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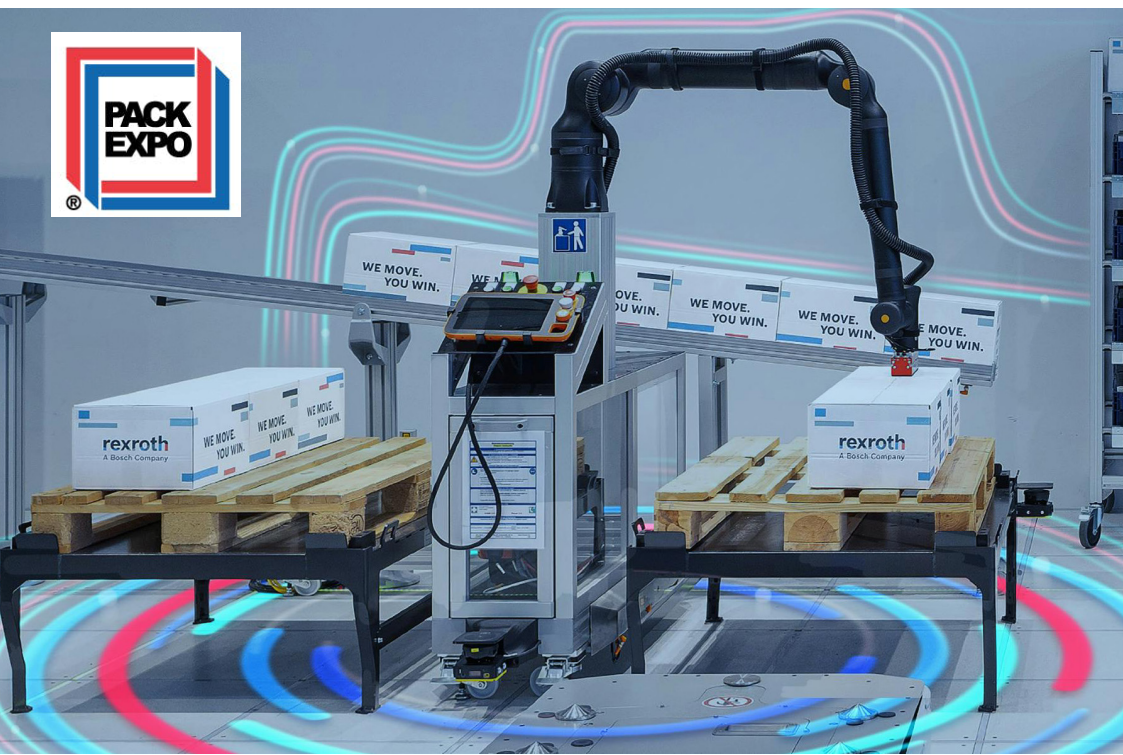
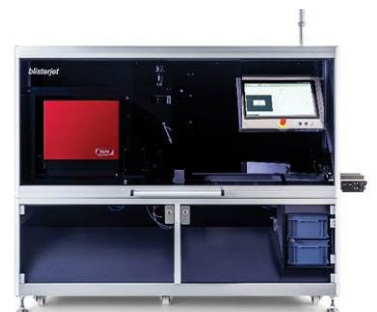
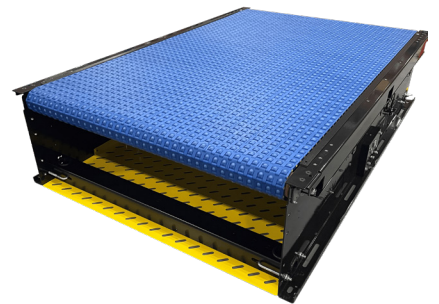
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PACK EXPO 2024: A Nexus for Packaging & Processing Industries



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- Fittings
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PACK EXPO 2024: A Nexus for Packaging & Processing Industries

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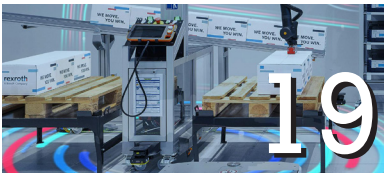
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WHAT YOU MISSED AND WHY YOU SHOULD FOLLOW UP.

Pack Expo International is the largest packaging and processing event of the year, bringing together representatives from 40 vertical markets.

The attendance tally is impressive: The biennial event took place at McCormick Place in Chicago (Nov. 3–6, 2024) and brought together 48,000 attendees and 29,500 exhibitor personnel, reaching 77,500 in total attendance.

These numbers shouldn't surprise anyone watching market fundamentals. According to a PMMI report, [State of the Industry: US Packaging Machinery](#), the U.S. packaging machinery market is projected to reach \$11.1 billion in 2024, driven by automation and sustainability. Growth is expected to peak in 2027.

With new show features and content spread across eight stages, including the rollout of Sustainability Central and Emerging Brands Central, innovative ideas flowed in abundance.

For those who didn't make it to Chicago this time around, all is not lost. Browse through this roundup of articles for an overview of technological insights, then click on the links that lead directly to the source of some of the industry's finest and most creative solutions.



*Rehana Begg,
Editor-in-Chief
Machine Design*

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PACK EXPO 2024: A Nexus for Packaging & Processing Industries



Amcor

CHAPTER 1:

PACK EXPO International 2024: Sustainability Becomes a Core Engineering Focus

REHANA BEGG, Editor-in-Chief, *Machine Design*

Packaging sustainability was marked as a core theme. In one example, Amcor showcased its responsible packaging prowess across a variety of markets, including food, beverage and medical.

Shows goers to the biennial PACK EXPO International will agree the show delivers on one aspect: scale.

Hosted at McCormick Place, Chicago (Nov. 3–6), the exhibition space took up more than 1.3 million square feet, where nearly 2,700 exhibitors represented more than 40 industries that serve the packaging and processing world.

The premier event for the packaging industry was produced by PMMI, the Association for Packaging and Processing Technologies, and is a central hub to discover solutions, stay abreast of the latest topics and trends.

