

New Dynamics in Automation and Motion Control

Automate 2025 boasts robotic ingenuity and efficiency



Matthew Jaster, Senior Editor

Automate 2025 takes place May 12-15 in Detroit.

Curious about the state of robotics and automation? A day or two at Huntington Place in Detroit this spring should clear everything up. Automate 2025 attendees might see robots serving coffee, robots maintaining shop floors, robots building other robots. We have officially crossed the threshold from future possibility to practical application.

Between intimate workshops with industry giants, keynotes, networking events, innovation competitions and live demonstrations, Automate offers comprehensive automation education and robotics, vision, AI, motion control and other technologies. Automate delivers the latest innovations in manufacturing automation technology from more than 800 leading exhibitors.

Future of Motion Control Technology

The Automate team says companies across industries are using AI to revolutionize motion control technology. ABB, Siemens, and FANUC are integrating AI into their industrial robots and control systems, enabling more intelligent and responsive movements in manufacturing processes.

Epson Robots, in partnership with Motion Ai, is integrating AI-driven solutions into their robotics systems, enhancing precision and adaptability in automation applications for semiconductor, pharmaceutical, and logistics sectors.

New encoder technologies are providing medical machine manufacturers with expanded options for position sensing and data transmission. Delta robots like the KUKA KR DELTA can achieve cycle times as fast as 0.32 seconds with high precision in pick-and-place operations for industries such as food and pharmaceuticals (automateshow.com/blog/motion-control-101-fundamentals-and-emerging-trends)

Advancements in AI

AI models are becoming increasingly capable of making real-time decisions. This has accelerated investment in edge computing, allowing businesses to automate processes faster and more intelligently than ever before. The Automate team examined these new technologies with Siemens and OnLogic:

The Rise of Private 5G Networks

Edge computing and private 5G networks go hand in hand. Companies like Ericsson are deploying 5G-powered edge solutions to enable seamless machine-to-machine communication, improving automation capabilities across industries.

Demand for Sustainability and Energy Efficiency

Localized data processing significantly reduces the energy consumption associated with cloud operations. Companies such as Schneider Electric are leveraging edge computing to optimize energy



Automate 2025 offers 800+ exhibitors, 200+ speakers and 140+ conference sessions.

use, reinforcing its role in sustainable industrial automation.

The Growth of Industrial IoT (IIoT)

Smart factories and connected supply chains are becoming the norm. Edge computing enables IIoT applications to function with minimal latency, ensuring smooth and efficient automation processes.

Robotic Technology

Whether you're looking to streamline your production line, tackle labor shortages, or make your workplace safer, robots are a powerful solution—and ally. The Automate Team is here to help with a list of common robot types, from traditional industrial robots to innovative collaborative and mobile robots. Examples on display at Automate 2025 include:

Cylindrical Robots

These robots combine rotational movement with vertical and horizontal motion, operating within a cylindrical workspace. Their versatility shines in various applications across the manufacturing floor. They

excel in machine tending operations, assembly processes, and material handling tasks. Their design makes them particularly effective for packaging, palletizing, and precision dispensing operations where consistent circular motion is required.

Collaborative Robots

Cobots represent the next evolution in industrial automation by working directly alongside human workers, unlike traditional robots that are confined to cages. They are ideal for quality inspection, assembly lines, and packaging or material handling. You can choose between 4 major types of cobots: Safety Monitored Stop, Speed and Separation, Hand Guiding, and Power and Force Limiting. These cobots use sophisticated collision sensors and force limitations to detect when they contact a human worker. This helps them to stop and avoid any injuries.

Autonomous Mobile Robots (AMRs)

These intelligent robots navigate independently using sophisticated sensor systems and AI. Their

advanced capabilities provide significant operational benefits. With dynamic obstacle avoidance and flexible routing capabilities, they can adapt to changing environments without requiring infrastructure modifications. Their sophisticated systems enable seamless integration with existing operations, making them a versatile solution for modern manufacturing facilities, warehouses, and even healthcare facilities.

