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OEM Profile: Serpa's Next Big Move

Grounded by innovation and boosted by a recent acquisition, there's so much opportunity on the horizon for this end-of-line equipment manufacturer.

By Natalie Craig

It's a good year for Serpa. The California-based OEM is currently undergoing a transformation as it was recently acquired by ProMach while hitting its fourth year of record growth. OEM Magazine caught up with the end-of-line equipment manufacturer to see what's been propelling its growth and how the business is adjusting to a huge acquisition.

Photography was taken by Kelly Peterson Commercial PhotoVideo

The company is no stranger to growth and innovation, which is what it has been doing since Fernando Serpa, the OEM's founder, created Serpa Packaging Solutions in 1985 after accumulating enough experience as a service technician to realize that machinery could be easier to operate and more maintenance-friendly.

"I worked for a company in an industry that offered manual machines, and

I started just breaking the chain. I worked my way up from the bottom and then became a service technician," Serpa says. "I traveled throughout the country and overseas fixing this company's machines, which didn't have the best designs and sometimes equipment was sent out that wasn't completed. So, I was forced to make parts and re-design equipment on the fly in the field. This experience made me more aware of how a company should operate, which is what motivated me to get out and create Serpa."

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But the company isn't just set on its

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original mission to create maintenance-friendly machines. Over the last 10 years the OEM has become a systems integrator, catapulting its expansion and landing the company on Inc.'s 5000 Fastest Growing Private Companies list.

"When I started 12 years ago, we were only in a 30,000 sq.-ft.-building," says Aaron Metzler, national sales and applications manager at Serpa. "A year later, we broke ground on another 30,000 sq.-ft.-building to expand our machine shop capabilities and accommodate our full line capabilities that we could do in house. We were probably a $10 million company at that point."

Now, Serpa has reached close to $35 million in annual revenue, 20% of which comes from its integrator business.

"What really excites me is our full line integrations that we've really been tapping into lately," says Justin Neece, vice president of operations at Serpa, noting its work in the pharmaceutical and CPG industries. "We just got done with a full bottle line for a top 20 pharmaceutical company, and we took it all the way from the beginning to the end. And with that, we've become a lot more efficient, and we've been able to take on a lot more of those large lines as an integrator."

For example, another project Neece mentioned was an integrated line for a multinational personal care corporation, which included three Serpa machines, complex robotics, cameras, and conveyors, all of which had to be deployed within a short lead time.

Both Neece and Metzler have been at Serpa for more than 10 years and have been able to see the company expand its product line and capabilities year after year.

Serpa was founded on cartoners, then the company began designing case packers, and, most recently, it has expanded to robotic palletizers and auxiliary equipment like a patented insert feeder, tamper-evident labelers, and checkweighers to complement its core equipment offering.

With its rapid growth and integrator status, the end-of-line equipment manufacturer also caught the attention of ProMach, which acquired Serpa in February.

"I'm turning 60 this year and a lot of companies have been looking at [Serpa Packaging], including ProMach, for about three years," Serpa says. "I've had conversations, but I said, 'Nah, I'm not going to do it.' But this time around, the timing was perfect. The main reason I chose ProMach was because I wanted to be good to my people. I didn't get the company to this point by myself and I have some very loyal people here—they're like my second family."

Aurelio Lara, a mechanical assembly tech, works on the product bucket conveyor for a cartoner.

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What "ProMach Built" means to Serpa

Serpa's Visalia, Calif.-based team will join ProMach's Robotics & End of Line

group, which is led by the group's senior vice president Hutch Coburn. They will join the ranks of some of ProMach's other brands like Brenton, Dekka, Edson, Orion, Quest, Rennco, Texwrap, and Wexxar Bel.

"The addition of Serpa to our Robotics & End of Line portfolio means our customers have access to one of the most robust lineups of end-of-line solutions in the world," Coburn says. "We're excited about what Serpa brings to ProMach with their cartoning and end-of-line capabilities."

The ruggedness of Serpa's equipment, its speed-capabilities, user-friendly operation, and rapid, repeatable changeover technology initially attracted ProMach, according to the company's president and CEO Mark Anderson.

"Serpa is no stranger to the ProMach organization," Anderson says. "We've worked with them on numerous projects over the years across multiple ProMach product brands and their customer-focused approach has always made them a wonderful partner. We're excited to welcome Serpa to the ProMach family and look forward to working with their outstanding team as they continue developing innovative solutions, expanding into new markets, and bringing immense value to their customer base."

Not only is ProMach optimistic about having Serpa on their roster, but the OEM's employees are equally excited about the opportunities that the acquisition will afford the company.

"Before the acquisition, we were our own company and we did things our own way, even when we integrated and collaborated with other companies," Metzler says. "Being a ProMach company now, everyone is going in the same direction

with the same goal and makes it very easy for collaboration between many different organizations."

Serpa's Neece, who has been at the company over the past decade, is looking forward to seeing how much more Serpa will grow now that it's a ProMach company. ProMach will continue to invest in Serpa's employees, brand, products, services, and facility to further advance its position as a leader in end-of-line packaging technologies.

"One of the biggest benefits of this acquisition is the sales potential and sales consistency," Neece adds. "ProMach will also put new equipment in on the machine shop side and software on the engineering side, which is something I can't wait for."

How Serpa innovates

Investing in the engineering and machine shop side of the business is appealing to Serpa as it's been on a bit of an innovation streak. Like many OEMs, its innovation comes from having to solve a customer problem or need, and Neece says Serpa's customers keep them on their toes.

"Between sales and engineering,

Spider robots sit atop a conveyor on one of Serpa's intermittent cartoners.

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we are always needing to innovate within the machines, and we are constantly being pushed to try something new," Neece says. "For example, there's always been an issue with feeding inserts into high-speed applications, and we've always had to outsource and depend on other companies to provide us a good product for leaflet feeding inserts. But Fernando had an idea of how we could make this better."

Serpa engineers, in collaboration with customers, looked at all of the things that didn't work and all the issues they've had with existing feeders and they created something better.

"For our new leaflet feeder systems, we knew getting the leaflets to the feeder has always been a difficult task because you're basically trying to handle these little paper cards, and then transferring a lot of them at once to a magazine at a high speed," Neece says. "So, after looking at what wasn't working, we thought 'why don't we just transfer them out of whatever they're coming to us from right into the feeder?' And so now, we've got the standard leaflet module that unloads the leaflets out of the trays that they come in. Now, we're able to transfer the leaflets out on the trays and put it into leaflet feeding system."

The creation of its insert feeder, which was rolled out in 2016 and then patented in 2018, also contributed immensely to the company's growth. Then, the OEM went on to develop a semi-automatic case packer in 2017 for serialization systems, which met a demand from customers who didn't need a fully-automatic case packer.

And the company's most recent innovation of a tamper-evident labeler was built based off labeling equipment they've assembled in the past, which helped them speed time-to-market for the pharmaceutical, medical device, nutraceutical, and personal care customers that were working hard to meet demands caused by the COVID-19 pandemic.

"For the labeler, the tamper-evident aspect was new to us, but we basically took a new labeler and then built standard components around the labeler and that helped us achieve what we were going for," says Neece.

When it comes to innovating new products or improving existing equipment, Serpa's engineers take what they know about their equipment and how it works, and they improve it and adapt it into standard design modules that they can build upon and customize—much like they did with the leaflet feeders.

Serpa's people are always thinking about ways to make the equipment better in terms of being more functional, easier to use, and having fewer parts. Internally the team uses the term "Serpify" when they are

The inside of a Serpa case packer being assembled on the OEM's floor.

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taking on a challenge or thinking about how they can develop a new solution.

"Serpifying describes the level of pride we have in creating this equipment," Metzler says. "When we have a machine that we build, from the guy that debugged it to the people that designed it, they all have that love and pride of building a Serpa machine that's top quality and that customers love and respect."

Another trend and industry innovation Serpa is implementing into their systems to keep the company relevant and growing is the concept of magnetic conveyance, like Rockwell's MagneMotion. The OEM has completed systems utilizing magnetic conveyors from Rockwell, which Neece says provides Serpa's customers with more flexibility.

"Those tracks allow us to process either products or cartons at a certain pitch on one part of the machine and with intermittent and continuous motion on another part of the machine," Neece says. "And to be able to transfer it down to another part of the machine and change the pitch or go intermittent or continuous, that's really a game changer when it comes to having robotics picking and placing in a machine."

Serpa's role and journey as an integrator

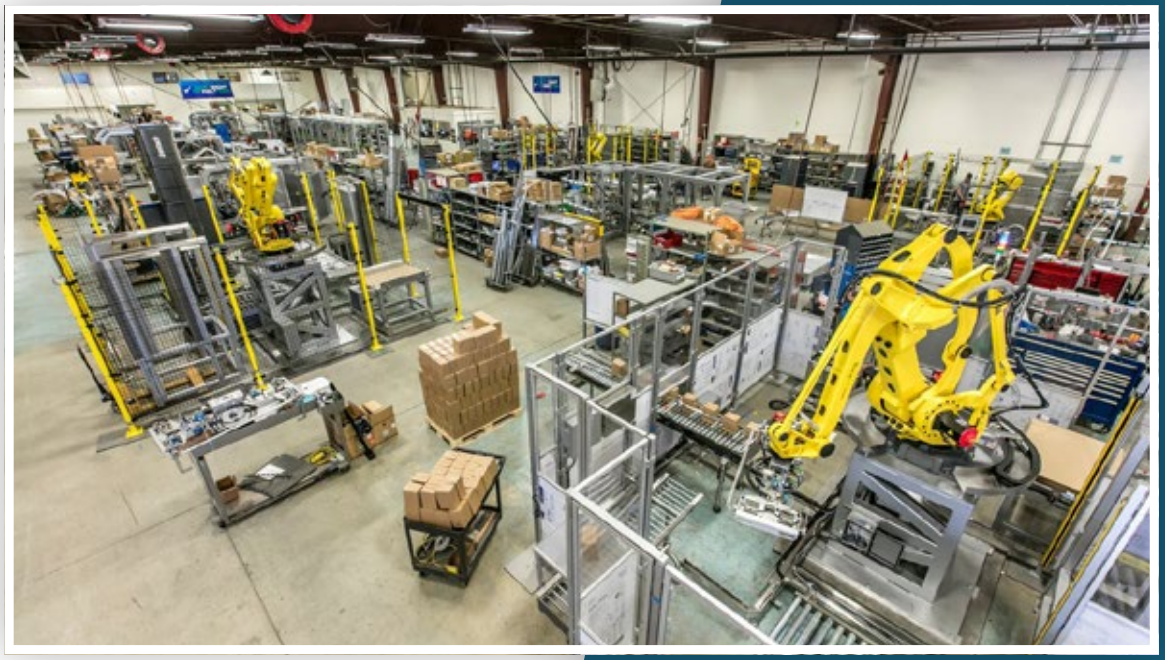
Serpa's product innovations have aided in the company's growth, but being an integrator has also accelerated in its expansion. The OEM started integrating when its customers were purchasing more than one piece of equipment to complete a line, which aligned perfectly with Serpa's mission to develop

complete end-of-line solutions.

Over the last decade, Serpa has expanded product lines to include equipment like robotic palletizers so that they can be a one-stop shop for their customer's end-of-line needs and further build their integrator reputation. But the OEM still looks to its peers to partner up on bigger lines.

"When we are looking for an OEM partner on an integration, service is big for us," Metzler says. "We want to work with OEMs that can match the level of service that we give after the machine is sold. We work with Weiler Labeling a lot and they match our level of service and quality. They have equipment that is top notch, and we don't have to touch anything on it."

Serpa was founded on making equipment easy to use and maintain while promising 98% uptime, which is why it has strict requirements for service and uptime.



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What's next for Serpa

As Serpa finds their place in the ProMach family, it will be important to keep an eye on this company's growth and innovations, some of which the company will show at

PACK EXPO Las Vegas 2021 happening Sept. 27-29.

"We are working on a collaboration between us and another company that we plan to debut during PACK EXPO," says Metzler. "It's going to be a really innovative in terms of product handling."

Looking forward, the company plans to improve on its service and continue to expand as it taps into new opportunities provided by the acquisition.

"Now, being a ProMach company, I'm looking at even faster growth in the next three years, which will make it even more stable for my people here in terms of security long-term," Serpa says. "That's important to me, especially as I look to retire."

Fernando Serpa, Founder and President

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Wes Garrett Excels in Building Relationships with System Integrators

Emerging Leader Wes Garrett is growing market share as the account manager for authorized system integrator sales at FANUC.

By Natalie Craig

Wes Garrett's role at FANUC is to grow market share and increase unit sales as the account manager for authorized system integrator sales within FANUC's Pick/Pack/Palatize/Fulfillment department. After getting his Bachelor of Science in mechanical engineering at Michigan Technological University, Garrett started working with robotics in the automotive market at FANUC. He then wanted to make a shift into the packaging product segment as a product manager for FANUC's palletizer robots and software, which gave him more experience on the sales side of the packaging business.

Now, Garrett handles everything from building relationships with existing authorized system integrators, to finding and developing new integrators.

He also helps produce three conferences a year to assist with authorized system integrator growth. Read on to learn how he got his footing in the industry and at FANUC.

OEM: What is it like working at FANUC as an emerging leader?

Garrett: The time with my company has been great. There are so many departments to work within. Since I have been with FANUC, I have been promoted to senior engineer and to account manager, while also holding titles from process engineer and product manager. FANUC has encouraged me to engage in the PMMI organization by attending the Executive Leadership Conference and Annual Meetings, along with sitting on the Emerging Leaders Committee. In addition to my involvement with PMMI, my company gives me a great amount of latitude to go and do what's needed to grow professionally.

Emerging Leader Wes Garrett is growing market share as the account manager for authorized system integrator sales at FANUC.

OEM: How do you help your company innovate?

Garrett: I work very closely with my customers, the FANUCPackaging Segment, and FANUC Product Development to help enhance and bring new products to life that the packaging industry needs. This could be a new robot with unique payload, speed capability, or software that allows a robot to execute a task more efficiently.

OEM: What fascinates or intrigues you about the packaging segment, compared to the experience you had in the automotive space?

Garrett: The most fascinating part of my job is being able to help my customers solve packaging automation challenges and then see them come to life. What gets me excited about packaging is the variety of applications and products. I'm always looking for a new challenge and packaging has been great for this.

OEM: As an emerging leader, what were some obstacles you faced in your career and how did you overcome them?

Garrett: As an engineer by degree and mindset, I had to adapt to take on a sales role. I needed to leave behind the number crunching and details to focus on selling. Selling is a major departure from engineering, I keep my engineering hat in my back pocket but wear my sales cap prominently.

OEM: What advice do you have for other emerging leaders about getting involved in packaging or robotics?

Garrett: Get as much education as you can on packaging. Attend PACK EXPO and visit a packaging plant. It's crucial to understand all the processes involved from the beginning of a product's life to the end of line where it is shipped to the customer.

OEM: Are there any technology trends you are keeping an eye on?

Garrett: I have my eye on 3D vision and artificial intelligence as they continue to evolve. I'm keeping a close eye on the products available and where they can be best utilized in packaging or fulfillment.

