Press Release

2021-11-11
Okuma Corporation
Marketing Office

"ECO suite plus"

A further evolution towards a decarbonized society
Okuma’s energy-saving system—compatible with high productivity, high accuracy and eco friendliness

Background

Efforts to reduce greenhouse gas emissions are accelerating toward the transition to an international decarbonized society. All companies have a portion of the total supply chain of carbon emissions defined by the greenhouse gas (GHG) calculation protocol: the sum of Scope1 (direct greenhouse gas emissions by businesses) and Scope 2 (indirect emissions from the use of electricity, heat, and steam supplied by other companies). To achieve the target of virtually zero before 2030, it will be necessary to calculate greenhouse gas emissions from production and take concrete actions to reduce them.

Since 2001, Okuma has gradually expanded its lineup of machine tools standard equipped with the Thermo-Friendly Concept, a technology that minimizes excessive temperature control of factories and machines, warm-up operations, and dimensional compensations, to achieve both energy savings (reduced CO_2 emissions) and highly accurate/productive manufacturing when machining parts using Scope 2 compliant machine tools. We have delivered more than 56,000 such machines to customer factories. In 2014, we commercialized the "ECO suite" Next-Generation Energy-Saving System with ECO Idling Stop, which uses Thermo Friendly Concept technology to stop idling machine tool functions while maintaining high accuracy and launched it globally. A total of more than 35,000 units have been shipped. Now the reinforced "ECO suite" has evolved into the "ECO suite plus."

What is “ECO suite”?

The "ECO suite" energy-saving system is installed as standard equipment in the CNC control (OSP) and is configured with the following functions and devices.

ECO Idling Stop:	A function that after machining has completed, sequentially stops idling equipment, beginning with coolers. By using Thermo-Friendly Concept technology, thermal deformation monitoring allows the machine itself to decide the necessity of cooling, and idling stop while maintaining high accuracy. Idling stop is possible with the ECO button during operations like setup jobs.
ECO Operation: (Optional)	A function to control the operation of peripheral equipment (mist collector, chip conveyor, etc.) during machining. Achieves both high productivity and energy-saving operation by setting program linked operations and operation intervals for each device.
ECO Power Monitor:	To raise operator awareness for conserving energy, auxiliary equipment, spindle, and feed axis power indicators are always visible. Records and manages CO_2 emissions for each program and operating conditions.
ECO Hydraulics: (Optional)	The ultimate energy-saving hydraulic unit that uses Okuma servo control technology. Achieving ultra-low speed rotation of the hydraulic pump, with low noise and low vibration simultaneously.

"ECO suite" plus Development Objectives

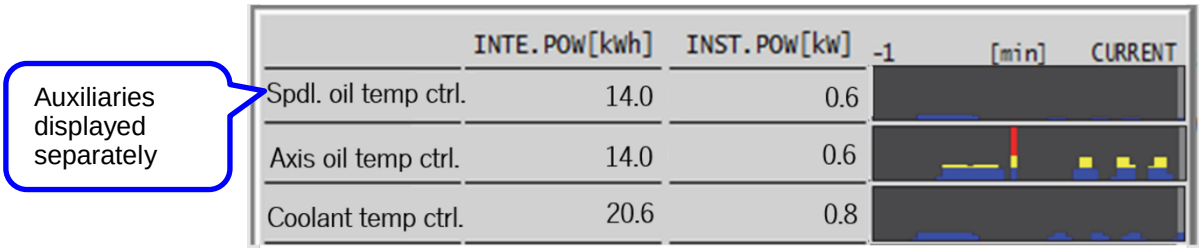
The "ECO suite plus" is a concept that achieves both highly accurate machining accuracy stability and energy savings (CO_2 emission reduction) achieved by the Thermo Friendly Concept, and the "ECO suite" put into practical use in 2014. These functions have enhanced and evolved with the following goals toward achieving a decarbonized society.

