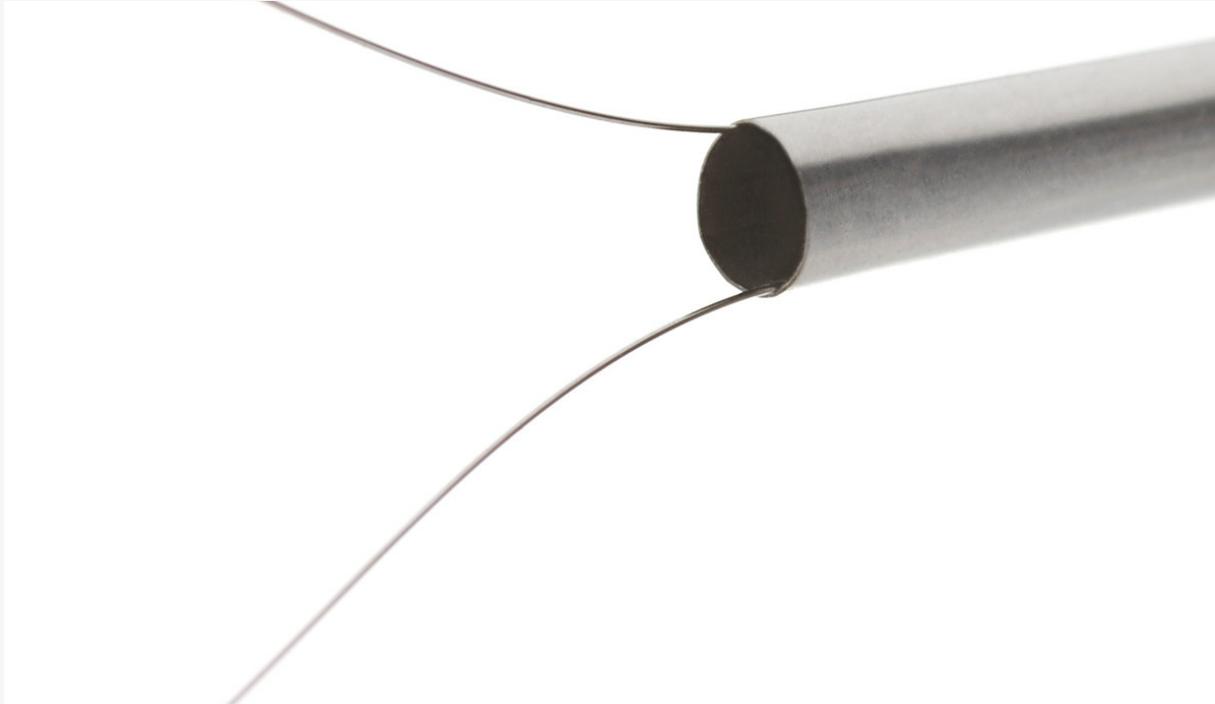

JUNE 2019

RESONETICS LASER WELDING PROCESSES BENEFITS MEDICAL DEVICE CUSTOMERS PRODUCING NEXT GENERATION DEVICES



PREPARED AND PRESENTED BY
RESONETICS MARKETING

PRECISION WELDING



A LITTLE BIT ABOUT OUR LASER WELDING PROCESS

Laser welding is a process that joins two parts with similar metals without the use of filler metal. The process utilizes a focused laser beam to produce welds with minimal heat affected zone, which maintains the integrity of the base material and prevents distortion of the final assembly. This makes laser welding particularly useful for micro-fabrication applications, which involve parts that are too small to be joined by traditional welding methods.

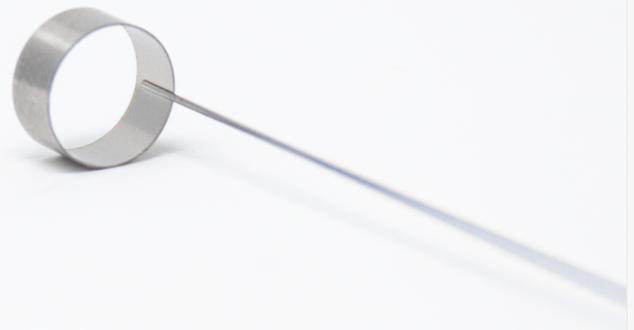
MARKETS THAT BENEFIT FROM LASER WELDING

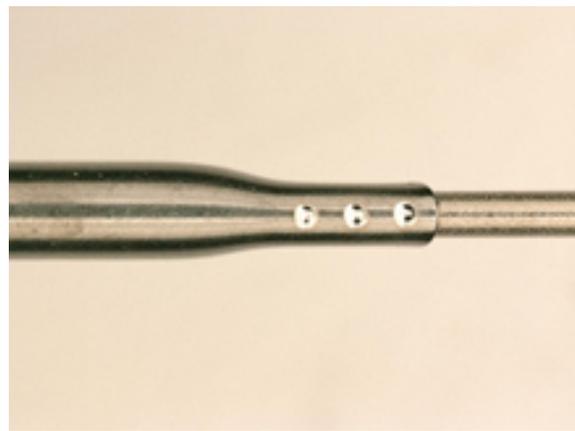
Many complex medical device subassemblies benefit from laser welding. The process is used across multiple medical device markets including Neurovascular, Structural Heart, Ophthalmic, Electrophysiology, Interventional Cardiology and even Sports Medicine. Example applications using laser welding include: pull ring assemblies for steerable catheters, thin wire components for delivery systems and micro implants.