It's Time for Machine Builders to Get Social Media Savvy

Consider these social media content strategies and advertising must-knows to enhance your Facebook, Instagram, YouTube, LinkedIn, and Pinterest presence to gain customers and effectively tell your company's story.

By Natalie Craig and Sarah Loeffler

The pandemic has forced OEMs to rely on digital communications, which has caused many manufacturers to pay closer attention to their marketing and social media strategies. In a digital world, it's more important than ever to effectively communicate your brand story through social media to engage existing and new customers as well as to attract potential employees who are looking to LinkedIn, Instagram, Facebook, Twitter, YouTube, and Pinterest, to learn more about prospective companies as they consider their next career move.

More than 3.6 billion people are on social media, which is expected to increase to 4.41 billion in 2025, according to Sprout Social, a social media software company. And right now, social media users spend around 144 minutes on social media every single day.

There are many ways to participate in social media as a manufacturer and

there are many platforms to engage with. Whether you already have a strong social media presence, or your company is hoping to boost its activity and engage with customers, suppliers, or the present and future workforces, these best practices will help you identify a strategy so that your company can stay consistent with its social media goals.

Social media best practices for manufacturers

1. Take advantage of social media's strengths.

One of the biggest advantages to becoming more active on social channels is the ability to reach your prospects where they already are consuming media and without email's spam blocking or regulations. There is also an immediacy with social that's difficult to achieve elsewhere, as you have direct insights into your audience's needs and message preferences in ways like no other.

2. Determine your voice, audience, and goals for your company's social media presence.

Whether you are embarking on your social media journey or wanting to improve your approach, it's important to have a discussion about your company's mission, the story you want to tell on social media, as well as who you want your audience to be. Having these conversations can help your marketing team create a strong plan for social media that provides you with the results you're looking for, according to Clare Blodgett, CEO, Clareity Marketing and Principal of The Sourced Collective. The Sourced Collective

specializes in helping manufacturers find their voice and drive engagement on social media.

"Great brands are built, they're not marketed," Blodgett says. "You build a great brand by having that foundation and an understanding of who you are. Then, having a plan that you're going to consistently execute over time versus just jumping into something without structure, which is a recipe for failure. We encourage manufacturers to start with a really strong and well-articulated brand strategy and that sense of 'who we are.' So now, they have something that they can consistently communicate to their audience through social media."

While it may seem straightforward that your social media audience should be your customer, there may be other people you want to reach on social. Blodgett shares how to narrow in:

"When we engage with a manufacturer, the leadership team has one idea of what they want to see for their marketing, but the salespeople have a different idea of what they want to see, and then marketing may have a different idea, too," Blodgett says. "So, we interview each sales team member and ask them what are your clients asking you for? What are they asking from you? What do they want to see? Do they need to see a video? Do they want to see more photos of the application? They're the ones with boots on the ground so asking the sales team and doing that research will give you a deep understanding of the audience you should be speaking to."

3. Create a content calendar and schedule social media posts.

One of the most important factors in growing your social media presence and audience is consistency, Blodgett says. "Hashtags are important to use if they are specific to the people you need to reach, but the biggest audience development tool is posting to your accounts consistently."

Morrison Container Handling Solutions' marketing communications manager Allison Wagner uses a content calendar and other planning tools to make sure Morrison is always present on social media.

"We use platforms like HubSpot, which has been really helpful for us from a social media scheduling perspective," Wagner says. "It will allow you to really build out that content into a calendar. And if you put it to paper and spend two hours every couple of weeks scheduling and laying out your next two weeks of content, it allows you to maintain that presence while not actually taking up too much of your time."

4. Harness the power of video.

Morrison Container Handling Solutions has been uploading videos of their equipment running on their own floor for more than 10 years, with some of their videos amassing views near the 100,000 mark. Video content comes naturally for Morrison as it is company policy to shoot video for every single system that leaves their facility because everything they build is highly customized. The Morrison team uses a Canon DSLR camera to shoot these videos, but they also use an iPhone to take videos and edit them in Adobe Premier Pro.

"Within the past year, we are trying to post a couple of times a month, if not more, because we have such a backlog of video content," Wagner says. "We get a lot of calls from people who say they saw our equipment on YouTube and that they need something like it. Because what we do is so custom and unique, YouTube has really allowed us to showcase the array of solutions that we can provide. And it really also serves as inspiration for people to watch and discover what they could need. We see people use YouTube all the time to discover what type of packaging equipment they need. And it just makes sense to be where your customers are at."

5. Keep videos short, but informative.

The sweet spot for videos that perform well on YouTube and other social media platforms is under two minutes, according to Jon Nigbor, president of Media 272, a North American B2B video production company.

"People are willing to watch a video one to two minutes," Nigbor says. "You have to be brief while also telling your audience a lot. When you shoot video, you may end up with 10- or 15-minutes' worth of content, which you have to cut down to two minutes. You're only going to use 10% of what you capture, and that's where it may be beneficial to hire a media company to help you organize information and edit these videos to perform well. Customer success story videos are the most relevant and influential videos. If a company could get their customers to show and tell how their machines work those videos are considerably more effective than a company demonstration video."

6. Don't limit your presence to "B2B" platforms.

Platforms like LinkedIn, Twitter, and Facebook are "ideal" B2B marketing platforms, whereas platforms like Pinterest and Instagram are viewed as more B2C-appropriate. For example, more than 96% of B2B marketers use LinkedIn for organic content distribution, according to Sprout Social. However, as the generational workforce shift in manufacturing occurs, OEMs will need to expand their presence to platforms such as Instagram—which has more than 1 billion active monthly users, with the largest age demographic being 18-24 years old—to reach their customers, as well as attract the incoming workforce, says Blodgett.

"Instagram allows manufacturers to tell their story visually, especially when we're dealing with products," says Kendal Marsh, a principal at The Sourced Collective. "It's not an official B2B space, but a lot of people are there. Another thing to consider is that platforms like LinkedIn have a 'nine-to-five nature,' meaning people check their LinkedIn accounts during business hours. But if you want to reach audiences around the clock, it needs to be through Facebook, Instagram, and Pinterest. And that's where you can still create connection and amplify your brand."

Dorner has found a lot of success on Instagram and Pinterest, according to Stacy Johnson, Dorner's director of marketing and strategic planning.

"We'll see comments on our Instagram posts where people tag other people and say, 'Hey, check this out,' or 'Did you know Dorner does this?'" Johnson says. "Instagram is a growing platform, and we find a lot of success in sharing more informational content, which position us as thought leaders in the industry."

7. Repurpose content and media to create organic and natural content.
Like Morrison, Dorner also has plenty of videos that they repurpose for YouTube and Instagram, which helps fill their content bucket and stay consistent on their platforms. And since Dorner is on Facebook, Twitter, Instagram, Pinterest, YouTube, and LinkedIn, the marketing team is always thinking of ways to maximize one post for several different platforms.

"It never feels like we're short for content," says Bridgette Jaeger, Dorner's digital marketing specialist. "A lot of our content is applications we shot on the floor and it comes across in a very natural and organic way, which performs very well on social media. Then, we will incorporate the videos from YouTube or our website into a blog, and then we'll put the blog out onto the social media channels, too. And while we will promote the same blog post on all of our channels, we'll change the text for each one. So, LinkedIn will have a little bit of a different message and Instagram and Facebook will have a different message than Twitter."

8. Leverage analytics and insights to find out what performs well.
Most social media platforms have built in analytics and insights that allow manufacturers to see how their posts are performing. This is a great way to see which content resonates with your audience and which types don't.

"You can do A/B testing and use the analytics and insights from your social platforms to decide, 'This is getting better impressions, but this is getting better interaction. Let's go with this type of content more often,'" says Steve

Hallblade, sales and marketing director at The Sourced Collective. "And the analytics are really important. It goes beyond seeing if you got X number of clicks. It's about comparing all of your analytics and seeing what works and what doesn't."

9. Go beyond equipment content.

When you're posting to different platforms, try to diversify your content to show different aspects of your company, the services you offer, and the people you work with. While machine videos may perform well for some manufacturers, most people like to see a company's culture, people, and mission shine through in their content.

"We guide people to try to really accentuate their different features, especially when you're in an industry where you can have machinery that looks similar," Blodgett says. "Content that performs very well is not so much about just the machine, but posts that show what your company is like. People are taking into consideration so much more the culture of a company that they're going to engage with and make a major purchase from. And that kind of comes in more with the younger generations."

Considerations for social media advertising

In addition to using social media to reach followers, many marketers are focusing increasingly on advertising using social channels to share content with prospects as well.

Many manufacturers are paying to reach audiences on their social feeds to raise awareness and drive web traffic. According to Sprout Social, more than 83% of B2B marketers found social media advertising to be the second most successful form of advertising for their business just behind search engine marketing and advertising.

As your team determines where and how to focus its efforts, consider these core efforts for advertising on social media platforms.

1. Have distinct strategies for both organic and paid placements.
Creating a company Facebook or LinkedIn page and inviting others to join can be a great way to connect with customers and industry contacts. After all, these "organic" posts cost nothing but your time. That said, posting on your company's page—or even having posts on trade media company pages—won't get you in front of new prospects with much success. To reach those who have yet to know your company, you should consider using paid ads to reach prospects on their feeds.

Audience differences should also be considered when planning your content strategy. Organic posts are a great place for sharing company news, discussing industry trends, and inviting interaction from customers, while paid efforts are a better fit for demand gen activities, such as building brand awareness, driving traffic to your website, and garnering white paper downloads.

2. Consider how the ad will be served when selecting creative.
In addition to ensuring your ad meets a social platform's specs, it's also important that it reflects the "goal" that the platform will try to maximize when serving. For example, Facebook and YouTube offer serving to maximize for "awareness" or "consideration" (website visits and engagement). Creative that is focused on pure branding will align well with "awareness," while more click-worthy content, such as ads that focus on a customer pain point or a download offer, will be a better fit for "consideration."

3. Recognize that bad creative can often put a drag on serving performance.
If you're thinking of advertising on YouTube, focus on creating videos that people will want to watch through to the end. Obviously, you need prospects to watch the video so they see and receive the value you're offering. If they don't watch to the end of the video, they'll miss out on your offer or message. But just as important, in some instances, if someone clicks on your video and doesn't watch to the end, YouTube may interpret that as a bad viewer experience and will give your video less priority in search and suggested results. Many social platform algorithms operate in similar fashion, prioritizing position and/or frequency by level of ad engagement.

4. Test creative materials.
The exciting part about advertising using social media platforms is that it's easy to experiment with different visuals or video cuts, headlines, calls to action and

types of placements, with many platforms even supporting easy split testing to optimize performance. Simple changes can often yield significant results.

5. Invest with an eye to achieving the best ROI.

Frequent monitoring will also help your team assess ideal duration. A common mistake those new to social media advertising may make is cutting off an ad too soon. Usually, there is an initial period where the social media platform will "learn" how the audience interacts with your ad followed by a period where it begins serving more efficiently to optimize for click throughs, view time, conversions, or reach, depending on the goal selected during set-up. You'll want to run your ad long enough to be in that sweet spot where you're maximizing performance with your spend.

6. Keep audience in mind.

One strength of social media advertising is the ability for platforms to recognize your customers with just a few pieces of data, such as name and email address or by pixel. Most advertising on social platforms will allow you to upload custom lists of customers. Beware when choosing "lookalike audiences" to these lists, as there is little control over what the platform will deem similar demographics. Tip: To confirm you're reaching who you intend to reach, don't simply run awareness campaigns. Test audience quality by viewing comments and running lead gen ads occasionally as well.

Also, talk with trade media about social audience options. Some publishers

offer ways to reach their audience on social channels in ways you otherwise couldn't. As an example, OEMs can reach readers of Packaging World, Healthcare Packaging and other PMMI Media Group brands on Facebook or LinkedIn by vertical, job duty, and other criteria. Also, Packaging World routinely offers Facebook reach to show registrants in the weeks leading up to and following PACK EXPO.

7. Use caution when advertising around keywords.
Google platform ads, including YouTube, allow you to target audience based around keyword search behavior, which can be very appealing. But this option may be better suited to some businesses than others, and you need to be search engine optimization (SEO) savvy. For example, will "labeling equipment" bring in a beverage manufacturer or someone looking for a device to aid a home organization project? Will "remote automation" bring you industrial automation users, or people who just want to control their iPhone and other personal devices on the same Wi-Fi? (Hint: you'll likely get a lot of the latter.) It's easy for a beginner to waste money reaching the wrong eyes.

8. Don't let personal social media habits drive your decisions.
Many people assume LinkedIn will be a better fit for B2B ads than Facebook. After all, LinkedIn is where people go to catch up on work-related news, right? The reality: When you target ads to an identical audience on Facebook and LinkedIn, Facebook will overwhelmingly generate more clicks and shares.

The reason is that most individuals spend far more time on Facebook than on LinkedIn. And to-date, Facebook has more powerful data integrations, so it does a better job at matching when given an audience list—it simply has better ability to recognize someone by email or phone number, whether company email or personal email. Always let data be your guide.

9. Don't have a mismatch between ad and landing page.

Ever click on an ad only to be taken to a landing page that seemingly has very little to do with the ad? Such ad and site incongruence will usually lead to page abandonment. To improve the pipeline experience, make sure your ads reflect the landing page's fonts, color choice, and other visuals. (Tip: If your access to graphic designers is limited, consider using no- or low-cost ad-building tools such as Canva or Visme to customize your ads.) Be sure to use similar language in the ad and on the landing page. Also, be sure not to take visitors to a crowded home page. The less friction between your ad and the landing page in terms of content promised, the greater the likelihood your site visitors will stay.

10. Don't "set it and forget it."

Social media ad campaign management is an active process, where you'll need to be monitoring spend, percentage of audience reached, ad performance by key metrics, and message frequency. It's also important to keep current with platform changes and monitoring performance trends, as

ad types and specs, algorithm serving preferences and audience targeting options frequently change. Tip: If your team doesn't have time to manage social media advertising, PMMI Media Group offers Facebook and LinkedIn options where its expert staff will oversee copy development and ad management. To see this in action, visit PMMI Media Group's Product Hub under the desired brand and search by "Facebook" or "LinkedIn."

Rick Nuñez Embraces All Aspects of the OEM Business

PDC International Corp.'s Rick Nuñez eyes leadership roles and the trends driving the Latin American packaging market.

By Natalie Craig

Rick Nuñez started his journey in the packaging field right out of college as a junior design engineer at PDC International Corp., a manufacturer of shrink sleeve labeling and tamper-evident machinery. After 13 years of holding various roles at the company, Nuñez is now the sales engineer for North and South America. When he entered into the packaging space, it was all new territory to him as a college graduate, but Nuñez finds himself intrigued and inspired by the ability to create and innovate. As he keeps rising through the ranks, Nuñez is setting his sights on holding more of a leadership role in the future.

OEM Magazine: What has your time at PDC been like?

Rick Nuñez: I started as a junior design engineer right out of college. And then, I worked in engineering for multiple years until I was promoted as a sales application engineer, which was focused on supporting the sales team. In

that position, I worked for a few years and learned about the sales side of the business. From there, I was also promoted to sales engineer, which is my current role now. I handle multiple accounts, specifically, in the Latin American market. Because of my engineering background, I can effectively explain our system to customers as a salesperson.

