

# THE ASSEMBLY SHOW TIMES

COVERING AMERICA'S ONLY DEDICATED ASSEMBLY SHOW

**SPECIAL EDITION**

**OCTOBER 24, 25, 26, 2023**

## Keynote Speaker to Discuss Data Management in Manufacturing

By John Sprovieri, chief editor, [sprovierij@bnpmedia.com](mailto:sprovierij@bnpmedia.com), and Jennifer Pierce, multimedia editor, [piercej@bnpmedia.com](mailto:piercej@bnpmedia.com)

**M**anagement consultant Peter Drucker is often quoted as saying, “You can’t manage what you can’t measure.”

Humorist Mark Twain, meanwhile, is said to have written, “There are three kinds of lies: lies, damned lies, and statistics.”

In modern manufacturing, with its emphasis on continuous improvement and data analytics, there is ample room for both men to be right.

People inherently want to skew data. Whether it’s to impress the boss or shape the future of a project, people tend to choose or manipulate figures to support a favored outcome. It’s just human nature. The problem is that these adjustments can ripple through a company,

creating higher costs, masking inefficiencies and eventually affecting the company’s most critical resource—its workforce.

Roger Koenigsknecht, vice president of North America Connection Systems at Lear Corp., has seen this firsthand during his 17-year career in manufacturing.

He joined Lear in September 2008 as a senior packaging engineer and led a cross-functional team that worked to implement best practices throughout the company’s global manufacturing plants. Since then, he has held several positions within the company, including plant manager, director of North American operations for terminals and connectors, and director of

global operations.

In his current role, Koenigsknecht manages some 500 people who design and manufacture Lear’s low- and high-voltage terminals, engineered plastics and components. Among other things, he works hard to ensure that machines and business intelligence software provide Lear with real-time, unfiltered information to help the company make sound business decisions.

He’s also the keynote speaker at this year’s ASSEMBLY Show. Sponsored by Promess Inc., the keynote speech will take place Wednesday, Oct. 25, from 9 to 10 a.m. in conference room 13. Prior to Koenigsk-

*continued on page 10*



Roger Koenigsknecht, Vice President of North American Connection Systems at Lear Corp. will be the keynote speaker at this year’s ASSEMBLY Show.

## Vote Now for New Products of the Year

By John Sprovieri, chief editor, [sprovierij@bnpmedia.com](mailto:sprovierij@bnpmedia.com)

### ASSEMBLY MACHINES & SYSTEMS

#### Self-Adjusting Tooling for Flexible Automated Assembly



This custom automated assembly system for military-grade products has the flexibility to process hundreds of part variants with no manual changeover required.

Servo-actuated nests, tools, fixtures and robotic grippers with pressure-sensing feedback allow for immediate and automatic changeover between part variants. The automated flexibility is even more impressive considering the complexity and precision of the processes to assemble the product. A high-speed delta robot picks components from a custom multi-lane feeding system that uses coin-change singulation and automated inspection. Pins measuring just 1 millimeter across are automatically de-reeled and stitched into housings in precise locations. The final product is laser

## NEW PRODUCT Awards

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<https://msautomation.com>

#### Servo-Driven Riveter



Orbitform offers a full line of servo-driven riveting equipment, including the PSV-1000, the largest on the market, with a peak forming force of 40,000 pounds. A servo drive gives manufacturers a higher level

of process control with variable advance and retract rates, precise speed and position advancement, the ability to form to a force or distance, multiple programmable stop positions, and programmable dwell time.

This level of process control means manufacturers can achieve consistent, high-quality parts. Servo equipment provides stability in an assembly process without reliance on pneumatics, eliminating any precision issues caused by fluctuations in air pressure. By using the precision control of servo-driven equipment, manufacturers can form a pivoting joint to specific dimensions,

check the torque, and if the torque specification is not met, repeat the forming cycle until the desired torque is reached.  
Orbitform • Booth 219  
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#### New Tech Simplifies Integration of Press Systems



The Work Flow Director provides a simple programming environment, reliable

*continued on page 2*

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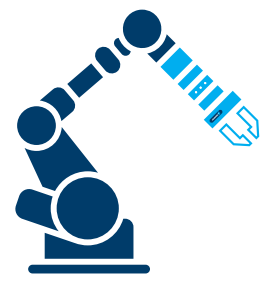


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connectivity and easy integration of non-Promess devices with Promess devices, providing a low-risk step into smart manufacturing. The technology alleviates assembly and manufacturing challenges derived from complex PLC programming, device mismatches and operator error.

One example is bar code scanning. The Work Flow Director allows a traditional bar code scanner to be easily integrated with a Promess Work Station. Part fixtures, press tools and physical parts can thus be scanned and verified based on part models. This is accomplished through a few setup windows, instead of an entire PLC project, which normally would require hours of integration, programming and debugging. With the ability to store up to 350,000 part model configurations and corresponding tooling, this system can enable manufacturers to be scanning and verifying parts within minutes.

The Promess Data and Device Hub, the backbone of this innovation, sets the stage for a future where manufacturing devices communicate seamlessly and easily. The Workflow Director is the first of many technologies that will be hosted on this platform.

Promess Inc. • Booth 305  
www.promessinc.com

### Heavy-Duty Conveyor Is IIoT-Ready



The HU twin-track pallet conveyor is suitable for assembly and test processes for heavy loads. Configurable standard modules allow engineers to quickly and easily create layouts for routing, balancing, buffering and positioning pallets. Modules include predefined control logic, which reduces programming time and enables true plug-and-play integration. Functions such as transfers, locating stations and stops are all electrical.

The conveyor is fully digitalized and prepared for IIoT and traceability requirements. The software includes tools for pallet routing, traceability, data acquisition and OEE data.

The conveyor beam is rigid, ensuring smooth running with low noise. T-slots ensure easy but firm attachment of accessories. The upper slide rail is made of stainless steel, while the lower rail is made of plastic. The return chain runs within the beam. Three types of chain are available: steel roller chain, steel off-set

roller-top chain, and lubrication-free steel roller chain.

Aluminum pallets come with an electrically conductive frame and are RFID-ready. The pallet has an accurate fixture interface and is tooled in relation to the locating holes. Standard pallet width is 1,040 millimeters. Conveyed products can range from a few grams up to 200 kilograms in weight.

A booster section doubles transfer speed when needed and reduces pallet exchange time by up to 50 percent. This reduces noise and stress on wear parts. Maximum speed is 15 meters per minute. Maximum conveyor length is 10 meters. Maximum accumulated load is 1,000 kilograms.

The conveyor has a mean time between failures of 12,000 hours (two years in a three-shift operation). All functions are plug-and-play and mounted in fixed positions, allowing a single digit mean time to repair. Smart motors and digital chain slack detection permit predictive maintenance.

A fully electric transfer is designed in two sections—lift and drive—to facilitate installation and maintenance. The locating unit stops the pallet and positions it with a repeatability of  $\pm 0.1$  millimeter. The locating pins are situated on one side, but machined in the same piece to achieve perfect accuracy.

The system offers a range of stops and dampers. Stops can be electric or pneumatic. FlexLink also offers a unique gravity damper that gently slows down the pallet.

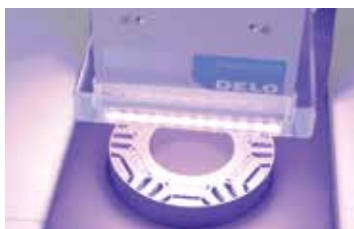
Smart asynchronous motors only run when needed, and thanks to the conveyor's low-friction design, engineers can configure longer sections per drive. This reduces torque by 50 percent. Motor control can be integrated or separate. A chain tensioner with a proximity switch for alarming is optional.

Modules include FlexLink standard controls logic. The line controller manages routing and track-and-trace, while FlexLink device controllers manage sensors, functions and smart motors. The benefits are reduced PLC programming and fast reconfiguration of a system.

FlexLink Systems Inc. • Booth 1723  
www.flexlink.com

### ADHESIVES, DISPENSING & CURING

#### Adhesive for Electric Motor Assembly



Dualbond HT2990 is a dual-curing, high-temperature adhesive for electric motor assembly applications, such as magnet bonding and magnet stacking. The adhesive achieves fixation in 5 to 10 seconds when exposed to light. This supplemental means of curing helps motor manufacturers quicken assembly processes and optimize efficiency.

While heat is the standard method of curing adhesives for magnet bonding, complementing it with light fixation creates an already-cured outer layer that helps keep everything in place. The adhesive does not seep outside or onto the motor laminations. In magnet stacking, supplementing heat curing with light fixation lets manufacturers forego having to keep magnets under a jig in the oven to reach the desired bond line thickness.

Final curing with heat takes 30 minutes at 150 C or 60 minutes at 130 C. If exposure to heat occurs later in electric motor assembly, for example via heat shrinkage, there is a possibility for the heat curing step to be skipped. Induction curing can be another alternative to oven curing as well.

At room temperature, the adhesive can achieve a compression shear strength of up to 70 megapascals (MPa) on steel. This compares to 45 MPa for standard high-performance heat-curing epoxies. It also has a high glass transition temperature of 165 C. In heat as extreme as 180 C, it still exhibits a tensile shear strength of 7 MPa on aluminum. This is equivalent to 70 kilograms per square centimeter of force.

DELO Industrial Adhesives LLC  
Booth 1811  
www.delo-adhesives.com

#### Adhesive Assembles ADAS Components



Loctite Ablestik NCA 01UV is formulated for assembly of high-resolution cameras and lidar modules for advanced driver assistance systems (ADAS). This active alignment adhesive is cured in a single step with just 3 seconds of exposure to UV LED light, eliminating the

need for oven curing to save time, energy and CO<sub>2</sub> emissions.

With low and consistent dimensional change of 0.4 percent during cure, this adhesive can be used to assemble high-resolution camera modules. No outgassing from volatile compounds ensures high image quality and no fogging of optical components. It is free of CMT, SVHC, or any toxic substances and fully EU REACH-compliant.

Henkel Corp. • Booth 1616  
www.henkel-adhesives.com

#### Adhesive for Low-Surface-Energy Plastic



TA4610 is a two-part toughened acrylic adhesive for bonding low-surface-energy plastics, such as polypropylene, polyethylene and polyolefins, without the need for primer or surface treatment. It can also be used to bond a wide variety of other materials, such as metals and composites, and it can bond dissimilar surfaces. It has a 1-to-1 mix ratio. It achieves full cure at room temperature. Set time is 12 to 15 minutes; handling time is 40 to 50 minutes; and working strength is 6 to 8 hours.

Permabond • Booth 1448  
www.permabond.com

#### Adhesives for Assembling Lithium-Ion Batteries



El-Cast epoxies are formulated for potting and encapsulating lithium-ion batteries. These epoxies keep batteries secure from damage caused by shock, moisture, vibration, chemicals and other elements. Epoxies can be used in batteries for EVs, power tools, garden equipment, marine components, military applications, GPS systems and other applications. All materials are non-hazardous, REACH and RoHS compliant, and solvent-free.

Epoxies are UL-approved, lightweight, thermally conductive, and heat-resistant with low exothermic properties. They resist chemicals, acids, fuels, solvents, moisture and salts. They come in a wide range of hardness ratings and viscosities.

El-Cast with 641 hardener is a medium-viscosity potting and encapsulation resin. It has excellent bonding properties to metals, plastics, and ceramics. With good air release, the cured part will have a gloss finish. Maximum use temperature is 250 F.

