The combination of accuracy and speed makes the MicroCut™ technology for processing parts of any material with intricate features. Using the MicroCut™ technology resulted not only in faster manufacturing time, but significant cost savings.

- Precision - with a kerf width of 0.009"-0.0118" and accuracy within +/-0.0004" MicroCut™ provides the accuracy to fabricate the small features of this part.
- Speed - with the capability of cutting 15.0" per minute with a material thickness of 0.050" for this copper coil. The speed of MicroCut™ results in a 50.0"/min difference compared to 0.010"/min using wire EDM.
- Cuts without Heat Affected Zones (HAZ).
- MicroCut™ technology enhances the appearance of the final part, requiring no post processing.

MicroCut™ Wire EDM*

For this copper coil, limitations exist in utilizing Wire EDM, due to being both labor and time intensive, resulting in longer lead times and increased cost.

- Blanks must first be cut and then 36 start holes are machined.
- For the intricate geometries of this part, a 0.006" wire will be used, preventing the efficient use of stacking.
- Due to the material thickness of 0.050"; cut speed is significantly reduced

With the requirements of this copper coil, Wire EDM was not an ideal solution for this part. Wire EDM capabilities could not be maximized and despite higher quantities, there will be minimal cost reductions and extended lead times.

*Wire EDM offers exceptional accuracy for cutting very hard materials such as, tool steel, intricate geometries, making die sets with taper cuts and modification of mill and lathe tools for custom applications.
MICROCUT™ technology offers the following technological advantages:

- Able to cut materials from plastic to hard alloys
- Fast prototype production
- Flexible production, “Just in time” fabrication
- High cutting speeds
- High cutting accuracy
- High surface quality
- Optimal material usage
- Low cutting forces (load)
- No thermal impact (heat)
- No change in material structure
- Narrow kerf width
- Minimal secondary finishing

MICROCUT Specifications

MICROCUT’s micromachining technology provides higher cutting accuracies and tighter tolerances than standard cutting processes:

- Positioning accuracy 0.0001 in. (0.003 mm)
- Contouring accuracy +/- 0.0004 in. (0.01 mm)
- Kerf width 0.008 in. (0.203 mm)
- Kerf width 0.0196 in. (0.5 mm) with abrasive
- Maximum work piece size 24 x 39 inches (600 x 1000 mm)
- Material thickness: 0.0005” - 0.250”, material dependent

MICROCUT operates without generating heat affected zones, allowing material composition to remain unaltered. Superior edge quality and minimal burr is achieved, resulting in no distortion or stress.

In comparison, wire EDM and laser cutting technologies as thermal processes, make it impossible to produce such high precision results without affecting material molecular makeup.

Process Comparison

The MICROCUT process was specifically designed to machine two-dimensional, high precision and micro parts with a substantially smaller kerf width (0.008 in.) compared to traditional cutting processes (0.045 in.) that are primarily used to cut or rough out large shapes and/or thicker materials.

More competitive with EDM and Laser Cutting, MICROCUT cuts without Heat Affected Zones (HAZ).

Applications

MICROCUT is an excellent alternative cutting method to traditional machining for a wide range of materials as compared to EDM or Laser Cutting. The applications are very broad across multiple industries including:

- Prototyping
- Research & Development
- Electronics
- Automotive/Motorsports
- Medical Technology/ Tools/ Implants/ Components
- Aerospace/ Defense
- Art/ Jewelry
- Scale Models

MICROCUT Technology – The Process

We use proprietary equipment developed in Europe to cut a wide range of materials, including heat sensitive types, with a cutting accuracy of +/-0.0004 in. (0.01mm) and a positioning accuracy of +/-0.0001 in. (0.003mm). This cutting process quickly and accurately removes material to produce a finished piece with little to no burr and no heat deformation. It is an ideal solution for soft materials such as rubber or silicone.

With our process, there are low occurrences of process forces and thermal stress. With these properties even the most delicate contours can be cut. Due to the small diameter of the cut it is possible to create sharp-edged contours. And, with the cutting diameter being less than 0.008 in.(0.203mm), a very high material efficiency is achieved.

Typical Substrates ideal for MICROCUT machining include:

- Metals - Stainless Steel, Steel, Gold, Silver, Titanium, Chromium, Nickel, Cast Iron, Aluminum, Brass, Bronze, Copper, Alloys
- Glass - Un-tempered, Bullet-proof, Mirror
- Plastic - Thermo, Curable, Elastomer, Plexiglass
- Stone - Ceramic, Granite, Marble, Quartz, Precious Stone
- Miscellaneous - Rubber, Kevlar, Carbon Fiber, Fiberglass, Graphite

What advantages does MICROCUT Cutting have over other forms of cutting?

- Fast transition from design to cutting
- Faster setup and cutting speed with higher accuracy
- Minimizes secondary cleaning operations
- Small kerfs
- Ideal for quick prototype, flexible production and proven for high volume production
- Optimum material utilization with CAD/CAM software

MICROCUT

The Future of Precision Cutting

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