

## **Double-Column Machining Center Series**

**Total Shipments Reach 10,000 Units**

**Accelerating solutions for social issues through green (decarbonization) and smart development**

In August 2022, Okuma Corporation reached total shipments of 10,000 units for its double-column machining center (DCMC) series.

Traditionally, Okuma has provided its products to the press die and industrial machinery industries, which are the mainstays of its business, but in recent years, it has provided growing numbers of products to the semiconductor manufacturing equipment industry, EV industry, and renewable energy industry such as wind power generation. Okuma's DCMCs are used in a wide range of industries to meet the needs of society, enabling Okuma to reach total shipments of 10,000 units.

**In response to social issues (decreasing workforce, drastic drop in the number of skilled workers, and achieving decarbonization), our DCMCs will be deployed globally as smart machines (automation and productivity improvement support) that can assist in decarbonization.**

### **History of Okuma Double-Column Machining Centers**

#### **Early Period (1960s)**

Period of innovations in NC machines and dramatic improvements in accuracy

Achieving high accuracy: DRA-J Double-column radial drilling and boring machine

High-speed, high-horsepower, large-size: MDB series milling, drilling and boring machine with DC motor

Continuous machining and automation: MCD series with automatic tool changer (ATC)

#### **Growth Period (1970s–80s)**

Period of rapid economic growth and technological leap forward with 5-face milling machines

Equipment modernization: MCV series was hit product in the market and became the top DCMC in Japan

Long runs of continuous automatic operation: MCR 5-face machining center with interchangeable spindle heads (attachment)

Generalization of NC machines: MCV-A became a major hit as a high cost-performance machine

#### **Development Period (1990s–2010s)**

Period of evolution from process-intensive to smart machines

Growing complexity of machining: MCR-BII with variety of attachments for wide range of machining applications

Process integration: Complete process from roughing to finishing on a single machine,

Reduced loss between processes

Pursuit of even higher accuracy: MCR-BIII with Thermo-Friendly Concept for maintaining high accuracy even in harsh environments

**Today, Okuma's smart machines can assist in decarbonization globally**

## Accelerating the evolution and deployment of smart machines that contribute to decarbonization

### Okuma's unique energy-saving technologies that contribute to decarbonization

#### ◆ Thermo-Friendly Concept Premium

This feature eliminates the need for using electricity to control the room temperature control, such as by using excessive machine cooling systems for maintaining accuracy or factory air conditioning systems. Dimensional change over time due to environmental temperature changes is only **16 µm (X-axis direction)**, which is **less than half** of the standard specification of previous models.

Okuma's unique concept of "adapting to temperature changes" contributes to power savings for the entire factory.

#### ◆ ECO suite plus

Enables stable high machining accuracy and energy savings (reduced CO2 emissions)

- **ECO Idling Stop:** The machine autonomously performs idling stops for peripheral equipment such as cooling systems without human awareness while maintaining high machining accuracy.
- **ECO Power Monitor:** Enables confirmation, recording, and management of power usage for individual peripheral equipment, which leads to reduced power usage and CO2 emissions. This provides visualization for facilitating improvement cycles to decarbonize factories.

For a DCMC in Okuma's DS3 factory, a one-year improvement cycle using ECO suite plus resulted in **40% reduction** in electricity used per hour by peripheral equipment (actual Okuma results).

#### ◆ Sludgeless Tank (Optional Specifications)

This feature dramatically reduces the time and labor required to clean the coolant tank, which used to rely on manual labor, enabling 99% sludge recovery.

This significantly reduces the amount of coolant waste, contributing to a reduced environmental impact.

No coolant tank cleaning was required for three years, and no coolant changing was required for three years (actual results at Okuma facilities)

### Significant improvements in labor productivity with reliability that supports stable operation over long runs and extended periods of time

#### ◆ 3D Calibration, Accuracy Stability Diagnosis Function

With this feature, the machine autonomously maintains high accuracy over long periods of time without relying on skilled personnel.

This allows easy semi-automatic calibration for deterioration in machine accuracy due to the effects of the machine's installation floor, which changes throughout the year.

It also enables measurement comparable to that of a CMM without the need for setup changes on the machine.

◆ **Wide Range of Spindle Heads (Attachments) for Various Machining Operations**

More than 100 types of spindle heads with extensive track records of performance are available for enabling even higher productivity.

Easily interchangeable spindle heads allow for a variety of complex machining with a single chucking operation.

Based on Okuma's basic design and manufacturing quality that maintains high accuracy over a long period of time because of the long product life, Okuma's DCMCs actively use green technology for contributing to decarbonization in addition to advanced smart technology, and constantly assist our customers in improving their productivity and solving problems in their factories.

We will continue to accelerate our efforts to help to attain a decarbonized society and resolve social issues such as a decreasing workforce.