El-Cast VFR with 117 hardener is a 100 percent epoxy system. Soft and flexible, this low-viscosity epoxy offers excellent air release, allowing it to cure to a high gloss finish.

El-Cast VFR with 118 hardener is a filled two-component epoxy. It has excellent air release and cures to a high gloss finish. It is heat resistant to 400 F.

United Resin Corp. • Booth 451  
www.unitedresin.com

### FASTENING TOOLS

#### Smart Controller and Transducerized Screwdriver



Sumake is introducing the SMT-C2 smart controller with a touchscreen user interface and a transducerized screwdriver with angle-controlled tightening.

Angle-controlled tightening tools provide precise and controlled tightening of fasteners. Unlike a traditional electric torque screwdriver that relies solely on torque measurement, an angle tightening driver incorporates angle measurement into the process, enabling more accurate and repeatable results. The driver features a built-in LED light to illuminate the work area. An ergonomic design with a covered rubber grip offers better handling and comfort during operation.

The smart controller optimizes the fastening process with a visible LED signal system. It also helps the operator analyze all fastening results to improve production efficiency. Users in an angle tightening assembly application are granted the flexibility to switch between multiple programs to effectively accomplish various tightening angles, turns and torque tasks. The smart controller saves historical data (up to 1 million run-downs), displays the data in a curved graph for simple analysis, and exports the data via FTP or USB storage. The digital display shows the real-time angle measurement as the fastener is tightened.

The ability to monitor the





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angle in real-time eliminates the need for multiple passes, reducing overall assembly time and labor costs. One of the primary functions of the SMT-C2 smart controller is the ability to track the tightening and angle status. This allows operators to monitor the progress of each tightening operation in real time, ensuring that all fasteners are properly tightened. By having this visibility, issues are easily detected during assembly and corrective actions can be taken swiftly.

Sumake North America • Booth 940  
<https://sumakenorthamerica.com>

### Intelligent Screwdriver



The CHP ATX intelligent screwdriver is equipped with a nonslip grip, a high-quality DC brushless servomotor, a high-precision transducer, and a high-resolution digital encoder for accurate angle measurement. The tools are accurate to within  $\pm 3$  percent of the set torque value.

The screwdrivers have an LED status indicator ring and a 1/4-inch hex bit. Model ATX-12 has a maximum speed of 2,000 rpm and a torque range of 2.4 to 12 kilogram-centimeters. Model ATX-30 has a maximum speed of 1,200 rpm and a torque range of 6 to 30 kilogram-centimeters. Model ATX-50 has a maximum speed of 700 rpm and a torque range of 10 to 50 kilogram-centimeters. The tools can be programmed for lever start, push to start, or both.

Engineers use a 10-inch, LCD touchscreen digital controller to set torque and speed.

The user-friendly controller includes a network interface to store and export graph data. It comes with either one or two ports for powering and controlling the drivers. As a result, two drivers can be operated simultaneously or in a user-defined sequence. Each fastener parameter is programmable for various combinations of time, torque, rotation angle and direction. Programmable digital I/O and definable user profiles with password protection provide process control.

American Hakko Products Inc.  
 Booth 1715  
<https://hakkousa.com>

### Transducerized Cordless Screwdriver



This programmable, transducerized cordless screwdriver delivers precise torque control. Model DFT060TMZ has a torque range of 2 to 6 newton-meters. Model DFT120TMZ has a torque range of 4 to 12 newton-meters. The tool is equipped with an efficient Makita-built brushless motor, with a no-load speed of 400 to 1,300 rpm. Including the battery, the tool weighs just 2.4 pounds. A built-in LED light illuminates the work surface for better visibility in low-light environments.

The tool automatically shuts off when a preset torque is reached, and it provides both visual and audible feedback on each fastening operation. A USB connection allows for six-stage programming of both direction and speed control throughout the fastening process. The tools are certified for a repeatability of  $\pm 4$  percent of mean torque.

The tool is powered by a 14.4-volt lithium-ion battery for extended run time and a greater number of lifetime charge cycles. The tool is automatically disabled once battery capacity drops below 5 percent. The battery recharges in only 30 minutes.

Makita U.S.A. Inc. • Booth 1323  
<https://makitaassemblytools.com>

### Cordless Screwdriver Is Smart



The EPT all-in-one transducerized cordless screwdriver has a built-in sensor that continually measures torque in real-time and feeds data back into the system. An error-proofing system helps prevent defects. Engineers can easily program the tool, setting torque tolerances for each fastener in a sequence. The tool records and stores torque and fastening data. Weighing 4.5 pounds, the tool has a 3/8-inch square drive and a torque range of 11.5 to 57.5 inch-pounds. Driver speed can be adjusted from 100 to 1,250 rpm.

Features include a built-in bar code scanner; digital I/O



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## Strip Series B300



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for interfacing with a machine; a PLC interface for line control monitoring techniques; and a screw counting function to ensure that all screws are accounted for during assembly.

Mountz Inc. • Booth 605  
www.mountztorque.com

## ROBOTICS

### Flexible Smart Gripper



The Flexible Smart Gripper (FSG) is a fully electric gripper with flexible, soft-bodied fingers for handling objects of varying size, shape and weight. The FSG allows for the picking and placing of parts with a multitude of shapes and sizes due to its FDA-compliant silicone fingers. The ability to rotate in the roll degree of freedom, while keeping rigid in the pitch and the yaw degrees of freedom, allows for dependable, soft and flexible gripping of delicate objects.

The Enhanced Intelligence version of the FSG provides

additional finger positions for grip precision and efficiency, as well as force control, allowing the user to reliably handle delicate objects.

The FSG can be easily programmed through a simple user interface that can be accessed with any Wi-Fi-enabled device.

Applied Robotics Inc. • Booth 807  
www.appliedrobotics.com

### Compliant Tool for Robotic Grinding and Finishing



The CGV-900 compliant angle grinder provides an automated alternative to grinding and finishing by hand. The device has built-in compliance, allowing the tool to compensate for irregularities in part surfaces and maintain contact

with a workpiece. The compliance force is adjustable, enabling engineers to fine-tune finishing processes in real time. The CGV-900 also provides position sensing data to help indicate media wear. This lets engineers establish media replacement intervals, eliminating unexpected rework and downtime. Additionally, the data can be used for process verification.

The angle grinder contains a governed, vane-style motor which provides a more consistent speed during grinding and finishing processes. This ensures an even finish throughout the contact path of the tool. It is compatible with industry-standard grinding media, such as flap wheels, sanding discs and wire brushes that are commonly used with handheld grinding tools.

ATI Industrial Automation • Booth 239  
www.ati-ia.com

### Smart End-Effector Makes Robots More Sensitive



The Smart Flex Effector, a new, sensor-based compensation module, gives robots and Cartesian linear systems human-like sensitivity. Processes which are difficult to manage can now be automated, optimized and monitored through simple retrofitting. Thanks to a kinematics system that works independently in six degrees of freedom, the tactile device with sensitive touch precisely records the position of the workpiece and passes the information to the robot control unit for active compensation purposes.

Typical applications are joining processes with minimal tolerances, complex assembly work or difficult handling tasks. Errors and rejects are minimized and teaching and commissioning can be carried out more easily and quickly. The Smart Flex Effector is designed for handling loads of up to 6 kilograms.

With its differentiated kinematics, the Smart Flex Effector is able to correct processes with great complexity and tight tolerances, as in the case of positional deviations between the tool and the workpieces or in complex joining processes with minimal tolerances. Thanks to this tactile sensitivity, tasks that were not automatable can now be performed by robots.

The device also reduces the

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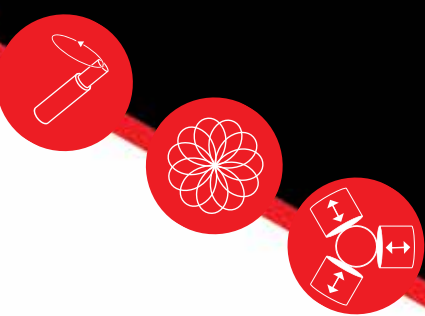
## BalTec ELECTRIC EA30 – Precision, Flexibility and Control

**The world's first articulated roller forming machine.**

With three individually programmable servos, the ELECTRIC EA30 can execute a variety of profile shapes in a single stroke. The forming capabilities include traditional roller forming, articulating roller forming, 3D articulating roller forming, and crimping. What makes the ELECTRIC EA30 so unique is the servo-controlled radial motion, which delivers significantly higher precision, flexibility and control compared to conventional solution.

**Booth #1223**

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time previously needed for teaching processes. Thanks to the 6D position recording, the robotic control system can read the exact coordinates for gripping and placing points directly. Repeated learning during operation is therefore possible in an automated manner. Robots can also be taught manually, simply by moving them into position by hand.

Even during sampling, the Smart Flex Effector can be used to recognize positional deviations and, with the help of the sensor system, determine the exact position of the object. The robot accurately picks up objects, positions them in a controlled manner, and places them reliably. Even parts made of glass or other fragile materials can now be handled safely. To ensure maximum productivity, the compensation module can be actively moved into the zero position and electromechanically locked for fast transfer runs.

The effector offers an RS-485 interface as well as an I/O interface for exchanging data. Installation is easy: For a passive compensation function, the device is simply screwed to the robot flange and the gripper. The locking function and data transmission are available as soon as the unit is connected to the power supply and the control system.

**Bosch Rexroth - Booth 119**  
[www.boschrexroth.com](http://www.boschrexroth.com)

### AI for Robot Guidance



MIRAI is a new control system that enables robots to handle variance in shape, position, color and light conditions in the work space. Using AI, MIRAI generates robot movements in real time and can respond automatically to movements of the target object. MIRAI takes control of the first and last centimeters of the robot's path, eliminating the need for rigid fixturing of parts.

MIRAI also simplifies the task of robot programming. Robots equipped with MIRAI are able to learn many tasks through observation, so they can easily be trained and retrained for various process steps. No knowledge of programming or AI is required.

The system consists of a MIRAI controller; a six-axis robot (supplied by FANUC or Universal Robots); a force-torque sensor; an end effector; a camera (supplied by Micropsi

Industries); and a ring-light.

MIRAI augments the robot's native controller, enabling the machine to perceive its work environment. Through AI, MIRAI-enabled robots observe actions performed by a person and then imitate those actions. Observations are recorded by a camera attached to the robot's wrist or situated at a fixed position proximate to the workspace. To train the robot, a person performs and records repeated demonstrations of a task by manually guiding the robot by the robot's wrist. The recordings are then transformed into a vision-based, real-time robot control schema.

**Micropsi Industries GmbH**  
**Booth 352**  
[www.micropsi-industries.com](http://www.micropsi-industries.com)

## FACTORY OF THE FUTURE

### AI for Line Monitoring



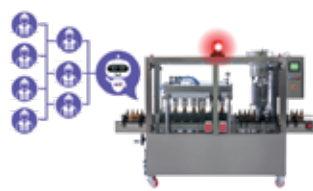
LinePulse 3.0 bridges the gap between continuous IIoT data collection in production and the data preparation required for machine learning and artificial intelligence, allowing modern algorithms to keep a constant pulse on the overall health of a manufacturing line.

Through advanced analytics, LinePulse provides actionable insights from complex product data to maximize the value of a manufacturer's investment in digitizing their production processes.

