Compact Cylindrical Grinding Machine with CBN Wheels

CBN wheels are superior in hardness and heat conduction and enable high peripheral speed from the structural side of grinding wheels, so that they bring a great effect for improvement of the productivity and the reduction of tool cost.

Due to the larger size of the supplementary equipment including motor for power, main body of equipment and coolant tanks as a grinder, CBN wheels were used mostly for such works with high unit price as camshaft and crankshaft.

On the other hand, as for transmission parts and small-sized accessory parts, conventional normal grinding wheels were commonly used for grinding, and expensive CBN wheels were not used so much. Under these circumstances, based on CBN grinding technology and automation technology of truing which HOUKO has cultivated over many years in the field of grinder, we developed a compact cylindrical grinding machine with CBN wheels for the grinding of transmission parts and small-sized accessory parts.

Purpose of Development

With the concept of "small, light and beautiful," this product has higher superiority to cylindrical grinder with specifications of normal grinding wheels in energy saving, space saving and low running cost.

Features

The equal processing ability with a conventional type is maintained by adopting CBN wheels, and this machine size is more compact than a conventional one.

R&D items	Viewpoint/Measures	Contents
Adoption of CBN wheels	Extension of dressing interval Shortening of non-processing time	510mm normal grinding wheels ⇒350mm CBN wheels
Downsizing of control panel	Downsizing of electrical equipment Wiring-saving	Control panel volume 0.4 m^3⇒0.33 m^3
Downsizing of grinding wheels and motor	Wheel spindle by smaller diameter of grinding wheels Downsizing of motor	Motor capacity 5.5kW⇒3.7kW
Downsizing of hydraulic unit	Minimization of tank capacity	Tank volume 20 L⇒10 L
Downsizing of coolant pump	Optimization of coolant discharge	Pump motor capacity 0.4kW⇒0.18kW
Lower position of center height	Improvement of work efficiency (No stool)	Center height 1 080mm⇒1 000mm

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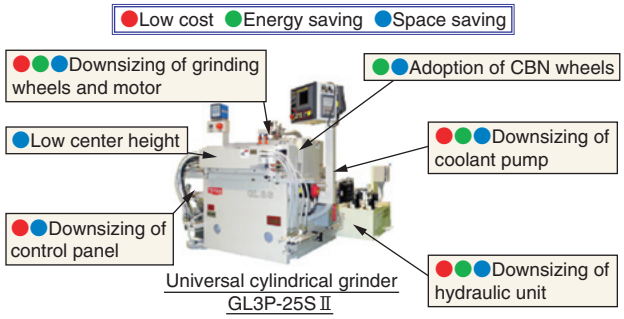
Composition

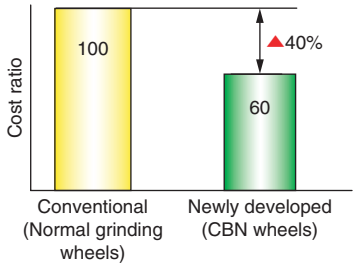
Optimization of peripheral devices and the ability with smaller equipment in size



Performance

1) Reduction of running cost

· Dressing interval: 10 pieces per dress⇒600 pieces per dress (60 times)
· Grinding wheel switching cost: 1 month per time⇒15 months per time (1/15)
· Cost reduction of quality confirmation by wheel diameter change
· Largely decreased quantity of abrasive grain mixtures into coolant tank
⇒Reduction of maintenance cost

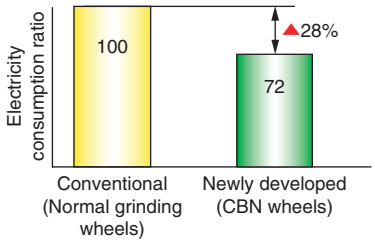


40% reduction of running cost

2) Energy saving

Downsizing of equipment is made possible by adoption of CBN wheels.

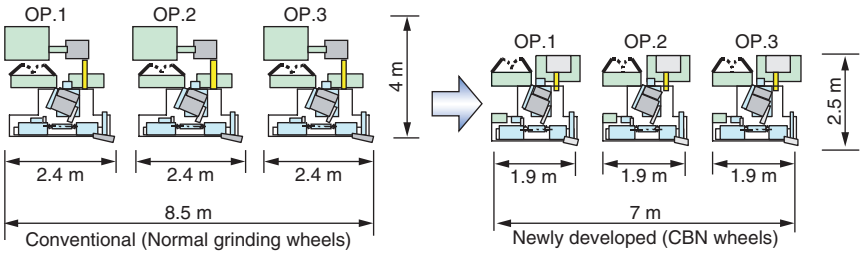
· Lower capacity of wheel spindle motor: 5.5kW⇒3.7kW
· Lower capacity of coolant discharge motor: 0.4kW⇒0.18kW

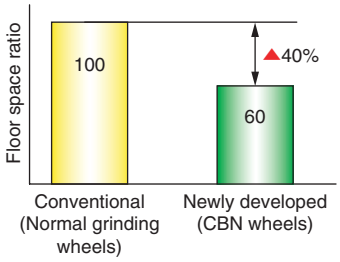


28% reduction of electricity consumption

3) Space saving

Example of grinding line of drive unit parts





40% reduction of floor space

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