mill is how jams are addressed on log

Weyerhaeuser's Recordable Incident Rate (RIR): 1997-2017



Statistics courtesy of Weyerhaeuser

Weyerhaeuser's recordable incident rate (RIR) has declined significantly over the past 20 years, but the company wanted to further lower serious injuries and fatalities. Its new safety plan was rolled out company-wide last October.

ladders and infeeds. As logs are brought into the facility on a step feeder, they can become crossed. In the past, employees had to shut down the machinery and physically dislodge and straighten the log with tools. This put employees in danger if the log, tool or worker slipped. Weyerhaeuser mills addressed the problem by redesigning the process to implement a new machine that would mechanically reposition the logs, eliminating the need for physical human intervention.

Another significant risk that the new safety plan has helped address is the matter of pedestrian safety in facilities with heavy mobile equipment traffic. To minimize accidents, mill teams established a series of "In-the-Clear" measures such as requiring communication between pedestrians and equipment operators before entering high-traffic areas; designating pedestrian walkways and installing hard barriers where necessary; installing flashing lights and alarms that can be activated by pedestrians as they enter high-risk areas; and implementing state-of-the-art pedestrian collision-avoidance technology inside mobile equipment.

Safety in the Woods

While mills can be dangerous places, many of Weyerhaeuser's most serious accidents happen in the woods, particularly when trees or rocks fall on loggers or equipment operators on steep slopes. Unlike in a mill, where designating a pedestrian walkway out of the path of heavy machinery can greatly minimize an accident, the workspace in the woods is constantly moving.

"The hazard profile shifts throughout the day," says Marc Cannon, safety and EMS manager for Weyerhaeuser's Western Timberlands. "Take five steps in any direction and you are faced with an entirely different hazard."

The implementation of Weyerhaeuser's new risk-based safety program looks a bit different in the field than it does in the mills. Because nearly all of the company's logging operations are done by contractors, Weyerhaeuser can't simply impose its own safety culture on those companies. Instead, Weyerhaeuser has invested considerable effort into encouraging contractors to subscribe to safe practices because it's the right thing to do and not just for the sake of complying with Weyerhaeuser's rules.

"The dialogue is changing," says Cannon. "Historically, we have been very compliance-driven. You could call us heavy-handed at times. Now, we are creating a dialogue and trying to promote an atmosphere of doing things for the right reasons."

Contractors are asked to play a large role in promoting safety among their employees, says Cannon. A site leader

Image courtesy of Weyerhaeuser

Weyerhaeuser recently shifted to a "risk-based" safety plan. In the past, the company tracked lagging safety indicators, which are metrics of injuries that had already occurred. Now Weyerhaeuser is tracking leading indicators, which are proactive measures to help prevent injuries.

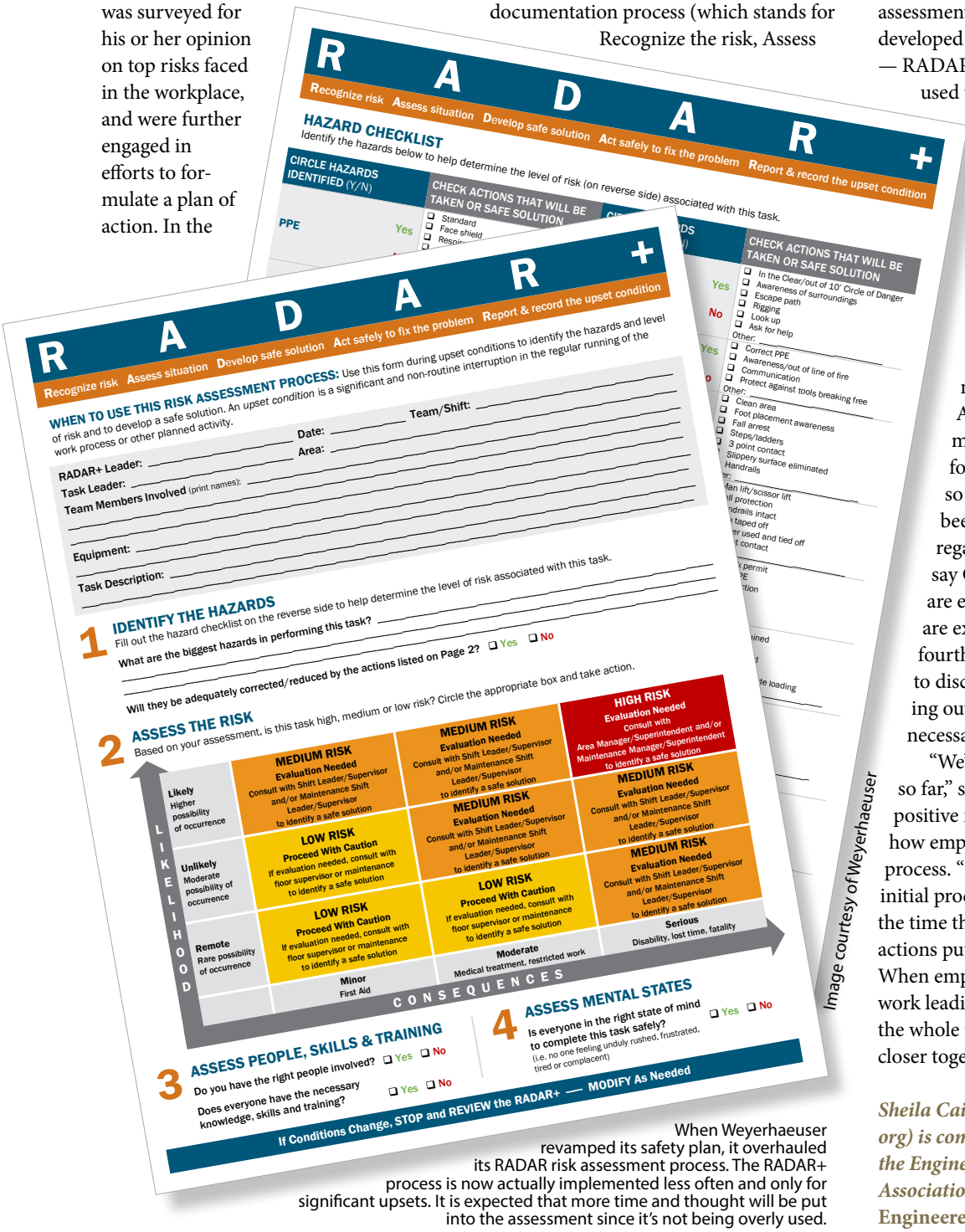
must be present at each jobsite, and the contractor must supply a risk-based business safety plan that details actions they will take to ward off serious injury. Contractors must also show that their workers are practiced in recognizing risks, assessing options, then moving toward a safe solution.

One of the major differences between Weyerhaeuser's former safety plan and its new program is the focus on employee engagement. In the mills, every employee was surveyed for his or her opinion on top risks faced in the workplace, and were further engaged in efforts to formulate a plan of action. In the woods, contractors and their employees have been similarly included in safety discussions and the formulation of action plans.

"Buy-in is key," says Cannon. "Once you have buy-in, you can have more conversations."

Revamping RADAR

To better assess and address risks, Weyerhaeuser has also fine-tuned its "RADAR" risk assessment process. The documentation process (which stands for Recognize the risk, Assess the situation, Develop a safe solution, Act safely to address the upset and Report the condition) had been used whenever a condition occurred to upset the safe work environment in the mills or in the woods. Company leaders realized, however, that RADAR was actually being used above and beyond its intended purpose, for thousands of routine, lower-risk upsets that had already been sufficiently assessed. This was watering down the system and producing very low-quality risk assessments. In response, the company developed the next generation of RADAR — RADAR+. The enhanced tool is now used to assess only significant, non-routine or first-seen upsets and high-risk tasks. The desired outcome of the revamped RADAR is that more time and thought will be put into the assessment since it's not being overused.



When Weyerhaeuser revamped its safety plan, it overhauled its RADAR risk assessment process. The RADAR+ process is now actually implemented less often and only for significant upsets. It is expected that more time and thought will be put into the assessment since it's not being overly used.

Image courtesy of Weyerhaeuser

Positive Feedback

The rollout of Weyerhaeuser's new safety plan started in August 2016, and was implemented company-wide by the following October. Because it is so new, the company has not yet been able to offer any statistics regarding its efficacy. But so far, say Cannon and Ellisor, employees are embracing it. Company leaders are expected to convene late in the fourth quarter or early first quarter to discuss how the program is working out and make adjustments as necessary.

"We're getting really good feedback so far," says Ellisor, who believes the positive response has much to do with how employees were included in the process. "They're not just a part of the initial process of giving input—most of the time they are also involved in the actions put in place to mitigate the risks. When employees see their input and hard work leading directly to improved safety, the whole team is energized and grows closer together—everyone wins."

Sheila Cain (scain@engineeredwood.org) is communications director of the Engineered Wood Technology Association and editor of its **Engineered Wood Journal.**

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MAKING YOUR MARK

Comparing Ink Jet Marking and Coding Technologies

by Donna Meade

With so many methods of marking and coding products available today, it can be difficult to figure out which technology best fits your particular application. Ink jet printing methods have gained popularity in the engineered wood industry and as a result, it is important to know the differences between them. First, let's understand why ink jet is favored by many for marking and coding applications in the industry and then we will take an in-depth look at the specific technologies.

Why Choose Ink Jet Technology?

You may already be marking your logo, along with tracking and operational information, on most products. If you are doing this with roller coders, stamps and stencils, be mindful that ink jet marking technology can streamline and clean up this process.

Ink jet marking produces high-quality marks on most building products. The surface of a wood product is textured, making it difficult to master high quality marks from contact solutions. Roll coders require the mark to be repeated continually along the length of the product, when only one mark per board is ultimately required. Stenciling can be a messy method of marking products as it requires manual interruption and results in wasted paint, overspray, and time-intensive clean up.

Inflexibility is a final downside to contact printing. When messages are changed, rubber type or dies must be physically removed, which could be messy. Periodic cleaning of the roll coder is also time consuming and expensive to keep your mark looking clear and attractive. Further, contact printers or redundant printers do not facilitate the potential for test marking or branding additional products because you need to change type with each new product.

Image courtesy of Matthews Marking Systems

Matthews Marking Systems offers a variety of inks appropriate for the engineered wood industry.

To change a printed message with ink jet marking and coding, the operator simply selects the desired message from the print controller, or the programmable logic controller (PLC) automatically sends the correct message to print. In less than a second, the printhead begins printing the newly prompted message without any process interruption.

Beyond Marking

Industrial ink jet printers have become much more than simple marking systems. They can improve your productivity through automation, provide feedback and reports on products traveling through your lines, and communicate with PLCs and other devices throughout your plant. Product coding changes are instantaneous and can prevent costly errors, such as forgetting to change a stamp at product changeover. Applications such as private branding for large home improvement stores require corporate identity logos that can be changed instantly with ink jet, regardless of product changeover. This technology can also save money by providing you with the capability to print only what you want, where you want on each product, instead of the typical continuous string of print required by contact printing.