LinePulse users do not need a data science or machine learning background to derive value from the product because its unattended AI runs in the background to provide actionable insights. LinePulse identifies problems like signal drift on the line and displays anomalies and root causes of failures in intuitive dashboards. Line operators and engineers can see a list of parts that ran in the past hour, their build history charts, and the solution directs their attention to stations or devices that can make the most impact to immediate product outcome. Configurable alerts through email or Microsoft Teams can also notify individuals or groups about high-impact predictions.

**Acerta Analytics Solutions Inc.**  
**Booth 539**  
<https://acerta.ai>

## AI-Powered Manufacturing Chatbot



Andi is an AI-powered manufacturing chatbot designed to bring AI augmentation to workers. Andi is advanced, natural language processing software driven by AI technology, enabling workers to engage in human-like conversations and request expert help and support. Andi can assist with tasks such as automatically monitoring machine and process performance, solving problems, and generating action plans, checklists and work instructions.

Andi can also learn company-specific information, such as machine operation and troubleshooting manuals, quality systems and HR manuals. This enables the software to provide instant support for specific questions like how to fix particular machine failure codes; identifying the top three problems causing the most downtime in a machine; determining first-time quality for the past hour; or even clarifying company vacation policies.

With Andi, workers can access a manufacturing expert on demand when needed, without delays or constraints. Andi can send timely automatic notifications when a problem or anomaly is detected when monitoring a machine or process. Whether on WhatsApp, Web, iOS or Android, factory teams can instantly consume performance metrics and access expert help to make informed decisions.

Andi is part of the Andonix Smart Work Station product suite, and it can adapt to any size company. Leveraging AWS' leadership position in manufacturing cloud infrastructure, Smart Work Station can easily be integrated with IIoT sensors; PLCs; business intelligence software, like Power BI; Google Locker Studio; Quick; SCADA systems; MES and ERP.

**Andonix - Booth 361**  
<https://andonix.com>

## Software Creates Work Instructions from PLM Data



Product lifecycle management (PLM) software is the single source of truth for all product data. PLM underpins the digital thread, informs other core systems such as ERP and MES, and ensures critical business processes are managed and optimized according to the most current data.

Manufacturers now need to make that data truly work for them, by extending the digital thread to the front line workers responsible for production and output. Canvas Envision integrates with Aras Innovator PLM, enabling anyone within an organization to create and consume interactive digital instructional documents that leverage up-to-the minute design data.

Design engineering generates huge volumes of data. PLM does the plumbing; it keeps track of versions, sends data to the right places, and is great at orchestrating workflows. And it lets engineers visualize 3D CAD. But PLM won't let manufacturers take the 10 or 15 other sources of data it houses and rapidly aggregate them, along with CAD data, into intuitive and easy-to-consume content that meets the unique contextual requirements of all the stakeholders in manufacturing.

Canvas Envision Creator does that. It's a powerful and easy-to-use desktop graphics application that gives everyone the ability to leverage 3D CAD models to create interactive visual documents. With Envision, manufacturers get easy to use 3D visualization combined with text layout, 2D drawing tools, vector graphics and photo editing, and a host of smart tools and features to help them visually communicate key information about their products.

**Canvas GFX Inc. - Booth 1918**  
[www.canvasgfx.com](http://www.canvasgfx.com)

## Video Analytics Software Monitors Shop Floor Operations



Dori AI is a full-stack, end-to-end computer vision and deep learning video analytics platform for monitoring shop-floor operations. Dori AI is a no-code platform that transforms images and videos into actionable insights.

The system can be tailored for any enterprise use case. It can instantly detect any person, process or asset. Engineers can choose from one of several preconfigured application templates designed to provide intuitive dashboards interfaces and instant video replay of any event. The software can be configured and deployed on the edge or cloud. Engineers can easily connect any camera or visual data source, and then deploy and manage thousands of endpoints through centralized dashboards and APIs.

The software turns visual data into predictive AI models. Engineers can monitor workforce movements and activities to improve productivity; ensure standards are followed; detect and flag risks and hazards before they escalate; and monitor how much time workers spend at various tasks or workstations. For example, engineers can use computer vision to ensure worker safety. The software can be used to detect PPE violations, track usage of restricted areas, and flag equipment violations. On the assembly line, the software can track cycle times, measure production yields, detect missing parts or steps, and flag violations of standard operating procedures.

**Dori AI - Booth 1710**  
[www.dori.ai](http://www.dori.ai)



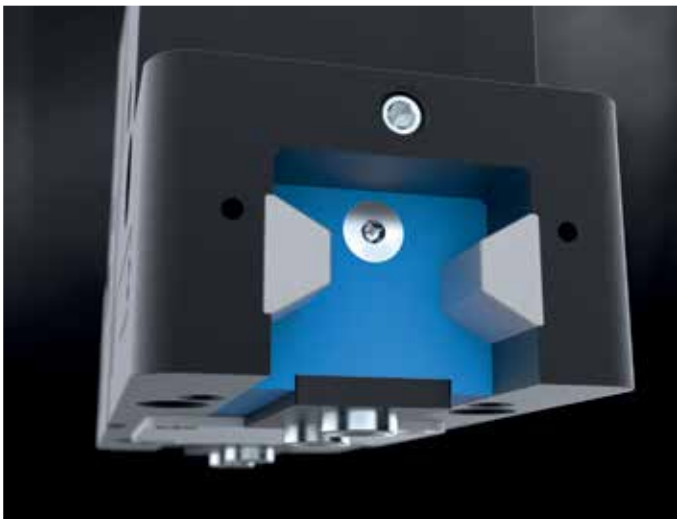
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continued from front cover

necht's address, ASSEMBLY magazine will present its annual Assembly Plant of the Year award to representatives from Taylor Guitars.

Recently, we sat down with Koenigsknecht to talk about data analytics, Industry 4.0, and the challenges of being a Tier 1 automotive supplier at a time when the industry is transitioning from gas-powered vehicles to electric ones.

**ASSEMBLY:** Tell us about your background.

**Koenigsknecht:** I graduated from Michigan State University in 2006 with a packaging degree. When I started with Lear in 2008, I was a packaging engineer. For almost two years, I lived on the road, optimizing packaging throughout the globe. I lived in hotels for 200 to 250 days a year.

Two years later, I was offered the opportunity to manage Lear's injection molding facility in Taylor, MI. The plant had been operating for 20 to 25 years, but it was struggling financially. We had to fix it, or it was going to close.

Five years later, I managed Lear's plant in Traverse City, MI, which does high-speed precision stamping.

**ASSEMBLY:** What are some of the biggest changes that you've seen in the company?

**Koenigsknecht:** The company is definitely more open to change and moving quickly into Industry 4.0. We're really pushing to move into the future of manufacturing. How can we make manufacturing more fun and not just putting your head down for eight hours and grinding out the workday?

It's been very enlightening, growing with the company over the past 15 years. The diversity, equity, and inclusion initiatives within Lear have been phenomenal over the past five years.

We're moving fast and hard into the EV space here at Lear, especially in our connection systems group.

**ASSEMBLY:** Let's talk about your keynote. I understand you're going to focus on how Lear is leveraging machine data. How do people tend to skew data, and what can you do to ensure data collection is unbiased?

**Koenigsknecht:** When Alan Mulally took over as president and CEO of Ford Motor Co. in 2006, all the metrics he was given were green across the organization. And yet, the company had just lost \$11 billion, so



At Lear, "We're really pushing to move into the future of manufacturing. How can we make manufacturing more fun?" says Koenigsknecht. Photo courtesy Lear Corp.

how could all of those metrics be green? He needed to understand where the issues were so he could fix them, but the numbers really weren't telling the truth.

When I took over as manager of Lear's injection molding plant, I encountered the same thing. So, we developed a machine-monitoring system that basically tells us how many

times each molding machine opens and closes. With that, we can say how many parts are being produced. We know how many parts we should have produced compared with what we actually did produce. From there, we can start to figure out why we didn't produce as much as the machine said.

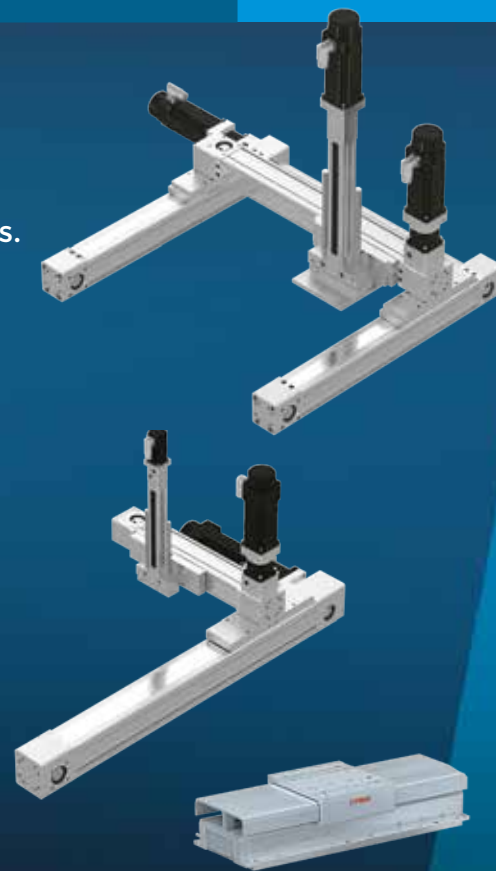
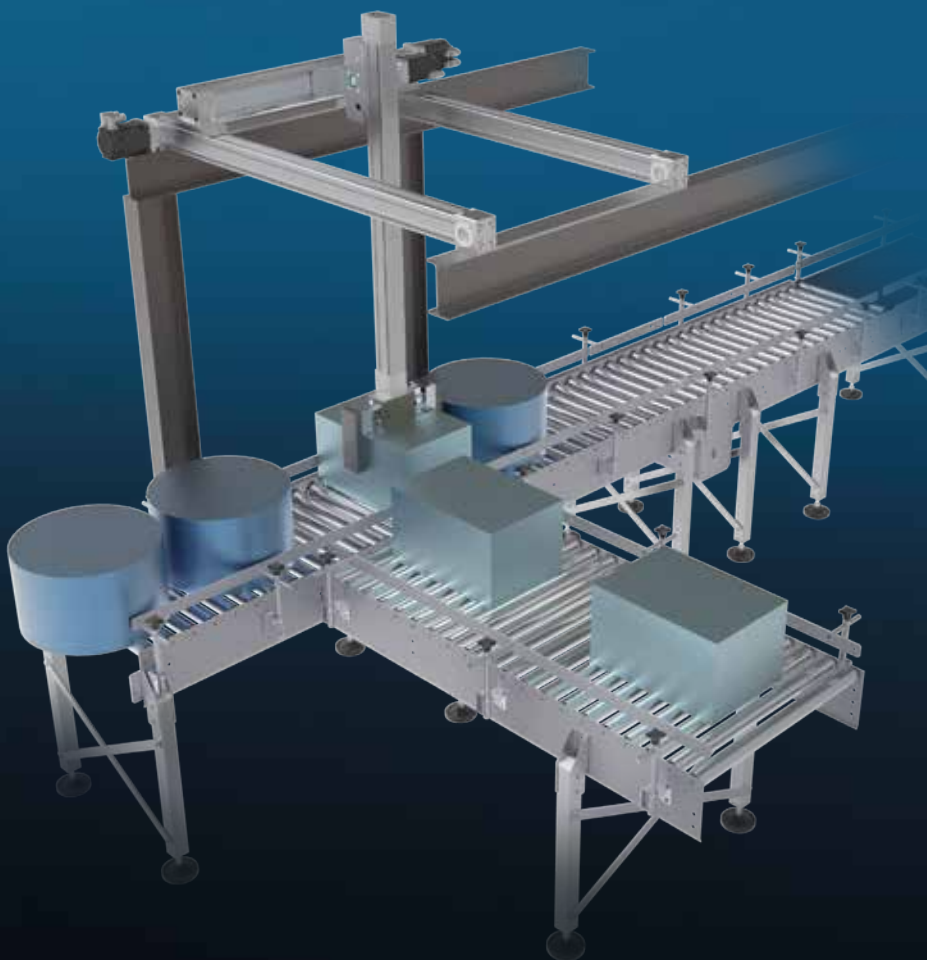
It's basically tool monitor-

ing. So historically in injection molding, you do shot counts and it's just like a mechanical shot count. But what we've done is taken it to the digital age and we could send that up into the cloud, take that data and it says the tool has opened and closed this amount of time.

