Noritake Proposal

Featured Products and Technology 04

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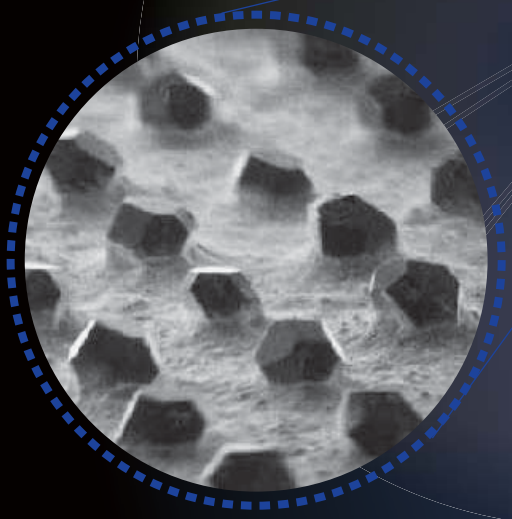

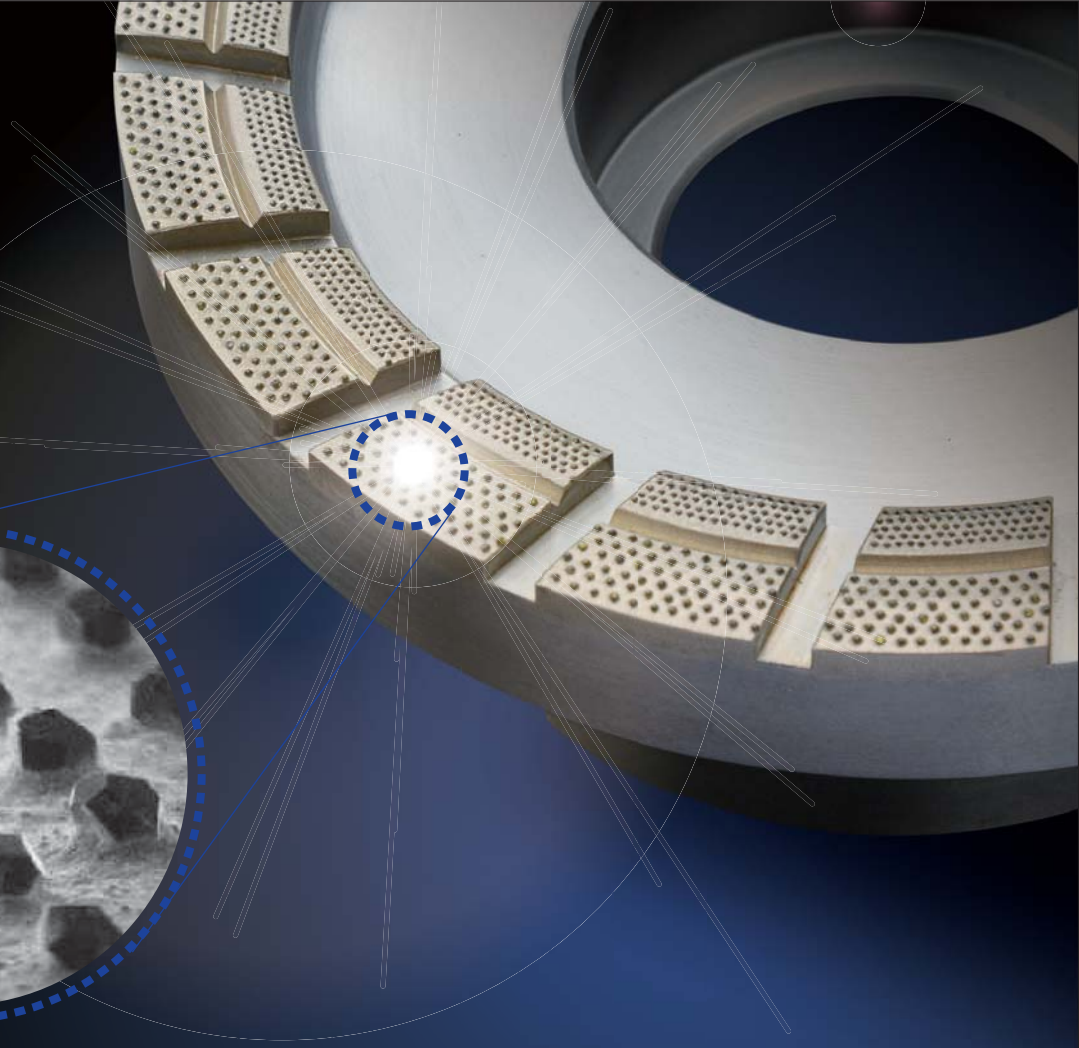

New concept of grinding tool achieving both ‘High efficiency’ and ‘surface finish in grinding field’

