

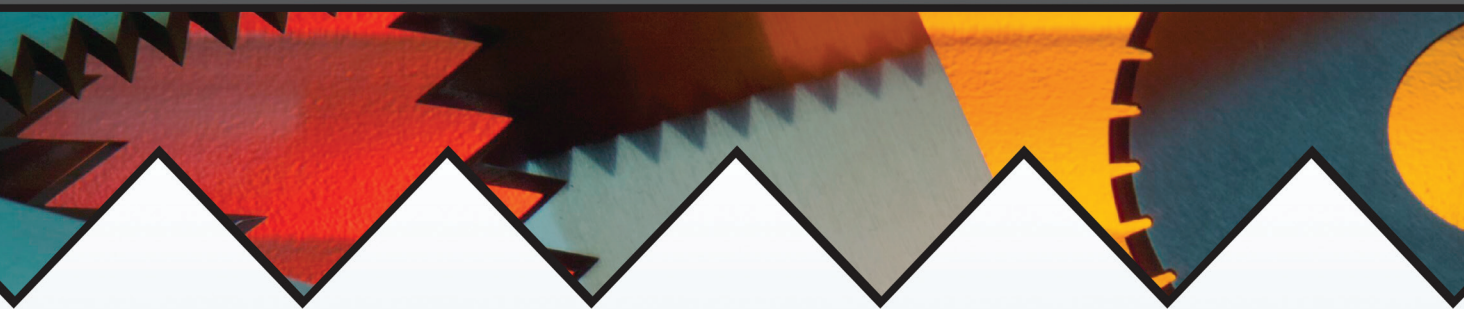
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Packaging

TECHNOLOGY TODAY

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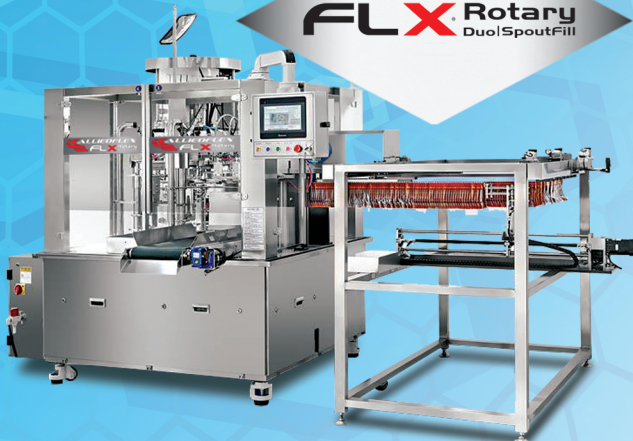
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EDITOR'S NOTE

Feeling Energized?

I'm a Chicagoan, and Pack Expo 2022 brought a special energy back to the city, and a sense of community I've never experienced at McCormick Place. PMMI definitely brought the packaging industry back to Chicago in a really big way.

The enthusiasm of the 1,500 students participating in Pack the Expo was contagious. I had a chance to meet Jack Sadler, a student from Waterford High School near Milwaukee. He said the experience was a pivotal moment, and he now aspires to become an OEM. And the industry definitely needs innovators like Jack and his teammates. They used 3-D printers to design the machine that won the Pack Challenge.

Like Jack, I'm feeling energized by the innovators we met at Pack Expo. Our publisher Randy Green and I sincerely appreciate everyone who took time to share insights about what's next in packaging. Five key takeaways you'll be seeing in our 2023 editions are:

- Gaming tech is going to work: Augmented reality and visioning technology are shaping the way people and machines work, connect and interact in manufacturing environments.
- Manufacturing is getting smart: Technology makes it possible to monitor and manage operations from smart phones and tablets, making factories safer, simpler and more efficient.
- Sustainability is a catalyst for collaboration: Materials scientists and OEMs are discovering ways manufacturers can switch to eco-friendly materials, reduce their carbon footprint and generate less waste — often using existing equipment.

- Onshoring is happening: All-in-one equipment with a smaller footprint, and compact collaborative robots are addressing labor shortages, supply chain issues and saving space on factory floors.
- Integrated end of line equipment and packaging solutions matter more: Track and trace regulations are evolving, and demand is growing for sustainable primary, secondary and tertiary solutions for retail, e-tail and direct-to-consumer packaging in every market segment — particularly home healthcare, fresh food, pet supplies and online groceries.

Many thanks to everyone who contributed articles in 2022! This is our final edition of the magazine this year, so be sure to visit www.packagingtechtoday.com for daily news, new products and more features.

Thanks for reading, and stay tuned for more insightful features in January!