Toward Sustainable Packaging Practices

Sustainability was a purposefully orchestrated theme at Pack Expo International 2024. “We’ve intentionally partnered with companies, exhibitors and vendors to integrate sustainability into every component of PACK EXPO International, including educational programming, show features, and how we do business as the largest packaging and processing event this year,” said Laura Thompson, PMMI’s vice president of Trade Shows.

The show debuted Sustainability Central, an expansive and dedicated



**November 3-6, 2024
Chicago, Illinois USA**

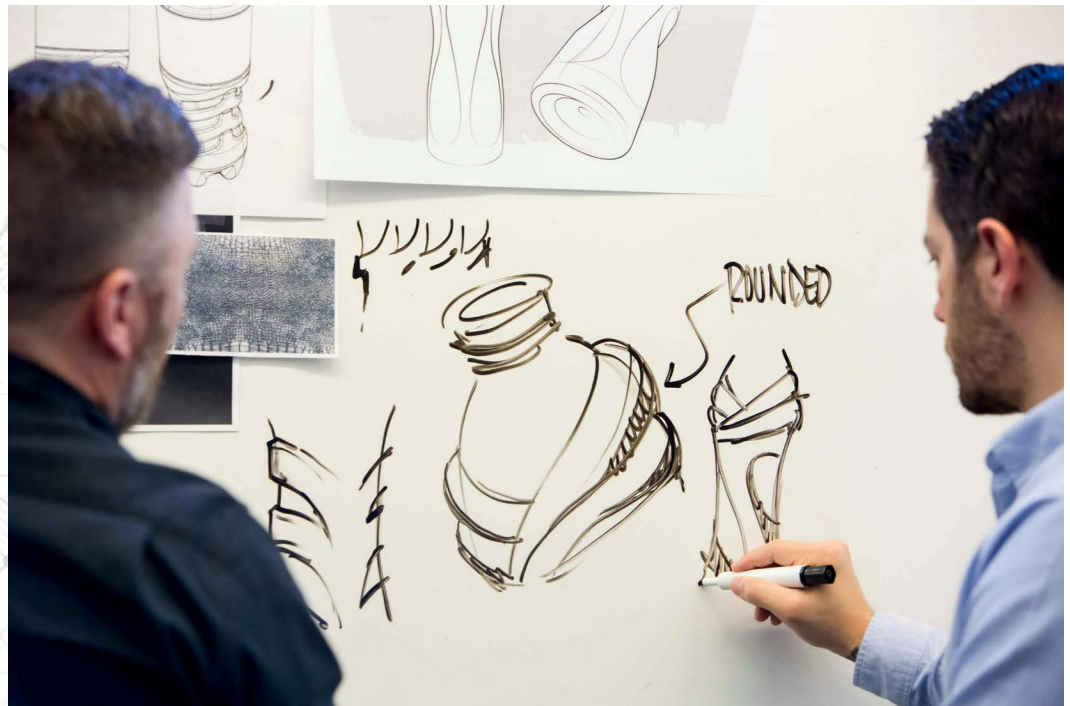
[READ MORE: Smart Packaging and Industry 4.0](#)

hub surveying packaging sustainability. New content included expert speakers at the Sustainability Stage, but also highlighted brands that could demonstrate actionable, sustainable solutions in manufacturing, materials, recovery, logistics, analytics and design. More than 20 expert presentations and educational sessions offered their takes on sustainability-enhancing solutions, including major industry players Amazon, Conagra, Clorox, Dow, Nestlé, the Consumer Brands Association and Conagra.

Minimizing the Use of Virgin Resources to Meet Sustainability Commitments

Many vendors are now developing and producing responsible packaging solutions by incorporating recycled content into their packaging. For instance, packaging solutions purveyor Amcor focuses on making packaging increasingly recyclable, reusable, lighter in weight and using an increasing amount of recycled content. The [AmFiniti portfolio](#) of recycled content packaging includes mechanical and advanced recycled material options for mechanical PCR (derived from post-consumer recycled content) for both food-grade and non-food grade applications, as well as advanced recycled materials.

Amcor produces responsible packaging solutions across a variety of materials for food, beverage, pharmaceutical, medical, home and personal care. For its in-booth demonstration of advanced film/equipment systems, Amcor shone a light on Liquiflex intermittent or continuous motion VFFS pouching machines, which it touts for creating “strong, abuse-resistant, zero headspace pouches with superb seal integrity.” These machines feature a programmable 200-function memory, rapid changeovers and cleanup, and accurate



Amcor has pledged to develop all its packaging to be recyclable, compostable or reusable by 2025. Amcor

[READ MORE: What Benefits Does Packaging Engineering Offer Businesses?](#)

weight control to eliminate variability and profit loss. According to Amcor, Liquiflex pouches reduce carbon footprint by 67% compared to metal cans and provide up to 30% reduction in material thickness over competitive structures.

Reduce, Reuse, Recycle Bottling Materials

The company noted that in fiscal year 2024, Amcor is on schedule to generate \$13.6 billion in annual sales from operations that span 212 locations in 40 countries. [Amcor has pledged](#) to develop all its packaging to be recyclable, compostable or reusable by 2025. The company's [long-term goal](#) is to achieve net-zero greenhouse gas emissions across its value chain by 2050.

In view of these ambitions, Amcor Rigid Packaging (ARP) has, for example, partnered with America Recycles Day to advance the ability to recycle small bottles. ARP's team of engineers designed a container that collapses in a controlled way to maximize its width. "With a collapsed width greater than 5 cm, this design would no longer slip through the cracks at most U.S. recycling facilities," noted Amcor.

When bottles are designed to collapse in a specific way, fewer bottles fall through the cracks. "The potential here is higher recyclability rates and more recycled content for multiple segments and materials," stated Dr. Terry Patcheak, vice president, R&D, Sustainability and Program Management at ARP in a press release.

This example, along with subsequent research, created a basis for Patcheak's presentation, "Designing the Future of Packaging," which highlighted how ARP has worked with brands on how they might convert from glass to PET, and why intentional, focused design "not only capture consumer interest but are also lighter and more sustainable."

Show Partners Demonstrate Commitment to Sustainability & Circularity


Sustainability Central hub featured displays from Virginia Tech, the University of Florida, Clemson University, PMMI Business Intelligence and AMERIPEN, among others, sharing their eco-friendly innovations, research and best practices.

