Value Added at MDA, IANA and IMTS

Smart Manufacturing Highlights PT Focus in Chicago

Matthew Jaster, Senior Editor

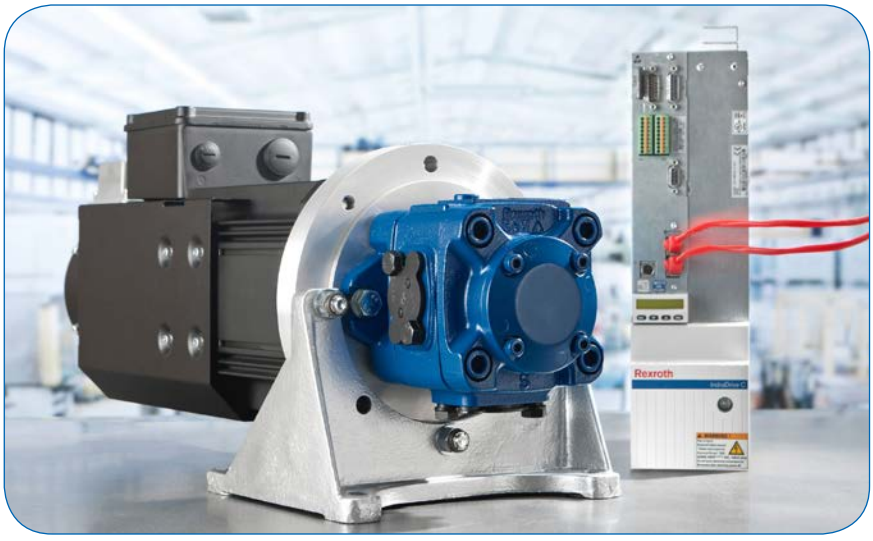
What was once targeted specifically toward the machine tool and metalworking industries, IMTS 2014 in Chicago spent a great deal of time and resources on automation, controls, mechanical components, self-diagnostics and an increase in productivity on the shop floor. Smart manufacturing is all the rage, following Europe's push for an intelligent factory that integrates customers and business partners into the manufacturing process via the latest technologies.

This is why the Industrial Automation North America (IANA) show expanded in 2014 and why Motion, Drive and Automation North America made its debut. IMTS now delivers some of the latest innovations in automation, power transmission, motion control and fluid technology. Here's a few of the highlights from the show:

Bosch Rexroth

Bosch Rexroth exhibited a broad range of automation products and systems for improving productivity and energy efficiency, as well as safety and training in machine tool and CNC applications. Visitors to the booth at IMTS participated in a demonstration that highlighted the flexible programming abilities of Bosch Rexroth's Open Core Engineering system. They were also treated to a real-time machining visualization on a handheld tablet connected by wireless Ethernet that demonstrated real-time machining monitoring, one example using the innovative Open Core Interface with the IndraMotion MTX CNC platform. In addition, the company showcased its IndraMotion MTX CNC family of machine tool controls. These provide open, scalable, CNC platforms for cutting, forming and machining applications. The newest platform version features the multi-core hardware CML 85, which supports 60 parallel NC-channels and control of up to 99 axes (up from 12 channels and 64 axes). In addition, the machine builder using IndraMotion MTX can now take advantage of simplified wiring of safety devices by using CIP Safety on Sercos (CSos) with the IndraDrive and PROFIsafe over Profibus DP.

For more information:
Bosch Rexroth
Phone: (800) 739-7684
www.boschrexroth.com



ABB

ABB Robotics featured more than ten advanced technology demonstrations at IMTS including new robots, turnkey manufacturing cells, and enhanced technology designed to increase manufacturing productivity for operations of varying sizes and industry sectors. The IRB 1200 Robots provide an entirely new small robot family that provides flexibility, ease of use, short cycle times, and a unique combination of a compact footprint and a large work envelope. It is designed for a wide range of material handling, machine tending and small parts assembly applications.

The FlexMT is a flexible, pre-engineered system designed to load and unload machine tools using vision guided robotics. Designed for both small batch and high volume production, the FlexMT increases spindle utilization by up to 60% over manual machine tending. The system can handle most any size and type of part, and is compatible with a wide range of machine tools, including horizontal and vertical lathes, machining centers, five-axis machines and grinders.

ABB's High Speed Industrial Part Handling Cell demonstrates the capabilities of the higher payload 6 kg and 8 kg IRB 360 FlexPicker robot models, bringing the fast cycle time pick-and-place performance used in the food and pharmaceutical markets to heavier-part industrial applications. The cell features ABB Integrated Vision, capturing accurate part locations for pick-up and set-down; and a Servo Gripper that allows the handling of multiple part sizes with a single gripper. The FlexPicker is the most widely used delta robot in the industry, with over 6,500 installations worldwide.