Rick Nuñez

OEM Magazine: What is the most fascinating part of your job?

Rick Nuñez: I love traveling and meeting with people. With this new role, I get to visit different places and customers. It's always fascinating to learn about other processes. The packaging industry is huge, and I find that there are new technologies and processes at every company. With COVID-19, the traveling got scaled down, and while I wasn't able to travel, I was able to still keep in touch and work with my customers in Latin America through different apps that allowed us to chat, share video, and call each other. In regard to tradeshows, not

being able to engage with people in person has been more challenging. But we are looking forward to attending PACK EXPO Las Vegas in September.

OEM Magazine: What are some industry trends or demands you are coming across?

Rick Nuñez: A lot of customers are looking for a more modern look with their machine. Technology is always advancing and moving forward and there are so many options for PLCs and HMIs. Our customers are really focused on incorporating new PLC and HMI screens because they want to patch them into a network so they can monitor data. These PLCs and HMIs also make it easier to have fewer machine operators on the floor.

OEM Magazine: How are the North American and Latin American markets different from one another?

Rick Nuñez: They are definitely different. The difference in language is important to note. I speak Spanish so I am able to reach these customers as they feel more comfortable with someone who knows their language. The Latin America market is looking more at the cost rather than the benefits or value of the equipment. Cost is one of the biggest issues we come across.

OEM Magazine: Do you enjoy being a part of PMMI's Emerging Leaders Network?

Rick Nuñez: I do. I have been involved in the Emerging Leader's Network for two years now. I love meeting new people and learning about what they do and how they do things on a daily basis. I'm always motivated to learn because we always share new ideas and best practices with each other.

OEM Magazine: As a rising star in your organization, what is next for you?

Rick Nuñez: I want to continue to evolve within the company. We are in the process of bringing up the next generation who will run the company, and hopefully, my name is on the list.

Understanding the Reshoring Effort

Supply chain interruptions related to COVID-19 have prompted manufacturers to consider bringing operations back to the U.S. But success depends on new ideas and new technologies.

By Stephanie Neil

In January, President Joe Biden ordered government agencies to take action and require the wearing of masks in airports, on commercial aircraft, ferries, and all public transportation, while encouraging "masking across America." And, if we are going to be buying more face masks, why not purchase products that are also "made in America?"

When the pandemic reached the U.S. early last year, about half of the world's disposable masks were produced overseas in China. And as COVID-19 became a global healthcare crisis, face masks became essential and countries imposed restrictions on exports, which increased the worldwide shortages of masks and raw materials, according to the U.S. National Institute of Health's National Library of Medicine.

"All it took was stopping the supply of disposable masks produced overseas from coming to the U.S. for us to be critically impacted," says Raphael Kryszek, founder and CEO of Intrepid Protect, a manufacturing start-up

focused on producing face coverings that are made at a new state-of-the-art facility in Los Angeles, Calif. It was the PPE shortage, dependence on foreign sourcing of goods, and a lack of quality-control standards that prompted Kryszek to make manufacturing in the U.S. a viable option. It is also his small way to create jobs and help bolster the U.S. economy.

And Kryszek is not alone when it comes to setting up shop stateside. According to a recent Thomas Industrial Survey assessing the ongoing impacts of COVID-19 on North American manufacturing, there is heightened interest in reshoring and hiring—mainly as a result of rethinking supply chains.

Of the 746 manufacturing companies surveyed in May and June of 2020, 69% are looking into bringing production back to North America, 38% are actively hiring, and 55% of the participants said they are likely to invest in automation, specifically as it pertains to production performance, process control, and product testing and quality. “With the growing appetite of reshoring and onshoring, respondents shared the top products they are looking to source domestically: metals (15%), machining tools and parts (13%), fabricated materials (13%), and PPE (12%),” the Thomas report states.

“Clearly, the pandemic has been an accelerant to reshoring, as well as nearshoring,” notes Paul Wellener, a vice chairman at Deloitte LLP, and the leader of the company’s U.S. industrial products and construction practice. “Nearshoring is getting into your time zone, like utilizing manufacturing in Central or South America if you are in the U.S., and reshoring is bringing production back into your country. But as things come back to the U.S., it is

not coming back in the same way as it's being done in another part of the world. There is technology being added to help continue to drive the cost targets, quality targets, and safety targets that manufacturers have."

According to Wellener, automation and robotics play a significant role as a way to offset labor costs, but machine learning, artificial intelligence (AI), cloud computing, 3D printing, and supply chain management (SCM) are also aiding in the effort to reshore manufacturing.

Intrepid Protect, for example, uses servo motors and absolute and relative encoders on the assembly line and relies heavily on AI and machine learning to ensure quality control and predictive maintenance to optimize operations and accelerate the delivery of mask inventory at the lowest cost. "There are a lot of moving parts on the assembly line, and they fail due to wear and tear. But we've seen huge improvements due to AI and predictive maintenance cycles, which has increased productivity, efficiency, and reduces pricing due to our ability to minimize waste and minimize faulty products," says Kryszek. "We didn't reinvent the production of

Bright Machine's Microfactory at work.

three-ply masks, what we did was streamline and automate it by adding technology to improve different parts of the assembly line."

The high price of production

In recent history, the U.S. has had an $800 billion/year trade deficit. The U.S. has been dependent on imports primarily because the cost to manufacture here is just too high. According to Harry Moser, founder and president of the Reshoring Initiative, his data shows that U.S. manufacturing costs are too often 20% higher than European manufacturing and 40% higher than China and other low labor cost countries, which makes offshore manufacturing more appealing from a cost-competitive standpoint. And the price is too high mainly because the dollar is too high, he said.

In addition, in the U.S. there aren't enough engineers and the country lacks the quantity and quality of skilled manufacturing trades people relative to the opportunities, hindering productivity growth that could overcome the impact of the U.S. dollar, Moser says. Plus, the U.S. has too many regulations, high corporate tax rates—which until 2017 were 35% when most of the world was around 22%—and there's no value-added taxes (VAT) here, whereas other countries apply it. "These are important things that we concentrate on and reversing those over 10-to-20 years would balance the trade deficit and get us out of the problem we're in," Moser says. "We call it leveling the playing field, and if you do that then it is a lot easier to get companies to decide to bring work back."

With that said, Moser agrees that the latest interest in reshoring is driven significantly by COVID-19. “From March 2020 through the end of the year, about 60% of cases of reshoring mentioned COVID-19 as one of the factors causing them to reshore. Some of those cases were COVID-19-related products, like masks, and gowns, and ventilators, and others were related to the company recognizing that whatever it makes, it is too dependent on China or offshore sources, and COVID-19 has educated it to not be so dependent.”

In addition, from a longer term perspective, growth and productivity is the only way to raise the living standards. And the average U.S. manufacturing growth rate for the last ten years is 0.4%, Moser says. So, the lack of applying automation due to concerns that robots will take jobs, for example, has not helped U.S. productivity. In contrast, China’s productivity is growing at 6% per year.

“If we don’t invest in automation, we don’t increase our competitiveness,” Moser says. “Some people are afraid of automation because they’ll lose their jobs. But throw away that statement, because the U.S. will lose more jobs to Chinese automation if we don’t automate than we will to U.S. automation if we do. Since we are competing, you have to automate the best you can just to stay even.”

But automation, too, must change to help manufacturers to compete. Moser points to Bright Machines, a San Francisco-based manufacturing technology startup that is transforming this space with its modular system for electromechanical product assembly.

The future is bright

The Bright Machines' Microfactory for assembly, testing, and inspection, is designed to get products to market faster by leveraging intelligent software and adaptive hardware, using computer vision, machine learning, cloud computing, and robotics.

The platform is first focused on hardware standardization and common interfaces that map to a common data model. On top of that, there is a set of algorithms and microservices which are put together via an API gateway for a common set of apps that take the manufacturer through all of the stages of automation, line planning, configuration of robotic cells, deployment, and service and support. Key to this is an AI-powered software layer that configures, monitors, and manages machines and operations.

"We are automating automation," says Bright Machines' chief product officer Abhishek Pani. To that end, Bright Machines will work across a variety of controllers and different components through an abstraction layer that makes it PLC agnostic. "There are a bunch of things happening through different vendors, but it is how we bring it together in one common interface and one common workflow and a common software tool."

To understand how the Bright Machine Microfactory works, and the speed at which this all comes together, one can just take a look at Argonaut Manufacturing Services, a U.S.-based contract manufacturer for the biopharmaceutical, diagnostics, and life sciences industries. With a focus on molecular diagnostics and parenteral drug products, the company

currently has many active programs in the COVID-19 area, partnering with companies on the manufacturing and supply chain side.

For example, the company produces the kits for COVID-19 testing and collecting of the swabs and the liquid that preserves the sample to be tested to tell if someone has the virus. The company does both filling and packaging of materials, which could be different chemicals in different tubes that make up a kit. “We work with Bright Machines as an enabler to significantly automate the process to increase our scalability in the areas of filling and finalizing these kits,” says Eric Blair, chief commercial officer at Argonaut. The benefit is the modularization that fits well into the operational budget. “It enables us to take what tends to be a capital-intensive process and turns it into taking the key parts and building it out for specific needs in shorter periods of time.”

This is important for reshoring because there’s a need for innovative diagnostic testing and drug discovery here in the U.S., and to do it quickly and at scale while mitigating supply chain risk. To do that, many

companies will look to contract manufacturers, like Argonaut.

Read about the rise in demand for sustainable and flexible packaging in the contract packaging industry in the PMMI report “Contract Packaging and Manufacturing Packaging Operations, Trends and Challenges” by visiting: oemgo.to/contractpackagingtrends

Inventory made easy

Another technology that can speed up things in the supply chain and on the assembly line is additive manufacturing, otherwise known as 3D printing, which is a way to fabricate an object by sequentially layering material, such as plastics or metals, in successive cross-sections. It has been used by manufacturers to make parts while eliminating tooling costs and shortening lead times.

Part of the evolution of additive manufacturing is introducing new materials, like carbon composites, a strong lightweight material. Arris Composites, founded in 2017, is a pioneer of next-gen composites for mass market applications, including aerospace, automotive, and consumer products. The company developed continuous carbon fiber composites that can be combined with other materials in a high-speed process that brings 3D printing together with the traditional high-volume manufacturing method of injection molding.

The Arris Additive Molding technology is capable of manufacturing complex geometries using continuous fiber and it can integrate hardware with

advanced electronics. So, for example, a smartphone enclosure could have the electronics embedded within the structure. In addition, combining additive manufacturing and injection molding creates repeatability for production volume at lower production costs—producing parts that are stronger than titanium at about 1/3 of the weight.

Skydio, a U.S. drone manufacturer, worked with Arris to redefined airframe designs leveraging the Arris Additive Molding carbon fiber manufacturing technology. It resulted in taking 17 parts in an assembly and consolidating it into one single, multifunctional structure that performed better, as there was a 25% weight reduction to increase range and speed of the drone, had better strength and durability, and, frankly, the part just looked nicer.

"Industrial design teams at consumer products companies are excited about the cosmetic latitudes we give them to make beautiful products," says Ethan Escowitz, CEO and founder of Arris. But the beauty of it all goes beyond aesthetics. "The ability to collaborate with customers and take the functional requirements for a single part or an assembly of parts and design something better is the key."

Skydio is a success story in that the drone company figured out how to innovate from the ground up and manufacture on U.S. soil. A lesson other companies looking to reshore can learn from. "One of the most important things about reshoring is that it requires rethinking how something is made," Escowitz says. Sometimes companies just look at a bill of materials to figure out what is made overseas that could be made here. "I think there are more

disruptive reshoring opportunities that are more interesting...like taking advantage of new manufacturing technology...looking at the architecture to make a more desirable product, and picking the right location based on the customer supply chain."

Making it in America

Deloitte's Wellener notes that what is coming back to the U.S. shores is high-value products—not the nuts and bolts—but, like the Skydio drone, the highly engineered items, as well as even components that go into larger subsystems. So, there is a balancing act for companies considering what to reshore and how to make investments at the right time.

To that end, the Reshoring Initiative offers a free online tool, the TCO Estimator, that helps companies quantify all offshoring costs and risks. The tool helps account for all relevant factors—overhead, balance sheet, risks, corporate strategy, and other external and internal business considerations—to determine the true total cost of ownership. Using this information, companies can better evaluate sourcing, identify alternatives, and even make a case when selling against offshore competitors. In addition, Reshoring Initiative created the Import Substitution Program (ISP) to convince and facilitate importing companies to produce or source more domestically. Customized versions of ISP are available for U.S. manufacturing companies, technology suppliers, trade associations, economic development organizations, and manufacturing extension partnerships. Moser estimates

that consistent use of the program would increase domestic manufacturing by about 10%.

For companies like mask-making Intrepid Protect, the labor costs, capital equipment costs, material costs, and technology costs, all factored into the equation when deciding where to build a facility. “It was a challenge,” Kryszek says. But making masks in America was always the goal. “The founding principle of the project was to help the American supply chain and the American labor force.”

Equipment is key to U.S. contract manufacturing

Contract packagers and manufacturers in North America will benefit from reshoring efforts, among other trends that are growing this industry segment, including mergers and acquisitions, e-commerce, customer demands for innovation, and the COVID-19 aftereffects. And that will impact OEMs, as well, as they will be buying more equipment, according to Carl Melville, founder and chief marketing officer at Melville Group during a webinar hosted by The Association for Contract Packagers & Manufacturers (CPA).

Automation, he says, will be the key to success for a few reasons. First, the pre-COVID-19 labor shortage and the current issues related to social distancing on the factory floor. Second, customer pressures for new things that require equipment adaptability. “If you look around at the machines getting attention at PACK EXPO, it is the ones with high-speed changeovers, flexibility, and easy washdowns, which work well in contract packaging and

contract manufacturing environments, and they are investing in this."

Melville notes that customers are looking into contract packagers supply chain as well and asking questions around ethical sourcing, how they are handling waste, energy usage, etc. And when it comes to sustainability, contract packagers won't make decisions on materials. "But they need to adapt to equipment and format changes."

Brands are demanding renewed innovation from contract packagers and it is a great opportunity for them—and for OEMs—to rise to the occasion and create new value, Melville says.

Manufacturing Skills Gap Widens in the Wake of COVID-19

A new study by Deloitte and the Manufacturing Institute says the pandemic erased 1.4 million U.S. manufacturing jobs. And, even as the industry rebounds, the remaining unfilled jobs could cost the U.S. economy $1 trillion.

By Stephanie Neil

Over the past six years, the manufacturing industry successfully added about 600,000 jobs, making some headway toward solving its biggest challenge of attracting and retaining a quality workforce.

But it's one step forward and two steps back for the industry. That's because it lost its momentum last year when the pandemic wiped away 1.4 million U.S. manufacturing jobs. While we recouped the majority of those jobs by the end of 2020, about 570,000 jobs remain unfilled according to information released in the 2021 Manufacturing Talent study from Deloitte and the Manufacturing Institute (MI). This is the duo's fifth manufacturing talent study which was fielded between December 2020 and February 2021 and surveyed more than 800 U.S. manufacturing executives across all sectors.

