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# Packaging

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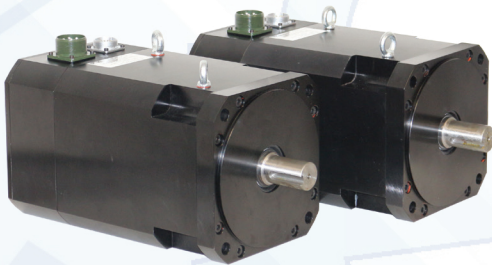
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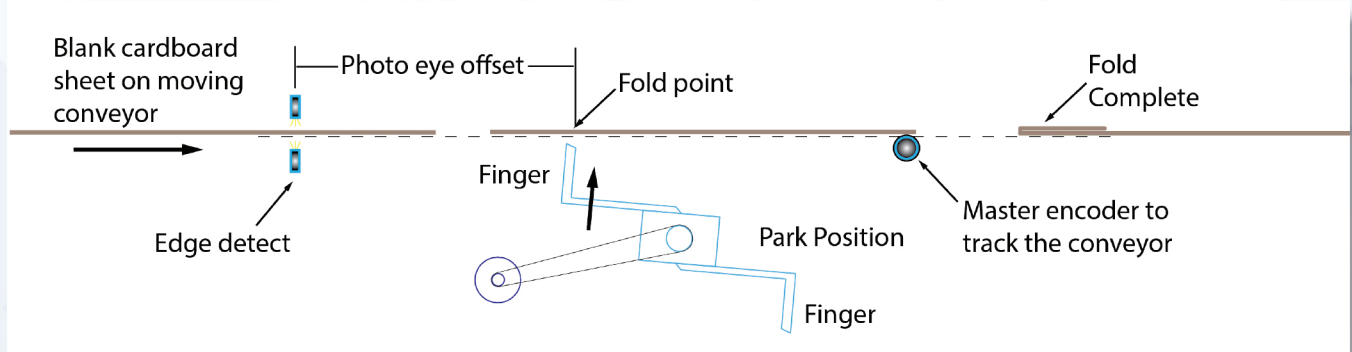


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## EDITOR'S NOTE

### The Future of Packaging

I'd like to thank our contributing writers for sharing their expertise and thought leadership. Look inside the February issue to gain industry insights about:

**End-of-line packaging systems** for medical devices must meet the stringent standards of the healthcare and bio-processing industries, comply with FDA packaging guidelines and conform to rigorous FDA labeling requirements that enable products to be traced. Robotics and turnkey integration by an original equipment manufacturer (OEM) can optimize product safety and regulatory compliance.

**E-commerce** continues to grow, and nearly half of all on-line purchases are made through Amazon. Discover how they partner with packaging suppliers to set standards for green manufacturing, sustainability and eco-friendly materials.

**Customized packaging** differentiates businesses and brands throughout the product lifecycle, and influences product discovery and purchasing decisions through visual appeal, tactile experiences, convenience and functionality. According to a recent report by Smithers, demand for packaging will reach \$1.05 trillion by 2024, and is growing 2.8% per year.

**Demand for premium packaging** is booming for pet care and pet supply products — which are among the top three growth categories for e-commerce and in-store sales according

to Statista. The category is diversifying, and demand is growing for sustainable and flexible packaging for vitamins, organic snacks, fur wipes and dog shampoo.

**Finding the right machinery for vertical form fill and seal** applications begins with effective communication. Learn the best questions to ask suppliers, and tips to identify the most intuitive human-machine interface for operators.

**Integrated conveyor systems** can optimize the entire production process. Discover how technology is transforming the way products are produced and packaged, and how automation is redefining the design of manufacturing facilities.

Send me a note if you have a topic you would like us to consider for an upcoming issue. See our 2022 editorial calendar at: [www.packagingtechtoday.com/packaging-media-kit/](http://www.packagingtechtoday.com/packaging-media-kit/).

Thanks for reading!

**Vicki McDonald-Kastory**  
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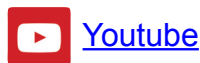
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**Packaging Automation Center - Employing Cobots for Picking, Packing & Palletizing:** <https://www.packagingtechtoday.com/infocenter/packaging-automation-center-employing-cobots-for-picking-packing-and-palletizing/>





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*Inside the EBS-6600 Series*



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*Splash-proof cabinet*



*Touch-screen control*



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## COVER STORY

### 8 Optimizing Integration of End-of-Line Packaging Systems for Medical Devices

Integrated systems enhance product integrity and improve product safety and regulatory compliance.

## FEATURES

### 12 Spotlight | e-Commerce How Packaging has Changed in the Amazon Age

Amazon suppliers are shaping industry standards for sustainable manufacturing and materials.

### 14 A Packaging Perspective Five Reasons to Use Custom Packaging

Custom color, design, shape, size and materials can provide a competitive edge.

### 16 Market Topic | Pet Sector Perfect Packaging for Pet Products

The pet sector is growing at an astonishing rate, boosting demand for premium packaging.

### 20 Innovation | Vertical Form Fill Seal Machines How to Impact Human-Machine Interface

Communication and an intuitive experience ensure VFFS machines are simple, by design.

### 24 Automation | Conveyor Systems A Holistic Approach to Automation

Integrated conveyor systems can optimize the entire production process from start to finish.

## DEPARTMENTS

- |                 |                      |
|-----------------|----------------------|
| 4 Editor's Note | 26 Supplier Products |
| 4 Online TOC    | 31 Ad Index          |





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# OPTIMIZING INTEGRATION OF END-OF-LINE PACKAGING SYSTEMS FOR MEDICAL DEVICES

## INTEGRATED SYSTEMS ENHANCE PRODUCT INTEGRITY TO IMPROVE PRODUCT SAFETY AND REGULATORY COMPLIANCE

By Jason Enninga, Vice President for the Robotics and End-of-Line group at Brenton

**T**he primary purpose of secondary packaging is to ensure the safety of a product during storage and transportation. The integrity of secondary packaging is particularly important with medical devices, such as tongue depressors, syringes, blood glucose meters, programmable pacemakers and others, where product safety is by far the most prevalent consideration for these mission-critical items.

The FDA does not just monitor and control the manufacture of medical devices, it also ensures the packaging used is safe and effective at keeping the contents clean and germ-free. The FDA expects manufacturers to

provide packaging that protects against environmental conditions, such as the transport and aging of the packaging material itself, which could weaken over time and expose the contents to pathogens.

Because of the critical nature of medical devices, these requirements demand a higher expectation of performance from end-of-line secondary packaging systems like case erectors, case packers, case sealers, labelers, palletizers and stretch wrappers, as well as the material handling systems that connect them.

For medical device manufacturing, end-of-line secondary-packaging systems must produce reliable and cost-effective results, while comply-





**RC1000 robotic case packing system.** Image courtesy Brenton Engineering

ing with FDA guidelines. This includes high-volume throughput, packaging flexibility, handling of delicate medical devices without damage, and maintaining industry standards for cleanliness and sterility.

### **Turnkey integration of end-of-line packaging systems**

Maximizing the capabilities of these individual packaging systems depends upon how smoothly they are integrated into a singular, optimized packaging line.

End-of-line solutions for medical device manufacturing – particularly when robotics is employed for pick-and-place case packing or palletizing – may appear as straightforward as acquiring and programming the machinery and robots. But in reality, this is just the beginning. Programming is the easy part. Making the ancillary systems work together, and presenting the products to the individual systems and robots so they are not doing more work than is necessary can be challenging, requiring considerable expertise.

