

“Green-Smart Machine” to Begin Shipping to Japanese Market from May 2023

5-axis machining centers and multitasking machines equipped with the next-generation CNC OSP-P500

Okuma Corporation will **begin shipping** its “Green-Smart Machine” **from May 2023**. Against the backdrop of a shrinking workforce, labor shortages, and energy conservation (decarbonization), we will roll out its lineup of “Green-Smart Machine” equipped with features for high-accuracy, energy-saving, and intelligent operation. Furthermore, **the next-generation CNC OSP-P500 will be installed in Okuma's 5-axis control machining centers (“5-axis MCs” below) and multitasking machines** to provide digital applications to customers' manufacturing sites.

The 5-axis MCs and multitasking machines were combined with the OSP-P500 for enabling a machine design with even more depth based on the concept of **“harmony between man and machine.”** In response to the ever-increasing demand for process integration, Okuma has set a **sales target for 5-axis MCs in FY2023 that is 1.5 times that of FY2022**, and is working to achieve that goal.

Okuma's “Green-Smart Machine” combining both high productivity and high accuracy with decarbonization

Okuma defines the “Green-Smart Machine” as its intelligent machine tool that autonomously achieves both stable dimensional accuracy and reduced energy usage for reducing CO₂ emissions during production machining.

This emblem will be attached to these machines when they are shipped.



Growing need for labor savings through process consolidation

Okuma's 5-axis MCs and multitasking machines have responded to changes in production patterns, from ultra-high-mix low-volume production to variable-mix variable-volume production, as well as to the increasingly complex shapes and high accuracy of parts, by providing high productivity and excellent accuracy stability to solve the problems of our customers worldwide.

To address the social issues currently facing the manufacturing industry (shrinking workforce, passing on of work skills, and decarbonization) by implementing high productivity and high accuracy, energy saving (decarbonization), and manufacturing DX, we will launch its product lineup of 5-axis MCs and multitasking machines as “Green-Smart Machine” equipped with the next-generation CNC OSP-P500.

Next-generation CNC OSP-P500 for Manufacturing DX

The OSP-P500 is a next-generation CNC with revolutionary ease of use that enables anyone to easily perform advanced machining and includes "Digital Twin on Machine" functionality that enables front-loading to further improve productivity.

In addition, Okuma will enable its customers to achieve Manufacturing DX by implementing Machining Innovation that allows high-speed and high-quality machining by anyone and robust security for building a secure environment.

Following its 5-axis MCs and multitasking machines, Okuma will further expand the OSP-P500 to more models in the future.

Example of Results from Using "Green-Smart Machine" with OSP-P500

Use of Okuma's Green-Smart Machine 5-axis MC (MU-V series) results in a **29% reduction** in annual CO₂ emissions compared to 5-axis MCs (same class) without energy-saving technology (Okuma estimate).

1. Green-Smart Machine technology

(1) Thermo-Friendly Concept, an Intelligent Technology that allows machines to autonomously maintain a stable high level of accuracy

- Provides high-accuracy stability without the need for a machine body cooling system or excessive air conditioning to maintain accuracy. This reduces the time and energy used on warm-up and dimensional correction processes for maintaining high accuracy.
- Okuma's AI-based innovative, Intelligent Technology that combines both machine design technology and control technology has been incorporated into more and more models at launch since 2001 and today is standard on over 60,000 models

(2) Energy-saving system "ECO suite plus" for contributing to a decarbonized society

- **ECO Idling Stop** intelligent energy-saving function based on the **Thermo-Friendly Concept**
The machine itself determines whether cooling is necessary and performs an idling stop of the cooling system while maintaining high accuracy. This enables both high-accuracy machining and energy savings.
- Realtime power usage and CO₂ emissions per process can be confirmed from the **ECO Power Monitor**. This enables data analysis based on machine operating information and equipment-specific operating information and allows recording of CO₂ emissions for traceability. In this way, the ECO Power Monitor supports an improvement cycle for decarbonization.

2. OSP-P500 technology

(1) Digital Twin Innovation for enabling Okuma's "M-E-I-K Merging" technology (Mechanics - Electronics - IT - Knowledge)

- Ultra-fast (1/1,000 of actual machining time) and ultra-accurate (error of 1% or less) simulations based on the latest actual machine data are implemented on the CNC at the production site and on a PC in the office. This enables highly accurate production planning and greatly improves productivity.

- **Digital Twin on Machine**

Ultra-high-speed and ultra-high-accuracy simulations are performed on the actual CNC machines on site to minimize machining preparations. This enables immediate machining for significantly increasing machine utilization.

- **Digital Twin on PC**

The latest data from the actual machine is utilized to enable accurate machining preparations and advance verification from the comfort of your office. This allows front-loading of data-object matching for significantly improving productivity without stopping the machine.

(2) Revolutionary ease of use that utilizes the on-site skills of skilled technicians for super simple operation even for beginners

- **Smart OSP Operation** for easy operation of advanced machining without any knowledge of NC programs

It guides and assists the operator through a series of procedures from motion commands to setup, machining, and inspection. Even beginners can use the work procedures based on the expertise of skilled technicians.

(3) High-speed and high-quality machining by anyone. Machining Innovation using ultra-high-performance CNC

- The CNC uses **Smart Control**, which features twice the computing performance of conventional models for high-speed, high surface quality machining.

This results in significantly improved response time. The cycle time is **reduced by up to 15%** even when using unmodified conventional programs.

(4) Robust Security for protecting machine operations, programs, and data from cyberattacks

- Robust security for complete defense, protection, and recovery is provided for enhancing cyber resilience.

This supports stable production in factories by protecting each and every machine tool from the risk of increasingly sophisticated cyberattacks.

- Safe and secure Digital Twin environment that accumulates customers' expertise

3. 5-axis MCs and multitasking machine tools incorporating a new design with the OSP-P500

Machines equipped with the OSP-P500 use a new design based on the concept of "Harmony between man and machine" for deepening and refining the conventional machine design and that has the following features:

- (1) Enabling space and ease of use for ergonomic-based production machining**
- (2) High integration with automation systems as flat operator door**
- (3) OSP-P500 for ease of use demonstrating the "Harmony between man and machine"**

In addition to meeting the demand for labor saving and automation due to the worker shortages, this machine also assists in compliance with the SDGs.

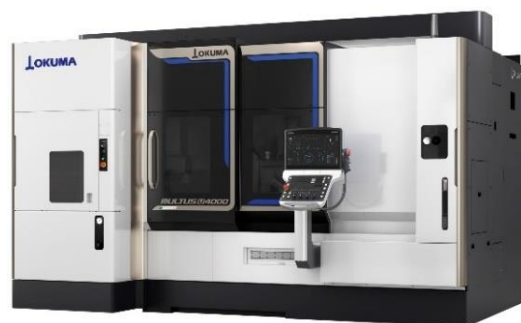
Applicable models

This new design and features are currently being incorporated into the MU-V series of 5-axis MCs and the MULTUS series of multitasking machines.

New design for harmony between man and machine



**5-Axis Control MC
MU-6300V**



**Multitasking machine
MULTUS U4000**