From there, I can look at

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preventative maintenance to know that this tool needs maintenance every 30,000 opens and closes. And then basically I could take the data from the tooling and the data from the machine and say, I theoretically should have produced this amount of parts. I only produced this, now my

team needs to tell me why didn't we get the full throughput of what the machine is telling me that we produced.

So you're eliminating someone telling you how many parts were produced and what you're OEE was, and the machine is telling you this. What's the discrepancy? How do we explain

the discrepancy and how do we fix that?

Machines don't lie, so they tell you how many times they open and close. And with that, you can tell how many parts should have been produced. And nine times out of ten, you're not going to produce what the machine says it pro-

duced. And that is where you dig down and say, Well, what caused it? Was it extra scrap? Was it you were only running three of four cavities, which is a big no-no when you're talking an injection molding machine.

It's the same with high-speed precision stamping. A machine could produce upwards of 2,000 strokes per minute. We're stamping silver-plated copper, which is an expensive material. If you're not watching your process carefully, you could lose hundreds of thousands of dollars in 15 minutes.

**ASSEMBLY:** How can manufacturers avoid drowning in a sea of data? And, how do you know which metrics are important?

**Koenigs knecht:** I'm of the belief you can't drown in data. The more data you have, the better off you will be. It's important to have as much data as possible, so you can slice and dice it, put it into a dashboard, and figure out where your actual issues are happening.

If you talk to quality managers, they want to keep data on every part produced for the life of the program. That's a lot of data. For me, in operations, I would say we really only need

to store that data for a year. So, we're not necessarily drowning in the data.

**ASSEMBLY:** Is there anything you'd like to add about the types of data that Lear is collecting and how it's helping your company?

**Koenigs knecht:** We're collecting all sorts of data. We're collecting machine data. We're collecting electronic data interchange (EDI) data.

EDI data is important. When we get an order from an OEM, it gets transmitted to our suppliers for materials. If the OEM stops production two weeks later, but the lead time for raw material is 18 weeks, I now have 16 weeks of inventory still coming to me that I can't manage. So the more data I have upfront, the better we can make decisions about the supply chain.

One of the biggest issues in the automotive industry today is the electronics supply chain. We still have major issues with semiconductors.

We just hired an industrial engineer who's a data scientist. We are quoting on a new program from an automotive OEM that may or may not require us to invest in a major new piece of equipment. Our data



Lear has been an early adopter of Industry 4.0 technologies. Photo courtesy Lear Corp.

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scientist is putting together a database that will automatically tell me the capacity of all our equipment around the world. With that data, we can determine whether we need that new machine or whether we can simply shift production to where there's available capacity. In the past, that sort of information would be siloed.

**ASSEMBLY:** Is the shift to EVs making a difference in terms of data collection and analysis?

**Koenigsknecht:** Data collection is really no different between the different types of vehicles. I do think that we are behind the times in terms of collecting data on gas-powered vehicles, and we're trying to get ahead of the times with EVs.

My brother Tony is the co-founder and COO of Freesk Inc., a Chicago start-up that makes kiosks for grocery stores. The kiosks dispense free samples of various products. You scan a loyalty card, and the machine hands out a free sample of, say, a candy bar. The value proposition of the machine isn't the free sample. It's the data on potential customers that the machine collects for the store manager and the manufacturer of the candy bar.

It's the same in manufacturing. It's all about using data to help you make things faster, better and cheaper.

**ASSEMBLY:** It's fascinating how you can break down the data and look at all the different contingencies.

**Koenigsknecht:** I believe that car companies will be selling fewer cars in the future. With the advent of autonomous vehicles, people won't have two or three cars per household. They will, however, buy subscription services for their vehicle—just as they do at home. How many people still have cable television? I do, but I'm old. How many people have cut the cord and gone to streaming services? Many people are just paying \$14.99 a month for Netflix instead of \$70 a month for every channel. They only want to pay for what they want to watch.

The automobile is going to turn into the same thing. If you don't have to drive the car, you could watch television or listen to a podcast on your way to work. There's a bunch of things that are changing, and we have to keep up with that.

**ASSEMBLY:** What advice would you give manufacturers that would like to get more out



Lear employs more than 160,000 people worldwide at 253 facilities in 37 countries. Photo courtesy Lear Corp.

of their data?

**Koenigsknecht:** The biggest thing is to be open to data. The more data you have, the better. I also believe that data scientists are the future and should be hired not only in manufacturing, but in all industries to make decisions.

There's data out there. We just need to collect it and put it

into a dashboard to make business decisions. That's the way of the future. Hospitals have been at the forefront of using data collection to do better things. How do you get people in and out of ERs faster?

It's the same in manufacturing. It's about using data to learn how well your equipment is performing and how much downtime it

is having, so you're not investing in additional capital equipment when you don't have to. It's about using time and energy more efficiently.



At Lear, data scientists are putting together a database that will automatically tell management the capacity of all the company's equipment around the world. Photo courtesy Lear Corp.



# New Fastening Tools Improve Ergonomics, Throughput

By John Sprovieri, chief editor, [sprovierij@bnpmedia.com](mailto:sprovierij@bnpmedia.com)

According to ASSEMBLY magazine's annual Capital Equipment Spending Survey, 38 percent of U.S. assembly plants will purchase electric or pneumatic fastening tools in 2024.

If fastening tools are on your shopping list, then The ASSEMBLY Show is the place to be! Here, you'll find dozens of suppliers offering cordless nutrunners, pneumatic screwdrivers, screwfeeders, digital torque wrenches and other fastening tools. Here's just a taste of what's on the floor.

## Resin Covers Tools, Sockets, Extensions



AirFlex is a proprietary, lightweight polyurethane resin for coating fastening tools, sockets and extensions so they won't scratch Class A painted surfaces. The resin does not contain silicones and won't interfere with paint systems. AirFlex Red is AGI's original nonscratch covering, blending lightweight resin with a flexible, durable exterior. AirFlex Black gives many of AGI's products their structure and, when necessary, the clamping force that keeps the covers in place.

AGI can cover any socket from any brand. AGI's free-spinning covered sockets dramatically improve operator safety. The covers will not crack or shatter, even if dropped. AirFlex absorbs energy from drops or falls. In many cases, the covers increase the longevity of coated tools. The socket and extension freely rotate inside the cover, so torque stays at expected levels with minimal loss. Booth 1800  
AGI Systems  
[www.agiprotects.com](http://www.agiprotects.com)

## Air-Over-Oil Pulse Tools



Air-over-oil pulse tools have won many international awards for their design and signal detection mechanism. The tools have precision torque adjustment elements for use on the assembly line. Pulse tools are discontinuous drive tools, meaning they apply torque in increments rather than one

continuous effort. These short pulses minimize or eliminate torque reaction experienced by the assembler. Tools are available in both in-line and pistol-grip versions with 1/4-, 3/8-, 1/2- and 3/4-inch drive shafts. These tools need less maintenance than other pulse tools. They provide stable operation with low noise. Booth 1345

Airboss Air Tools Co. Ltd.  
[www.twairboss.com](http://www.twairboss.com) airboss

## Preset Torque Screwdriver



The Gedore Preset Pro Torque Screwdriver provides controlled screw tightening in the range of 0.2 to 1.5 newton-meters of torque. The screwdriver has a 1/4-inch female hexagon drive for use with 1/4-inch hexagon bits. The tool is classified according to DIN EN ISO 6789:2003 Type II Class F, with a traceable factory certificate. It is calibrated to a ±6 percent of the set torque. The tool has a precision radial ball clutch and cam design for controlled bidirectional tightening. The mechanism slips noticeably when the preset value is achieved. The tool automatically resets to the starting position. An ergonomic hand grip and a smooth tool reset action ensure fatigue-free work. Presetting can be done at the factory or by the user on suitable torque testers. Booth 517

ASG, Division of Jergens Inc.  
[www.asg-jergens.com](http://www.asg-jergens.com)

## Insulated Torque Wrench



The electrically safe, insulated WrenchStar Multi-e digital torque wrench has been developed for electric vehicle and battery assembly environments. The insulated wrench complies with the IEC 60900:2018 standard, applicable to insulated hand tools for working with or close to electrically live parts. The wrench has nonconductive insulation on the handle, shaft and head. The wrench is also finished with insulated components, giving added protection for the

user in high-voltage applications and security against product failure due to electrical damage.

The wrench is available in 10-, 25-, 50-, 75- and 100-newton-meter versions. The wrench has an inductive battery charging system, making the process of charging the torque wrench easier by simply placing the wrench in the new charging cradle. The inductive system removes external charging contacts and complies to WPC/Qi standards.

The WSM-e wrench works in combination with Crane's TCI lineside controllers for seamless production capabilities, or with the company's TorqueStar Pro data collectors, for accurate quality auditing and verification applications. Booth 831  
Crane Electronics Inc.

<https://crane-electronics.com> crane.jpg

## Cordless Impact Driver



The ESB4-SXI is an automatic shut-off impact tool designed specifically for assembly applications. Impact tools are excellent for administering high rotational torque with little to no reaction force to the operator. This is perfect for handheld applications where using a torque reaction arm is difficult or unmanageable.

The automatic shut-off function can be programmed to a desired impact force and fine-tuned through the impacts setting. Numerous combinations can be dialed into the tool to meet specific torque requirements. Engineers can customize up to five separate application programs, which are a combination of impact force, impact blows and screw rotation parameters. These parameters can be used individually or in sequence.

The limit function allows engineers to program the number of rotations for proper fastening. For example, if desired torque is reached before reaching the preset rotation count, the tool will signal an error, indicating potential cross-threading. With the sequence function, engineers can set torque values for individual fasteners in a sequence.

The tool is easily programmable with a remote control. Cross-threading and strip-out detection can be achieved through the tool's param-

eter settings. The tool has a batch-counting function, and it can run in reverse. The "ignore friction" function increases repeatability when working with multiple joint types and materials.

Internal voltage monitoring ensures fastening consistency by disabling the tool if battery levels are less than optimal. An indicator provides instant feedback to the user, helping to detect cross-threading and stripping. Booth 1039  
Delta Regis Tools  
<https://deltaregis.com>

## Multi-Spindle Nutrunning Technology



The MULTI system for multi-spindle nutrunning applications can be controlled remotely via Desoutter's wireless Connect platform. The compact system can control up to 40 tools, synchronized or not.

The MULTI was specifically designed to become an asset of the Connect platform, which can manage multiple assets, such as cordless tools, positioning tools and digital smart wrenches. Assets are easily paired with Connect, and one software program manages every asset. Connect provides full traceability and access to data analytics for preventive maintenance and quality control.