This expertise can be found exclusively with the end-of-line original equipment manufacturers (OEMs), in terms of understanding the upstream and downstream inputs and outputs to the machines that will serve to optimize the entire system. End-of-line machinery today has the latest in servo-motion control technology for fast and reliable changeovers, superior diagnostics for quick identification of root-cause issues, and first-rate technical support, all of which contribute to high-end overall equipment effectiveness (OEE) metrics.

An OEM's turnkey integration typically includes evaluation of all the machines on the line for safe operation as defined by current industry standards, and taking steps to bring these systems up to those standards by adding guards, emergency shut offs, hold-in-place actuators, etc. Simply bolting on conveyors between machines and writing control code to ensure proper handshakes between programmable logic controllers (PLCs) is not enough.

Some packaging machinery OEM's are uniquely positioned to de-

liver a pre-tested, fully-functioning end-of-line system assembled in one location at the OEM's plant, rather than assembling the line and testing it at the medical device manufacturer's facility. This gives medical device manufacturers the opportunity to evaluate the performance of the entire line before installation, which is considerably more time-efficient and less costly than machine-by-machine demonstrations in isolation.

### **Hard automation versus robotic end-of-line systems**

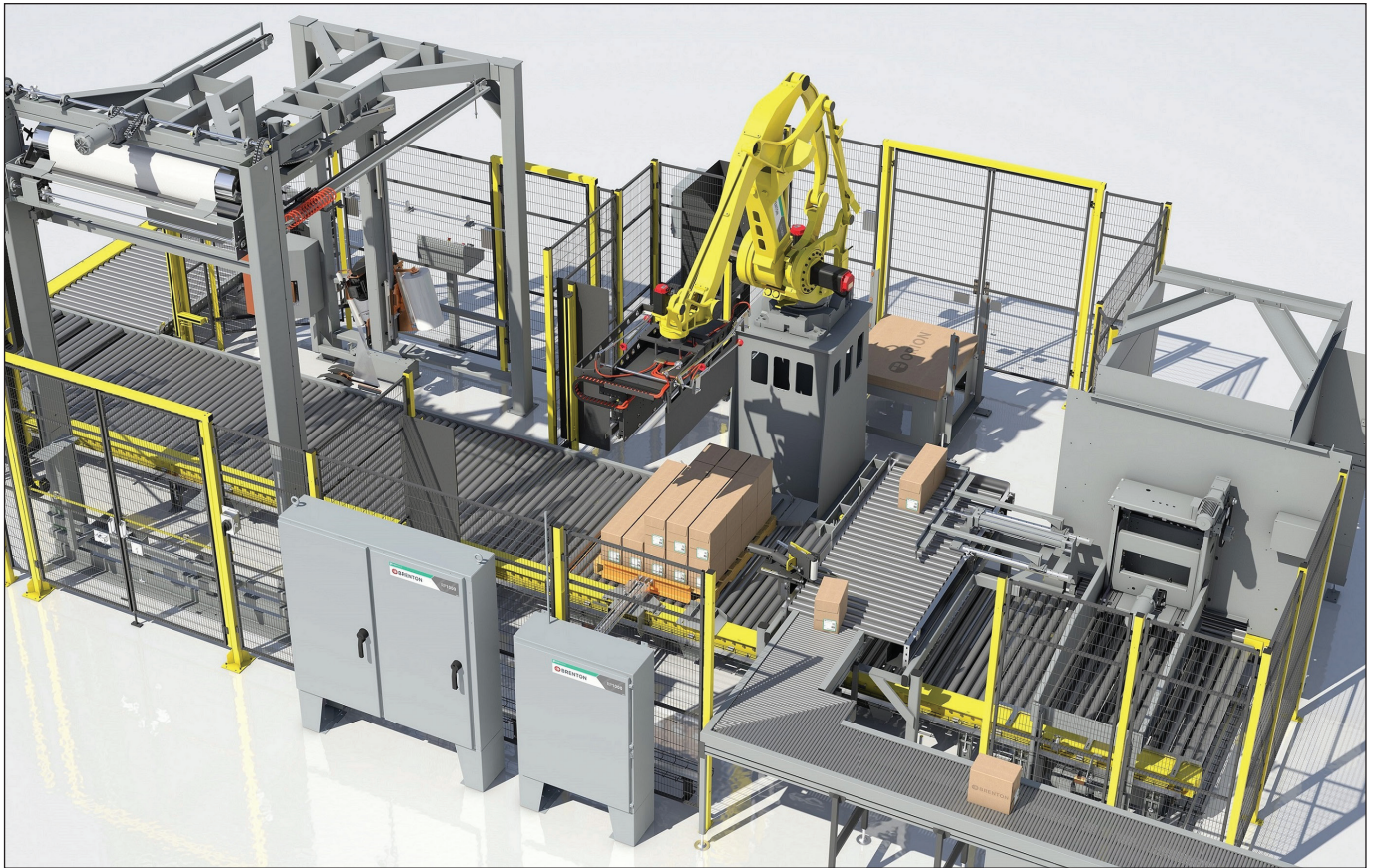
Installing either hard automation or robotic systems into an end-of-line packaging operation for medical devices are an application-by-application decision based on the items to be packed, the pack configuration, desired speeds, the space available at the facility, and a company's general equipment philosophy. Finding the best solution requires an analysis of the product, the package, a company's current needs and its potential plan for future growth.

Typically, if robotics is incorporated into an end-of line solution, the ability to more efficiently process multiple SKUs, manage varying product sizes and create many pack configurations results in more streamlined throughput with reduced labor costs. Whether robotic or hard automation, these systems can be seamlessly integrated with preferred or existing equipment, case erectors, case sealers, palletizers, stretch wrappers and labelers to provide a turnkey integration.

### **Material handling with pick and place robotic systems**

Utilizing 5- and 6-axis articulating-arm robots, delta-style high-speed robots, and 4-axis SCARA (Selective Compliance Articulated Robot Arm) robots, a wide range of applications are possible for pick-and-place, sorting and inter-plant routing for end-of-line material handling. These robots are well suited for picking products and placing them into secondary packaging with excellent repeatability performance and high-level accuracy which supports handling sensi-





**RP 1000 robotic palletizer.** Image courtesy Brenton Engineering

tive and fragile medical devices.

Robotic material handling systems are low maintenance, flexible and reconfigurable, and especially beneficial in end-of-line packaging when dealing with hazardous and potentially injury-causing materials.

Much of the technology of pick-and-place with robots is involved in engineering end of arm tooling (EOAT), used to pick up the items. The design of clamping and vacuum-based arm tool picking solutions contributes to establishing precision product placement and handling, and successful pick rates without product damage.

For example, with flow-wrapped products, too much vacuum on the EOAT will pull air through the plastic or cause the plastic to get puckered or deformed, but the vacuum has to be adequate to move the product successfully. Clamp-style tools need to be robust enough to survive a crash, but not too heavy that they require a larger robot to handle payloads and the inertia at play.

There is also the metering and presentation of the products into queue to be picked by the robot. Aside from PLC functionality, also at play is a system of sensors and signals that tell the robot when and where a product is in position to be picked, and if a product has been missed and left behind. Vision systems permit random picking and arrangement of products as desired. Factually, this is where the real skill in robotics pick-and-place automation comes into play to effectively manipulate on small scales, with odd product sizes, and randomly oriented pieces.

### **Palletizing reduces product damage and shipping costs**

Robotic palletizers provide considerable improvements, including

more options for customized pallet configurations, faster change-overs for different packaging runs, tighter and more cubically-optimized pallet loads for reduced shipping costs and less possibility for product damage.

Automated infeed palletizers are ideal for packaging operations ranging from 30 to over 100 cases per minute, and can serve single- or multiple-packaging lines. Robotic palletization, however, provides significant advantages. Today's robotic palletizers are capable of building a higher, more dense and more stable pallet than prior systems, with improvements in speed, order accuracy and flexibility.

