



Press Release July 2010

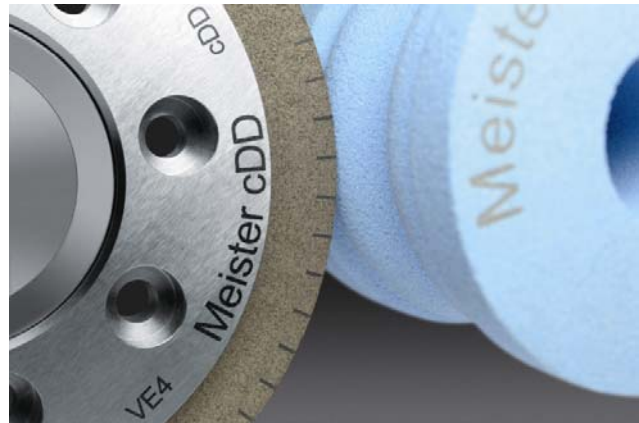
Meister Introduces Revolutionary cDD Dresser Technology

Now One Dressing Tool for Optimal Truing and Sharpening

Meister Abrasives has introduced a revolutionary new cDD (CVD-tipped Diamond Dresser) technology producing rotary dressing tools that hold their profiles better and their sharpness longer than other dressing technologies to date.

The cDD dressing tools rely on a unique structure in which high-quality CVD diamond inserts are strategically embedded within

Meister's hDD porous hybrid-bond diamond matrix. As a result of this combination, users are no longer forced to choose a dressing tool that is optimized either for truing or sharpening; cDD dressing tools excel at both.



Bruce Northrup, General Manager of Meister Abrasives, USA, said, "The choice of a dressing tool and the parameters under which it is used has a direct impact on the profile and cutting behavior of the grinding wheel and therefore the resulting surface finish, geometry, and quality of the ground components. The challenge for the dressing tool manufacturer is to produce a dressing tool that is good at both truing and sharpening the grinding wheel at the same time. Unfortunately currently available dressing tools are typically good at either truing or sharpening, but not both."

He explained that metal bonded dressing tools and handset diamond dressing tools tend to be good at truing and profile generation but underperform when it comes to sharpening. Vitrified (ceramic) bonded dressing tools, on the other hand, sharpen well but are generally not as good for truing or generating profiles because they lose their edges quickly. Meister's cDD technology answers both requirements by bringing the best qualities of metal, vitrified, and handset diamond into one technology.

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The Primary Components of a cDD Dressing Tool

Component-1: Hybrid Bond Diamond Matrix

The bonding matrix used in the new cDD tools relies on Meister's proprietary hDD (hybrid diamond dressing) technology. This matrix comprises of diamond grains impregnated into a porous metal-ceramic hybrid bonding material, which combines the toughness of metal bonding with the natural porosity of a vitrified bond structure, comparable to the porosity found in vitrified CBN or Diamond grinding wheels.

Improved porosity means that the hDD matrix is freer cutting, carrying more material and heat away from the grinding wheel with every revolution. The open pore structure and thin metal-ceramic bond posts also allow each crystal to stand out for exceptional sharpness. When the diamond ultimately wears to the level of the matrix, the thin posts fracture, allowing the crystals to readily break away from the bond, thus revealing new layers of thoroughly exposed diamond.

Meister's flexible manufacturing process allows a wide range of latitude for customizing the dressing tool by varying the pore size, the metal-ceramic bond post thickness and hardness, and the grit size and concentration of the diamond grains.

Component-2: CVD Reinforcements

The new cDD dressing tools have CVD (Chemical Vapor Deposition) diamond inserts strategically located within the bond structure to reinforce the dressing tool. As a result they hold an edge or profile as well as or better than typical handset dressing tools while providing all the aforementioned advantages of Meister's hybrid-bond diamond matrix.

Why CVD? CVD is ideal for truing applications because it provides wear resistance, cutting efficiency and thermal conductivity superior to natural or poly-crystalline diamond inserts. The inserts can be engineered to any size and shape and are strategically located for optimal profile reinforcement. The microcrystalline structure of CVD inserts readily breaks down for continuous self-sharpening.



