

Press Release

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September 12<sup>th</sup>, 2024

## **New release: NLX 2500 | 700 2<sup>nd</sup> Generation, DMG MORI's 5<sup>th</sup> Generation Turning Center**

DMG MORI CO., LTD. (hereinafter referred to as "DMG MORI") has launched the NLX 2500 | 700 2<sup>nd</sup> Generation, our 5<sup>th</sup> generation turning center with a robust and thermally stable machine structure that maximizes cutting performance and offers high accuracy and milling capability equivalent to a machining center with #40-taper spindles.

Since its first release in 2010, the NLX 2500 series has been our best-selling turning center and widely used in the automotive, industrial equipment, semiconductor, and other industries. Based on user feedback on previous models, we have applied all of DMG MORI's expertise to upgrade this popular series. As a strong advocate of Machining Transformation (MX), DMG MORI has encouraged digitization to drive process integration, automation, and ultimately Green Transformation (GX). Embodying the latest technology, the NLX 2500 | 700 2<sup>nd</sup> Generation is the ideal machine to accelerate your MX.

From the early stages of development, we have used FEM analysis and Digital Twin simulation for performance prediction and thermal analysis, and carefully optimized the machine structure. For example, the X- and Z-axis slideways have been widened by 10% from the previous model, improving vibration damping and dynamic rigidity.

The machine is equipped with turnMASTER, our highly reliable in-house spindle with a 3-year warranty coverage, which improved the cutting capability by 1.25 times from the previous model. The right spindle can be equipped with a 10-inch chuck\*1 for continuous machining on both right and left spindles with the same chuck size\*2. If you combine the large through-spindle hole of  $\phi 115$  mm with a large-diameter bar feeder, you can achieve process integration for high-mix production.

The built-in motor turret (BMT) provides powerful milling performance comparable to a machining center with #40-taper spindles. This makes it possible to complete a conventional 2-machine (machining center + turning center) job on a single NLX 2500 | 700 2<sup>nd</sup> Generation. You can even integrate gear machining processes that normally require a specialized machine, such as gear hobbing or internal gear machining, simply by adding the DMG MORI Technology Cycles "Gear Hobbing" or "Gear Skiving."

However, usability and operability have improved as well. The NLX 2500 | 700 2<sup>nd</sup> Generation has a new operational panel ERGOline X with CELOS X. On the screen enlarged for better visibility, you see many

applications to support your production preparation and machining simulations and improve your productivity, such as NC-CLAMP to easily control the clamping force of your chucks. Other mechanical structures were also optimized based on customer feedback. The machine covers are designed to prevent chips, coolant, and fog (the so-called 3 evils of machining<sup>\*3</sup>) from being carried out of the machine, keeping the body clean at all times, and the servo automatic door<sup>\*1</sup> properly controls the acceleration and deceleration of door opening and closing. This significantly improves your efficiency, maintainability, and usability.

The machine also supports automation and makes unmanned night-time operation possible when combined with robot systems, gantry loaders, bar feeders, and other automation systems. For example, with a robot system MATRIS, the machine can flexibly handle high-mix, varying-lot production with high operation rates. In order to prevent problems caused by chips, coolant, and fog, which are the main obstacles of automation, we have standardized a two-layer clean coolant tank to improve the tank capacity without additional floor space, as well as a built-in mist collector *zeroFOG* that collects particles as fine as 0.3 µm. The machine can also be equipped with a vertical high-capacity coolant tank *zero-sludgeCOOLANT pro*<sup>\*1</sup> for customers in need of stable and long-hour continuous operations.

The NLX 2500 | 700 2<sup>nd</sup> Generation will also contribute to sustainable shop floor. For a gear shaft, a conventional processing line of 1 turning center and 1 vertical machining center can be replaced with a single NLX 2500 | 700 2<sup>nd</sup> Generation. This reduces the power consumption by 12%<sup>\*4</sup>, which is equivalent to the amount of CO<sub>2</sub> absorbed by 63 camphor trees per year (approx. 1,890 kg).

For those interested, the NLX 2500 | 700 2<sup>nd</sup> Generation is currently on display at AMB2024 in Germany from September 10 to 13, and will be showcased at JIMTOF2024 at Tokyo Big Sight from November 5 to 10.

You can also visit our websites to see the product catalog and AMB 2024 Digital Twin Showroom. <sup>\*5</sup>

- Catalog : <https://www.dmgmori.co.jp/en/download/catalog/detail/id=7255>
- Video : [https://www.dmgmori.co.jp/en/movie\\_library/movie/id=7257](https://www.dmgmori.co.jp/en/movie_library/movie/id=7257)
- AMB2024 Digital Twin Showroom : <https://www.dmgmori.co.jp/sp/dtsr/amb-stuttgart-2024/>

## ■Features

### ① Machine structure to maximize cutting performance

- Slideways on X- and Z-axes: high rigidity bed optimal for heavy-duty cutting
- 10% wider slideways for more stable cutting
- High-torque turnMASTER spindle improves cutting capability by 1.25 times  
Left spindle: 10 or 12 inch / Right spindle: 6, 8, or 10 inch available