MULTI compact modules can be installed close to, or on, the tightening unit, which reduces the footprint of multi-spindle systems by up to 60 percent. Since it is designed with short-length tool cables, the installation is leaner, simpler and faster. And, the risk of failure due to cables is greatly reduced. Featuring a robust and lightweight design for multiple positions on the line, the MULTI resists vibration, shock, heat, humidity and dust.

The maintenance interface provides information on the digital and physical status of the entire system. Alarms are triggered in the event of a malfunction. To meet the varied demands of factory production, the MULTI can manage up to 40 tools, synchronized or not. The tool drives are managed by the M-ModuRack, the backbone of the system. Cables and firmware are not required.

User-friendly software assists engineers in setting up a fasten-

ing application. The software helps engineers distribute and manage spindles across multiple tightening units, depending on the application. Premium EFM fixtured spindles cover a torque range from 1 to 2,000 newton-meters. Booth 431  
Desoutter Industrial Tools  
<https://www.desouttertools.com>

## Ratchet Wrench



The patented design of the 72-tooth ratchet wrench has less backlash, a smaller size, and a 10 percent higher torque limit compared with a 36-tooth ratchet wrench. The swing arc of the 36-tooth ratchet wrench is 10 degrees per click. In contrast, the swing arc of the 72-tooth wrench is 5 degrees per click. The finer 72-tooth design creates more surface-area contact with the gear. As a result, it has a 10 percent higher torque upper limit. The 36-tooth wrench has a single-pawl design; the 72-tooth wrench has a dual-pawl design with a single spring. Booth 1415  
Koken USA  
<https://kokenusa.com>

## Cordless Transducerized Pulse Tool



The AccuPulse 4.0 cordless mechanical pulse tool is equipped with four onboard microcomputers and a built-in torque transducer for better quality control, accuracy and data collection on the assembly line. The tools cover a torque range of 70 to 220 newton-meters. The tool is designed to work particularly well with M12 to M16 fasteners. The tools can be operated one-handed with no torque reaction. The tools provide two-way wireless communication for advanced error proofing and data collection. Annual maintenance costs are 90 percent less than competing hydraulic pulse tools. Up to 99 parameters can be programmed through the controller. Booth 1331

Panasonic  
<https://na.panasonic.com>



# Robots, Grippers and Tool Changers on Display at The ASSEMBLY Show

By John Sprovieri, chief editor, [sprovieri@bnpmedia.com](mailto:sprovieri@bnpmedia.com)

**A** slow U.S. economy and high interest rates have taken a toll on robot orders in North America, resulting in a decline for the second quarter in a row after record purchases in 2021 and 2022.

According to the latest report from the Association for Advancing Automation (A3), companies ordered 7,697 robots valued at \$457 million from April to July 2023, a 20 percent drop in value over the same period in 2022.

When combined with first quarter results, the robotics market in North America is down 29 percent compared to the first half of last year, with a total of 16,865 robots ordered. This drop comes after a record high 44,196 robots.

“Over the last five years, we’ve seen a steady acceleration of robot orders, as all industries have struggled with a labor shortage and more non-automotive companies recognize the tremendous value automation provides,” said Alex Shikany, vice president of membership and business intelligence at A3. “After this post-COVID surge, however, we’re seeing a drawback in purchases, exacerbated by the slow economy and high interest rates. While many companies continue to automate, others just don’t have the capital to invest right now, despite their struggle to find workers willing to do many of the dull, dirty and dangerous jobs that remain unfilled.”

The ongoing labor shortage, especially in manufacturing remains a key driver of automation. Increased reshoring is another contributing factor.

If you’re looking for robotics, you’re in the right place. The ASSEMBLY Show hosts numerous robot OEMs, including Epson, Fanuc and TM Robotics, as well as multiple suppliers of grippers and other robotic peripherals, such as Schunk, ATI Industrial Automation and Zimmer.

Here’s a sampling of the new robotics technology that can be found on the show floor.

## Manual Tool Changer



With intuitive and ergonomic lever operation, the MC-50 manual tool changer enables

workers to quickly change robotic end-of-arm tooling by hand. This compact and robust tool changer is designed for applications on collaborative robots that support payloads up to 25 kilograms and small industrial robots supporting payloads up to 10 kilograms.

Featuring an ISO 50-millimeter mounting interface on the master-side and tool-side, the low-profile MC-50 mounts directly to most cobots and seamlessly integrates with many common cobot marketplace grippers and end-effectors.

The MC-50 also includes a safety latch button on the lever to provide secondary locking for increased safety and prevention of involuntary uncoupling. A variety of electrical and pneumatic utilities for downstream end-effectors are supported through four M5 pneumatic pass-through ports and a mounting flat for optional ATI utility modules. Booth 239

ATI Industrial Automation  
[www.ati-ia.com](http://www.ati-ia.com)

## Modular Multi-Stage Vacuum Pump



The CMS HD series of modular multi-stage vacuum pumps are for high-suction flow rate vacuum handling of a wide variety of objects. The pumps are ideally suited for pick-up and transfer operations in applications such as handling of porous parts or emptying large-volume tanks.

The new pumps improve on the performance of previous models in three areas: power, robustness and modularity. The pumps are specified to handle flow rates up to 1,300 normal air liters per minute. These heavy-duty pumps withstand harsh environments. The IP65-rated pumps are designed for a service life of 50 million cycles. With their modular design, the pumps can be configured with a selectable flow rate, with or without piloting, and with three configurable exhaust methods, depending on the application. The modularity allows each of its subassemblies to be accessed individually for servicing, which also improves the reparability rate.

Some models offer a fully integrated control system, making them easy to install, even where space is limited.

Coval  
<http://www.coval-inc.com>

## High-Performance Robot Controller



The RC700E robot controller offers powerful motion control, open architecture, ease of use and safety. The controller powers the entire lineup of Epson’s high-power density GX-Series SCARA robots. The controller enhances productivity, enables collaborative robot applications, and reduces the footprint of robot automation systems.

Featuring intelligent servo drives that provide high acceleration, smooth motion control and fast settling times, the controller enables engineers to integrate third-party software and hardware to create systems that suit their needs. More than just a connection to a PC, the RC700E integrates the power of PC-based controls and a real-time engine that can run up to 32 tasks with over 500 commands to optimize run-time, recovery and error handling.

Featuring integrated safety technology with an EN/ISO 10218 safety rating, the RC700E provides safe-rated speed and separation monitoring. With proper risk assessment, it allows interaction between workers and robots without a safety fence. This enhances productivity through faster interaction with machines for daily operations and maintenance. The potential elimination of physical safety barriers helps users reduce the footprint and overall cost of robot systems.

The controller includes Modbus TCP/IP, standard 24 inputs, 16 outputs and Epson RC+ software with no recurring license fee. RC+ software helps create powerful programs with a simple user interface, integrated debugger and 3D simulator. It also helps to create standalone robot applications that can be PC-based with API options, such as LabVIEW, or PLC-controlled with remote fieldbus options.

Three option slots are available for additional I/O, force

guidance, conveyor tracking, fieldbus slave and analog I/O; seamless software integration with API (.NET), vision guidance and IntelliFlex parts feeding. Booth 1231

Epson Robots  
<https://epson.com>

## Multi-axis Motion for Universal Robots



The Festo Motion Control Package (FMCP-UR) is a complete motion control panel for up to four axes motion to complement the operation of a six-axis collaborative robot from Universal Robots (UR). The FMCP is fully integrated with UR’s cobot control panel and HMI and features an enhanced safety I/O handshake and communications interface.

The FMCP-UR can control turntables, gantry systems, conveyors, transfer tables, and any combination of linear and rotary servo axes up to the 10th axis.

Streamlined axis configuration allows for less engineering, integration and troubleshooting during setup and can be easily done through the UR HMI. The Multi-Axis Drive controller is a URcap software that allows engineers to set position, speed, and acceleration on the HMI or use the toolbar to jog the axes in manual mode to configure motion.

Festo Corp.  
[www.festo.com](http://www.festo.com)

## High-Payload Cobots



FANUC has increased the payload capacity of two of its collaborative robots. The CRX-25iA cobot now has a maximum capacity of 30 kilograms, while the CR-35iB cobot can now handle 50 kilograms. Both robots can operate eight years with zero maintenance.

With a 1,756 to 1,889 millimeters, the CRX-25iA is perfect for jobs that require extra lifting in a collaborative environment, such as palletizing, material handling, machine tending and welding. The cobot’s lightweight and compact design allows for easy integration into any work area. It

can be installed without the use of a crane or lifting equipment. The robot runs on standard 120-volt power. It can be programmed using a teach pendant, lead-through teaching, or simple drag-and-drop programming.

Connecting or switching out peripherals is easy with a wide selection of FANUC-approved devices.

Two connection ports on the J6 axis offer quick connections and interchangeability for end-of-arm tooling.

With a reach of 1,831 millimeters, the CR-35iB can work alongside people in a variety of applications that would typically require lift-assist devices or custom equipment. Repeatability is  $\pm 0.03$  millimeter. The industry’s strongest cobot, the CR-35iB has a small installation footprint, making it ideal for tight spaces. A more streamlined and lighter mechanical unit includes FANUC’s latest sensor technology for safety. The cobot can be equipped with a FANUC vision sensor or 3D area sensor, enabling it to locate or visualize products. Booth 621

FANUC America Corp.  
[www.fanucamerica.com](http://www.fanucamerica.com)

## Robotic Soldering



MTA’s classic iron head can be integrated with any of the company’s standard soldering platforms, including the MRC500, TR300, OEM and station. The head features multiple adjustments allowing easy configuration for specific applications. A robust structure guarantees that tip and wire feeder do not get misaligned accidentally. Soldering tips have a long life span, and users can change them quickly and easily. An extensive selection of tips is available to suit a wide variety of applications. The jam-free wire feeder mounts directly on the head, ensuring tight process control. The head can be used for lead-free alloys. Booth 939

MTA Automation Inc.  
<https://mtaautomation.com/us/mta>

## Modular Tooling



Tri-Axis modular tooling components for transfer press systems are strong, light-weight and versatile. These components are one-piece construction, completely interchangeable, and have been maximized for light weight and rigidity. When combined with the GRM Series of automated sheet-metal handling clamps, these components optimize the performance of high-speed tri-axis transfer presses.

Recent additions to the tooling components lineup include Receiver Adapters and Modular Shovels. Receiver Adapters plug into the rail receiver (docking device) and, when securely latched, create a pneumatic and electrical connection for the transfer finger assembly to the press feed bar. Modular Shovels are used in conjunction with GRM clamps. Their flexible design makes it easy to create a shovel that delivers optimum support and control of the panel through the transfer press. These modular components can be rebuilt and repurposed for future applications.

PHD Inc.  
[www.phdinc.com](http://www.phdinc.com)

## Flexible Gripper for Small Components



The EGK is an intelligent, versatile gripper for handling small, fragile components, such as glass vials or circuit boards.

The electric gripper has a spur gear and rack-and-pinion to ensure constant gripping force over the entire finger length and allow permanent re-gripping. Since no startup distance or force impulse is required for power generation, the gripper delivers 100 percent of its performance right from the start. The integrated gripping force maintenance avoids the loss of workpieces and holds the finger position even in the event of an emergency stop.

A high-resolution, integrated absolute encoder offers additional process transparency. It permanently captures the base jaw's position. Therefore, the gripping process can be continued after power failure or reboot without new referencing.

