

Welding with Lasers: Bringing Technology to the Jeweler

“Stuller believes that bringing this technology to the jewelers in the US can help them to profitably increase the volume of their business”

In 1993 Baasel Lasertech developed a compact, self-contained laser welder for welding platinum, gold, silver, titanium, and most alloys. (Laser is an acronym for Light Amplification by Stimulated Emission of Radiation.) The welder, with a pulsed, air-cooled 85 joule Nd:YAG laser as the welding source, has gone on to become a success in many industries.

When used in the jewelry industry, the StarWeld saves jewelry manufacturers, store-owners, and repair shops time—and money! The precision of the computer-controlled spot-welder coupled with the small heat-affected zone eliminates the fear of welding close to enamels or sensitive stones. And the long hours spent in preparation for such tasks are virtually eliminated due to the simple and precise positioning of the jewelry under a stereomicroscope.



Testing shows that welds are 70% stronger than soldered joints and the ability to combine or marry metals together is a “breeze” with laser welding. The prices of laser welders have come down in recent years enabling retail jewelers and designers to purchase them for their shops. This new technology

has found its way to thousands of jewelers across the world.

The StarWeld is used in a variety of jewelry applications:

- Repairs and additions in close proximity to precious and semiprecious stones
- Restorations of vintage jewelry
- Filling porosity in castings
- Fabrication/repair of fine gold
- Fine jewelry detailing and fabrication

Perhaps the most important jewelry application for the StarWeld is the ability to repair/fill voids in castings. Normally, pieces with these voids are either scrapped or, if repaired using conventional

Step-by-Step
Jewelry
Fabrication using
the StarWeld
Jewelry
Microwelder



methods, have telltale marks noticeable to the trained eye. Typically such pieces are intricate gold or platinum pieces that begin from a basic casting to which further decorative work is added and finally stones. Only when the piece is fully assembled is it polished, during which process any defects in the casting will show up.

The challenge is now to repair these voids—invisibly, if possible. Using conventional brazing (soldering) methods, the stones would need to be removed, and an alloy of the ring material with a lower melting point used to fill the defect. Unfortunately this process has a number of disadvantages:

- Labor cost to remove and reset the stones.
- The alloy filler is softer than the host material and will tend to polish away more quickly during repolishing, leaving shallow indentations.

- The alloy material is a different color than the host.

However, the laser offers the following advantages when making these repairs:

- Because of localized heating, there is no need to remove sensitive stones. Even welding in close proximity to emeralds, which are most sensitive to heat is possible with the laser.
- Because of the intense concentrated heat of the laser, the same filler material as the host can be used, resulting in practically invisible repairs.

Another application is spot welding prior to brazing. Traditionally, pieces to be brazed (soldered) are held together with wire, a time consuming task that adds additional cost. Placing a few spot welds on the piece holds it together and speeds up the assembly process.

A variable focus adjustment feature on the laser is essential for these operations. A small spot size is used for joining parts to the piece to be worked, while a larger spot size gives a smoother finish when used to fill imperfections in the casting.

Stuller has used the StarWeld in



StarWeld Jewelry Microwelder from Rofin-Baasel, and distributed by Stuller Inc



Brett Northcutt, Director of Stone Setting for Stuller Inc. of Lafayette, LA

its facility over the past four years, finding this welding method to be exceptionally valuable in jewelry industry applications. Stuller believes that bringing this technology to the jewelers in the United States can help them to profitably increase the volume of their business.

Brett Northcutt, Director of Stone Setting for Stuller says, “The Rofin-Baasel Performance Laser is a very important tool for us here at Stuller. We have used laser technology in our manufacturing operations for 6 years and we strongly feel that our quality, production, and turns

have dramatically improved since its introduction to our company.”

Over a thousand other Platinum and Fine Jewelry Designers/Manufacturers say “it’s a must in fine jewelry detailing and fabrication” and the system gives them the cutting edge over their competition.

Prices and information on a business-leasing program is available through Stuller.

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