Vicki McDonald-Kastory
Editor, *Packaging Technology Today*
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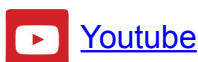
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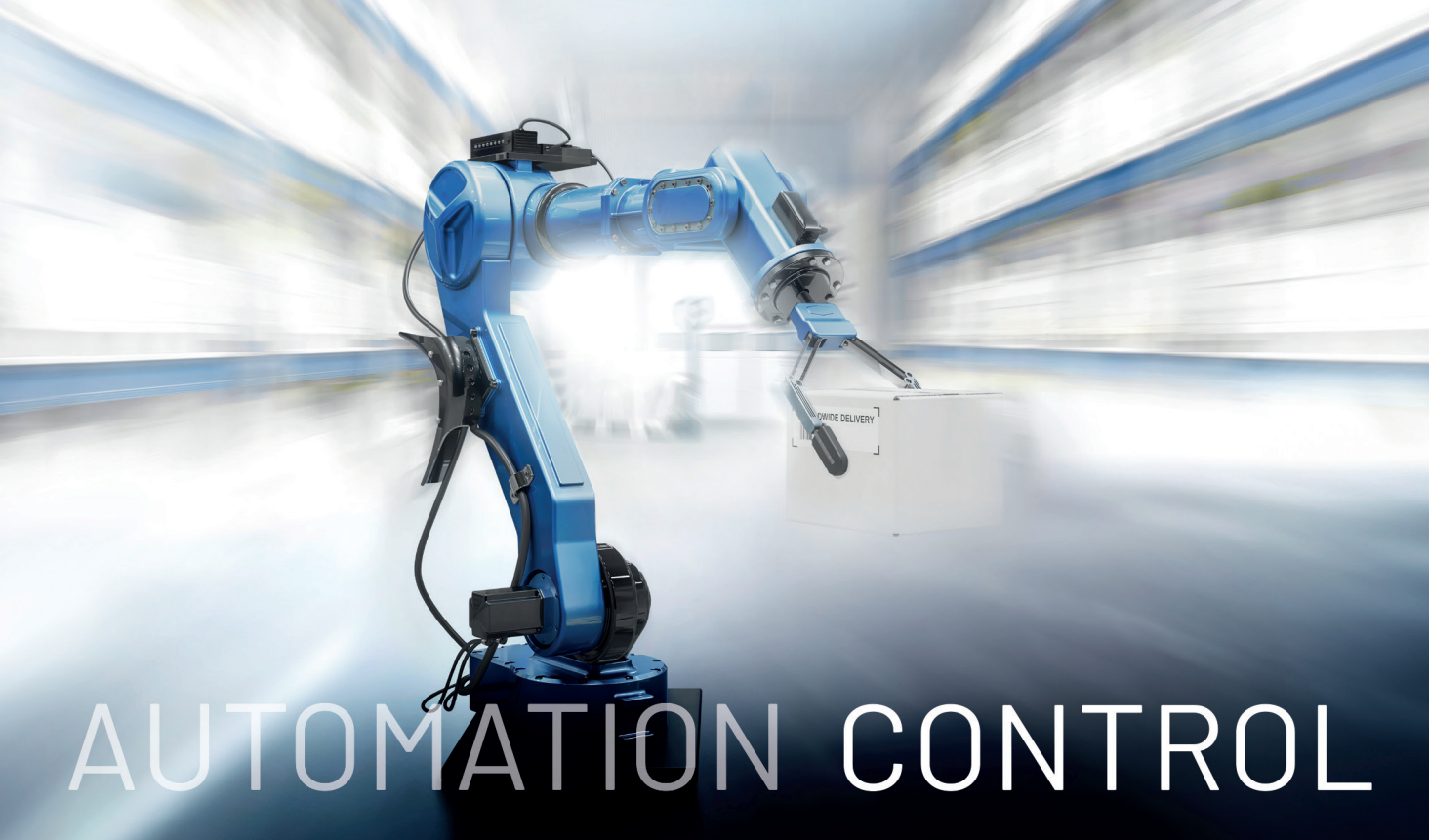
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The Luddite Fallacy has been prevalent throughout human existence and follows us into modern times.

ARE MACHINES STEALING OUR JOBS?

IT'S AN AGE-OLD QUESTION

By Tess Danielson for RIOS Intelligent Machines

The history of man and machine is a long, turbulent one. The fear of technology replacing human workers is far from a new idea. The Luddite Fallacy is one that has been prevalent throughout human existence and follows us into modern time. But when did this saga even begin – and where is it going?

The metamorphosis of machine labor

The history of human labor and its gradual metamorphosis into industrial manufacturing is one that dates back to our hunter-gather days. But the path to American capitalism and industrial manufacturing began in Medieval times.

Out of necessity, local peasants would spin raw wool into suitable clothing for themselves and family members. Eventually, the wealth-

ier class began craving finer garments, which created the wool-cloth industry.

It worked like this: Merchant clothiers, or entrepreneurs, saw the demand and opportunity. They would purchase massive quantities of raw wool and track their progress through all production stages. Those with the deepest pockets began buying in bulk leaving little competition. These were considered some of the first monopolies.

As advancements in effective tools became more prevalent and accessible, it developed new concepts and practices. For example, another significant invention to come out of this time was water and wind power. These unmanned technologies were so effective it unwittingly founded the practice of replacing human labor with machine power.

As societies developed, the desire for novel inventions faded, and

there became a preference for adaptable innovations for devices they already owned. Water and wind power, combined with older forms of technology, revealed untapped possibilities of production scale. This is the most primitive form of what we currently call a factory system.

The catalyst for automation

Hints of industrialization and capitalism have been prevalent throughout history. But the major catalyst that pushed both ideas forward in America came down to output.

The term mass production relates to the strategy of large production scales at low costs. Inside factories, there's an organized flow of high volume material from beginning to end. This also assured quality control through supervision and division of labor.

Things only moved faster with the emergence of the machine-tools and interchangeable parts.

Machine tools were power-driven and bolted down. They were charged with shaping or forming various materials, such as metal. These innovations soon became fundamental to advancements in mass production. The US excelled with these technologies so much it was dubbed the "America System."

America led the Industrial Revolutions in more than one way. The "true ancestor" of the assembly line dates back to the late 19th Century in the American meat processing industry.

Workers in Cincinnati and Chicago would use overhead trolleys to disassemble carcasses by passing them to different production areas. Stationary workers performed a single task at a dictated speed, which minimized movement and increased productivity.

One influential man took notice of this process. Henry Ford, the American automobile manufacturer, modeled his production line off the meatpacking structure and introduced his assembly line operation in 1913.

Ford's next game-changer was his unique approach to chassis assembly. Under the old system, it took 12 ½ hours to drag a chassis, metal frame of a car, to each station. Ford decided to tie a rope to a frame to pull it past several lines until it reached its final destination. This cut production time to six man-hours.

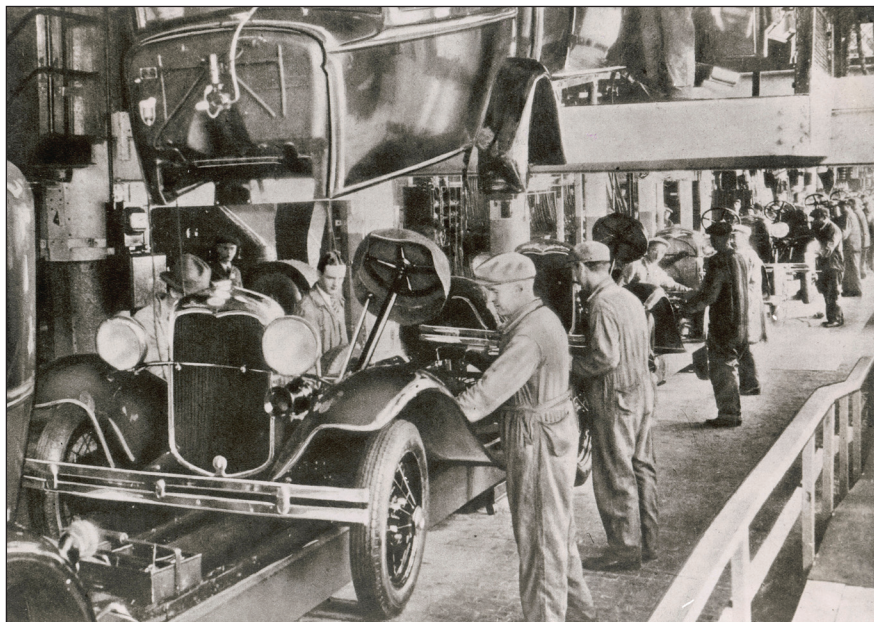
By the end of April 1914, the assembly line was upgraded to be pulled by a chain, which resulted in an astounding total production time of 93 man-minutes. Thanks to Ford's innovations, prices of automobiles drastically fell providing the middle class the chance to own private vehicles.