PMMI demonstrated an organizational commitment to sustainability best practices and minimizing the environmental impact of the event by working with Dow, the Official Sustainability Partner and the Official Sponsor of Show Floor Recycling at PACK EXPO International.

Additionally, PMMI noted that McCormick Place has been recognized by independent third-party organizations such as LEED, APEX, Green Seal and the U.S. Environmental Protection Agency for its innovative strategies to reduce its carbon footprint.

[READ MORE: Medical Device Maker Enhances its Packaging 3D Printing Workflow with a Benchtop Multiplier Pressure Former](#)

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PACK EXPO 2024: A Nexus for Packaging & Processing Industries



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CHAPTER 2:

Business Intelligence: PMMI Contextualizes the Place for Artificial Intelligence

REHANA BEGG, Editor-in-Chief, *Machine Design*

An industry report examines benefits, barriers and tactics for the deployment of three AI technologies: machine learning, deep learning and generative AI. Plus, links to resources and case studies.

The promises of AI are sparking lively debate and reshaping perspectives in 2024. In the United States, a significant proportion of domestic machinery production still lags global adoption of cutting-edge technologies such as AI-driven manufacturing and robotics. [Analysts](#) expect key investments—including those backed by the [Executive Order](#) on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence—to spur demand for machinery across manufacturing sectors.

For packaging machine OEMs, in particular, AI is expected to have a net benefit when it comes to improving machine design and functionality, improving productivity and enhancing support and services.

A recent whitepaper, [“The AI Advantage in Equipment: Boosting Performance and Bridging Skills Gaps.”](#) published by The Association for Packaging and Processing Technologies (PMMI), aligns the definition of artificial intelligence and its subsets (machine learning, deep learning, generative AI) with the National Artificial Intelligence Initiative and White House Executive Order on AI, as follows: “a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments.”

In a complementary [PMMI podcast](#), “AI in Packaging: Driving Innovation and Overcoming Barriers,” George Blunt, a consulting analyst with Interact Analysis and an author of the whitepaper, commented on the findings and named five areas where AI is demonstrably

[READ MORE: Pack Expo International 2024: Sustainability Becomes a Core Engineering Focus](#)



Thekaikoro | Dreamstime.com

affecting packaging: AI co-pilots (based on large language models), machine vision (the use of cameras and sensors), predictive maintenance (using generative AI to scale up advanced machine monitoring), digital twins (virtual representations that run simulations of the machines and the whole plant) and connected worker platforms (digital management systems for controlling metrics on parts, processes and staff performance).

The good news for those concerned about AI skills development, according to Blunt, is that packaging employees don't need to be bogged down with the details of AI technology. Specialized knowledge comes into play when a packaging company wants to develop its own AI tool, such as a generative AI chatbot, without involving another company.

Beneficial Aspects for Manufacturers That Choose to Implement AI

The PMMI whitepaper outlines the ongoing benefits and challenges associated with the use of AI tools and technologies. Benefits include:

- Better machine performance.
- Efficiency and productivity. AI frees up employees' time by carrying out routine tasks such as data entry and coding.
- Filling skills gaps and mitigating labor issues.

Barriers associated with AI Deployments

The PMMI report also discusses challenges and barriers to successful deployment of AI solutions, such as:

- Concerns around cybersecurity.
- Inconsistencies with the quality of data and collection methods.
- Resistance to change, particularly among older workers.
- Fears about job replacement.
- Problems associated with data hallucination.

Download the whitepaper, "The AI Advantage in Equipment: Boosting Performance and Bridging Skills Gaps," at PMMI's [website](#).

[READ MORE: Super Bowl Tickets, Powertrain Solutions and Conveyor Demos at PACK EXPO 2024](#)

[READ MORE: Packaging Machinery a Bright Spot for Manufacturing Sector \[Power & Motion\]](#)

Expand Your List of AI Resources

The following list depicts just a sampling of AI topics and real-world capabilities presented at [PACK EXPO International 2024](#).

The Future of Labeling: AI-Powered Machine Diagnostics

This session, presented by Travis Younger, VP & general manager of [P.E. Labellers North America](#), based in Cincinnati, Ohio, described a new AI-powered solution, TelescoPE, which offers augmented labeler performance metrics, customizable KPIs and proactive identification of inefficiencies, delivering business-specific recommendations on enhancing productivity tailored to all levels within the organization, from operators to engineers and management alike.

Effectively Deploy Generative AI in Packaging and Processing

Presented by Deepak Padgaonkar, an electrical engineer and a founding member and EVP Technology at [V3iT Consulting, Inc.](#), this session explored various AI-driven methodologies that enhance design, efficiency, customization and sustainability. Attendees learned to delineate among various AI strategies and tools for implementing them, including how Generative Adversarial Networks (GANs) facilitate design prototyping and synthetic data generation; how AI-driven 3D printing enables rapid prototyping and custom packaging solutions; why reinforcement learning optimizes processing parameters and enhances robotic automation, whereas augmented and virtual reality technologies offer immersive virtual prototyping; and employee training. Additionally, he discussed how data-driven decision-making processes optimize supply chains and analyze consumer behavior, thereby creating more appealing packaging designs.

AI-Enabled Vision: Inspection & Robotic Guidance Application

Traditional rules-based machine vision excels at inspecting highly repeatable products. But Harley Green's presentation argued that with the help of AI, machine vision can "inspect in greater detail and tackle more complex problems, such as products with a high variance of naturally occurring organic variability." The vice president of Strategic Business at [Oxipital AI](#) discussed how AI-enabled machine vision incorporated into the production process in the food industry makes it possible to grade cuts of meat to help manufacturers appropriately price their products or to check the quality of received produce to ensure manufacturers aren't overpaying for low-quality products.

Packaging in 2025 and Beyond: How AI Can Accelerate Process and Insight to Your Packaging Program

Michael Schwabe, director of Market Intelligence, [Surgere](#) unpacked opportunities for the use and success of AI within packaging operations for warehouse, inventory and transportation applications. The session focused on the role of AI in business applications, including where to start with AI and what the impact of introducing this advanced technology within your company operations could mean.


