

Press Release

October 20, 2014

Debut of Second Generation of NTX 1000, High-precision, High-efficiency Integrated Mill Turn Center

DMG MORI SEIKI CO., LTD (hereinafter called DMG MORI SEIKI) will begin taking orders for the second-generation model of the NTX 1000, which is a high-precision, high-efficiency integrated mill turn center, on October 20, 2014. The second-generation NTX 1000 boasts its new design and an innovative operating system CELOS as well as enhanced machining performance as a new, evolving model. The machine will be put on show at JIMTOF 2014, which will be held October 30 – November 4 at Tokyo Big Sight.

The existing NTX 1000 is a compact integrated mill turn center which is capable of high-efficiency machining of complex-shaped workpieces with a perfect combination of turning and milling. The machine has received as many as approximately 500 orders since its release in 2010. The second-generation NTX 1000 is jointly developed with our business partner, DMG MORI SEIKI AG of Germany, with customers' requests and needs toward the existing model reflected on the every detail to achieve high-reliability. The model is equipped with an operating system CELOS that uses a touch panel operation, which is a game changer for every machine tool in use today, and the curvy and rounded appearance overturns a conventional image of factory equipment. The second-generation machine has gotten the cutting-edge technologies required for automation, high precision and energy saving.

We would like to highlight the features of the second-generation NTX 1000 from perspectives of (1) High Productivity, (2) High Precision, (3) CELOS, (4) Automation, (5) Varieties of Specifications, (6) Energy Saving, and (7) Safety.

(1) High Productivity

The second-generation NTX 1000 requires less floor space than the existing machine which is already compact. The footprint is the smallest in its class of 10.4 m². Despite its space-saving design, the X-axis travel is extended from 380 mm to 455 mm, and the Z-axis travel 460 mm to 800 mm, allowing the widest machining area in its class. The small footprint and wide machining area drastically improve productivity per unit area. The max. indexing diameter of the Turret 2 is enlarged to 680 mm, while the optimal design ensures a sufficient machining space. This enables simultaneous machining with the tool spindle and the Turret 2.

The compact tool spindle and the Turret 2 which allows a flexible tool layout are able to avoid interference with tools and fixtures. What's more, the machine employs a structure that prevents chip accumulation, and the Spindle 2 provides higher output compared to the existing model. High productivity is ensured by such enhanced machine functions.

(2) High Precision

The cooling oil circulation structure (patent pending), in which cooling oil circulates inside the ball screw, ball nut and spindle, minimizes heat generation and has strong resistance to environmental temperature variation, ensuring stable, high-precision machining for long hours. The traveling column is newly employed on the Y-axis for positioning with a higher level of precision. Besides, the Turret 2 is equipped with BMT® (Built-in Motor Turret) that minimizes heat generation and vibration, which improves a level of milling precision and performance and drastically increases production capacity.

(3) CELOS

With a futuristic design and the industry's first touch panel operation, CELOS accelerates the processes from an idea to a finished product. CELOS apps enable the operators to manage production instruction, process and machine data on the screen, thereby bringing efficient and greater productivity. CELOS can connect the shop floor with the administrative division over a network, creating a paperless manufacturing environment. CELOS is also compatible with the PPS (Production Planning and Scheduling) and ERP (Enterprise Resource Planning) systems and can be linked to the CAD/CAM systems. The use of SMARTkey[®] that comes with the user authentication function and internal USB memory enables the users to individually set access privileges to the NC unit and the machine.

(4) Automation

The machine is flexibly compatible with automation with the bar feeder specification and the in-machine traveling robot specification. As to the newly developed in-machine traveling robot specification, a robot is installed inside the machine to handle workpieces. The operator can manipulate the robot and check the operation status using the NC unit^{*1} as if it were a part of machine operation.

*1 Siemens spec. only

(5) Varieties of Specifications

We offer six types of specifications suitable for each customer's use. The second-generation NTX 1000 is able to handle workpieces that are generally machined with dedicated machines, so customers can replace those machines with the new NTX 1000 as a valuable multi-purpose machine.

Spec.	T	TZ	TZM	S	SZ	SZM
Tool spindle/Spindle1	●	●	●	●	●	●
Spindle 2	×	×	×	●	●	●
Turret 2	×	●	×	×	●	×
Turret 2 (Milling spec.)	×	×	●	×	×	●
Tailstock	●	●	●	×	×	×

(6) Energy Saving

In an effort to reduce environmental burden and running costs, DMG MORI SEIKI uses energy-efficient parts such as LED lighting, and cut down lubrication oil consumption by 90% through the optimization of various machine functions. We also work on machine design which enables efficient machine operation aiming at effective energy-saving improvements.

The second-generation NTX 1000 has achieved shorter cycle times by optimizing M codes and employing the new function to reduce canned cycles. We have enhanced energy-saving functions used during automatic operation, such as the function to adjust coolant discharge rate according to machining load and the function to shut off the power of channels in the standby

mode. The CELOS-equipped machines can reduce cycle times and energy consumption thanks to those energy-saving functions and the machine design to promote the acceleration of each mechanism. For example, when compared with a lathe which has been used for 15 years or longer and is about to reach its replacement time, a CELOS-equipped model can cut down the annual energy consumption by 45%.^{*2} The operators are able to visually check the energy-saving effects on CELOS.

*2 Comparison between the latest DMG MORI lathe “NLX2500MC” and “SL-250BMC” manufactured in 1997.

- The effect value may vary depending on machines, cutting conditions, and environmental conditions at the time of measurement.

(7) Safety

The second-generation NTX 1000 complies with safety standards all over the world, including ISO standards, IEC standards, UL standards and JIS standards.

DMG MORI SEIKI will continue to provide products that are reliable, highly functional and worthy of investment to meet each and every customer's needs.

Type	High-precision, high-efficiency integrated mill turn center
Model	NTX 1000
Market	Medical, aircraft and automotive industries
Order start	October 20, 2014
Monthly production capacity	20 units/month

■ Main specifications

Item		NTX 1000
Axis travel (X/Y/Z)	(mm)	455 /±105 / 800+155 (ATC travel)
Max. turning diameter	(mm)	φ430 (tool spindle)/φ274 (Turret 2)
Max. turning length	(mm)	800
Bar work capacity	(mm)	φ52 [φ65]
Rapid traverse rate (X/Y/Z)	(m/min)	40 / 40 / 50
Max. Spindle 1 speed	(min ⁻¹)	6,000 [5,000]
Max. tool spindle speed	(min ⁻¹)	12,000 [20,000]
Tool spindle taper hole		Capto C5 [HSK-A50,KM-50]
Tool storage capacity	(tool)	38 [76]
Number of tools on Turret 2	(tool)	10
Max. rotary tool spindle speed	(min ⁻¹)	10,000
Electric motor for Spindle 1	(kW)	Siemens: 15/11 (30 min./cont.) [22/15 (30 min./cont.)] Fanuc: 11/7.5 (30 min./cont.) [30/26/22 (25%ED/30 min./cont.)]
Electric motor for Spindle 2	(kW)	Siemens: 15/11 (30 min./cont.) Fanuc: 11/7.5 (30 min./cont.)
Floor space (width x depth)	(mm)	4,170 × 2,500

[] Option



Photo 1 Exterior



Photo 2 Inside the machine