"Manufacturing provides well-paying jobs for many people and provides goods that power our economy and protect people's health," says Darrell West, director of the Brookings Manufacturing Initiative, whose team focuses on the future of manufacturing via email. "Sectors such as automobiles, electronics, pharmaceuticals, and semiconductors are vital for U.S. national security and competitiveness."

In the 1940s, the Ford Motor Company defined automation as a concept. For the automotive company, the initial meaning related to autonomous handling of tasks in metalworking production. The modern understanding represents the goal to subtract human hands from the production process to ensure accuracy and quality.

The introduction of computer aided manufacturing

In 1943, American mathematician Norbert Wiener gave automation



Henry Ford modeled his original assembly line after the meatpacking structure, and reduced total production time for an automobile to 93 man-minutes.

a broader context by introducing cybernetics. While the tech's full potential was not seen in his lifetime, Wiener knew it was only a matter of time before manufacturing would recognize the value in applying computers to the sector.

Beginning late in the 20th century, Wiener's prediction finally came to fruition with the arrival of computer aided manufacturing (CAM). This software and computer-controlled machinery were designed to modernize manufacturing, which gave operators access to automatic control systems. The average CAM could adjust the position of a lever or machine without the human element, but these devices lacked speed, size, and sensitivity.

Computer chip innovation

The most important recent innovation has been computer chips, which are crucial for digital goods and services and vital for the overall economy. We cannot make cars, produce goods, or provide needed services without chips.

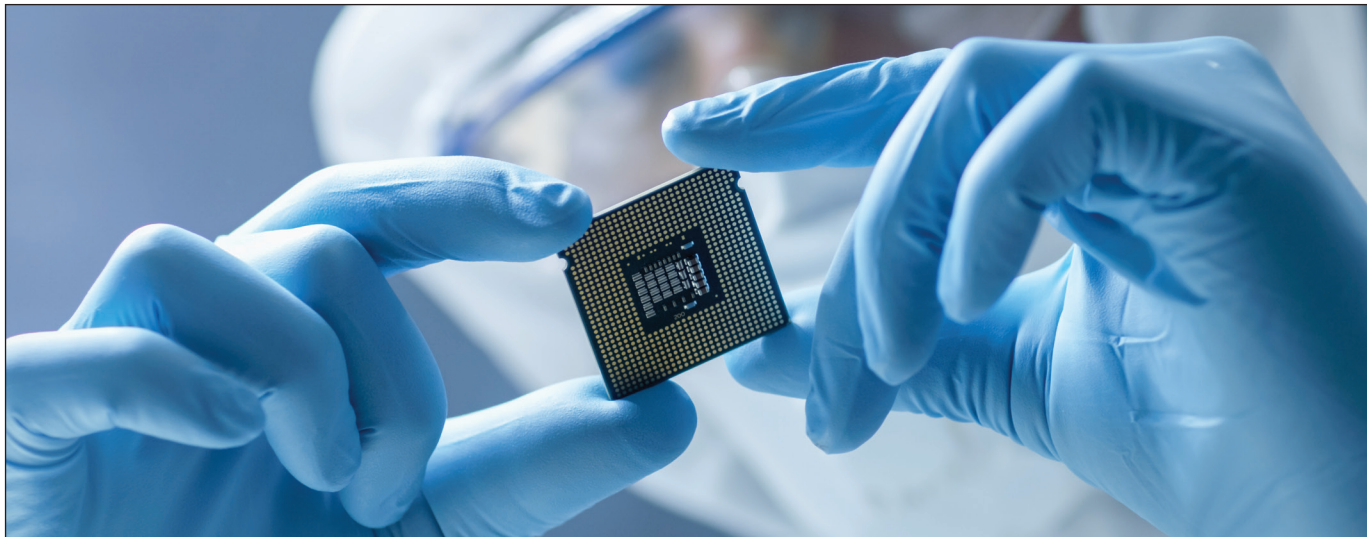
Ultimately, computerization generated two current fields: computer-aided design (CAD) and CAM. In a sense, CAD/CAM allows the mass production system to manufacture customized "handmade" articles.

Even more impressive is how these machines can produce small batches of material that allows for it to be applied to various products and components. This offered avenues to achieve what was exclusively available through mass production of identical objects.

This is where we begin to establish the modern era of factory automation, or, as some like to call it, smart factories.

As history has demonstrated time and again, technology wins in the long run. Things like end of the line packaging automation have become essential to keep up with post-COVID demand.

"After COVID, companies are far more open to automation and technology," says Scott Hamric, Senior Sales Executive at RIOS Intelligent Machines, who adds that the evolution in the industry is the only way to evolve and stay competitive. "The customer realizes this is the future, and early adoption of tech will help them to get in front of the next potential labor issues in this new fast-paced economy where labor shortages are common."



The most important recent innovation has been computer chips, which are crucial for digital goods and services and vital for the overall economy.

The manufacturing labor shortage

As of now, there is a massive shift in the manufacturing industry. The labor shortage makes it glaringly obvious that the speed at which we advance technologically as a society tends to leave workers behind.

These days, the numbers for labor are abysmal, especially within the durable goods manufacturing industry. As Deloitte reports, even if every qualified citizen was gainfully employed, this sector would still have openings for 35% of its positions to meet production goals.

Deloitte goes on to predict that by 2030 there will be a labor shortage of at least two million American manufacturing jobs. This amounts to about a trillion dollars per year.