Depending on the gripper size, the highly flexible component range enables various workpieces to be handled with the same gripper due to its long, freely programmable jaw stroke and continuously

adjustable gripping force of 20 to 300 newtons. For sensitive gripping of particularly fragile workpieces, SCHUNK has equipped the EGK with a special "SoftGrip" mode, in which almost no impulse forces are acting.

The gripper is certified for use in clean rooms. It is lubricated with food-compliant H1-grease, and it is equipped with a sophisticated three-stage sealing concept that protects gears and electronic components effectively while minimizing wear. Its control and power electronics are also fully integrated and sealed according to protection class IP 67.

Available in three sizes, with and without a brake, the gripper has a variety of interfaces and can be integrated into the following networks: Profinet, EtherCat, EtherNet/IP, IO-Link and Modbus RTU. Robot plug-ins and PLC function modules reduce programming effort during commissioning.

SCHUNK

<https://schunk.com>

## Cost-Effective Six-Axis Robot



The cost-effective TVM six-axis robot is aimed at a multitude of industries, including automotive components,

plastics, medical devices and packaging, due to its light-weight, reliable design and high productivity in transfer and assembly.

The robot's main arm is an aluminum extrusion, which is 55 percent lighter than the usual cast aluminum design. Less weight reduces the overall cost of production and components, further improving the costs associated with this machine.

Model TVM900 has a maximum reach of 1,124 millimeters and a maximum payload of 20 kilograms. Model TVM1200 has a maximum reach of 1,418 millimeters and a maximum payload of 15 kilograms. Model TVM1500 has a maximum reach of 1,715 millimeters and a maximum payload of 10 kilograms. Booth 653

TM Robotics  
[www.tmrobotics.com](http://www.tmrobotics.com)

## Flexible Robotic Cell



ZiMo is a simple, inexpensive, mobile robot workstation for automating small- and medium-sized batch production in high-mix operations. Its compact size enables engineers to position the robot in any production situation. Commissioning and operation is easy via a robot-neutral human machine interface. No program-

ming knowledge is necessary. Engineers can choose from a wide portfolio of accessories, individually tailored to specific requirements.

Zimmer Group  
[www.zimmer-group.com](http://www.zimmer-group.com)

## Robotic Tinning Machine



The Fancort tinning machine combines the capabilities of a precision six-axis robot with an easy-to-program parameterized environment that includes part, tray and process libraries. Custom parts, trays, and processes are easy to program using the built in HMI. Bar code recipe and tray verification is included to match trays, parts and process, ensuring quality and consistency. In-feed component trays are easily programmed using a tray position function and can be enhanced with an optional vision system.

The machine includes two solder pots: stainless steel for lead solder and titanium for lead-free solder. Also included are stations for air-knife pre-heating, air drying, fluxing and washing with deionized water. Universal adjustable trays eliminate the need for dedicated trays. Booth 1818

Fancort Industries  
<https://fancort.com/>

# Helium Leak Detector Is Versatile

By John Sprovieri, chief editor, [sprovieri@bnpmedia.com](mailto:sprovieri@bnpmedia.com)

LACO Technologies Inc., a manufacturer of vacuum and leak testing technology, has launched the Titan Versa, a new helium leak detector platform for applications requiring high performance, versatility and reliability. Designed and assembled by LACO in the U.S., the device is available in three unique configurations:

The Titan Versa Compact is lightweight, mobile and flexible. Manufacturers specify or provide a separate, external pump. The Versa Compact can be easily mounted on a service cart or seamlessly integrated into a production leak test system.

The Titan Versa Tower is a ready-to-work and small footprint system. Available with either a wet (T) or dry (TD) pump configuration, the Versa Tower is ideal for laboratory and R&D environments. The Versa Tower T has a maximum

pumping capacity of 6 cubic meters per hour; the TD has a maximum pumping capacity of 3.6 cubic meters per hour.

The Titan Versa Horizontal is a high-performance instrument built for speed and accuracy. Available with either a wet (L) or dry (LD) pump configuration, Versa Horizontal is ideal for stand-alone production systems and large-volume leak detection applications. The Versa Horizontal L has a maximum pumping capacity of 15 cubic meters per hour; the LD has a maximum pumping capacity of 6.5 cubic meters per hour.

All three models can find small leaks with vacuum or sniffing methods. Large primary pumps provide faster pump downtimes. A high-flow vent and evacuation manifold produce quicker cycle times.

Using the vacuum method, the minimum detectable leak rate is 5 x 10<sup>-12</sup> millibar-liter

per second. Using the sniffer method, the minimum detectable leak rate is 5 x 10<sup>-9</sup> millibar-liter per second.

The instrument uses proven mass spectrometer technology for long life and stable operation. High-capacity cooling keeps the instrument up and running in extreme temperatures. Temperature-stable leak standards provide for accurate and dependable readings regardless of the environment.

The instrument is easy to use. It has a 7-inch color touch-screen display with intuitive menu structure for easy navigation. The instrument can be controlled via a remote screen, wireless remote control, or powerful I/O module. Data logging technology captures data and stores it to a USB drive or direct connection to a PC.

Accessories include test chambers, remote controls, sniffer and spray probes, bar code readers, helium bomb-

ing chambers, external pump packages and calibrated leak standards.

For more information on leak test instruments, click <https://lacotech.com> or visit booth 839 at The ASSEMBLY Show. LACO Technologies is one of at least 13 suppliers of test and inspection equipment that will be exhibiting at the show.



The Titan Versa helium leak detector platform is for applications requiring high performance, versatility and reliability. Photos courtesy LACO Technologies Inc.



# New Adhesives, Dispensing Equipment Improve Bonding Efficiency

By John Sprovieri, chief editor, sprovierij@bnpmmedia.com

**A**dhesives offer many benefits over mechanical and thermal methods of assembly.

Adhesives distribute load evenly over a broad area, reducing stress on a joint. Adhesives are applied inside the joint and are nearly invisible within the assembly. They resist flex and vibrational stresses, and will form a seal as well as a bond to protect joints from corrosion. They join irregularly shaped surfaces more easily than fastening or welding. They add minimal weight to an assembly, create virtually no change in part dimensions or geometry, and can join dissimilar substrates and heat-sensitive materials.

Whether you need a UV-cure adhesive to assemble a medical device or a two-part epoxy to encapsulate electronics, you'll find it at The ASSEMBLY Show. At least 20 suppliers of adhesives, dispensing and curing technology are displaying their wares. Here's a look at some of what you'll see.

## Wash-Off Label Adhesive Promotes Recycling of Plastics



Flexcryl ClearCycle 1000 is a temperature-resistant, water-based acrylic label adhesive that can be washed off of plastic bottles so they can be recycled more easily. The adhesive meets the Association of Plastic Recyclers Critical Guidance Criteria for recycling PET bottles.

The Flexcryl family of emulsion acrylic adhesives is typically used in label applications. ClearCycle 1000 was formulated to adhere to PET, which is increasingly popular for bottle manufacturing. With ClearCycle 1000, converters can now use wash-off labels for cold-fill or freezer-grade applications that require adhesion at temperatures of 40 F or lower. Surface pretreatment is not required for the adhesive to adhere to biaxially oriented polypropylene label face stock. Booth 341

Bostik Inc.  
[www.bostik.com](http://www.bostik.com)

## Jet Valve Is Easy to Maintain



The pneumatic jet valve Delo-Dot PN5 can dispense dots of adhesive at a continuous frequency of up to 300 hertz, even on difficult media. The plunger speed is twice the maximum value of its predecessor, the Delo-Dot PN3. Noncontact dispensing prevents collisions between the valve and the component. Even high-viscous materials can be dispensed accurately, precisely and reliably. The valve offers interchangeable nozzles with different diameters, as well as an adjustable plunger stroke. This ensures reproducible results even with drop sizes in the nanoliter range.

The jet valve's plunger is made of hard materials, such as ceramics and carbide, and is suitable for prolonged use, even with complex materials. The actuator has a lifetime of more than 1 billion cycles. The valve can be cleaned and maintained easily and efficiently, because less parts come in contact with the adhesive. In addition, when the plunger wears out, only the nozzle and fluid plunger need to be replaced, instead of the entire device. No special tools are required, since the fluid system can be easily removed via bayonet lock. The valve's cartridge retainer, which can be positioned in 90-degree increments, allows media to be fed from all four sides of the device. Booth 1811  
DELO Industrial Adhesives  
[www.delo-adhesives.com](http://www.delo-adhesives.com)

## Up to 8 Million Shots With Consistent Accuracy



Chamber metering valves are one of the most accurate ways of dispensing lubricants. They work according to the volumetric dosing principle. Material is discharged shot by shot via a metering piston. This ensures a dispensing process that is insensitive to pressure fluctuations. The dosing volume

(0.05 to 100 milliliters) can be easily and quickly adjusted via a setscrew. The same valve can thus be used for different quantities.

Dispensed volumes are accurate to within  $\pm 1$  percent of the set amount. The valve's seal provides up to 8 million dispensing cycles. With stroke detection, the dispensing process can be monitored simply and reliably. When filling and discharging the dosing chamber, the dosing piston is controlled by material pressure. A stroke sensor monitors this movement and thus indirectly detects material flow. Stroke detection is performed magnetically via commercially available C-slot sensors. Booth 1439

Dopag & Meter Mix US  
[www.dopag.com](http://www.dopag.com)

## Electrically Conductive Epoxies



More than 40 electrically conductive epoxy adhesives are available for PCB fabrication, die attach, solder replacement, LED attachment, EMI/RFI protection, optoelectronics, LCD interconnect and other electronic assemblies. EO-23M has very small particles for intricate microelectronic applications. EO-21 is certified to the ISO 10993-5 standard for biocompatibility. EO-20E is an industry-standard formula for chip bonding, LED and LCDs. EO-98HT is a high temperature formulation for intermittent use up to 325 C. EO-32HTK is an ultra-high thermal conductivity formulation, conducting up to 12.4 watts per meter-Kelvin. EO-30M-1 is a 1-to-1 mix ratio formulation that can be cured at room temperature. Booth 1144

EpoxySet Inc.  
<https://epoxysetinc.com>

## UV Spot Curing System



The OmniCure S2000 Elite UV spot curing system closed-loop feedback technology,

which automatically monitors and maintains optical output for a repeatable curing process. A new 30 millisecond high-speed shutter ensures highest precision dose delivery. Intelli-Lamp technology maximizes lamp life while maintaining effective lamp service life. The 4.3-inch LCD touch screen enables advanced process control and intuitive navigation and monitoring of all curing-related parameters. The system is Industry 4.0-ready with the latest communication capabilities, such as programmable PLC inputs and outputs, a USB connection, an SD card slot, near-field communication, and an Ethernet port to connect the system to a local area network. Wireless remote management and monitoring is available through the web-based user interface. Booth 1617  
Excelitas Technologies  
[www.excelitas.com](http://www.excelitas.com)

## Thermally Conductive Adhesiv



Heron 746 thermally conductive adhesive, together with the activator EF37173, produces a high-impact bond after 4 minutes. The adhesive and activator do not require mixing. A small quantity of the adhesive is applied to one surface to be bonded, and the activator is applied to the other surface. Full curing is achieved within 24 hours at room temperature. Corrections can be made within 15 to 30 seconds after applying.

