MAZAK’S FIVE LEVELS OF MULTI-TASKING
Selection Guide
A MULTI-TASKING SOLUTION FOR EVERY APPLICATION

Multi-Tasking machines are becoming more widely used throughout the market across a variety of industries. Manufacturers need solutions that help cut costs and lead times, but it is becoming increasingly difficult to identify the best technology to optimally align with their production processes. To help manufacturers identify the best level of technology for their operations, Mazak created the Five Levels of Multi-Tasking.

In recent years, Multi-Tasking technology has evolved and been implemented in nearly every industry. Mazak’s Five Levels of Multi-Tasking selection guide outlines our offering of revolutionary machines by category to help companies’ decision processes by narrowing down the selection of Multi-Tasking technology.

Whether producing small parts with unit cycle times of under a minute or enormous, complex components that require a full week of machining, Mazak offers a Multi-Tasking solution that can boost efficiency, flexibility and productivity. By pursuing complete machining with fewer machines, manufacturers ensure greater reliability in product quality and precision, while also reducing labor cost per part and maximizing equipment utilization.

In the global market, manufacturers benefit from every possible competitive advantage. Identifying the right level of technology for your operations is a vital starting point. Mazak’s Five Levels of Multi-Tasking can help.

LEVEL 1

With simple turning, milling, drilling and tapping operations, Level 1 is perfectly suited to producing rounded parts with minimal complexity. Machines typically offer a single turning spindle and a drum-style turret with rotating-tool capabilities. The following Mazak series offer machines that fall into the Level 1 category.

**SUPER QUADREX**
With an upper turret containing milling tools and lower turret with turning tools only, the SUPER QUADREX Series is equipped to greatly shorten cycle times for shaft workpieces.

**INVERTED VERTICAL SPINDLE TURNING CENTER**
Ideal for high-volume production, such as manufacturing of automotive components, multiple INVERTED VERTICAL SPINDLE CNC turning centers with rotating-tool capabilities can be arranged in a line with a conveyor to allow for unattended operation.

**MEGATURN NEXUS**
The MEGATURN NEXUS Series excels at heavy-duty cutting of large cast iron and steel workpieces common to manufacturers of construction machinery, industrial machinery and jet engines. The MEGATURN NEXUS is optionally equipped with a two-pallet changer to increase spindle utilization.

**LEVEL 2**

With two or three turning spindles, Level 2 is perfectly suited to producing parts with more complexity. Machines typically offer a combination of single- and multi-spindle functionalities. The following Mazak series offer machines that fall into the Level 2 category.

**SLANT TURN NEXUS**
Designed for heavy-duty applications, the SLANT TURN NEXUS Series offers tremendous value to energy, aerospace and off-road equipment manufacturers working with large, long shaft workpieces.

**QUICK TURN SMART**
Offering affordability and high productivity, the QUICK TURN SMART Series delivers fast axis feed rates and incorporates the user-friendly CNC SMART control. The new Mazak MX Hybrid Roller Guide System on the X- and Z-axes ensures high rigidity and smooth cutting, while X-axis ball screw pretension provides high accuracy.

**LEVEL 3**

With three or four turning spindles, Level 3 is perfectly suited to producing complex parts with specific requirements. Machines typically offer a combination of single- and multi-spindle functionalities. The following Mazak series offer machines that fall into the Level 3 category.

**MEGATURN NEXUS**
The MEGATURN NEXUS Series excels at heavy-duty cutting of large cast iron and steel workpieces common to manufacturers of construction machinery, industrial machinery and jet engines. The MEGATURN NEXUS is optionally equipped with a two-pallet changer to increase spindle utilization.

**MEGAMASTER NEXUS**
The MEGAMASTER NEXUS Series excels at heavy-duty cutting of large cast iron and steel workpieces common to manufacturers of construction machinery, industrial machinery and jet engines. The MEGAMASTER NEXUS is optionally equipped with a two-pallet changer to increase spindle utilization.

**LEVEL 4**

With four or more turning spindles, Level 4 is perfectly suited to producing complex parts with specific requirements. Machines typically offer a combination of single- and multi-spindle functionalities. The following Mazak series offer machines that fall into the Level 4 category.