As Boomers and “old scholar’s” exit the workforce, the newer generations are expressing little interest in manufacturing.

It isn’t a secret that factory management has consistently demonstrated negligent practices related to worker treatment. This notorious reputation has done little to appeal to the up-and-coming generations. Instead, they are moving towards opportunities that offer stable, safe work environments and provide compensation.

The factory of the future

But after the COVID-19 spike in global demand, it also revealed an overarching theme that can leave certain economic aspects vulnerable.

While the displacement of certain roles is inevitable, the importance of automation on production lines cannot be understated. These factors are essential to uphold the economic system we’ve built.

In the process, there is room to upskill workers to perform higher-level and better paying tasks that are appealing to a new labor market. New roles such as “robot supervisors” are designed for employers and employees to succeed.

In the 21st century, machinery is approaching levels of dexterity that are not only matching the skill of their human counterparts but outperforming them. Manufacturing is now an automated game, and the consumer packaged goods sector has experienced the brunt of it.

With the explosion of demand on production, along with a lack of bodies, it shows that producers cannot keep up. Manufacturers are hoping that things like fully automated “smart factories” will hold the key to post-COVID success. ■



RIOS robotic work cells transform American factories, providing robotic automation for tasks that monopolize human labor. RIOS provides quality data to manage and grow the enterprise. Image courtesy of RIOS Intelligent Machines.

About the Author

Tess Danielson spent six years as a journalist before founding her nonprofit centered around documenting how communities change over time. She currently writes automation and robotics content for RIOS Intelligent Machines.



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Inefficient packaging means companies are paying to wrap, ship, and store empty space. Image courtesy of DHL.

RECONFIGURING THE PACKAGING PROCESS FOR E-COMMERCE

EFFICIENT PACKAGING MEANS LESS WASTE AND LOWER COSTS

By Alicemarie Geoffrion, President, Packaging Operations, DHL Supply Chain, North America

Packaging has become a strategic component of the entire supply chain, especially for many e-commerce providers who do not have the luxury of delaying orders until the next day. Meeting consumer demand for faster delivery times requires orders be filled and packaged the day they are received.

A DHL survey revealed that packaging is moving up corporate agendas across all sectors, with nine out of 10 customers expecting the relevance of packaging for their business to rise soon. Our research also found that, on average, 24 percent of the volume of an e-commerce package is empty space. In some e-commerce categories, this increases to 40 percent.

This inefficient packaging means companies are paying to wrap, ship, and store empty space. Poor package utilization translates into lower utilization of transportation assets, which drives up energy consumption and puts additional strain on network capacity. And

underutilized packaging can also increase the risk of product damage in transit.

Packaging density optimization is an industry-wide challenge. The problem is difficult to solve, especially in complex and increasingly fast-moving supply chains where every shipment is different, and staff have just a few seconds to plan and execute the packing processes.

Optimizing Packaging with Data Analytics

To improve decision making and to reduce the burden placed on operational personnel, companies are increasingly leveraging data and analytics to optimize packaging processes.

Thanks to the vast degree of digital transformations and the Internet of Things, unprecedented amounts of data can be captured from various supply chain sources. This wealth of data and the insight it is providing is driving efficiencies and decision-making throughout the packaging system. One major example of this data-driven solution is



The growth of e-commerce has heightened awareness of wasteful packaging among consumers. Image courtesy of DHL.

with on-demand packaging solutions.

Carton optimization tools, such as the AI solution OptiCarton from DHL Supply Chain, combine sophisticated algorithms with an on-demand packaging production approach to ensure the right packaging is produced at the right time for each shipment.

Standardized carton sizes save shipment space

They help to optimize the filling volume of boxes from an existing, pre-configured set of standard-sized cartons to maximize carton and pallet utilization at a facility. Software not only suggests the optimal size of the outer packaging, it also provides individual, visual instructions on how to arrange the contents within the box to utilize the space. The tools even suggest the splitting of an order into several boxes to make individual shipments more cost-effective and/or reduce the carbon footprint.

By running the tool periodically as demand patterns and product selections change, companies can maintain high levels of utilization while minimizing the overall complexity of their packaging systems.

According to our calculations, an optimally pre-configured and well-utilized set of corrugated boxes can save as much as 50% in superfluous shipment space. This greatly reduces the number of truckloads, allowing commercial customers to save costs not only with regard to oversized cartons and filling material, but also shipping, by eliminating unnecessary transports.

On-demand packaging solutions are efficient and eco-friendly

This type of on-demand packaging solution can deliver benefits outside of just cutting costs, increasing efficiencies and making ship-

ments more environmentally friendly. It can help companies move away from a one-size-fits-all approach to packaging. Allowing them to gain more control, consistency and predictability with packaging while offering the flexibility needed to quickly react to changing demands and seasonal peaks and fluctuations.

Carton optimization tools, when combined with postponement and customization strategies, allow companies to make decisions and adjustments more cost-effectively at the very end of the supply chain. This is ideal for the production of popular, high-value promotions that allow retailers to design their own products and packs and support in-store promotions and brand differentiation on the shelf. It is also vital to incorporating any last-minute changes or reconfigurations that come in as the product is being stored and prepared to ship.

The growth of e-commerce has heightened awareness of wasteful packaging among consumers. An on-demand packaging solution, in combination with the optimized utilization of packing material and transport capacities, offer incredible leverage when it comes to saving costs, reducing carbon emissions, and improving the customer experience – all at the same time. ■

About the Author

Alicemarie Geoffrion is Vice President of Packaging Operations for DHL Supply Chain in North America, where she is responsible for growing and managing our end-to-end packaging operations to drive innovations, create efficiencies, and realize savings for our customers.





Barcoding is the gold standard for traceability and data collection, and this technology also provides insights to gain supply chain and operational efficiencies.

BARCODING TECHNOLOGY STREAMLINES PACKAGING NEEDS

HOW TO CHOOSE THE RIGHT SOLUTIONS TO IMPROVE THE SPEED AND ACCURACY OF PACKAGE MOVEMENT

By Jessica Bernardo, Senior Product Marketing Manager Barcode and Label Print Solutions for Toshiba America Business Solutions

We finally made it through the worst of the pandemic shutdown; now comes the after effects of the recovering economy and global pressures that require us to steady the ship and navigate a new course.

