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Meister Abrasives USA
Make A Quality Decision
United States of America

New Advances in Vitrified Diamond Grinding Technology

January-2009

Several development projects conducted by Meister Abrasives during 2008 have resulted in substantial improvements in the performance and durability of its vitrified diamond grinding wheel product line. These advances are being made available to Meister Abrasives USA customers, giving them more options to select diamond wheels with the best combination of stock removal, surface finish and geometry, and durability characteristics.

Bruce Northrup, General Manager of Meister Abrasives USA, said, "We are offering our customers much more than a "one bond fits all" solution to their grinding problems. During 2008 we added several new bonding matrices, including the proprietary HPB (High Performance Bonding) technology which we introduced for CBN Wheels in 2007.

"We have added a number of advanced diamond grains which were previously unavailable. This gives us many choices to meet specific requirements for diamond crystal shape, toughness, friability, and heat resistance."

The breadth and number of grit size choices has also been expanded. Grit sizes range from FEPA 427 μ m for rough-grinding, down to 1-2 μ m for superfinishing/honing. Meister Abrasives has also made improvements in its mixing and wheel processing techniques for absolutely superior product homogeneity and consistency.

Northrup Concluded: "These improvements have given us a 50% greater range of options for fine tuning our vitrified diamond wheel products to meet the specific requirements of our customers' processes".



Applications Shown

(L to R / Top to Bottom):

- Rotary Surface Grinding
- OD Cylindrical Grinding
- Prime Wafer Thinning
- Wafer Backgrinding
- Bore Grinding
- Fine Grinding

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Non-ferrous Problem Solvers:

Meister Abrasives' advanced vitrified diamond wheels provide users with more options for cost-effectively handling the most difficult non-ferrous grinding applications.

- Types of parts ground include:
 - medical implants
 - semiconductor wafers
 - optics
 - electronic components
 - cutting tools
 - aerospace engine and wear components
 - high-end bearings.

- Materials Ground include:
 - advanced ceramics such as Silicon, Silicon Carbide, Silicon Nitride, Sapphire, Alumina, Glass, and Quartz.
 - HVOF thermal spray coatings containing Tungsten Carbide, Cobalt, Nickel, and Chrome.
 - hard cutting tool materials such as Tungsten Carbide and Titanium Carbide.

- Stock removal rates are improved 20%-50% over resin and metal bond diamond wheels.

- Achievable Finishes: For finishing operations to reduce or eliminate the need for subsequent polishing, here are two examples:
 - Advanced ceramics (such as Silicon carbide) as smooth as 1.5-2 nm (nanometer) Ra.
 - Carbide tools (for example inserts) down to 14 nm Ra.