There are many different types of ink jet systems. Most fall into one of three main technologies or methods. These include continuous, high resolution, and drop-on-demand valve jet.

Continuous Ink Jet for High-Speed Marking

Continuous ink jet (CIJ) printers are a non-contact form of high-speed, small character printing used to apply variable information, such as tracking codes, product names and logos to individual products on the production line. These small character printers are often used to print date, batch, time and shift codes onto wood products such as door frames, moldings and more. CIJ printing is fast and versatile and can print on most materials regardless of size, profile shape and texture. Most CIJ printers are easy to use, have proven reliability, and are capable of matching the speeds of the fastest production lines.

These printers work by jetting a high velocity, continuous stream of ink through a nozzle. This stream is broken down into identical droplets at an estimated rate of 80,000 drops per second. These droplets are selectively charged and deflected to print dot matrix characters. Undeflected drops are recirculated, recycled and returned to the ink tank. All CIJ printers use the same basic technol-

ogy, but they are not the same in terms of design.

What are some of the downsides to CIJ printing technology? These systems are only designed for small character marking (just under .5-inch maximum character height). The larger the font size selected for printing, the slower the actual printing speed. This limits the applications where CIJ is a satisfactory solution.

Another important weakness of this technology includes ink and consumable expenses. There is a defined marriage between the inking wells and printer controls that make changing a system's ink type problematic. If a CIJ customer wishes to change the ink they are currently using, most will have to send their printer to the manufacturer for service.

Inks developed for this technology tend to be more costly as well. Printing requires the use of two fluids – ink and makeup solution. Over time, the makeup solution tends to evaporate, wasting valuable dollars. This technology requires absolute viscosity control that, in turn, requires the extensive use of makeup fluids to maintain vital ink properties. Poor viscosity management will lead to poor print quality. VOC emissions are also a concern as industries are required to comply with environmental protection measures.

Flexibility is not an attribute in which CIJ excels. Most controllers are limited to the number of printheads they can control. Many CIJ systems are unable to run more than two printheads simultaneously. Overall, higher maintenance requires a higher level of monitoring to work well in tough environments. Finally, if a user is printing a larger font size, speed capabilities are drastically reduced. Characters are formed by a raster pattern of drops that are vertically printed. The more drops vertically printed, the longer it takes to sweep the ink across the substrate.

High-Resolution Ink Jet for High Quality Marks

High-resolution ink jet printers operate by either a piezoelectric printing process or thermal ink jet process. These printing systems are used to print high quality graphic logos and text, as well as small character traceability information. Each print head may provide 300-500 dpi, depending on printhead and technology selection.

The benefit of all high-resolution printers is that they yield the highest print resolutions available. The character size ranges are more flexible and small-to-large ranges are available from a single system. Inks come in limited choices, but are environmentally friendly formulas, typically for a porous, absorbent marking surface. Fast dry inks are also available. These printers can also run multiple printheads to keep building the marking area of the solution.

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Image courtesy of Matthews Marking Systems

This image was created by Matthews Marking System's VIAjet L-Series thermal ink jet. The high-resolution ink jet printer operates by a thermal ink jet process and is used to print high quality graphic logos and text, as well as small character traceability information.

Piezoelectric printers operate via acoustic sound waves. A small series of openings in the printhead are channeled into a large number of nozzles. Using sound waves, the ink is then moved from the nozzle openings to the product. No pressurized ink systems or mechanical valves are used to assist with the process of moving ink through the printhead and onto the product. A weakness here is the use of non-pressurized ink systems that rely on gravity-fed ink delivery.

Another high-resolution technology is thermal ink jet. The thermal ejection process in this method is very energetic. Inside the printhead, a vapor bubble acts like a piston to drive ink and air bubbles out of an orifice. Ink droplets are forced out of the printhead and onto the product. There are no moving parts in the printhead, just the ink itself. The fact that this process does not involve moving parts inside the printhead reduces routine maintenance for lighter industrial applications.

There are some disadvantages in using high-resolution ink jet solutions for marking engineered wood products. The most scrutinized weakness is the simple fact that these systems were originally designed for light industry applications such as printing packaging where the substrate being marked is under strict control, such as package identification, mail processing and carton marking.

High-resolution printing solutions use more ink and require more material handling solutions to counter environmental challenges, such as dust and vibration commonly encountered in engineered wood marking applications. Most high-resolution printheads cannot be serviced, which can be costly to maintain optimum print performance. They also require a much closer print distance between the printhead nozzles and the in-line products.

Another issue is that high-resolution ink jet printers tend to produce lighter marks on dark substrates like wood products, since ink selections are not expansive and consist of mostly water-based formulas. These tend to make lighter marks and require longer drying times. In addition, marks may bleed when exposed to wet conditions.

Drop-on-Demand Valve Jet for Maximum Durability

Drop-on-demand (DOD) valve jet technology is an extremely reliable printing solution for harsh industrial applications. This versatile printing method is frequently used to print quality large logos, some spanning many feet in size. Other prime applications include grade marks, association marks, nail/pattern marks and even smaller sized marks, such as date and batch codes. One of the most economical methods of printing, DOD systems typically conserve inks, marking with only the necessary ink drops with very little waste.

The flexible nature of this technology allows for adapting to almost any application need. Printheads can be stacked and electronically stitched for logo and large format printing. A single controller can perform both small and large character marks. Simple interfacing options, like touch screen controls, bar code scanner linking and PLC integration make operation and setup convenient for end users and original equipment manufacturers alike.

In addition to ease-of-use, DOD print speeds stack up well with the current wood manufacturing process. Finally, there is a large selection of industrial-grade inks to choose from when using this method of printing. There are special inks designed specifically for engineered wood applications, including water-based, water-fast, fluorescent for machine readable codes, and extremely fast dry and UV-stable inks.

The DOD printhead design is robust, and a closer look reveals the appropriateness of its use in most heavy-duty applications. Each printhead is comprised of several stainless steel, micro-solenoid single valves and specially developed rubber tip plungers to seal against ink leaking. Drop-on-demand technol-

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ogy operates on a dot matrix valve-jet process that begins when a column or row of nozzles are sprayed together to form a printed character as the product moves. The more nozzles in a printhead, the more dots are available for printing. Typically, 32 individual valves in a single head provide the maximum amount of flexibility, and combining multiple heads per marking station expands resolution. Heads may be equipped with different nozzle sizes. Smaller nozzles allow for a finer marking pattern, and larger nozzles provide the highest degree of ink coverage on a product. Pigmented inks, which allow for contrast on dark surfaces, or the greatest UV resistance and weatherability, are manageable in the DOD valve heads in marking applications.

The disadvantage of DOD valve technology is the final print resolution, as it is considered low resolution. However, a marking station using multiple print heads stacked together to provide a greater DPI, in combination with a smaller nozzle chosen for a finer quality mark, offsets this disadvantage. It boils down to the user's choice between print quality and performance versus cost savings.

Although these systems are engineered to be durable enough for industrial applications, they do require daily maintenance of the printhead faceplate and weekend flushing. Disposing of flammable fluid inks (solvent-based) can also be a hassle at times. Waste management procedures must be followed to properly dispose of these inks when necessary. Engineered wood product substrates tend to be very porous and require large printed dots to overcome absorption to provide a quality mark. Other printing technologies need to dispense more ink drops to combat absorption, which increases cost per mark.

How to Choose the Best Fit for Your Application

In summary, each of these technologies have specific areas of excellence. Continuous ink jet best fits applications requiring only small character marks such as date codes, batch codes, and lots. It is not versatile in terms of character size ranges; however, it does yield some of the fastest marking speeds available for a single line of print.

High-resolution solutions are the best fit for marking applications demanding the highest print quality. They tend to cost a little more in terms of consumables and require special material handling to survive harsh conditions, but no other technology can match the print resolutions these systems can produce.

Drop-on-demand ink jet fits applications that, above all else, demand reliability and flexibility. They are the true industrial powerhouses that can stand up to the dust, vibration and abuse encountered in the engineered wood industry.

Additional Variables to Consider

There are a number of variables when it comes to selecting a marking and coding supplier. What experience do they have in the harsh wood marking industry? Can they provide references? What technologies set them apart? For modern marking and coding operations, finding a simple printhead solution is not enough. Often, applications place an emphasis on

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the entire concept of marking, resulting in value-added products with improved brand recognition. These techniques include nail and pattern marking, small and large format logo printing, instructional marking, and even multi-color printing.

Many in the wood industry also place an emphasis on production line efficiency and automating processes. Selecting a supplier with an automated marking and coding platform to manage print messaging across multiple production lines will give you an edge in meeting these goals.

Take time to carefully consider the needs of your application before buying a marking system. Review the following points: purpose, size and location of mark; production rates and location of printer; number of products, substrate, and number of code changes; operation and maintenance costs; ease of integration; best technology and supplier for application. If you keep the mark's purpose and end goal at the top of your mind throughout your selection process, you will not go wrong.

Donna Meade is the Strategic Initiatives Manager for Matthews Marking Systems, a leader in marking and coding in the engineered wood industry. For more information about Matthews Marking Systems, please visit www.matthews-marking.com.

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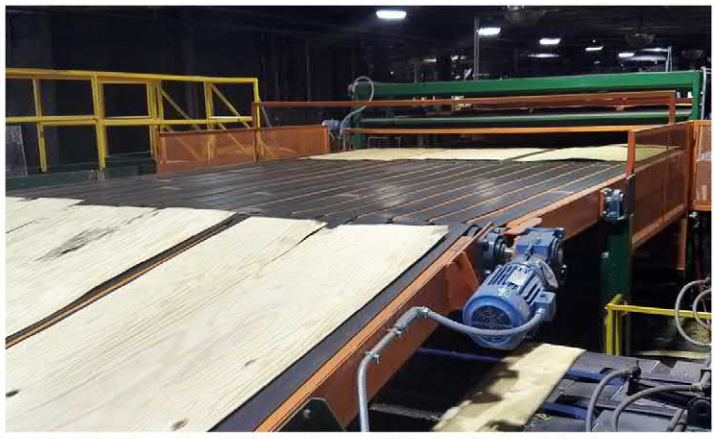

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ON THE CUTTING EDGE:
SHARPENING STRATEGIES FOR THE TECHNOLOGY GENERATION

APA Annual Meeting and Info Fair Preview

by Sheila Cain

As older workers retire and members of the younger generation move in to take their place, companies are recognizing the importance of fine-tuning their approach to recruitment, hiring, training and leadership. Join APA member manufacturers, Engineered Wood Technology Association members, and suppliers to the industry at *APA – The Engineered Wood Association's* 2017 Annual Meeting, where the opportunities and challenges of new generations in our labor force and markets will be addressed. Guest speakers, panelists and roundtable discussions will explore how the industry can fill critical gaps in the skilled labor workforce and learn from examples set by manufacturers in other industries.