Today's supply chain bares economic challenges. Inventory is hard to control. Uncertainty exists surrounding purchase order fulfillment delays and component lead times. Therefore, the need for speed and accuracy of package movement is paramount.

When facing such challenges – now more than ever – you must understand exactly what your company requires to run efficiently and effectively. Barcoding technology is one key area for gaining supply chain efficiencies and has long been the gold standard for trackability and data collection while also enabling flexibility for multiple areas

of operation.

It is highly accurate, easy to use and commonly deployed for automatic identification. Barcoding allows for the continuous collection of data to preview inventory status whether you are receiving packages and shipping in a distribution center or planning product builds at the manufacturing site. You'll know at any given moment what is arriving on your dock and what will leave.

Identifying the right barcoding technology

Since barcoding technology is integral to the success of weathering this economic storm, what should you look for in today's solutions? Whether it's retail, logistics, hospitality, shipping, chemicals, pharmaceuticals, healthcare, or manufacturing – every business requires labels to track, count and price as well as ensure the safe use of their



Every business requires labels to track, count and price as well as ensure the safe use of their products. A base analysis of the environments and conditions that your company operates under is paramount.

products. A base analysis of the environments and conditions that your company operates under is paramount.

First, assess the environment and operations where the labels will be in use. This informs your decision on the type of barcode print technology and labels to use. Labels need to be legible to the human eye or scanner so size and clarity will be important.

Just as importantly, labels need to stay on the goods and remain legible through a variety of conditions such as weather, friction and chemical processes.

Choosing the right label printer

Considering the range of technologies and options, it's also essential to choose the right label printer. Getting it right will lead to a rapid return on investment. Getting it wrong can be a costly mistake.

There are two types of print technology used for labels: thermal transfer and thermal direct. As the names imply, both use heat to create the printed information, but they do so in separate ways.

Thermal transfer technology transfers ink from a ribbon to paper using heat. The thermal transfer process produces a crisp printed image that is very stable and long-lasting. Because the image is made with and absorbs ink it effectively becomes part of the label stock and won't rub off, fade or smudge. Thermal transfer is therefore ideal for labels that need to last a long time while enduring harsh conditions or processes.

Direct thermal printing does not use ink and therefore has no ribbon. It instead utilizes thermal paper featuring a leuco dye coating, which changes color when heated. Direct thermal printers also produce a crisp image and because they use no ribbon or ink, are lighter, less expensive and easier to operate.

Portable printers, ideal for offsite printing, all use direct thermal technology which is very cost-effective for creating short-term use labels. So, the type of print technology you choose will depend on what you are labeling and why. Where you will most efficiently apply labels physically within your supply chain environment will also help dictate printer selection. Mobile print-



The need for speed and accuracy of package movement information is paramount, and barcode technology optimizes supply chain management.

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ers, for example, allow untethered mobility for workers to move to the best location in the facility at a moment's notice.

Selecting the best label

Also, consider the use of the label. Specifically, the tag's expected shelf life and treatment while remembering that the primary goal of a label is to remain legible. Selecting labels for a specific purpose is now a trend helping drive organizational efficiency.

The requirement for multiple solutions to include more than one label in or on a package is a common requirement. Thermal printers make shipping labels, while laser printers produce packing lists.

To drive even greater efficiencies, organizations may now consolidate two labels into one.

Taking it a step further and selecting a liner-less label dramatically reduces the resources to place a label on a package and has the added benefit of greater sustainability through the elimination of the wasteful liner. Combining two labels into one furthermore optimizes hardware use and personnel, effectively doing two labels at once with one printer. All factors will drive the speed and accuracy to further help navigate today's challenges. ■

About the Author

Jessica Bernardo is a senior product marketing manager of barcode and label print solutions for Toshiba America Business Solutions. If you're seeking more insight into the numerous benefits barcoding technology fulfills for supply chain and logistics operations, please send an email to Jessica. Bernardo@tabs.toshiba.com. For more information, visit www.business.toshiba.com



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A NEW CRATE FOR A NEW ERA

THE AGE OF CORRUGATED CRATES IS HERE—AND FOR GOOD REASON

By Rodger Mort, President of PACT

Despite the much-maligned, COVID-caused supply chain slowdown, the modern history of the shipping industry is a story of inspiring innovation. Ever since standardized containers brought seamless uniformity to global goods delivery, shipping has witnessed a steady stream of creativity resulting in unprecedented efficiencies that have helped improve lifestyles and drive economic growth.

Just-in-time delivery, high-speed RFID cataloging and block-chain-based supply chain verification are just a few of the inventions that have revolutionized the way we move goods and, not coincidentally, helped make Amazon founder Jeff Bezos the world's wealthiest person.

But one aspect of shipping has, unfortunately, remained largely stagnant: the conventional wooden crate.

Don't get me wrong: wood crates have been essential to shipping's growth. The need to separate and protect bulky-yet-delicate items – household appliances, expensive furniture, even certain vehicles – is a must in modern shipping, which often emphasizes speed over the fragile handling that such high-value items deserve.

Still, all things must pass. The shipping sector is ever-evolving – a forever forward-thinking industry leading the charge on everything

from supply chain security to electric delivery vehicles. It's time that crating technology evolves along with it.

The knock on wood

For all their conventional benefits, wood crates bring a number of drawbacks that are increasingly at odds with modern shipping needs. For starters, at a time when the exponential growth of e-commerce has stretched logistics capacities to their limits, package weight is being increasingly scrutinized and surcharged.

Wood weighs a lot. In fact, wood crates frequently outweigh the products they house, meaning they add more than 100% to the total shipping weight. Hefty packages lead to hefty costs at a time when shipping fees are already historically high. It's a simple equation, really: Weight equals fuel, and fuel equals money.

All this might be fine if wood crates delivered bang for your buck by consistently protecting high-value goods. But they don't.

Here, wood's bulk works against it because it's a natural reverberator, meaning the myriad jolts and jostles packages receive along their supply chain journey rattle right through the crate's interior. This is one reason that, despite their bulk, wood crates have damage percent-

age rates that are less than ideal.

Finally, wood falls flat against each of the top three trends in the packaging and shipping sectors today. In order, those trends are sustainability, sustainability, and sustainability.