Industrial AI: Practical Examples for CPG Manufacturing

Chris Barnes, a leader in Data & AI Consulting at [Rockwell Automation](#), presented practical manufacturing applications to demonstrate how AI can address key business challenges. Use cases were culled from CPG manufacturers using AI to gain competitive differentiation.

AI & GenAI Application in Industrial and Packing Solutions

Juergen Weichenberger, VP, Artificial Intelligence & Strategy at [Schneider Electric](#), presented a solution for PLC Code Generation, which allows operators to create code for their PLC without being an expert coder.

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PMMI

CHAPTER 3:

PACK EXPO International Celebrates Innovation with 2024 Technology Excellence Awards

SHARON SPIELMAN, Technical Editor, *Machine Design*

PACK EXPO International announced the Technology Excellence Award winners, which recognize innovations in packaging and processing. The awards celebrate never-before-seen technology showcased at the event.

PACK EXPO International announced the Technology Excellence Award winners, which recognize innovations in packaging and processing. The awards celebrate never-before-seen technology showcased at the event.

[Winners were announced in various categories](#), highlighting exceptional solutions across multiple sectors. Notable recipients include standout innovations in food and beverage, general packaging and processing, personal care/pharma and sustainability. These awards represent a culmination of votes from [industry professionals](#) who evaluated the impacts and capabilities of the technologies.

Food Radar Systems Wins Food and Beverage Category

For food and beverage, the winner is [Food Radar Systems](#) for its detection of foreign bodies by transmitting low power microwaves through the food product. The system uses a microwave sensor designed for emulsions and pumpable products and measures the dielectric properties of the food.

General Packaging and Processing Goes to Fogg Filler

[Fogg Filler Company](#) took home the award for general packaging and processing. Its PF pressure filler series is a complete rethink of filling technology engineered as a hybrid

[READ MORE: Super Bowl Tickets, Powertrain Solutions and Conveyor Demos at PACK EXPO 2024 | Machine Design](#)

system to offer significant advantages over current gravity bowl and pressure gravity filling designs. The technological hybrid pairing integrates the precision and the product supply pressure of contactless electronic metering valves with the closed-loop bypass process controls and CIP/SIP cleanability in a contact filling valve.


Pace Packaging Prevails for Personal Care/Pharma

The personal care/pharma winner is [Pace Packaging LLC](#) for its Omni-IR, the new generation of the company's linear technology, enhancing its capabilities and reliability to meet the ever-growing needs of manufacturing environments. Capable of achieving speeds ranging from 250 to 650 bottles per minute, the Omni-IR series offers manufacturers of all sizes a customizable solution to meet specific production demands.

Plastipak's PET Resin Scores Sustainability Award

The sustainability award went to [Plastipak Packaging Inc.](#) for its PPK Natura, the world's first PET resin made from waste carbon. The resin is designed to reduce greenhouse gas emissions, and its production process does not require land or food resources. Packaging made from this material can be fully recycled at the end of its life, keeping the carbon in a circular material cycle. Proprietary bacteria are applied to consume a variety of waste feedstocks and convert them into new chemicals, which can be turned into packaging, clothing, laundry detergent, aviation fuel and more.

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PACK EXPO 2024: A Nexus for Packaging & Processing Industries



Regal Rexnord

CHAPTER 4:

Super Bowl Tickets, Powertrain Solutions and Conveyor Demos at PACK EXPO 2024

REHANA BEGG, Editor-in-Chief, *Machine Design*

A large-scale material handling conveyor demo serves as the platform for an array of motion-control technologies.

Enticing people with a draw to win a 2025 Super Bowl package that includes two tickets, airfare to New Orleans, hotel accommodations and admission to an exclusive tailgate party is a resourceful way to lure people to a trade show booth.

And that's just one of two tactics Regal Rexnord's material handling and packaging experts brought to PACK EXPO International 2024.

The other was to bring along a large-scale conveying demo and demonstrate how the company goes about solving common throughput challenges, particularly when it comes to the unique collection of components that drive operations. With the conveyor set up, Rexnord experts were able to weigh in on best practices in arranging a package handling conveyor network to incorporate robotic-arm palletizing and could answer questions on embedded motion-control conveyor technologies.

Powertrain Solutions

Headquartered in Milwaukee, Wisc., Rexnord has four operating segments: Automation & Motion Control, Industrial Powertrain Solutions, Power Efficiency Solutions and Industrial Systems. At the show, the company focused on powertrain solutions for the material handling, packaging, and food-and-beverage industries.

The conveying demo in the booth was designed to show how Rexnord can address

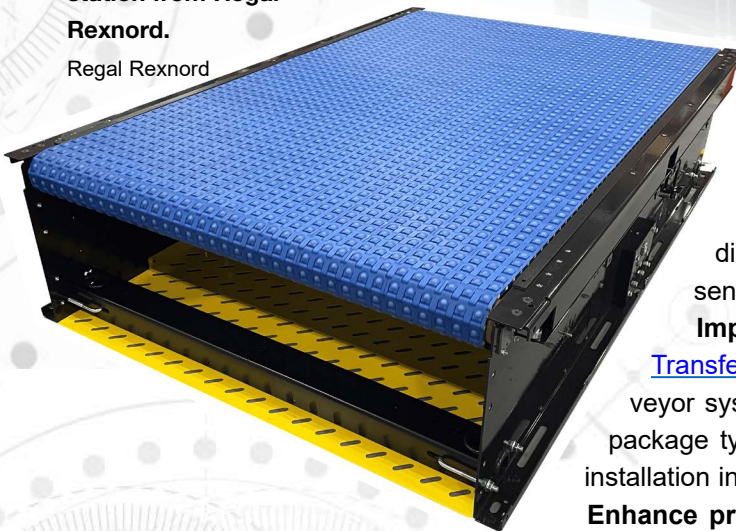
[READ MORE: Regal Rexnord Curve System with 1540 Series MatTop Chain Provides Flexibility for Case Handling](#)

An answer to industrial manufacturing needs, Regal Rexnord's Perceptiv Web is a single platform for condition monitoring and predictive maintenance and reliability. Regal Rexnord



ModSort is a low-noise, low voltage modular transfer and diverter station from Regal Rexnord.

