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**Protecting
the Human
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PG 31

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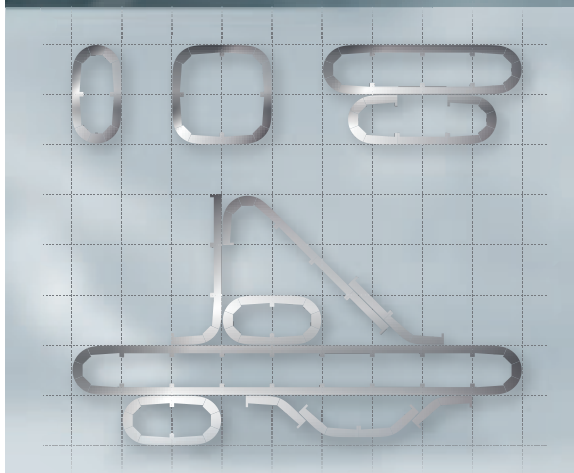


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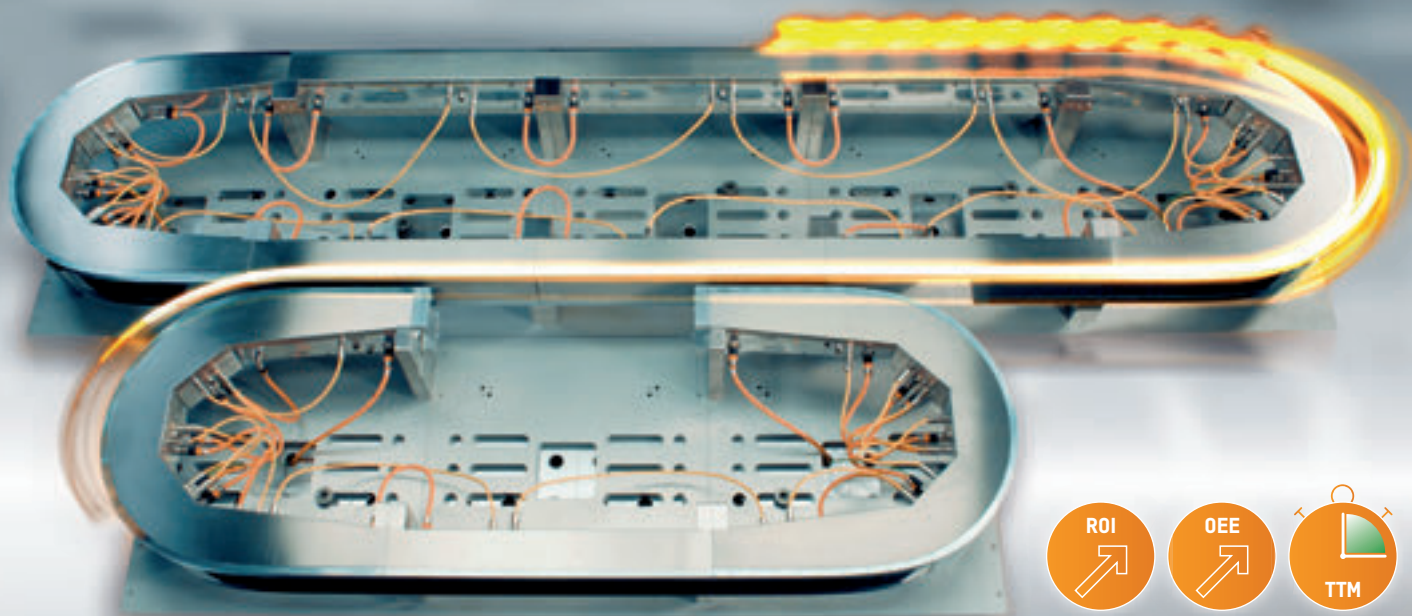
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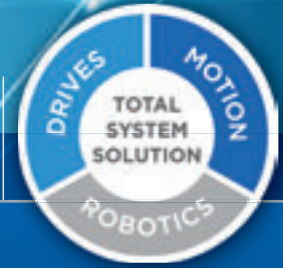
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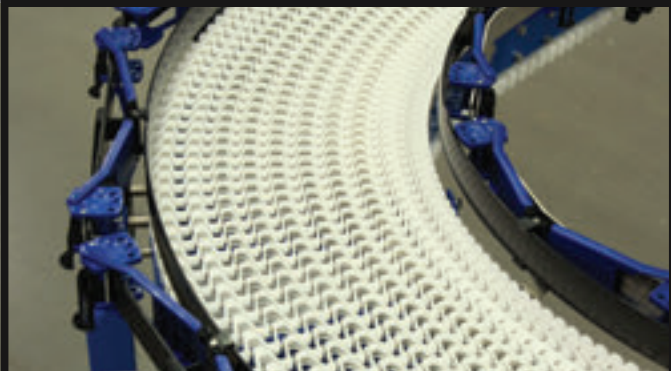
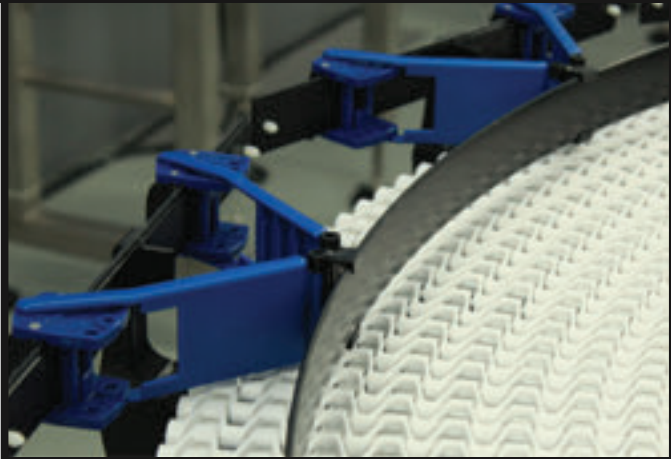
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FOR OPENERS**STEPHANIE NEIL** EDITOR-IN-CHIEF

Learning From Your Peers



We've been asking readers what they'd like to see in the pages of *OEM Magazine*, and much of the feedback points to more profiles on machine builders. Readers simply want to know how their OEM confreres are dealing with similar issues around lead times, technology adoption, the workforce, etc. It's not to gain proprietary competitive knowledge, but rather it's a natural curiosity around how machine builders conduct business—especially when a company has innovated and prospered through many decades. Or, how

about a century?

In this issue, you can read about Milwaukee-based Felins (**page 18**), an equipment provider of banding, tying, strapping (and more), which this year celebrates its centennial

anniversary. It takes innovation and determination to survive 100 years, but the Felins team is quick to point out that culture is the cornerstone of the company's success. "Oftentimes companies say employees are the most important asset, but they don't treat them like that," Felins CEO Andrew Barrieau told me.

To support that mindset, we've explored how OEMs can best look after their most important asset—humans (**page 31**). Then find out how robots fit into corporate culture as we share results from *Automation World's* robotics adoption survey (**page 37**).

Is your company ready for the spotlight in an OEM profile? Drop me an e-mail and tell me all about it!

Stephanie Neil is the Editor-in-Chief of OEM Magazine. Reach her at sneil@oemmagazine.org or [linkedin.com/in/stephaniesneil](https://www.linkedin.com/in/stephaniesneil).

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FOR THE RECORD**NATALIE CRAIG** SENIOR MANAGING EDITOR**The Culture Needs a Shift**

Over the past two years, our world and industry have changed quite a bit. Manufacturers have had to adjust and adapt in many ways, one of which being how they approach recruiting, retaining, and training their workforce.

In one of our cover stories on **page 31**, we talk more about how OEMs are handling workforce development as the pandemic unfolds. Luckily, many OEMs have been able to stay busy with increased demand as COVID-19 plays out. But this also means that they have had to grow and expand while much of their workforce is

working remotely. We spoke with OEMs like Intralox about how they developed remote onboarding processes for employees during extreme growth.

We also interviewed organizations and OEMs like Pearson Packaging Solutions about their efforts to create a culture that is more realistic, balanced, and flexible.

The pandemic, along with many other world events have caused company cultures to shift—not only with remote work policies, but also by sparking conversations around diversity and inclusion.

And among all the OEMs, manufacturers, and organizations we interviewed, one thing is clear: the culture needs to be shifted in order to accurately reflect the world around us. Having spoken with and profiled many OEMs over the past six years, I know how important culture is to you all. And I also know how hard it can be to change or adapt any kind of company policy or tradition—especially during such a volatile time. So, we have included resources to help guide your company's transformation and inform you on all things culture, worker safety, and development in this story.

Natalie Craig is the Senior Managing Editor of OEM Magazine. She may be reached at ncraig@pmmimedialogroup.com or at www.linkedin.com/in/nataliedcraig.

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BUSINESS INTELLIGENCE

Predictive Maintenance Pain Points in Packaging Machinery

Kim Overstreet, Senior Content Strategist, Alignment, PMMI Media Group

Predictive maintenance is the ability to monitor a machine, or machine component, and avoid unplanned downtime by foreseeing machine failure and allowing the opportunity to take preventative action. The possibility of machine failure shutting down a production line ranks high on most manufacturing managers' list of worries, and report research showed that manufacturing managers at CPG companies consider their packaging machines to be more prone to downtime than the other types of machines they use.

According to PMMI's *Packaging and Predictive Maintenance* report, most of the predictive maintenance solutions currently on the market are designed to monitor critical assets such as AC induction motors, pumps, and gearboxes; and they tend to be based on vibration sensor solutions.

The critical functions of packaging machinery, however, tend to be under servo control, even though many machines do employ standard AC motors. Servo technology does not lend itself to vibration monitoring, so OEMs are currently using thermal imaging to gather necessary data on servo systems. It is expected that in the future, predictive maintenance opportunities will be built directly into the servo drive, allowing for standard predictive maintenance solutions to be applied.

Some types of packaging machinery are more prone to downtime than others, and CPGs reported interesting results with regard to which are most likely to break

down. In the "extremely likely" category, form/fill/seal (f/f/s) machines were reported in the lead—with 14.3% of manufacturing managers at CPG companies rating them as extremely likely to suffer downtime. Next reported in the "extremely likely" to fail category are labeling, decorating, and coding machines—which were placed in this category by 13.3% of respondents.

Interestingly though, when the three categories of "likely to fail" (extremely, moderately, and slightly) are aggregated, labeling, decorating, and coding machines comes out in the lead as the least reliable type of machine; while f/f/s machines only make it into third place.

There were seven causes reported by respondents at CPG companies as the most common cause of packaging machine downtime. Within these seven leading types of downtime, three rated higher: general wear and tear (26.3%), operator error (21.1%), and product changeover (22.1%). Of these three, the only one that clearly could not be addressed by predictive maintenance is operator error.

Machines that are used to package multiple types of items and can require a changeover of parts when switching between different items was also mentioned as a problem area for CPG respondents, and according to the report, "there is a clear and definite need for OEMs to work with predictive maintenance specialists to design bespoke predictive maintenance solutions that can monitor the product changeover process."

One other specific area with a need for predictive maintenance solutions is in washdown areas. Packaging machines that are implementing predictive maintenance based on vibration sensing can become dislodged by high pressure water washdown processes, and companies who want to implement predictive maintenance in washdown areas need to ensure that they find a predictive maintenance partner who understands their specific needs.

Download PMMI Business Intelligence's Packaging and Predictive Maintenance report by visiting: oemgo.to/predictivestudy

You May Be Interested: OpX Asset Reliability Roadmap

Optimizing your company's current investment in existing production equipment is a widely shared goal in the consumer products industry.

PMMI's OpX Leadership Network recently commissioned an Asset Reliability Solutions Group to undertake a work product on asset reliability in order to get CPGs and OEMs on the same page regarding definitions, key performance indicators (KPIs), calculations, and leadership guidance when developing an asset reliability initiative.

To access this free download, visit: oemgo.to/asset

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INDUSTRY NEWS



Creating the Digital Thread to Connect OEMs and End Users

Siemens and SAP expand their partnership to connect plant floor operations, remote condition monitoring conducted by OEMs, and product development via digital twins to facilitate collaboration across an asset's entire lifecycle.

David Miller, Senior Technical Writer, *Automation World*

The relationship between original equipment manufacturers (OEMs) and manufacturing end-users is undergoing a sea change in terms of how equipment is purchased and maintained. Numerous forces are responsible for this shift. Most prominent among these is the availability of fewer onsite engineers. This operating reality has led manufacturers to outsource much of their maintenance operations, requiring them to rely more heavily on remote condition monitoring and predictive maintenance techniques provided by OEMs themselves.

As a result, new business models, bolstered by digital transformation, have begun to spring up among OEMs. For instance, performance-based costing, which bills end-users based on the amount of throughput a machine achieves, has started to usurp the flat-fee model. This not only reduces upfront capital expenditures for manufacturers but incentivizes OEMs to continuously improve the performance of their equipment, making them more competitive and delivering better results for end-users.



Watch this video for more on how the “as-a-service” model is changing automation technology purchases: oemgo.to/asaservice

In addition, as these machines-as-a-service type arrangements become more prevalent, they are being tapped to provide an end-to-end data pipeline between OEMs and end-users that allows those who design and engineer equipment to better understand how their products are used in the field, effectively extending the process of asset lifecycle management to the planning and design stage of a piece of machinery.

These equipment agreements between OEMs and manufacturers are made possible by new industrial software partnerships between suppliers. One such example is the

recent expansion of a partnership between Siemens and SAP, wherein Siemens will begin offering SAP's Asset Intelligence Network, the SAP Asset Strategy and Performance Management Application, and the SAP Enterprise Portfolio and Product Management package. In turn, SAP will offer Siemens' Teamcenter software service lifecycle management portfolio.

SAP's Asset Intelligence Network and its accompanying applications allow end users to collect and aggregate sensor, time series, and status data from equipment into a centralized repository that can be used to build a digital twin for sharing with others—in this case, an OEM. By studying the digital twin, OEMs will not only make suggestions for maintenance and improving performance but will be able to learn more about how their equipment is actually used in the field to improve the design of future products.

Supporting this data sharing process, Siemens' Teamcenter software enables engineers to share computer-aided design (CAD) and design data via the cloud for real-time, remote collaboration at the product development stage. Users can view, measure, and markup CAD files, share projects, and review designs via augmented reality on tablets and other mobile devices.

According to SAP and Siemens, the integration of this diverse set of offerings will bolster collaboration across the entire supply chain, offering OEMs and manufacturers alike the possibility to discover end-to-end efficiencies that previously would not have been possible. By using SAP's Asset Intelligence Network and Siemens' Teamcenter software together, the companies contend that a consistent digital twin of a plant's operation can be viewed by plant operators, OEM service teams, and engineers working in new product development.