The Robotic Bin Picking Cell is designed in collaboration with Midwest Engineering Systems Inc. (*www.mwes.com*), an ABB Value Provider. The cell, which features an ABB IRB 4600 robot, combines *SICK PLB 3-D* vision for the

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precise localization of randomly orientated parts in bins and boxes, with gripper accuracy that allows the parts to be placed in known orientations and positions. The cell features *ABB RobotWare* software and *SICK* bin picking software, integrated in the IRC5 robot controller for simplified programming and operation. MWES, headquartered in Pewaukee, WI, provides custom machines, integrated systems, and automation/robotic solutions to manufactures around the world.

ABB's CNC Machine Tending Cell designed by VersaBuilt (*www.versabuilt.com*), uses vise soft jaws to move parts in and out of the CNC machine, with no custom robot programming or robot fixturing required. The soft jaws enable a new tended part to be setup in approximately 10 minutes, with the system able to run unattended for 24 hours.

The IRB 6700 Robots includes one model in material handling dress and two models dressed for spot welding. The material handling robot is simulating load, unload and part presentation for the welding robots. The spot welders feature Spot Servo Equalizing, which allows spot welding gun equalization without mechanical equalizing hardware, reducing the investment cost and improving productivity. The IRB 6700 is available with LeanID, a new Integrated Dressing (ID) designed for easier programming and a smaller footprint. It has also been built to withstand the harshest working environments and is available with ABB's ultimate Foundry Plus 2 protection system. In addition to enhanced speed, payload and accuracy, the power consumption has been lowered by 15%, total cost of ownership has been reduced by up to 20%, and maintenance has been optimized, doubling the time between service intervals.

For more information:
ABB
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www.abb.com

Sercos International

Sercos International, supplier of the Sercos automation bus, presented a multi-vendor interoperability demo at IANA in Chicago, IL,The multi-vendor interoperability demo displayed various automation products connected using the Sercos automation bus including the Bosch Rexroth XLC (eXtended Logic Control) PLC, IndraDrive Cs servodrive, various IO devices (Inline, S20, S67 and VAM panel), SafeLogic compact safety control, and HNC100-3X hydraulic axis controller. Additional Sercos devices included an Aventics pneumatic valve system, Cannon-Automata SSI Gateway for Encoders, Feller Engineering's multi-channel temperature controller, Festo's pneumatic valve terminal, a halstrup-walcher positioning system, RiceLake's Laumas Load Cell Transmitter and a TR-Electronics programmable absolute encoder. Cannon-Automata presented a demo of the new A2 PC based-Intel Atom dual core equipped Programmable Automation Controller. The A2-PAC device family combines the advantages of a PC-based control with the typical features of PLCs and motion controllers. Also on display was Bihl+Wiedemann's AS-i 3.0 Sercos Gateway with integrated safety monitor for CIP Safety on Sercos, which can be used to transmit data from safety input slaves and to safely control safety output slaves via CIP Safety. Peter Lutz, managing director of Sercos International, presented "Trends in Industrial Communications for the Factory of the Future."Part of his presentation was on the blended infrastructure conceptual approach that simplifies the integration of machinery in manufacturing. True to the slogan "Fewer cables, less complexity, easier machine integration," Sercos International developed this approach in collaboration with ODVA and the OPC Foundation. A common network infrastructure where Sercos telegrams, EtherNet/IP messages, CIP Safety messages and TCP/IP telegrams run on one single cable.

For more information:
Sercos International
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Nachi Robotic Systems Inc.

The MZ07 robot series features ultra-high-speed motion capability with advanced through-arm dress capabilities to simplify routing of hoses and cables for material handling, assembly, vision and many other applications. Through arm cabling minimizes interference and potential snags with peripheral objects in your work cell, helping to protect pneumatic and signal cables from damage. Boasting an IP67 rating, the MZ07 robot boasts a 0.31 second cycle time in standardized speed testing, leading all competitors' robots. Flexible mounting solutions allow the MZ07 to be floor, wall, or invert mounted to better suit customers' needs for any given application. In addition to being the world's fastest articulated robot, the MZ07 offers the largest working envelope in its class at 723 mm with an impressive repeatability of ±0.02 mm. The MZ07L extends the usable work space up to

912 mm. The MZ07 and MZ07L offer full 6-axis articulation while the MZ07P and MZ07LP are specially designed for palletizing applications featuring a five-axis design to simplify teaching palletizing routines by eliminating the J4 axis. In addition to Nachi's comprehensive robot lineup, the MZ07 builds on the great heritage of large payload robots by providing an extremely versatile small robot with top of the line capabilities.

Additionally, Nachi continues to develop advanced robotic spot welding solutions – focused on making higher quality welds more quickly than in the past. With advanced industry leading hollow arm technology, the SRA-H series robots simplify cable routing by eliminating the need for external dress packages. Nachi's advanced hollow arm design improves cable life and neatly packages all pneumatic, power, and servomotor cables for turnkey success. Specifically designed for the fast paced automotive industry, SRA-H series robots will dramatically reduce cycle times, significantly improve productivity, and achieve cost reduction.

