

Mazak

HYBRID

MULTI-TASKING SERIES

[AM | HWD | FSW | AG]



The Next Level of Multi-Tasking

The pace of industry constantly accelerates, a fact that forces manufacturers to seek out new technology to give them the edge over the competition and meet their customers' needs. It's why Mazak first combined mills and lathes to create Multi-Tasking, and it's why we extended the concept until our customers could achieve true DONE IN ONE® part production. Now, with HYBRID Multi-Tasking, Mazak has pushed the concept even further, pairing subtractive metalcutting processes with new software-based solutions, additive manufacturing technology or joining techniques to give single machines the productivity and capability that once required entire production cells.

HYBRID MULTI-TASKING SERIES

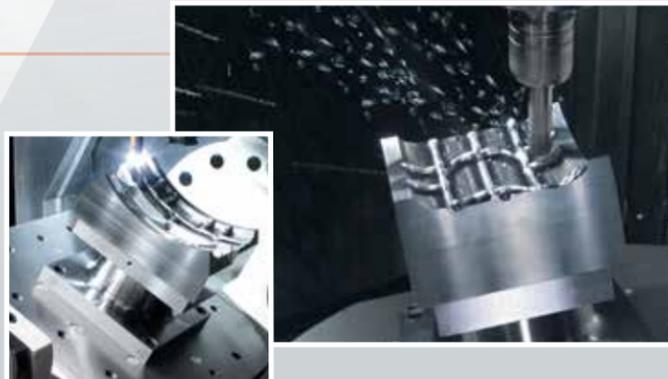
ADDITIVE MANUFACTURING (AM)

ADDITIVE MANUFACTURING (AM) includes laser metal deposition and multi-laser metal deposition. By far the fastest way to build parts with metal powder, single-laser metal deposition uses one high-power laser to melt powder as it's sprayed from a nozzle. Multi-laser metal deposition takes single laser technology even further. With a gantry AM head capable of directing powder from any angle, the heat of multiple lasers builds small part features/textures or coats one material with another.



HOT WIRE (HWD)

HOT WIRE (HWD) is a high-speed additive solution that offers programmable welding automation: wire arc AM. As with conventional welding, a 5-axis HOT WIRE head's arc torch melts metal wire directly on the base material to build part features or welds on any of a workpiece's surfaces.



FRICTION STIR WELDING (FSW)

FRICTION STIR WELDING (FSW) applies highly precise levels of frictional heat and forging pressure to create full-penetration, defect-free welded joints.



AUTO GEAR (AG)

AUTO GEAR (AG) involves subtractive processes for SMOOTH Gear Milling, Gear Skiving and Gear Hobbing. These software innovations make gear production simple, reducing the need for complex programs, specialized machines or having to farm out low-volume gear work.



Top Technological Advances

Like Mazak's subtractive Multi-Tasking machines before them, HYBRID innovations have created new levels of cost efficiency. The highly productive combinations of additive, subtractive and joining processes will truly transform your manufacturing operations.

- **Reduced lead times** – Rather than sending workpieces out for secondary or tertiary processes, HYBRID Multi-Tasking gives shops the ability to keep work in-house and reduce lead times significantly.
- **Improved overall part accuracy** – Whether it's the perfect welds created with HWD heads or the exceptionally precise gear hobbing, skiving and milling enabled with the AG package, HYBRID delivers outstanding accuracy.

- **Shorter setup time** – HYBRID machines require just one setup for multiple additive, subtractive or joining processes, bringing DONE IN ONE part-production strategies to entirely new manufacturing sectors.
- **Reduced overhead/operating costs** – When one machine can do the work that used to take multiple processes across a whole production line, the reduction in labor costs, utilities and required floor space results in large cost savings.
- **Streamlined processes and the elimination of WIP** – DONE IN ONE means exactly what it says; you don't need to store WIP or design elaborate workflows when you put raw materials in a HYBRID machine and take out finished parts.