The Annual Meeting, held Oct. 28-31 at the Hyatt Regency Huntington Beach Resort & Spa in Huntington Beach, Calif., coincides with EWTA's annual Info Fair supplier exhibition.

The theme of the meeting – On the Cutting Edge: Sharpening Strategies for the Technology Generation – will be woven through the workshops and presentations at the multi-day event. The extended weekend program will also feature cocktail hours, receptions and plenty of time for networking.

First on the agenda are several advisory, marketing and subcommittee meetings on Saturday – including those of the EWTA Adhesives and Technical Subcommittee and the EWTA Advisory Committee. The day wraps up with an EWTA-hosted reception for APA and EWTA members and meeting attendees.

On Sunday, the annual golf tournament, cripple coot shoot and tennis tournament bring members together for a little friendly competition. EWTA's Info Fair opens that evening, accompanied by an EWTA-hosted reception.

Workshops and presentations make up the bulk of Monday's presentations, starting with the General Session. The keynote session echoes the theme of the weekend program with presentations from Brent Weil of the National Association of Manufacturers and Stephanie Cameron from APSCO, a manufacturer of pneumatic cylinders, controls, and valves for the mobile, truck equipment, and automotive markets. Both will discuss ways the engineered wood industry can address the skilled labor gap. The General Session will also include "State of the Industry" and the "State of the Association" addresses by APA Chairman Jim Baskerville and APA President Ed Elias.

Weil and Cameron will lead a deeper discussion of the labor gap issue in a Roundtable discussion following the General Session.

The Safety and Health Workshop will continue throughout the day and include a special presentation by David Libby, the partner and president of Consulting Services, Krause Bell Group. In his talk, 7 Insights into Safety Leadership, Libby will speak about improving safety leadership, culture and performance. Greg Ellisor, Weyerhaeuser's corporate health and safety manager, will also present at the workshop.

The APA Annual Meeting and EWTA Info Fair will be held at the Huntington Beach Resort & Spa in Huntington Beach, Calif.


Brent Weil


Stephanie Cameron


Jim Baskerville


Ed Elias


David Libby


John Burns


Joe Elling


The Hyatt Regency Huntington Beach Resort & Spa is located along the Pacific Ocean and offers a number of amenities for socializing and relaxing.

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Schedule of Events

(As of publication. Check the APA meeting agenda for latest schedule.)

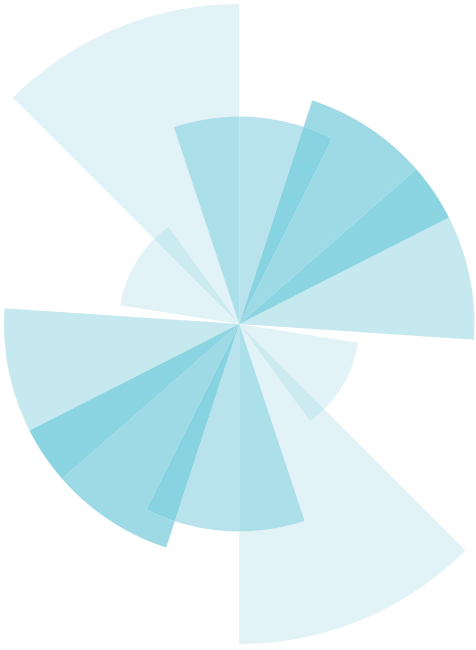
SATURDAY, OCT. 28	
8 am – 5 pm	APA Registration Desk Open
10:30 am – Noon	EWTA Adhesives and Technical Subcommittee *(All APA and EWTA members welcome)*
11 am – 1 pm	International Market Subcommittee *(APA members only)*
12:30 – 2:30 pm	Glulam Management Committee *(APA members only)*
2 – 2:30 pm	Info Fair Exhibitor Meeting *(open to all exhibitors)*
3 – 4 pm	EWTA Advisory Committee *(All APA and EWTA members welcome)*
3 – 5 pm	I-Joist Management Committee *(APA members only)*
4 – 5:30 pm	Industrial Market Subcommittee *(APA members only)*
4:30 – 5:30 pm	Chairman's Reception *(invitation only – one person per exhibiting company and APA Board of Trustees)*
5:30 – 7 pm	EWTA Welcome Reception *(All attendees welcome)*
SUNDAY, OCT. 29	
8 am – 1 pm	Golf Tournament
8 am – 2 pm	Cripple Coot Shoot
10 am – 1 pm	Tennis Tournament
11 am – 5 pm	APA Registration Desk open
3 – 5 pm	Nonresidential Market Subcommittee *(APA members only)*
5 – 7:30 pm.	Info Fair and Reception
MONDAY, OCT.30	
7 – 8:30 am	Buffet Breakfast
8 am – 4 pm	APA Registration Desk Open
8:30 – 10:15 am	General Session Keynote: On the Cutting Edge: *Sharpening Strategies for the Technology Generation*
10:30 – 11:30	Roundtable Discussion (*General Session follow-up):* *How to Bring "Manufacturing Day" Messages to Your Company and Community*
10:30 – 11:30 am	Special Presentation: *7 Insights to Safety Leadership*
10:30 – Noon	Residential Market Subcommittee *(APA members only)*
10:30 am– 2:30 pm	Spouses' Program
10:30 am – 5 pm	Safety and Health Workshop
Noon – 1:30 pm	Info Fair and Buffet Lunch
1:30 – 4 pm	Marketing Advisory Committee
5:30 – 7 pm	Info Fair and Reception
7 pm	Chairman's Dinner and Safety Awards Recognition
TUESDAY, NOV. 31	
6:30 am	Board of Trustees Breakfast *(Board members only)*
7:30 – 11 am	APA Board of Trustees *(Board members only)*

The mid-day Marketing Advisory Committee meeting will include updates on the year's activities and plans for the 2018 marketing program, as well as a housing outlook for 2018 and beyond. Guest speaker John Burns, author and CEO of John Burns Real Estate Consulting, will speak at the meeting and APA Market Research Director Joe Elling will present his latest market forecast.

In addition to the Sunday evening reception, the Info Fair supplier exhibition will be open twice on Monday from noon to 1:30 p.m. (including a buffet lunch) and again from 5:30 to 7 p.m., coinciding with a reception to kick off that evening's APA Chairman's Dinner and Safety Awards Program. Here, APA members who have made significant advances in mill safety will be honored, along with winners of EWTA's Supplier and Innovation Awards.

As always, the Annual Meeting allows plenty of time for networking and relaxing. The spouses' program on Monday offers participants the choice between two excursions: lunch and a tour of the Bolsa Chica Ecological Reserve or a chance to customize and decorate a pair of flip flops, lunch included.

The APA registration desk at the resort opens on Saturday at 8 a.m. and continues through 5 p.m. See the schedule of events at left for the complete meeting agenda.



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The **2017 EXHIBIT FLOOR PLAN** with booth numbers is shown on page 48

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Sweed Machinery, Inc.
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Email: klmartinson@fs.fed.us
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(continued in next column)

USDA FOREST PRODUCTS LABORATORY *(continued)*

wood, wood products and their commercial uses in partnership with academia, industry, tribal, state, local and other government agencies. The focus of the Forest Products Laboratory is to promote healthy forests and forest-based economies through the efficient, sustainable use of the nation's wood resources.

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President

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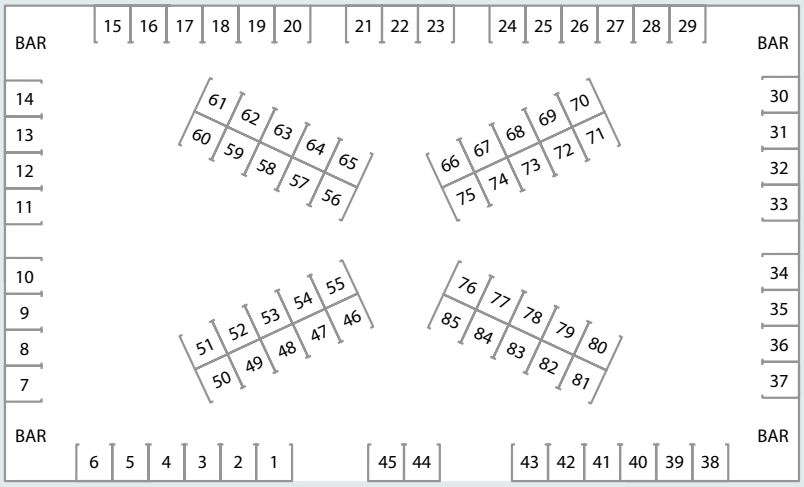

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2017 SUPPLIER AWARDS

Innovation and Excellence Celebrated

EWTA members will be recognized this month for innovative practices and excellence in service at the APA Annual Meeting and EWTA Info Fair.

The Supplier Awards – which encompass the Supplier of the Year awards as well as the Innovation of the Year award – will be bestowed during the awards dinner during the annual meeting in Huntington Beach, Calif., Oct. 30. The winners will also be published in the Spring 2018 issue of the *Engineered Wood Journal*.

Supplier of the Year award winners are determined by a vote of APA members via email ballot before the annual meeting. Votes are cast based on quality, service and delivery.

Innovation Award winners are also determined by APA member email votes, combined with in-person votes at EWTA's Info Fair supplier exhibition.

Below is a preview of the Innovation Award entries (in alphabetical order by company) followed by a list of the Supplier of the Year award candidates (sorted by member type). Additional information about the awards program may be found on EWTA's Supplier Awards web page at http://www.engineeredwood.org/awards.

INNOVATION OF THE YEAR – **ENTRY A**

Guillotine Goggle Gate

Entered by: **CMA engineering Inc.**

Description: Description: CMA's 100 percent man-safe Guillotine Goggle Gate completely segregates hot, dirty flue gasses from adjacent equipment by means of a quick action, upward goggle plate movement. The booster fan provides a gas-tight operation which ensures zero leaks within the system. This gas-tight operation enables the gate to function repeatedly despite the probable settlement of solids at the bottom of the duct, which eliminates the need for regular cleaning.

INNOVATION OF THE YEAR – **ENTRY B**

Metal Shark BIGpba

Entered by: **Connexus Industries**

Description: The Metal Shark BIGpba is a metal detector aperture designed to detect foreign metal objects in chip and fiber mats in forming lines. The product features a highly sensitive detection coil, a dynamic digital interference filter with frequency spectrum, and fully automatic definition of parameters when changing the board format. Reserves of sensitivity and functionality enable optimal metal detection even under harsh conditions.