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MARKETING FOCUS

Solving the Remote Buying Team Challenge

Sarah Loeffler, Contributing Editor

How do you ensure prospects can effectively shop your product anytime from anywhere? For many OEMs, it's clearly a struggle. Face-to-face is always the first choice, but it's not always possible. On-site demos with prospects have become more difficult in recent years as buying teams have become larger and more global. You—and your prospects' entire buying team—can't make every trade show or site visit. Not to mention reticence for business travel, even before the pandemic.

But traditional online options don't cut it either. Photos and spec sheets are important, but they don't always give the buyer the best feel for things. Today's buyers want to get a sense of dimensions and space, and envision how well a piece of equipment would function in their specific facility.

Offer 3D machine tours

With PMMI Media Group's new 3D Machine Tours, OEMs can now easily give remote prospects the next best experience to being in front of their equipment. With the aid of 3D photography, the OEM is able to provide buyers with the ability to see every angle and zoom in on every component. Prospects—from the comfort of their computer—can self-guide and navigate around the entire machine.

There's also interactivity, with the OEM able to drop in tags with captioning, whether it be short videos of equipment running, links to related resources or any desired audio clips with narration. There's even the capability to allow viewers to measure any portion of the machine with a built-in ruler tool.

The best part? The 3D Machine Tour development process is incredibly easy, with PMMI Media Group's 3D photography partner able to conduct the onsite shooting in the U.S., Canada, the United Kingdom, and many other countries. Turnaround from shoot date to finish image/tour is typically about a week. Afterward, the OEM will receive a URL hosting the tour that can be embedded onto its website or linked to with any email, social, or other digital promos.

Leverage the permission builder

As OEMs try to make their websites more "shoppable"

for remote prospects, one common challenge has been managing access to proprietary product information. For example, with the 3D Machine Tour, an OEM might feel torn between having web visitors learn about their product to advance the sales process while also wanting control over detailed views of their equipment.

Thanks to a new privacy tool from PMMI Media Group, OEMs no longer need to worry about this traditional barrier. With Permission Builder, OEMs can finally control those who can—and can't—see information about their product online in a timely, automated fashion.

To use Permission Builder, the OEM posts its proprietary content asset, whether it be a video or 3D Machine Tour, onto a PMMI Media Group-owned landing page. A pop-up form on the page compares data entered and IP address against an identity resolution algorithm that makes use of information exclusive to PMMI Media Group's database, SIC/NACs verification, and other third-party data points to separate validated end users from competing suppliers. OEMs can establish permissions at a profile level, blocking or allowing visitors by individual email address or domain.

Those passing identity validation and the permissions settings are granted access and will immediately see the protected content. Others will receive notice that access is pending the OEM's approval, or, in the event that a competing supplier or other non-desired viewer is detected, access will be denied.

If desired, OEMs also can include on the landing page a contact form that allows for online appointment scheduling, where dedicated sales calendars (individual or team) are available to prospects to book meetings directly.

Because Permission Builder lives on the landing page itself, it can work with any digital campaign. It doesn't matter whether visitors to the page come from your email, social, or other marketing efforts.

For more details on 3D Machine Tours or Permission Builder, visit: hub.pmmimediagroup.com

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SALES FOCUS

Sales Pipeline Forecasting – Fact or Fiction?

Jay Spielvogel, CEO, Venator Sales Group



“ I believe I have a 50/50 shot of closing this piece of equipment.”

“They loved our presentation; I’d give this a 75% chance of closing at this point.”

“My contact is reviewing our quote internally; I’d say we have a 90% chance of closing this one.”

Does this sound familiar? How often do you hear these optimistic statements from your sales team, and then find yourself asking, “Whatever happened to all of the other deals that you forecasted at 90% chance of closure?” Only to hear the typical responses:

“The project was put on hold.”

“My prospect wasn’t able to get the budget.”

“Turns out they were looking at another competitor that offered a better price.”

This scenario is being played out across the globe, in every sales organization—small and large—by salespeople who are feeling the pressure to show pipeline activity. When required to assign a stage and percentage chance of closure to a deal, the critical thinking for most salespeople is biased by wishful optimism and hopeful inference. On one hand, pipeline stage and forecasting are highly influenced by downward pressure from management to show opportunities that have a chance to close during the current quarter. But salespeople are influenced by positive feedback and interest they receive from their main contact.

When asked, most sales leaders will admit it is a numbers game and that the team is closing less than 25% of the deals that are forecasted at 50% or greater. In some cases, the deals are completely falling apart, while in others the close dates keep getting moved and stretched from quarter-to-quarter and year-to-year.

The question is “WHY is our forecasted pipeline so unreliable?” Perhaps it points to a need for:

1. Training and playbooks on qualifying and closing.
 2. Hiring a team of inside hunters to free our outside team up to focus on closing.
 3. Management involved helping to close late-stage deals.
- These are all good tactical approaches that can help

drive sales by applying more energy, time, and resource. Unfortunately, these solutions still do not get to the root cause of the forecasting issue.

Misalignment between sales process and pipeline stages

Regardless of the type of sales training and process a company has adopted, they all have several core components the sales team needs to follow:

- Take the time to uncover the business drivers (pain, issues, concerns, and vision).
- Gain full clarity and access to all the stakeholders.
- Clarify the budget allocation, “real” timeline, and formal approval process.
- Address and remediate roadblocks such as competition, budget constraints, and other priorities.

Whether it is based-on experiential wisdom passed down informally through sales management or formalized sales training, the components listed above make up the foundation of all solid sales processes and playbooks.

Still, there are more questions, like: “With all the time, energy, and money we have invested in sales process and CRM, why is it not translating into accurate and reliable pipeline forecasting?”

To answer this, look no further than the company pipeline stages. Most companies are diligently training their salespeople to ask questions and get information from prospects, yet the pipeline stages are based on the answers and information the salespeople provide to prospects.

We teach our people to maintain control of the sales process and most of all not to rush into providing demos and quotes, yet we have them staging their pipeline and percentage chance of closure based on the initial call, solution presentation, proposal, negotiation, and contract pending.

When companies implement stages that mirror the ones above, they are following the conventional thinking that milestones and chances of closure will improve based on information and material delivered.

Getting into alignment

To improve the accuracy of our team's pipeline forecasting and the effectiveness of our sales management approach, we need to align our pipeline stages with our sales process rather than with our prospect's evaluation process. This does not mean that salespeople should refuse to do demos, send samples, provide initial quotes and presentations at earlier stages in the relationship cycle where it is appropriate with a prospect. It means that these activities do not translate into increased chances of closure or progression through the sales funnel or pipeline stages.

Stages based on opportunity qualification

To help clarify process and pipeline alignment, I have provided below some sample milestones we use at Venator Sales Group.

- Initial call scheduled.
- Explored and uncovered issues, concerns, and vision.
- Our contact is willing to review stakeholders, competitive landscape, and decision process.
- Access to and/or confirmed budget and initiative approval from the final decision maker(s).
- Validation of budget process, timeline and next steps, and a verbal commit to move forward.
- Reviewed final proposal with prospect and remediated all roadblocks.
- Signature date locked-down, and follow-up call scheduled and accepted.

The above example is based on actual qualification stages meant to align with a sales training program and a formalized sales process. Depending on statistical data, as well as size of deal and whether the prospect is a new or existing client, relevant percentages can be applied.

Benefits of staging based on sales process, include:

1. Ability to apply a validation approach by adding fields that are required to be checked off, picked, and completed at each stage in the company CRM.
2. Ability to scale sales management team by training sales operations to perform pipeline reviews based on KPIs versus experiential wisdom.

Besides the obvious, which is a more accurate weighted average pipeline, the above list represents just a few of the added benefits of this realignment approach.

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Felins Celebrates 100 Years of Problem Solving

What started in 1921 with a simple tying machine for the Quality Sausage Company, has evolved into niche end of line offerings that, with a little creativity, can be applied to a broad set of applications.

Stephanie Neil, Editor-in-Chief

This year marks the centennial anniversary of Felins USA, Inc., a provider of bundling and labeling machines, as well as materials, parts, and services.

While Felins may offer a unique product in the vast packaging landscape, *OEM Magazine* is spotlighting the Milwaukee-based machine builder because the company is a shining example of what dogged determination looks like.

To last 100 years—through the Great Depression, wars, recessions, and fierce competition—takes grit with a bit of passion, perseverance, and reinvention thrown into the formula for good measure. For example, during the 2008 recession, Felins was hit hard because, at that time, much of its business came from the print industry, and about half of the printers went bankrupt.

“Since then, we’ve reconfigured for growth in food, pharmaceutical, personal care, e-commerce, and hospitality which involves end of line commercial laundry facilities,” says Andrew Barrieau, president and CEO of Felins. And, it has been a success, he says. “We’ve had 400% growth in non-print areas of our business.”

Barrieau joined Felins in 2005 as CEO, partnering with Joe Schaffer, managing director of Monument Capital partners, an investment firm that is the majority owner of Felins. Barrieau’s background ranges from his first job in a gun factory to heating and air conditioning R&D to then, after getting an engineering and master’s degree, landing a job at Koch Industries. But when he was given the opportunity to be the CEO and a partner at Felins, he jumped at the opportunity. “I fell in love with the business and in one day decided to leave an industry I had been in for 25 years,” Barrieau says.

So, what is so exceptional about this small, 30-person company? Well, there are a few things.





Felins USA, Inc.

Location: Milwaukee, WI

Established: 1921

Leadership: Andrew Barrieau, CEO and President, Joe Schaffer, Owner

Revenue: \$10 to \$20 million

Employees: 30

Field service personnel: 8 (sales and technical)

Facility: 30,000 sq. ft.

Markets served: Global

Industries served: Banking, CPG, Corrugated, E-Commerce, Floral, Food, Healthcare, Laundry, Mailing, Manufacturing, Personal Care, Pharmaceutical, Print, Textile, and Wood

Product range: Bundling and labeling machines, materials, parts, and service. Products include banding, strapping, sleeving, adhesive free labeling, string tying, stretch film, shrink film, and rubber banding.

Standard controls platform: Mitsubishi and Omron PLCs



Andrew Barrieau, President & CEO of Felins USA, Inc.

First, the Felins history

In 1903, Fred E. Lins, an immigrant from Germany, started the Quality Sausage Company in Milwaukee. By 1921, with business growing, the manual process of tying sausage ends was creating a bottleneck on the processing floor as employees' hands were hurting. So, together with a co-worker, Lins developed a mechanical way to tie the sausage links using a foot-operated machine. The patented machine, called the Pak-Tyer, used fewer tying materials, reducing waste and costs, as well as reducing worker injuries while maximizing production efficiency. When sales of Pak-Tyer skyrocketed, Lins started a separate packaging company called Felins—based on his first and middle initials (F and E) and his last name.

“It was very innovative. And the same focus Fred had back then we’ve been applying to new markets for the last 100 years,” Barrieau says. “We’ve accelerated that in the last 40 years as the company has invested in new technology. Some of it we invented, some of it we bought, and for some of it we partnered with others.”

The ability to shift course as needed came in handy last year when 94 of Felins' customers in the hospitality and non-urgent medical care businesses shut down due to COVID-19, which in turn impacted Felins. But, in true form, Barrieau and team ramped up offerings for other customers in the pharmaceutical field that were producing vaccines, COVID test strips, and the COVID-19 vaccine cards. The growth in that area offset the temporary loss of 94 customers. “As a result, last year was a record year for us and this year looks to be the largest in company history.”

The record-breaking revenue is not just due to pandemic-related equipment needs, but also because of a significant investment Felins made in the food segment, which includes innovative products like adhesive-free labeling that is held in place using tension instead of glue. And automatic sleeving, an automated way to offset the manual process of putting on a chipboard sleeve, for example.

Its paper and plastic banding machines, an alternative to plastic strapping and shrink-wrapping, uses wide but thin material to keep a strong

hold on products without causing damage. And while many banding options are heat-sealed, the Felins offering uses ultrasonic technology which can be used in clean rooms, refrigerated rooms, and wet rooms. It generates no heat which means lower energy consumption and gentle handling of products. And material usage and waste are kept to a minimum which reduces costs.

Of course, Felins offers a range of ways to bundle products, but because this is an end of line offering, many manufacturers don't factor it into the total equation. And that means the Felins sales team spends a lot of time educating its customers.



The original Pak-Tyer model is on display in the foyer at Felins. The original Pak-Tyer was invented in 1921 by Fred E. Lins and Frank Radechovsky.



The original Pak-Tyer patent can be found in the Felins showroom, dating back to 1922.

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“We’ll do an evaluation to look at how a company is packaging something and to figure out if there is a way to find a reduction in labor, because a lot of times when we go into a facility we see folks standing around and that’s a signal to us that there’s an issue with throughput,” says Seth McNally, Felins’ regional sales manager, noting that these companies will have their upstream process completely

figured out—until it gets to end of line. “They are willing to spend millions of dollars on upstream equipment, but when it comes to end of line stuff it’s an afterthought. So, we focus our attention on how we can help the process and how our machinery can save on labor costs and increase throughput.”

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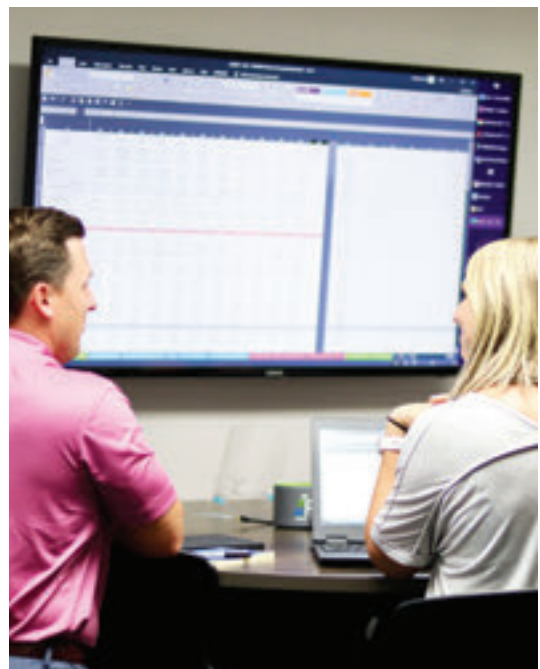


Process Engineers

Controls Engineers

Maintenance Managers

Plant Managers



The Felins Finance team meets in one of the collaboration rooms.

