

As seen in the May 2015 issue of

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**W**hen there is a wide range of choices, the design and materials used to create deburring and finishing tools make a difference. Materials used for brush filaments as well as holders—and the manufacturing method behind Los Angeles-based Brush Research Manufacturing’s NamPower abrasive nylon disc brushes—are what differentiate BRM’s offerings from others in the marketplace, says Michael Miller, vice president, global sales.

BRM’s NamPower disc brushes are constructed with a fiber-reinforced, injection-molded base, which provides a balanced and rigid design as opposed to commonly used casting or potting methods. The brush features a proprietary combination of abrasive filaments: silicon carbide to produce a fine surface finish and long life, and ceramic filaments for effective material removal. “Ceramic abrasive has wonderful material removal properties but tends to cut a bit roughly,” Miller says. “We buffer the cutting action with silicon carbide to provide a finer finish at the same time.”

BRM provides large and small brushes, giving users added flexibility when working on different sized parts. Large-diameter brushes are available in 100 mm, 125 mm and 150 mm. Smaller brushes come in 50 mm, 60 mm and 80 mm diameters. Each size is designed to work with a unique flow-through coolant holder. The center flow coolant is a distinctive feature as it floods coolant from the center as opposed to the more traditional method of coolant being applied to the outside of the brush.

“When you don’t have flow-through coolant, you apply it from the outside of the filaments which cause the coolant to hit the brush and flow away,” Miller says. “But for us, we shoot the fluid to the cen-



## Smooth switch-ups

Secondary operations take up valuable shop time





ter of the brush so centrifugal force works the fluid from the inside to the outside of the brush. It's a very efficient way to supply the coolant. You can run the brush faster and cut deeper.”

#### **Flexibility and filaments**

Cosmetic expectations are high as more and more industries expect a deburred and finished surface. Improved appearance and uniformity in part finishes and cost efficiency are factors that drive BRM customers in applications that include air-

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**NamPower brushes feature a proprietary combination of abrasive filaments: silicon carbide for a fine surface finish and long life and ceramic filaments for effective material removal.**

craft manufacturing, medical implants and industrial products.

To achieve these desired finishes, both large and small tools give users flexibility because either tool series uses one holder

that accommodates multiple brush sizes. The larger series brushes (100 to 150 mm) feature a lightweight tool holder made of fiber-reinforced thermoplastic bonded to a hardened and ground center shaft. The smaller series brushes (50 to 80 mm) have a balanced, one-piece steel holder that is hardened and ground and PVD coated for precision mounting and long holder life.

The lightweight holders for the larger tools have reduced mass and are better at reducing spindle wear. The fiber-filled mounting flange reduces vibration and its

Fluid through the center of the brush is an efficient way to supply coolant. You can run the brush faster and cut deeper.



# Deburring/Finishing

inherent dampening properties improve brush performance and increase brush life. The holder for the small-diameter tools is designed for long-term usage. The brushes are removed from the holder by way of a single mounting screw in the flow-through tip. “You take the brushes off and on—one holder fits three sizes,” Miller says. “The large holder has a 25 mm shank and fits a variety of collet holders on the machine tool. The smaller holder has a 16 mm shank.”

Filament pattern also makes a difference. BRM’s design offers both a dot and turbine filament pattern. “It’s a tradeoff between flexibility and aggressiveness. The dot pattern is a little more flexible and can get into part recesses where turbine is more aggressive and is better suited to heavier deburring,” he explains.

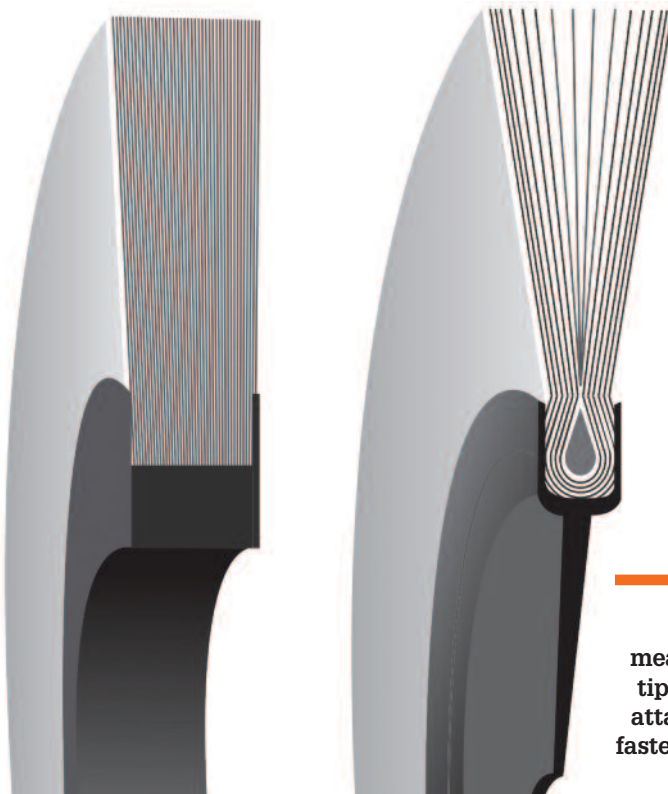
## Tackling harder material

BRM’s latest offering, its Diamond Wheel Brush, was designed largely as a result of customer requests for a tool that could finish harder materials. The NamPower composite hub wheel brushes took “a considerable amount of time to develop,” Miller says. “We found we couldn’t go to a trade show without someone asking or telling us they wished we had diamond brushes—and now we do.”

Used to polish the flute relief on mills, reamers and drills, and to provide a controlled edge radius on carbide inserts, the finish imparted to the cutting tool by the diamond wheel removes chips faster with less heat buildup. “Creating a controlled edge radius on carbide inserts will reduce the overall potential for chipping and fracture,” says Miller.

He describes the proprietary brush construction. “This has a composite hub in the center, not a stamped or metal ring construction,” explains Miller. “When you make a brush that way, you can add far more filaments and get a very dense uniform face on the brush.” More filaments mean more cutting tips at the point of attack, resulting in faster, more uniform finishing. Composite hub construction also has the benefit of being better balanced, which results in less spindle load and wear as well as improved brushing action.

Another new offering from BRM are



miniature brush kits for use with small holders in components like valve bodies and blocks and cylinders with intersecting holes. “These small holes get little burrs and it is necessary to remove the loose, hanging material and file down the edges,” Miller says. “These miniature brushes are good at removing hanging debris and leaving a clean hole.”

These miniature tools have been used effectively for years but previously had not been offered as a kit. The kits make owning and operating various size brushes more convenient and accessible. “There are a lot of industries that require intricate deburring using these smaller brushes which are often done by hand,” he says.

“Industry demand prompted us to offer these kits in inches and millimeters,” says Miller. “We supply a pin vise to hold the tiny brushes for hand applications. The pin vise is double ended so you can have two separate brushes put up at the same time.” BRM built kits after finding customers often wanted to try just one set before committing to a larger quantity. Other customers routinely work on a variety of small holes and appreciate the variety offered and order multiple kits.

The miniature brushes can be used by hand in a pin vise or put in a drill or machine tool spindle. “It depends on size and number or parts.”

Increasing numbers of customers want the ability to finish and deburr parts directly on the machine tool that produced them, Miller says. “It is no longer efficient to schedule secondary operations to perform surface finishing and deburring when the part can be dropped off the machine tool complete.”

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