The execution of pallet-building functions calculates the case and packaging contact surfaces, and determines the layering of the individual packages, which is critical to producing a stable palletizing pattern. Stacking criteria is modified by a number of factors including size and shape of the case or package, crushability, stability factors, volume of cases per layer, number of layers and the layer patterns.

The latest robotic palletizers can handle speeds of 20 cycles per minute, while handling cases, bundles, bags or large objects with complex pack patterns. The entire cycle from in-routing of cases into the palletizing station, case identification and labeling, palletizing, stretch wrapping and pallet license plating is accomplished within the palletizing station.

Robotic palletizers, as well as conventional automated infeed palletizers, when smoothly integrated with upstream end-of-line systems, deliver reduced labor hours and reduced downtime, with more consistent end-of-line throughput.



## Enhanced product integrity improves patient safety

Medical device manufacturers are continually focused on enhancing product integrity to improve patient safety. Optimizing the integration of end-of-line packaging systems facilitates streamlined throughput for the handling of these life-critical medical device products.

Those healthcare industry manufacturers that endeavor to make the upgrade to these systems will not only experience reduced product defects and a higher level of product quality, but also a more efficiently run and profitable plant. ■

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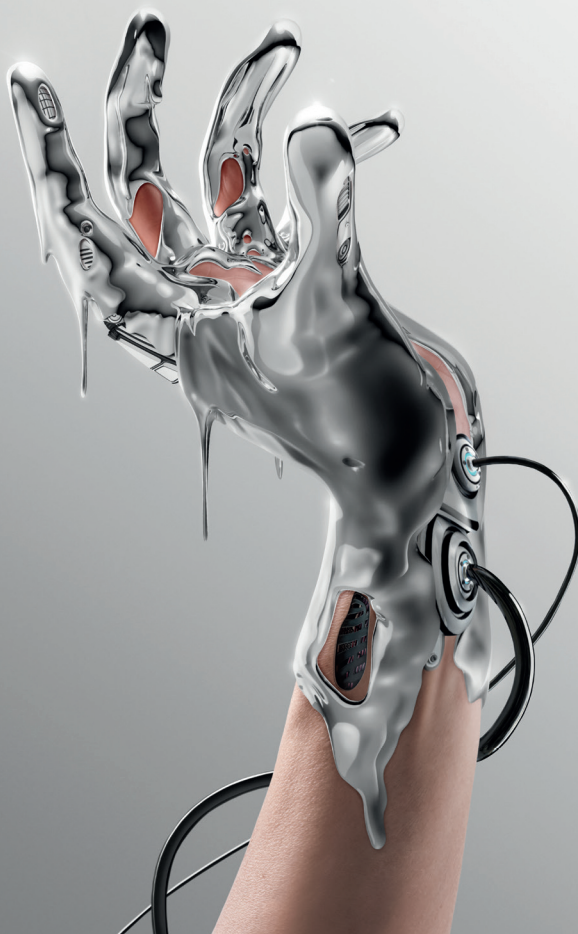


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# HOW PACKAGING HAS CHANGED IN THE AMAZON AGE

## AMAZON SUPPLIERS ARE SHAPING INDUSTRY STANDARDS FOR SUSTAINABLE MANUFACTURING AND MATERIALS

By William J. Madl, Marketing Consultant

**A**mazon has been doing business since 1994, originally founded by Jeff Bezos out of his garage. Starting with over \$20,000 in sales weekly, his company has gone on to reach \$100 billion in revenue to date, is responsible for over 49% of all online purchases, and employs over 155,000 people full-time. Due to many of these aspects, Amazon has altered packaging and the packaging industry in significant ways.

### Push for sustainability and eco-friendliness

Not only are consumers concerned with environmentally friendly packaging, but Amazon is setting goals with their suppliers to maintain standards of sustainability, including through recycled content of the packaging and the ability of the packaging to be recycled.

In 2008, Amazon established “Frustration-Free Packaging” (FFP) programs with their suppliers, which set industry standards and guidance for brand packaging. These standards optimized box selections to better fit product sizes and the specific weight of items. Working with their partners, Amazon reduced fillers in packaging and has also

reduced packaging waste by over 1 million tons.

Since 2015, Amazon has reduced the weight of the packaging used by over 36%. This trend with packaging will continue well into future and is key to the efforts Amazon is engaging in with suppliers.

Amazon has reduced the weight of their packaging by working with their suppliers to eliminate fillers, making the packaging user-friendly to open, and ensuring it is recyclable.

In fact, although plastic used in packaging is difficult to recycle at times, Amazon is working with their customers to educate them on how and where to recycle this form of packaging. Since plastic mailers and plastic sacks are being more widely used by Amazon to save space in trucks and reduce transportation costs, it's imperative this education continue.

### On-time deliveries and shipping rates

Amazon has been able to secure their online business by utilizing on-time delivery for their customers and ensuring their suppliers deliver as needed. Packaging must be on-time so Amazon can accurately let





**Amazon has partnered with suppliers to reduce the weight of packaging by over 36%, eliminate fillers, make packaging easier to open and ensure material is recyclable.** Photo Credit: Amazon.com

customers know when their products will be delivered and give them a reliable time-frame when placing orders. Due to Amazon's success in this area, consumers are now demanding this quick delivery service and forcing competing companies to do same.

Related to this is Amazon's free shipping offer for orders over \$25. This long-standing policy has encouraged competitors to offer similar deals, including such outlets as Barnes and Noble and Walmart. Additionally, Prime members don't pay shipping costs due to their membership fees, another Amazon innovation.

### **Direct-to-consumer shipments**

Amazon often utilizes warehouses and third-party shippers in their process. This entails having products, generally one at a time, going direct from third-party warehouses and straight to consumers. By shipping directly to the consumer and not to Amazon, suppliers are forced to ensure good quality with their packaging or run the risk of not doing business with Amazon.

This direct-to-consumer business model will continue as Amazon is working to expand its shipping offerings in numerous ways, including utilizing drones and driverless trucks in the future. Packaging must be designed to handle these coming changes, and Amazon even holds classes for their suppliers to keep pace with the new landscape.

In summary, Amazon has changed packaging in many ways, but especially in how it

is made, how waste is eliminated, how companies can save energy, and how to make packaging recyclable and eco-friendly. The future of packaging and Amazon's competing companies will be looking to the online retailer as the industry leader, and the bar that they set for ecommerce shipments sold and delivered!



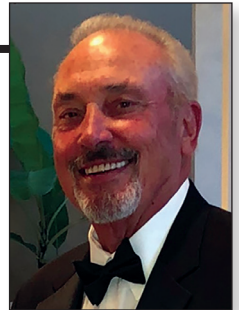
**Amazon has changed how packaging is made, how waste is eliminated and ensures manufacturers save energy and make packaging that is recyclable and eco-friendly.** Photo Credit: Amazon.com

### **Amazon and its suppliers are elevating industry standards**

In addition to changing the way products are bought, sold, packaged and delivered; Amazon and its suppliers are developing eco-friendly packaging materials and establishing sustainable practices to reduce waste, conserve energy and make it easier for consumers to recycle and re-use packaging. Amazon and its suppliers are elevating industry standards, and shaping the future of the packaging industry.

#### **About the Author**

**William J. Madl** has been working within the packaging industry since 1967, and currently serves as a consultant for custom packaging company, Ashtonne Packaging. Learn more at <https://www.ashtonne.com/>.