INNOVATION OF THE YEAR – **ENTRY C**

EvoL Sanding Machine

Entered by: **IMEAS**

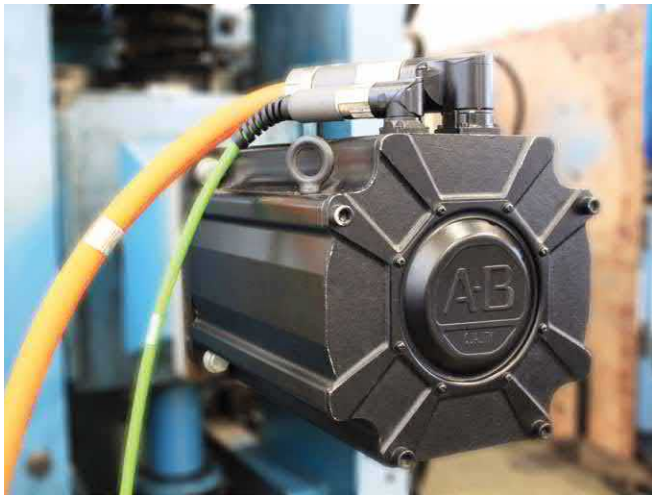
Description: The new EvoL model sander represents IMEAS' ninth generation of sanding machines. The sander offers improved sanding quality and throughput and automatic (recipe-driven) sander set-up and closed-loop thickness control. The new model combines many field-proven mechanical and control (electrical) enhancements into one machine with modern redesigned operator-side enclosure.

INNOVATION OF THE YEAR – **ENTRY D**

AC Veneer Clipper

Entered by: **Raute Canada Ltd.**

Description: Raute raises the standard in green veneer clipping with the AC Veneer Clipper that utilizes algorithms and proprietary technological innovations to increase clipping accuracy and recovery. Accurate execution and efficient operations save power and expensive consumables, which includes a substantial reduction in roll maintenance and replacement, decreasing costs as well as downtime.



INNOVATION OF THE YEAR – **ENTRY E**

P2 Patching System

Entered by: **Raute Canada Ltd.**

Description: The P2 Patching System redefines veneer quality by transforming low-graded veneer with minor defects into higher grades with speed, accuracy and significantly lower operation costs. The system delivers up to 9,600 patches per hour via three levels, operated by only one operator. Sophisticated cameras and automated technologies minimize waste while maximizing surface veneer value without manual veneer handling on one-fourth of the manual patching floor space requirements.

INNOVATION OF THE YEAR – **ENTRY F**

Dry Random Veneer Stacker

Entered by: **Raute Canada Ltd.**

Description: The Dry Random Veneer Stacker has eliminated the hazards to the employee from hand-pulling dry random veneer, reduced staffing significantly and added high-grading veneer sorting capacity. The direct benefits include elimination of injuries that historically occurred, a significant reduction in annual labor expenses and greatly improved veneer upgrade benefits.

INNOVATION OF THE YEAR – **ENTRY G**

Dryer Infeed "Smart Pause" Technology

Entered by: **Sweed Machinery**

Description: Sweed's new patent-pending "Smart Pause" technology provides veneer dryer infeed operators additional time to address veneer feeding issues while maintaining a 100 percent dryer fill rate. The technology functions separately from the veneer dryer to drive each deck independently. Smart Pause allows the operator to pause the feeder for up to 20 seconds upon a misfeed, without stopping the dryer. Once the misfeed is corrected, the Smart Pause infeed allows the veneer to catch up, and eliminates the gap created from the pause.

INNOVATION OF THE YEAR – **ENTRY H**

Vacuum Feeder Peel Cups

Entered by: **Sweed Machinery**

Description: Sweed's new Vacuum Feeder Peel Cups use a patent-pending approach to grip and feed green veneer into high-speed dryers. This method reduces feeding multiple veneer sheets, known as "doubles." Instead of using traditional vacuum cups that pick the veneer straight up while keeping the sheet flat, Sweed's Peel Cups lift the sheet from the outside edges first, then pull it into the dryer tipple feeder. This process mimics an operator's efforts to separate two sheets from one another if they become stuck.

INNOVATION OF THE YEAR – **ENTRY I**

Cross Laminated Timber (CLT) Press

Entered by: **USNR**

Description: USNR's new modular press for the manufacture of cross laminated timber panels features the use of compressed air instead of hydraulics; which sets it apart from other CLT presses. Once the CLT panel is fed into the press, a set of pneumatic cylinders applies pressure from the sides to ensure minimal gaps between core materials within a given layer. Meanwhile, a set of channels carrying eight, large-diameter pneumatic hoses is lowed to rest atop the CLT panel. Once the panel is configured correctly, the hoses are brought to pressure. The method is a more cost-effective and environmentally friendly one than the hydraulic alternative.

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SUPPLIER OF THE YEAR AWARD CANDIDATES

APA members will choose Supplier of the Year winners in three categories (Consulting/Services, Equipment/Tooling, and Materials/Supplies) based on quality, service and delivery. Below is a list of candidates (all EWTA members):

Consulting/Services (15)

Casey Industrial, Inc.
CMA engineering Inc.
Cogent Industrial Technologies
Evergreen Engineering, Inc.
Hunt, Guillot & Associates LLC
KTC Panelboard Engineering
Mid-South Engineering Company
Nondestructive Inspection Service
Panel World Magazine / Hatton-Brown Publishers, Inc.
PMP Solutions
SEMCO
The HT Group
Union Pacific Railroad
University of Tennessee, Center for Renewable Carbon
Wechsler Engineering & Consulting, LLC

Equipment/Tooling (68)

Adwest Technologies, Inc., A CECO Environmental Company
AkzoNobel Wood Adhesives
A-Lert Construction Services
ALTEC Integrated Solutions, Ltd.
ANDRITZ Inc.
Argos Solutions AS
Babcock & Wilcox MEGTEC
Baumer Inspection GmbH
Biele, S.A.
BRUKS Rockwood
Brunette Machinery Company Inc.
Clarke's Industries, Inc.
Coil Manufacturing, Ltd.
Combilift USA
Connexus Industries Inc.
Con-Vey Keystone, Inc.
COSTA Sanders LLC
Cross Wrap Ltd.
Dieffenbacher Customer Support, LLC
DO2 Industriel
Dürr Systems, Inc.
Electronic Wood Systems, N.A.
ESOT
Flamex, Inc.
Globe Machine Manufacturing Company
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Grenzebach Corporation
IBC, International Bar Coding Systems & Consulting Inc.
IMAL-PAL Group
IMEAS Inc.
Itipack Systems
KADANT Carmanah Design
Kimwood Corporation
Koch Knight, LLC
LIMAB
Lundberg
Matthews Marking Systems
Meinan Machinery Works, Inc.
Mereen-Johnson LLC
Metriguard Technologies Inc.
Mill Machinery LLC
NESTEC, Inc.
Nicholson Manufacturing Ltd.
Pallmann Industries, Inc.
Panel Machinery & Controls, LLC
PFS - HAWE Hydraulik
Player Design Inc.
Process Combustion Corporation
Raute
REA JET
Rockwell Automation
Samuel Packaging Systems Group
Siempelkamp LP
Signode Packaging Systems
SonicAire
Spar-Tek Industries
Spraying Systems Co.
Steinemann Technology USA, Inc.
Sweed Machinery, Inc.
Taihei Machinery Works Ltd.
Tebulo Industrial Robotics
TIP - The Industry Pivot
TSI
USNR
Venango Machine Company, Inc.
Veneer Services, LLC
Westmill Industries USA Corp.
WPS Industries / Eagle Project Services LLC

Materials & Supplies (39)

Albany International
Arclin - Performance Applied
Ashland Specialty Ingredients
ATCO Wood Products Ltd.
Axalta Coating Systems
BASF - We create chemistry
Chem-Trend LP
Clarke Veneers and Plywood
Coastland Wood Industries Ltd.
Dominion Chemical Company, Inc.
Ecosynthetix
Engineered Coated Products, a division of Intertape Polymer Group
Evertree
Franklin Adhesives & Polymers
Fusoni U.S.
Georgia-Pacific Chemicals, LLC
Guardian Chemicals Inc.
H.B. Fuller
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HexArmor
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LIGHTEN UP

The Low Hanging Fruit of Energy Savings

by Adam Montgomery

Cutting costs as a business can be difficult. Where in your business lies the most opportunity and quickest return? Are the results measurable? Is your business better off due to the cuts or are you required to give something up? Businesses face these types of tough questions every day without realizing part of the solution might be energy. Yet interestingly enough, energy is often overlooked as a cost-cutting solution.

In the engineered wood industry, energy usage is a significant cost of doing business. If history is any sign of the future, this cost will only continue to rise. According to the U.S. Energy Information Administration (2016), prices have risen approximately 18 percent in just the last 12 years.

Taking this into consideration, if emergence from the country's recession has taught us anything, it is that lean and mean is the new standard. Meaning, it is more important now than ever for the engineered wood industry to actively manage and reduce energy costs when and where they can. However, where in your plant lies the most opportunity for energy savings? Where is the low hanging fruit and what solutions will provide the quickest returns? As many plants across the country have already discovered, lighting is one of them, offering substantial energy savings along with many other benefits.

Energy savings

With recent advancements in technology, interior and exterior LED lighting offers a significant opportunity for energy savings. So much so that the average plant can often reduce anywhere from 55 to 75 percent of their annual lighting energy usage. Even though lighting is not typically a large percentage of a plant's overall electrical load, this reduction can still equate to significant monetary savings.

For example, consider the operating cost of 100 400-watt metal halides (MH), which are typical in manufacturing plants, compared to the equivalent energy efficient LED solution. The annual cost to operate the halide fixtures is approximately $26,000, compared to just over $8,500 for the equivalent LED fixtures. The differences in fixture operating costs are extreme and the savings can be even higher. These 100 fixtures represent only five to 10 percent of an average plant's fixture count. Furthermore, plants can bolster their savings by another 25 to 50 percent with the addition of dimming motion sensors and controls. While lighting is one of the low hanging fruits of energy savings, lighting maintenance savings offer another cost-cutting opportunity for plants.