Additive Manufacturing (AM)

Using lasers or arc torches to melt metal powder or wire, respectively, additive machining techniques allow manufacturers to build parts to near-net shape to reduce scrap or achieve faster research and development. The rough surfaces ordinarily created by additive processes are no problem for HYBRID Multi-Tasking machines, which can perform finishing and semi-finishing operations without an additional setup.



INTEGREX i-200S AM & INTEGREX i-400S AM

Featuring a second turning spindle (S) in addition to laser AM capabilities, the INTEGREX i-200S AM and INTEGREX i-400S AM deliver maximum versatility, precision and throughput for medium to large parts. These machines' full 5-axis machining and laser metal deposition capabilities make it possible to dramatically reduce lead times and improve part accuracy while significantly reducing scrap material thanks to the AM head's ability to build parts to near-net shape.



INTEGREX i-200S AM



INTEGREX i-400S AM

VC-500A/5X AM

The Kentucky-made VC-500A/5X AM machine platform has a trunnion-style rotary/tilt table that allows for accurate and cost-effective processing of small complex parts via full 5-axis machining. In addition to the standard high-performance spindle, powerful MAZATROL SmoothX CNC and 30-tool capacity magazine, the HYBRID Multi-Tasking version of this high-value machines adds laser metal deposition (AM) capabilities for advanced machining operations and unparalleled DONE IN ONE productivity.



VC-500A/5X AM

Hot Wire Deposition (HWD)

VARIAXIS j-600/5X AM with HWD

A cost-effective and highly efficient vertical machining center, the space-saving VARIAXIS j-600 utilizes fast, high-rigidity spindles and a high-accuracy rotary/tilt table to enable DONE IN ONE operations without taking up a lot of floor space. The addition of the HWD package further adds to the machine's versatility, while such options as expanded tool magazines, high-speed spindles and 2-pallet changers make it easy to boost productivity and attain greater throughput.



VARIAXIS j-600/5X AM with HWD

VC-500A/5X AM with HWD

Like the AM version of this Kentucky-built machine, the VC-500A/5X AM with HWD delivers exceptional full 5-axis machining with the addition of the HWD package's wire arc AM. Ideal for handling active materials like aluminum or titanium, the HOT WIRE system offers greater rates of deposition for roughing out near-net shapes and coating large surface areas quickly for system and material cost savings.

Friction Stir Welding (FSW)

Using precise amounts of heat and pressure, FRICTION STIR WELDING creates flawless and full-penetration welded joints. This innovative technique makes joining dissimilar metals or making weld repairs easier than ever while minimizing heat-affected zones for both fine and rough applications.

VTC-300 FSW & VTC-800 FSW

The VTC-300 and VTC-800 Vertical Traveling Column Machining Centers possess standard high-speed 40-taper spindles, B-axis swivel spindle heads, full traveling column design and fixed tables for machining extremely long and heavy workpieces. In addition to optional table center partitions that allow for creating two work spaces from a single machine, the new FSW heads make it possible to achieve DONE IN ONE welds and joins for heavy-duty components made from tough materials.



VTC-800 FSW

Auto Gear (AG)

SMOOTH Gear Cutting Solutions include SMOOTH Gear Milling for OD parallel axis gears, SMOOTH Gear Hobbing for OD gears and splines and SMOOTH Gear Skiving for OD/ID gears and splines, a software suite that helps shops produce gears of all shapes and sizes faster and more precisely than ever before.

INTEGREX i-200ST AG

Perfect for medium to large parts with complex contours, the INTEGREX i-200ST is made even more versatile with the AG package. Combining the functions of a high-powered turning center, a full-function machining center and a specialized gear machining solution, this powerful solution also features a second turning spindle (S) and a lower turret (T) to minimize fixtures, tools, handling and non-cut time.



INTEGREX i-200ST AG

INTEGREX e-1250V/8 AG

A heavy-duty solution for heavy-duty applications, the INTEGREX e-1250V/8 with the AG package is perfect for producing large and highly complex parts and gears from titanium, aluminum and steel. A standard 2-pallet changer and wide range of milling spindle options, as well as its full suite of Multi-Tasking features, makes this the ideal way for manufacturers to reduce inaccuracies and WIP inventory by eliminating the need to move heavy parts across multiple workstations.