**MEGATURN NEXUS**
The MEGATURN NEXUS Series excels at heavy-duty cutting of large cast iron and steel workpieces common to manufacturers of construction machinery, industrial machinery and jet engines. The MEGATURN NEXUS is optionally equipped with a two-pallet changer to increase spindle utilization.

**LEVEL 5**

With five or more turning spindles, Level 5 is perfectly suited to producing complex parts with specific requirements. Machines typically offer a combination of single- and multi-spindle functionalities. The following Mazak series offer machines that fall into the Level 5 category.

**MEGATURN NEXUS**
The MEGATURN NEXUS Series excels at heavy-duty cutting of large cast iron and steel workpieces common to manufacturers of construction machinery, industrial machinery and jet engines. The MEGATURN NEXUS is optionally equipped with a two-pallet changer to increase spindle utilization.

**www.mazakusa.com**
**LEVEL 2**

The inclusion of Y-axis functionality for the machine’s drum turret increases the range of part geometries that can be attained with Level 2. Machines at this level provide machining off the center-line and perform Done-In-One machining through use of two spindles with a milling turret or two spindles with two-turret configuration, thus achieving higher productivity than Level 1.

**MULTIPLEX**

With twin spindles and twin turrets, the MULTIPLEX Series of CNC turning centers offers excellent productivity for mid-size lot production.

**HYPER QUADREX**

The HYPER QUADREX Series of two-turret CNC turning centers includes models that feature twin high-performance spindles for maximum productivity. Through enhanced Done-In-One processing, the HYPER QUADREX Series offers complete machining from slug material in a single setup.

**QUICK TURN NEXUS**

Combining advanced technology, high productivity and uncompromised performance, the QUICK TURN NEXUS Series offers a wide variety of options that actually allow it to straddle both Level 1 and Level 2. All machines in the series contain the Mazak MX Hybrid Roller Guide System to increase vibration dampening, achieve quicker acceleration and deceleration and require less maintenance and oil consumption.

**LEVEL 3**

At Level 3, Multi-Tasking capabilities are further enhanced through an independent milling spindle headstock with B-axis indexing. Y-axis travel motion is increased and a tool magazine increases tooling capacity. The machines at this level offer ideal efficiency for applications requiring up to 4.5-axis Multi-Tasking operations. With the launch of the new j-Series, Mazak provides affordable Multi-Tasking technology, which delivers higher versatility of machining and improved productivity for most small parts applications requiring secondary operations.

**INTEGREX j-SERIES**

The newest Multi-Tasking machines introduced in the Mazak family, the j-Series eases setups for Multi-Tasking applications. This robust line of machines performs 4-axis simultaneous machining and 5-axis tool tip positioning, achieving significant advantages in productivity, accuracy and flexibility when machining complicated workpieces. In lieu of a drum turret, the j-Series integrates a tool magazine, increasing versatility in part production.

www.mazakusa.com
LEVEL 4
With an emphasis on automation and tackling large or highly complex parts, Level 5 Multi-Tasking encompasses full, simultaneous 5-axis machining. Mazak’s INTEGREX i-Series and e-Horizontal machines reside in this category and can be combined with robots, while our e-Vertical machines can be combined with our PALLETech system to achieve fully automated, unattended production. Representing the evolution of the highly successful MARK IV Series, the INTEGREX i-Series is Mazak’s latest addition to Level 4.

INTEGREX i-SERIES
Building off the incredible success of Mazak’s MARK IV Series of Multi-Tasking machines, the i-Series features a milling spindle of the same power as found in a machining center. With fast, reliable and accurate performance, the i-Series achieves high-speed, high-power milling and heavy-duty facing.

INTEGREX e-HORIZONTAL SERIES
The INTEGREX e-Horizontal Series represents a true fusion of a CNC turning center and full 5-axis machining center. Comprehensive Done-In-One production can be achieved on large parts with complicated geometries, providing incredible productivity and efficiency gains for manufacturers working with these types of components.

INTEGREX e-VERTICAL SERIES
The INTEGREX e-Vertical Series offers robust turning capabilities, in addition to machining capabilities for multiple faces. Simultaneous 5-Axis machining allows for the production of parts with highly complex geometries and the series excels across a broad range of aerospace, energy and automotive applications.