Can wood be recycled and reused? Sure, it can – but context matters. And the specific circumstances of wood crates in the shipping sector lead to massive waste – and massive bonfires. Generally speaking, the wood crates crossing the globe today have a common final destination: an incinerator or, failing that, a landfill. There are a number of reasons for this, but a key factor is the just-in-time nature of today's shipping.

Breaking down a wood crate and using it to build other items – even another wood crate – is often considered more time-consuming and costly than starting from scratch. Brand owners and logistics companies want goods ready to go on their timeline – a timeline that doesn't include reusing crates from arriving items for departing ones.

Could that be changed with wood repurposing and repacking infrastructure? It could – but that's a longer-term issue and, besides, one working against the almighty wallet. This is because shipping companies charge goods producers handsome crate discarding fees – a blow to both planet and purse strings.

So why has wood been the go-to crate materials for decades? Mostly because there wasn't a better alternative. Until now.

Making the case for corrugated crates

In the shipping industry, materials science is finally catching up to technological advancements. Today, customized corrugated crating solutions are available that offer a bevy of benefits including reduced shipping costs, maximization of warehousing space, and increased sustainability.

While the execution is complicated (and patented), the concept is simple: rather than the cumbersome all-wood crates typically used to transport large items, their corrugated counterparts comprise a wooden base surrounded by sturdy yet pliable corrugated material. The result is a shipper that is not only a 1/3 of the weight of an all-wood container, but can collapse to be barely wider than the base wood component to take up exponentially less space.

Crucially, advanced corrugated shipping crates don't sacrifice product protection. The containers have been proven to keep even the most fragile items secure during transport, as the structure can withstand thousands of pounds of pressure. In addition to the novel solution's inherent sturdiness, its corrugated material is a better shock absorber than



Corrugated crating solutions offer a bevy of benefits including reduced shipping costs, maximization of warehousing space and increased sustainability. Image courtesy of PACT

wood. Statistics show that this lighter-weight, lower-footprint option diminishes the sort of vibration-related damage that can occur throughout the supply chain.

Corrugated shipping crates also solve the sustainability issue, as its materials can be conveniently recycled, repurposed and reused several times over. No more bonfire fuel, landfill fodder and disposal fees. Utilizing internal airwall material in lieu of foam further enhances eco-friendliness.

Finally, adopting corrugated shipping crates system-wide addresses another pressing issue: the protracted labor shortage facing not only the logistics industry but many other sectors worldwide. With companies looking to do more with less manpower, the corrugated crate's simple fold-out process significantly mitigates labor-intensive crate construction.

The benefits of corrugated crates

Sometimes sustainable solutions struggle to match the functionality of their conventional counterparts. This is decidedly not the case when it comes to next-generation corrugated crates, which have proven to not only match but rather exceed the ability of wooden crates to protect products, reduce

shipping weights and therefore costs, and diminish labor intensity at a time when personnel are in high demand.

Indeed, corrugated crates would stack up well against wooden ones even if their environmental profiles were similar. But of course, they aren't: corrugated crates are lighter, more reusable and more easily recyclable than wood, a sustainable cherry atop a bevy of other benefits. ■

About the Author

Rodger Mort, President of PACT, a leader in manufacturing industrial packaging and crating solutions. With over 25 years of experience, PACT has designed custom crating and packaging products for the



furniture and automotive industries. PACT was founded on the idea of sustainability and continues to embrace a green future in the packing and crating industry. For more information, visit www.pactww.com.



The Drug Supply Chain and Security Act requires electronic tracing of certain prescription drugs at the lot, unit and package levels by November 27, 2023. Image courtesy of Omega Design Corporation.

MISSION CRITICAL: AGGREGATION DONE RIGHT

THE DEADLINE IS APPROACHING FOR AGGREGATION OF PACKED PRESCRIPTION PHARMA PRODUCTS

By Chris Siegele, Sales & Marketing Specialist for Omega Design Corporation

Tick, tock. The countdown to November 2023 continues – and so far – the data isn't encouraging.

With aggregation compliance deadlines per the U.S. Food and Drug Administration's Drug Supply Chain and Security Act (DSCSA) less than a year away, it's officially crunch time. We are fast approaching the point at which establishing parent-child relationships between units of prescription pharma packaging – such as cartons, bottles and vials – goes from an optional value-add to a mission-critical must.

By November 2023, the DSCSA will require electronic tracing of certain prescription drugs at the lot, unit and package levels. Ultimately, the FDA aims to create a secure supply chain where prescription drugs can be traced through every stage of the manufacturing and distribution process.

For many pharma brand owners and contract packagers, the result is something akin to a bad sequel. Often, the same folks who muddled through the decade-long process of incorporating unit-level serialization – the DSCSA's initial hurdle – are now scrambling to aggregate. And like serialization before it, aggregation can be a tricky, trial-and-error process that requires fine-tuning lest it hamper the pace and flow of overall production.

The pharma industry is still ironing out aggregation's wrinkles – and that's putting it kindly. More than 25% of aggregation data coming into distributors during their aggregation pilot programs was found to be inaccurate.

Twenty-five percent. A full one-fourth. It's a jarring figure, and hopefully it's enough to wake us up. Because as an industry, we need to get this right or drugs will not reach consumers, will not save lives,



A simple upstream strategy – one that places codes where they will be visible to a camera after product packing – enables this secure aggregation method during case aggregation. Image courtesy of Omega Design Corporation.

and will not provide shareholders value.

When out of compliance, prescription drugs are more than a drag; they are utterly worthless. Without accurate aggregation data, your product's value will go to zero after spending millions to create it. Was expected return on investment baking in a loss of a quarter of your product sales? Were your investors anticipating a 25% earnings shortfall?

Do we need to ask any more rhetorical questions before getting aggregation done right?

Un-trackable is untraceable

Distributors have continued to be unified and clear in their messaging to trading partners, and cannot accept un-trackable prescription drugs.

The quantity of products passing through prominent distributors requires inferring the contents of a case or shipment from its label. If a label isn't accurate, then the drugs' path through the supply chain will be disrupted, delaying or even entirely denying their arrival at pharmacies, doctors' offices and, of course, patients. Distributors require high integrity aggregation data to infer case contents with certainty.

The industry is improving the quality of data that accompanies valuable products in the supply chain. It's been a process, and now we have some best practices to share.