Regal Rexnord



common throughput challenges, including ways to:

Increase productivity through machine health. [Perceptiv Intelligent Reliability Solutions](#) is a condition monitoring and predictive maintenance platform, which combines condition monitoring sensors with expert analysis and prescriptive recommendations.

Improve facility and operation performance. [ModSort Divert and Transfer Modules](#) can be integrated into existing or motorized roller conveyor systems. Their main function is to divert, transfer and sort multiple package types. They use industry-standard 24V connections to help ease installation in typical applications.

Enhance product handling and throughput. Rexnord highlighted a range of IP69K rated solutions, including [Sealmaster SS Gold Mounted Ball Bearings](#), [Boston Gear Gen2 SS700 Series Speed Reducers](#) and [Bauer Gear Motor HiflexDrive Gear Motors](#), as well as conveying solutions such as Rexnord [1533 LBP \(low back pressure\) Series MatTop Chain](#) and the high-performance [Rexnord 8505 MatTop Chain](#).

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Sealmaster SS Gold bearings feature a 316 passivated stainless-steel housing and 440C stainless steel insert and a high-performance triple lip seal that retains lubricant and prevents contamination. It is IP69K certified, which verifies it can withstand the toughest environments.

Regal Rexnord



PACK EXPO 2024: A Nexus for Packaging & Processing Industries



Festo

CHAPTER 5:

A Handful of Product Highlights from PACK EXPO 2024 in Chicago

SHARON SPIELMAN, Technical Editor, *Machine Design*

Explore fundamental components as well as groundbreaking technologies and solutions that were showcased by industry leaders who aim to transform automation, safety and efficiency—wrapping up the week's event.

PACK EXPO 2024 unveiled a wealth of legacy and innovative solutions that are shaping the future of packaging and processing among a range of vertical markets. With industry leaders showcasing their latest offerings, attendees had the opportunity to engage with products, services and solutions that prioritize automation, safety and efficiency. Here is just a smattering of some products that were seen at the event.



Altech Corporation's line of industrial components were on display at PACK EXPO 2024. From disconnect switches to terminal blocks to manual motor controllers, the company offers industrial automation components for a range of industries. Altech Corporation

Altech Corporation Offers Automation Components

With a legacy of 40 years, the company continues to be a leading supplier of industrial automation components. They showcased several products at PACK EXPO, including:

- Disconnect switches
- Miniature circuit breakers
- Terminal blocks
- Enclosures.

One highlight is their manual motor controller, which offers a robust panel safety. They also displayed DC UPS systems, sensors and safety devices that comply with UL requirements and international standards, ensuring they are ROHS and Reach compliant.

Balluff Demos Showcased Controls, Monitoring and More

Visitors to the Balluff booth got to explore the latest automation technology for controls architecture, condition monitoring, guided format change and more to enhance processes, decrease downtime and improve overall equipment efficiency in the packaging and food and beverage industries. Demos included:

- Guided changeover solutions
- Level detection
- Form-fill-seal systems
- Condition monitoring
- Food safety technologies
- Smart automation monitoring systems
- Network architecture
- Standard automation sensors
- Logistics
- Traceability with RFID.

Festo Featured Motion Control, Grippers, Imperial Components and More

The company offered motion control solutions for food and packaging operations; adaptable gripping solutions for packaging applications; VTUX valve terminals; vacuum components; Didactic learning solutions; and Fabco Air imperial components.

Attendees considering motion control or remote I/O for their food and packaging operations got to see the ability to power up efficiency and connectivity with the company's portfolio of products. Festo's linear and rotary mechanical systems, servo drives and motors, control solutions and I/O systems can be integrated into an existing automation

[READ MORE: The New, Noteworthy and Game-Changing: Product Launches at PACK EXPO 2024](#)



In addition to PACK EXPO 2024, Balluff made its rounds at other trade shows this year, including Automate 2024. Level detection can be used in a range of industries, including packaging and processing. Sharon Spielman



Festo displayed motion control solutions for food and packaging operations; adaptable gripping solutions for packaging applications; VTUX valve terminals; vacuum components; Didactic learning solutions; and Fabco Air imperial components at PACK EXPO 2024. Festo

chain with minimal risk.

Intelligent gripping systems adapt to unique requirements. From delicate items to heavy loads, the company's grippers are made to handle a range of products.

The VTUX valve terminals can serve as I/O, remote I/O and decentralized I/O. The compact and rugged IP65/67-rated terminals can be located anywhere on a machine that boosts operational performance and original equipment manufacturer (OEM) installation productivity. Their modularity aims to result in less inventory and lower overhead costs.

The OVPN multistage vacuum generator and the OASP vacuum generator cartridge are suitable for overhead palletizing, case erecting and bag feeding. The OVPN nozzle technology creates high initial suction flow while optimizing air consumption leading to maximum energy efficiency and sustainable operations. The OASP generator cartridge is offered in a two- or three-stage design, with the three-stage option giving the highest suction flow rate at 245 l/min. The OASP is available as a simple generator cartridge or with a retaining cap and integrated silencer. Like the OVPN, the OASP is designed to be lightweight and compact.

Didactic specializes in providing innovative learning solutions for technical education and industrial training. They offer a range of training systems, simulators and educational resources designed to develop practical skills and competencies in fields such as automation, mechatronics, robotics and fluid power.

Finally, Festo's Fabco Air brand is made for precision, reliability and performance in the inch-sized pneumatic market in industries that require inch-based solutions. Components include:

- Actuators
- Valves
- Air-preparation products.

KHK's metric gears made its rounds at trade shows this year. In addition to PACK EXPO 2024, KHK brought its line of products to Automate 2024 earlier this year. These gears are used in packaging and processing as well as other industrial automation applications.