LEVEL 5
As the next step in the evolution of Multi-Tasking, Level 5 capabilities are the result of Ultra-Tasking, a concept whereby Level 4 machines incorporate specialized machining tasks, such as gear cutting, honing, grinding and polishing. With Ultra-Tasking, even the most demanding and complex parts will be machined to completion in a single setup.
## APPLICATION CATEGORIES

### GENERAL MACHINE TRAITS
<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key-Ways on Center Line</td>
<td>Off-Center Line</td>
</tr>
<tr>
<td>Done-In-One *</td>
<td></td>
</tr>
</tbody>
</table>

### EQUIPMENT SPECIFICATIONS
<table>
<thead>
<tr>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turning Spindle with C-Axis</td>
<td>Turning Spindle with C-Axis</td>
<td>Turning Spindle with C-Axis</td>
</tr>
<tr>
<td>Tailstock</td>
<td>Second Turning Spindle with C-Axis *</td>
<td>Second Turning Spindle with C-Axis</td>
</tr>
<tr>
<td>Y-Axis Travel</td>
<td>Drum Turret with Rotating Tools</td>
<td>Y-Axis Travel</td>
</tr>
<tr>
<td>Milling Headstock with B-Axis Indexing</td>
<td>Milling Headstock with B-Axis Indexing</td>
<td>Tool Magazine, Automatic Tool Changer</td>
</tr>
<tr>
<td>Tool Magazine, Automatic Tool Changer</td>
<td>Tool Magazine, Automatic Tool Changer</td>
<td>Pallet Changer ***</td>
</tr>
<tr>
<td>Bar Feeder</td>
<td>Bar Feeder</td>
<td>Bar Feeder</td>
</tr>
<tr>
<td>Gantry Loader</td>
<td>Gantry Loader</td>
<td>Gantry Loader</td>
</tr>
<tr>
<td>Robot</td>
<td>Robot</td>
<td>Robot</td>
</tr>
<tr>
<td>Palletech System</td>
<td>Palletech System</td>
<td>Palletech System</td>
</tr>
<tr>
<td>QUICK TURN SMART - M Models</td>
<td>QUICK TURN NEXUS - MY, MS, MSY Models</td>
<td>QUICK TURN NEXUS - MY, MS, MSY Models</td>
</tr>
<tr>
<td>SLANT TURN NEXUS - M Models</td>
<td>HYPER QUADREX</td>
<td>HYPER QUADREX</td>
</tr>
<tr>
<td>MEGA TURN NEXUS - M Models</td>
<td>MULTIPLEX</td>
<td>MULTIPLEX</td>
</tr>
<tr>
<td>IVS TURNING CENTER - M Models</td>
<td>SUPER QUADREX</td>
<td>SUPER QUADREX</td>
</tr>
<tr>
<td>QUICK TURN SMART - M Models</td>
<td>QUICK TURN NEXUS - MY, MS, MSY Models</td>
<td>QUICK TURN NEXUS - MY, MS, MSY Models</td>
</tr>
<tr>
<td>SLANT TURN NEXUS - M Models</td>
<td>HYPER QUADREX</td>
<td>HYPER QUADREX</td>
</tr>
<tr>
<td>MEGA TURN NEXUS - M Models</td>
<td>MULTIPLEX</td>
<td>MULTIPLEX</td>
</tr>
<tr>
<td>IVS TURNING CENTER - M Models</td>
<td>SUPER QUADREX</td>
<td>SUPER QUADREX</td>
</tr>
<tr>
<td>QUICK TURN SMART - M Models</td>
<td>QUICK TURN NEXUS - MY, MS, MSY Models</td>
<td>QUICK TURN NEXUS - MY, MS, MSY Models</td>
</tr>
<tr>
<td>SLANT TURN NEXUS - M Models</td>
<td>HYPER QUADREX</td>
<td>HYPER QUADREX</td>
</tr>
<tr>
<td>MEGA TURN NEXUS - M Models</td>
<td>MULTIPLEX</td>
<td>MULTIPLEX</td>
</tr>
<tr>
<td>IVS TURNING CENTER - M Models</td>
<td>SUPER QUADREX</td>
<td>SUPER QUADREX</td>
</tr>
<tr>
<td>QUICK TURN SMART - M Models</td>
<td>QUICK TURN NEXUS - MY, MS, MSY Models</td>
<td>QUICK TURN NEXUS - MY, MS, MSY Models</td>
</tr>
<tr>
<td>SLANT TURN NEXUS - M Models</td>
<td>HYPER QUADREX</td>
<td>HYPER QUADREX</td>
</tr>
<tr>
<td>MEGA TURN NEXUS - M Models</td>
<td>MULTIPLEX</td>
<td>MULTIPLEX</td>
</tr>
<tr>
<td>IVS TURNING CENTER - M Models</td>
<td>SUPER QUADREX</td>
<td>SUPER QUADREX</td>
</tr>
<tr>
<td>QUICK TURN SMART - M Models</td>
<td>QUICK TURN NEXUS - MY, MS, MSY Models</td>
<td>QUICK TURN NEXUS - MY, MS, MSY Models</td>
</tr>
<tr>
<td>SLANT TURN NEXUS - M Models</td>
<td>HYPER QUADREX</td>
<td>HYPER QUADREX</td>
</tr>
<tr>
<td>MEGA TURN NEXUS - M Models</td>
<td>MULTIPLEX</td>
<td>MULTIPLEX</td>
</tr>
<tr>
<td>IVS TURNING CENTER - M Models</td>
<td>SUPER QUADREX</td>
<td>SUPER QUADREX</td>
</tr>
</tbody>
</table>