INTEGREX e-1250V/8 AG

MAZAK TECHNOLOGY CENTERS

As a key component of Mazak's comprehensive customer support, its network of eight Technology Centers strategically located across North America puts component machining demonstrations, experienced applications engineers and training in close proximity to customers. These Technology Centers also provide a channel for customer input to Mazak manufacturing for the development of new machine tool technology.

Technology Centers offer advanced application support, educations and training, new technology and manufacturing systems, along with on-site training and technology seminars.

Advanced application support

- Expert applications engineers help customers optimize part-production processes and create effective manufacturing solutions
- Mazak-certified cutting tool, workholding and automation partners collaborate to develop optimized turnkey manufacturing solutions.
- Test cuts of customer parts run on the latest, most-advanced machine tools
- Secure applications development and complete design privacy of each customer's individual manufacturing system

Education and training

- Education, training and seminar events in cooperation with Mazak technology partners
- Free access to the most advanced machine tools
- Industry focused education - general aerospace, energy, jet engine and construction



New technology and manufacturing systems

- The latest, most-advanced manufacturing systems that can optimize the processing of industry-specific components
- Productivity experts help customers select the best new machine tool technology for their particular businesses

On-Site Training and Technology Seminars

- Hands-on applications and operator development courses
- Technical seminars held in conjunction with our Value Inspired Partners (VIPs)
- Regularly scheduled market-focused events that provide valuable industry insight



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MAZAK Optimum Plus

To maximize machine tool investments, Mazak offers all customers its Optimum Plus program, which represents a company-wide commitment to provide the best possible, most comprehensive service and support.

The Optimum Plus program encompasses Five Pillars – distinct, yet interrelated areas:

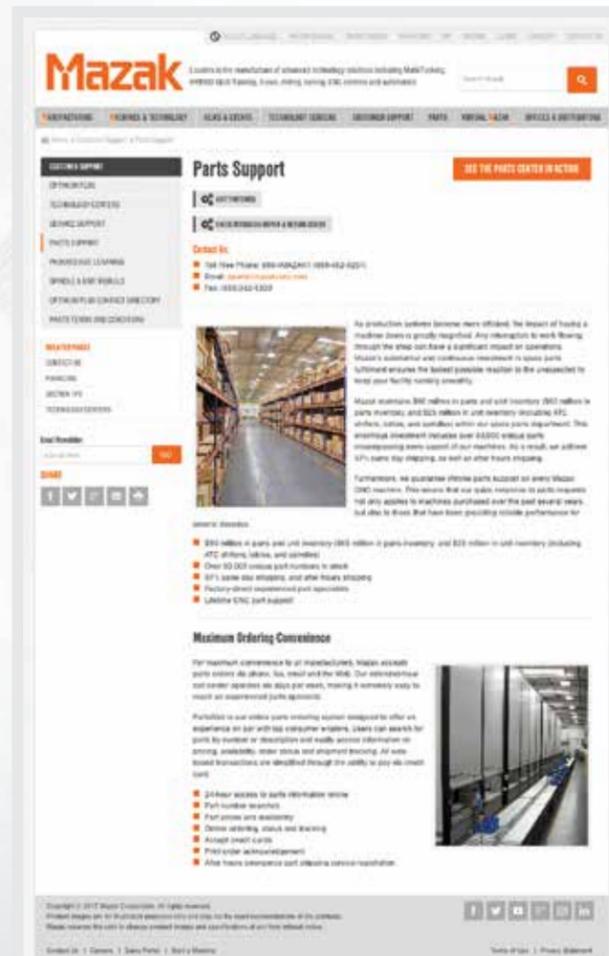
- Single-source service
- Technical Support – machine and CNC
- Parts support
- Progressive learning
- Spindle and unit rebuild

Single-source service

Mazak is a single point of contact for any Mazak-related service need, whether it involves a machine, control, accessory or automation solution. This effective service approach helps customers maintain the highest possible level of productivity.