When embarking upon new market segments, Felins is perfectly willing to accept a little help from its friends. For example, Felins makes castings for a part in mild steel, but that same casting cannot be used to make the part in stainless steel economically. So, they went to a supplier partner and 3D-scanned the part that is made in mild steel so that it could be printed in stainless steel.

“We tried machining this the conventional way, and it cost us about four times more than when we had it printed,” Barrieau says. “Now, we don’t own the printer, because there’s a slew of suppliers in Milwaukee with different specialties, and there’s one company with so many 3D printers that all we have to do is send them a 3D file and they’ll print the parts for us no problem.”

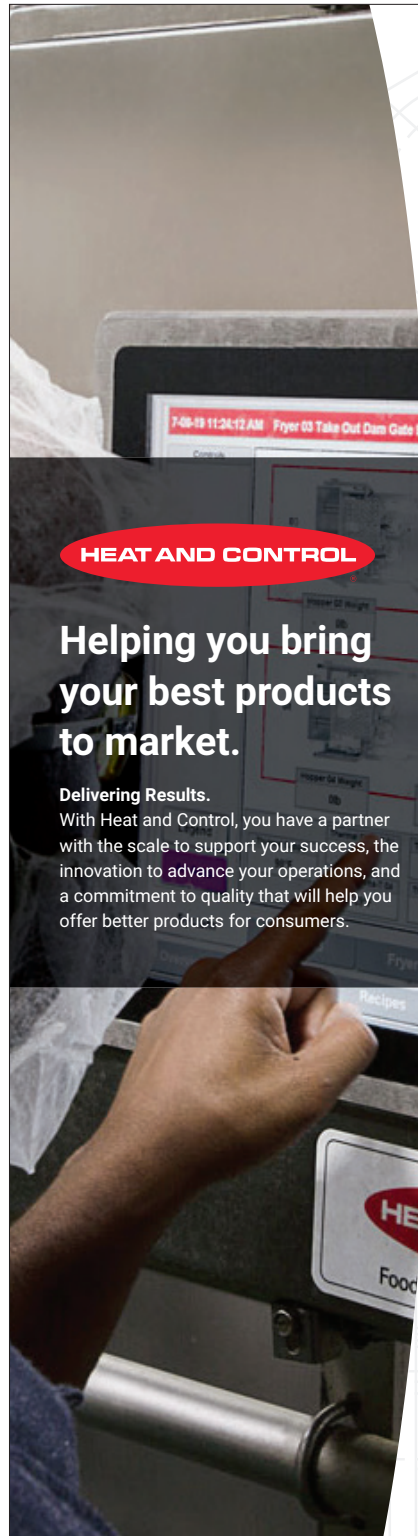
That flexibility to manufacture inhouse or shift to suppliers where needed is aided by a lean philosophy which allows for creative solutions to problems, especially when it comes to lead times. Barrieau remembers one instance when a client quoted 12-to-14 weeks to deliver 10 automated systems. “We said we can build the first one in 12-to-14 weeks and then we can build two every week after that. But they said they needed all 10 sooner than that. So we reinvented the process and the way we make them and we built all 10 systems in 12 weeks. That kind of innovation comes from leveraging supplier

partners and then also leveraging the talent that we have in our company.”

One of the talented people at the company that Barrieau refers to is Lindsay Gruenwald, technical service and procurement manager, who has been with Felins for 14 years. Gruenwald had been working as a bartender, and, as a single mother at the time, she decided to go back to



Joe Schaffer, Brent Bunker, Briana Helt, Hannah Rios, and Monica Hubrich of the Felins Finance team collaborate on a project.



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school. Shortly after graduating, she started work at Felins as an assistant in accounting and quickly moved into purchasing—responsible for buying all major components for equipment. And then a few years ago, she identified that the company needed someone to run the technical service department, as well as the warehouse, and so she stepped into those roles as well.

Having the ability to grow within the organization is an important part of the company culture. And it is Barrieau's leadership style that keeps everyone engaged. "A few weeks ago, he was going to take the afternoon off, but he didn't go for some reason," Gruenwald remembers. "I asked him why and he said he was having too much fun here today. Things were happening so he couldn't take the time off, but he didn't get upset."

"No matter what kind of day you are having, he makes it better," echoes Holly Stendler, Felins' customer service manager. "He makes time for every single person in the company. Prior to COVID, he'd come in and shake everyone's hand and say good morning. He's just a phenomenal person to work for and he believes in each and every one of us."

Third, its commitment to sustainability

Another thing that helps Felins stand out is its focus on the environment for "less packaging mess."

Sustainable product packaging is Felins' passion and is at the center of everything the company does. Initiatives inside of the company include going paperless. Over 14,700 pounds of paper have been eliminated since tracking began in 2015. The company has also eliminated all use of Styrofoam-based products from operations including foam cups and foam packaging materials. All corrugated cardboard, paper, plastic, and metal is recycled. An installed in-line water filtration system eliminates any bottled water onsite. And energy-



Engineer Draftsman, Tom Plewa, works on a CAD drawing.



The Felins rental fleet of banding systems is available for short-term rentals and leases, offering their customers flexible financing options.



Field Service Engineer, Tony Vorpahl, works on a banding machine. The Felins service team offers a wide range of services for their customers including repairs, service visits, technical support, and customer training.

efficient temperature controls and lighting have been installed to reduce power and energy consumption and costs. And its products are designed using compostable and recyclable materials to reduce the packaging mass by up to 95%.

And the banding products Felins provides to the packaging community are designed to minimize packaging material consumption overall. “It’s not just a reduction in actual materials needed to accomplish any given job, but also what banding does,” explains Lisa Barrieau, Felins’ food industry sales manager. “Sometimes you show up at a plant and see trash bins filled with scrap material. We use the exact amount of material needed for each project, so there is no wasted material.”

Ultrasonic banding is also the perfect fit for the industry’s e-commerce efforts underway to make the box the size of the customer order so that there’s no need for extra inner pack material at all. Or banding can help unitizing orders with more than one item to ensure that products banded into a bundle maintain the shape and size as they travel through the entire scanning and boxing process. Working with box on demand companies, that have equipment that can 3D scan something to make a box the size of the product, Felins comes in as the way in which the items are held together so that as they are 3D scanned the dimension doesn’t change.

“It’s a new area for us, but in e-commerce, when it comes to reducing the amount of inner pack in a box, we specialize in that,” Andrew Barrieau says. “It is us helping the people who are fulfilling orders to do it with less packaging mass and with less labor. But these are not traditional packaging solutions that the world knows about, and that’s our challenge. How can we get the people who are making decisions to find us when they are exploring their options?”

To overcome that challenge, the Felins marketing team is very social media savvy, using a digital strategy



Cong Nghiem, Warehouse Specialist, unboxing an incoming package.



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to educate and attract new prospects.

“Because we typically offer niche types of packaging, it’s not the first thing that most packaging engineers or brand managers think of,” says Ben Vlieger, Felins’ director of marketing and product management, noting that in an RFP, Felins seldom competes with others doing the exact same thing because the sales team is finding unique applications to apply technology in a different way. The challenge is getting people to understand the product’s potential.

“YouTube has been a great tool for us, especially since search engine optimization is so important,” Vlieger says. “Having all of that content on YouTube, we believe, boosts us up in the search rankings. And video content has become more popular. It is what people want. They don’t want to read page after page after page, they want a 30 second video in their social media feed to educate them on what it is that they are thinking about or looking for.”

For example, years ago, Felins had a solution for tying bunches of flowers with elastic, and now that technology has been modified to be all stainless steel and food-grade elastic. As a result, companies looking for an automatic machine to truss a chicken are now turning to Felins.

“The way they find us is through YouTube,” Andrew Barrieau says. “They’ll Google ‘is there a chicken trussing machine out there?’ and they’ll find us. We have manual versions, and we partner with other companies to do more automated robotic systems, and that kind of innovation is successful for us. We are emerging into a new market segment where we really didn’t have a presence before with a technology that we already have mastered but applying it to a new application.”

Last, the culture is totally RAD

A few years ago, Felins went



The Felins showroom showcases a variety of their automatic and semi-automatic machines, including stainless steel automatic banding systems.



Felins offers free product testing. Their team will receive product samples and test them in their machines while filming and photographing the process. The customer’s packaged samples, HD video, and photos are then sent back for review.



Lisa Barrieau is the Banding Sales Manager for the food industry and one of PMMI’s Emerging Leaders on the Rise. Her main focus is helping her customers with simplifying their packaging operations and creating sustainable food packaging solutions.



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through a rebranding effort in order to better represent the company as an “innovative alternative brand.” The result is a new tagline of “Simplify, Solve, Sustain,” which represents what the company has been doing since 1921.

And it all starts with customer service. Stendler, who has been working in customer service at Felins for 14 years, created a guidebook—the customer service bible—that captures everything in a consistent manner so that anyone on the team can receive a customer call and manage the query appropriately. “I stress that world-class customer service is a must,” she says. And that eventually flows into the rest of the organization. “The customer service department is a feeder program for our company where people learn from the ground-up how processes work so one day they’ll succeed in another role.”

In addition, by listening to what customers want, Felins continuously adapts the organization. For example, about 10 years ago, Felins began offering programs for leasing and renting machines. This way, when a customer is not familiar with the Felins offerings, they can test it out without having to make a big investment that requires purchasing the equipment. The leasing program has been so successful that Felins is outgrowing its current 30,000 sq. ft. space and will be moving to a new facility in the Milwaukee area by 2023.

As for technical support, getting equipment up and running has recently been streamlined by using FaceTime video to diagnose problems quickly. “And during COVID we took the opportunity to film the set up and barcode the machine so anyone can scan [the barcode] on the phone and see a walk-through of how to set up the machine,” Gruenwald says.

The company mission—which puts sustainability as a top priority—is supported by core values that state: “Be Reliable, Accountable, and Dependable.” In other words, Felins folks are living the RAD life which is focused on



Machine frames for the Felins Pak-Tyer, a semi-automatic tying machine, await assembly.



Felins also manufactures the Flex-Strap machine, a stretch film banding system that bundles a wide range of products, especially products in the manufacturing and wood industries.



Tsheng Lor holds a machined component for the Pak-Tyer. Tsheng has been with the Felins production team for over 25 years.



The Felins warehouse carries inventory of materials and parts on hand in order to support their customers' needs.

forward-looking behavior to innovate and continuously improve and excel personally and as a team. Also important is "candor with care," which Felins has defined as being honest and direct, but never mean or hurtful, and always committing to customers first.

"The one thing that really differentiates us, at least over the past 15-to-20 years, has been the culture," says Vlieger. "It is the thing we work on more than anything because we work hard to make sure this is a great place to work, that the work is meaningful and rewarding, and that people want to come work here. It shows up in the way we treat our customers and the way that we treat each other, and that is what really makes Felins different than any other company I've worked for or seen from the outside."

As CEO, Barrieau takes the company's core values very seriously. "Reliable, accountable, and dependable isn't something we hope we have someday, it is something we expect of every new hire," he says. "If you're not reliable, accountable, and dependable, you can't be on our team. It will not work." But the other side of that, he says, is having fun. "Life is too short, so we may as well enjoy our work. It's a choice. You can choose to be miserable at work or you can choose to have fun. We choose to have fun."

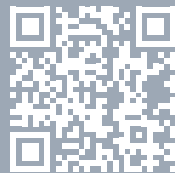
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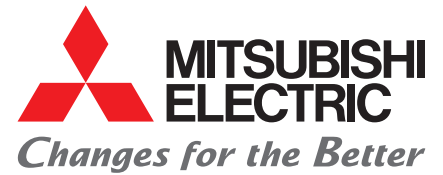


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Protect Your Most Valuable Asset: People

What does workforce development look like in 2021 and beyond as workplace safety and company culture continue to be extremely important? Emerging leaders, industry organizations, and OEMs share how they are progressing.

Natalie Craig, Senior Managing Editor

► **NEARLY TWO YEARS LATER**, COVID-19 is still affecting the way many North American manufacturers are doing business.

As the industry moves forward—and possibly into another wave of COVID-19 restrictions as a result of virus variants—OEMs need to refocus on their human assets to avoid obstacles like employee burnout, while also navigating simultaneous workforce crises such as the skills gap and labor shortages.

According to the 2021 Manufacturing Talent study from Deloitte and The Manufacturing Institute, the skills gap will contribute to two million manufacturing jobs going unfilled by 2030, which makes employee retention and recruitment one of the top challenges for OEMs today.

So, to keep up with innovation, OEMs need to draft a plan on how to hold on to existing employees while attracting and training new recruits in an ever-evolving, remote world that's still enduring a pandemic. Fortunately, they have the most valuable resources at their disposal: the people who currently work for them.

OEM Magazine interviewed emerging leaders, OEMs, and manufacturing organizations to reveal the industry's top priorities when it comes to workforce development for 2021 and beyond. And the two biggest issues discussed were worker safety as the pandemic ensues, and workplace culture as managing remote employees becomes a priority—as does a focus on diversity and inclusion initiatives.

How to improve employee safety during COVID-19

With new COVID-19 variants and only 50.8% of the U.S. population reported to be vaccinated, as of press

time, the pandemic is long from over. OEMs will need to continue to provide employees with a safe place to work or remote alternatives. Here are some ways OEMs are ensuring employee safety and promoting wellness.

Require and provide personal protective equipment (PPE) and space. Located in Spokane, WA, Pearson Packaging Systems was very proactive in its approach to protecting employees as it required masks in its facility before it became an official state-wide mandate.

“Washington state was one of the first to actually be affected by the pandemic with the first COVID-19 case being recorded in Seattle,” says Machel Johnson, Pearson's director of human resources. “We were diligent about following the protocols that were established by the CDC and we brought in education, when necessary, for employees throughout the entire process.”



In Miller Fabrication Solution's “Meet an Expert” webinar series for Manufacturing Day 2020, the fabricator opened their doors to a digital audience, which included educators, students, and parents from all over the U.S., in an effort to modernize their workforce development approach.

Eric D. Miller, president of Miller Fabrication Solutions, a metal parts fabricator located in Pennsylvania, says social distancing and PPE didn't represent a drastic change for his people on the shop floor.

"Our equipment was already spread out to make it easy to execute social distancing. We already had strong PPE requirements, so adding masking wasn't an extraordinary inclusion," Miller says. "I don't know if we're in this forever or not, but as an essential manufacturer who needs people on the shop floor, we are still maintaining precautions and social distancing guidelines and we will continue to. We still have a big emphasis on PPE, cleaning, and making sure that we are properly distanced."

Monitor Centers for Disease Control and Prevention (CDC) guidelines regularly. Pearson has regular meetings to review and implement CDC guidelines within its facility, as well as evaluate the health and morale of its people.