Combined Advantages

Because the CVD inserts are embedded into an already sharp and free-cutting diamond matrix, they can be smaller and more widely spaced than those in conventional handset diamond tools. The hybrid-bond diamond matrix does a large amount of the dressing, while the inserts provide structural support and reinforcement.



Both the inserts and the matrix self-sharpen; no conditioning is required. In addition, unlike the larger diamonds in conventional hand set tools, the smaller CVD inserts do not produce large flat areas that can dull the grinding wheel. Furthermore, due to the multi-layer structure of the matrix, the cDD tool can be re-profiled to it's original shape if and when necessary.

The cumulative advantages of the cDD technology for both dressing and subsequent grinding processes are many:

- Superior Truing (accurate and consistent profile generation on the grinding wheel)
- Superior Sharpening (does not dull the grinding wheel)
- Low dressing forces
- Grinding wheel cuts better and achieves better part quality
- Lower dress in-feed or higher skip dress possible
- Dressing tool stays sharp - No conditioning required

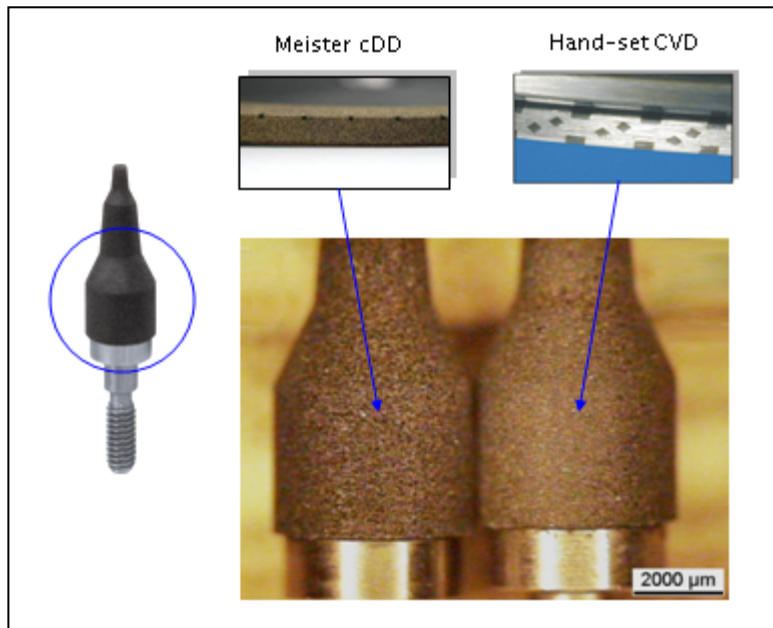
Performance Demonstration

To demonstrate how the cDD technology can be used to achieve application-specific advantages, Meister performed the following demonstration at its R&D facility in Switzerland. The wheel chosen for dressing was a vitrified CBN product used for fuel injection/internal profile grinding. The objective of the test was to demonstrate improved dresser edge holding and better wheel sharpening compared to identically dimensioned hybrid-bond (hDD) and hand-set CVD dressing tools, operated under identical conditions.

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The products were tested for 100 dressing cycles. The Meister cDD dressing tool held its edge more than 10-times longer than the non-reinforced hDD dressing tool, and produced wheels so much sharper than the conventional hand-set CVD disk that the difference was visible to the naked eye. The bottom Line: Meister cDD technology in this application will provide a more consistent wheel profile over a large number of dress cycles and significantly sharper wheels for improved part quality and tighter statistical control.

Meister's cDD dressing tools (cups and disks up to 150mm) are ideally suited for dressing almost any vitrified bonded grinding wheels including aluminum oxide, silicon carbide, ceramic, and CBN. The design and specification of these products are meticulously customized to meet the requirements of the application. Pricing is comparable to existing handset CVD dressers and the standard delivery is 6-8 weeks. They will be commercially available during the 3rd quarter of 2010, and on display at the IMTS in Chicago, September 13-18, booth N-6748.

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Meister Abrasives Corporation is an international manufacturer of high precision industrial abrasive products, offering superabrasive grinding wheels, dressing tools, quills, ancillary equipment, and free technical support to provide customers with complete, customized, turnkey solutions to their grinding problems. Visit Meister Abrasives USA on the web at <http://www.meister-abrasives-usa.com>.