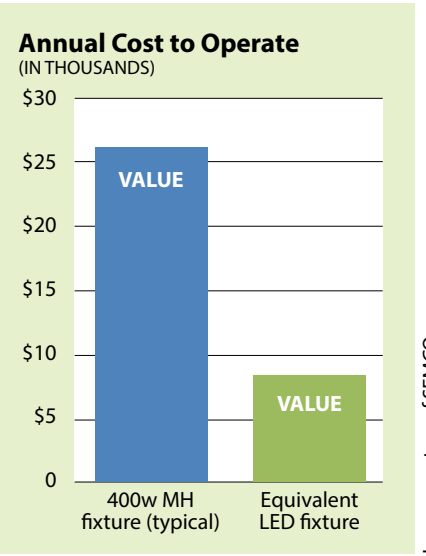
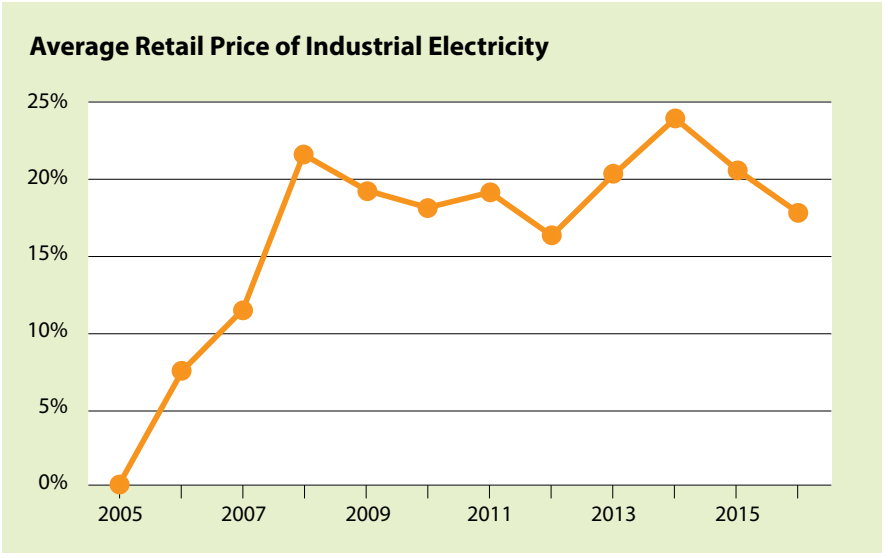


Image courtesy of SEMCO

The difference in the annual cost of operating 100 metal halide fixtures, which are typical in manufacturing plants, compared to that of equivalent LED fixtures is extreme.



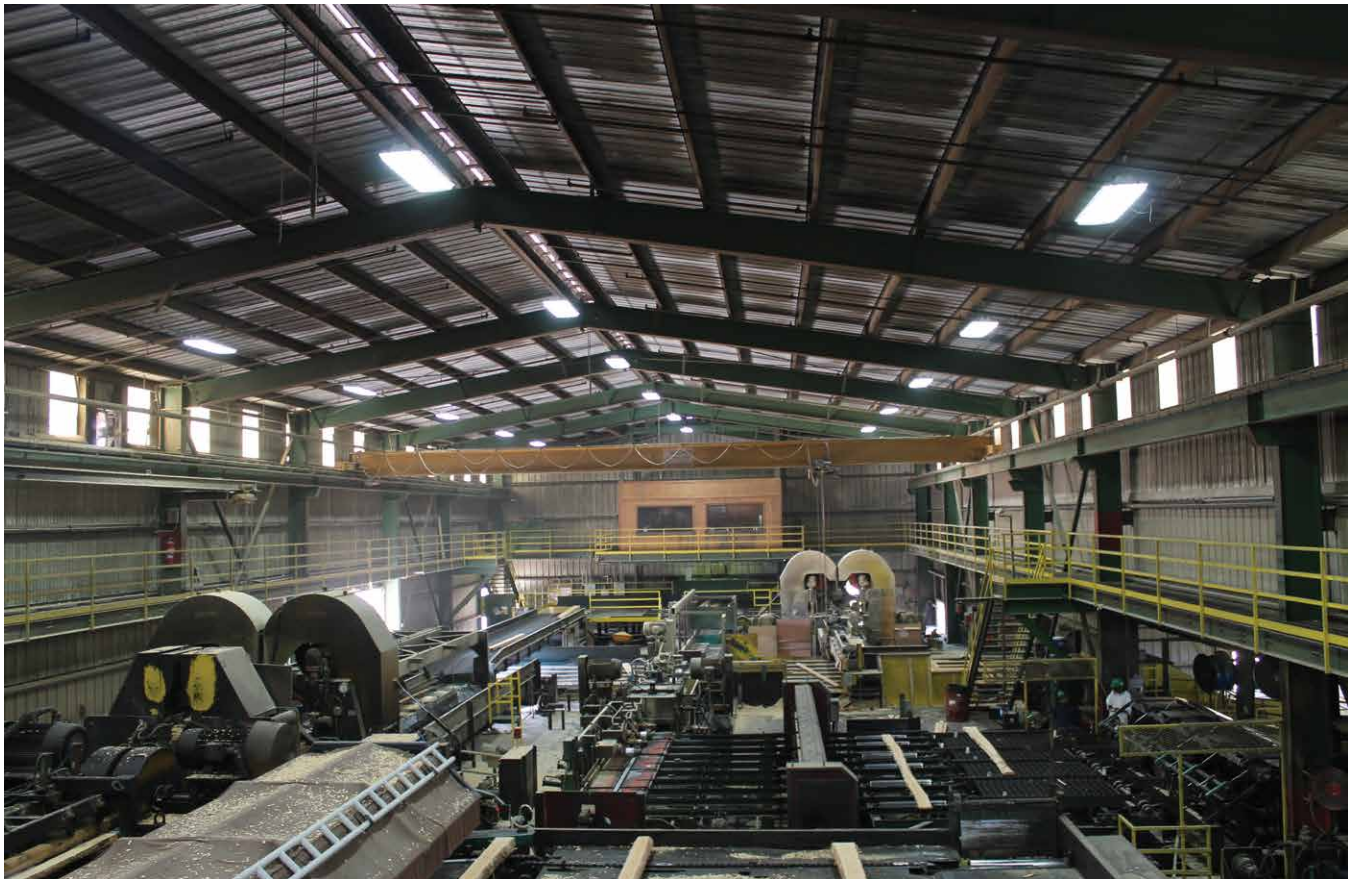
Energy Information Administration

According to the U.S. Energy Information Administration (2016), retail energy prices have risen approximately 18 percent in just the last 12 years.

Maintenance savings

Most plants have lighting fixtures within their facilities that are located in high, hard to reach places or above heavy-duty machinery. Unfortunately, these unavoidable obstacles make it difficult and costly to replace failed lamps and ballasts. Because of this, burned out lamps are often not replaced, leaving the plant insufficiently lit, which affects worker productivity and creates undesirable safety concerns.

New energy efficient lighting technology provides longer lamp lives compared to metal halides. For example, a typical metal halide lamp will have an estimated rated life of 20,000 hours, or 2.2 years in



These photos were taken before and after a plant's lighting upgrade where the facility went from 464-watt 2700k High Pressure Sodium (HPS) lamps to 118-watt 5000k LED fixtures.

a plant operating 24 hours a day, seven days a week. On the other hand, LED fixtures can have a rated life of up to 100,000 hours, or 11.4 years in a 24/7 operating environment. With many of these LED fixtures coming with 10-year warranties, plants can virtually eliminate the cost and/or need for lamp replacements. This equates to significant monetary savings in replacement costs and ensures that the plant is properly lit year-round.

Increased light levels

Poorly lit facilities can decrease worker productivity and create unnecessary safety concerns. While energy efficient lighting upgrades clearly reduce energy usage, they also offer significant increases in both lighting intensity and quality. On average, plants can expect a 10 to 15 percent increase in lighting intensity by upgrading. This increase is further augmented with the utilization of 5000k, day light, color temperature LED fixtures.

Overall, as energy efficiency technologies continue to evolve, the more opportunities the engineered wood industry will have to not only lower, but manage and control their energy usage. Lighting technology has evolved through major advancements in the last five years and is currently on the forefront of viable cost saving opportunities. Taking into account that electrical prices are going to continue to rise, managing energy usage now is an imperative step in ensuring the long-term success of any business.

Adam Montgomery is the director of business development for SEMCO, a leading energy efficiency company in the wood products industry. He can be reached at amontgomery@thesemco.com. For more information about SEMCO, please visit www.thesemco.com.

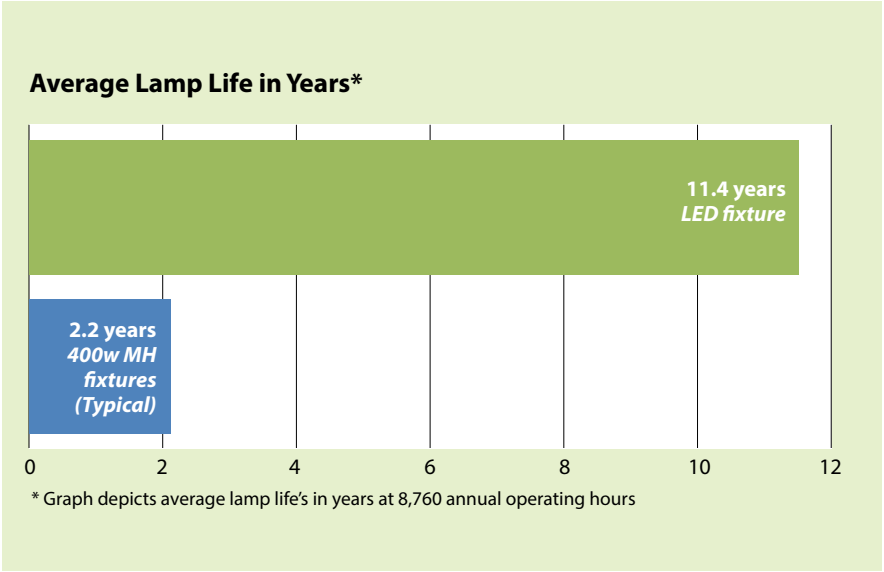


Image courtesy of SEMCO

New energy efficient lighting technology provides longer lamp lives compared to metal halides.

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CASE STUDY

Adaptations Bring New Life to Idled Board Plant

by Darrell Turner and Sergei Kuznetsov

Image courtesy of Fiber Commercial Technologies

Fiber Commercial Technologies LLC, a Jupiter, Fla.-based manufacturer of exterior decking and other exterior building products reconfigured an idled plant previously used to make panels out of soy stalks by using a unique modification to a classic predictive control algorithm. The resulting is stable board weight control and significant raw material savings.

In 2016, Fiber Commercial Technologies LLC, a Jupiter, Fla.-based manufacturer of exterior decking and other exterior building products, decided to reconfigure an idled plant previously used to make panels out of soy stalks. To make these products, the company uses a unique combination of resin and recycled carpet, requiring modifications to the plant to ensure optimal production processes. While adapting and replacing the process equipment included a number of challenges, perhaps the biggest task was adjusting the existing equipment and control system to respond to the different density of the new fibers. The team involved in the project developed a unique modification to a classic predictive control algorithm, resulting in stable board weight control and significant raw material savings.

The retrofit provides some learnings that have been used successfully a few times before – at several existing U.S. and Canadian OSB plants. These mills have realized similar savings and stable board weight, and the retrofit is especially efficient at older OSB mills using long conveyors to transport wood flakes from the dryers to the forming belt.

Making the Existing Equipment Work

Because the recycled carpet fiber has significantly lower density than the soy stalks used in the plant's prior operation, some serious challenges existed during the plant reconfiguration and restart. First of all, the existing forming equipment appeared to be somewhat undersized. Additionally, the plant has a traditional flat layout — similar to OSB plants built in 1990s — with multiple long conveyors slowly moving the material from one process area to another. This impeded good automatic control of the forming process. The new operator was justifiably concerned that keeping the mat weight stable under these conditions would represent a significant challenge. Replacing the process equipment would have been an expensive option, so the decision was made to keep most of existing forming equipment but address the mat weight stability problem with process control tools borrowed from the process industry.

