Next Steps in Automation at IMTS 2024

SPS focuses on collaborative robots, motion control, and data management

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Predictive analytics will be all over IMTS 2024 including the Automation Sector, accelerated by SPS—smart production solutions. Visitors will find a broad range of digital solutions at IMTS 2024 at McCormick Place in Chicago on Sept. 9–14.

IMTS 2024 will feature the new Automation Sector, accelerated by SPS—smart production solutions in the North Building, which features companies specializing in robots, collaborative robots (cobots), motion control, data management, and automation integration. Additionally, exhibits throughout IMTS will demonstrate automated solutions for CNC machining, additive manufacturing, vision systems, metrology, tooling, workholding, abrasive machining, gear generation, parts handling and cleaning, and other manufacturing technologies.

"Automation is omnipresent at IMTS because exhibitors know industry needs automation technologies to leverage worker productivity and boost business profitability," says Peter R. Eelman, chief experience officer, AMT—The Association for Manufacturing Technology, which owns and produces IMTS.

Ian Stringer, vice president of data strategy at AMT, says that "the push toward greater adoption of industrial automation is influenced by an aging workforce and geopolitical uncertainties that have increased defense spending and led to a revitalization of the U.S. supply chain."

Stringer notes that capital intensity (the amount of capital utilized per unit of labor) has surged nearly 12 percent from 2017 to 2023, according to the March 21 economic news release from the Bureau of Labor Statistics. According to Stringer, this figure "is solid evidence" of a significant shift toward more capital-intensive and labor-efficient manufacturing processes facilitated by the automation solutions shown at IMTS 2024.

"From reshoring initiatives and workspace optimization to production capacity and workforce shortages, multiple issues are often at play when companies are looking to invest in automation technology," says Doug Burnside, vice president of North American sales and marketing for Yaskawa Motoman (IMTS Booth #236601). "For smaller companies, collaborative palletizing and welding are two easy options for first steps into automation. The systems deploy rapidly and have user friendly pendants."

Previews for IMTS 2024

The following is a list of exhibitors in the Automation Sector as well as other areas of IMTS that will be of interest to *PTE* readers.

THK America (Booth #236207) will show how its OMNIedge IoT system combines connected sensors and artificial intelligence to detect part failures before they occur. "We can improve machine operating rates, make maintenance more efficient, and reduce inventory management costs," says John Dykas, marketing and events manager at THK.

Hiwin Corporation (Booth #236124) offers an extensive line of mechanical and electrical motion control components linear and rotary tables and robotic solutions. Visitors will learn more about ball screws, linear guideways, ball splines, crossed roller bearings, strain-wave gearing systems, linear motor components, torque motor components, AC servomotors, drives and controllers and position measurement equipment. They also offer high-performance, single axis and multi-axis ball screw driven and linear motor driven linear motion driven stages and rotary-motion tables. Robotic solutions include articulated and SCARA robots.

Igus (Booth #236557, #236230) has expanded its drive technology range with the new drylin ZLX high-performance toothed belt axis. The compact, robust, and self-lubricating series features an anodized aluminum profile with a completely new geometric design, making it easy to integrate into modular profile systems. With a load capacity of 150N and speeds up to 3m/s, the drylin ZLX is ideal for automated production lines, pick-and-place systems, 3D printers, and more.

The heart of the new toothed belt axis is the linear guide system from the drylin W series, size 16, integrated into a robust, corrosion-resistant, clear anodized profile. Unlike other igus axes, the toothed belt runs inside the profile, giving the axis the appearance of a mechanical engineering profile.

"Classic aluminum profiles have specific dimensions and standards for grooves, which our drylin ZLX meets," says Matt Mowry, drylin product manager at igus. "Using standard slot nuts and connecting elements, combining with other mechanical engineering profiles is easy. This modularity is especially useful for linear robot structures, and the design ensures a cohesive, uniform look."