"I was just in a meeting where we were reviewing CDC guidelines regarding people going back to masking up indoors, even if they're vaccinated, because they now say that the vaccinated person can spread the virus," Johnson says. "I was in the process of meeting with our CEO, going through our policy, and we are going to have everyone go back to masking up. So even though our state hasn't required a masking mandate, we're putting it back into our business because we want the business continuity and to make sure our people stay healthy. And that's really been our goal all along."

Offer vaccine access, education, and resources to employees. When the vaccine became available, many

manufacturers, including Pearson and Miller Fabrication Solutions, set up onsite vaccine clinics.

"We continue to provide information to our people so they can make educated choices," Johnson says. "And we also incentivized [employees] by offering bonuses and giving discounts on health insurance premiums for those who got vaccinated."

Along with Pearson, Miller Fabrication Solutions had staff that were among some of the first people to get the vaccine in the area because of these onsite efforts.

"We had about a hundred people in our facilities vaccinated," Miller says. "We wanted to make sure that if someone needed or wanted a vaccine that we could help them get it. That was important to me."

In addition, vaccines are now becoming necessary to enter some CPG and OEM facilities, which has Pearson executives wondering if vaccines need to become mandated at their facility to ensure collaboration with their customers. "It's really been our CEO's directive not to mandate the vaccine, but we're starting to see our customers telling us we can only send vaccinated employees into their buildings," says Johnson.

How to Shift and Improve Workplace Culture

When it comes to manufacturing, workplace culture is something a lot of OEMs pride themselves on creating and fostering. To attract and retain employees in today's climate, culture is a huge selling point, especially for emerg-



ing leaders, women, and younger generations—all of whom manufacturers need in order to thrive.

As the industry and its people continue to grapple with what the future holds, here are some of the cultural shifts manufacturers should consider:

Adopt diversity and inclusion as a core mission. Workplace diversity and inclusion has become an initiative that has gained momentum and is top of mind as employees reevaluate or start their careers in manufacturing. A 2020 Glassdoor study revealed that 76% of Millennial and Gen Z job seekers expressed that diversity and inclusion was important to them.

As a Hispanic woman, Pearson's Johnson acknowledges that the packaging and processing spaces have evolved over the years, but that it's still a male-dominated field with a very low minority population.

"When I came to Pearson 18 years ago, there were very few women," Johnson remembers. "Out of around 200 employees, there were only 10 women, and there weren't many women on the leadership executive team. And I am really proud to say that half of my leadership and executive team are women. We have also increased our representation in minorities and those in protected groups throughout the Company."

Johnson has been able to bring more diversity to Pearson by spending time looking into different recruiting networks and labor and talent pools that may not have been considered before.

"We post our job listings in diverse communities and different talent pools," Johnson says. "But that's something you actually have to spend time researching and networking to find talent. Once you have the talent in the interview process you don't have to convince managers to hire people of diverse backgrounds it happens naturally. The most qualified person is hired, and I have found that including women and minorities is how we improved our Equal Employment Opportunity demographics."

And not only is this something that employees will expect companies to prioritize, but creating a diverse and inclusive workforce could stand to boost business and innovation. In 2018, Boston Consulting Group found that companies with a diverse management team—including people of color and women—innovate quicker and have 19% higher revenues than companies whose teams are non-diverse.

Take workforce development digital. Manufacturing Day is held on the first Friday of October, and it aims to connect students, parents, and teachers with local manufacturers to show students what modern manufacturing looks like. Typically, OEMs host engaging plant tours for high school, middle school, and elementary students.

In 2020, many manufacturers closed their doors to keep

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their people safe, but Miller Fabrication went digital, offering virtual plant tours and webinars throughout October. Not only did these engaging events reach students in their home state, but the events went national.

“We had a thousand visitors or more across 16 states,” Miller says. “We are in Pennsylvania, and we had educators and students attending our events from as far as California.”

So, this year, in addition to holding on-site plant tours, the company is developing virtual webinars on the lifecycle of heavy metal parts fabrication for OEMs, which they will release throughout the month of October.

“We saw educators, student groups, suppliers, and vendors inside and outside of our local community join in last year,” says Susan Towers, marketing director at Miller Fabrication Solutions. “Our events were focused on particular roles throughout our company, from the shop floor to back-office positions. It gave folks better insight into what we do and got kids excited about possibly working here one day. The reception was fantastic, and we’re excited to have a new take on it again for this year.”

Develop Remote Onboarding Processes. While much of manufacturing and production needs to be done on the shop floor, there are many departments that can work remotely, as OEMs learned during the beginning of the pandemic.

As the trajectory of the pandemic is unknown, one thing is for certain; remote work is possible and will be around for a while, according to a study conducted by consulting firm McKinsey and Company.

Tim Jolly, for example, just started as a global account team leader at Intralox. The conveyor belt manufacturer is based in Louisiana, but Jolly is based in southern California. As Jolly accepted the job at Intralox months ago, he became part of the company’s first incoming class that was entirely remotely onboarded.

“Although it’s not ideal, I think Intralox’s remote onboarding process

Resources Manufacturers Can Leverage for Culture, Workforce Development, and Safety

Making changes at any organization takes time and a lot of effort, especially when it comes to incorporating new policies and accommodating emerging work styles. There are several resources and guides that OEMs can access to empower their transformation and inform future decisions, including:

PMMI Career ToolKit: PMMI’s Career ToolKit provides OEMs with the resources they need to address the critical shortage of skilled workers. From hiring interns and veterans to learning about the latest workforce retention strategies, you can find all the information you need to transform your workforce development efforts at: oemgo.to/toolkit

Packaging & Processing Women’s Leadership Network (PPWLN): Through online and in-person events for networking and information-sharing, PPWLN serves to recruit, retain, and advance women’s careers in packaging and processing. Whether you are a woman in packaging or processing or you are looking for ways to empower women within your organization, make sure you register for the PPWLN breakfast during PACK EXPO Las Vegas, Sept. 28 starting at 7:15 a.m., by visiting: oemgo.to/pelvwln. The PPWLN website and blog also offer insightful information for women in manufacturing, as well as inspiring stories of the women who are currently leading companies. To learn more about these resources, visit: oemgo.to/ppwln

The Women in Manufacturing Association: The Women in Manufacturing Association (WiM) is not only focused on recruiting more women into manufacturing, but also elevating more women to the top of companies. Their website is focused on offering resources to inspire and educate future generations of women to leave the ranks and to get into more positions of power. The association also hosts events and webinars to help women, as well as leaders, make and strive for change in their organizations. For example, one of the association’s initiatives is called “Moms in Manufacturing,” which is a year-round virtual community for moms in manufacturing to talk, share, and provide resources and support.

“I would encourage women who are in manufacturing careers or who are considering manufacturing careers to connect with us,” WiM president Allison Grealis says. “We are a growing community and now support more than 8,100 members in 44 states, with 30 active chapters throughout the country. Our organization offers professional development opportunities, virtual learning, community groups, and on-demand training resources. We hope these resources continue to be effective tools for our members as they grow in their careers, and for companies as they aim to recruit, retain and advance more women at their organizations.”

You can learn more at: womeninmanufacturing.org

PMMI Skills Fund: Created by PMMI for its members, the PMMI U Skills Fund matches company contributions up to \$50,000 per year to fund regional education programs. It is a resource intended to help members form meaningful partnerships with regional two- to four-year colleges, universities and/or technical/vocational schools, as well as other nearby educational programs. For more information on how to leverage this program to enhance workforce development practices, visit: oemgo.to/skillsfund

Centers for Disease Control and Prevention Critical Infrastructure Guidance: Since manufacturing is considered essential business, the CDC has developed guidelines for a path forward. Access this resource at: oemgo.to/cdc2021

was highly effective,” Jolly says. “Typically, I would’ve spent several weeks on campus going through onboarding, culture training, and our continuous improvement training. But instead, I did it with an incoming class remotely. With Intralox’s ability to roll out a flexible work environment and comprehensive remote onboarding process, I felt very supported from day one.”

To Jolly’s point, remote workforce development isn’t the same as the traditional methods, but if supporting remote recruitment, development, and training can help OEMs secure talent in pools across the country, a shift in practice might pay off.

Support remote work and build in flexibility. The ability to work remotely may also accommodate employees who need more flexibility and for those who had to entirely shift their priorities due to the pandemic.

For example, the impact of COVID-19 on women and working mothers was devastating, as an estimated 2.4 million women left the labor market between February 2020 and February 2021, according to Pew Research Center. In addition, according to a 2019 study conducted by consulting company Maven, of the 35 million working mothers, nearly 10 million of them were cited as suffering from workplace burnout even prior to the pandemic.

“These are startling numbers,” says Allison Grealis, president of the Women in Manufacturing Association. “Our goal is to help women return to manufacturing, and one of the biggest ways manufacturers can assist is by reevaluating workplace policies and culture to build in more flexibility. One of the positive outcomes of the pandemic is that it helped manufacturers look at their policies and adopt more progressive practices. Manufacturing companies can make themselves employers of choice by putting in place more progressive work policies that draw people in and set them up for success.”

To that end, company culture must change to align with the realities of the world today.

“Intralox is very much a traditional type of company where I think we are concerned about whether or not the company culture, that we take very seriously, is going to be able to carry over into this new work life,” Jolly says. “If you walk into our corporate campus, you can see our business philosophy plastered on every wall throughout every building. Looking forward, we need to see how we can preserve this culture that we find so unique and special in a remote and flexible way.”

But as manufacturers revise their culture to reflect today’s climate, it will usher in a new class of individuals into manufacturing—including more women—as well as promote diversity and inclusion.

“I’ve never seen a brighter future and opportunity for women in manufacturing than now,” Grealis says.

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Robotics Adoption Survey Finds Ups, Downs, and a Few Surprises

Last year proved itself a veritable rollercoaster of disruptions and developments, resulting in robotics adoption growing in some areas and shrinking in others, yet still painting a picture of continued growth for robotics ahead.

David Miller, Senior Technical Writer, *Automation World*

► **2020 PROVED TO BE A UNIQUELY** tumultuous and challenging year, beset not only by the unprecedented disruptions of the COVID-19 pandemic and its associated economic impacts, but the uncertainty that so often accompanies election years as businesses are forced to hold their breath on major decisions until the policy environment they will have to navigate over the next four years becomes more clear. Accordingly, a recent survey on robotics adoption conducted by *OEM Magazine's* sister publication *Automation World* shows some industry verticals seeing a huge uptick in robotics due to the need to socially distance, reshore supply chains, and increase throughput, while others saw investment stall as demand for their products cratered and their decision-making process became paralyzed by political and economic uncertainty.

Still, given the turbulent dynamics of the prior year, the general consensus among robotics suppliers—much of which is borne out in our survey data—is that strong growth remains expected in their space and robotic adoption should see continued acceleration in the near future.

Of the respondents surveyed, 44.9% reported that their assembly and manufacturing facilities currently use robots as an integral part of their operation. More specifically, of those with robots, 34.9% have adopted collaborative robots (cobots), while the remaining 65.1% use only industrial robots.

With a few caveats, robotics suppliers interviewed for this article concur that the results of the survey were consistent with the overall landscape they see. However, they did note that adoption is clearly more advanced in some areas of industry than others.

For instance, automotive manufacturing in particular has seen a high penetration of robotics, having automated long before many other industry verticals. According to Mark Joppru, vice president for consumer segment and service robotics at ABB, this is not only because of the automotive industry's ability to make high CAPEX investments, but also due to the rigid and standardized nature of automotive manufacturing, which can be accommodated by fixed robotics technologies.

Similarly, packaging has seen automation growth for the

same reason, though many of the packaging machines that move products along lines would not qualify as robotics in the eyes of some. All the same, much use has been made in recent years of robotic arms, sometimes on mobile carts, at the beginning and end of packaging lines, where they perform material handling tasks, such as loading, unloading, and palletizing. It is in these end-of-line applications for which further growth of robotics in packaging is expected to take greater hold.

Meanwhile, smaller job shops and contract manufacturers—whose high-mix, low-volume (HMLV) production environments often require more flexibility—still have a long way to go when it comes to robotics adoption. Joe Campbell, senior manager of applications development at Universal Robots, feels that this is where much of the next wave of adoption is to be found. In fact, Campbell posits that overall adoption figures to date may be even lower than the 44.9% our survey detected, as he feels many of the small and medium enterprises (SMEs) his company serves are liable to fly under the radar, remaining essentially invisible to trade associations, industry surveys, and other data.



Small job shops and contract manufacturers in the high-mix, low-volume space may represent the next frontier of growth for robotics with collaborative robots (cobots) in particular proving popular due to their flexibility.

“There’s a large chunk of the market that’s really been underserved by the whole automation community, and we continue to uncover every week more and more [SMEs] that have very little automation, if any. They have no robots, and so that’s a big growth area going forward,” Campbell says. “A lot of surveys that associations and other publishers do might not be touching these people. They don’t go to trade shows, and I don’t know how many automation publications they’re looking at, but these small companies have growth potential.”

The COVID-19 effect

While many have opined that COVID-19 would accelerate robotics adoption, one of the biggest surprises of our survey was that 75.6% of respondents indicated that the pandemic did not drive any purchase of new robots within their facilities. Furthermore, of those who did bring in robots in response to the pandemic, 80% purchased five or less.

These findings do not, of course, mean that COVID-19 has had a wholly negative effect on robotics adoption, as several suppliers note. Rather, it may imply that the degree to which the pandemic has accelerated robotics is highly variable between different industries and applications. In some cases where manufacturers did purchase new robots throughout 2020 it may have been in response to other factors that were only indirectly tied to COVID-19, such as the need to increase throughput in verticals that saw a surge in demand or quickly meet labor requirements in fields where supply chain disruptions forced reshoring.

For example, Scott Marsic, senior project manager at Epson Robotics, points out that his company has seen strong adoption from medical equipment and device manufacturers facing soaring demand amid the need for personal protective equipment (PPE). Marsic stresses the primary interest in robots from these industries has been focused on increasing throughput rather than using robots to space out production for social distancing purposes. At the same time, the automotive industry—though already well-automated and a typical source of new robot purchases—has seen demand crater as lockdowns have reduced transportation demand exponentially. As a result, these companies have put large CAPEX spends on hold.

“I’ve put about 2,000 miles on my car in the past 10 months. I’m not getting oil changes or new tires,” Marsic says. “My demand is down and, if you look at automotive manufacturing, they’ve followed suit. If the demand is not there for automotive components, they won’t invest in more automation. On the other side, if you look at fields where demand has gone up, like medical devices, pharmaceuticals, and even consumer packaging, they’re seeing [increased] demand, and that’s where the robots are being sold.”

