Case Study:
3-Dimensional Laser Ablating for Medical Device Applications

Specialized 3-D process enables production of micro-scale neurovascular components.

Resonetics developed a 3-D laser ablation process that enables prototyping and production of neurovascular components and provides a unique micro-scale fabrication technique for many other life science applications.

Background
Several customers approached Resonetics requesting three-dimensional metal (nitinol, platinum-iridium) micro scale parts with complex geometry.

Target Applications for this process are micro-scale parts with features too small or materials not compatible with swiss CNC machining.

Technical Requirements:
- Material: Nitinol
- Part Geometry: 0.0135” OD x 0.0054” ID, 0.026” length with +/- 0.0002” tolerances, complex geometry

Challenges
- Component was too small for CNC Swiss Machining
- Holding tight tolerances on critical features was important
- Minimizing heat input and thermal damage was critical
- Size of parts made it challenging to handle
- Part had not previously been able to be manufactured

Solutions
- Fabricated the part in one setup to minimize handling and cost
- Developed in-process inspection for critical features
- Enabled component to be manufactured for the first time
- Optimized process settings to minimize heat input or thermal damage
- Automated part collection

Customer Outcome
- Able to create custom micro component that wasn't possible with other technology
- Can now create smaller parts than previously able to
- Enabled a neurovascular delivery system to be manufactured

Challenging application? Contact our technical team.
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