The plant uses a forming process that is very similar to the one used by OSB manufacturers. The recycled carpet comes in bales that get shredded into a uniform fiber mass by newly added equipment. Since the fiber comes to the plant with a low moisture content, the dryer train was removed. Fresh fiber is batched in a large storage bin with a live bottom that feeds two existing "dry" fiber bins, which in turn feed the core and surface blenders where the resin is added.

The resin-impregnated fiber is then transported over a long incline conveyor to one core and two surface forming heads. The forming line has two weight scales – one after the core former, the other after the top surface former. The mat is cut up and fed into the two-day-light Dieffenbacher press. The boards are then pushed out onto the finishing line.

Optimizing Efficiency

The project managers tasked with optimizing the equipment for the plant's new use had past experience working with OSB manufacturers and knew that the density of the material discharged from a forming head is influenced very strongly by the amount of material in the head. The more material in the head, the higher its density. As such, the resulting mat weight inherits the density variations coming from the forming heads.

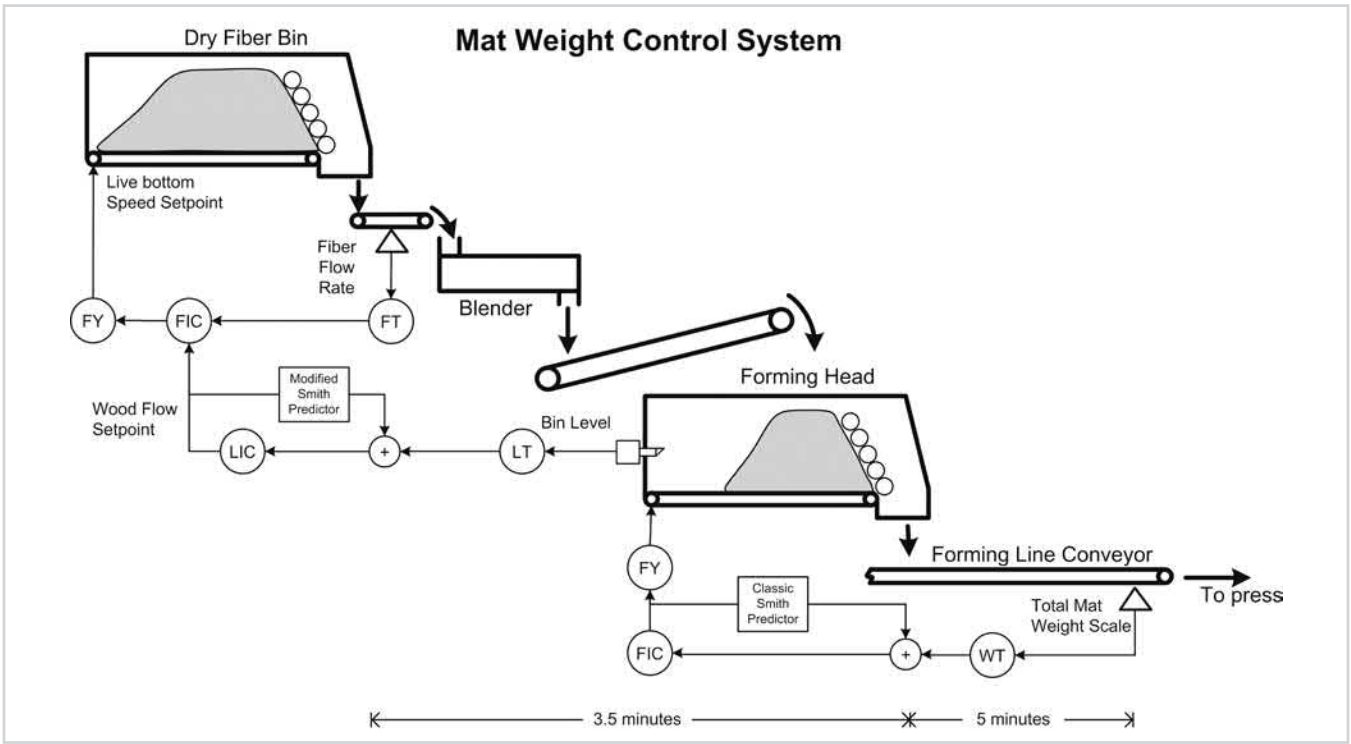
Removing the level variations in the forming heads to stabilize the density of the material in them thus becomes a dire necessity. The obvious solution is to maintain constant head fill level. However, the three-and-a-half minutes that it takes the material to travel from the dry feed bin to the forming head — coupled with relatively small head sizes — makes it difficult to maintain steady levels using conventional control such as a proportional-integral-derivative (PID) algorithm. Either in automatic or manual mode, the operators have a difficult time maintaining the forming head level between the minimum/maximum limits, let alone holding it steady.

Some plants do not have weight scales between the surface forming head and the press, and the first opportunity to weigh the board is on the other side of the press. For these plants, stabilizing the forming head levels is especially important. The Fiber Commercial Technologies plant, however, had a total mat weight scale, providing an opportunity to assess the board weight before the mat goes to the press. In other words, if a mat happened to be too light, it could be corrected within the space of the mat length, an undisputable and valuable advantage.

But even if the forming head level – and subsequently the fiber density – is held absolutely flat, a tight control of the mat weight itself is burdened by the so-called "transport delay" problem. Contemporary forming heads have weight scales positioned right in the head discharge path, or have finishing "fillers" immediately affecting the final mat weight to achieve tight control. But here, the original equipment used by the plant had to deal with a large time delay — almost five minutes — between when the corrective action (live bottom speed adjustment) is implemented and the moment the corresponding section of the mat reaches the weight scale.

Dealing with Delay

Such a significant transport delay is known to make it very difficult for a conventional PID controller — or even for an operator — to maintain stable mat weight control. For example, every time the mat weight falls below the target the controller or an operator increases the former's live bottom speed to compensate. However, the mat weight as measured by the scale is not changing for a full five minutes, which is the time it takes the newly added material to travel from the former's discharge to the weight scale. Not immediately seeing the desired result, the controller (or an impatient operator) makes additional multiple increases of the former's live bottom speed. Eventually the newly added material shows up at the weight scale possibly exceeding the target weight. The operator begins reducing the former's speed, oftentimes causing the mat weight to fall below the target even more.



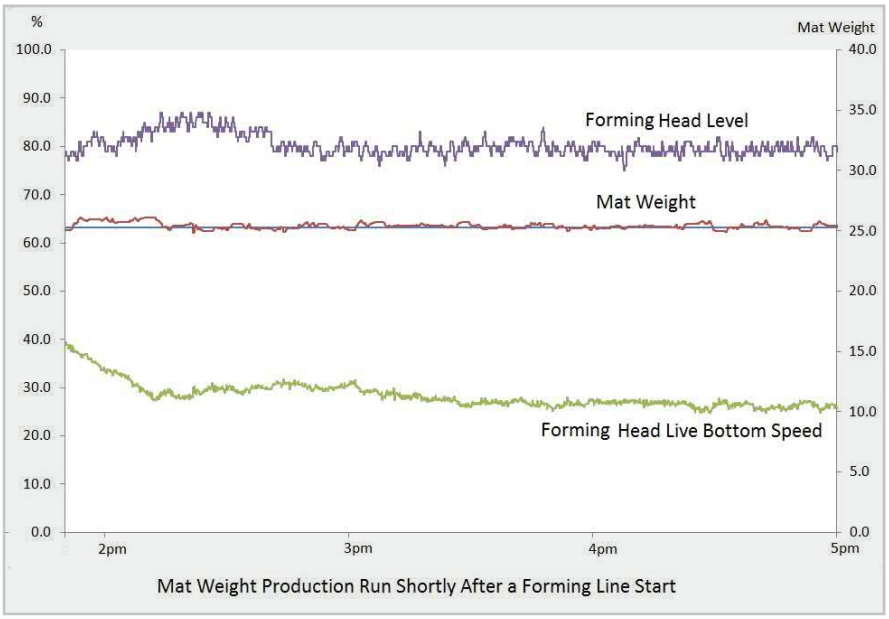
The classic Smith Predictor algorithm has helped a number of OSB plants maintain stable board weights.

Such "hunting" around the target produces boards that are either too light or too heavy, so the plant is forced to increase the mat weight target so that the lightest boards are still above the minimum weight. It reduces the amount of the off-spec boards but also makes a lot of "heavy" boards that take extra raw material to produce. If the mat weight is somehow kept stable, the weight target can be taken down to just above the minimum allowable, thus saving a significant amount of raw material for the plant.

A Classic Solution for a New Problem

In the Fiber Commercial plant, head levels and the mat weight control issues were addressed with the application of the Smith Predictor algorithm, invented by O.J.M. Smith in 1957. It uses an internal model to predict the delay-free response of the process, effectively "canceling out" the time delay in the control loop.

The Smith Predictor is widely used in process industries. For instance, it makes closed-loop gas composition control possible when the sensor is a gas chromatograph with up to 10 minutes of processing time. The Fiber Commercial project managers were certain it could deal with three- to five-minute delays in this case. As implied in the name, the algorithm "predicts" what is going to be the mat weight if there was no transport delay and the additional material deposited by the changed former's live bottom speed immediately shows up at the weight scale. It is done by using a model of the process which shows how much the mat weight changes in response to a given live



This graph shows how mat weight is stabilized using the Smith Predictor algorithm.

bottom speed increase. Such calculated mat weight value is fed into a conventional PID controller that indicates the mat weight changes the very moment the former's live bottom changes. When the real material reaches the weigh scale, the Smith Predictor reverts to sending the real mat weight to the PID controller. The end result? The weight scale is "virtually" moved up right under the forming head making the controller's job to maintain stable mat weight a lot easier.

The classic Smith Predictor is a perfect solution for non-integrating processes, or processes that regulate themselves. It could appropriately address the mat weight control issue, since this process is self-regulating. A change in the forming head live bottom speed results in a new – and fixed — mat weight value. Head level, however, is an integrating process. If the rate of the material fed into the head is just a touch off, the level will drift continually until it eventually triggers either minimum or maximum level interlock.

To make the Smith Predictor work for the forming head level control the project team used a proprietary adaptive filter — similar to one that had been previously developed for use at OSB plants – that would maintain head levels during the forming line production runs.

The Fiber Commercial plant managers requested that the algorithm cover the forming line starts every morning, as a one-shift operation was initially planned. The filter used in the version of the controller previously used in OSB mill projects was taking several hours to "adapt" or "converge" before it became operational. To comply with the Fiber Commercial plant requirements, the filter had to be further modified to "converge" within minutes from the forming line startup and become fully operational in 20 to 30 minutes. After this, the mat weight draws an almost flat line on the operator screen.