And, despite the fact that the unemployment rate remains high, the majority of survey respondents said that finding the right talent is now 36% harder than it was

in 2018, with 77% of surveyed manufacturers saying they will have ongoing difficulties in attracting and retaining workers in 2021 and beyond.

And, while there's always need for engineers, really, these companies are just trying to fill entry-level positions. All it requires is a good work ethic and the ability to follow directions. There's also a need for mid-level skilled jobs, such as welders or CNC machinists, which may require a certification, but not a college education. So, with so many people displaced from other industries like the hospitality and restaurant businesses, the question is: "Where are the people?"

If we stay on this track, the U.S. manufacturing skills gap could leave as many as 2.1 million jobs unfilled by 2030, according to the study, which is concerning because manufacturing has the highest multiplier effect of any economic sector: "For every $1.00 spent in manufacturing, another $2.74 is added to the economy. Using this multiplier, leaving the open jobs unfilled in manufacturing could bring a potential negative impact to the U.S. economy of more than $1 trillion by 2030 alone."

They are a few reasons why we are not seeing people lining up to work on the factory floor. First, there's the old stigma that it's a dark, dirty, and dangerous place. The study found that the ongoing challenges in attracting entry-level and skilled workers in the right geographic markets are often the result of misconceptions about manufacturing work, especially amongst the younger generations who wonder if it can deliver rewarding career experiences with work-life balance.

"The biggest challenge is perception," said Carolyn Lee, executive director of the Manufacturing Institute in an interview. "People don't know these are jobs that they want to look for...It has to be a different narrative today for parents, students, and dislocated workers who say there's nothing for me there. It's not true, there's a lot."

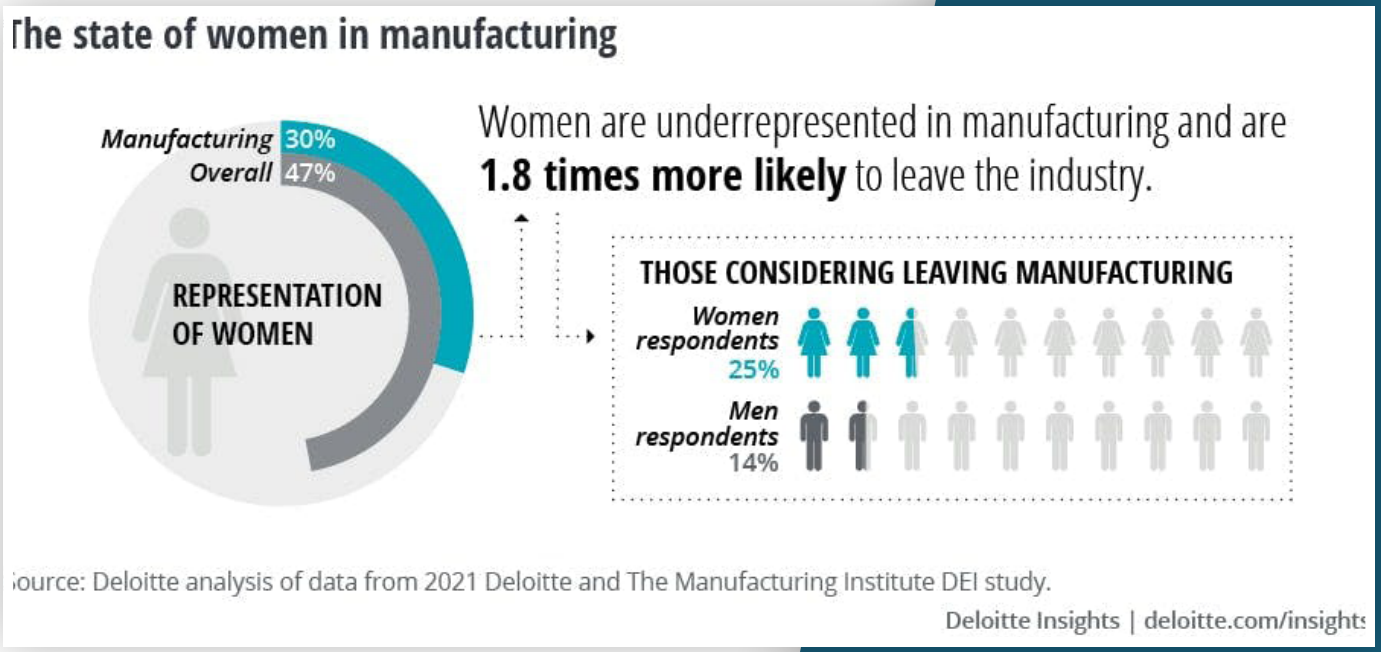
Creators Wanted Campaign

In an effort to change the perception, the National Association of Manufacturers (NAM) and MI are taking its message on tour, kicking off the Creators Wanted mobile experience which features a 53-foot tractor trailer that will be traveling throughout the country starting in Washington D.C. this fall. The truck has five rooms set up in a gamified escape room experience where teams of four are provided information on modern manufacturing and have to solve challenges to get to the next room, which ends with a picture of the future of manufacturing based on an individual's interests, showing educational paths or perhaps even local apprenticeship programs.

"Creators Wanted is perfectly timed to meet the needs of today and talk about what the future of work looks like to eliminate the perceived barriers of entry," Lee said.

In addition, the Manufacturing Talent study underlines the importance of thinking differently about the kinds of skills required because the other challenge relates to the ongoing digital transformation, which means the skills needed to run a smart factory in the future will be very different than the jobs of today.

Deloitte developed a series of personas to describe the new kinds of roles that will be required in the future. Titles include: digital twin engineer, predictive supply network analyst, robot teaming coordinator, drone data coordinator, smart safety supervisor, etc. The good news is, the roles are not mundane. A robot teaming coordinator, for example, will be responsible for training



humans and robots to work together collaboratively for optimal human-machine interactions. An interesting job! However, to be successful, the manufacturing community will need to change its approach to recruiting—highlighting the new career opportunities and expanding its recruiting efforts.

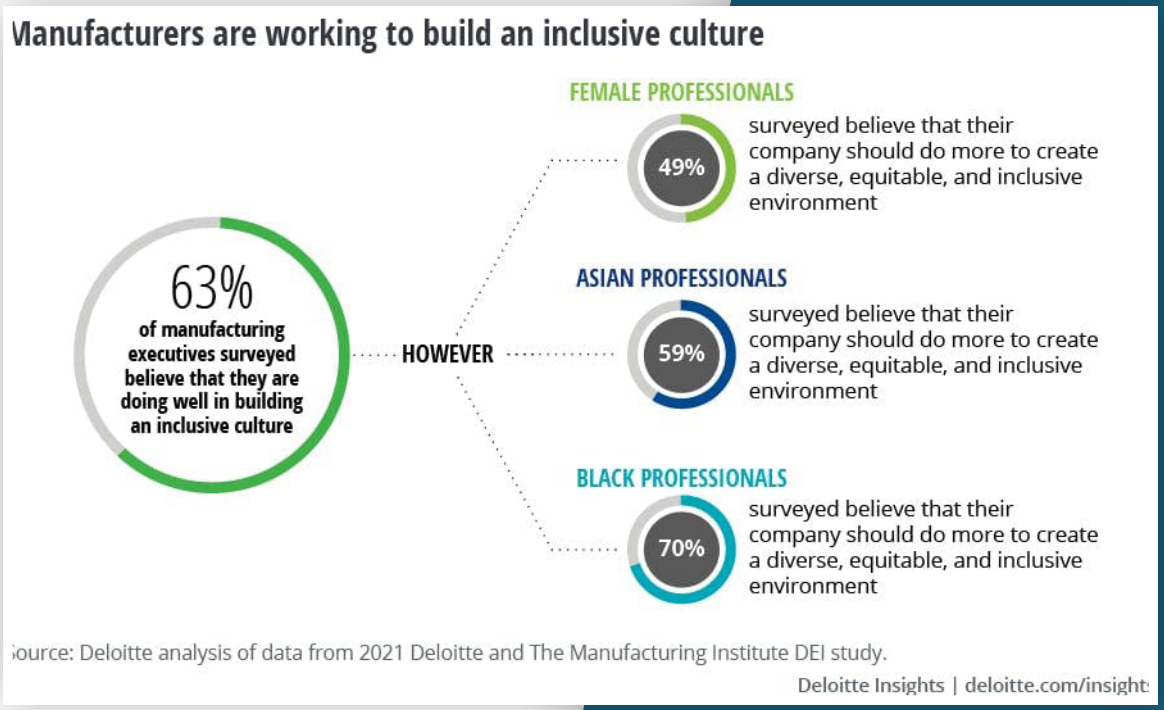
Diversity, Equity, and Inclusion

Specifically, the report notes the growing need for diversity, equity, and inclusion (DEI). "In manufacturing, DEI is often focused on women because the industry has historically been male-dominated. Fewer than one in three manufacturing professionals are women today, despite representing nearly half of the overall workforce in the United States," the report said. In addition, a separate DEI study by Deloitte and the Manufacturing Institute notes that women are more likely to leave the industry than men, in part due to the circumstances of the pandemic, but it could also be about the way work is organized in manufacturing—noting that the lack of work-life balance and flexible work arrangements have been a top reason that many women give for leaving the industry.

It's important to have a diverse workforce for a number of reasons. Of course, offering an environment of equity where all people have fair access, opportunity, resources, and power to thrive is the right thing to do. But having DEI in a company has been proven to drive business performance and innovation. According to the study, "An analysis of Fortune 500 manufacturing companies reveals that companies fostering diversity and building inclusive

environments are more likely to have stronger financial performance." In addition, 63% of manufacturers surveyed link the business benefits of DEI to the ability to attract, retain, and develop talent.

That means manufacturers need to put more role models out there that people will identify with, and write different job descriptions that expand beyond one skillset. "Instead focus on a person's capabilities," Lee said. "Diversity and inclusion is not only the right thing to do, but an essential thing to do because we can't mathematically get there to close the skills gap if [the industry] only attracts white males. The labor force is evolving and we need to make sure all potential workers see the opportunity in manufacturing."



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.

By Stephanie Neil

This year marks the centennial anniversary of banding equipment and automated packaging manufacturer 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.

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

the total equation. And that means the Felins sales team spends a lot of time educating its customers.

"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."

Second, its appreciation for partners and people

Internally, Felins has a great team of salespeople, but the company also has a network of dealers and distributors across the country.

Interestingly, Felins will forecast demand and build standard machines without orders pending, but the company can also build custom machines. Felins can do machining, wiring, control programming and design inhouse. But there are some areas that may be outsourced. "We'll do an automated system, and it all depends on where a customer wants us to start and stop," Barrieau says, explaining that they can handle conveyance right out of the line and then into the Felins system which then goes into the next thing

downstream. “If we’re good at it, we’ll take it on. But if we’re not good at it, we’ll refer it to other suppliers. We clearly are a manufacturer that leverages supplier partners in a unique way.”

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

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.

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 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.”

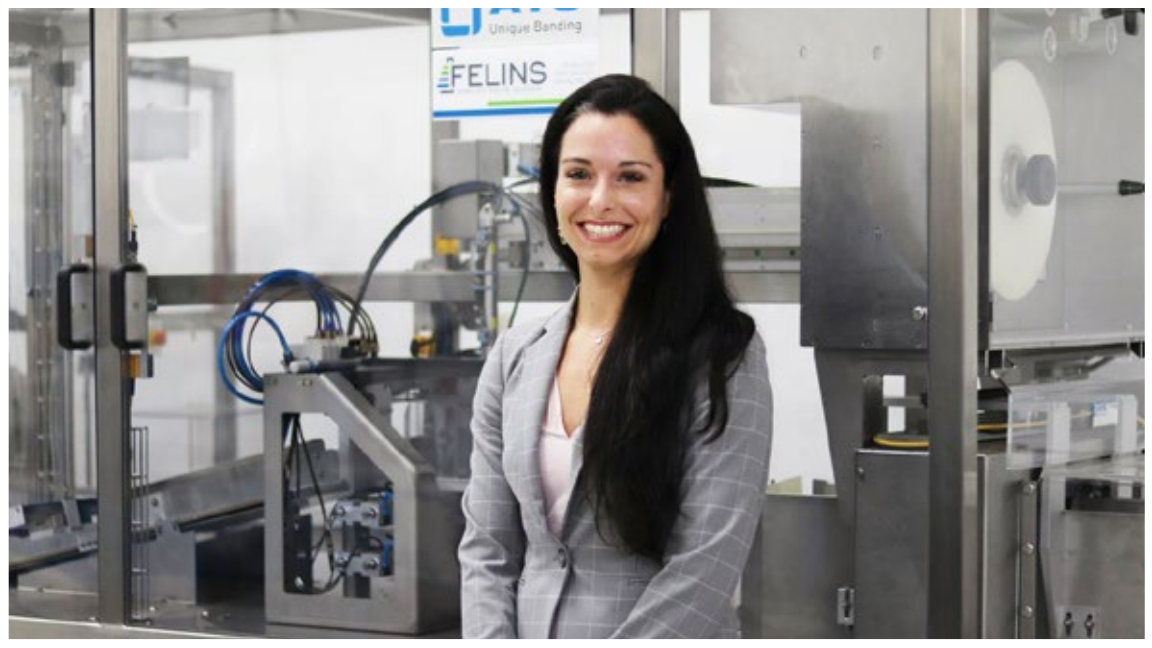
"No matter what kind of day you are having, he makes it better," echoes Holly Stendler, Felins' customer service manager. "He makes time for every single person in the company. Prior to COVID, he'd come in and shake everyone's hand and say good morning. He's just a phenomenal person to work for and he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

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.



system eliminates any bottled water onsite. And energy-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.

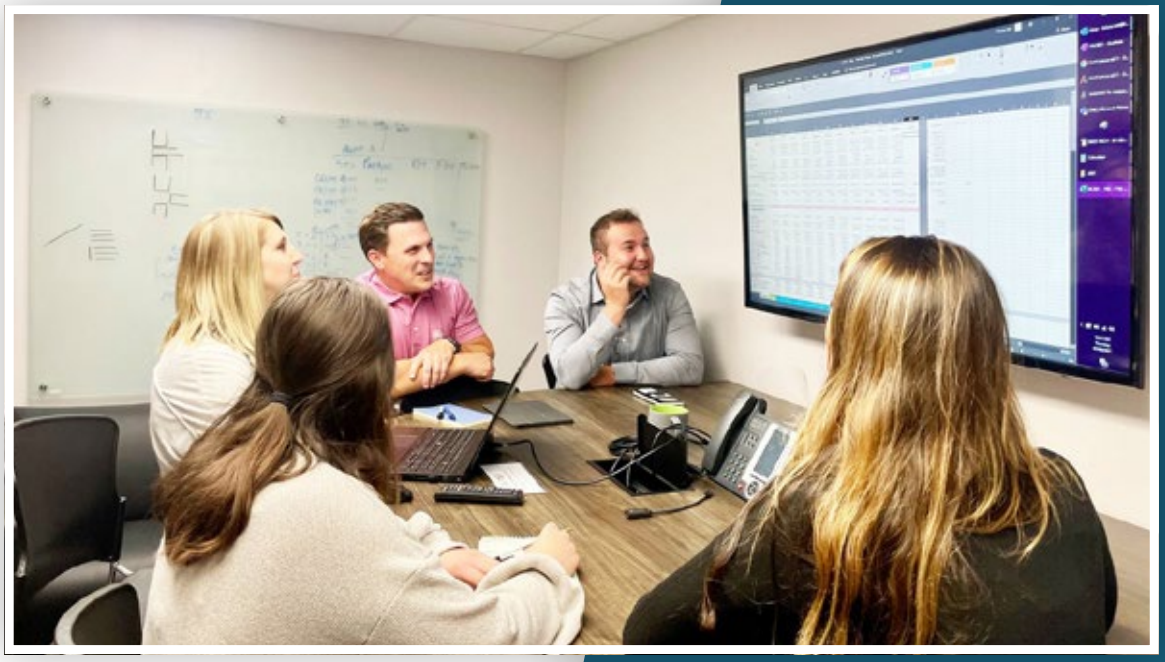
“It’s a new area for us, but in e-commerce, when it comes to reducing the amount of inner pack in a box, we specialize in that,” Andrew Barrieau says. “It is us helping the people who are fulfilling orders to do it with less packaging

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 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



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

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 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

Cong Nghiem, Warehouse Specialist, unboxing an incoming package.