Realizing both machining efficiency and machining accuracy is a difficult issue on the shop floor. Tools generally require sharpness, long life, and machining accuracy. However, it is not easy to develop wheels that can deliver on all fronts. By thinking out of the box, Noritake has developed “Grit Ace”, with grains fixed in single layer, offering sharpness, long life, and machining accuracy through the adoption of unique new technology.

Wheel with grains fixed in single layer

Grit Ace

[Scope of application and expected benefits]

Metallic material		Non-metallic material		Other
Ferrous material	Non-ferrous material (Al, etc.)	Inorganic material (glass, ceramics)	Organic material (rubber, plastic)	Advanced material
	●		●	

Shorter cycle time	Improved tool life	Improved machining quality	Improved workability	Environmental consideration
●	●	●		

Featuring Technology Used to Control Abrasive Grain's "Ordered Arrangement, "Protrusion", "Arrangement Interval", and "Tip Height"

Going beyond the grinding capability, making a milling/grinding wheel into reality

Machining tools capable of responding to demands such as varying production volume, lead time reduction, and cost reduction are in huge demands. At the same time machine and tool manufacturers must continue to innovate technologies and products to meet the demands. The general machining theory is that heavy stock removal is done with rough cutting process, while precision machining requiring high accuracy finish is done with grinding.

As a grinding and polishing equipment manufacturer, we have received many inquiries in the past for tools to replace cutting process with grinding.

We approached such requests by making improvements realizing you can only do so much in modifying the wheel, this lead us in the direction in developing a totally different tool. So, we developed "Grit Ace", a new type of grinding tool employing Noritake's collective technological strengths.

Grit Ace is positioned as a grinding tool that offers both the machining efficiency of milling, and the surface roughness of grinding as shown in Fig. 1. It also is an original Noritake tool using 16 patented technologies.

Grit Ace capabilities

We compared the performance of Grit Ace with a PCD milling cutter on an aluminum alloy workpiece. Test conditions are shown in Table 1, and the Grit Ace appearance is shown in Fig. 2.

Fig. 2 Grit Ace

We used a PCD milling cutter with effective diameter of 100 mm, and 6 cutters.

Table 1 Test conditions

Grit Ace specs	SD 40
Wheel dimensions	ϕ100 × 30T × 31.75H mm
Grinding wheel speed	21 m/s
Feedrate	800 mm/min
Cut depth	1 mm /pass

Wheel spindle load factor is shown in Fig. 3, and surface roughness after machining is shown in Fig. 4. While the wheel spindle load of Grit Ace is the same as that of a PCD milling cutter, the surface roughness value is approximately 1/17, meaning that Grit Ace offers much better surface roughness.

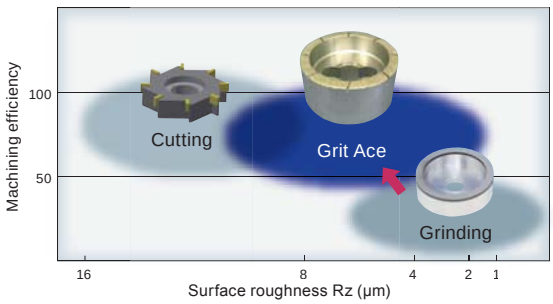

Fig. 1 Grit Ace positioning

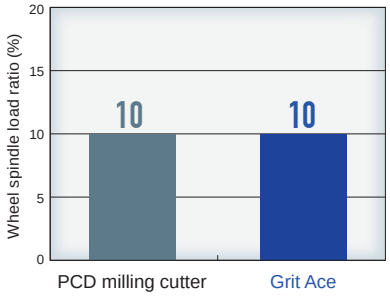

Fig. 3 Wheel spindle load ratio

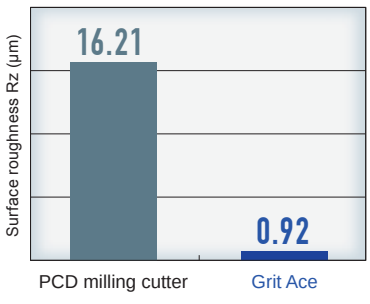

Fig. 4 Surface roughness