① Providing CO_2 emission analysis linked to improvement cycles
② Achieving idling stops per machine-made autonomous decisions without human intervention
③ Achieves machining with minimum energy while maintaining high machining accuracy and stability

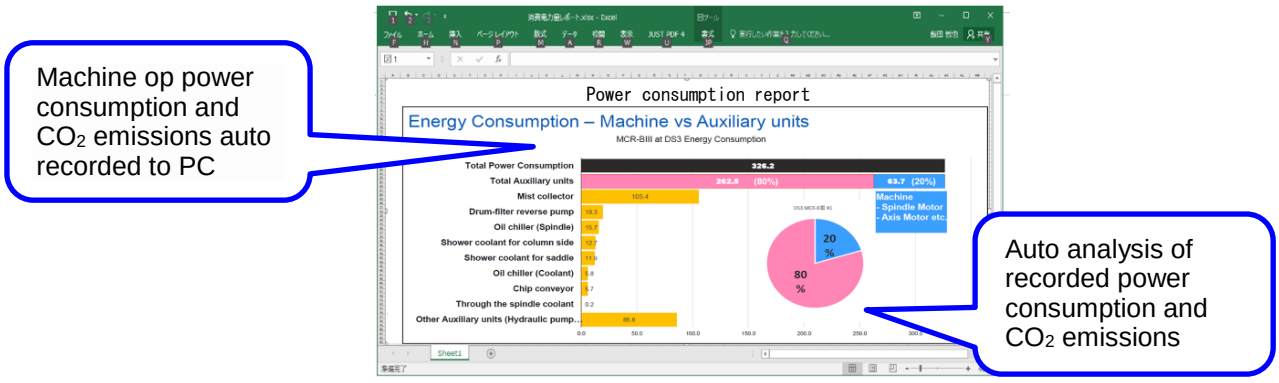
Features and Key Enabling Technologies

① Providing CO_2 emission analysis linked to improvement cycles—a "plus" for the Power Monitor

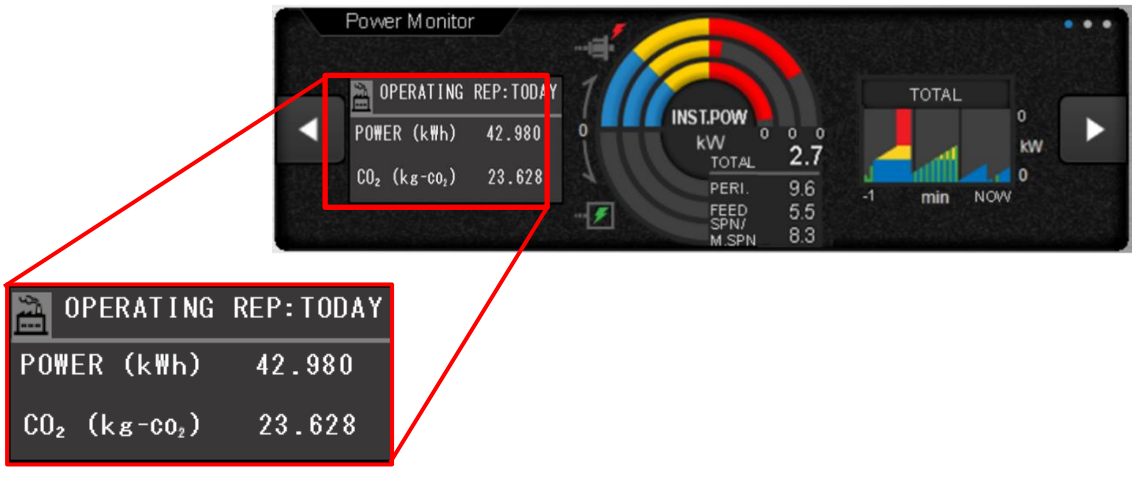
- Using ECO Idling Stop and ECO Operation with added functionality to individually check and record the power consumption of each device, leading to reduced power consumption and CO_2 emissions.
  Promoting visual control for easier factory decarbonization.