PBC Linear (Booth #236443) has combined high-quality linear motion components to offer a selection of

manual and electric linear actuators. This extensive range of linear actuators are designed to cater to a broad spectrum of industries and applications, providing everything from high precision and load capacity to exceptional durability and environmental resistance. These actuators ensure performance, reliability, and integration ease, whether for a compact medical device or a robust industrial machine.

Collaborative robots (cobots) are a true workforce multiplier and will be demonstrated in conjunction with tooling and workholding, welding, metrology, machining, part handling, and scores of other applications at IMTS. According to Will Healy, global industry leader—welding at Universal Robotics (UR) (Booth #236131), a cobot can arrive on a loading dock in the morning and be assisting with production by noon because cobot providers have "a hyper focus on simplifying the cobot integration experience and improving the cobot operator experience."

A paradigm shift has occurred with cobots. "The breakthrough occurred because of a hyper focus on simplifying integration and improving the cobot operator experience," Healy adds. "At IMTS 2024, conversations will center around how artificial intelligence, 3D vision systems, and cobots combine to pick a wider variety of parts with an unprecedented reliability."

Today, machine operators (not robot programmers) can program and staff multiple pieces of equipment, boosting machine utilization numbers and shortening changeover time between parts. With these factors, shops can now run more parts per machine with overnight runs or lights-out manufacturing, boost shop competitiveness, and help company leaders win new business.

"At IMTS 2024, conversations will center around how artificial intelligence and cobots come together to bring new levels of usability and productivity to the shop floor," adds Healy. "As an example of applications that were challenging to automate in the recent past, we will demonstrate how a UR20e cobot can pick a wider variety of parts with an unprecedented reliability," Healy says.

This advance occurred through a partnership between UR and Siemens (IMTS Booth #133249) that utilizes Siemens' deep learning-based vision software, called *SIMATIC Robot Pick AI*, and Zivid's M130 3D camera.

As manufacturers embrace automation, they also need to explore the transformative power of generative AI. Google Cloud (Booth #236709) delivers AI and machine learning solutions to unlock untapped potential and drive innovation through data-driven insights and intelligent automation. Google Cloud can help IMTS visitors understand where and how to apply AI to product design, research, production, supply chain, customer service, and other manufacturing processes.

While pallet pools provide capability, advanced machine controls ensure accuracy and consistency during unattended runtime. "The TNC7 control will help end users to feel confident in automating their process," says Gisbert Ledvon, vice president of marketing at Heidenhain (Booth #339440). "This year at IMTS, we will demonstrate tool quality and tool life monitoring features using the TNC7's integrated tool table database."

Heidenhain will also demonstrate the TNC7's component monitoring and process monitoring capabilities. Component monitoring can detect events such as tool breakage or excess force on the spindle. Process monitoring captures the data for a sample path and compares subsequent paths to this reference; deviations are graphically displayed, so operators can pinpoint the location.

Additive manufacturing (AM) is inherently an automated process, which is especially helpful to large-scale metal additive technologies such as directed energy deposition (DED), which can replace forgings, castings, and tooling. These products typically come from overseas with lead times of six to 18 months, which AM can shorten to a few months or weeks.

Melanie Lang, co-founder and CEO of Formalloy Technologies (Booth #433018), believes the trend of adding AM equipment to move work in-house is growing and will continue. "The last few years opened our eyes to the instabilities in our supply chain," says Lang. "We can't take delivery times for granted; the true country of origin for our products remains uncertain; and some sources are subject to geopolitical issues. Fortunately, we can apply technology to solve those problems."

Siemens (Booth #133249) will present its extensive machine tool CNC portfolio and digitalization software technology, highlighted by the digital native SINUMERIK ONE control platform for machining applications. Also, using a sports theme of "Speed, Agility and Endurance," aimed at the machine shop on its path to digitalization, Siemens will introduce MACHINUM to the North American market. MACHINUM brings together machine tool controls, digitalization software and machine shop services from Siemens to help manufacturers optimize their production processes, to provide agility for quick adaptation to changing customer requirements and calculated uptime needs, plus enable digitally proven endurance to maximize the productivity of the entire machine shop or production department.

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