Not only did the new algorithm minimize the amount of the raw materials per finished board, it also freed up the operators from the mundane task of controlling (or augmenting controls of) the head levels and the mat weight. It also allowed them to dedicate more attention to managing the overall process more efficiently.

Mat Weight Stabilized

The control algorithm allowed the user to maintain the formed mat weigh to be held within two percent of the target weight at all times with long stretches of as little as half a percent error.

The plant is making a useful product out of recycled carpet, so it is only fitting that the equipment itself was "recycled" without compromising — while arguably enhancing — the overall plant efficiency.

Darrell Turner is the COO of Fiber Commercial Technologies, LLC, a board manufacturer based in Jupiter, Fla. He can be contacted at (864) 979-7369 or by email at Darrell.Turner@fibercommtech.com. Sergei Kuznetsov is a consultant at Triage Controls, a Minnesota-based provider of process control services. He can be contacted at (952) 250-6512 or by email at sergei@triagecontrols.com.

MEMBER SAFETY

APA Announces 2016 Safety Awards

APA – *The Engineered Wood Association* recently announced the winners of its 2016 Safety and Health Awards, a program that encourages and recognizes safety and operational excellence in the North American structural panel and engineered wood industry.

Resolute-LP Engineered Wood and LP won Safest Company Awards in their respective categories, while the coveted Innovation in Safety Award went to two winners: LP of Two Harbors, Minn., for the Equipment-Based Innovation Award, and RoyOMartin of Oakdale, La., for the Jeff Wagner Process-Based Innovation Award.

LP earned top honors among companies with four or more mills, with a 2016 average Weighted Incident Rate (WIR) of 1.57. Resolute-LP Engineered Wood, which produces I-joists, won its award in the category for companies with three or fewer mills. The company posted a perfect 0.00 WIR for 2016.

The Two Harbors LP mill's original "Saw Handling Articulating Arm" equipment innovation and the Oakdale RoyOMartin mill's "Safety Banners" took top honors out of 26 Innovation in Safety Award entries.

Seventy-seven APA-member structural wood panel and engineered wood product facilities in the U.S., Canada,

INCIDENT FREE HONOR SOCIETY	Product	WIR*	TIR**
Boise Cascade Company *Roxboro, NC*	LVL	0.00	0.00
EACOM *Sault Ste. Marie, ON*	IJ	0.00	0.00
Louisiana-Pacific Canada Ltd. *Fort St. John, BC*	OSB	0.00	0.00
LP *Hanceville, AL*	OSB	0.00	0.00
LP *Houlton, ME*	SCL	0.00	0.00
LP *Jasper, TX*	OSB	0.00	0.00
LP *Lautaro, Chile*	OSB	0.00	0.00
LP *Newberry, MI*	OSB	0.00	0.00
LP *Panguipulli, Chile*	OSB	0.00	0.00
LP *Red Bluff, CA*	IJ	0.00	0.00
LP *Roxboro, NC*	OSB	0.00	0.00
LP *Sagola, MI*	OSB	0.00	0.00
LP *Tomahawk, WI*	OSB	0.00	0.00
LP *Two Harbors, MN*	OSB	0.00	0.00
LP *Wilmington, NC*	LVL	0.00	0.00
Norbord *Guntown, MS*	OSB	0.00	0.00
Norbord *Jefferson, TX*	OSB	0.00	0.00
Resolute–LP Engineered Wood *Larouche, QC*	IJ	0.00	0.00
Resolute–LP Engineered Wood *Saint Prime, QC*	IJ	0.00	0.00
RoyOMartin *Oakdale, LA*	OSB	0.00	0.00
Weyerhaeuser *Grayling, MI*	OSB	0.00	0.00

* Weighted Incident Rate (WIR)
** Total Incident Rate (TIR)

APA Safety and Health Advisory Committee Members

Greg Ellisor, *Chairman*
Weyerhaeuser

Terry Evans, *Vice-chairman*
Boise Cascade Company

Keith Harned
LP

Bryan Kimball
Murphy Company

John Myers
Roseburg Forest Products Co.

Sam Newbill
Hood Industries, Inc.

Peter Quosai
Norbord

Terry Secrest
RoyOMartin

and abroad participated in the 2016 program. A total of 24 facilities representing eight APA member companies — Boise Cascade Company, EACOM, LP, Louisiana-Pacific Canada Ltd., Norbord, Resolute-LP Engineered Wood, Roseburg Forest Products Co., RoyOMartin, and Weyerhaeuser — earned awards in various competition categories. Some of the mills were multiple award winners. See the complete list at right for more details.

In addition to the Safest Company and Innovation awards, other competition categories include Safety Improvement, Annual Safety and Health Honor Roll, 3-Year Safety Award, and Incident Free Honor Society. Twenty-one mills achieved a zero incident rate for the year and thus were named to the Incident Free Honor Society. The annual honor roll, three-year average, and safety improvement categories are divided into three divisions based on the type of product manufactured at the mill.

The 2016 Safety and Health Awards program is coordinated through the APA Safety and Health Advisory Committee. Winning facilities and companies will be recognized and their safety accomplishments celebrated during the Chairman's Dinner at APA's Annual Meeting this October in Huntington Beach, California.

INNOVATION IN SAFETY AWARD

Equipment-Based Innovation Winner:	*Jeff Wagner Process-Based Innovation Winner:*
LP – *Two Harbors, MN* *"Saw Handling Articulating Arm"*	**RoyOMartin** – *Oakdale, LA* *"Safety Banners"*

SAFEST COMPANY AWARDS

	AVERAGE WIR	AVERAGE TIR
Resolute-LP Engineered Wood *(Companies with three or fewer member mills)*	0.00	0.00
LP *(Companies with four or more member mills)*	1.57	0.41

ANNUAL SAFETY & HEALTH HONOR ROLL

Division I (Plywood)		WIR	TIR
1st Place	**RoyOMartin** – *Chopin, LA*	4.75	0.70
2nd Place	**Boise Cascade Company** – *Chester, SC*	5.98	1.56
Division II (OSB)		**WIR**	**TIR**
1st Place	**LP** – *Lautaro, Chile*	0.00	0.00
2nd Place	**LP** – *Jasper, TX*	0.00	0.00
Division III (Glulam, I-Joist and SCL)		**WIR**	**TIR**
1st Place	**LP** – *Houlton, ME*	0.00	0.00
2nd Place	**LP** – *Wilmington, NC*	0.00	0.00

3-YEAR SAFETY AWARD (2014-2016)

Division I (Plywood)	Avg. WIR	Avg. TIR
RoyOMartin – *Chopin, LA*	3.93	0.70
Division II (OSB)	**Avg. WIR**	**Avg. TIR**
LP – *Panguipulli, Chile*	0.00	0.00
Division III (Glulam, I-Joist and SCL)	**Avg. WIR**	**Avg. TIR**
Resolute-LP Engineered Wood – *Saint Prime, Quebec*	0.00	0.00

SAFETY IMPROVEMENT AWARD (2014-2016)

Division I (Plywood)

Roseburg Forest Products Co. – *Riddle, OR* — **74% Improvement**

2014 WIR	2015 WIR	2016 WIR	2014 TIR	2015 TIR	2016 TIR
36.09	14.86	9.40	5.55	3.43	2.91

Division II (OSB)

LP – *Hanceville, AL* — **100% Improvement**

2014 WIR	2015 WIR	2016 WIR	2014 TIR	2015 TIR	2016 TIR
16.85	0.52	0.00	2.17	0.52	0.00

Division III (Glulam, I-Joist and SCL)

– *No mill qualified for award*

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EWTA Holds Spring Membership Meeting

The Engineered Wood Technology Association held its spring advisory committee meeting at the Hilton Garden Inn on April 13 in Springfield, Ore. Twenty-two EWTA and APA members met and received reports on EWTA activities, programs, research and finances.

EWTA reported strong financial footing, with net reserves over $150,000 and a total of $165,000 going to industry research in 2016 and 2017.

The meeting also included updates on industry standards from APA staff as well as a presentation on "Formaldehyde Emission Standards for Composite Wood Products" from Jeff Swartzentruber of member company Hexion Inc. Following the meeting, attendees were treated to a tour of the Springfield Hexion laboratory.

APA Releases 2017 Engineered Wood Yearbook

The 2017 Structural Panel & Engineered Wood Yearbook has been released by *APA – The Engineered Wood Association*. The yearbook includes an analysis of the U.S., Canadian, and global economies, focusing on factors that impact demand for engineered wood products across several market segments as a basis for forecasting expected production of engineered wood products over the next five years. Besides the analysis and forecast, the yearbook also includes historical data on engineered wood production.

The yearbook can be purchased for $275 through APA's Resource Library. Visit www.apawood.org, click on the Resource Library tab and search for form MKOE183.

EWTA Welcomes New Members, Setting New Membership Record

Several new members have joined EWTA in recent months, bringing the association's membership count to 122, a new record for the association. The following are members who have joined since the spring issue of the *Engineered Wood Journal*:

- **Adwest Technologies Inc., A CECO Environmental Company** (www.adwestusa.com, www.cecoenviro.com), located in Anaheim, Calif., provides high efficiency regenerative thermal and catalytic oxidizers for engineered wood, OSB, MDF, laminating, veneer drying and resin VOC abatement. Scott Brayton, key account manager, can be reached at sbrayton@onececo.com
- **A-Lert Construction Services** (www.centurionind.com), based in Fredonia, Kan., specializes in manufacturing and installing rotary dryers and related process equipment. Sales Manager Jordan Stewart can be reached at jstewart@centurionind.com
- **ATCO Wood Products Ltd.** (www.atcowoodproducts.com), based in Fruitvale, B.C., Canada, is a forest management company and a producer of softwood veneer. ATCO specializes in producing custom softwood veneer for plywood and engineered wood products customers in both Canada and the United States. COO Mark Semeniuk can be reached at mark.semeniuk@atcowoodproducts.com
- **Coastland Wood Industries** (coastlandwood.com), located in Nanaimo, B.C., is a triple line veneer mill with an offsite drying facility, two barge loading facilities and three log sorts. Wade Bentley, vice-president of sales and marketing, can be reached at wbentley@coastlandwood.com
- **Cogent Industrial Technologies** (www.cogentind.com), located in Richmond, B.C., Canada, provides expertise in the design and integration of electrical, control and IT systems to the engineered wood industry. President Bijan Shams can be reached AT bijan.shams@cogentind.com
- **DO2 Industriel** (www.do2.ca), based in Colbeau-Mistassini, Quebec, Canada, is the distributor of the DO2 Rapid Wrapper Automatic Panel packaging system to the engineered wood products industry. Sales representative Patrick Sasseville can be reached at psasseville@do2.ca
- **EcoSynthetix** (www.ecosynthetix.com), based in Burlington, Ontario, Canada, is a renewable chemicals company specializing in bio-based materials that are used as inputs in a wide range of end products. Company representative Scotti Good can be reached at sgood@ecosynthetix.com.
- **Evertree** (www.evertree-technologies.com), located in Plymouth, Mich., is an industrial solutions and materials provider with cost competitive, plant-based chemicals that offer the same or better performance than petroleum-based chemicals. Director of Business Development Clancy Redmond can be reached at clancy.redmond@evertree-technologies.com
- **HexArmor** (www.hexarmor.com), located in Grand Rapids, Mich., is a global personal protective equipment manufacturer that uses innovative technologies to build high performing hand protection, arm/body protection and eyewear. Patrick Beadling, director of account services, can be reached at patrick@hexarmor.com
- **PMP Solutions** (pmpsolutions.ca), located in Quebec, Canada, offers manufacturing plants real-time access to production performance data by connecting machines, processes and people. Business Development Director Anne-Marie Levesque can be reached at anne-marie.levesque@pmpsolutions.ca
- **Rockwell Automation** (www.rockwellautomation), located in Alpharetta, Ga., is an industrial automation and information company offering flagship products including Allen-Bradley and Rockwell Software. Stephen Howell, process business development manager, can be reached at slhowell@ra.rockwell.com
- **SEMCO** (www.thesemco.com), located in Gulf Shores, Ala., offers design, layout and project management services to companies seeking lighting upgrades and helps businesses cut lighting energy cost by 60-75 percent through turnkey LED lighting retrofits. President James Fletcher can be reached at jimf@thesemco.com
- **Wechsler Engineering & Consulting** (wechslereng.com), based in Charleston, S.C., is an engineering and consulting firm with experience optimizing the interrelated components of energy, production processes, safety and environment. President Kimble Garrett can be reached at kgarrett@wechslereng.com