Sharon Spielman



KHK USA Inc. Geared Up for Industrial Automation Applications

The company specializes in providing an array of metric gears tailored for industrial automation applications. Visitors were able to explore nearly 200 styles of gearing in more than 26,000 configurations. Representative samples included:

- Metric spur gears
- Helical gears
- Internal ring gears
- Gear racks, including CPR racks and pinions
- Miter gears (spiral, straight, Zerol and Hypoid)
- Screw gears
- Worms and worm wheels
- Gearboxes
- Ratchets and pawls
- Gear couplings
- Involute splines and bushings
- Educational demo kits for deeper insights into gear functionalities.



The company demonstrated how their products can optimize efficiency in industrial settings.

Schmersal Inc.'s Comprehensive Safety Solutions

Standing at the forefront of machine safety technology, the company has more than 75 years of technical knowledge and industry experience to create comprehensive safety solutions tailored to protect machinery operators. Their offerings at this year's event included:

- Safety-related components
- Industrial switches
- Position sensors
- Control accessories
- Engineering services.


Schmersal's safety-related components made its rounds at trade shows this year. In addition to Pack Expo, Schmersal brought its line of switches, sensors and control accessories to Automate 2024 earlier this year. Sharon Spielman

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Their tec.nicum group offers product- and manufacturer-neutral consultation on matters relating to machine safety and work protection. Their team of TÜV certified functional safety engineers for machinery can plan and realize complex solutions for safety around the world in close collaboration with clients. They also offer:

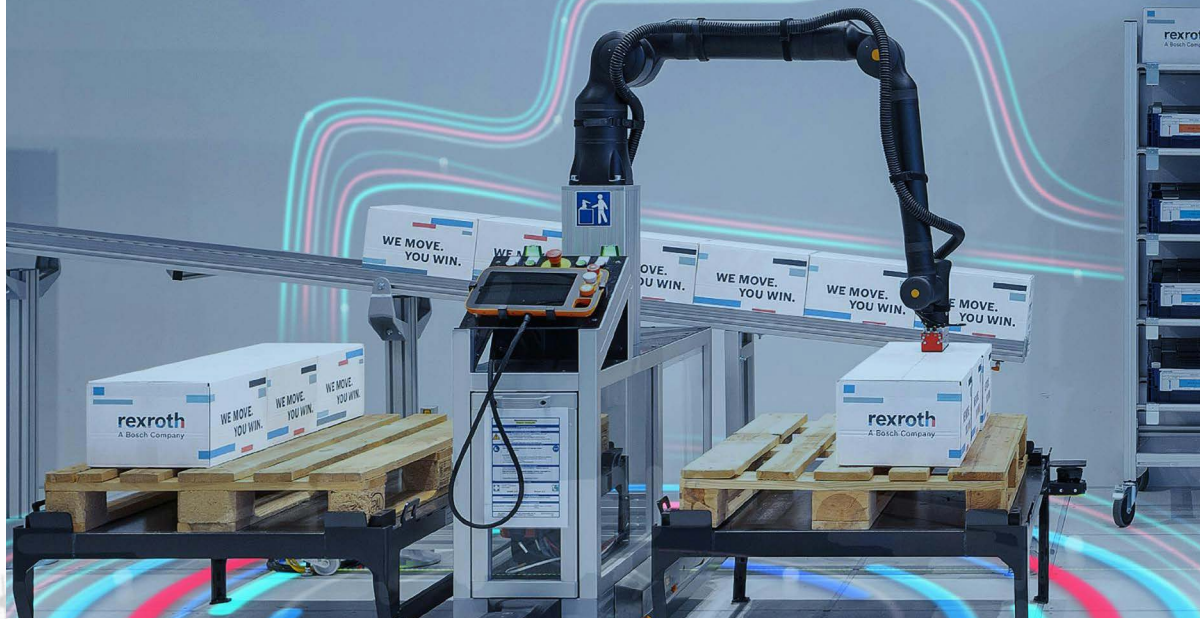
- Training courses on numerous topics, including general machine safety, ISO13849, safety circuits and wiring, and understanding and conducting risk assessments.
- Safety appraisals and conformity check with applicable legislation and standards of machine safety and work protection.
- Risk assessments, machine testing and complete project documentation.
- Assist in the parametrization, programming and installation of complex components such as optoelectronic safety products and safety controllers.

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Bosch Rexroth

CHAPTER 6:

The New, Noteworthy and Game-Changing: Product Launches at PACK EXPO 2024

REHANA BEGG, Editor-in-Chief, *Machine Design*

Packaging automation experts demonstrated how manufacturers can gain visibility and control to solve critical challenges.

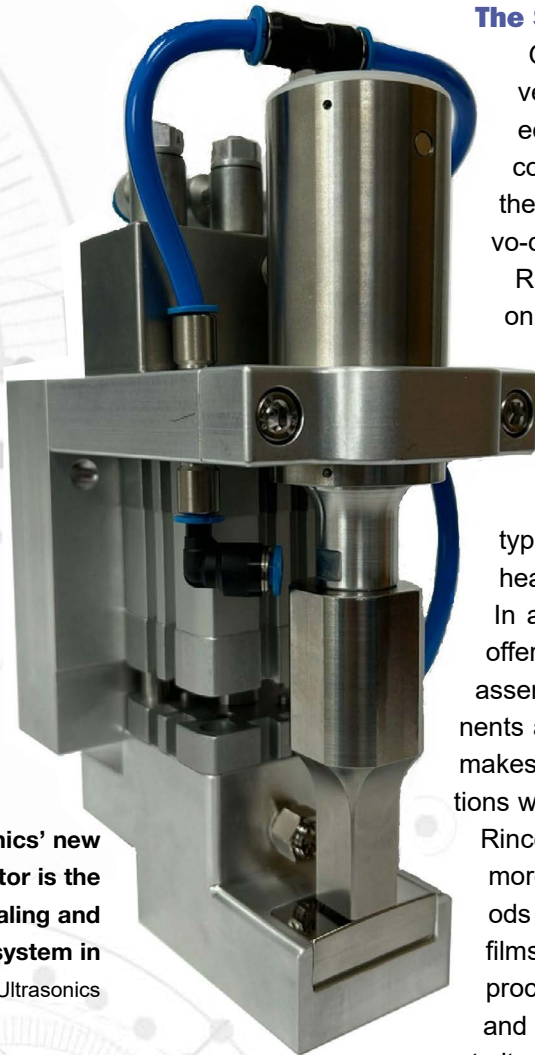
PACK EXPO International runs biennially, making it a must-attend trade fair if you're going to keep up with the latest developments in packaging machinery; materials; packages and containers; automation and robotics; digital printing and labeling; and supply chain solutions.