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 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."

Shiseido Moves to Forefront of Cosmetics Packaging with XTS

Machine builder Unista uses linear transport system to provide the basis for compact and flexible packaging system with minimized changeover times

By Frank Würthner

End customers in the cosmetics industry require their suppliers to provide them with packaging systems that feature maximum adaptability and flexibility. After all, the market demands ever-evolving changes in product presentation and packaging. To meet the needs of cosmetics company Shiseido, equipment manufacturer Unista developed a solution based on the eXtended Transport System (XTS) from Beckhoff Automation as well as other automation components and software from the technology supplier.

Shiseido is a Japanese maker of high-end cosmetics with an international presence. Its European headquarters and two manufacturing plants have been based in France for 30 years. Machine builder Unista, located in the Nantes region near the western coast of France, was selected by Shiseido to develop and build two packaging machines. Since Shiseido uses containers

in many sizes and shapes for its diverse portfolio of products in the luxury segment, the equipment had to deliver a maximum of flexibility.

Unista has produced packaging lines for 10 years and specializes in robot-supported equipment. The machine model developed for Shiseido supports many different container types and lot sizes while keeping changeover times to a minimum.

Keyword: Flexibility

Unista's goal was to meet the demand for flexibility without compromising the engineering, motion controls, and production process, according to Anthony Forget, managing director of Unista France. "To accommodate the broad product portfolio of Shiseido, we needed an extremely flexible machine."

Unista employed an XTS with a track length of 4 meters, which enabled them to maintain a compact machine footprint and put the available floor space to its best use.

"Unista's needs were very much in line with the properties of our XTS

transport system," says David Ranchy, sales engineer at the Beckhoff office in Nantes. "XTS now functions as the machine's central component and makes the production much more flexible."

The mechatronic linear transport solution is supplemented by two 6-axis robots for product handling. The first robot takes care of the loading and unloading. It places the filled cosmetics jars on the XTS, which uses 11 movers to transport them to the respective processing stations.

The second robot places lids on the containers and lightly screws them in before they are fully closed with a specific torque and rotation angle at the following handling station.

At the final quality control station, the containers are sorted into good and reject units. One of the key requirements involved was protecting the high-value cosmetics containers against any kind of damage to ensure that the packaged products are in line with the high-quality standards of the Shiseido brand.

Benefit: Operational agility

One advantage of the XTS in that context is the individual product transport, which is not subject to rigid synchronization between the processing stations. As a result of the individual and highly precise positioning with the movers, the machine delivers maximum throughput paired with gentle product handling.

In addition, the software-based control functions make it easy to adapt the system to changing formats, such as container diameters, on the fly. All it takes is a change in the software parameters instead of a complex and expensive machine reconfiguration.

A universal hardware and software platform

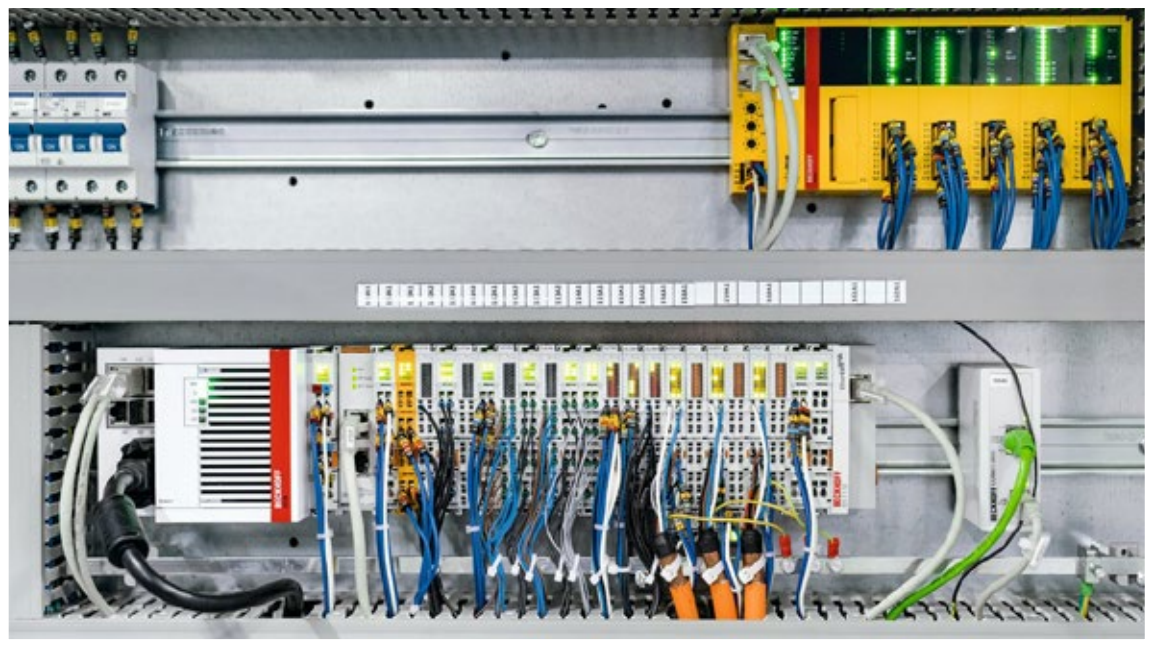
Besides the XTS, Unista also employs servomotor terminals and servomotors from Beckhoff for the handling unit that screws on the lids. Other components from the Beckhoff portfolio include EtherCat Terminals for the communication between the control components as well as TwinSafe products for machine safety. Sourcing all components from a universal hardware and software platform means a single point of contact and fast and easy integration.

The entire machine is controlled by a space-saving, cabinet-mounted CX5140 Embedded PC that runs TwinCat 3 automation software. The drive technology of the handling unit features an especially compact design. EL7211 servomotor terminals

control the dynamic AM8100 servomotors, which are connected via One Cable Technology (OCT). This reduces the cabling costs by 50% and gives the machine a very tidy appearance. A CP3918 Control Panel displays Unista's own user interface.

Simplified engineering and reduced time to market

The simple engineering and straightforward commissioning with XTS and PC-based control enabled the experts from Unista to complete a ready-to-operate machine in less than 10 weeks. With its short time to market and high degree of operational flexibility, the XTS application for Shiseido represents a prime example of mechanical engineering in the age of Industry 4.0 that is at the forefront of cosmetics packaging.



Report: Innovative New Robotics at PACK EXPO Connects

PMMI Media Group editors—covering a virtual event instead of an in-person exposition—divided and conquered to collectively take in as much of PACK EXPO Connects as possible. Here's what they saw in the robotics category.

By PMG Staff

E-commerce has reached unprecedented levels, much like the unprecedented pandemic that prompted the rise. According to Robert McElmurry, Executive Director—Global Accounts at Fanuc America Corp., e-commerce spiked Q1-2020 from 11% of retail to 16%—representing a 45% increase in just one quarter.

McElmurry, who led Fanuc's demo at PACK EXPO Connects, shared other statistics on e-commerce as he set the stage for a discussion on "Leading-Edge Order Fulfillment Systems." Among them, he noted that there were 103 billion packages shipped worldwide in 2019, 20 billion of which were in the U.S. "Globally that comes down to 3,200 packages per second that are being handled by parcel companies," he said. "The great news is that this industry is expected to double in size by 2026. So, if you're a technology provider or you're an end user, it means there's going to be 103 billion new

handling opportunities in the next five years"—handling opportunities that can be addressed by robotics (1).

According to McElmurry, robots can assist in both upstream and downstream processes—"not only getting the product from a manufacturer to a consumer, but also from a manufacturer to a DC or FC, or an omnichannel fulfillment center, and then moving from there to either a retail location or a cross dock, or moving out to a business or consumer," he explained. "There are all these upstream opportunities where robots are being successfully deployed today, and we really do see it as the sky is the limit in terms of the number of opportunities likely to be out there over the next two short years."

The most common applications for robots in the warehouse and distribution center today are each picking (also known as piece picking or split-case picking), depalletizing, sortation, and order fulfillment, McElmurry shared. What they all have in common, he added, is that they identify where an item is, grab that item, and move it somewhere else.

- Each picking: Robots can be used to pick an item from a bin or tote and place it somewhere else—potentially in a package or a bag for a grocery order.
- Depalletizing: Here, robots can be used at a cross-dock facility, for example, to induct items into a small sortable center where small products are handled.
- Sortation: Depending on where an item sits in the supply chain, the robot can singulate and induct the item into more traditional automated command systems.
- Order fulfillment: Robots can be used to pick items necessary to fill an order that will then be routed to an end user.

Said McElmurry, “We’re seeing literally hundreds of robots deployed into these areas, and a lot of companies are having a lot of success.”

What followed next were several examples of Fanuc robots being used on the outbound side, either out of an FC or out of a parcel facility. The first was the bulk flats induct system, which comprised a robot inducting bulk items into a sortation system through the use of a vision system and a vacuum gripper. Scanners and sensors on the line read the shipping case barcode from multiple sides to orient the package correctly. The solution uses an AI vision system. Said McElmurry, “Where we are really seeing success with these [AI] systems are in applications that have a significant amount of variability in the types of products being handled,” for example, traditional letter envelopes mixed with a variety of box sizes. He added that these types of AI robotic systems can operate at speeds from 1,000 to 1,500 pieces/hr, depending on the number of robot arms used.

The next example was a parcel sorting application, using Fanuc’s integrated 3DV/1600 vision sensor, part of its iRVision® suite of fully integrated machine vision products for robot guidance and inspection, to pick objects presented in a random assortment from a bin in a fixed position. Developed specifically for this type of application or for line tracking large parts, the 3DV/1600 can quickly snap 3D images over a Z range of 2 m, with a maximum field of view of 2,700 mm square. “So, you’re getting the field of view that you need, as well as the resolution you need in order to correctly identify pick points for these packages,” McElmurry explained.

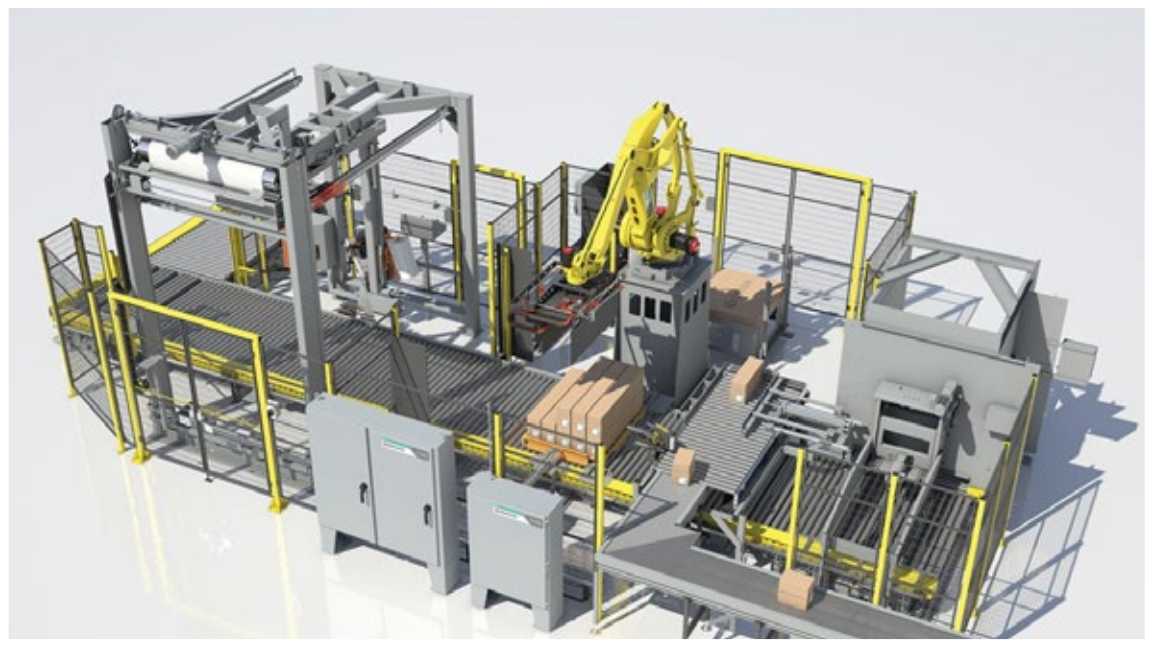
Fanuc offers its own integrated suite of vision products and can help end users work with a third-party vision company for AI. McElmurry said Fanuc also has the most diverse range of robot products in the industry on a standardized platform.

End-of-line applications

Robotics is making its way increasingly into end-of-line packaging—from more established palletizing applications to up-and-coming medical device packaging—and Brenton Engineering, a ProMach brand, had a lot to show of this technology and its capabilities at PACK EXPO Connects. With 12 different virtual demonstrations, Brenton detailed a variety of ways to integrate robotics into end-of-line packaging, showing integration methods as well as new technologies in case packing and linear servo motor tracks (2).

In Brenton's video demonstration of a very high-speed, continuous-motion robotic top-load case packer, it was easy to see how the incorporated linear servo motor tracks would

Image #2 in the article text.



benefit the packaging operation. The Intelligent Track System (iTrak) from Rockwell Automation replaces chains and belt drives to replace fixed pitches with a more flexible system, automating changeovers easily. “With the push of a button, you can change from a 20-in. to a 25-in. pitch with no changes,” explained Ryan Glenn, Vice President of Sales at Brenton.

This type of technology has been around for a few years—demand driven by SKU proliferation and the move toward mass customization—but it’s newer in case packing, according to Glenn. “It’s becoming more cost-effective. It hasn’t been mainstream on fixed-asset machines; we’ve seen it more on larger-scale processing machines,” he said, adding that Brenton is one of the first case packing companies using the technology. “We’ve already sold a prototype machine, and customers are excited about it.” Interest is coming primarily from retail food customers.

Demonstrating how modules can be integrated into a full end-of-line packaging system, Brenton showed why robotic pick-and-place has been gaining acceptance in pharmaceutical and medical device packaging. Robots enable a more compact, efficient line design; a higher level of cleanliness; and high reliability, durability, and accuracy.