The logistics and warehousing spaces have also seen an uptick in robotics adoption for similar reasons, says Mel-

onee Wise, CEO at Fetch Robotics. With more homebound consumers ordering all manner of goods online, demand has spiked.

On the topic of adopting robots for social distancing purposes, the overall response of those surveyed was fairly weak, with only 16.2% of respondents indicating it as a factor driving their decision to purchase new robots. More prominent reasons for robot purchase included cutting labor costs at 62.2%, increasing capacity at 54.1%, and navigating a lack of available workers at 37.8%.

On a related note, of those who did purchase robots in response to COVID-19, 45% indicated that they purchased cobots, while the remaining 55% opted for industrial robots. As cobots have often been held up as the best robotic solution for social distancing due to their ability to flexibly work alongside humans when attempting to space out a line or work cell, their lower-than-expected adoption rates among those responding to the pandemic may further highlight that concerns related to labor cost and availability, quality, and throughput are greater.

Forecasting future adoption

Looking ahead, the expectations of robotics suppliers are bullish, with many believing that with the elections over and increased availability of COVID-19 vaccines on the horizon, much demand will return in industries where market skittishness has slowed robotic adoption. Meanwhile, those industries already seeing an uptick are expected to plough ahead at an even faster pace.

As a potential caveat to suppliers’ high expectations, our survey results were a bit more modest, with slightly less than a quarter of respondents reporting that they plan to add robots in the next year. Of those respondents, 56.5% plan to purchase cobots and 43.5% plan to purchase typical industrial robots.

However, some suppliers suggest that the lower expectations apparent in the survey results might be misleading. For instance, Fetch Robotics’ Wise feels that, with instal-



Automotive manufacturing is one of the industry verticals where extreme demand drop-off amid the COVID-19 pandemic and its associated lockdowns has caused robotics adoption to slow, rather than speed up.

lations of traditional fixed robotics systems sometimes taking as long as 9-15 months, many respondents who indicated they do not plan to add more robots in the next year may already have projects underway. In addition, ABB's Joppru notes that though only 23% of respondents plan to add robots, some may add a substantial amount, meaning that overall growth for the industry could be significantly higher.

In terms of the factors driving specific robot purchases, 52.8% said ease of use and 52.6% said end-of-arm-tooling options, while only 38.5% were interested in specific collaborative capabilities. This result seems to imply that flexibility, rather than collaborative safety features themselves, may be driving end-users' growing preference for cobots.

This is most certainly reflected in the HMLV space where manufacturers are dealing with a challenging combination of high labor costs and labor shortages on the one hand, and shorter product lifecycles mandating rapid change-over and an increased degree of production variability on the other. Doug Burnside, vice president of North American sales and marketing at Yaskawa-Motoman, notes the paradox of dealing with rapid changeover using a manual workforce is actually easier, as human beings are, by their nature, adaptable. It's only when automation is brought in that the process becomes more challenging. However,

increasing flexibility enabled by the integration of vision, artificial intelligence, and more diverse and modular tooling options are helping to surmount these challenges.

Elsewhere too, there are some areas where robots may prove themselves useful that haven't yet begun adoption. According to Joppru, ABB has had preliminary discussions with the oil and gas industry about integrating new types of robots into their field operations, though the realization of these projects may be years off.

"In oil and gas, there's still a lot of manual processes that happen where three guys grab a pipe, and then they put a chain around it, grab a new pipe, and attach it so that they can drill another 20 feet," Joppru says. "Could we automate that with some robotic arms that would eliminate a dull, dirty, and dangerous job? That's one example, and we've had discussions with customers about this being a new area of penetration for robots that we just haven't been able to go after yet."

With that in mind, even should job shops, contract manufacturers, and SMEs become as robot-laden as the biggest automotive manufacturers, there will still be plenty of room for expansion in the future.

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ASSOCIATION NEWS

Sean Riley, Senior Director, Media & Industry Communications



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Please register at: oemgo.to/memberbfast



PACK EXPO Las Vegas 2019

Business Intelligence: U.S. Domestic Shipments of Packaging Machinery Rises to \$9.4 Billion in 2020

According to the newly released 2021 State of the Industry report, the value of U.S. domestic shipments of packaging machinery is estimated to have been worth \$9.4 billion in 2020. The largest industry sector in terms of packaging machinery is estimated to have been food (40.2% of shipment revenues) in 2020, followed by beverages (21%). The smallest sectors are estimated to have been personal care, toiletries, and cosmetics, which accounted for 7.2% of shipment revenues in 2020. The household, industrial, and agricultural chemicals sector is forecast to grow the fastest to 2026, at a compound annual growth rate of 8.6%.

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Request a Quickie Survey by visiting: oemgo.to/quicksurveys

PPWLN's New World of Work

Everyone has had to work differently over the past year, with some adjustments driving long-term transformations in the way we work. Things like increased digitalization and automation on the plant floor, the push for diversity and gender parity, and how to attract the next generation workforce – together are creating the new world of work.

The Packaging & Processing Women's Leadership Network (PPWLN) breakfast at PACK EXPO Las Vegas and Healthcare Packaging EXPO (Tuesday, Sept. 28) will bring together a panel of experts to discuss different perspectives on how to thrive in this fast-changing world. First, PPWLN welcomes Tracey Noonan, co-founder and CEO of Wicked Good Cupcakes, as the keynote speaker.

Tracey and her daughter turned a small home-based baking business into a multimillion-dollar corporation through creativity, perseverance, and an investment from Shark Tank's Kevin O'Leary. Recently acquired by Hickory Farms, Tracey will reflect on her experience of scaling an e-commerce business, managing a growing workforce, and her insights into how the food and beverage industry is evolving.

Following her keynote, Noonan will join Yolanda Malone, vice president of global RD Foods at PepsiCo, and AJ Jorgenson, vice president of strategic engagement at The Manufacturing Institute, for a candid conversation about the new world of work, what it means to the future of manufacturing, and what we can do to make a difference.

To RSVP for this breakfast, visit: oemgo.to/ppwlnbfast

To attend, you must be registered for PACK EXPO Las Vegas. Register here: oemgo.to/registerpelv



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Register for the PMMI Annual Meeting

As the world—and how we do business—continues to evolve, PMMI is excited to welcome back its Annual Meeting. This in-person event is a vital opportunity to step away from your everyday tasks, reconnect with peers, and invest in your team and business. With dynamic speakers and invaluable networking, the PMMI Annual Meeting promises three days to focus on your business.

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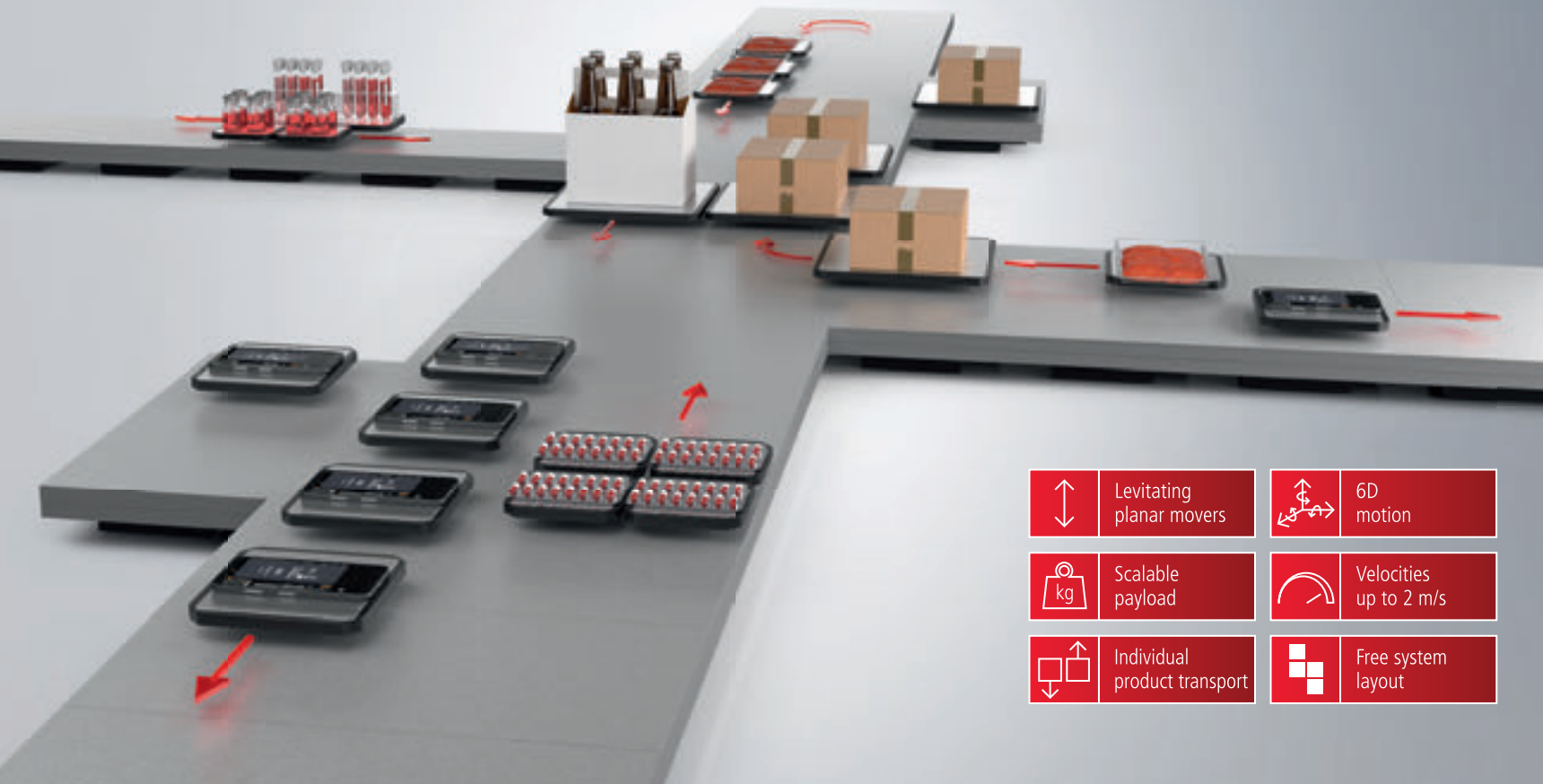
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PACK EXPO Las Vegas Is Back

After more than a year of virtual events, the largest in-person and most comprehensive packaging and processing event in North America, PACK EXPO Las Vegas, and co-located Healthcare Packaging EXPO, will take place in September.

Melissa Griffen, Contributing Editor

As the COVID-19 pandemic's grip loosens on society, in-person events are coming back, including PACK EXPO Las Vegas and the co-located Healthcare Packaging EXPO, which will take place Sept. 27-29 at the Las Vegas Convention Center. Effective June 1, Las Vegas returned to pre-pandemic guidelines, but to keep all attendees and exhibitors safe, efforts are being put in place, with updated health and safety protocols that meet current government regulations and industry standards. PACK Ready—PMMI's commitment to safety—provides a detailed list of protocols implemented by the Las Vegas Convention Center and show management.

With more than 1,500 exhibiting companies, the show produced by PMMI, The Association for Packaging and Processing Technologies, will welcome tens of thousands of people.

Through in-booth demonstrations and free education on the show floor, attendees will not only see technology in action and have the opportunity to talk with suppliers, they will also learn about best practices and industry breakthroughs.

For more information about exhibiting or attending PACK EXPO Las Vegas, Sept. 27-Sept. 29, visit: oemgo.to/pelv2021

Can't-miss seminars

Returning on all three days of the show are free, educational, 30-min Innovation Stage seminars, showcas-



PACK EXPO Las Vegas 2019

ing breakthrough technologies, best practices, and case studies, presented by industry experts. Topics will include connecting your supply chain network to build resilience; sustainability in healthcare packaging; continuous improvement success, based on stories from 700 consumer packaged goods (CPG) and food and beverage manufacturers; and Industry 4.0 and digital transformation best practices.

The interactive Forum will also be returning with 45-minute sessions, which begin with short presentations on the latest industry trends delivered by topic experts and OpX Leadership Network members, followed by roundtable discussions with peers.



For those who are unable to attend in person, PMMI now offers virtual aspects of the live event via PACK EXPO Xpress, where you can search for products and

innovations in digital showrooms and connect with solutions suppliers during the event no matter where you are.

Also at the show

The PACK to the Future interactive exhibit debuts this year, showcasing the industry's past, present, and future. It will display curated items and machinery from some of the world's largest CPGs and packaging companies. Industry experts, futurists, and business and financial leaders will speak daily on where the industry has been, where it is now, and what the future holds for packaging and processing. Sessions will be broken into 30-minute increments on advancements, such as artificial intelligence, sustainability, and more.

The Reusable Packaging Stage, hosted by the Reusable Packaging Association, will show how implementing a reusable packaging system can improve material handling performance, reduce operating costs, create new economic values, and lower environmental impacts in the supply chain. The information will be conveyed in company presentations, product demos, case study findings, and industry panels.

The Future Innovators Robotics Showcase will feature

student teams from Las Vegas-area high schools demonstrating creations they designed and built, reflecting how the next-generation workforce is driving innovation. Attendees and exhibitors are encouraged to see the robots these bright students built, watch the demonstrations, ask questions, and talk with them about the field.

Attendees are invited to download the free PACK EXPO Las Vegas app to organize their schedules, so they can participate to the fullest. It includes all the features of the My Show Planner on the PACK EXPO Las Vegas website at www.packexpolasvegas.com. The app allows users to create a personal itinerary for navigating the show by simply clicking on an exhibitor or session and adding it to their schedules, along with their personal appointments. Attendees can use the app to search for exhibitors by name, keyword, vertical market, or category. They can also search for educational sessions by venue or topic. In addition, the app includes interactive floor plans, exhibitor messages, event reminders, shuttle bus schedules, frequently asked questions, news, and notifications.

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The Packaging & Processing Women's Leadership Network (PPWLN) breakfast takes place Tuesday, Sept. 28 from 7:15 am to 9:00am (Room N-247). Everyone has had to work differently over the past year, with some adjustments driving long-term transformation in the way we work. Things like increased digitalization and automation on the plant floor, the push for diversity and gender parity, and how to attract the next generation workforce, are all creating the new world of work. PPWLN welcomes Tracey Noonan, co-founder of Wicked Good Cupcakes, as the keynote speaker, who will then sit down with *OEM Magazine* editor Stephanie Neil, as well as Yolanda Malone, vice president of global RD Foods at PepsiCo, and AJ Jorgenson, vice president of strategic engagement at The Manufacturing Institute, for a candid conversation about the future of work in manufacturing. The event is sponsored by Emerson, ID Technology, Morrison Container Handling Solutions, Plexpack, Septimatech, and SMC.

to both PACK EXPO Las Vegas and Healthcare Packaging EXPO, is \$130. For more information and to register online, visit: packexpolasvegas.com.

