Is there really anything conventional about CNC metalcutting machine technology these days? To the lists of high-tech machines that include vertical, horizontal, universal, single-spindle, multiple spindle milling, turning, five-axis and multitasking machines, you can now add multifunction for machines that combine the new wave of additive processes, or 3D printing, to traditional subtractive machining. Of course, it makes a difference what kind of shop you’re running. Do you specialize in one-off prototyping, small-lot job shop production, or limited, medium-volume or high-volume serial production of parts. The challenge is always to match the right machining process choices to the right requirements for the right price, and reasons.

Methods Machine Tools is betting big on the precision machining capability of their new YASDA precision machines for aerospace, die/mold, and automotive applications.

Spindles Hold Sway, but Multifunction on the Way

See how advanced machine tool technology is keeping pace with requirements of high-profile industries like commercial aviation, oil and gas, automotive, and medical device manufacturing. Every conceivable or never-seen-before solution will be exhibited making parts by removing material or nontraditionally by adding material to build up parts.
There’s no doubt that IMTS 2014 is exactly the right place to kick the tires of the latest advanced technology machines and take them out for virtual test drives through the magic of the most sophisticated CNCs and software. Or you can watch machines under power cut through the most difficult-to-machine materials like butter. IMTS 2014 is made for buying or leasing decision-making. Leaving shopping for another day, or expo, is not really the best and most productive option. The advanced manufacturing gurus will all be there waiting for your prints, parts, or napkin-drawn parts renderings.

**Economy is Picking Up Steam**

“The economy is finally cooperating and re-shoring is picking up steam, both of which help to create a strong US manufacturing base. Manufacturing is experiencing a renaissance in North America, leading to a continued, strong demand for machine tools and automation solutions,” said Bryon Deysher, president & CEO of Methods Machine Tools Inc. (Sudbury, MA).

At IMTS 2014, Methods will feature high-precision machining including their new YASDA Precision Machine Tool line.

“The need for more efficient ways to machine exceptional, high-quality parts is increasing as manufacturers in segments such as aerospace, die/mold, and automotive are demanding tighter tolerances combined with shortened cycle times. We expect this trend to continue over the next several decades and YASDA precision machine tools are well positioned to meet these challenges,” said Deysher.

Methods will showcase several automation solutions from its dedicated Automation Department. One of these cells for job shops that are just getting into automation is the Lathe JobShop Cell. It features the new Nakamura-Tome AS-200 high-performance multitasking turning center with a single spindle, single turret in a heavy-duty and compact machine.

Methods offers machine tool solutions for the varying needs from small shops to OEMs. For example, for those looking to get into horizontal machining, Methods will be demonstrating the new YASDA Precision Machine Tool line.

**At IMTS, 10 solutions you’ll see nowhere else, including:**

- 5-axis turn-mills
- Multispindle CNC lathes
- Swiss turning

**Only high-quality, long-term answers to complex precision parts making challenges. Answers that pay for themselves.**

With our machines, shops across the globe develop machining strategies that permit high precision, multiple operations in a single setup with rapid changeover and zero handling.
a newly expanded line of Kiwa horizontal machining centers. Methods will also feature Nakamura multitasking turning centers, Feeler performance milling and turning centers, Fanuc RoboDrill five-axis VMCs and RoboCut Wire EDMs and metrology solutions. Methods will debut a Sigma Tandem 6A palletized VMC that provides in one platform flexibility for job shops and OEMs. Sigma, which Methods is introducing in the US, is part of the FFG Europe Group which also includes quality Italian machine tool builders (JOBS, Sachman and Rambaudi).

**Theme: Discover More with Mazak**

“Where most companies have an hourglass through which they’re pushing product development, we are able to create more products faster—and products that meet the needs of the market—if we design them close to where they’re being used,” said Brian Papke, president, Mazak Corp. (Florence, KY). “Of the 21 new machines for industries including aerospace, automotive, energy, and medical that we’ll exhibit at IMTS, nine of them have been designed in our Florence North American manufacturing headquarters. They are produced here and some are exported. We’ve actually taken the lead in designing certain families of machines here, particularly the smaller vertical machining centers and turning machines.”

The growth of the design center at Mazak’s manufacturing HQ is quite notable, as is the company’s implementation of MT Connect throughout its manufacturing facility where it uses its own machines to manufacture its own products. At IMTS, every Mazak machine will feature MT Connect and be used to demonstrate how digital connectivity can help customers monitor their machines for performance.

To ensure the highest digital performance of its multitasking machines, Mazak will introduce a new level of innovative capability they call Smooth Technology for its high-end machines. The concept weaves together the design of Mazak’s multitasking machines, new applications-driven software systems and their powerful new Smooth X Control to provide high levels of

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productivity. Seven models of Mazak multitasking machines will feature the Mazatrol Smooth X CNC Control. “Smooth Technology” is characterized by being extremely powerful, as well as user and ergonomically friendly,” said Papke.