Automated Guided Vehicles (AGVs)

AGVs are robots that follow predetermined paths, providing dependable and error-free transport of materials within a facility. They offer safe and efficient material transport, reducing human error and improving accuracy in tasks like moving heavy items across warehouses and distribution centers.

Drones (UAVs)

UAV stands for unmanned aerial vehicle but is more commonly known as a drone. These aerial robots can assist with surveying, inspections, and deliveries. Since they can take to the skies to see hard-to-reach areas and deploy quickly, they are ideal for complex terrains or challenging environments. In fact, they are becoming increasingly popular in industries like construction, logistics, infrastructure, and energy.

Service Robots

Service robots are as diverse as the environments where they assist operations. From industrial applications to specialized fields, they are designed to perform tasks that assist humans in daily or dangerous activities. These include humanoids, customer service, exoskeleton, inspection, agriculture, and medical robots.

Booth Previews

PTE readers will be interested in many of the component and motion control exhibitors at Automate. The following is a shortlist of must-see exhibitors and technologies. Editor's Note: Booth numbers and compa-

nies are subject to change prior to the trade show.



Zero-Max Booth #744

Zero-Max provides high-performance flexible shaft couplings, overload safety couplings, right angle gear drives, keyless shaft bushings, overhung load adaptors and other precise motion control components. The company will display the latest mechanical power transmission and motion control products at Automate 2025 in Detroit.

Zero-Max also provides the Miki Pulley brand of spring actuated brakes and electro-magnetic brakes and clutches ideal for the growing robotics, AGV, and AMR industries. Featuring the fastest delivery in the industry and extensive custom capabilities and expertise, Zero-Max is known throughout the World for innovative designs, high quality, high performance, and durability. Zero-Max and Miki Pulley products solve applications in automated assembly machines, autonomous mobile robots, material handling equipment, conveyors, automated workholding, motion control equipment, and other high performance industrial machinery.

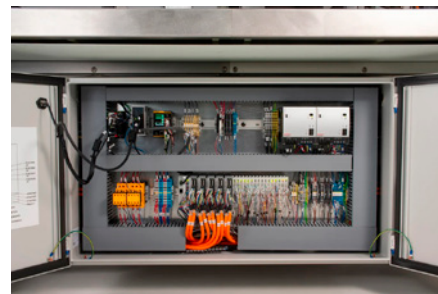
"Automate 2025 is the ideal setting for us to demonstrate our latest advancements and interact with industry professionals looking for automation solutions," said Brian Mishuk, vice president of sales and marketing at Zero-Max. "We are excited to meet with attendees and preview how the Zero-Max and Miki Pulley products can solve their motion control needs. See us at Booth #744."

zero-max.com

ASI Drives Booth #6203

For 40 years, ASI Drives has been providing quality tailored engineered solutions to the gearmotor industry. As a full-service engineered products company, ASI Drives offers a range of gearmotor solutions designed for battery-operated products up to one ton in weight. From robotic floor cleaning machines to outdoor field robotics, warehouse AGVs and AMRs, wheeled mobility solutions and many others—ASI Drives provides the traction solution to keep them moving. Located in Montgomeryville, PA—about 45 minutes outside of Philadelphia—we are proud to provide American-made products for our customers from all over the world. Products include autonomous mobile robots (AMRs), mobility solutions, motors, actuators, mobile robots and design and engineering services.

asidrives.com



Beckhoff Automation Booth #2400

Beckhoff empowers engineers to differentiate and succeed as industry leaders—to harness new technologies, embrace open standards, and solve the world's most complex problems. Founded and led by engineers, the company organically creates advanced controls, communication, IoT, and motion technologies that become unique tools in an age of digital transformation.