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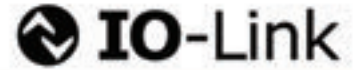
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EXHIBITOR'S CORNER

Ensuring Leads Leave Las Vegas

Sean Riley, Senior Director, Media and Industry Communications

Interacting with potential customers at a trade show is essential, but what you do after that brief meeting determines the real success of the event. While attending PACK EXPO Las Vegas and Healthcare Packaging EXPO 2021, you may fall behind if you don't have a proper post-show plan in place. Without a company-wide plan for post-show lead follow-up, your connections and exchanges will literally stay in Las Vegas.

To get the most out of your exhibiting experience, don't settle for substantial booth traffic alone. Your company's actual goals are new sales and hopefully long-term customers, factors that depend heavily on efforts after the show. Simply put, keep the long game in mind. To optimize performance, consider these four critical tactics:

1. Immediately after the show, send a quick thank you to all booth visitors reminding them of your products. Attendees leave an event with a ton of new information, and it's crucial that you don't get lost in the shuffle.
2. Schedule six months of post-show follow-up to keep your brand top of mind among potential buyers during their research process. The further a potential customer gets from the show, the more important it is to maintain the relationship that started at PACK EXPO Las Vegas and Healthcare Packaging EXPO.
3. Communicate across a variety of channels, creating ongoing opportunities for engagement with your brand. Don't settle for just a phone call or one-off email. Investigate whether your new connection engages on social media and reach out via Twitter, Facebook, Instagram, or LinkedIn. Direct mail is also seeing a resurgence in effectiveness because it is different from what customers receive every day on laptops or mobile phones.
4. Leverage show-related messaging in your campaigns. Use relevance to grab attention with messaging specific to the show. Highlight points that you connected on while engaged with the customer.

In business-to-business buying, especially when talking about high-ticket items such as machinery, components, materials, or software, the path to purchase can be long

and have many fits and starts. All too often, companies will send out a few emails to assess near-term sales interest, separate out only the most promising leads and miss out on a good portion of the value. Some companies require extensive due diligence and numerous approvals before significant capital investments.

For more information about exhibiting or attending PACK EXPO Las Vegas, Sept. 27-Sept. 29, visit: oemgo.to/pelv2021

Tips for a long-term nurturing plan include:

- Composing an engaging post-show email campaign. Consider offering an exclusive promotion just for attendees to foster further engagement.
- When writing follow-up communications, instead of a generic home page, direct prospects to the most relevant pages on your website, so it is easy to identify products relevant to their interests.
- After determining who opened your email, make sure you follow up by giving them a call or sending another email.
- Keep on your leads with a timely direct mail campaign that allows you to continue the conversation. Make sure your call to action is clear.
- Don't forget to post periodic status updates, offers and industry news on your social channels. Doing so further builds your network and connects with your prospects.

The buying journey can be long, and purchasing teams are often diverse. Keep your brand top of mind over the months post-show by continuing to share high-quality content with trade media and your show leads, such as case studies, white papers, and upcoming webinars.

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Did 2020 Change Packaging Forever?

In this UnPACKED with Packaging World podcast, learn about the seismic shifts in packaging caused by COVID-19 and a societal call for social responsibility.

Sean Riley, Senior Director, Media and Industry Communications, PMMI

During a recent episode of the UnPACKed podcast, PMMI's Sean Riley interviews *Packaging World* editor Matt Reynolds, who takes a step back from reporting on and analyzing the details of the latest packaging trends and provides a more holistic view focused on the year 2020. After a time unlike any other, Reynolds discusses the two biggest influencers on consumer behavior—COVID-19 and societal values—and how these two drivers changed the way consumers purchase and experience packaged goods. In turn, Reynolds reinforced his belief that packaging reflects society at large.

This is a shortened version of the episode. To listen to the entire podcast or learn more about how the pandemic affected packaging in terms of social justice issues and sustainability, visit: oemgo.to/2020change

To subscribe and find more UnPACKED podcast episodes, visit: pmmi.org/podcast

Reynolds: We're always covering trends, and there's a lot of trends that are going on right now. And we're always covering them from the lens of very close to a specific application, one company, one brand, one pack style. But with all of the change that we've seen happening, we wanted to take a little more of a holistic view of what's going on and why we're seeing all these changes. Whether it's sustainability, or pack style, or whatever it might be. And it all seems to ratchet up to not really one single trend, but a year. And that's 2020.

Obviously, you can't mention 2020 without saying COVID-19, that was the big 1A influencer on consumer behavior. And then 1B, I think not far behind, would have been social responsibility and societal values coming into the fore. And how packaging as a reflection of society at large has to adapt to meet its consumer where its consumer is. So those are two trends

that it's not really a causal relationship, it just so happens they both landed in the calamitous year that was 2020. And kind of orbit each other, and both had some affect in changing the behavior and the attitudes of the consumer. And we'll just want to look at how the attitudes changed and how that affects brands upstream, and then from brands to their suppliers, and just the ripple effect that the year 2020 had on consumer packaged goods, and food and beverage, and packaging.

Riley: And the biggest thing from our point of view, and for our industry, is that COVID-19 basically blew up the supply chain. And anyone who went into a store could see that. Why couldn't Kimberly-Clark, or whatever company that was in charge of making toilet paper, crank out more of it? What was the big issue?

Reynolds: Well, I think we'd gotten too good at producing products in the precise volume and timeliness that we were doing everything just in time. Nobody was keeping any inventory of anything because inventory can be seen as waste. You want things moving through the system, not waiting for use. And we got so good and efficient—and by we, I just mean the supply chains in general. Going all the



way back up to forestry, right on down to Kimberly-Clark, and then as seen by consumers in the retail setting in the toilet paper aisle. But I think going forward, it taught us a lesson, and we're going to see more slack built into the system to be able to withstand these shocks and jolts to the supply chain. I think that the biggest lesson we see coming out of COVID-19 is just a preparedness that we may not have had before.

Riley: Do you see that beyond borders? Is that a reshoring of sourcing of materials? Is that having warehouses?

Reynolds: Yeah, it can be. I think it's certainly the closing of the borders was a lesson to begin with, particularly China, which is such a massive supplier. India, secondarily. But I think just the reliance on single sources in a supply chain...that's been disrupted in the sense that you no longer want to have all your eggs in one basket as the sole supplier of fiber, or the sole supplier of aluminum, or whatever it might be coming from one specific region. That's a regional way of looking at it. But also from companies, different companies that are multinationals, you're not going to be necessarily doing business with only one single company...what if their paper mill has an outbreak of whatever the pandemic du jour might be? Well then, does that shut you down? Or do you have an option B, option C?

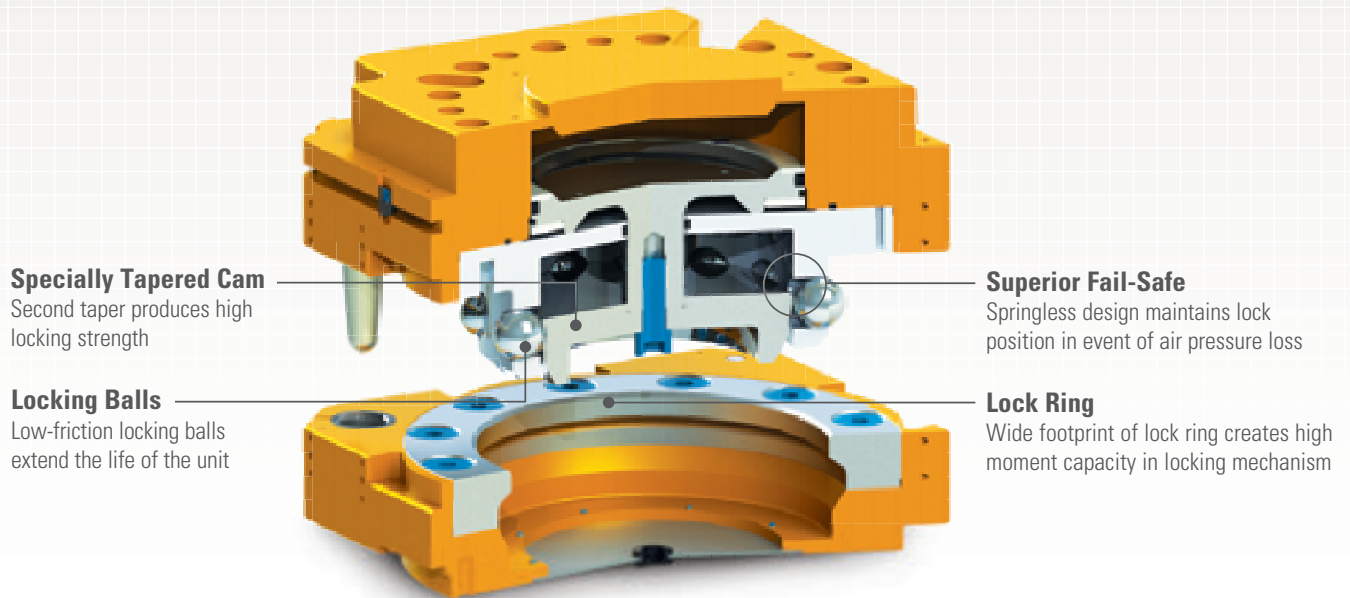
So, it puts a lot more emphasis on supplier relationship management because if you want to be the one getting the packaging and materials you need, particularly in a scarcity environment, wouldn't it pay to have a better relationship with your suppliers than your competitors have? Would it pay for you to adopt a position where you aren't just beating up a key strategic supplier on price, but instead are actively engaged with those strategic suppliers and making a relationship aimed at both supplier and customer better? And not all suppliers, but certainly the ones that are the key strategic suppliers. Instead of chipping away at price, can you create a situation where you're both prepared for shocks to the system, and you're both diversified? And the supplier's supplier, and the supplier's,

supplier's, supplier's, supplier. I think those are all lessons learned from the initial shock to the system. And I think that'll all be implemented going forward.

Riley: Interesting. Using our example of the toilet paper, I went in the store, I couldn't get it. So naturally, you go home, and you try to find it online, because now you're picking from thousands of places. So clearly that had to be another shock to the supply chain, or another shock to the system. How did that play out?



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Reynolds: It was a shock. I would call it an earthquake to the landscape of the omnichannel. So the omnichannel, the broadest way of thinking about it would be a three-legged stool, where you've got food service, educational, and industrial. It would be one of the legs. So, hospitality, food service, that sort of thing. Next would be retail, which we all know there was a run on retail. And then I think at least the temporary and probably long-term winner would be the e-commerce. And the rate of adoption of e-commerce accelerated. So, where we thought we would be in e-commerce in 2030, maybe we'll be in 2025—in terms of adoption rates. Because people who had been resistant to it for whatever reason, not necessarily just that they're troglodytes, but maybe they just don't need it—they live in a neighborhood with everything they need within walking distance. Well, when those retail environments shut down, you turn to Amazon, you turn to e-commerce. But that had some negative ramifications, both in supply chain and also in their relationship to packaging, considering a retail environment or a food service environment. There's a lot of packaging that's happening in the back room, that secondary packaging, shrink wrap, corrugated, 50 pound bags of chicken that go to your local chicken fryer shop food service that are kept cloistered from the consumer. Well, with omnichannel a lot of that packaging ended up on people's doorstep.

And what originally was a very strong sustainability movement prior to the pandemic, only accelerated it. It was a hockey stick type of "aha" moment. I just watched a commercial the other night, it was of the world's strongest man breaking down your Amazon boxes. And basically, it brings into focus for consumers who had been happily, blissfully unaware, just how much packaging is involved in the supply chain. So, I think it's a long trail of breadcrumbs to get there, but in a way COVID-19 has spurred sustainability in a way that it wouldn't have had that acceleration curve prior to the pandemic.

Riley: How do we get from there to the next step? What is going to happen now?

Reynolds: I would say for the vast majority of food and personal care, CPG product brands, they've been struggling just to keep up, just to make sure product needs are met. Obviously, we know the trend of SKU proliferation. They squeezed the number of SKUs at a lot of these brands to concentrate on the highest volume items that they can just keep churning through nonstop. So, we saw a contraction in the number of SKUs in the industry over the last 16 months or so, that kind of coincided with the homespun feeling of looking for wholesome and nostalgic foods. Can imagine Campbell's tomato soup probably had a good few quarters there.



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But what I mean to say is that there's been a certain amount of pent up innovation. These brands haven't been blind to what's going on, either on sustainability or social responsibility trends that the consumers are asking them to address. They just haven't had the capacity on their lines to be doing a whole lot of R&D, testing new products, and spinning off new SKUs that might hit a new market, or hit well with a certain group of consumers. But I think we're normalizing. I think what I mentioned before, this earthquake to the landscape of the omnichannel is recalibrating in a way that might be somewhat permanent, at least in the near term. And then based on that, you'll see brands that are gradually seeing capacity come back. And with that capacity, ability to start experimenting with new pack designs, new ways to express who they are in terms of what they stand for and the values they believe that will resonate with their customers or their consumers.

And the other factor is we haven't had a chance to have in-person events to really connect the dots of what might be available out there. Again, 16 months, we've also seen that people haven't been able to get together and exchange ideas as easily as they have in the past. Just because the packaging shows like Interpac, PACK EXPO, those are the big ones, just haven't been able to happen for obvious reasons because of COVID-19, because of borders being

closed. So, the free exchange of ideas, while we've done our best via Zoom, the best collaboration tends to happen in-person and in areas where you can get your hands on a machine. Or use AR, VR to virtually get your hands on a machine at least. But still, what we're feeling is pent up innovation. So we had these thought leaders or early adopters in Unilever and Hershey that are showing what's possible and what might be around the next bend.

But we also have a lot of pent up innovation and brands that are just waiting for an opportunity to make the next shift, because they have been running like gangbusters for 16 months. And as they gain more capacity, then they'll be able to turn their attention to what they want to look like next, what the next version of that brand is going to be. And I think the first event that we're all going to be at is going to be PACK EXPO Las Vegas. I know I'll be there, Sean, and you'll be there. I look forward to that as the first time that I will be able to see a lot of these trends that we've been following and been hearing about, but in the flesh and actually in some sort of application going forward.