- Upgraded BMT with milling performance equivalent to machining centers with #40-taper spindles

## ② Precision achieved through uncompromising commitment

- Basic structure carefully and meticulously optimized with Digital Twin simulation applied from the design stage
- Magnescale's full-closed loop control realizes outstanding positioning accuracy \*1
- Magnescale's high-resolution laser scale centrally controls the accuracy and compensates for spindle encoder errors

## ③ Excellent thermal stability

- Long-term accuracy ensured with the structure optimized through simulation-based performance prediction and thermal displacement analysis
- X-, Y-, Z-axes ball screws with center cooling and double anchor support to improve feed axis cooling efficiency and rigidity
- Coolant circulation for casting components minimizes thermal displacement and stabilizes long-term machining accuracy

## ④ Enhanced usability

- Intuitive human machine interface *ERGOLine X* with *CELOS X*
- Standard app *NC-CLAMP* to command chuck clamping force from the operational panel
  - Chuck stroke and clamping pressure controllable & visible on the operational panel
  - Detects workpiece setup errors to prevent mistakes during high-mix production
- Covers designed to prevent chip and coolant leakage, keeping the machine body clean at all times
- Chillers, lubricants, hydraulic filters and all the other equipment for daily operation and maintenance located and easily accessible on the backside

## ⑤ Unique solutions against three machining troublemakers (3 evils of machining)

- 2-layer clean coolant tank expands the tank capacity without additional floor space
- Vertical high-capacity coolant tank *zero-sludgeCOOLANT pro*\*1 for long-hour continuous operation
- Efficient fog collection with *zeroFOG*\*1
- Ceramic coating applied on chip accumulation areas for smooth removal. Stainless steel covers for chip contact areas to improve protection

## ⑥ Extensive automation solutions\*1

- Bar feeder : Automates bar material processing in combination with a workpiece unloader
- GX loader : Full automation from material supply to finished workpiece unloading for speedy mass production

- MATRIS Light : A fence-less automation system with a human collaborative robot-cart
- MATRIS : Flexible automation system for high-mix varying-volume production  
Standardized peripherals for easy customization
- WH-AMR 10 : Autonomous collaborative robot system for factory logistics

⑦ Efficient use of energy & resources

- SBT certificate\*<sup>6</sup> obtained. Continued efforts to reduce CO<sub>2</sub> throughout the supply chain
- Process integration reduces power consumption by 12% (vs. conventional process) \*<sup>4</sup>
- Comprehensive coolant and chip management extends coolant lifetime

DMG MORI will continue to address customer needs with highly functional and reliable product releases worth your investment.

Product type	Turning Center
Model	NLX 2500   700 2 <sup>nd</sup> Generation
Target industries	Electric vehicle, Medical, Semiconductor, Industrial equipment, etc.

\*1 Optional

\*2 If 10-inch specification is selected

\*3 Chips, coolant, and fog are the main obstacles to stable and continuous operation and a clean factory environment.

\*4 Power consumption and CO<sub>2</sub> emissions for conventional processes and NLX 2500 | 700 2<sup>nd</sup> Generation are simulated based on customer cases. CO<sub>2</sub> emissions are calculated with a basic emission coefficient of 0.451(kg-CO<sub>2</sub>/kWh) and an annual CO<sub>2</sub> absorption rate per camphor tree of 30 kg.

\*5 The catalog and other exclusive contents are available only for web members (registration free of charge).

\*6 Abbreviation of Science Based Targets, which are the greenhouse gas emission reduction targets set by companies for the coming 5-15 years in line with the Paris Agreement (which aims to keep the global temperature increase well below 2°C above pre-industrial levels and to limit it to 1.5°C).

\*DMG MORI CO., LTD., DMG MORI, CELOS, BMT, Magnescale, MATRIS, zero-sludge, zeroFOG, and 3 evils of machining are registered trademarks or trademarks of DMG MORI CO., LTD.



NLX 2500 | 700 2<sup>nd</sup> Generation



NLX 2500 | 700 2<sup>nd</sup> Generation (interior)



NLX 2500 | 700 2<sup>nd</sup> Generation with automation systems (Bar feeder, MATRIS Light)

**EV**

Outer race



Φ95mm × 200mm (S50C)

**Industrial equipment**

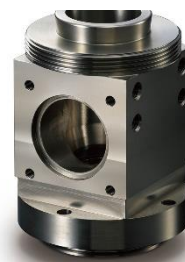
Sprocket



Φ180 × 200mm (S45C)

**Food machinery**

Port block



Φ90 × 200mm(Stainless steel)

**Industrial equipment**

Gear



Φ70 × 600mm (S45C)

**Medical**

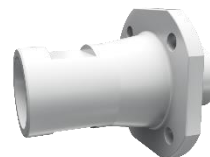
Hip joint part



Φ180 × 200 mm (Titanium alloy)

**Semiconductor**

Pipe lower



Φ100 x 120 mm (Resin)

NLX 2500 | 700 2<sup>nd</sup> Generation workpiece samples