The bonds heat sinks to components and parts, and securely bonds the latter not only to vertical cooling surfaces but also to metallic housing surfaces and side panels. Typical applications include the bonding of transformers, transistors, microprocessors, LEDs and other heat-generating components. The thermal conductivity of the adhesive is more than 0.76 watts per meter-Kelvin, and it remains unchanged even during permanent use at operating temperatures between -55 and 150 C. It has a shear strength of 5.5 newtons per square millimeter (N/mm<sup>2</sup>) and a tensile strength of 15.2 N/mm<sup>2</sup>.

The adhesive has a shelf life

of three years at a temperature of 22 C. It is available in 4-, 10- and 25-milliliter tubes. The activator EF37173 is available in 10- or 52-milliliter bottles. Booth 347

Hernon Manufacturing Inc.  
[www.hernon.com](http://www.hernon.com)

## Modular Jet Dispensing Valve



The S Jet Superior modular dispensing valve is versatile. The connection of the valve drive and the dosing needle via a ring spring limits the media contact to the dosing unit. This can be replaced quickly and at will. The modular valve is ideal for dispensing abrasive media with short processing times. Frequencies of up to 1,000 hertz with a service life of more than 1 billion cycles are possible without maintenance thanks to the piezo drive. The exchangeable dosing units print dots or lines between 50 and 3,000 microns wide. In addition, heat-conducting plates can be attached to ensure temperature control of the media.

Marco  
[www.marco-systems.com](http://www.marco-systems.com)

## Conformal Coatings Earn UL 746E Certification



Silicone conformal coatings have received UL 746E certification. Both 800-505FC UV alkoxy dual cure sprayable silicone and 500-210 general purpose conformal coating have passed the testing required to achieve UL 746E certification.

UL 746E certification is obtained after the product passes a series of tests meant to evaluate whether a conformal coating can withstand sudden electrical surges and maintain its dielectric integrity. These tests are done in succession and include voltage transient testing, dielectric withstand testing, and dielectric breakdown. In addition to the electrical testing, there is also a vertical burn flammability test.

Both of conformal coatings are rated V1 for flammability.

The coating 800-505FC cures in 3 to 5 seconds upon exposure to UV light. It has a secondary, neutral alkoxy moisture cure for shadow areas that begins immediately and develops full adhesion in hours. The coating 500-210 is a clear, moisture-cured sprayable silicone that offers simple “dispense and forget” processing and tack-free performance in as little as 10 minutes.

Electronics-grade alkoxy silicones offer superior performance in harsh, demanding environments. They combine increased flexibility and high temperature resistance, offering versatility in the design and assembly process. They do not contain solvents, isocyanates, benzene, toluene, ethylbenzene, or xylene. Novagard silicones are also free PFAS chemicals. Booth 1816

Novagard  
<https://novagard.com>

### Robotic Dispensing System



The Delta 8 is a flexible robotic dispensing system that is ideal for conformal coating, potting, gasketing and other applications. Designed for maximum flexibility, the system features a robust overhead three-axis motion platform suitable for inline or batch operations. System repeatability is  $\pm 25$  microns. The system features closed-loop process control and an onboard PC for unlimited program storage. The system can be equipped with an optional servo-controlled fourth axis of motion for tilting and rotating the dispensing valve. Booth 443

PVA  
[www.pva.net](http://www.pva.net)

### Jetting Valve for Coating Applications



The SCS TowerValve for the PrecisionCoat line of spray coating and dispense systems gives manufacturers flexibility. The jetting valve features piezo control motor technology, ensuring uniformity and repeatability to meet unique material dispensing needs.

The jet valve precisely dispenses small amounts of material using physical force to separate specific volumes of material into microdroplets. The valve's piezo control motor allows the rate of closure and opening to be altered to meet the material's energy requirements. This approach enables the valve's pulse to be wide and high for high-viscosity materials or narrow for low-viscosity materials. In addition, the nozzle orifice and shape can be changed to adapt to substrate features and variations in materials.

The jet valve is used to apply

single-part coating materials, such as acrylics, urethanes and silicones. Its precise application eliminates the need for complex masking and removal. Additionally, the valve can be used to dispense solder pastes, and it can apply adhesive in elevated patterns, which enhances the adhesive hold through compression.

The PrecisionCoat's Automatic Quick Change feature allows the use of eight separate tools within a single machine. Valves or heads can be individually positioned with independent materials and functionality, enabling users to automate and control the application of multiple materials. Booth 1711

Specialty Coating Systems  
<https://scscoatings.com>

### Modular Dispensing Pump



The vipro-PUMP has a modular design. The separable rotor assembly allows fast installation and removal

of components, which speeds up service and maintenance, reduces downtime, and minimizes spare part and operating costs. In addition, variable rotor and stator materials ensure optimum dispenser performance. For example, a ceramic rotor and stator are ideal for abrasive media, while a plastic rotor is used for standard adhesives. An enlarged pump inlet minimizes pressure loss, improves material flow and allows easy attachment and detachment of the hose supply. Two larger, modular bleed openings ensure a user-friendly and clean bleeding process and ultimately help to guarantee dosing with no air bubbles. The new stator design has an anti-rotation device and a defined non-positive connection to allow easy and intuitive assembly. Booth 1417

ViscoTec America Inc.  
[www.viscotec.com](http://www.viscotec.com)



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# New Technology for Motion Control Provides Accuracy, Flexibility

By John Sprovieri, chief editor, sprovierij@bnpmmedia.com

For a product to be assembled successfully, it's essential to move the right parts or tools, to the right place, in the right orientation, at the right time. Motion control technology makes that happen.

Pneumatic actuators provide high force and speed at a low unit cost in a small footprint. Force and speed are easily adjustable and are independent of each other. Pneumatic components are inexpensive, but maintenance and operating costs can be high.

Electric actuators provide precise control and positioning, are more flexible, and have low operating cost. Electric actuators consist of a ball, acme or roller screw connected via a coupler to an electric motor. As the screw turns, it moves a nut, which is connected to the rod or carriage. The rod or carriage moves the load. While component costs of electric actuators are high, operating costs are low.

The ASSEMBLY Show plays host to at least 20 suppliers of linear and rotary actuators, electric motors, controllers and other motion control technology. Here's a sample of the new tech on the show floor.

## Compact Linear Module Positions Small Loads Accurately



The Small Module Screw-Driven (SMS) electric linear actuator is ideal for simple positioning and feeding tasks. This ultra-compact, low-profile, ballscrew-driven actuator comes in five widths from 30 to 120 millimeters. Maximum stroke length is 1,200 millimeters. Optional attachment sets for motors from various manufacturers are also available. These help save time during engineering. Repeatability is  $\pm 0.005$  millimeter.

The module can be used to position small loads in a range of cost-sensitive applications with low to medium dynamics. Thanks to low system and service life costs, the linear module is an efficient alternative to pneumatically driven axes.

The module has a compact, low-profile aluminum design

with integrated precision guideways. A magnetically fixed steel cover strip protects the components inside.

**Bosch Rexroth Corp.**  
[www.boschrexroth.com](http://www.boschrexroth.com)

## Motion Control Kit Reduces Design Time



The e-MOVEKIT helps manufacturers of mobile machinery simplify the specification, assembly and testing of electric linear actuation systems. The kit was developed in response to the trend towards electrification of motion systems in mobile and off-highway equipment—in particular, replacement of hydraulic devices with electric actuators that offer high power density, greater force capacity, energy efficiency, safety and reliability. The kit is ideal for both prototype development projects as well as full-scale equipment builds.

The kit is a complete system with all the components needed to drive and control linear motion in mobile machinery fitted with a 24-volt power source, with either analog or CAN-bus standard controls. At the heart of each kit is an advanced, modular electric actuator. The actuator is designed to be used with a wide range of high-performance motors, gearboxes and end attachments, all of which are supplied in the kit. Each kit also includes all the connectors, cables and mounting attachments needed for installation.

Ewellix electric actuators offer a range of benefits. For example, regenerative braking can be initiated when each actuator is being driven under load. Safety features—such as a descent speed limiter, backup nut and electromechanical motor braking—can easily be incorporated.

**Ewellix**  
[www.ewellix.com](http://www.ewellix.com)

## Linear Motor Stage



Versatile LMXK linear motor stages can be combined to form cross tables, cantilever or gantry systems. When combined with E1 series drives and motion controllers, these stages deliver high performance. The stage is driven by a powerful and synchronous iron-core linear motor, providing high thrust density and low cogging force. The stage is equipped with the Q series linear guideway with SyncMotion for accurate, quiet and ultra-smooth movement. It is capable of delivering high force (308 newtons of continuous force and 868 newtons of peak force), high acceleration (50 meters per second squared without load), and high velocity (5 meters per second without load). The stage is available with stroke lengths up to 3,700 millimeters.

Three encoder options are available, including: hall effect, optical or magnetic. Additional options include aluminum protective covers, limit switches and extended lubrication.

**Booth 1311**  
**HIWIN Corp.**  
[www.hiwin.us](http://www.hiwin.us)

## Linear Actuator With Long Stroke Length



Model EC Eleccylinder Slider linear actuators are designed for long-stroke, high-load applications. Widths range from 35 to 73 millimeters. Maximum stroke length is 1,500 millimeters. These compact actuators can be mounted horizontally, vertically or on the ceiling. Built-in, four-row, ball-circulating linear guides support heavy weights and large overhangs. Maximum payload for horizontal applications ranges from 3.5 to 51 kilograms. The motor can be mounted on the end or the side of the actuator. Maximum payload for vertical applications ranges from 1.5 to 25 kilograms. The actuator can be

programmed with a wireless remote control.

**IAI America Inc.**  
[www.intelligentactuator.com](http://www.intelligentactuator.com)

## Cam Followers Handle High Loads



In heavy-duty cam-driven machines, two common causes contribute to bearing downtime: misalignment and inadequate lubrication. Improper mounting often causes misalignment that produces thrust forces and metal contact between the bearing's outer ring and side plate. Inadequate lubrication or failing to relubricate a cam follower that is in a hard-to-reach place can create unnecessary risk of failure.

The CR-VBS and CR-BSE IKO cam followers combat these issues. They feature a proprietary sealing technology called ThrustDisk, along with a radial gap to alleviate impact loading. The cam followers' ability to handle thrust loads allows them to handle higher loads, while their sealing technology ensures high performance. CR-BSE bearings also come with C-Lube technology and are lubricated with a thermosetting solid-type lubricant that fills the inner space of the bearing. This lubricant helps provide long-term, maintenance-free operation.

Both the CR-VBS and CR-BSE have ThrustDisk seals made from a synthetic resin with a low wear rate. Other features include a low coefficient of friction, good rotational performance, and a hex head stud for easy mounting. **Booth 556**  
**IKO International**  
[www.ikont.com](http://www.ikont.com)

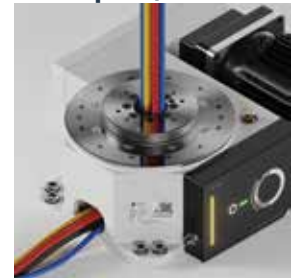
## Rotary Indexers for High Torque and Moment Loads



The X-Line rotary indexer delivers up to three times more torque and greater moment load capacity than the previous model. The indexer has a redesigned roller pinion and a larger gear pitch to handle higher torque capacities that

deliver accuracy, fast acceleration, high-speed positioning, increased load capacity, and true repeatability. The indexer's mounting features and the additional fastening points of the rigid cast housing are designed for a greater moment load capacity than a standard design. Additionally, systems can be designed for low or zero backlash to meet the project specifications. **Booth 1445**  
**Nexen Group Inc.**  
[www.nexengroup.com](http://www.nexengroup.com)

## Programmable Indexers Are Compact, Flexible



The fifth generation of fixed-cycle, programmable rotary indexing tables from Weiss have been designed to provide more flexibility, resource efficiency, speed and connectivity. To simplify integration, these modular tables have been optimized to minimize interfering contours. Thanks to a larger central opening and optimized media in-feed, additional sensors, actuators or handling units can be implemented on the upright center part. With five configuration options for the motor and gear unit, and several installation locations, the tables can be used in a range of automated assembly applications. The tables can be combined with various control packages that are easy to operate.