Operation Warp Speed and other government programs built around speeding COVID-19 test kits and ultimately vaccines to the public are adding to the need for life sciences manufacturers to improve efficiencies and speed production, Glenn noted. “We’re kind of on the tail end of gearing up to be prepared for that,” he noted. “We’ll have a big focus around delivery of

vaccines by the middle to end of next year."

Complete lines show a range of packaging capabilities, including solid dose end-of-line, robotic sterilization tray handling, thermoformed (blister pack) packaging, and vial packaging.

Robotic palletizers

In its PACK EXPO Connects demo, "miniPAL® A Collaborative Palletizing Solution," Columbia/Okura showcased the new safety and mobility features of its miniPAL® collaborative palletizing robot (3), which features the UR10e robot. To ensure operator safety, the miniPAL now has two area scanners and two safety mats that actively monitor the miniPAL cell. When the scanners are triggered, the robot slows down to collaborative speeds. During collaborative mode, the horn will beep. To resume speed, the area must be cleared, and the yellow button labeled "reset" must be pressed.

For mobility, all of the miniPAL's connections now have quick disconnects at the back of the robotic enclosure. To move the miniPAL, users just disconnect all cables and unlatch the robot frame.

The miniPAL has a compact design that includes a lifting column for tall loads, dual stacking locations for continuous load building, built-in fork pockets for easy mobility, and intuitive pattern building software. Sheet placement and product double-picking options are available. The cobot has a load capacity of 18 lb, including the end effector.

According to Columbia/Okura, the cobots are easy to program, using Pally software by Rocketfarm. “The software is designed to be smooth, flexible, and quick to install, with three easy steps,” Columbia/Okura said. “It also handles changes in production with ease and requires no downtime.”

Noted Columbia/Okura, the miniPAL offers five significant benefits:

- Efficient Set-Up: Takes less than a full day; plugs into 110V AC wall power
- Easy Operation: No previous programming experience required
- Quick Payback: Average payback is between eight to 10 months, depending on application and industry
- Flexible Deployment: The mobile solution is easily moved and redeployed to new processes
- No guarding required: Vast majority of cobot applications work next to humans without perimeter guarding requirements

Elsewhere on the cobot scene, Yaskawa Motoman’s HC20XP collaborative robot (4) with a 1.7-m reach is IP67-rated, easy to program, and safe and flexible enough to work side-by-side with people or move

Image #3 in the article text.

between conveyors. It made its debut at PACK EXPO Connects.

The HC20XP cobot is designed with an extended reach that makes it perfect for end-of-line palletizing applications while working in close proximity to humans, the company said. To that end, the new cobot features a 1.7-m maximum reach. Its extensive range enables the cobot to reach full 80-in. pallets without requiring an elevator or lift mechanism, while its 20-kg payload allows it to lift larger cases and parts.

"End-of-line palletizing is one of the best places to implement robotic automation," said Michael Castor, material handling product manager at Yaskawa Motoman, noting that instead of having multiple people taking boxes off of a conveyor, "you can put in one robot that will take all of the boxes from the conveyor and stack them on the pallet for you."

Castor noted, too, that the HC20XP is easy to implement—featuring precise hand-guided teaching—and, while there still may be a robot risk assessment required, cobots typically don't require safety fences. This means it uses less space and is flexible. "Because there is no big cell, you can move it to different conveyors, so you don't have to deploy multiple robots as there is the potential to use one robot to handle many different conveyors just by moving it around."

According to Yaskawa, this is the industry's first IP67-rated collaborative robot, equipped for continuous use in damp or splash-prone environments. Made of cast aluminum for durability, this model features an easy-to-clean surface, allowing utilization in sanitary environments where wipe or wash is required. NSF H1 food-grade grease is included as standard, enabling use in

settings where there is a possibility of incidental food contact.

In addition, the HC20XP meets established safety standards (ISO 13849-1 and ISO 10218-1) and complies to ISO TS 15066. It offers four modes of collaborative operation, including Power and Force Limiting (PFL), where dual channel torque sensors in all joints constantly monitor force to quickly and safely react to contact. Designed for the utmost safety, the HC20XP features a pinch-less design, while through-arm utilities hide cabling, reducing risks of snagging or interference with other equipment.

The HC20XP can easily shift between collaborative speed in PFL mode or full speed in industrial mode to optimize cycle times based on risk assessment and process requirements. It can operate without additional protective measurement (risk assessment dependent) resulting in reduced cost and space requirements. Function-specific tooling and accessories are available from various Yaskawa partners. A through-arm Category 6 cable enables a wide variety of communication options for tooling.

The HC20XP robot is controlled by Yaskawa's ultra-compact YRC1000micro controller which can be installed vertically, horizontally, or mounted in a standard 19-in. equipment rack. Its small footprint and lightweight cabinet are ideal for factories with high-density layouts, where seamless integration and stacking of controllers may be required.

Introduced not long ago by Apex Motion Control, the Baker-Bot (5) relies on a collaborative robot from Universal Robots that is safe and easy to use and does not require guarding. It can be integrated into most production lines and

ensures consistent product quality.

At PACK EXPO Connects, Apex highlighted a new function for the Baker-Bot: end-of-line palletizing. So in addition to decorating cakes, performing pick-and-place functions, and loading/unloading trays and pans, this cobot can now handle palletizing tasks and be integrated into most production lines without the need for safety guarding. As many as 11 cases/min can be safely placed on a standard North American pallet with a stack height up to 76 in. and with a 10-kg case load including the end effector.

ONExia Inc., a collaborative robot integrator and creator of the PalletizUR™, announced at PACK EXPO Connects the release of PalletizUR 2.0, the latest version of their palletizing robot product line (6). Based around the Universal Robots collaborative robot, PalletizUR 2.0 features a custom software that enables end-users to have this robot palletizing standardized products for final shipment in minutes. Key features:

- Automates an otherwise manual process, eliminating worker ergonomic issues
- Allows reassignment of workers to “higher and better” work contributions
- Durable and portable: move with a pallet jack or forklift
- Minimal integration: PalletizUR 2.0 comes ready to run out of the crate
- Custom end-effectors: designed for each customer’s specific needs
- PalletizUR 2.0 software: drag and drop pallet configuration
- Continuous operation: two-pallet reach for minimal down time
- Auto-height adjustment: seventh axis provides ability to stack pallets up to 70 in.

"Robotic automation has become priority number one for manufacturing in 2020, and the PalletizUR 2.0 gives end-users the ability to successfully automate palletizing without a major redesign of their current packaging lines," said Tim Pelesky, Marketing Manager of ONExia Inc. "With a price point around $100,000 our customers are seeing an ROI in under a year. The system also frees up valued employees to do higher level and ergonomically safer tasks."

Coesia company's FlexLink Systems RI20 palletizer (7) is suitable for palletizing closed boxes within fast-moving consumer goods industries. The unit includes enhanced safety features that allow a safe coexistence between the robot and operators on the production floor. The presence of operators in the safety area dynamically adjusts the speed of the robot instead of stopping it, reducing unnecessary downtime. Two pallet loading docks create a seamless pallet exchange that allows them to be filled in succession and increase capacity by up to 5%.

The compact design of the unit saves up to 40% floor space compared

Image #5 in the article text.

to heavy robot palletizers. The mainframe does not have to be attached to the floor and the RI20 unit can easily be moved using a forklift. The palletizing unit can be relocated in just a few hours, 50% more quickly than alternative solutions the company says, and can be used in multiple lines during the day.

The RI20 has an intuitive, web-based pallet pattern manager and does not require robot programming. It takes less than 10 minutes to set up a new recipe, or a few clicks to load an existing design.

The palletizer is available with several options, including a rigid interlayer module, pallet pattern manager software, a portable tablet, a remote assistance package, preventive information package, and data collection package.

Focus on flexibility

Out of necessity, end-of-line palletizing equipment is becoming increasingly agile and complex. As speeds go up and SKUs multiply, highly flexible equipment—and increasingly, custom equipment—becomes more important. That's why NuSpark used a portion of its demo time at PACK EXPO Connects to show its NRP-10 (NuSpark Robotic Palletizer) robotic palletizing solutions (8).

These systems use Fanuc robots, typically within the range of M710, R1000, or R2000 depending on the application. The NRP-10 can range from more manual versions with manual pallet replacement to systems with automatic pallet transfer. Illustrating at the event the upper echelons of automation available within the NRP-10, the company demonstrated a system with two

pallet magazines, dispensers, and transfer systems. The robotic arm with mechanical gripper, located at the intersection of the two intersecting lines, can simultaneously service both lines with disparate product without any changeover. In the case of the demo, this meant one line of bliss-style open-top trays, and another line of sealed RSC cases, while running slip sheets between each layer.

Continuing on the flexibility theme, but increasingly stressing NuSpark's custom-equipment chops, a second demo showed a custom wraparound sleever for a paint brush equipment. The commercialized application is for Purdy brand Nylox brushes. Brushes from 1- to 3-in., in various bristle orientations from flat to angular, are readily run on this versatile system. At 30 brushes/min, the un-named, custom system horizontally slides each brush into a waiting, formed sleeve and keeper carton. A servo-driven indexing conveyor transfers brushes through the loading operations, as well as the sealing and labeling. Pressure sensitive Velcro button 'labels'—one male, one female—are applied to the body and outer flap of the keeper carton, along with a sensomatic tag. When the carton receives its last fold to enclose the brush, the male and female buttons are joined to create the final seal. All of these applications are integrated into a single sleever frame.

For packaging and processing

At PACK EXPO Connects, Omron Automation highlighted three of its robot products designed to address specific packaging and processing applications.

One of these robots is Omron's new HD-1500—an autonomous, intelligent mobile robot that can handle payloads of up to 1500 kg. Omron's demo showcased the robot's use of lasers to provide 360 deg of safety coverage as well as its sensor, which allows for precise pick-up and drop-off of materials. The HD-1500 uses Omron's Fleet Manager software, which enables the robot to calculate the best route for material transport while navigating safely around people and obstacles without the use of magnetic floor tapes or other guides. Omron's Fleet Manager can control up to 100 mobile robots of different sizes, configurations, and payload capacities, such as Omron's other mobile robots—the LD-60/90 and LD-250.

"The HD-1500 is specifically designed for industrial environments and allows for the movement of large payloads while reducing the need for forklifts," said Kate Cramer, Automation Engineer at Omron Automation. "Typical applications include high-payload transporting of materials or finished products such as wrapped pallets, modular equipment, and subassemblies to and from the warehouse or from one location to the next."

Omron also gave PACK EXPO Connects attendees a preview of its forthcoming FH-3D Vision Sensor (9), which will be available for purchase in April 2021. To demonstrate this new sensor, Omron showed how it works with the company's TM collaborative robot.

Danielle Belskis, Automation Engineer at Omron Automation, said Omron developed the FH Series 3D camera to solve robotic bin picking applications. "Our collaborative robot, when equipped with our new 3D vision camera,

is able to pick up known objects with random overlapping positions out of a bin. Traditionally, this was difficult to automate due to varying weights, shapes, and orientations of objects that require 3D location and different forces during picking. The FH Series 3D camera locates the various objects in the bin and sends their coordinates to the robot, while the cobot's software makes the advanced calculations required for optimized trajectory and force to pick up objects."

In Omron's Traceability 4.0 demo, Brian Jeppesen, Automation Engineering Supervisor at Omron Automation's Technology Center, used an Omron NX102 automation controller, a mechanical stage with a concentric ring, Omron's G5 servo system, and Omron's FH vision system. He explained that, in this setup, the NX102 automation controller sends motion commands to the G5 servo system. The servo system then sends position data back to the automation controller, which then determines the correct time to trigger the camera and send triggers to the FH-5050 vision system.

"The vision system triggers the camera and the strobe light and the camera passes the image back to the vision system," Jeppesen explained. "The FH-5050 processes the image and decodes the 2D code. The code value is sent back to the NX102, which sends the decoded data to the cloud using the MQTT protocol. And all of these processes can be programmed and monitored using the Omron's Sysmac Studio software."

With the controller's ability to send data to the cloud via MQTT, Jeppesen said "one of the major benefits of this Traceability 4.0 solution is having the ability to get information scanned at the point of origin and then become

immediately available for analysis using cloud services."

The ability to quickly access and analyze this kind of granular production data is critical to industries such as the food and beverage packaging industry so that contaminated products can be traced to a specific serial number or a lot number. With this level of detail, it means that "all products with a specific part number need not be discarded, only the products with that specific lot number or serial number range would need to be discarded," Jeppesen said.

More speed, more payload

ABB highlighted its new FlexPacker robot (10) and PickMaster Twin software at PACK EXPO Connects.

The IRB 390 FlexPacker robot, with its 35% faster pick speed and 45% increase in payload of up to 15 kg compared to ABB's TRB 360-8/1130 FlexPicker, is available as a four- and five-axis variant delta robot. Marc Segura, ABB's Managing Director of Consumer Segments and Service Robotics, said ABB developed the IRB 390 FlexPacker with the food and

Image #6 in the article text.

beverage, logistics, pharmaceutical, and consumer packaged goods industries in mind. He added that the IRB 390 is designed for secondary packaging and higher payload applications, with the speed and flexibility to support shelf-ready packaging and retail-ready packaging. It features NSF H1 food grade lubricants and is built using an FDA-compliant material, suitable for use in hygienic environments.

In its exhibit, ABB demonstrated how the PickMaster Twin, ABB's digital twin robotic software for vision-guided random flow picking-and-packing applications, enables the simulation of packing stations to optimize the picking process before the stations are physically constructed. This ability is said to dramatically shorten commissioning times from days to hours and reduce changeover times from hours to minutes, while maximizing overall line efficiency. The software also features a color vision system that can support up to 10 cameras for accurate position guidance and inspection.

Just prior to PACK EXPO Connects, ABB announced its acquisition of Codian Robotics, a well-known supplier of delta robots for high-precision pick-and-place applications. Codian's robots are also recognized for their use in hygiene-sensitive industries, including food and beverage and pharmaceuticals.

Johannes Faden, Strategic Development Manager at ABB for the company's machine and factory automation business unit, explained that Codian's portfolio of robots for hygienic food and beverage processing are built with FDA-approved materials, meet the IP69K water-proof standard, and can be cleaned with high pressure water and detergents.

"There is a strong need for pick-and-place robots that ensure high hygienic standards, which has been accelerated by the COVID-19 pandemic. Our food and beverage, pharmaceutical, and logistics customers are particularly interested in the potential of automation, enabling supply chains to continue to function, while protecting employee welfare," said Sami Atiya, President of ABB Robotics and Discrete Automation.

Faden noted that ABB's interest in acquiring Codian was driven by the growing use of delta robots in pick-and-place applications in the food and beverage, pharmaceutical, and logistics industries. "Codian's robot arms will be integrated into ABB's IRC5/Omnicore control platform, RobotStudio simulation tools, and PickMaster picking software to expand our total solution platform for end-customers and system integrators," he said.

Check out the many packaging and automation technologies featured by ABB at their PACK EXPO Connects Virtual Showroom, found at PE.show/713 and PE.show/618.