**Custom packaging can be more cost-effective than generic packaging, and machinery depreciation rates are often lower.**  
Image Courtesy of Custom Packaging Products

# 5 REASONS TO USE CUSTOM PACKAGING FOR YOUR BUSINESS

By Brent Lee, CEO of Custom Packaging Products

**C**ustom packaging is a great way to make your company feel more professional. It's important custom packaging match the style of your business, which is why customizing it with your logo or other images is an important aspect of custom packaging. Here are five reasons to customize you packaging:

## 1. Stand out from the competition

Custom packaging can help your business stand out from the competition because it is unique and will vary in color, design, shape, size and materials. Many companies are beginning to recognize that people value uniqueness of product branding more than following trends with mass-marketing of logos and colors. Brands sometimes want custom packaging because they want their products to appear different or they want their packages to reflect their image or lifestyle.

## 2. Promote new products and services

Custom packaging is an excellent way to promote new products and services successfully. It couples the power of customized packaging with your corporate vision. Often, it can be seen in small boutiques that are trying to stand out in their industry or reach a particular mar-



**Packaging can help your business stand out from the competition because it is unique and will vary in color, design, shape, size and materials.** Image Courtesy of Custom Packaging Products





**Custom shrink film protects irregular shaped items during shipping and distribution.** Image Courtesy of Custom Packaging Products

ket segment. These stores use custom packaging for small businesses to lure customers into looking at what they have to offer.

### 3. It's more cost-effective than generic packages

Custom packaging is more cost-effective than buying generic packages because of several factors. An individual's purchase history allows a custom packager to assess the relative value of any given product in relation to the customer and current inventory.

Returning customers with a diverse product line seem to be an obvious choice for this type of strategic merchandising, but you may also be surprised to find that increased customer loyalty from increased satisfaction is an added bonus from implementing these types of pro-



**Custom bulk bags speed up production and move product faster.** Image Courtesy of Custom Packaging Products

grams. In addition, machinery depreciation rates are often lower with a custom program when compared with a generic program because it means less wear on expensive equipment simply by changing out custom sized boxes.

### 4. Convey the company and brand image

The size, shape, and materials that you choose for your custom packaging will depend on what kind of image you want to give off. For example, if you're a DIY company with handmade products, then rustic materials might be the way to go. Natural elements like recycled papers and natural colors are good ways to convey both environmental friendliness and emotional sentimentality. If you're trying for stability, glass is an option. However, many people find glass containers too informal unless they contain foods like olive oil or vinegar. It's important to have a clear goal in mind when designing your packaging.

### 5. Gain customer appreciation

Your customers will appreciate receiving something special when they purchase from you — not just another product in a box. Custom



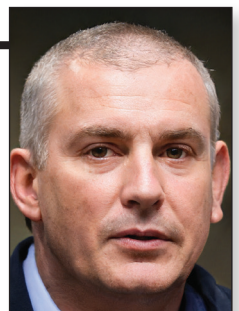
**Custom poly bags protect contents from exposure to air and moisture.** Image Courtesy of Custom Packaging Products

packaging is something that many customers will appreciate, feeling like they're receiving something special even before opening the item. You might not know it, but people get excited about things that are just new and unique. Most of the time new things are high quality, and custom packaging elevates the first impression, which is often most important. We don't want to admit it, but we really do judge things by their outward appearance.

Packages are everywhere—in our houses, in supermarkets, on the streets—so why not choose a creative method by which you can attract potential consumers? Customers do not need too much prompting when the packaging stands out against the competition. ■

### About the Author

**Brent Lee is the CEO of Custom Packaging Products, a full-service packaging supplier and contract packaging company specializing in industrial packaging, packaging fulfillment and custom package design.**







**Demand is growing for recyclable, biodegradable and resealable pet product packaging. Flexible packaging is also an ideal format for durability and temperature resistance to preserve pet products.**

# PERFECT PACKAGING FOR PET PRODUCTS

**THE PET SECTOR HAS GROWN AT AN ASTONISHING RATE, AND DEMAND IS ON THE RISE FOR PREMIUM PET PRODUCT PACKAGING THAT IS SUSTAINABLE AND CONVENIENT**

By Jeremy Freedman, Managing Director of Guardpack

**W**ith many people confined to their homes over the previous 24 months, the pet care sector has been growing at an astonishing rate around the world. Due to consumers' considerable expenditures on their pets, this sector has grown globally from \$216 billion in 2020, to \$232 billion in 2021, and is expected to reach \$350 billion by 2027 according to a recent report from Global Market Insights.

But where there is a growing market opportunity, there is also greater competition. Despite this, many budding companies just slap their brand onto sub-par pet care products in the hope of making a dent in the industry. The majority of these fail to cater to both the needs of the pet and the owner, making success here rare.

## **Diversification of the pet product sector**

The industry has seen substantial growth over recent years and shows

no signs of slowing down. While canned food may have been acceptable to the average consumer in years gone by, the modern era calls for something different. The market is diversifying almost as quickly as it expands, with vitamins, organic snacks, fur wipes and dog shampoo all growing in demand.

With packaging typically being the last step in the customers buying journey, it's essential that brands are able to provide convenient packaging that matches the growing demand and lifestyle of the consumer. This covers anything from an eye-catching design to unique innovative capabilities. So, the question arises, how can you differentiate yourself?

## **Most consumers want sustainable packaging**

Sustainable products are of increasing importance in this day and age, and for good reason. With over 75% of consumers preferring





**Visual appeal and a tactile experience differentiate premium packaging, and consumers are drawn to eye-catching graphics, high-quality printing techniques and surface enhancements such as soft finish matt, paper feel, varnish and high shine gloss.**

products in sustainable packaging, this is something that cannot be ignored. Sustainability is an incredibly influential factor in the consumer buying decision, and this is something that will not diminish. Considering the climate change horror stories that are now more prominent than ever, it comes as no surprise that the call for ethical and eco-friendly products is rapidly growing. For the majority of pet product packaging, utilizing recyclable and biodegradable materials is the most prominent approach.

Continuous technological developments allow for new sustainability opportunities. An option proving particularly effective in recent years is recyclable plastic and laminate. The majority of existing packaging consists of some form of plastic. These sustainable materials offer equal, if not improved barrier properties to the standard packaging materials.

While some sustainable packaging materials fail to deliver the desired quality, durability or safety features that manufacturers strive for; recyclable plastic is not one of them. They meet, not only the preservation requirements of pet product manufacturers, but also the environmental requirements of the average consumer. Eco-friendly production, however, is not enough in the campaign for widespread sustainability. Brands should also include clear recycling instructions in order to encourage consumers to participate in local recycling programs and assist in the sustainable disposal of these packaging materials.

### **Demand for premium packaging is growing**

With a growing number of pet owners treating their companions to premium cat or dog food, many businesses are pushing for a new range of high-quality products. This is unlikely to slow down either, with many pets being put on specific diets, prompting the demand for gourmet food with all the vitamins and nutrients they need. The rise

of premium food prompts the need to protect, preserve and present the contents of it through high quality packaging, reflecting the premium promise.

Flexible packaging is an ideal format for pet food products, as it offers outstanding temperature resistance and durability, while also remaining cost-efficient. This format's high-quality barrier properties also help in retaining the respective nutrients and health benefits of the food, heightening the value in the eyes of the customer.

Premium packaging isn't solely used for pet food, however; with an increasing number of owners pampering their pets with a variety of premium products, the market is continually expanding to account for more top-quality pet soap, shampoo and general cleanliness products, catering to specific breeds and skin types.

### **The visual appeal and feel of packaging matters**

Whatever your product may be, the visual appeal of its packaging is an essential component in securing an initial sale. With customers spending increasingly more on premium products in recent years, multiple indicators have arisen to create a distinction between the high and low-quality products available.

Visually, this could include eye-catching graphics or high-quality printing techniques. This is all well and good, but your product must also feel premium. Popular surface enhancement options - such as soft finish matt, paper feel varnish and high shine gloss - all enhance both the visual and tactile experience for consumers. This also provides another medium for brands to differentiate themselves from the competition.