Whether yours is a growing brand looking to scale up and expand operations, or you're a contract services provider looking for ways to differentiate, this event offers fresh perspective on how comparable companies are advancing their growth strategies and overcoming automation, innovation and sustainability challenges in manufacturing and packaging.

According to [Contract Packaging & Manufacturing: Drivers of Machinery Investments](#), a report published by the show producer, PMMI (The Association for Packaging and Processing Technologies), 87% of contract manufacturing firms interviewed plan to install new equipment in the next three years to increase flexibility (78%), expedite changeover (53%) and simplify machine operation (46%).

The most popular machinery additions, according to PMMI's report, are in palletizing (40%), case/tray handling (35%), label/decorating/coding (32%), form-fill-seal (31%), cartoning (30%), filling/dosing (26%), bottling line (25%) and wrapping/bundling (22%).

The list below is a mere sampling of new and innovative technological advancements that attendees were exposed to this year. Feel free to find out much more about what the packaging and processing industry has to offer by [navigating here](#).



The Smallest Fin Sealing and Zipper Crushing System

Global demand for lightweight, portable, durable and convenient packaging is good news for ultrasonic welding equipment manufacturers such as Rinco Ultrasonics. The company launched two new products at PACK EXPO, namely the Micro-35 packaging actuator and the FPA4500EM servo-driven pouch sealer.

Rinco's new Micro-35 Actuator is a welding unit that operates on a 35-kHz frequency and was designed for continuous fin sealing and zipper crushing applications for the packaging industry.

Ultrasonic sealing or welding is a preferred sealing method that operates on the principle of converting electrical energy into high-frequency mechanical vibrations, typically in the ultrasonic range (around 20 kHz or higher). The heat is generated only inside of the materials to be welded. In addition to forming strong, airtight and watertight bonds, it offers speed, precision and sanitary sealing, making it ideal for assembling products like medical devices, automotive components and consumer electronics. The lightweight actuator system makes it viable for continuous movement zipper crushing applications where the actuator must move with the film.

Rinco's press release characterized ultrasonic welding as a more sustainable process when compared to traditional methods and has the capability of sealing recycled and bio-based films as well as many paper-based materials. Thermal sealing processes are blind and often affected by ambient conditions and are unable to confirm seal quality. Rinco noted that intelligent ultrasonic systems provide a high level of process data, offering insight into the sealing process.

Rinco Ultrasonics' new Micro-35 actuator is the smallest fin sealing and zipper crushing system in the industry. Rinco Ultrasonics

A Servo-Driven Pouch Sealer

Rinco's FPA4500EM servo-driven pouch sealer can dynamically manipulate key parameters such as vibratory amplitude, weld force and stroke velocity during the weld cycle, ensuring the best possible weld strength and the fastest possible cycle time. According to Rinco, eliminating the use of compressed air to develop seal force means the new servo-driven welder significantly reduces energy consumption. The

By eliminating the use of compressed air to develop seal force, Rinco Ultrasonics' FPA4500EM servo-driven pouch sealer significantly reduces energy consumption. By eliminating the use of compressed air to develop seal force, Rinco Ultrasonics' FPA4500EM servo-driven pouch sealer significantly reduces energy consumption. Rinco Ultrasonics



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servo system monitors the force and position of the sealing tools and can detect folded and missing pouches, noted the company's press release.

In the ultrasonic process, the high-frequency vibrations generate frictional heat within the materials being sealed. A melt is created almost instantaneously, which offers productivity benefits where thicker films are being used. Furthermore, data available from the ultrasonic generator provides process control benefits that are not available with thermal sealing, stated the company.



A Floor-to-Cloud Approach to Energy Management

Emerson's extensive product line was on full display to enable smarter packaging lines and more efficient processes. Emerson experts demonstrated ways to unleash trapped data and link up traditionally passed-over machinery and equipment. The product selection highlighted how to accelerate net zero progress, raise overall equipment effectiveness (OEE) asset by asset, and systems that empower staff with data to drive continuous improvement. For example, operators can gain visibility through the [Energy Manager](#), a pre-engineered hardware and software solution that

Ready out of the box, the Energy Manager is designed to simplify energy monitoring in real time. Manufacturers gain deeper insight into asset-specific consumption, associated costs and carbon dioxide (CO₂) emissions. Emerson



By monitoring air consumption in pneumatic systems, AVENTICS Series AF2 Flow Sensors enable rapid intervention if leaks occur.

Emerson

simplifies asset energy monitoring in real time. Dashboards display asset-specific consumption, associated costs and carbon dioxide (CO₂) emissions for up to 10 end points (expandable to 50 with a license).

Combined with the Emerson Compressed Air Manager, the Energy Manager presents a streamlined view of energy costs and compressed air usage across a packaging line, factory and site. To this end, Emerson now also offers a high flow model of an advanced sensor that propels compressed air monitoring beyond individual machines to benefit larger air lines and systems. The [Aventics Series AF2 Flow Sensors](#) brings expanded capabilities to compressed air consumption and energy efficiency, allowing users to optimize across an entire packaging facility and improve overall plant sustainability.