- Fortified external output to network allow CO_2 emissions checks and analysis on a PC. Achieving visual control that supports decarbonization activities



- The actual CO_2 emissions are always displayed. Can be used for daily CO_2 emission management.



② Idling Stop decisions autonomously made by the machine without human intervention
A "plus" for ECO Idle Stop

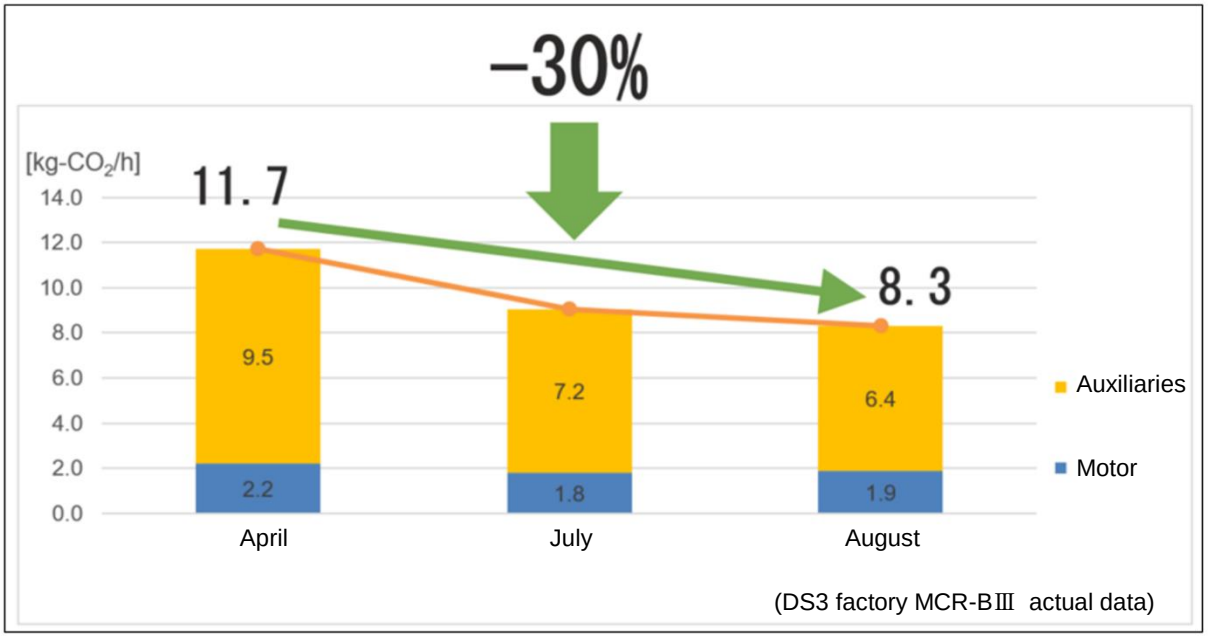
- Automatically detects operation status in all situations where the machine tool is used, including not only the machining process but also machine operation and maintenance work—idling stops and restart operations are fully automated.
- Maximizing the effect of reduced CO_2 emissions without operator intervention (no button operation needed)

③ Achieving machining at minimum energy levels while maintaining productivity
A "plus" for ECO Operation

- Full support for CO_2 emission reduction activities that do not impair productivity by enabling more detailed tuning of "operation patterns" for mist collectors and other equipment that use a large amount of electricity.
- For controlling the operation of each auxiliary equipment based on recording and analysis results from the Power Monitor to reduce power consumption and CO_2 emissions.

Utilizing the above technology, double column CO_2 emissions from the double column machining centers installed in our plant have been reduced by 30%.

- Measurement and analysis of power consumption of each auxiliary equipment in each machining process
- Reducing power consumption by reviewing mist collectors and other operation patterns during machine operation



Notes 1. Reduction varies depending on the application.
2. Above measures used to reduce electricity and CO_2 emissions for machines equipped with the Thermo-Friendly Concept and "ECO suite."

With appreciation for your cooperation.