IntelliFlex additions

Epson Robots debuted the two newest additions to its IntelliFlex flexible feeder system (11) line-up at PACK EXPO Connects. The new additions are the IntelliFlex 80 for handling small parts (3 mm to 15 mm) and the IntelliFlex 380 for large parts (15 mm to 60 mm). These systems join the IntelliFlex 240 (for part sizes 5 mm to 40 mm) and the IntelliFlex 530 (for part sizes of 30 mm to

150 mm). These flexible feeder systems are used to feed consumer goods for packaging in kits, as well as sorting of electronics and medical device parts for packaging.

A key aspect of Epson Robots' approach to flexible feeding systems is its all-in-one system delivery. Stacey Tieu, Product Manager at Epson Robots, explained that common flexible feeder systems are composed of separate feeder communication protocols; feeder tuning requirements; vision system calibration and programming; and system programming and optimization to coordinate the robot, feeder, and vision system. Epson Robots' approach is to combine all these components into one system that integrates the vision programming, part tuning, and parts control adjustment. This allows for the Epson IntelliFlex system to be set up and running in one day, rather than the weeks it typically takes to set up a flexible feeder system, according to Tieu.

"IntelliFlex is a great alternative to bowl feeders," said Tieu. "With bowl feeders, if you happen to change a part, you have to go out and buy a new bowl feeder or modify your existing one to handle the new part. "With IntelliFlex, you don't have to retool the system, it can accommodate different part sizes as well as different part and material types."

This inherent adaptability of IntelliFlex is made possible by Epson's RC+ integrated software environment, which is used to program and control all aspects of the flexible feeder system. "It's also what enables the IntelliFlex to be set up so quickly," Tieu added. "We have built-in command sets for parts feeding so that engineers don't have to figure this out themselves. The user interface provides a point-and-click way to program the feeder.

The software environment's use of artificial intelligence enables autotuning of the IntelliFlex system. Aaron Donlon, Epson Product Manager, explained that, in the RC+ environment, "if you set up the system for one part and then need to move to the next part for a different product, setting up that new part in the system is very easy with all the built-in wizards. You literally just drop 10 parts on the feeder and it uses the built-in algorithm to determine the right set of vibrations or frequency to spread those parts out for optimized feeding. There's no trial and error with this process, you just let the machine do the automated tuning calibration for you."

Donlon noted that the longest he's seen the system take to self-adjust to new parts is five minutes, but that the process typically only takes about two minutes.

Though Epson Robots is well known for its SCARA robots, the company has been producing 6-axis robots for 25 years. The newest addition to the company's C series of 6-axis robots is the C12XL—Epson Robots' highest payload and highest reach robot released to date. It features a 12kg payload capacity and a reach of 1400 mm.

As with Epson's other 6-axis robots, the C12XL has a slim, lightweight

Image #7 in the article text.

design due to its use of Epson's QMEMS (quartz micro electro-mechanical system) technology in the robot's gyro sensors, which are part of the servo system. This technology dramatically reduces the weight of the robot, allows for low residual vibration, and minimizes overshoot with smooth end-of-arm motion, according to Epson.

"Many robots on the market use a lot of mass to dampen out the vibration," said Donlon. "We use the QMEMS technology to cancel out the vibration and that allows us to have a lighter weight, faster, and higher-performing robot. That's how we get a 65 kg robot and a smaller controller with that level of payload capacity."

According to Epson, the C12XL features high acceleration/deceleration rates and high-speed cycle times to optimize parts throughput. Its compact wrist pitch enables access to hard-to-reach areas. ISO 4 Cleanroom models of the C12XL are also available. In the cleanroom version, protective covers are used to avoid static buildup and a vacuum port in the base pulls particles in.

Usable as a stand-alone robot or as part of a line, Donlon noted the C12XL will excel in end-of-line applications such as packaging, kitting, material handling, or palletizing.

An integrated vision option is also available for the C12XL.

Counterflow principle

Schubert used its PACK EXPO Connects platform to demonstrate its TLM (top-load machine) Flowpacker, an integrated, modular flow wrapper. The system is

U-shaped in product flow, with naked product entering randomly and loosely on a wide pick-and-place infeed belt, and passing left to right in the enclosure until it eventually is picked-and-placed by Schubert-built, gentle-handling delta robots in the third module in the system.

The robots transfer the naked, randomly placed product onto a smaller, faster-moving belt traveling parallel to the pick-and-place infeed belt, but 180 deg in the opposite direction. As the robots make the 180 deg directional transfer from the first belt to its counterpart, it indexes product in precise, back-to-back orientation on the flow-wrapper infeed belt. Naked product is now indexed and traveling from right to left.

This space-saving design carries product in parallel, but in two different directions, like a two-way highway. The company refers to this as the counterflow principle. The best way to think of the product as it travels through the three main modules is to imagine naked product going into the first module, through the second, then to the third. There, it makes an about face thanks to the delta robots, and then travels the opposite direction from the third, to the second, to the first module, from which it exits.

In most flow wrappers, the spools of rollstock film, or the “film device” as described by Johannes Schubert, Global Key Account Manager, would reside in the same module as the flow wrapping function, right above it in fact. But in this system, the film device has been moved out of the first module, where product is flow-packed into film both by an ultrasonic long-sealing and flying cross-sealing unit. Instead, the rollstock and film application equipment has

been moved slightly upstream on the flow-wrapper infeed belt, into the second module between the flow packer in the first module at the front of the machine, and the delta robots in the third module at the back of the machine.

The reason for this design adjustment was to give operators unfettered access to the sealing jaws in the first module and film roll device in the second module for maintenance or cleaning, leaving much more room to work in these spaces. Perhaps even more important, the in-line (instead of stacked) film rolls/device and flow-wrapping units allows for reduced machine height—the two stations are next to one another instead of one on top of the other.

"The low height is very ergonomic for operators," Shubert said in the demonstration. "Operators can easily prepare the automatic splice, or if they need to replace film, the height is easy to reach."

Also of note, the vision system in the third module of the system, where the delta-robots reside, is a Schubert-made 3D vision system. This allows a 3D quality control check to occur directly upstream of the flow-packing operations, looking closely at shape, color, height, and weight.

Image #8 in the article text.

Rejects are ignored by these trained robots and fall harmlessly into a reject bin at the end of the wide pick-and-place infeed belt. Not only does this save QC after flow-wrapping, it also saves the film that would be used to pack out-of-spec or damaged product.

An optional fourth module contains a single pick-and-place robot paired with a denester for any applications where you aren't flow-wrapping naked product, rather product placed in, for example, a 1x4 format thermoformed plastic tray for multi-packed cookies. For applications requiring a tray, the trays are simply placed on the outfeed conveyor just upstream of where the delta robots would place the product. Only, instead of placing product directly on the belt, product would be filled into the denested and robotically placed trays prior to flow wrapping.

A separate Schubert focus, but a quite timely one, was on aftermarket support and service. In the COVID-19 era, with supply chains disrupted and access to service team members compromised, clever service and support programs were quite the topic of interest throughout PACK EXPO Connects. Schubert's slant on this topic was in the form of an exhaustive online parts catalog with full dimensional spec that can be fed into 3D printers. That means many wear or replacement parts that otherwise would have to sit in inventory—or worse yet, wait on shipping—instead can be 3D printed by the end user.

Valve bag placer

A member of the Duravant family of operating companies, Hamer Fischbein launched its new robotic valve bag placer (12) at PACK EXPO Connects. The

placement of valve bags onto valve bag filler spouts is a highly repetitive, labor-intensive task. In many cases, it must be performed in very challenging, dusty environments. The 2400 VBP Robotic Valve Bag Placer automates this placement onto most valve bag filler machines on the market today and can be easily integrated into existing production lines. It utilizes up to two six-axis Yaskawa Motoman robots to place individual bags onto industry-standard filler spouts at speeds to 20 bags/min. A high-capacity, LiveLoad bag carousel capable of storing up to 400 bags virtually eliminates downtime due to bag changeover by allowing the operator to load various bag sizes at once. This unique design features dual magazines that allow bags to be safely loaded from one side of a secure cage while the robot continues to place bags onto filler spouts on the other side.

"We're committed to our customers' success, and to offering innovative packaging solutions to help increase throughput, reduce operating costs, and enable safer work environments," said Ed Pickens, Director of Engineering and Product Development at Hamer-Fischbein.

"One aspect of the 2400 that is truly unique to our design is the LiveLoad bag carousel," added Brian Bunkenburg, Senior Product Manager. "It keeps our customers up and running because they don't have to stop production to load bags or to make mechanical adjustments for bag changes. They simply load the different bag size on the carousel at any point, and it just keeps going."

Integrated Design for Seamless Blister Pack Transfers

ProMach's Serpa and Pharmaworks join forces to flex their packaging expertise in line integration with a new integrated design for seamless blister pack transfers.

By Natalie Craig

Two ProMach brands are integrating their packaging technologies together to create a more seamless transfer of blister packs to a cartoner at PACK EXPO.

The integrated line involves a TF-2 Blister Machine from Pharmaworks and a P100 Horizontal Cartoner from Serpa. The two machines are connected with a Linear Transport System, an exciting new technology that enables a seamless transfer of up to three blister packs to a cartoner.

Blister pack transfers to cartoners have traditionally been a difficult task to accomplish. Most transfer designs are mechanically-based with many moving components, which generally produced inefficiencies between both the thermoformer and cartoner due to challenges in connecting two asynchronous machines together. The result is typically lower output and increased chances of curled blisters.

The Linear Transport System removes the shortcomings found in mechanically-based transfer designs by linking the two machines together using electro-magnetic technology to smoothly transfer and pack up to 330 cartons per minute.

The Linear Transport System is a relatively simple design that uses electro-magnetic technology to loop a series of buckets between the TF-2 Blister Machine and a P100 Horizontal Cartoner. When the TF-2 senses a bucket is present, it drops a blister pack into it. That bucket loops around to place the blister pack onto a track, which moves it to the cartoner for packaging. Since the drive system is magnetically-based, buckets can accelerate or decelerate to meet changing output; no accumulation of blister packs are needed for transfers.

The success of this design is due to the TF-2, Linear Transport System and P100 all connected, communicating with one another to ensure the blister pack is properly oriented for a perfect, efficient transfer. The TF-2 brings added functionality by allowing operators to package up to three blister packs in a carton with a touch of a button; the Linear Transport System can accommodate format changes on the fly.

The P100 Horizontal Cartoner from Serpa features a balcony-design that provides maximum access to all drive components from one side of the machine while maintaining a compact footprint. Locating these features, along with all of the changeover points on the operator side of the machine makes changeover fast, easy and convenient.

This functional integrated packaging line is a great example of ProMach bringing its product brands closer together to better meet the needs of its customers. Projects like this allow customers to have one central point of contact, and that contact really serves as a one-stop, full-service provider by connecting all the ProMach brands together. This level of project management greatly streamlines the planning process, installation, and start-up curve for packaging lines.

Earlier this year, ProMach acquired Serpa, increasing the number to 42 packaging and automation-focused companies comprising the ProMach family of product brands in categories including Systems & Integration, Filling, Bottling & Capping, Decorative Labeling, Flexibles & Trays, Handling & Sterilization, Labeling & Coding, Robotics, End of Line and Pharma.

Serpa is also exhibiting other packaging solutions PACK EXPO 2021 including:

P200 Side Load Case Packer

The P200 Side Load Case Packer can run cases and trays. Sealing both styles (tape for cases and glue

for trays) can easily be switched to the preferred method through a simple changeover of less than five minutes. Its walking beam with dual-sided opposing vacuum ensures square cases all the way through the closing station without the need for flight lugs.

RF450/TL450 High Speed Insert Feeding System

The RF450/TL450 High Speed Insert Feeding System features a patented design that largely eliminates common insert feeding issues. The system does not require vertical troughs that rely on gravity to drop the inserts onto a belt. Rather, inserts are driven through the process and fully contained to the pick point. Capable of reaching speeds of more than 400 pieces per minute with minimal operator intervention, the RF450/TL450 High Speed Insert Feeding System is perfectly suited for applications that require an insert in any industry.

Connected to Serpa's booth is ProMach Pharma Solutions, a space devoted to highlighting ProMach's pharmaceutical and medical packaging solutions.

Collaborative Robots Expand in Scope

As the development of collaborative robotic systems continues, the line between typical industrial robots and those deemed “cobots” continues to blur.

By David Miller

We all want to know what makes our co-workers tick, and perhaps collaborative robots—or cobots—are no different. Yet for all the buzz about their growing prevalence in industry, there’s often a great deal of confusion over precisely how the term “cobot” is defined. Therefore, as companies look to increase productivity, circumvent labor shortages, and reduce human contact in their plants with the help of cobots, it’s time to ask: What does it truly mean for a robot to be collaborative?

It’s important to note that there is no single, formal definition of what a cobot is. Rather, ISO standards 10218-1 and 10218-2 set forth four potential characteristics of collaborative robotic systems. These collaborative capabilities—safety monitored stop, speed-and-separation monitoring, power-and-force limiting, and hand-guiding—can all be achieved through

the use of sensors, control systems, and peripheral devices, some of which may already be integrated within a robot upon purchase and others can be retrofitted to a pre-existing industrial robot.

"There is no hard line between collaborative and non-collaborative robots," says Andie Zhang, global collaborative robots product manager at ABB. "Cobots are basically a subset of industrial robots with different features, and almost all industrial robots we provide have the possibility of becoming more collaborative. From the user's perspective, they should think about what the specific operational problem they want to solve is and what the best way to do so is. Picking an option always depends on your application."

Various approaches

Highlighting the variety of available cobot products, ABB, for example, offers a multitude of different collaborative robot products. While the company's YuMi robot, which is trumpeted as being "inherently safe," may spring to mind first due to its small size and power and force limiting capabilities, ABB also offers SafeMove, a software system that integrates with ABB's IRC5 robot controller family to allow its pre-existing industrial robot lines to engage in both safety monitored stops and speed and separation monitoring. Simply put, by utilizing pressure-sensitive safety mats, light curtains, or laser area scanners as inputs, SafeMove enables industrial robots to either slow down or stop entirely when workers enter their hazard envelope.

The key distinction here is whether or not an application requires a human to work so closely alongside the robot that there is potential for a collision. If so, such as in a situation where task changeover is frequent or workers are required to continue processing parts after a robot has finished handling them, cobots like YuMi (which allow for hand-guiding and power-and-force limiting) may be the best option. However, because the laws of physics require these robots to be smaller and move slower to remain collision-safe at all times, speed and payload capacity may need to be sacrificed, thereby lowering throughput potential.

In contrast, if a robot is capable of working mostly on its own with humans only occasionally entering its workcell, safety monitored stop and speed-and-separation monitoring technologies, which can be externally appended, may be preferable, and come with the added benefit of being compatible with larger, faster industrial robots.

One technology company focused exclusively on transforming industrial collaborative robots into cobots is Veo Robotics. This company's FreeMove

The dual-arm YuMi collaborative robot from ABB is touted as the world's first truly collaborative robot.

system uses multiple camera sensors and an algorithmic computing platform to transform industrial robots into cobots.

Other options and considerations

The term “cobot” is even more loaded than the nuances of ISO standards 10218-1 and 10218-2 would initially seem to suggest. Even beyond the specific technologies that enable robotic systems to become more collaborative, the concept of a cobot brings with it certain end-user perceptions and expectations apart from the product’s electronic and mechanical capabilities.