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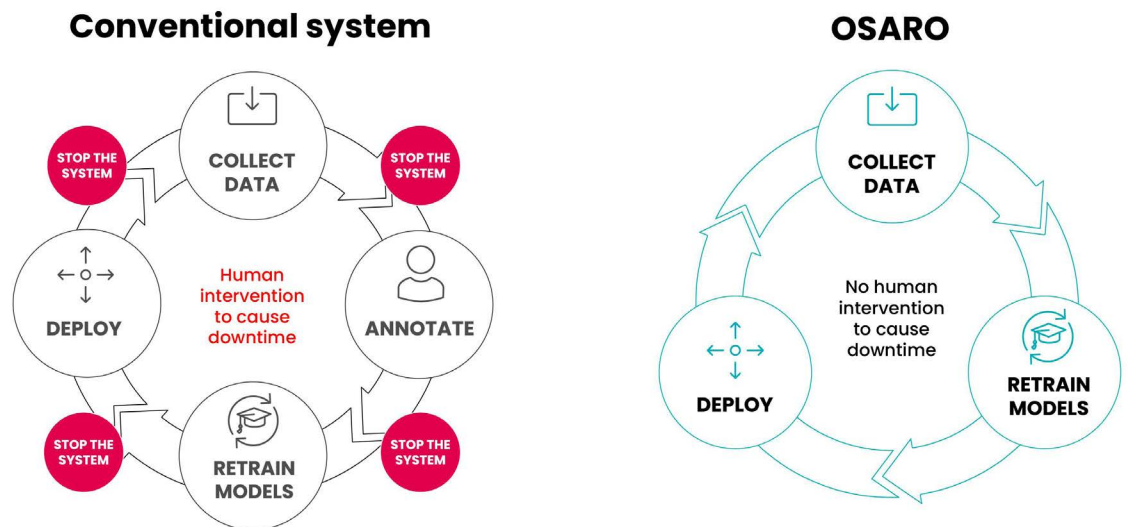
Digital Imaging Solutions Collaborate with Robotic Bagging Solutions

Canon USA demonstrated an AI-based robotic perception and pick-and-place software solution developed by Osaro, a San Francisco-based robotic automation integrator. [Osaro's Robotic Bagging System](#) is fitted with Canon's optical-encoder-based, low-cost force-torque sensor, which measures the magnitude and direction of load along three axes and rotational forces. When attached to a robotic arm, a force sensor helps the arm sense the strength needed to handle objects.

OSARO

OSARO AutoModel™

Automated infrastructure for training, evaluation, and deployment.



Osaro's AI-powered software streamlines new SKU introduction and provides greater flexibility and efficiency in kitting, piece-picking and autobagging. OSARO

Powered by Osaro's advanced AI and machine-learning algorithms, [Osaro SightWorks](#) enables the automatic addition of thousands of SKUs. The system features Canon's proprietary optical encoder technology, including a force torque sensor that measures three-quarters of an inch (in thickness) and weighs .55 lb. A digital mechanism works to provide high precision levels, and the Canon Force Torque Sensor Application Software connects users to a personal computer. No coding needed.

[Osaro](#) has unveiled a significant advancement in its Osaro SightWorks perception platform with the release of Osaro AutoModel, which accelerates the introduction of new SKUs. Osaro's experts note that the system monitors performance, identifies when an improvement can be made, retrains a model, tests the new model and deploys it without the robot ever stopping. The new advanced AI perception algorithms are well suited to high-volume piece-picking and kitting applications and customers will benefit from real-time AI model updates and ongoing performance optimization, they said.



In a new collaboration with Hamrick Packaging Systems, a packaging equipment OEM, Olis Robotics integrated its Olis remote support, diagnostics and error recovery software directly into Hamrick's HMI panel. Olis Robotics

Remote Monitoring and Error Recovery for Industrial Robotics

Seattle-based Olis Robotics specializes in remote control and error-recovery systems for industrial robots. Specifically, the technology focuses on video-based diagnostics and telemetry. Their latest collaboration is with [Hamrick Packaging Systems](#), a packaging equipment OEM, which integrated the Olis remote monitoring, control and troubleshooting system directly into the HMI panel. Olis monitors and diagnoses all PLC-controlled hardware in the cell (not just the robot arm). Hamrick's display at Pack Expo featured Olis in a robotic bottle packing application, offering customers the ability to restart production faster, reduce troubleshooting and downtime costs by up to 90%, while gaining access to expert support quickly. After a

system failure, operators can use Olis to run a tool inspection routine and perform remote error recovery, allowing the robot to resume its cycle and get back to work. Olis was also displayed at the Universal Robots and Kawasaki booths.



Multi-Tech Palletizing and Conveying

Bosch Rexroth demonstrated its complete factory automation solutions for CPG manufacturing. A multi-tech collaborative palletizing demo, it is built on Bosch Rexroth's aluminum structural framing, consisting of a VarioFlow plus conveyor system that delivers high accuracy with unprecedented speed, combined with

Bosch Rexroth's featured a multi-tech palletizing demo, highlighting different components—from conveyors and control systems to linear motor modules and a multi-axis handling system. Bosch Rexroth

a Kassow 7-axes collaborative robot. The modular VarioFlow plus plastic chain conveyor is a high-performance versatile plastic chain conveyor system with components that are easy to assemble in both horizontal and vertical configurations. In addition, Linear Motor Modules feature a zero-backlash direct drive. The LMMs come ready-to-install, with axes are available in sizes 140 mm, 180 mm and 220 mm.



Hapa's blisterjet agile enables late-stage customization for blister packaging. COESIA



The Norden NM 702 Tube Filler is a high-efficiency tube-filling machine that can handle various sustainable materials. COESIA

Cross-Industry Automation Innovations

Coesia brought an international flair with its suite of advanced technologies, production solutions and automation representing 10 companies, 17 solutions and nine product launches at its 2,000 sq. ft. booth. Collaborating with [Beckhoff](#), experts from R.A Jones (a Coesia company) presented on the Pack Expo Innovation Stage on the subject of "Cabinet-Free Machine Designs" and their impact on modern manufacturing.

At the booth, key solutions targeting the U.S. market focused on flexibility, reduced cost of ownership and operational excellence. One example is an advanced digital printing solution, blisterjet agile from Hapa, a Coesia company, which enables late-stage customization for blister packaging. With CMYK or spot color capabilities and integrated vision inspection, it improves flexibility while ensuring consistent print quality.

In the food area of the booth, demonstrations included a selection of Flow Packing, Chub Packing, and Robotics solutions. For example, the Norden NM 702 Tube Filler is a high-efficiency tube-filling machine that can handle various sustainable materials, such as mono-materials and paper-based tubes, making it ideal for personal care and pharma applications.

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