* Done-In-One is performed with second turning spindle configuration.
** Second spindle offered with i-Series and e-Horizontal Series.
*** Pallet changer offered with e-Vertical Series only.
MAZAK NATIONAL TECHNOLOGY CENTER &
CENTER FOR MULTI-TASKING AND MANUFACTURING EXCELLENCE
8025 Production Drive, Florence, KY 41042
Tel: (859) 342-1700 Fax: (859) 342-1865

MAZAK SOUTHEAST REGIONAL HEADQUARTERS
AND TECHNOLOGY CENTER
1075 Northbrook Parkway, Suwanee, GA 30024
Tel: (678) 985-4800 Fax: (678) 985-4801

MAZAK NORTHEAST REGIONAL HEADQUARTERS
AND TECHNOLOGY CENTER
700 Old County Circle, Windsor Locks, CT 06096
Tel: (860) 292-4400 Fax: (860) 654-0752

MAZAK SOUTHWEST REGIONAL HEADQUARTERS
AND TECHNOLOGY CENTER (Energy Focus)
10950 Greenbend Blvd., Houston, TX 77067
Tel: (281) 931-7770 Fax: (281) 931-6191

MAZAK WESTERN REGIONAL HEADQUARTERS
AND TECHNOLOGY CENTER (Aerospace Focus)
1333 West 190th Street, Gardena, CA 90248
Tel: (310) 327-7172 Fax: (310) 538-4087

MAZAK MIDWEST REGIONAL HEADQUARTERS
AND TECHNOLOGY CENTER
300 East Commerce Drive, Schaumburg, IL 60173
Tel: (847) 885-8311 Fax: (847) 885-9565

MAZAK SAN FRANCISCO SALES
AND TECHNICAL CENTER
1497 N. Milpitas Blvd., Milpitas, CA 95035
Tel: (408) 941-2240 Fax: (408) 946-7381

MAZAK MID-ATLANTIC SALES OFFICE
1275 Glenlivet Drive, Allentown, PA 18106
Tel: (800) 436-8900 Fax: (610) 481-0851

MAZAK CORPORATION CANADA HEADQUARTERS
AND TECHNOLOGY CENTRE
50 Commerce Court, Cambridge, Ontario N3C 4P7
Tel: (800) 668-5449

MAZAK MEXICO S.A. de C.V.
Calle Spectrum No. 100
Parque Industrial FINSA Monterrey
Apodaca, Nuevo Leon C.P., Mexico 66600
Tel: +52-818-221-0910 Fax: +52-818-221-0919

MAZAK CORPORATION, NORTH AMERICAN HEADQUARTERS
8025 Production Drive, Florence, KY 41042
Tel: (859) 342-1700 Fax: (859) 342-1865

www.mazakusa.com