beckhoff.com

Freudenberg-NOK Sealing Technologies Booth #4839

Manufacturers are using smaller, faster, and more efficient robots and

cobots to improve production efficiency and make operating conditions safer and easier for workers. These advanced automation systems also must endure extreme temperatures and harsh chemicals, all of which require greater sealing performance. Freudenberg offers comprehensive sealing solutions for all types of robots, in all conditions, facing all challenges. Excellent seal effectiveness prevents leaks and the resulting machine breakdowns—reliably and lastingly. Costly downtime is eliminated, and service and repair expenses are reduced.

fst.com

Bishop-Wisecarver **Booth #4713**

Bishop-Wisecarver (BW) develops reliable motion solutions expertly designed and delivered to perform. BW is a U.S.-based, certified women owned company, with over 70 years of experience. The company offers complete linear and rotary motion solutions that excel in extreme and harsh environments and can be found in virtually every industry of industrial automation. Products include motion control equipment, power transmission, actuation, mechanics and industrial robots.

bwc.com

Siemens Industry, Inc. **Booth #3232**

Siemens will offer attendees the combined power of software and automation. The booth will highlight the most advanced solutions to help companies make a giant leap in their digital transformation—without the need to rip and replace. Technologies include robotic integration, virtual control, IT/OT data integration and everything it can power, copilots for operation and maintenance, AI visual quality inspection, AI prescriptive maintenance, cybersecurity in automation, digital twins and advanced simulation tools.

siemens.com

Destaco **Booth #2807**

Destaco will showcase its cutting-edge automation products and solutions designed to enhance efficiency, precision, and productivity in manufacturing and industrial settings. Visitors can experience firsthand how Destaco's innovative gripping and tool-changing solutions revolutionize automation processes across various industries.

"Automate 2025 provides a fantastic platform for us to demonstrate our latest advancements and interact with industry professionals seeking state-of-the-art automation solutions," said Ravi Shivanna, director, global new product development engineer at Destaco.

destaco.com



Iris Dynamics Ltd. **Booth #6207**

Iris Dynamics Ltd., a leader in innovative motion control solutions, is proud to announce its latest product, ORCA-3: the smallest, fastest, and most cost-effective motor in the ORCA Series. Developed in response to a growing demand for a more affordable and compact solution, the ORCA-3 is set to revolutionize cost-conscious design while upholding the high-performance standards of the ORCA product line. It is priced below \$1,000 for volume orders.

The ORCA-3 combines compact design, high speed, and cost efficiency, while maintaining full compatibility with the ORCA Series for seamless integration in space-limited and budget-conscious applications. It is ideal for OEMs, machine builders, and integrators working on research and product development projects, offering easy integration and scalability. With minimal

changes to mechanical, electronic, and software components across the ORCA Series, engineers can design with the ORCA-3 and easily migrate to more advanced models as project requirements evolve. This adaptability enables rapid prototyping and iterative development. Key product features include its compact size, high speeds of 6.5 m/s, and affordability.

Full Integration: The entire line of ORCA electric linear actuators combines integrated power delivery, motor drivers, logic, and sensors, all calibrated during manufacturing. This design enhances performance, simplifies integration, and reduces installation overhead by eliminating separate components.

Force Control: Inherent force control enables ORCA motors to sense the force they impart, a critical safety feature in applications where force may be exerted on a person. The motor can detect when it encounters an object, allowing it to back off or apply lower force as needed.

Silence in Actuation: With some of the quietest motors on the market, ORCA motors support seamless integration into shared environments, enhancing safety and reducing fatigue in industrial settings.

Smooth, Consistent, Cogless Motion: ORCA motors deliver smooth, consistent, and cogless linear motion, ensuring uniform force and enhanced precision. Fully backdrivable, ORCA motors can be moved manually without resistance when powered off, offering flexibility and ease of use across various applications.

irisdynamics.com

It's Educational

The Automate 2025 exhibition floor is more than enough to keep attendees busy throughout the week, but the comprehensive conference agenda adds even greater value. Topics in 2025 include AI and machine learning; HMIs for 21st-century factories; vision, imaging and inspection; 5G capabilities, robotic integration, ISO standards, automotive assembly, motion control accuracy and much more.

automateshow.com/agenda

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