To save space, Weiss optimized the size of the tables. At the same time, axial force has increased by a factor of two, which enables higher loading. To save energy, the tables are equipped with energy-efficient motors. Because the bearing and cam roller are harmonized to each other, the tables are up to 38 percent faster under the same load. Indexing time is almost infinitely adjustable.

To facilitate predictive and preventive maintenance, each table has an integrated smart-board user interface that provides information on its operating state. It alerts users to possible measures for keeping the table in good condition.  
**WEISS North America Inc.**  
[www.weiss-world.com](http://www.weiss-world.com)

# New Presses, Ultrasonic Welders Are Designed for Precision Assembly

By John Sprovieri, chief editor, sprovierij@bnpmmedia.com

**A**ssembling one part to another usually requires a third material—screws, adhesive or filler metal—but it doesn't have to.

In fact, sometimes all you have to do is bend, fold or deform a feature on one part to capture the other. As long as one of the parts is made of a malleable material—typically metal—engineers can use a press to crimp, stake, swage or clinch it to retain the other part.

Alternatively, assemblers can simply insert one part tightly into a hole in another part. The assembly stays in place through friction and the force of the two parts pushing against each other. In most cases, the press fit is strong enough to stand on its own. In others, the joint is augmented by an additional assembly method, such as adhesive bonding or brazing.

Many parts are assembled with press fits, including bushings, bearings, pins, studs, rotors, gears, pulleys and shaft collars. In most cases, these methods are much less expensive than bonding, welding or fastening the parts.

More than a dozen suppliers of presses, riveters and plastics assembly machines are displaying their latest wares at The ASSEMBLY Show. Here's a taste of what you'll see.

## Roller Forming With Servo-Controlled Articulation



The Electric EA30 is the first roller-forming machine with servo-controlled articulation. With three individually programmable servos, the Electric EA30 can execute a variety of profile shapes in a single stroke. The forming capabilities include traditional roller forming, articulating roller forming, 3D articulating roller forming, and crimping.

Servo-controlled radial motion delivers higher precision and control compared to conventional equipment, which requires manual adjustment of a mechanical stop. All three servomotors are aligned within the unit, giving the machine a slim design. As a result, the

machine is well-suited for integration into automated production lines with limited space. It can also be used as part of a stand-alone work cell for prototyping or low-volume production where frequent changeover of nests and programs may be necessary.

HPPi software allows programming and quick adjustment of the forming process using the HMI. The software monitors all aspects of the forming process and stores the process data. The data can be exported through an industrial data interface (OPC/UA), enabling integration into higher-level production management systems.

The primary advantages of the technology are flexibility in forming; programmability and control of the vertical, radial and rotary motions; and real-time feedback of the forming process parameters. Additionally, this technology can reduce cycle time compared to conventional machines, which may require multiple forming steps to produce the same part. Booth 1223

BalTec Corp.  
<https://baltec.com/en>

## Instrument Monitors Multiple Process Variables



The Digiforce 9307 monitors processes in which precisely defined functional relationships between two or more measured quantities need to be demonstrated.

These quantities are recorded synchronously during a manufacturing process or functional testing to produce a measurement curve, which is then assessed using graphical and mathematical evaluation techniques. After internal evaluation, the curve and evaluation results are visualized on a color display and output via external control interfaces.

The processes in the controller are optimized by a powerful real-time operating system to achieve a fast evaluation cycle: It typically takes just 15 milliseconds to deliver an "OK" or "not OK" result, which can then be analyzed by a higher-level controller.

In addition to traditional evaluation windows with defined entry and exit sides, the instrument also offers thresholds, trapeziums of type X or Y, and envelopes as graphical evaluation elements. Individual evaluation results from the graphical tools can then be combined by mathematical operations to provide even more analysis flexibility for a range of signal curves.

The device has a range of process control applications, including monitoring processes such as joining, riveting or caulking, or checking torque curves, for instance for hinges or high-quality rotary controls. Even complex signal-over-time curves, such as pressure curves or leaks, can be monitored using a large choice of evaluation techniques.

Simultaneous recording of up to two Y variables (Y1 and Y2) with respect to a common X variable allows many applications to use one Digiforce controller to monitor two synchronous processes.

Alternatively, this feature can be used to evaluate an application with three process variables—for instance the force-displacement curve and associated current consumption of a lifting electromagnet. While Digiforce is used in many automated production areas, it is equally at home at a manual workstation, for instance, to monitor force-displacement when using hand presses for assembly or for random spot-checking of incoming parts. Booth 1143

Physicom Corp.  
[www.physicomcorp.com](http://www.physicomcorp.com)

## Servo-Driven Ultrasonic Welder



The eMotion series of servo-driven ultrasonic welders provide precision and speed with an intuitive and user-friendly interface. Available in 20- and 35-kilohertz frequencies, the machine represents a move away from traditional pneumatic ultrasonic welding systems.

Servo control allows engineers to control weld depths to within 0.01 millimeter. It also provides the ability to precisely match

the joining velocity of the weld process with the melt rate of the plastic, resulting in stronger bonds than previously attainable using pneumatic systems.

The system offers precise control of the welding process via seven welding modes: time, energy, collapse distance, absolute distance, energy and time, energy or time, and contact cut off. Depending on the mode, the actual weld sequence can be subdivided into as many as 10 unique steps, a level of control which is unavailable with pneumatic systems.

Of particular interest to medical device manufacturers is Rinco's ISO 13485 certification and the eMotion's unique traceability feature. The traceability feature, or "audit trail," tracks and stores all system adjustments and faults, allowing maintenance staff or Rinco personnel to determine the reason for any issues with the final product. Booth 1118  
Rinco Ultrasonics  
[www.rincoultrasonics.com](http://www.rincoultrasonics.com)

## Press Is Fast, Accurate



The ram on the Torque Press 520 is powered by a torque motor and driven by either a ballscrew or a planetary roller screw, depending on how much force is required. There are two advantages of using a torque motor over a servomotor. Whereas a standard servomotor has six poles, a torque motor has 42 to 46 poles. Because the torque motor moves a short distance from pole to pole, the machine can press at high forces with low speeds. In addition, acceleration and deceleration times are faster with a torque motor than a servomotor, which translates to faster cycle times.

Another advantage of the Torque Press lies in its in-line design. There is no belt connecting the motor to the drive screw. That means less maintenance and less tolerance variation. It also gives the machine a slimmer profile.

A position sensor is mounted on the face of the ram where it comes out of the housing. Data from the sensor feeds into the CNC driving the ram, which ensures highly accurate positioning.

The press has a continuous load capacity of 2,250 pounds and a peak load capacity of 4,495 pounds. Maximum ram speed is 260 millimeters per second. Booth 1123

Schmidt Technology  
<https://www.schmidtpresses.com>

## Rapid Cooling Reduces Cycle Times for Ultrasonic Staking



Ultrasonic staking is ideal for assembling large plastic parts, such as automotive interior components. A part with one or more holes in it is slipped over corresponding posts on a base part. Then, a sonotrode is used to apply energy to the posts, melting the plastic, deforming the top of the post, and trapping the top part tightly against the base.

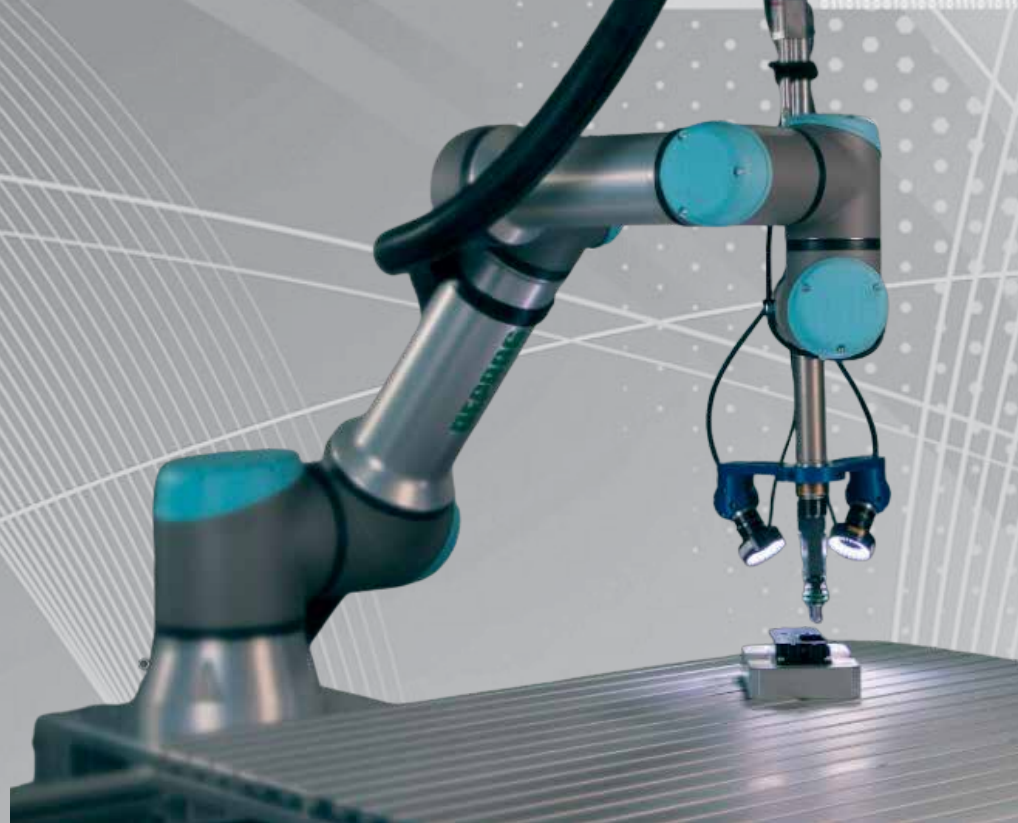
To shorten cycle times, the sonotrode is often cooled after melting the plastic. There are several ways of doing this. One option is to blow compressed air at the sonotrode, but this method takes a long time and it's inefficient. Another option is to create a sonotrode with built-in cavities to convey compressed air to the joint. This method is effective, but it's complex, expensive and inflexible.

Telsonic has developed a different concept for sonotrode cooling: The compressed air connection is on the booster rather than the sonotrode. There are two benefits to this setup. First, there is no need to detach the compressed air connection when replacing the sonotrode. It's also more efficient at cooling. This concept permits cycle times of less than 2 seconds per stake.

The compressed air is conveyed to the booster and precooled. Low-pressure zones with fast vortex circulation separate the cool air in the middle from the warmer air on the wall surfaces of the sonotrode. The cool air stream from the middle of the sonotrode is then directed immediately at the tip, cooling the staking point faster and making the process more efficient. Booth 1823

Telsonic Ultrasonics Inc.  
[www.telsonic.com](http://www.telsonic.com)





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