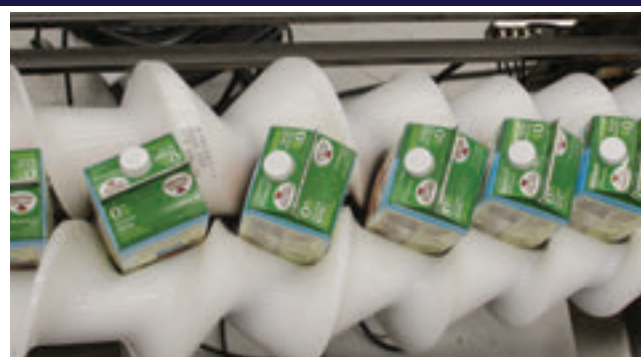
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APPLICATION BRIEF

A Unique Approach to Automating Production and Packaging

Rapid Development Services and Multivac team up to develop an automated system to package insulin reservoir syringes into a form/fill/seal machine, followed by carton and case packing for ready-to-ship product delivery.

Callan Keeter, Contributor

For manufacturers, the continual need to increase production speed and efficiency while reducing labor has spurred a shift toward implementing more automated systems. However, off-the-shelf equipment will not accommodate every application. Especially those that are complex with robots and conveyors, as well as a host of equipment for manufacturing and assembly in addition to packaging, labeling, and palletizing, which must be flawlessly coordinated.

“While implementing off-the-shelf solutions can be a starting point for some projects, automating and incorporating robotics frequently requires a custom solution that meets very specific process requirements. For this reason, even large suppliers in this space will often pass on opportunities if they are not easily resolved,” says Leon Gurevich, founder and chief technology officer of Rapid Development Services (RDS), an industrial automation equipment builder and integrator.

According to Gurevich, to avoid delays or failure on larger, more complex projects, it is particularly important to work with a supplier that not only has automation expertise but is also nimble and flexible.

“When it comes to automating production, equipment can range from very small to complete lines several hundred feet long that can consist of robots, conveyors, vision systems, server drives, etc.,” says Gurevich, who has worked with companies such as Medtronic, Johnson & Johnson, Abbott Labs, and Pfizer. “So, automation suppliers and integrators need a ‘tool box’ full of solutions including the ability to design and build from scratch in order to fit together all the pieces of the puzzle.”

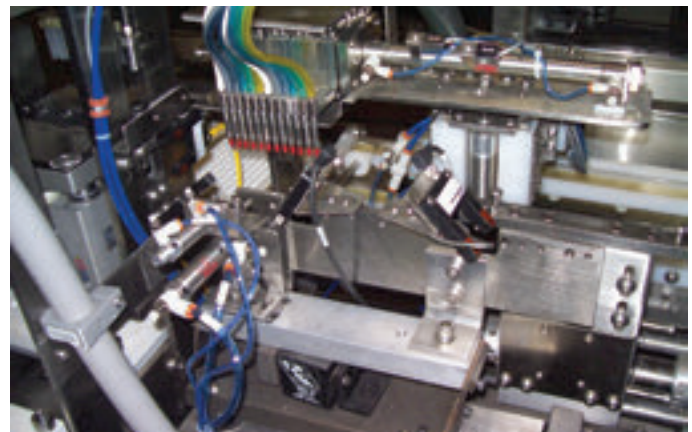
For example, after a major medical device manufacturer received FDA approval of a real-time insulin pump for continuous glucose monitoring, the company needed to

automate production with specific attention to packaging.

RDS was called on to develop an automatic system to package insulin reservoir syringes into a Multivac form/fill/seal (f/f/s) machine, followed by carton and case packing for ready-to-ship product delivery.

The reservoir syringe was presented to the system in a bulk form. The robotic system utilizes vision inspection to check for the presence of subcomponents before placing reservoir syringes into the Multivac machine’s formed web cavities. The vision inspection identified the presence of the plunger, guard, and overall geometry pattern of syringes by inspecting a set of 10 units per cycle. The system used two, six-axis robots, two vibro-feed bowls, and the Multivac web machine to feed, pick, place, and seal reservoir syringes.

With the robotic system, each of two cells packaged



Off-the-shelf equipment will not accommodate every application, particularly those that are complex involving equipment for manufacturing, assembly, packaging, labeling, and palletizing that must be flawlessly coordinated. Photo courtesy of RDS

product at a rate of over 120 reservoirs per minute, for a total of 240 units per minute. The packaging system also had a carton erector, and the sealed packages were robotically inserted into cartons.

RDS initially installed the system in a California plant, which ran the robotic system trouble-free in a clean room for more than five years. At the company's request, RDS disassembled, moved, reinstalled, and started up the system at a new facility in Puerto Rico, where it has continued to run trouble-free three shifts per day for another 10 years, according to the company.

In addition, RDS partnered with Multivac to provide engineering and robotic integration services for multiple projects for both medical device and consumer cosmetics applications.

The company has built robotic part handling and unloading systems to load parts into a thermoformed web of the Multivac f/f/s machines, and to unload form, filled, sealed packages and pack parts into cartons and cases after the Multivac machines perform their functions.

"In RDS's partnership with Multivac, we have utilized proprietary technologies for feeding, staging, and loading an array of parts per each machine cycle with up to 60 parts per pick with a single robot," says Gurevich. "The solution allows one robotic cell with a single six axis robot to

place parts into Multivac at rates of up to 800 per minute."

According to the market research and consulting company Grand View Research, the global medical automation market is expected to grow at a compound annual growth rate of 9.9% from 2016 to 2024 to reach \$79.4 billion by 2024. The company cites the rising prevalence of chronic diseases and the increasing adoption of automated equipment for diagnosis and therapy as the factors propelling market growth.

So, whether packaging device manufacturers need help automating their production, or the equipment used in other settings, partnering with an expert in automation can be the surest route to ensuring compliance, reliability, and efficiency.

"Companies sometimes shy away from automation when only focusing on direct labor savings or short-term ROI," concludes RDS president Sunit Mishra. "However, if you factor in increased production speeds and improved quality along with reduced waste, labor management savings, labor hiring and training savings, as well as repetitive motion injury, the investment in automation usually provides an attractive ROI in the short term itself."

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PERSPECTIVES

How to Streamline Robotics in Packaging

Select open control platforms for easier programming and runtime for various robots, and consider whether other systems make more sense in certain applications.

Mark Ruberg, Packaging Industry Manager, Beckhoff Automation LLC



Robots have provided important advances in the packaging industry for many years. And the technology continues to mature. With innovations like collaborative robots (cobots), autonomous mobile robots (AMRs) and real-time coordination with vision systems, use of robotics will only continue to expand throughout plants—from upstream processing to all levels of packaging and to end-of-line and intralogistics operations. Robots of all types are a significant tool to design and build machines ready for Industry 4.0 and lot-size-one produc-

tion. But in practice, they still present some challenges.

As I talk to engineers in the field, two key sticking points keep coming up: lack of truly open standards for communication, programming, etc., and limitations in terms of footprint and adaptiveness. Robot vendors work hard to differentiate themselves, and while these decisions might benefit performance, they can have dramatic effects on interoperability. Beyond that, robots are often the most flexible part of a system; they can adapt to processes more adeptly than traditional mechanical components.

However, even cobots without traditional safety fences or enclosures take up significant floorspace and have hard limits on accommodating situations the design engineer didn't imagine in the beginning.

How can you get past these hurdles and make the most out of robotics? Let's look at the root causes of these issues and what solutions can help streamline control and functionality.

Standardize on consolidation, openness, and flexibility

Open robotics standards do exist. For example, PLCopen Motion Control Part 4 includes kinematics in its definition,

which is a common standard for PLC vendors to supply IEC 61131-3 based programming. The problem with robotics standards isn't with the standards, but with the automation vendors. Practically every commercially available robot requires a different control platform and different programming methodology. The controllers are typically standalone "black boxes." On the software side, vendors often close off the kinematic formula for robotic movement and the interface, simply to keep machine builders locked into a single solution.

This approach not only requires more hardware and increased footprint, but also creates communication delays between the robot controller and main PLC and peripheral field devices. So, you must decide whether to reduce throughput or quality—or face the added expense of installing more robots to make up the difference. In addition, engineers and maintenance staff must learn additional software for programming and provide regular updates for yet another system, with less connectivity for remote troubleshooting and performance statistics. The lack of openness is a real predicament for nearly all robotics applications, but there are some ways to address it.

First, explore options for open control. While some vendors like to lock you into their walled garden for everything, the reality is that practically every machine requires a mix of components and communication protocols. Maybe your preferred cobot supplier is different from your preferred delta or SCARA robot vendor, which are all different from your vendors for machine vision, HMI, PLC, safety, IoT, machine learning, etc. Open control platforms offer advantages when bringing together these existing systems in brownfield applications, but more importantly, they offer opportunities to combine the control on a single software with one piece of control hardware.

Beckhoff's TwinCAT 3 automation software, for example, provides a comprehensive engineering and run-

time environment for all the functions mentioned above, including robotic programming and control. Engineering for all functionality, including robot kinematics, takes place in the familiar Visual Studio environment. With scalable Industrial PC (IPC) hardware from Beckhoff, ranging from micro-controllers to 40-core industrial servers, engineers can select the right controller to suit their applications, and individual cores can be dedicated to specific tasks. For example, a multicore CPU might run PLC on core 0, HMI on core 1, robotics on core 2 and so on. In addition, the real-time communication and high synchronization of the EtherCAT industrial Ethernet system make it ideal for highly coordinated motion. EtherCAT can also establish connectivity with simple gateways to almost any other industrial Ethernet system, fieldbus, and protocol you'd encounter in the field for true openness.

Robot manufacturers have noticed these benefits and adapted them in varying degrees. For standalone solutions from KUKA and Stäubli, for example, EtherCAT is the bus system of choice, and native programming and integration in TwinCAT can be easily implemented via KUKA.PLC mxAutomation and Stäubli UniVAL.

Denso Wave has taken a different approach: The company has standardized its new RC9 control system on Beckhoff and EtherCAT. The turnkey hardware solution uses EJ series I/O terminals that plug into custom PCB boards and an ultra-compact C6030 IPC that uses TwinCAT for control for new systems, and existing Beckhoff-based systems using EtherCAT and a variety of IPCs can also serve as Denso robot controllers. For pick-and-place products, vendors like Autonox consider the highly dynamic and precise servomotor and servo drive technology from Beckhoff to be just as valuable as the control components.

A truly open automation platform should simplify programming, commissioning, and running robots from multiple vendors on a single machine. For machine builder OEMs and major CPG manufacturers, this means not reinventing the wheel every time you deploy a new end-of-line, for example. However, it also leads to optimizations in footprint, product quality, and synchronization with other systems, such as mechatronic transport systems. And that's where even more gains in flexibility take place.

Increase adaptive manufacturing and reduce footprint

In packaging, like most industries, floor space is at a premium and customization is rampant. Operations often must increase capacity without adding square footage, which means automation must become more condensed on each machine. Cobots are helping; since they can interact with operators, they are considered safe without requiring the large cages or enclosures. However, in many cases, robots take up extra space doing tasks less efficiently than other systems. Since the end goal of Industry 4.0 is



EtherCAT provides the optimal fieldbus for synchronizing robotics with mechatronics, like the XTS, which can replace robotic functions in some instances. Photos courtesy of: Beckhoff Automation

mass customization down to lot size one using IIoT-enabled technologies, it's important to determine which processes make the most sense for robots and which could benefit from something else, such as mechatronic transport systems which offer faster, more dynamic material handling in many cases and increase possibilities for personalization.

Beckhoff's eXtended Transport System (XTS), for one, enables instant changeovers, greater flexibility, and machine footprint reductions up to 50%. The fully integrated motor modules contain all power electronics, and movers can operate individually or in groups. Whereas robots often process one product at a time, XTS inherently enables engineers to double or triple the slower processing stations while allowing product to go through the faster processing stations one at a time. Adding tooling to movers allows the XTS system to perform kinematics directly on the linear transport system. For example, custom labeling, messages, or even expiration dates could be printed directly on packages with a stationary laser head, or adhesives could be applied in specific spots on a package. Movers can also work together to carry larger payloads, which we saw in the recent Brenton M-3000 case packer for stacks of frozen pizzas.

Sending product down the right path is also an important task for robots, whether for customization, inspection, rework or discarding of rejects. The Track Management functionality of XTS allows for movers to switch between tracks, carrying the individual product where it needs to go based on real-time feedback from the machine controller. Beckhoff's XPlanar system, however, takes this to a new level.

Using flying motion with freely arrangeable motor tiles and passive movers, the XPlanar adaptive transport system sends product to only the necessary stations, bypassing others. The system includes automatic collision avoidance, path planning, anti-slosh, 360-degree rotation and more. All of this supports the trend of moving the part around the tool versus moving the tool around the part with robotics.

Granted, in some instances, maybe you need to move both, but this is where the capabilities of mechatronics highly synchronized to robotics really shine. While robots remain useful at infeed and outfeed, much of the other functionality can be supplemented while an XPlanar mover is holding the product.

In addition, XTS and XPlanar map movers as individual servo axes, so scanners are not required at each station to ensure complete traceability. And both support washdown environments through the ability to cover XPlanar with any surface, such as stainless steel, glass, plastic, etc., and the IP69K-rated XTS Hygienic built out of stainless steel. This makes both systems ideal for true lot-size-one production for packaging, pharma, and food processing, as well as other applications across industries, that robotics simply couldn't pull off.

Ask the right questions to streamline robotics

Robotics will continue to become more important, but the true efficiency gains—and your return on investment (ROI) on the robots—will depend on openness and forward-looking design. Look for solutions that decrease cycle times, boost computing power, and offer the right tools for the job.

As you look to upgrade existing systems or design entirely new lines, make sure you ask several important questions:

- Am I using a system that will offer openness for today and tomorrow as new technologies emerge?
- Will communication delays limit throughput or create issues with product quality?
- Is a robot right for the material handling or part processing task, or would a different kind of system make more sense?
- Am I using more effort to move the tool to the part with a robot than I would by moving the part to the tool with a mechatronic transport system?
- How much cubic footage on the line will

be taken up by enclosures and the sheer height of the robots?

With some careful consideration, you can get to the root cause of longstanding issues and begin to correct them. As a result, future robotics implementations can provide even greater value and more impressive, adaptive capabilities in your packaging machines. ■

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Small, Lightweight Handheld HMI

IDEC, us.idec.com

The IDEC human-machine interface (HMI) has contoured hand grips, a hand strap, and a wall hanging bracket. The HG1P handheld unit includes a hardwired emergency stop button, selector switch, and three-position enabling switch. It is configured with WindO/I-NV4 software. Available in serial and Ethernet models, the HMI supports industrial communication protocols, such as Modbus TCP/IP, Modbus RTU, FTP client, FTP server, webserver, and user communication.