### **Convenience enhances the customer experience**

As mentioned above, the ever-growing demand for premium pet care products requires convenient packaging to enhance and simplify the

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customer experience. Commonly used products — such as dog food, wipes or shampoo — require factors such as resealability, storage and ease of use to be considered. Resealability factors in particular are essential in keeping the product fresh. This technology also resonates with the consumer by making the cleaning or feeding process quick and easy.

While convenience is primarily applicable to the end-user, it also holds a profound effect for manufacturers. In order to ensure that production and distribution is as streamlined and effective as possible, brands must utilize packaging which enhances the efficient manufacturing capabilities of the business throughout its entire range of operations.

Pet care trends will inevitably change in the future — as trends tend to do — but for the foreseeable future, sustainability, convenience and premium packaging will linger at the forefront of the consumer's mind. In order to be successful, brands must cater to the desires of their target audience, so if this is what pet owners want, this is what they will get! ■

### About the Author

Jeremy Freedman is the managing director of the UK's leading manufacturer of bespoke biodegradable wet wipes and sachets, Guardpack, and has vast knowledge of the most pragmatic design choices for pet care product packaging and formulas.



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Effective communication and a good user experience ensure Original Equipment Manufacturing is simple, by design, for vertical form fill seal machines. Image Courtesy of Matrix

## HOW TO IMPACT HUMAN-MACHINE INTERFACE COMMUNICATION AND AN INTUITIVE EXPERIENCE ENSURE VFFS MACHINES ARE SIMPLE, BY DESIGN

By Mike Krummey, Electrical Engineering Manager at Matrix

**D**o you ever wonder why some companies make things more complicated than they need to be?

That's been a puzzling question for me, especially when it comes to the Human-Machine Interface (HMI) and control system hardware on vertical form fill seal machines (VFFS). Complexity when needed for proper machine performance is unavoidable. However, when original equipment manufacturing (OEM) limits complexity, it maximizes reliability and minimizes the total cost of machine ownership.

Unfortunately, some machine builders inadvertently create an HMI application that ends up being convoluted and difficult to navigate. This application may seem 'normal' to that OEM, but not to the end user. The end user experience needs to be considered to ensure solutions are intuitive to navigate, and settings are easy to understand.

### Simple HMI is vital for efficiency

Simplicity in the HMI running your VFFS machine is vital for efficiency. Employees of different skill levels are going to be responsible for setting up and running the machine. It's important to make it easier for your operators to be successful in their job operations, and to have a deep understanding of your team's needs. Whether the operator is new to the industry, or has been around VFFS machines for years, the HMI application needs to be simple and intuitive for anyone to use.

Extending this concept of simplicity further, it's important to work with your OEM VFFS supplier early in the process by discussing the production goals of your new machine. Whether it's launching a new project from scratch, or replacing obsolete equipment, discussions including the HMI manual pages should occur. Ask for a machine





**Effective communication and a good user experience ensure Original Equipment Manufacturing solutions are simple, by design, for vertical form fill seal machines.** Image Courtesy of Matrix

manual from a similar machine model. Carefully review this documentation and put yourself in the position of being an operator or set-up person attempting to use the machine.

### **Communication starts by asking the right questions**

Communication is a key element to successfully select the right VFFS machine for your application. Effectively communicating your current and desired production rates to your supplier is important. Information that is important to define an application includes:

- What do you want to put in the bag and what is the size for each bag?
- Have you developed a film type or graphic design for the bag?
- How many pounds of product an hour would you like to package?
- Are there special environmental considerations like wash down?
- What is up-line? (e.g., scales, augers, cup fillers)
- Are there down-line automations such as conveyor systems planned?

Having this information readily available before starting any conversation with a potential machine supplier will advance the discussion efficiently. Often at trade shows I will be asked “how fast can your bagger go?” While this is a valid component of any packaging system discussion, it is not the most effective way to begin conversations with an OEM. An OEM needs to understand the full scope of your project, and that starts with basic engineering:

- What are your requirements?
- Do your packaging lines have space limitations?
- Do you have enough building height for a VFFS machine?
- How many hours in a shift will the machines be running?
- What does your up and down line look like from filling equipment to end of the line equipment?

### **Standardization delivers better efficiency**

For the control system of your new VFFS machine, it may be best to look for machine models that will not require any custom software for your application. Start by looking for standardized features and options in the programmable logic controller (PLI) and HMI. This kind of standardization usually provides superior long-term service support as well as an assurance of proper performance. An OEM with all-inclusive standardization ensures everyone on the sales and support team is familiar with the machines. A customized machine requires a modified custom control system for the application, and is often more difficult to troubleshoot and service.

In some parts of the packaging market there is a prevailing thought that customization will do a better job because it's designed just for you. That's not necessarily true. It is actually important to consider a comprehensive standardized controls package that will handle everything you are going to need the machine to do. This can also reduce costs, delivery time and the overall cost of ownership of the machine. Purchasing a VFFS machine with a powerful standardized control system means you are receiving the best components, but at a

reduced cost when compared to custom-built controls.

### **Standardized machines can have better reliability**

Another benefit of going with a standardized VFFS machine is that it is likely to have fewer parts. Custom-built machines are going to have more components and may be more difficult to operate, typically are more expensive, and have longer delivery times. More parts mean more chances of failure when compared to a machine with fewer parts. Thus, your overall cost of ownership goes down with a standardized machine as the reliability goes up.

Finally, if you have a custom-built machine control system, that complexity is going to likely extend to the HMI application as well. You are likely going to find the HMI more challenging to navigate and less intuitive to use. This reality will defeat the operational efficiency of the machine. Control systems that are simple, efficient, and standardized are going to work better for you and your company in the short and long run.



**Original Manufacturing Equipment solutions with all-inclusive standardization ensures everyone on the sales and support team is familiar with the machines.** Image Courtesy of Matrix

## Focus on the human-machine experience, not the hardware

When shopping for new VFFS machines, it is wise to separate the HMI application from the HMI hardware. Regrettably, people often link those two components together when comparing different manufacturers' VFFS machines. You should really focus in on the functionality of the HMI application, with the hardware running it as a secondary consideration. A good analogy would be you want to watch Monday Night football and it doesn't really matter what brand of TV it is being viewed on, it's the content you want. Of course, the reliability of that hardware does play a critical role (nobody wants the TV to quit working).

When focusing on the content of the application running on the HMI, consider these items:

- What do the touchscreens and pages look like in terms of color usage, font size, ease of readability?
- What is the content, how are pages organized, how easy is it to understand settings?
- Are steps provided onscreen to troubleshoot problems? Are alarms clear and status indicators simple to understand?
- How are security levels handled? Are passwords editable?

Always remember, the HMI application impacts the user interface between OEM's of VFFS machines. The HMI application can matter more than the HMI application for the end user. The HMI hardware used by any reputable OEM will be name brand and backed by a minimum one-year warranty.