The SRA series robots and their FD controllers are suited to spot welding applications. The SRA-H robots are highly rigid and weight less, providing faster motion and less vibration. Advanced motion control from the FD controller provides top acceleration thereby shortening cycle-times. The FD also has 4th generation servo gun control software enabling higher motor speeds while maintaining gentle electrode contact to parts, optimizing spot welding performance. Finally, Nachi together with welding partners (Obara and Art Hikari), are pushing the envelope in resistance welding with lightweight modular guns and spot welding solutions for aluminum parts.

For more information:
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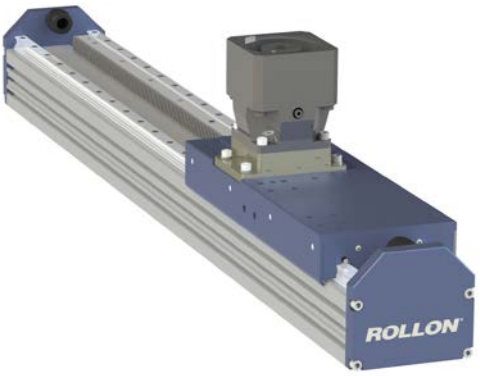
www.nachirobotics.com

Rollon Corp.

Rollon has been providing linear bearings, actuators, and linear motion products across a wide variety of industries including plant assembly, packaging design, transportation manufacturing and medical device development. The company unveiled its new rack and pinion for vertical applications and long strokes at IMTS 2014. Rollon Corp's new R-Plus System rack-and-pinion actuator delivers consistent rigidity and high axial forces throughout its stroke. The R-Plus is attached to a robust 160- or 200-mm wide aluminum alloy beam with single piece long lengths that permit large loads with minimal deflection. It supports multiple carriages and associated pinions on the same axis, with each carriage capable of independent motion. The actuator is also effective in vertical applications and comes pre-installed with a precision speed reducer ready to mount the motor of the users choice.



The R-Plus System has self-sustaining aluminum extrusion profiles that house profile rails with recirculating ball bearings for large and balanced load capacity. The units are operated by hardened, tempered and ground steel rack and pinion helical teeth gears and a built-in lubrication kit allows the pinion to be easily greased for smooth operation and long life.

For more information:
Rollon Corporation
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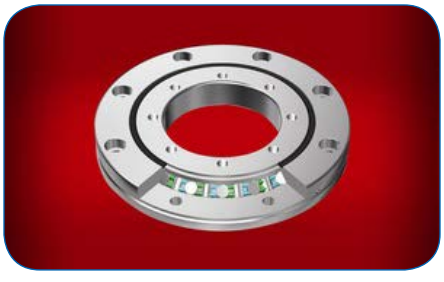
www.rollon.com

THK America

THK aims to contribute to the improvement of industry by focusing on toughness, high-quality and know-how in areas like ball screws, lifting equipment, lubricants, robots, slides, linear guides and more. During IMTS, THK offered its latest Caged Ball LM Guide models SPR/SPS and SVR/SVS used in the machine tool industry as well as other motion solutions including ball screws, actuators and cross roller rings.



For more information:
THK America
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Neugart USA Corp

German gear technology products manufacturer that believes in modern CAD and manufacturing processes to create high quality and precise products including gearboxes, bearings, clutches, gears, v-belts, gear reducers, etc. This year, Neugart presented the latest version of the *NCP* (*Neugart Calculation Program*), the design software for the entire powertrain. With the new version *NCP 3.0* new applications are implemented, such as the center winder and the contact or surface winder. Furthermore the product lines

PSN and PSFN are now also available in the design sizes 142/190 (PSN-helical geared shaft gearbox) and 140/200 (PSFN helical geared flange gearbox). A new concept for motor and gearbox selection was implemented and offers now many new features to make the selection of the matching components even easier. Convenient filtering and sorting options are used. With *NCP 3.0* it is also possible to sort according to operating efficiency or running noise. To offer the opportunity to dimension the gearboxes even more accurately, it is now possible to determine the gearbox losses as a function of gearbox temperature, torque and speed for any time.

For more information:
Neugart USA Corp.
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Mach Motion

What began as a father and son retrofitting machines has expanded into designing and fabricating CNC controls, offering CNC software and providing retrofitting, rebuilding and remanufacturing services. Quality is the goal at Mach Motion where engineers want anyone to retrofit or build machines without a lot of electrical CNC know-how. The company is developing controls and products of the "plug-n-play" variety. Mach Motion had a presence at two booths at IMTS including Yaskawa America and SolidCAM. The company provided information that will allow attendees to add the latest CNC technology to their existing machines. The company also held a raffle to win a free control on a machine eligible for retrofit in the Continental United States.

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