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Press Release

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Ultimate Machining Accuracy, Durability and Price Vertical Machining Center *ecoMill* V Released

DMG MORI CO., LTD. (hereinafter called DMG MORI) has developed three vertical machining centers of the *ecoMill* V series, "*ecoMill* 600 V," "*ecoMill* 800 V," and "*ecoMill* 1100 V" and began the sales and shipment. The *ecoMill* V series, the newest line in the ECOLINE series, made their world premiere at IGA INNOVATION DAYS 2015 which was held at the Iga Campus during July 22 to 25, and the models received a great number of orders and inquiries from customers.

Equipped with high functionality, the ECOLINE series models are DMG MORI's ultimate machines that boast superior operability and customer-satisfying prices, and achieve shorter delivery times. The models were jointly developed with DMG MORI AKTIENGESELLSHFT (hereinafter called DMG MORI AG) with advanced technologies of both companies incorporated in them, which ensures high precision, high rigidity and high productivity.

In Japan, the ECOLINE series models are manufactured at the Chiba Campus (Funabashi City, Chiba), the symbol plant of the business collaboration between both companies, where we produce other ECOLINE series models, a CNC lathe *ecoTurn* 450; the jointly developed MILLTAP 700, and a DMG MORI AG's 5-axis machine DMU50.

We would like to give an in-depth view of the *ecoMill* V series from viewpoints of (1) High productivity, (2) High rigidity, (3) High precision, (4) Workability, (5) Operability and Industry 4.0, (6) Accessibility, (7)Energy Saving and (8) Safety.

(1) High Productivity

The models achieve space saving with a footprint of only 5.14 m^2*. As for the chip conveyor, the left and rear disposal specifications are available according to the installation area. The machining area, despite the space saving design, is large with a size of 600 x 560 x 510 (X/Y/Z) mm*, so productivity per unit area is drastically improved. The spindle uses the in-line structure with a maximum rotation speed increased from 8,000 min^{-1} to 12,000 min^{-1}. The *ecoMill* V series offers three variations: *ecoMill* 600 V (max. loading capacity: 600 kg), *ecoMill* 800 V (max. loading capacity: 800 kg), *ecoMill* 1100 V (max. loading capacity: 1,000 kg) according to customer needs.

* *ecoMill* 600 V

(2) High Rigidity

The machine structure of the models has been optimized by FEM analysis to ensure high rigidity and thermal stability. For guideways, the series models use high-rigidity roller guides for ultra-heavy load to increase rigidity. The highly-rigid structure enables machining of large, heavy workpieces.

(3) High Precision

The models employ the high-quality direct drive ball screws on the X- and Y-axis, achieving zero backlash. The positioning accuracy of 6 µm or less is ensured without the direct scale feedback, which leads to high-precision machining.

(4) Workability

The ceiling cover which can be opened and closed by the operation panel has a wide opening. This enables the operator to safely load/unload workpieces and fixtures with a crane, leading to improvement of setups. The models employ a cover with an inclined angle of 30 degrees on the X-axis to improve chip disposal. As for the ATC, the series is scheduled to install the newly developed “toolSTAR” that makes possible an intelligent tool change by servo motor drive in January 2016. Tool change can be optimally done according to the tool, ensuring a faster and more efficient change. The models are equipped with the ATC shutter as standard to prevent chips from entering into the tool magazine and to reduce operators’ work load in cleaning and maintenance.

(5) Operability and Industry 4.0

For the operation panel, the models are equipped with a 15-inch monitor “SLIM*line*® ” which is used by all ECOLINE series models. The automatic conversational programming function and 3D simulation function enable the operator to easily create programs for machining of complex-shaped workpieces. It is also possible to do programming using PCs on the network. The sensor and monitoring systems are linked on line to gather production information in real time. DMG MORI keeps pace with Industry 4.0 and supports customers’ production systems.

(6) Accessibility

The series models ergonomically designed with a shorter machine width and a wider door opening compared to the conventional models ensure good access to the machining area. The table height is 850 mm, and the distance from the machine front to the table is 313 mm, which ensures good access to the table and easy workpiece setups. The operator can move the spindle toward himself/herself using the tool change button on the spindle head. This allows for better accessibility and easy and direct tool change.

(7) Energy Saving

The models are equipped with the regenerative drive system, LED lighting and automatic shutdown mode. Those functions help reduce energy consumption by 22% compared to the conventional models.

(8) Safety

The *ecoMill* V series complies with safety standards all over the world, including ISO Standards, IEC Standards, UL Standards and JIS Standards.

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

Item	Vertical Machining center
Model name	*ecoMill* 600 V, *ecoMill* 800 V, *ecoMill* 1100 V
Market	Automotive industry, general part machining

■Main specifications

Item		*ecoMill* 600 V	*ecoMill* 800 V	*ecoMill* 1100 V
Travel (X/Y/Z)	(mm)	600/560/510	800/560/510	1,100/560/510
Table size	(mm)	900 × 560	1,100 × 560	1,400 × 560
Table loading capacity	(kg)	600	800	1,000
Max. spindle speed	(min^{-1})	12,000		
Rapid traverse rate (X/Y/Z)	(m/min)	36/36/30		
Tool storage capacity	(tools)	30		
Max. tool diameter	(mm)	Φ80 (without adjacent tools Φ125)		
Spindle drive motor	(kW)	15/9（25%ED/continuous）		
Footprint (width x depth)	(mm)	1,868 × 2,749	2,118 × 2,749	2,750 × 2,749

ecoMill 600 V