The pack first, then inspect strategy

First and foremost, to achieve accurate data packagers need to design a data-oriented packing process. The most secure data-oriented pro-

cesses create a pack first, then inspect its contents. Such a 'Pack First, Then Inspect' strategy reduces risks and protects earnings.

Some companies will be able to afford expensive, fully automatic case packing solutions to automatically create aggregated cases. With full automation, fail-safes integrated into the machine design can catch insufficiently aggregated product before it leaves the facility.

However, nearly half of all packaging lines in the United States involve manual packing operations. By using semi-automatic technologies, it is possible to achieve aggregation compliance while maintaining manual case packaging operations. However, with manual operators an additional strategy is required to produce accurate data. This is done by placing them on an electronic path within the system itself.

A coordinated, back-and-forth exchange between operator and machine keeps products on an electronic path toward securely aggregated cases. This action-reaction process involves an operator initiating the packing cycle by preparing a case, the machine signaling the operator to begin packing, and the operator triggering a camera to read product codes. A case label is automatically applied, and a camera automatically triggered to maintain operational speed.

In the background, the contents in the case will be associated to the automatically applied case label code in the database. The data duet continues, with the machine confirming a case is complete and the operator pushing it through the sealer, sealing the product and the correct data along with it. Through a series of handoffs, then, the operator and machine produce the required result.

A simple upstream strategy – one that places codes where they will be visible to a camera after product packing – enables this secure ag-



The FDA aims to create a secure supply chain where prescription drugs can be traced through every stage of the manufacturing and distribution process. Image courtesy of Omega Design Corporation.

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gregation method during case aggregation. Case packing is the last time you'll see a code before your customers do. Do it the right way and keep product flowing forward through the supply chain.

The stakes are high to bridge the gap

Both the stakes and the gap to bridge are clear: distributors require perfect aggregation data, and the pharma industry is currently nowhere close to providing it. Pharma brand owners and contract packagers must do better – and quickly – to ensure neither business continuity nor patient health is compromised.

Luckily, whether packaging via fully automated or semi-automatic procedures, there are clear paths toward a workable aggregation strategy. Unsurprisingly, the delicate data dance aggregation requires is a little trickier with partially manual setups, but tried and true best practices are emerging that can help packagers comply with DSCSA without unacceptable equipment investment or production slowdown.

About the Author

Chris Siegle is Sales & Marketing Specialist for Omega Design Corporation, a global provider of innovative packaging solutions for the pharmaceutical, nutraceutical and consumer healthcare industries. The company specializes in the design, manufacture, service, and support of a broad range of container handling and packaging equipment systems, as well as coding, vision and case packing modules supporting serialization and aggregation. Learn more at www.omegadesign.com.





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A pressure-sensitive, double-sided adhesive enabled a Florida cake bakery to add wholesale to its distribution mix. Image courtesy of We Take the Cake

THE RIGHT ADHESIVES MAKE PACKAGING A PIECE OF CAKE

HOW AN ARTISAN BAKERY INCREASED PRODUCTION WITH A FREEZER-GRADE ADHESIVE

By Steven Staedler, a Wisconsin-based writer specializing in materials handling and packaging

We Take the Cake is an artisan cake bakery based in Fort Lauderdale, Florida that primarily sells individual hand-decorated cakes online. The gourmet bakery prides itself on making everything from scratch and with care. They mix their own batters from scratch every day, create their own frosting and hand-decorate every cake.

With a streamlined baking, packaging and shipping process, We Take the Cake's e-commerce business was thriving. However, when a major retail grocery chain ordered 90,000 frozen cakes to be packaged in custom branded boxes, the cake baker needed to make some modifications to its packaging process.

The cake walk – understanding the application

When selecting an adhesive, it is important to consider a number of factors. Every application is unique, and it's important to consider where the adhesive is being applied, the type of packaging material it is being applied to, the temperatures in the environment where the adhesive is being applied, as well as the temperature in the location where the package will be stored or transported.

Frozen food applications require a special food-grade adhesive that maintains an effective bond, and provides a durable seal in extreme temperatures. The bakery's adhesives would be applied between 72 and 76 Fahrenheit and then immediately frozen at zero degrees Fahrenheit. This extreme temperature change proved to be the primary challenge

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We Take the Cake used the Dot Shot Pro as a simple and cost-effective solution for applying freezer-grade adhesive that did not require a lot of training. Image courtesy of We Take the Cake.

in selecting an adhesive.

Additionally, We Take the Cake did not want to add an expensive, fully automated packaging system, and needed to address challenges they had experienced with previous projects. For example, the bakery had used a liquid, hot-melt adhesive for previous clients. They learned liquid hot melt tends to drip, creating a safety issue for employees, and the residue negatively affected the package appearance.

We Take The Cake wanted a safe, cost-effective alternative to hot melts and liquid glues, and needed an adhesive that could provide an instant bond, with no residue or odor. The bakery was also searching for a simple and cost-effective solution that was not going to take a lot of training for people to use.

The icing on the cake – finding the right solution

We Take the Cake chose a food-grade and freezer-grade adhesive from Glue Dots. The product is a pressure-sensitive, double-sided adhesive with zero cure time. It also leaves no mess, which resulted in cake boxes with a beautiful giftbox-like appearance.

From an operational standpoint, the product was affordable, and the easy application process did not bog down production in any way.



Employees were able to place Glue Dots adhesives quickly and consistently on individual cake boxes, creating an instant bond, with no residue or odors. Image courtesy of We Take the Cake.

Ultimately, the cake maker successfully completed the retail grocery chain's order on time by employing a fast, simple and economical sealing process. As We Take the Cake grows with more wholesale distribution, more people around the country will be able to delight in its sweet treats as they arrive in custom boxes that are safely sealed and shipped from Florida. ■

About the Author

Steve Staedler is a Brookfield, Wisconsin-based writer focused on the material handling and packaging industries. He can be reached at steve@lepoidevin-marketing.com. Learn more at www.lepoidevinmarketing.com.