## Clear communication is essential

Successful installation of a VFFS machine begins with clear communication about your application. When working with different suppliers of these machines, look for options with experience and expertise in your market. Once you have narrowed the list of potential suppliers, look for simplicity in the control system and HMI application. A well-built VFFS machine is going to be rooted in simplicity and a built-in standardized controls package including everything you need to successfully bag your product. While the technology in VFFS machines is more advanced than ever before, it really doesn't need to be complicated to operate. Seeking out an OEM that strives to keep things simple is a great start to your long-term packaging success. ■

## About the Author

Mike Krummey is the Electrical Engineering Manager for Matrix Packaging Machinery. He can be reached at Mike.Krummey@promachbuilt.com. Learn more at [www.matrixpm.com](http://www.matrixpm.com)



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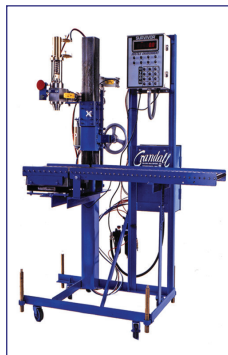
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# A HOLISTIC APPROACH TO AUTOMATION

## INTEGRATED CONVEYOR SYSTEMS CAN OPTIMIZE THE ENTIRE PRODUCTION PROCESS

By Mike Hosch, Vice President of Industrial Products at Dorner

**N**ew waves of technologies are transforming the way products are produced and packaged, and automation is redefining the overall design of many manufacturing facilities. Flexibility and connectivity are the name of the game when it comes to equipment, and that's certainly the case for conveyors

### Gaining efficiencies with a conveyor system

Conveyors have become integral components in all phases of automation, packaging and assembly. Global brands were early adopters of conveyor systems designed to integrate and optimize the entire production process. Companies of all sizes are now taking a closer look at the ways they can use integrated conveyor systems to perfect processing and packaging lines.

There are many conveyors engineered exclusively for applications focused on packaging automation, but there's no reason to settle for a conveyor that's being shoe-horned into your application. An effective conveyor system can do more than move product from one point to another. A well-engineered conveyor system integrates various processing lines, and can precisely position, sort and lift items at key stages of the production and packaging process.

### Designing a conveyor system

As more companies look to automate their processing and product lines, product orientation is becoming more critical. Designing an effective system begins by gaining a clear understanding of your application and production process. It is also important to consider your operating environment, space constraints and budget. Whether you're an OEM or integrator, a small family-owned shop or a multi-national business, answering these questions can clarify your needs, priorities and expectations:

- What do you need conveyors to do?
  - o How do you envision a conveyor system integrating your lines and production processes, or other systems you're planning to build?
  - o What aspect of your production process or processing lines do you plan to automate?
- What do you need to move or position?
  - o How precisely do you need to position or sort items?
  - o What are the height, weight and shape of the packaged product(s) being moved?
  - o What's the targeted rate of production?
- Does your operating environment have any constraints or limitations?



- o Is space likely to be tight, or require conveyors to make sharp turns or go up inclines?
- o Is the machine/production line manual or automated?
- o Is the anticipated flow of production linear or oval?

Knowing this information upfront enables you to design a system that will perform well, helps define the scope of the project and allows the conveyor supplier to streamline the quotation process by gaining a more complete understanding of your needs and the application.

## Selecting the right conveyor

The manufacturing environment inside facilities is much different than it was a generation ago. Automation is now a prime driver behind the way products are being produced and packaged. Many applications include both manual processes and robotic interaction. This means conveyors need to be engineered for specific applications, and address challenges in the operating environment.

Photo courtesy of Dorner



**Pallet system conveyors** are ideal for many automation-focused applications that require exact movements and positioning of parts. They can be setup or programmed to start and stop at specific intervals to sync up with robotic interaction or other processes and modules.

Pallet system conveyors typically come on different platforms to convey the pallet. The right type of pallet system will depend on the needs of the application and product. This can be a roller edge conveyor, or a dual belt configuration powered by a common drive on a flexible plastic chain belt.

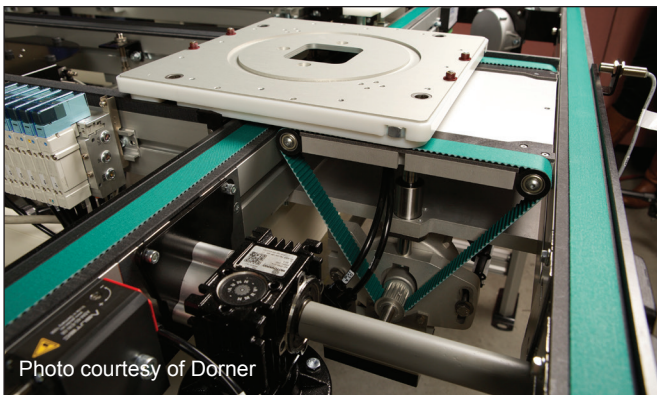


Photo courtesy of Dorner

A lift and locate module uses a dual strand timing belt conveyor and pneumatic lift to change product orientation.

**Lift and rotate modules** are used for applications requiring product rotation. The module allows pallets to stop, rise up off the belts and rotate 90 degrees or 180 degrees to reposition product as necessary. Other common types of lifting modules include lift-and-locate, which provides 200 pounds of lifting capacity at an accuracy of .002 inches, and lift-and-transfer, which uses a dual strand timing belt conveyor and pneumatic lift to change product orientation.

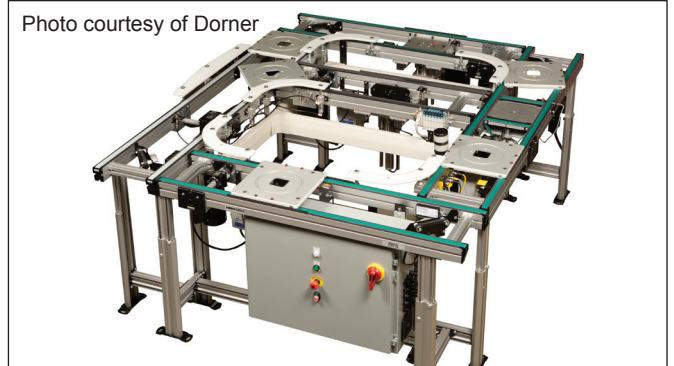


Photo courtesy of Dorner

**Flexible chain conveyors** move product around equipment and machinery, and are a popular choice for packaging lines within industrial, medical, life sciences and consumer product industries.

Flexible chain conveyors are able to make tight turns and operate well in an environment that has tight spaces or elevation changes. Some application designs also require product to be moved in and around equipment and machinery. Flexible chain conveyors are a popular choice for packaging lines within industrial, medical, life sciences and consumer product industries.

Photo courtesy of Dorner



**Precision timing belts** are used for applications requiring precise alignment, at repeatable times and distances.

Precision timing belt conveyors position product in an exact spot on the conveyor at the right time, and provide the level of precision that is critical for robotic applications. This is the right choice for many packaging, industrial automation, product assembly and manufacturing applications. Servo motors power the conveyor to deliver precise alignment, at repeatable times and distances. These conveyors have indexing repeatability of plus or minus .004 inches, at a rate of 100 indexes per minute.

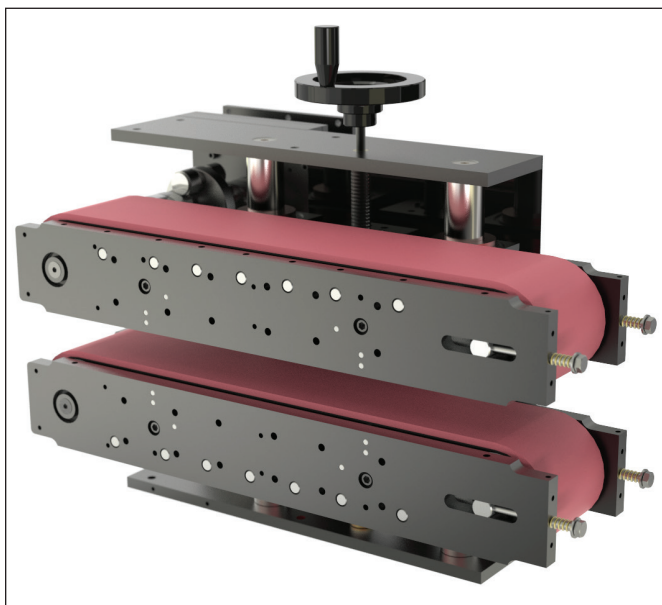
## Understanding the application is essential

Product orientation and sorting are essential factors to consider when designing a conveyor system. That's because automation in packaging applications relies heavily on products being positioned correctly at a specific time and location. Making this happen can be a daunting task, but you don't have to do it alone. The first step is to evaluate your application and determine the expectations for your conveyor system. There are a number of resources available to assist you in this. The right conveyor system is out there, it's just waiting to be designed. ■

## About the Author

**Mike Hosch is the vice president, industrial products business unit for Dorner. He can be reached at [Mike.hosch@dorner.com](mailto:Mike.hosch@dorner.com), and you can learn more about conveyor systems online at [www.dornerconveyors.com](http://www.dornerconveyors.com).**





## Caterpillar Pullers Move Tubing, Profiles, and Pliable Materials

Caterpillar pullers from Versa Machinery provide uniform pressure over the entire traction length, thus exerting greater pulling force without product deformation. They are ideal for pliable materials like tubing, extruded profiles, foams, soft extruded materials like weather stripping, and more.