Benefits of Mazak’s single-source approach include:

- Free technical phone support and software upgrades for the life of a Mazak machine
- Diagnostic software support that provides instantaneous remote diagnostic services via remote real-time systems
- Guaranteed phone response to any technical question within 1 hour via a 24/7 technical phone support system
- More than 350 factory-trained Mazak service representatives and certified distributor personnel who can be at a customer’s site within 24 hours under most circumstances
- Wide variety of services, including laser calibration to ISO, ANSI and JIS standards; ball bar qualification and analysis; preventive maintenance plans and programs; and vibration analysis and benchmarking



The Mazak Optimum Plus program enables customers to maximize the value of their Mazak purchase.

Technical support – machine and CNC

Comprehensive warranties on every Mazak machine tool component, including a 2-year part warranty on CNC control components.

Technical support for machines and CNCs also includes:

- Additional warranty coverage available upon request
- Free technical phone support and software upgrades for machine lifetime
- Diagnostic software support/real-time remote diagnostic services

Parts support

Mazak’s spare parts fulfillment ensures the fastest possible reaction time. The state-of-art Mazak North America Parts Center uses the latest AS/RS fully automated warehouse storage system technology and maintains a \$65 million parts inventory.

Benefits of the North American Parts Center include:

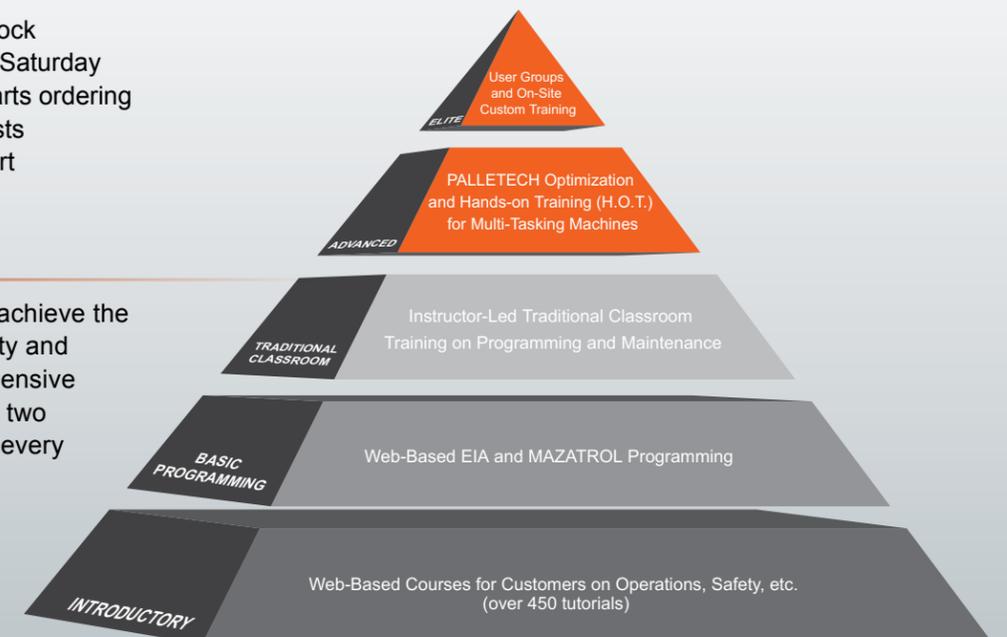
- Average 97% same day parts shipment and after hours shipping
- 52,000 part numbers in stock
- Call center open Monday-Saturday
- Convenient web-based parts ordering
- Experienced part specialists
- Lifetime CNC parts support

Progressive learning

We ensure our customers achieve the highest levels of productivity and profitability with a comprehensive training program, including two weeks of free training with every machine purchased.



Fully automated warehouse storage systems ensure the fastest delivery of Mazak spare parts





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