SMALL DIAMETER METAL ASSEMBLIES

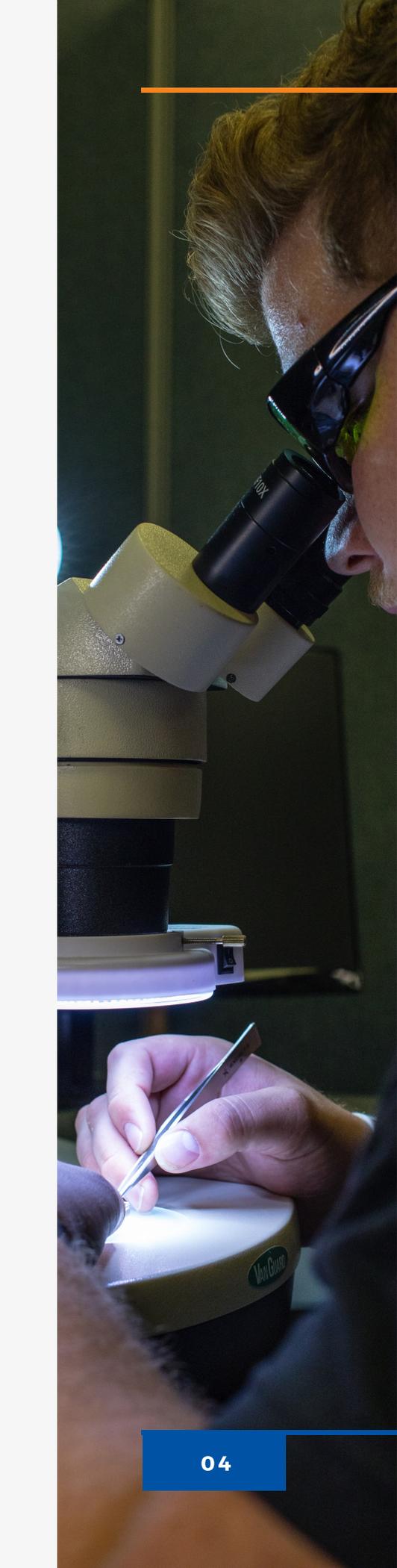
Some assemblies (typically small diameter metal assemblies) need to connect to a polymer catheter to provide a medical device with steerability, which assists in traversing difficult anatomies. During a diagnostic or therapy procedure, a guidewire and general guide catheter are frequently used to gain vascular access near the targeted vessel. When the targeted vessel is too small for the large guide catheter, a guide catheter extension is pushed through the guide catheter and deployed to gain access to the smaller vessel.





The image pictured above is one example of this type of assembly. Two different hypotubes go through multiple processes at Resonetics before being joined together via laser welding. The larger hypotube on the left is laser cut and formed to fit the smaller hypotube, then tumbled to break the edges. The smaller hypotube on the right is EDM cut to length. This example is often used for neurovascular and peripheral vascular devices.

Another use of laser welding is laser radiusing. The process of laser radiusing happens in one of our Nd: YAG (neodymium-doped yttrium aluminum garnet) pulsed laser systems attached to a 4-axis workstation with through-axis vision. In this case, the laser welding process is being utilized to change the shape of a sharp corner into a 0.012" radius. The radius is usually placed on metal components that pass through a catheter in order to prevent scrapping or snagging inside of both polymer and metal catheters. In some cases, the component may pass through a blood vessel or vein, and the radius would prevent damage such as internal bleeding.



Resonetics Welding

We started with **1** welding laser, have grown to **5** welding locations, accumulated **17** years of welding experience and counting, running a **24/7** production schedule, welding **Millions** of life saving components.

Laser welding is often one step in our customers' process of creating subcomponents and bringing their project together, producing lifesaving devices. Through our recent and strategic acquisitions, we're able to simplify customer supply chains by providing more complete subassemblies through our vast capabilities. At Resonetics we are the industry experts in laser welding and have over 17 years of experience, plus dedicated resources and team members to serve every step of your project. Contact us now to see how our welding capabilities can elevate your next device.

U.S.A. | Costa Rica | Switzerland | Israel
sales@resonetics.com
1-800-759-3330