Versa series "C" pullers are available in non-motorized versions which can be included in OEM designs, or in motorized versions that allow "out of the box" productivity. Belt configurations range from 2 inches wide and 9 inches long; to 4 inches wide and 17 inches long.

A wide variety of belt materials and durometer ratings are available including sponge, gum rubber, silicone, neoprene, urethane, or nitrile some of which are FDA approved. Additional options include left-to-right configuration, and OSHA guarding package.

All Versa pullers are equipped with a hand wheel or optional pneumatic operation of the belt booms along a constant center-line. The pneumatic option provides control of the pressure applied to the product being pulled and makes repeatable setup almost instantaneous. Additional options include left-to-right configuration, and OSHA guarding package.

## Motorized Pullers

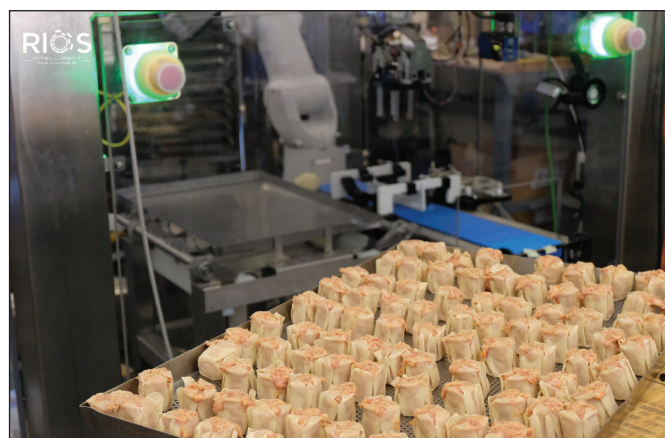
Motorized puller assemblies include all components for "out of the box" productivity for many downstream handling requirements. They are mounted on a 12-inch by 14-inch base plate for easy positioning of feed materials and include a choice of either A.C. or D.C. motor and drive, and a remote Operator Control Station (OCS) which can be mounted wherever desired. A wide variety of speed ranges are available. The OCS includes push-buttons for Start, Stop and Emergency Stop, as well as a 10-turn potentiometer with turns counter for speed control. Digital speed indicator and 115-volt input are standard, with other voltages available as options.

## Non Motorized Puller Assemblies

Standard non-motorized "C" series puller assemblies are virtually identical to their motorized counterparts, except without the motor and drive. They provide excellent grip and feeding yet allow end users and OEM machine builders to design, configure, and build machines to meet their specific requirements. With speeds from 0 to 450 feet per minute (fpm) and with a variety of belt materials available, they are ideal replacements for existing puller assemblies or as components for specialized equipment for unique applications.

Versa motorized pullers and caterpillar assemblies are ideal for many applications, including downstream handling of pipe, profiles, tubing, vinyl siding, wire and cable, steel materials, pulling materials through braiding machines, and more.

Versa Machinery manufactures automated downstream equipment for the plastic and rubber extrusion industries. For 70 years they have designed and built de-reelers, cutters, pullers, cutter/puller systems, and takeaway conveyors. Customized solutions are available for specific applications. For additional information, visit [www.VersaPullers.com](http://www.VersaPullers.com), or email [sales@Versa-Machinery.com](mailto:sales@Versa-Machinery.com).



## RIOS Ranked a Top 5 Robotics Startup in Food Warehouse Sector

RIOS Corporation was named a global industry leader in food sector warehouse management, and developed one of the five top robots in the industry according to StartUs Insights.

StartUs analyzed 138 startups, and recognized RIOS' innovative automation-as-a-service solutions for the food industry, and the impact of their robotic solutions and artificial intelligence (AI) technology on food warehouse automation.

The analysis recognized the impact of the RIOS DX-1, a full-stack multi-purpose dexterous robot that interacts with objects in both static and dynamic applications, such as bin picking and moving conveyor belts. The robot also works in changing warehouse environments and automatically adjusts to complex manipulation tasks.

Picking and sorting food items of variable packaging, size, texture, and volume is a labor-intensive process at warehouses. Robotics are emerging as a solution to address labor shortages, and have the capability to intelligently sort and place items in



designated bins.

U.S.-based RIOS was founded in 2018, and helps enterprises automate factories, warehouses and supply chain operations. More information is available at [www.rios.ai](http://www.rios.ai).



## Markem-Imaje Introduces High-resolution Inkjet Coder

Markem-Imaje, global providers of end-to-end supply chain solutions, launched the 5940 G, Touch Dry high-resolution inkjet coder in North America. It provides label-free and high-resolution coding, branding and text on secondary packaging, including

corrugated. The 5940 will be available globally in February.

Applicable for a broad range of materials, the 5940 G prints grade C or better, GS1-128 compliant codes on corrugated cases and trays of fresh produce, beverages, meats, confection, and many other foods. It also provides precision printing on polystyrene for frozen foods and shrink-wrap for pallet shipments. In addition, the system prints clean, crisp information and codes on porous surfaces including fabrics and non-wovens for medical personal protective equipment (PPE) such as masks, gowns and diapers.

The new inkjet coder features Markem-Imaje's proprietary Touch Dry inks that instantly dry on contact. The inks, which are free of odors and volatile organic compounds (VOC), are safe to handle and contribute to a more sustainable production line. Touch Dry inks will not spread along corrugated fibers and lose resolution. A variety of colored inks are available.

The 5940 G also features a patent pending, Intel-li'Flow printhead technology that avoids nozzle blockages due to ink backsplash and dust buildup. Plus, a filtering process that degasses the ink during printing and keeps the jetting mechanism clean and clear, resulting in a higher print quality, greater throughput, reduced maintenance, and less downtime. The system performs well in temperatures ranging from 32° F to 104° F (0° C-40° C).

Greg Kasprzak, Senior Product Marketing Manager, Markem-Imaje said, "Our customers look to us to improve efficiency on the production line, to achieve this every detail is important. For

## Meet Your Deadline: Grow Your Productivity

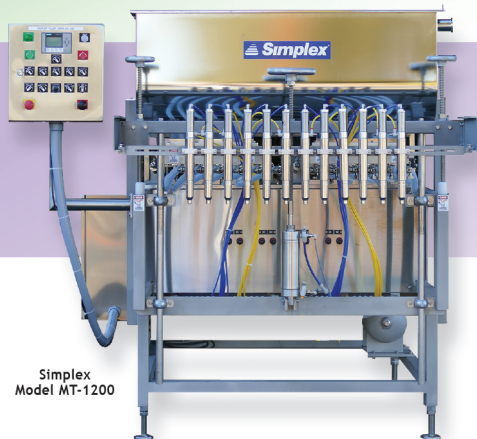


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example, we've been able to include a specially designed ink container which is 75% larger than most competitors, cutting operator intervention by 43%. Plus, the ink containers can also be replaced without stopping production and a heat time speed of 67% faster than previous models can be achieved. In combination details like these make a significant difference to efficiency and throughput. We've even designed this for enhanced serviceability which will lead to greater availability and factory output, in addition to the print quality and efficiency advantages."

