

Abrasive Water Jet Cutting for Harder Gasketing Materials

By Roberto Naccarato, Elasto Proxy

Abrasive water jet cutting is similar to pure water jet cutting, but with an important difference. During both gasket fabrication processes, highly-pressurized water is fired through a nozzle, or jewel, to cut sheet materials or extrusions. With abrasive water jet cutting, however, the vacuum that is created by this pressure draws garnet sand into the stream. It's this mixture of highly-pressurized water and garnet that enables abrasive water jetting to cut through harder materials than a pure water jet.

Recently, Elasto Proxy added a three-axis abrasive water jet cutting to our manufacturing capabilities. We also have a six-axis robotic abrasive water jet cutter and two pure water jet cutters at our Boisbriand, Quebec, Canada headquarters. In addition, we're planning to add a three-axis abrasive water jet machine at our Simpsonville, South Carolina location this spring. Elasto Proxy serves customers across North America and welcomes partnerships with other GFA members who need to cut harder materials.

The three-axis machine that Elasto Proxy purchased has an X-Y cutting envelope of 52" x 26" and 8" of Z-axis travel. With a table size of 69" (L) x 30" (W), this OMAX 2652 water jet can cut small and medium-sized parts from sheets or extrusions of metal or rubber-reinforced metal. It also cuts Kevlar, ceramic, glass, and other hard materials. With aluminum, tolerances of 1/8" are typical. Minimum feature sizes of 3/8", including angles and circles, are just part of what the OMAX 2652 water jet can do.

Abrasive water jet cutting isn't the only gasket cutting process for harder materials, but it provides important advantages over CNC cutting, which is also computer-controlled. With CNC machining, small parts with intricate features are time-consuming to cut. CNC tools are also subject to wear and workpieces must be held in place. With composite materials, CNC cutting can produce significant amounts of dust. By contrast, abrasive water jet cutting is tool-less and essentially dust-free.

Laser cutting can be used instead, but a laser's heat can discolor the thinner sections of parts or melt thin walls. Abrasive water jet cutting doesn't produce heat-affected zones but can still make intricate cuts even in tight areas. Plus, abrasive water jetting can produce parts cost-effectively, even in low-volume runs. Although abrasive water jetting cuts with a slight taper and produces some surface roughness, the precision is suitable for many gasket fabrication projects.

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