Motion Control Program Features Unprecedented Level of Integration

Siemens, siemens.com

The Siemens motion control program provides download ready-to-apply function blocks, such as camming, cross-cutter, gearing, flying saw, jog path, load sharing, positioning, rotary knife, splice control, and synchronism, from an online library. Built-in simulation tools allow the testing, validation, and optimization of an application code, independent of physical hardware. The integration of safety technology enables safety and standard control over one network, drive-based safety including motion functions, and a safety acceptance test integrated in an engineering tool. Uniform system diagnostics are automatically generated during device configuration.

Miniature Photoelectric Sensor

SICK, sick.com

The W4F is a new ASIC platform that delivers numerous performance advantages. It can provide distance information, such as the height of objects and, as a result, identify process errors. Initial users have confirmed that the photoelectric sensors have the best ambient light and sunlight suppression on the market as well as maximum immunity to all known sources of optical interference. The Blue Pilot operating concept combined with the innovative monitoring options make configuring and monitoring the sensors easier than ever which saves time during commissioning.



Spur Gears

KHK Gears, khkgears.us

The meshing of spur gears results in rolling contacts producing high efficiency of about 95% to 98%. Secondary operations that can be performed include opening the bore, adding of keyways, adding of tapped holes, or reduction of the hub diameter.



SCARA Robots

FANUC, fanucamerica.com

The small SR-3iA and SR-6iA SCARAs have a compact footprint and space-saving design for maximum efficiency. In addition, the SR-3iA/H and SR-6iA/H are 3-axis variants that provide strong performance and an affordable alternative to small linear slide products. The higher-payload SR-12iA and SR-20iA provide flexibility with a large vertical stroke, and an environmental option for harsh conditions. All of FANUC's SCARA robots include superior robot motion, high-speed operation, and ultimate precision. Powered by the R-30iB Compact Plus controller, FANUC's SCARA robots have the same intelligence and reliability that's available on all FANUC robots, including integrated iRVision, conveyor tracking (iRPickTool), and most other software options. FANUC's latest SCARA iRProgrammer user interface makes it easy to setup and program the robot on a Tablet or PC (Teach Pendant is optional).



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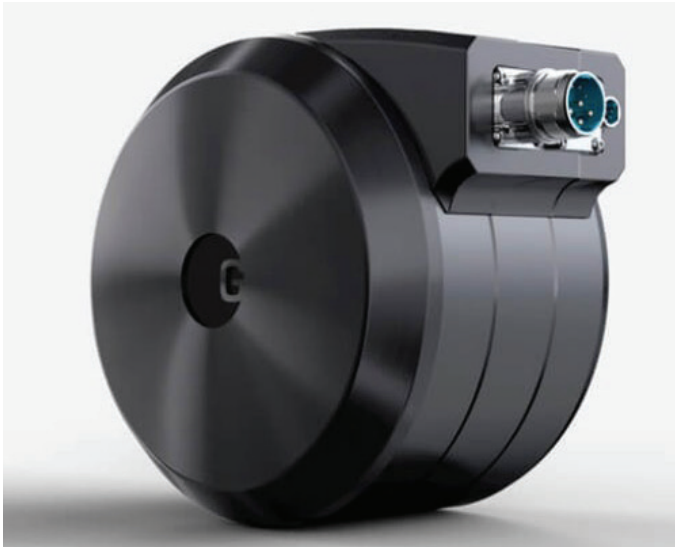
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STRAPPING SYSTEMS

Shown: USI-SoniXs® island system featuring SoniXs sealing technology, indexing head and strap lance.

Gearless Robotic Actuators

Genesis Robotics & Motion Technologies,
genesisrobotics.com

Genesis Robotics & Motion Technologies unveiled its new LiveDrive LDD 1800 Series Direct Drive Actuator. With an extensive range of configurations and performance options, LiveDrive, direct-drive actuators eliminate the need for gearing and are redefining the next generation of parallel robots and precision machinery, unlocking capabilities beyond the reach of conventional drivetrains, across many applications. According to the company, LiveDrive LDD actuators redefine the standard of simplicity, cleanliness, and productivity for high-throughput machines. LiveDrive is a high-torque, compact, direct-drive solution designed for robots and machines.



Aluminum Cylinder Increases Machine Speeds and Reliability

Emerson, emerson.com

The Aventics cylinder is supported by a full suite of web-based design and integration tools. An online configurator provides a product part number, as well as 2-D and 3-D CAD drawings. National Fluid Power Association compatible, the TM5 TaskMaster pneumatic cylinder has an aluminum body construction and steel piston rod and features pneumatic technology that allows cushion adjustment to slow down the piston to a stop by the time it reaches the endcap.

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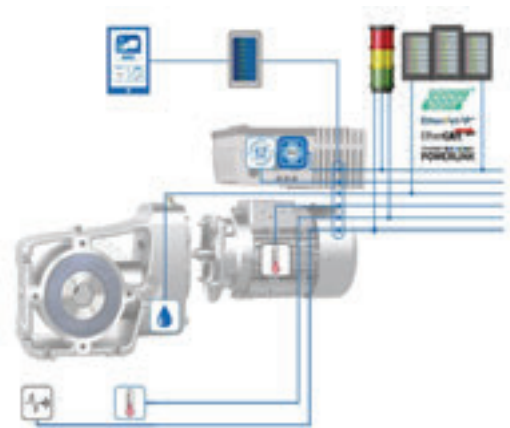
/ Visit Us at Pack Expo Las Vegas Booth SL-6106



MMS 2

wipotec-wt.com
info.wipotec.usa@wipotec.com

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Condition Monitoring Solution Extends the Life of Components and Machinery

Nord Drivesystems, nord.com

The Nord condition monitoring solution utilizes the internal programmable logic controller (PLC) within the variable frequency drive to integrate drive-related actuators and sensors into a system that detects undesired operating conditions at an early stage. Drive and status data are recorded periodically or continuously. The results are then provided via the PLC output parameters and can be sent and saved to a local dashboard via Industrial Ethernet for visualization. An interface for digital and analog sensors, including virtual sensors, enables the PLC to calculate information, such as the optimal oil change time.

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*This guide features a selection of participating exhibitors with relevant products as of press time. View the full exhibitor line-up and complete product listings online at www.PackExpo.com.

Alphabetical company placements may be adjusted for space consideration as needed.

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FINAL THOUGHTS

JIM PITTAS PRESIDENT & CEO, PMMI

Positive Projections for Packaging and Processing



In the coming days, we expect to see many of you in person in Las Vegas for PACK EXPO and Healthcare Packaging EXPO. This trade show marks the first time the industry has come together in over 18 months, and while a lot has changed and continues to change, our industry remains more robust than ever. As many industries slowed down, packaging and processing reached unprecedented levels of production.

According to the newly released 2021 State of the Industry Report, the total value of U.S. packaging machinery shipments is estimated to have been worth \$10.1 billion in 2020. To put that into perspective, that nearly

15% increase came one year after an increase of about 3%. Our industry has been so efficient as an essential business—consistently meeting the demands of consumers and retailers—that after years of solid, steady growth, packaging machinery orders exploded in 2020, creating an increased order backlog of over 22%. All told, the U.S. market for packaging machinery is estimated to have exceeded \$12 billion in 2020, representing 14% growth from 2019.

As one would think, with various shutdowns and people consuming more meals at home, food (40% of shipment revenues) and beverage (21%) represented the largest shares of packaging machinery shipments in 2020. The household, industrial, and agricultural chemicals sector is forecast to grow the fastest of all markets through 2026, at a compound annual growth rate of 8.6%. I recommend all members download the report at oemgo.to/businessintelligence. All of our business intelligence reports offer keys to unlock information that provides a true competitive advantage.

Why am I providing you with all of these numbers? Because it tells us that these are exciting times in the packaging and processing industry, and PMMI plans to do everything we can to aid your success.

Our PMMI Annual Meeting arrives on the heels of PACK EXPO Las Vegas and Healthcare Packaging EXPO. It is a vital opportunity to step away from your everyday tasks, re-

connect with peers, and invest in your team and business. From dynamic speakers and invaluable networking to an exclusive FANUC plant tour, it promises three days to focus on your business with sessions covering cybersecurity, end user challenges, and workforce trends, just to name a few. We will also host a can't miss economic update from Alan Beaulieu, president, Institute for Trend Research (ITR) Economics.

From there, we move on to what we expect to be a full year of events from the PACK EXPO portfolio of trade shows, including PACK EXPO East 2022 (March 21-23, Pennsylvania Convention Center, Philadelphia), EXPO PACK México 2022 (June 14-17, Expo Santa Fe Mexico, Mexico City) and PACK EXPO International 2022 (Oct. 23-26, McCormick Place, Chicago).

You can find more information on each of these events at pmmi.org.

PACK EXPO East 2022

March 21-23

Pennsylvania Convention Center
Philadelphia

Registration opens Sept. 2021

EXPO PACK Mexico 2022

June 14-17

Expo Santa Fe Mexico
Mexico City

Registration opens Feb. 2022

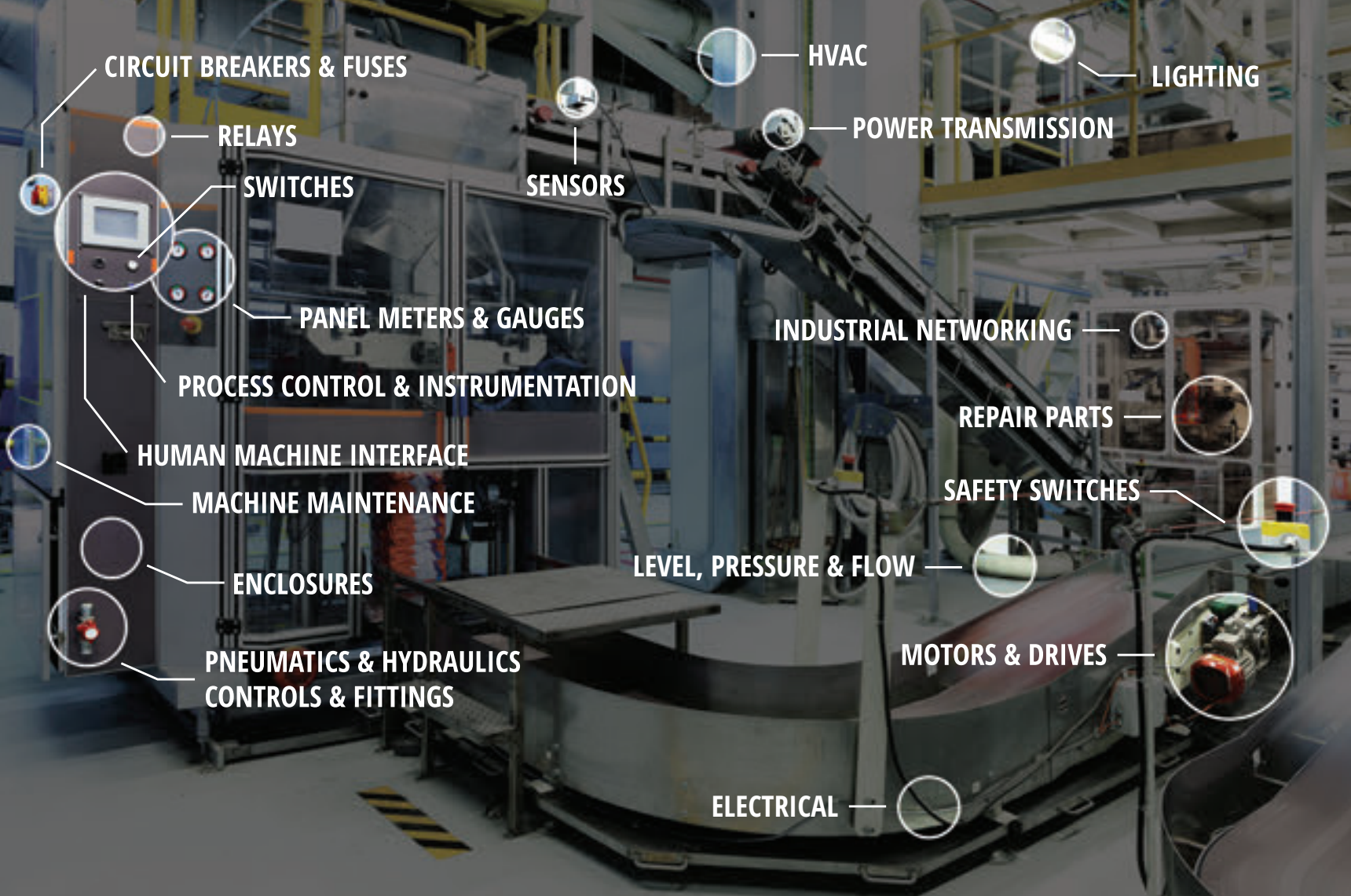
PACK EXPO International 2022

October 23-26

McCormick Place
Chicago

Registration opens March 21, 2022

Jim Pittas is the President & CEO of PMMI. He may be reached at jpittas@pmmi.org or at linkedin.com/in/jim-pittas-162ab79.



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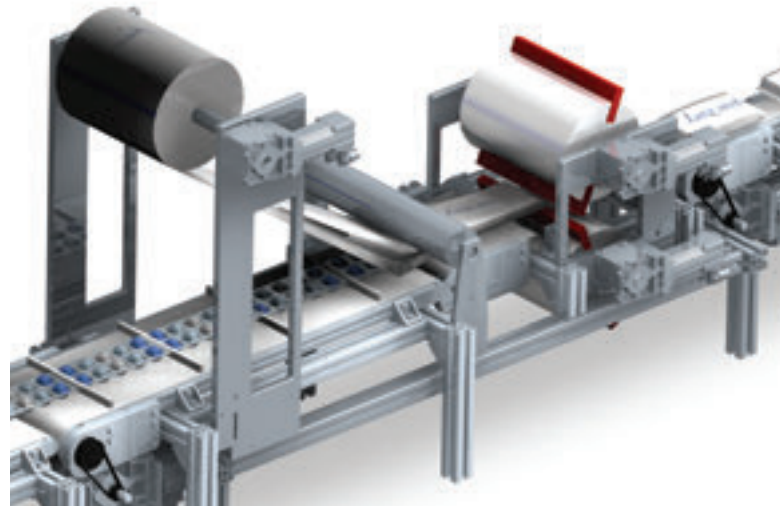


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