Metriguard Inc. Purchased by Raute

Wood product machinery company Raute Corp., headquartered in Finland, recently purchased Pullman, Wash.-based Metriguard Inc. (www.metriguard.com), a company that specializes in high-speed strength grading technology for lumber and veneer.

The acquisition will strengthen both Metriguard and Raute's product lines, according to a press release, amalgamating and enhancing the best practices of both businesses in the future. The Metriguard team will stay intact, with the exception of Jim and Jean Logan, who will remain as consultants for a period of time to oversee the transition before stepping away from the business completely. The new president of Metriguard is Jani Roivainen, who has successfully managed the Mecano business unit for Raute Corp. since that acquisition.

Metriguard will continue to operate in Pullman under the legal name of Metriguard Technologies Inc.

NESTEC Partners with A.H. Lundberg Systems

NESTEC Inc. and A.H. Lundberg Systems Limited announced in a press release a strategic alliance to mutually promote each company's technologies in North America and other parts of the world. The partnership will expand the reach of new and state-of-the-art technologies in the U.S. and also complement NESTEC with proven control systems to further strengthen its broad spectrum of single source clean air solutions, according to the announcement.

AkzoNobel Appoints Vanlancker as New CEO

AkzoNobel announced that its chief executive officer, Ton Büchner, stepped down due to health reasons, and Thierry Vanlancker will serve as the company's new CEO. Vanlancker joined the company in 2016 and was most recently head of specialty chemicals at AkzoNobel.

SASCO Acquires Release Agent Line

SASCO Chemical, a Polymer Solutions Group company, recently announced that it has acquired the wood release agent product line of Michelman Inc., a supplier of wood release agents to the engineered wood market.

Over the next few months, SASCO's legacy products and the newly acquired products from Michelman will be integrated into Polymer Solutions Group's Functional Materials business segment. Products will be sold under PSG's existing brand name, TechKote.

Corrected Listings in Spring *Engineered Wood Journal*

The listings for Itipack Systems and Nondestructive Inspection Service in the Membership Directory of the Spring *Engineered Wood Journal* were listed incorrectly. The listings should have read as follows:

ITIPACK SYSTEMS
919 Zelco Drive
Burlington, ON L7L 4Y2 Canada
Contact: Harry Scholtens - Sales Manager
Phone: 905-333-3695 ext. 224
Email: hscholtens@itipacksystems.com
Website: www.itipacksystems.com
Itipack Systems has been in business since 1970. We are a manufacturer of automated strapping systems.

NONDESTRUCTIVE INSPECTION SERVICE
PO Box 220
Hurricane, WV 25526
Contact: Ed Hauldren - VP of Operations
Phone: 304-562-6835
Email: ed@nisforndt.com
Website: www.nisforndt.com
Nondestructive Inspection Service (N.I.S.) was incorporated in 1960. Since that time we have taken preventative maintenance to higher levels of predictive maintenance while saving our customers costly unpredictable down time, on all types of process equipment along the entire production line. We are the established leader in applying our knowledge of NDT and perfecting inspection procedures to exceed industry standards. In the case of wood processing and construction board plants we have developed, tested and implemented significant innovations on the standard inspection techniques to shrink costly inspection downtime and overcome the issues of inspecting difficult-to-reach parts of the equipment.

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2017

OCTOBER

1-3 Composite Panel Association Fall Meeting, Savannah, Ga., www.compositepanel.org

14-18 Wood Processing Machinery and Intermob Fair, Istanbul, Turkey, intermobistanbul.com/en/fair-info

17-19 Southern Oregon Occupational Safety and Health Conference, Ashland, Ore., osha.ore.gov/conferences

18-20 Southern Forest Products Association 2017 Annual Meeting, Bonita Springs, Fla., sfpa.org/calendar/sfpa-meetings/

28-30 APA Annual Meeting and EWTA Info Fair, Huntington Beach, Calif., www.apawood.org, www.engineeredwood.org

NOVEMBER

8-10 Greenbuild International Conference and Expo, Boston, Mass., www.greenbuildexpo.com

8-10 North American Wholesale Lumber Association (NAWLA) Traders Market 2017, Chicago, Ill., www.nawla.org

14-16 2017 North American Association of Floor Covering Distributors + North American Building Materials Distribution Association Annual Convention, Colorado Springs, Colo., www.distributorconvention.org

28-12/1 Western Pulp, Paper and Forest Products Safety and Health Conference, Portland, Ore., osha.oregon.gov/conferences/western/Pages/index.aspx

2018

JANUARY

9-11 National Association of Homebuilders International Builders' Show 2018, Orlando, Fla., www.buildersshow.com

APRIL

11-12 Wood Bioenergy Conference & Expo, Atlanta, Ga., bioenergyshow.com

13-14 Panel and Engineered Lumber International Conference and Expo (PELICE), Atlanta, Ga., pelice-expo.com

22-25 Composite Panel Association Spring Meeting, Victoria, British Columbia, Canada, www.compositepanel.org

JUNE

12-15 Forest Products Society 72nd International Convention, Madison, Wis., www.forestprod.org

21-23 American Institute of Architects Conference on Architecture 2018, New York City, N.Y., conferenceonarchitecture.com

AUGUST

20-23 2018 World Conference on Timber Engineering, Seoul, Korea, http://wcte2018.kr/home/

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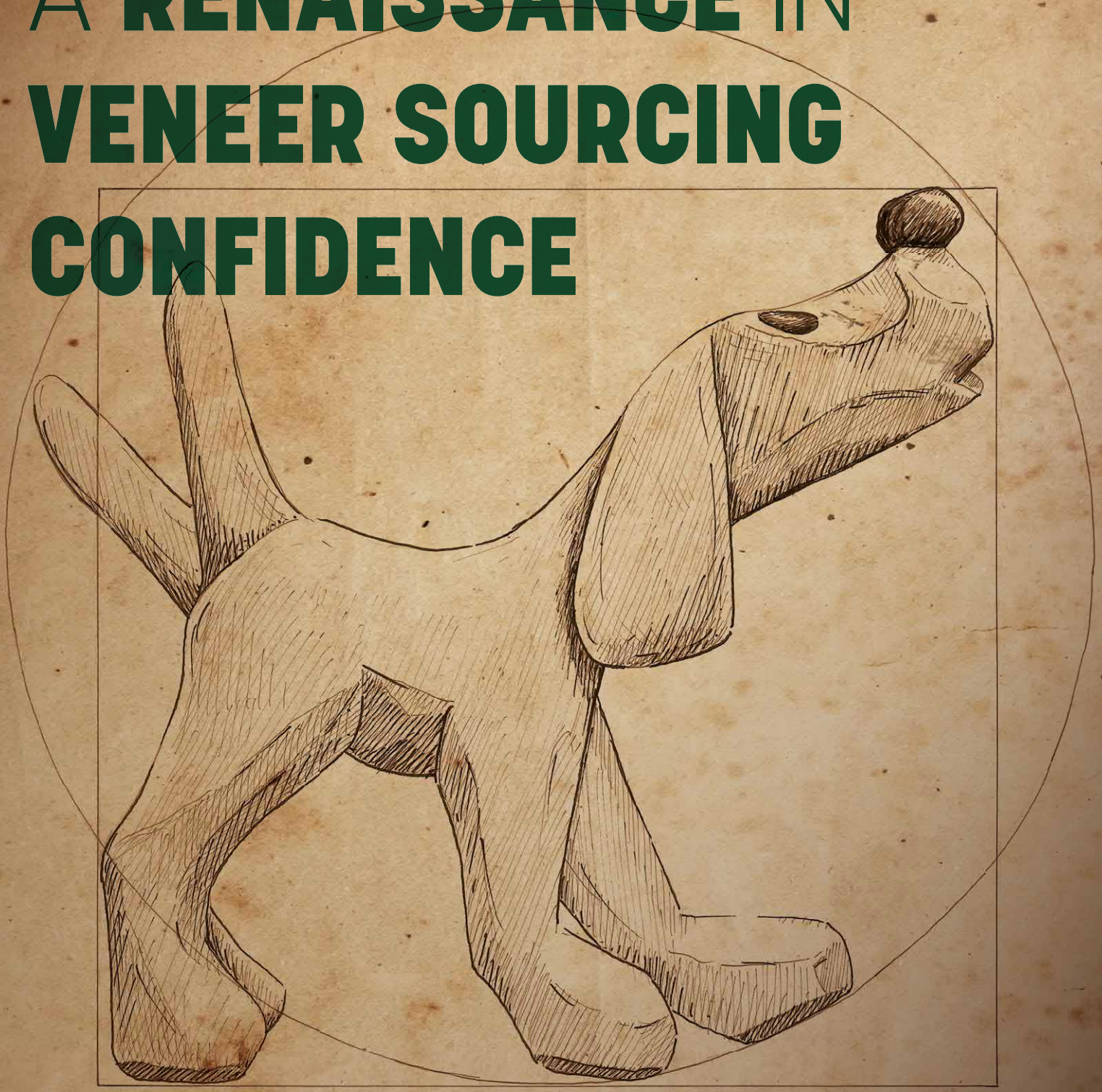

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