“Retiring workers and an overall skills shortage creates a need for capital equipment that boosts the output of a shop’s existing workforce,” said Papke. “And the incorporation of automation to do so doesn’t necessarily mean that the machine has to be the most sophisticated. It might mean that a faster machine or a machine that combines processes, like turning and milling or includes automation like barfeeders and pallet changes is what is needed.”

At IMTS, among the Mazak machines that will be seen for the first time are the Horizontal Center Universal 4000 and 5000, Integrex j-200S, Integrex e-1600-V10S, Quick Turn Universal 300 MY, and Quick Turn Universal S-220 MY. Mazak will pair several of the machines it demonstrates with different types of automation, including twin-pallet changers, gantry loaders, an articulated robot cell, and the company’s Palletech automation system. Its VIP partners will showcase their third-party tooling, software, inspection, and other devices on machines.

Flexible, Compact, Modular Automation

GF Machining Solutions (Lincolnshire, IL) will demonstrate automated machines that are capable of overcoming skilled labor shortages by leveraging advanced technology. “Our exhibit will be divided into four segments with one dedicated to automation and System 3R,” said Glynn Fletcher, president, GF Machining Solutions. “Automation is going to be a very key part of our message. We will also highlight market segments dedicated to electronic information and communications technology (ICT).” Die/mold, medical and dental applications will also be shown.

“We will demonstrate our milling machines where most advantageous, concentrating on high-performance five-axis milling, high-speed machining for mold/die. Machines on show will include the Mikron HS 200-ULP, our smallest Medtech machine, the Mikron HPM 800-U for aerospace, and Mikron HSM 400 ULP for die/mold applications,” said Fletcher.

On the self-contained automation side, the full five-axis Mikron HPM 800U through its integrated pallet changer and tool magazine options can accommodate up to 210 tools. Designed for the production of tools, molds and high-value parts, the HPM 800U features a sturdy and compact design with a large working space.

System 3R automation will also be featured in the booth, with a focus on the new Transformer modular automation system. Tying everything together will be MConnect functionality, with GF Machining Solutions showing how this standardized protocol makes it easier to control, monitor and improve production systems. The newly introduced Transformer modular automation solution can easily be integrated with a single machine, but can also be seamlessly expanded to include up to 12 machines within a cell. The system accommodates a wide range of machining technologies and simplifies unifying diverse machines into a highly efficient production cell.

Sensors, Software Offer Adaptive Machine Control

Michael Huggett, president, Hwacheon Machinery America Inc. (Vernon Hills, IL) points out the growing emphasis on adaptive software driving machine tools. The combination of sensors in the machine structure and software allow users to operate much more efficiently, saving time and producing better quality surfaces.

“Our moldmaking machine tools feature standard integrated software developed by Hwacheon for thermal displacement control and compensation. We’re not only thermally measuring the machine throughout its use, but we’re using the information collected to dynamically verify and control accuracy. We are able to control the kinematics of the machines for contour machining, allowing us to optimize machine performance for roughing, semifinish, and finish machining without going back and forth through a number of different programs.”

While software development is extremely important at Hwacheon, the structure of machines is essential as well.
A weak machine construction cannot be compensated for with software. “While some machine tool builders are getting away from boxway geared headstock machines, Hwacheon is committed to supplying both the heavy-duty geared headstock machines, as well as integral spindle motor, linear guideway machines. There’s a need in the market for manufacturers who want to have heavy-duty reliable machines that are powerful enough for heavy-duty machining as well as able to hold high accuracies in both positioning and finishing,” said Huggett.

**Multifunction Machine Offers 3D Printing Versatility**

DMG Mori (Hoffman Estates, IL) has combined additive manufacturing with conventional subtractive five-axis milling in its Lasertec 65 Additive Manufacturing machine. The multifunction Lasertec 65 is a hybrid machine that incorporates generative laser deposition welding on a five-axis milling machine platform. Complex workpieces featuring complex geometries are able to be produced with combined laser deposition welding and five-axis milling.

With the Lasertec 65, DMG Mori has added laser sintering capability to alternately build up and mill powder metal using a wide variety of metals. The method uses a deposition process by means of a powder nozzle which is up to 20 times faster than generation in a powder bed. Equipped with a 2-kW diode laser, the Lasertec 65 is positioned to expand the market for additive processes from metal prototype and small-part production to complete machining of complex components with undercuts as well as for repair work.

Lasertec 65 is also well-suited for application of partial or complete coatings for moldmaking and general engineering or medical applications. Changeover between milling and laser operations on the Lasertec 65 is automatic with the option to successively build up layers of different materials in wall thicknesses of 0.1–5 mm. *ME*

—Jim Lorincz

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