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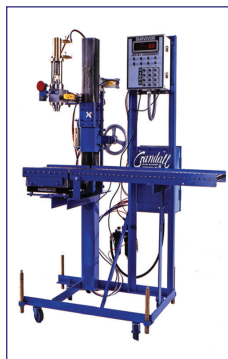
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Mettler-Toledo Launches New Combination Checkweighing and Serialization System

Mettler-Toledo Product Inspection has launched a new track and trace and checkweighing combination solution aimed

at small and mid-market manufacturers in the pharmaceutical and cosmetics industries. The Mettler-Toledo CT33 system gives operators a deep level of integration between mark and verify, serialization and precision weighing capabilities, helping them to achieve compliance, better brand protection, quality control and supply chain traceability. Learn more at <http://www.mt.com/pi-pr>.

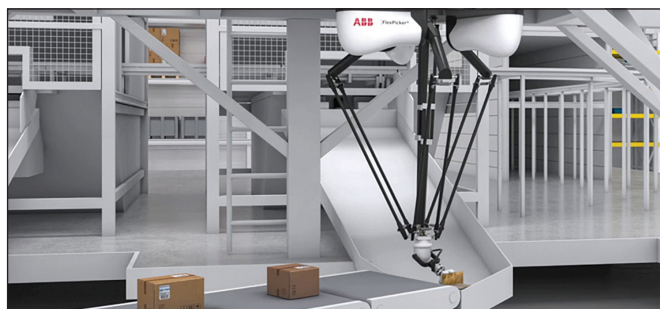


ABB Launches Five Axis Delta Robot for Product Picking, Packing & Reorientation

Responding to the rise in e-commerce and growing demand for shelf-ready packaged goods, the IRB 365 has been developed for applications including food and beverage, pharmaceuticals and consumer goods, where production line speed and adaptability are essential. ABB is expanding its FlexPicker® Delta robot portfolio with the IRB 365. With five axis and 1.5kg payload, the IRB 365 is both flexible and the fastest in its class for reorienting packaged lightweight products such as cookies, chocolates, peppers, candies, small bottles, and parcels. For more information, visit www.new.abb.com/products/robotics.

ePac Flexible Packaging Announces Flat Bottom Pouch Offering Expansion with Totani

Aiming to accelerate growth in coffee, pet, and lawn and garden markets – ePac Flexible Packaging has announced it will soon be offering flat bottom pouch options in addition to its extensive line of flexible pouch offerings. ePac is extending its partnership with the industry-leading pouch equipment manufacturer, Totani to bring the highest quality finished products to their customers. The flat bottom pouch offering is a premium side gusseted package that offers a true flat bottom for superior stand-ability. The package style allows five graphics panels for billboarding to maximize shelf presence. Learn more at www.epacflexibles.com.



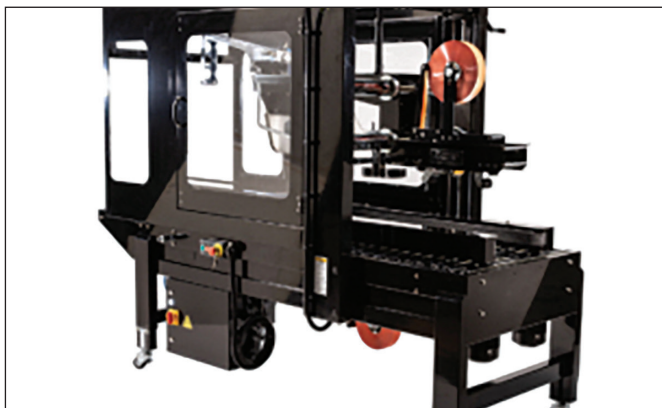
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Universal Robots Ships Cobots with Two-Week Lead Time, Enabling Manufacturers to Meet Tax Deduction Deadline

Despite needing 600 components from 100 different suppliers to make its cobots, Universal Robots has prevailed, overcoming challenging supply chain issues to offer one of the shortest lead times in the industry at just two weeks. This allows packagers to meet the Section 179 tax deduction deadline, installing cobots before year's end to reap significant tax deductions. Learn more at www.universal-robots.com.

Introducing the SB-2EX Auto Side Belt Case Taper from Easteys

The new Easteys SB-2EX Auto case taper is designed to automatically close all four top case flaps and seal the top and bottom of each case, and can accept cartons from a powered conveyor. It is a great alternative to hand taping, featuring an adjustable plow system that provides the utmost flexibility for varying carton sealing applications -- sealing up to 20 cases per minute. Learn more about Easteys shrink packaging equipment, automated case erectors, tapers, and material handling solutions at: <https://easteys.com>



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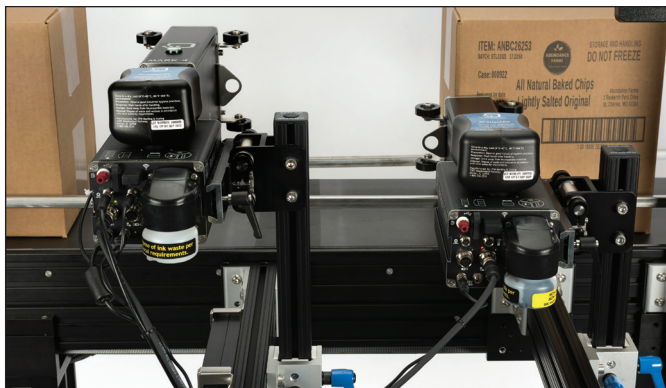
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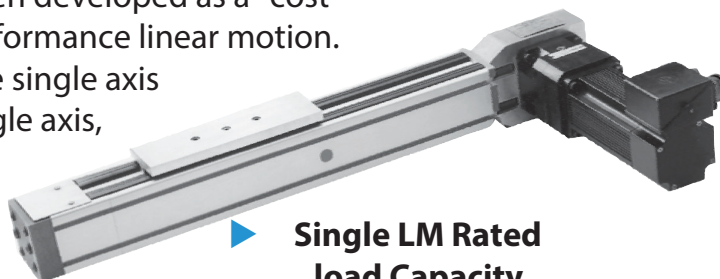
Diagraph Releases High Res Inkjet Coder for End-of-Line Packaging

The Diagraph ResMark 5000 with 2-inch Mark 2 and 4-inch Mark 4 print heads is the newest high-resolution coding printer for end-of-line secondary packaging for cases, cartons and tray packs. It serves a variety of industries including food, beverage, building, pharmaceutical, personal care, cosmetic, automotive and industrial. Piezo print engine technology enables manufacturers to operate the printer continuously in industrial environments. For more information, visit www.diagraph.com.

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