As senior manager of applications development at Universal Robots, Joe Campbell points out that the cobot designation is as much about stripping away complexity and providing flexibility via easy integration, programming, and operation as it is about safety features. To meet these needs, the Universal Robots business model is oriented toward ease of use. In fact, Universal Robots’ market niche has long been small- and medium-sized companies, contract manufacturers, and any business that due to risk aversion, skills gaps, or lack of capital cannot adopt more fully automated solutions.

“We’re selling double digit numbers of robots into companies that I previously never would have made a sales call on in my entire career because they never would have qualified before,” Campbell says. “For instance, I know a 22-man machine shop that now has ten robots. Before, I wouldn’t have ever marketed to them because they wouldn’t have purchased traditional automation. Now they’re a huge part of this explosion in interest.”

That's why a company like Epson Robotics, which has yet to release its own cobot line, feels that it has learned from trends in the collaborative safety space and has something to offer customers who are eyeing a cobot purchase. According to Scott Marsic, senior product manager at Epson Robotics, when new entrants look to purchase their first robot, it is often their need for an intuitive user experience, scalability, and a low-cost product that incentivizes them to choose a cobot, over and above the need to actually share a workspace with their machine. In response, Epson Robotics has released its all-in-one line of small SCARA and six-axis robots, which Marsic feels can fulfill the same fundamental needs that many cobots do, even without the collaborative safety features.

"The biggest feedback we've seen from people is that they purchase cobots because they see they're easy to use, easy to implement, and easy to place, but what they don't realize until after they've placed the cobot is that their throughput isn't going to be what they expected. They like the simplicity of the programming and the graphical user interface (GUI) that allows them to get up and running quickly, but they're not able to perform at the levels they really want to," Marsic says. "What we've seen from our builders, our customers, and our distributors is that in some cases, cobots are not being used the way they were designed to be used. What people really need is simply ease of use."

The trade-offs Marsic indicates are the result of the need for power-and-force limiting cobots to remain below a certain threshold of size and speed to

ensure they are collision safe at all times. He argues that the reductions in throughput that result from these slower speeds may ultimately hurt one's bottom line, offsetting the initial labor savings the cobot allows for. Still, even though these restraints may affect smaller, power-and-force limiting cobots, advances in speed-and-separation monitoring are helping larger, faster industrial robots circumvent these boundaries.

For example, Fanuc's CR series cobots, which use speed-and-separation monitoring, can reach speeds of up to 1500mm per second and offer payload capacities of up to 35kg, which is the highest on the market, according to Fanuc. Greg Buell, Fanuc senior engineer, anticipates the trend continuing toward cobots with longer reaches, higher speeds, and greater payload capacities as speed-and-separation monitoring technologies continue to improve.

A Fanuc cobot working on an automotive headliner gluing application.

Making a decision

According to Universal Robots' Campbell, while cobots have historically been smaller and more simplistic than general industrial robots, that's largely because the

companies producing them early on were highly specialized and sought to sell them to small- and medium-sized enterprises with a need for highly intuitive features. However, now that their popularity and functionality has expanded and major robotics manufacturers such as ABB and Fanuc have begun trying their hand at designing and selling collaborative robotic systems, end-users can expect larger, faster, and more powerful cobots to continue to proliferate. As a result, potential purchasers should anticipate a more diverse landscape of choices, though this may turn out to be a double-edged sword.

On the one hand, as options multiply, it is likely that products that are more closely tailored to manufacturer's individual needs will become more common. On the other hand, more careful consideration may need to go into parsing the alternatives to select the one that is best suited to a company's particular application. This latter process will require keeping the trade-offs enumerated above firmly in mind.

Beyond that, it's important to note that, even when investing in inherently safe, power-and-force limiting cobots such as ABB's YuMi, some safety qualms may remain. For instance, regardless of how collision safe a cobot itself is, if it's tooling or the objects it is handling possess sharp points or jagged edges, humans working in proximity to it may still be injured. Similarly, while a cobot engaged in a machine tending operation may be able to stop if it collides with a human worker, that does not mean that the door of a CNC or other device could not still slam on an operator's arm. Even in applications where fencing has safely come down, a box or other manipulated item dropped due

to a momentary loss of air pressure to a pneumatically actuated arm could find itself sliding across the floor in a haphazard manner. As such, situational awareness on the part of plant floor workers remains important and performing a risk assessment before deploying any particular type of cobot is absolutely indispensable.

Finally, those interested in cobots should keep a close watch, not just on individual robots, but the various peripheral and add-on technologies being developed and released to supplement pre-existing industrial robotic systems. As in much of industry, software for zoning and safety controls continues to take precedence in areas where physical barriers and other hardware would have once been required. In addition, products such as Touché Solutions' T-Skin, a tactile safety sensor system which can be applied to the surface of industrial robots to allow them to come to a safe stop upon collision with human workers, as well as several increasingly advanced vision systems for speed and separation monitoring continue to be game-changers in the collaborative space, making faster, higher payload collaborative robotic systems evermore feasible.

And for those who feel overwhelmed by the rapidly expanding suite of options presented by this seeming robotic takeover, it's important to remember that whatever Hollywood films may have taught us, these cobots come in peace.

Picking, Packing, Fulfillment, and Palletizing Robots

FANUC to feature robot and cobot solutions for picking, packing, fulfillment, and palletizing at PACK EXPO Las Vegas.

By Natalie Craig

FANUC America, a supplier of CNCs, robotics, and ROBOMACHINEs demonstrated a wide range of automation solutions for picking, packing, fulfillment, and palletizing during PACK EXPO Las Vegas in booth #1441.

CRX collaborative robot

FANUC's CRX cobot is an easy-to-use and flexible solution for a variety of applications, including palletizing, packing, inspection, and more. Built-in sensors on each axis can allow the CRX cobot to work safely alongside people without the need for expensive guarding. In addition, the CRX can operate for eight years maintenance-free.

At the show, a FANUC CRX-10iA/L equipped with an iRVision 3DV/200 vision sensor demonstrated case palletizing. The CRX used the 3DV sensor to find a

box, pick it up from one pallet and place it on another pallet.

The CRX collaborative robot offers the same level of performance. It supports several of FANUC's features including iRVision and is a perfect fit for any application where collaborative robots can help customers achieve higher efficiencies. Also, interactive programming enables users to teach points using hand guidance or a new tablet interface with drag and drop icons.

FANUC also showcased two SCARA demos. The new FANUC SR-20iA picks and transfers milk crates between two trays, which shows the SR-20iA's ability to handle heavy parts in a wide operating area at high speeds.

The second SCARA demonstration featured the FANUC SR-12iA robot with the Environmental Option packing and unpacking bottles of mouthwash. This option includes white epoxy coating, bellow covers, anti-rust bolts and seals, and an IP65 rating to withstand dust and liquids.

FANUC's family of 4-axis SCARA robots has grown to include the SR-3iA, SR-6iA, SR-12iA, and new SR-20iA models with 3kg, 6kg, 12kg and 20kg payload capacities, and a 400mm to 1100mm reach, respectively.

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 robots provide flexibility with a large vertical stroke, and an Environmental Option for harsh conditions. All of FANUC's SCARA robots include exceptional robot motion, speed, and 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).

DR-3iB/8L food grade delta robot

FANUC's DR-3iB/8L food-grade delta robot uses 3DV iRVision and iRPickTool line tracking software to pick randomly oriented pieces of chicken from a continuous infeed conveyor. Equipped with a Soft Robotics gripper, the robot picks chicken breasts and reorients them onto an outfeed conveyor. The cell features high-speed picking with product re-orientation. The DR-3iB sets a new standard for robotic food handling in terms of payload, speed, reach, and sanitation.

The DR-3iB delta robot is FANUC's latest solution for picking and packing primary and secondary food products. Rated IP69K, the robot meets the strictest

food handling regulations. Its design features corrosion-resistant materials, an unpainted finish, and a fully enclosed body allowing it to tolerate high pressure/temperature and sanitizer wash down environments.

A powerful four-axis design and higher wrist inertia allows the DR-3iB/8L to handle 8kg payloads at very high speeds. Improved repeatability maximizes accuracy, and a hollow wrist design keeps all gripper wires and piping tucked inside. In addition, a large work envelope featuring a 1600mm reach (500mm height) is ideal for applications that require more range such as reaching into tall boxes or handling product on wide conveyors.

The DR-3iB operates with FANUC's latest R-30iB Plus controller with integrated intelligent functions such as iRVision, Force Sensing, Robot Link, Collision Guard, and Zero Down Time (ZDT).

High-speed tote picking with iRVision 3DV/400

At the show, an M-10iD/12 robot creates random orders by picking from four homogenous totes, each with a 3DV/400 vision sensor mounted overhead. Each of the four sensors provide "best pick" locations from the homogenous totes, and then the robot picks parts to fill a customer order. Once the order is complete, the order tote will move to an LR Mate 200iD robot station also equipped with a fixed 3DV/400 to remove the parts from the bin for further order processing. The demonstration highlighted how the use of fully integrated robotic 3D Vision is an ideal solution for applications in the warehousing, logistics and e-commerce markets.

The 3DV/400 Vision Sensor is lightweight and can be used as a fixed or robot mounted 3D Vision camera. The 3DV/400 offers single snap 3D image acquisition enabling faster bin picking and the ability to perform applications such as line tracking. Compared to conventional 3D vision sensors it provides better acquisition of shiny parts and offers a solution for glare caused by reflective parts. The 3DV/400 is part of FANUC's iRVision suite of fully integrated and complete machine vision products for robot guidance and inspection. FANUC designs all of the hardware and software specifically for FANUC robots, providing our customers with solutions that meet their production needs.

The M-10iD robot series includes four compact material handling robots—the M-10iD/12, M-10iD/10L, M-10iD/8L and M-10iD/16S. Rated best-in-class for speed and repeatability, the M-10iD robots offer a sleek and lightweight design and feature internal cable routing and a curved J2 robot arm, minimizing interference with work pieces and fixtures. The robots' payload capabilities range from 8-16kg, allowing them to handle a variety of products. In addition, a long reach (1103mm to 2032mm) and stroke—even in the backflip region—makes it easier for customers to apply the robots while maximizing their available workspace—including larger parts or tooling.

The LR Mate 200iD series of tabletop industrial robots offer a "best in class" work envelope for both upright and invert mount installations. Ten models include clean room and wash proof versions, each with various wrist speeds and reaches to accommodate even the most limited workspace.

FANUC M-410iC/110 Palletizing/Depalletizing with HMI

At the show, the M-410iC/110 robot picks cases from two conveyors and palletizes mixed layer unit loads. Attendees can select from a preset number of unit loads using an Allen-Bradley HMI screen. Once selected, the HMI displays the unit load and the robot palletizes up to three layers. The demonstration shows how easy it is to change layers on the fly. Finally, the robot depalletizes the cases, and the cycle repeats.

The system highlights FANUC's latest PLC Motion Interface option designed to enable palletizing operators to program homogeneous or mixed unit loads using FANUC Add-On Instructions (AOIs). This helps simplify the deployment of FANUC robots into facilities with operators that have no robot programming experience but are familiar with Rockwell PLCs.

The M-410iC/110 robot is designed for high-volume case, bag, and bottle palletizing operations. It features a 110 kg payload, four-axis articulation, a compact footprint, and a slim arm with through-arm cable routing to simplify dress-out and minimize interference with tooling and other peripheral devices. The ability to perform 2200 standard palletizing cycles an hour with a 60 kg payload makes the M-410iC/110 the fastest palletizing robot in its class. It also features a compact footprint and a 646 mm interference radius, ideal for tight workspaces.

It's Time to Step-Up Machine Safety

OEMs understand the need to comply with machine safety standards, but new requirements may necessitate bringing in a third party to help mitigate risk.

By Stephanie Neil

Polytron is a systems integrator (SI) specializing in automation and controls, industrial networks, simulation, smart manufacturing, and cybersecurity. But another area of expertise the company offers as a service that is very valuable, and sometimes overlooked, is machine safety assessments and verification/validations.

Polytron's Safety Practice helps companies—mostly large food and beverage and CPG manufacturers—to protect packaging and processing equipment, and, of course, people. The safety team hold certifications in global safety competency, with Functional Safety Engineer (FSE) certified by TÜV Rheinland and Certified Machine Safety Experts – CMSE – TÜV NORD. These certifications held by the Polytron team validate that a manufacturer's safety projects will be delivered with proven competency and expertise in best-in-class machine safety practices and thorough understanding of safety standards.

"In the safety business, we have a safety lifecycle from risk assessment, safety definitions, designing, implementation, validation, and help with overall standards—either compliance or helping to write standards for the end users," says Sean Daswani, project manager and safety business leader at Polytron. And while the safety lifecycle is focused on the end user, "pieces of that lifecycle go directly to help facilitate the OEM that is selling equipment to the manufacturer."

The need for machine builders to be part of the process is the reason that Polytron is extending its service to work directly with them. And they are finding that a lot of the OEMs they work with have a few different issues.

"One is, the OEMs in the U.S. that are trying to sell machines over in Europe have an issue with certain requirements of the machinery directive that has to be met to get machines to the EU," Daswani says. Here in the U.S., the standards are not as strict, but there are still standard enforcements, like the new ANSI B11.0 (2020), which outlines the responsibilities of the machine builder. "We've helped manufacturers with standards, but they require risk assessments at the OEM facility to identify hazards and they want to know what [the OEM] has done to mitigate those."

Part of that mitigation may be to bring Polytron in during the factory acceptance test (FAT) to offer an equipment assessment as a third party. In that scenario, it would likely be the manufacturer that would bring in Polytron. But there is value-add for the OEM as well. "Once we do the safety risk assessment, identify hazards and safeguards, and get everything to

acceptable levels, we hand over that documentation with all of the standards that meet the specifications," Daswani says, noting that this helps bridge the disconnect that often occurs between the end user and the machine builder when it comes to conforming to equipment standards.

The documentation, comprised of the industry standards for risk assessment, can be used later during validation to ensure all scenarios—from devices to wiring—have passed and the equipment is safe for operators.

New safety concerns

Since the pandemic, there's another reason to conduct a safety analysis, and that has to do with workforce safety programs put into place and manufacturers having to decide what level of risk to take in the production environment. With minimum operators on the plant floor due to social distancing guidelines, or the need to shift operators around, it could mean putting someone in charge of a machine that they are not familiar with, which could lead to unexpected downtime.

"We see manufacturers moving toward standardized machine safety programs across the organization for greater plant floor efficiency in maintenance, workforce training, and documentation for equipment safety standards. This approach allows the manufacturer to maintain insurance standardization and stockholder confidence in a safe work environment," Daswani says.

These industry drivers are requiring changes related to a comprehensive safety design on new and existing equipment, including detailed documentation to meet ISO and ANSI standards following the life cycle of the equipment, equipment risk assessments for hazard standardization, an analysis of the performance level achieved by each safety function using an industry-accepted tool such as the Safety Integrity Software Tool for the Evaluation of Machine Applications (SISTEMA), as well as the need for third party verification and validation.

"In the U.S., the owner of the equipment, typically our customer [the manufacturer], is responsible for the safe functioning of their equipment and are legally liable for ensuring that," Daswani says.