The 5940 G also leverages Markem-Imaje's packaging intelligence software, CoLOS to help manufacturers maintain their entire database of print jobs centrally, streamlining print management and supporting greater throughput. Plus, the 5940 G works seamlessly with the Systech Packaging Intelligence Suite, which integrates the key pillars of packaging intelligence: message management, verification, line control and insight.

### Epson Announces Commercial Inkjet Label Printer

The ColorWorks C4000 inkjet label printer is engineered for markets that require easy connectivity to produce durable color labels with high-resolution image quality, such as food and beverage, retail, healthcare and pharmaceutical labeling applications.



The latest addition to the ColorWorks line features expanded connectivity and compatibility, improved image quality, remote management tools and increased ink capacity. It will be available in gloss and matte versions in spring 2022 through Epson authorized partners.

The ColorWorks C4000 is a dynamic solution for a wide

## Meet Your Deadline: Grow Your Productivity



Simplex  
Model AS-1

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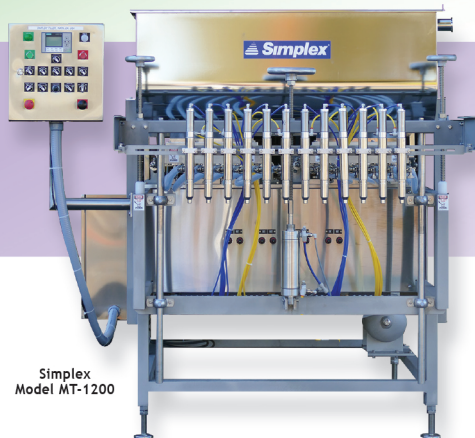
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range of high resolution labeling applications, from product or packaging labels with legible text, to scannable barcodes and shipping labels. Its durable high-quality labels meet BS-5609 certification, and it delivers exceptionally crisp, photo-quality images and barcodes with up to 1200 dots per inch (dpi) resolution with variable droplet sizes.

Engineered with PrecisionCore technology, it has print speeds of up to 4-inches per second, and eliminates the need for pre-printed labels. Its compact design accommodates tight spaces, and it is dust and water resistant to withstand the pressures of high-duty-cycle and commercial environments.

Designed to be easy to operate and easy to manage, the ColorWorks C4000 has optional Wi-Fi connectivity, and is designed to integrate seamlessly into a variety of workflows. It is compatible with many major middleware programs as well as ZPL II, SAP, Windows, Mac and Linux. It can print from compatible devices, and features remote printer management via Epson Device Admin for managing large fleets over the network.

For additional information, visit [www.epson.com/colorworks](http://www.epson.com/colorworks).

## Cadence Adds New ISO Class 7 (10,000) Cleanroom in Connecticut

Cadence, Inc. announced the completion of a certified International Organization for Standardization (ISO) Class 7 (10,000)



cleanroom at its Suffield, Conn. manufacturing facility. Cadence now offers certified cleanroom manufacturing at three of its facilities for maximum customer flexibility.

The new cleanroom is dedicated to the production of innovative medical device components and sub-assemblies, and enhances Cadence's portfolio as a leading, vertically integrated contract manufacturing partner of medical devices worldwide.

"The new cleanroom and citric passivation allows us to expand

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our service offerings for existing and new customers, as well as streamlines our supply chain, reduces costs, and complements our laser processing expertise," said Chris Haddad, the Director of Operations at Cadence's Connecticut facility.

#### About Cadence, Inc.

Cadence is a full-service contract manufacturer of specialized medical devices for medical companies worldwide. Services range from initial product design through manufacturing, supply chain management, and full warehousing and logistics. Learn more about certified cleanroom manufacturing at [www.cadenceinc.com](http://www.cadenceinc.com).

#### ProAmpac Announces Partnership with Rutgers Food Science Professor

ProAmpac is partnering with Rutgers University Food Science Professor Dr. Kit Yam to develop smart packaging solutions to improve food safety, extend product shelf-life and reduce food waste.

ProAmpac, a leader in flexible packaging and material science, has partnered with Rutgers University Department of Food Science professor, Dr. Kit Yam to accelerate innovation in smart packaging to improve food safety, extend product shelf-

life and reduce food waste.

"Dr. Yam is recognized as an expert in the fields of active and intelligent packaging, and ProAmpac is honored to include him and his lab in our expanded research and development partnerships," said Hesam Tabatabaei, global vice president of product development and innovation.

The partnership is being integrated with ProAmpac's Material Science and Innovation teams to support the company's commitment to developing active and intelligent food packaging. Through this partnership, Dr. Yam's lab will provide testing capabilities critical to ProAmpac's smart packaging development mission.

Dr. Yam states, "ProAmpac's commitment to studying the fundamentals of active and intelligent packaging will move the field forward. Through this impactful partnership we will work to bring smart packaging out of the lab and onto store shelves."

Rutgers University's food-safety and shelf-life expertise complements ProAmpac's existing partnerships with institutions such as Polytechnique Montréal, Rochester Institute of Technology and Clemson University. For more information, visit [www.ProAmpac.com](http://www.ProAmpac.com).

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### AD INDEX

CAMA North America .....	11
<a href="http://www.camagroup.com">www.camagroup.com</a>	
Crandall Filling Machinery .....	22
<a href="http://www.crandall.com">www.crandall.com</a>	
Delta ModTech .....	BC
<a href="http://www.deltamodtech.com">www.deltamodtech.com</a>	
EBS Ink Jet Systems USA .....	FC, 5
<a href="http://www.ebs-inkjet-usa.com">www.ebs-inkjet-usa.com</a>	
HMC Products Inc. ....	18
<a href="http://www.hmcproducts.com">www.hmcproducts.com</a>	
Industrial Indexing Systems .....	2
<a href="http://www.iis-servo.com">www.iis-servo.com</a>	
Logical Machines.....	31
<a href="http://www.logicalmachines.com">www.logicalmachines.com</a>	
Lotar Enterprises.....	11
<a href="http://www.lotarenterprises.com">www.lotarenterprises.com</a>	
Matthews .....	19
<a href="http://www.matthewsmarking.com">www.matthewsmarking.com</a>	
Mettler-Toledo .....	3
<a href="http://us.mt.com/us/en/home.html">http://us.mt.com/us/en/home.html</a>	
Northcore Industries .....	11
<a href="http://www.northcoreind.com">www.northcoreind.com</a>	
Omtec Corp. ....	29
<a href="http://www.omtec.com">www.omtec.com</a>	
Raco International Inc. ....	31
<a href="http://www.racointernational.com">www.racointernational.com</a>	
Rechner Electronics Industries Inc. ....	18
<a href="http://www.rechner.com">www.rechner.com</a>	
Schober USA Inc. ....	30
<a href="http://www.schoberusa.com">www.schoberusa.com</a>	
Simplex Filler CO.....	27
<a href="http://www.simplexfiller.com">www.simplexfiller.com</a>	
Simplex Filler CO.....	28
<a href="http://www.simplexfiller.com">www.simplexfiller.com</a>	
Totani America, Inc. ....	23
<a href="http://www.totaniamerica.com">www.totaniamerica.com</a>	
William B Rudow Co.....	7
<a href="http://www.suckers.com">www.suckers.com</a>	

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