



MIL-STD 883 Hermetic Laser Seal Welding System for Microelectronics Devices



▶ SEE IT IN ACTION 

Plasma | Tig | Laser | Mig | Sub-Arc

Engineering Challenge

CHALLENGE ▼

Design and build a 3-axis laser welding system capable of performing high-precision hermetic seal welds inside a high-purity glove box environment.

The system needed to accommodate aluminum and Kovar microelectronic enclosures across a wide range of shapes, thicknesses, and alloys, requiring maximum programmable flexibility.

Each device required processing through a vacuum bake-out oven to remove moisture and oxygen prior to welding. Following bake-out, components had to be hermetically sealed to 1×10^{-8} torr in an atmosphere containing less than 3 PPM oxygen and moisture.

To maintain production efficiency, the system also required a pass-through chamber to remove completed assemblies without disrupting ongoing bake-out cycles.

SOLUTION ▼

Weldlogic Engineering developed a G-code programmable, high-precision 3-axis laser welding system designed for delicate microelectronic components and a wide range of materials.

The system integrates the AWS-1000 Advanced Welding System with a 1000W fiber laser, delivering precise control and repeatable weld performance for MIL-STD 883 hermetic sealing applications.

A custom-designed 316 stainless steel glove box ensures ultra-high purity conditions, meeting stringent gas environment and vacuum bake-out requirements.

The result is a turnkey laser welding solution capable of producing reliable hermetic seals for microelectronic devices, while maintaining process consistency, flexibility, and production efficiency in demanding aerospace and electronics applications.

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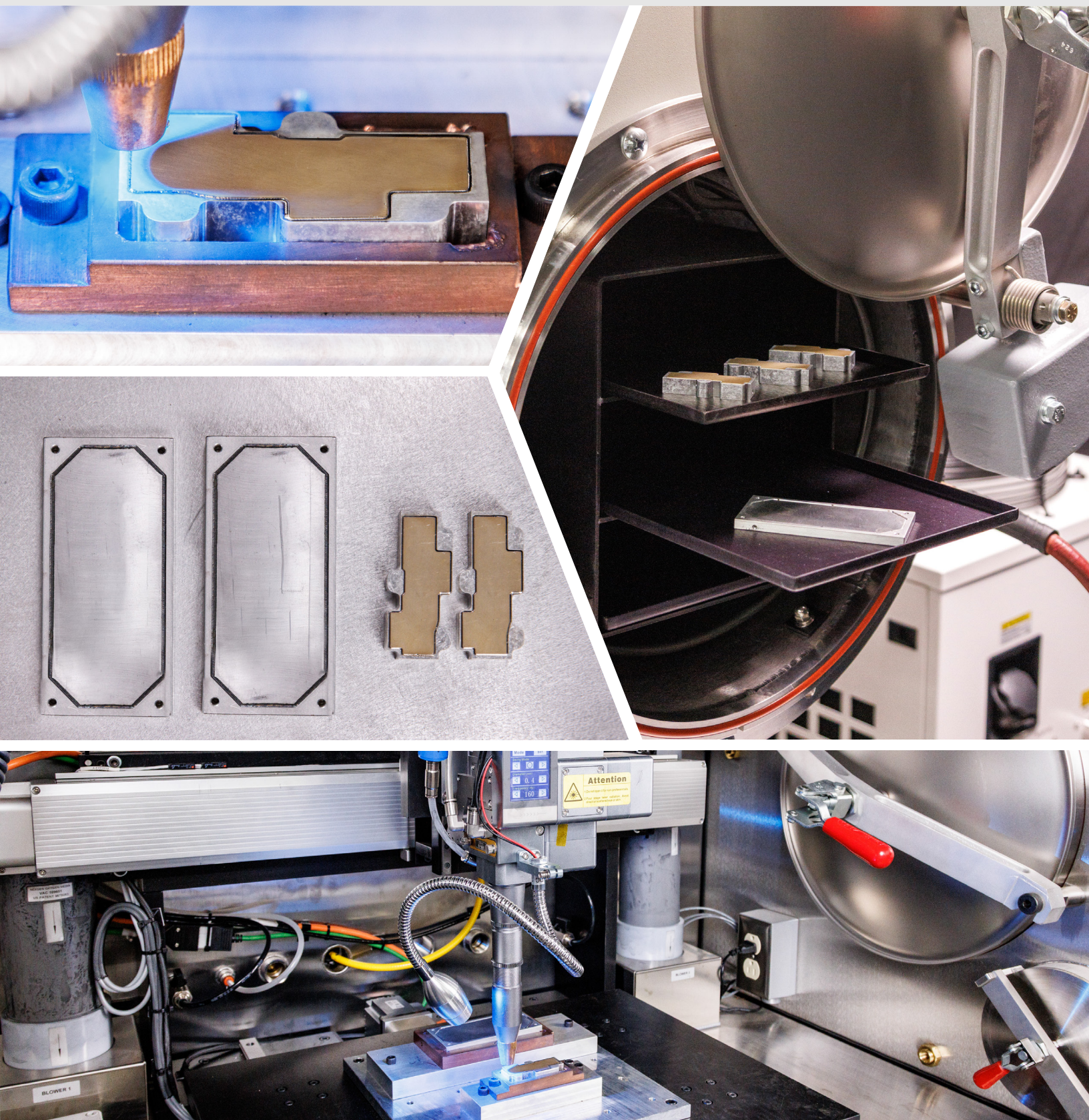
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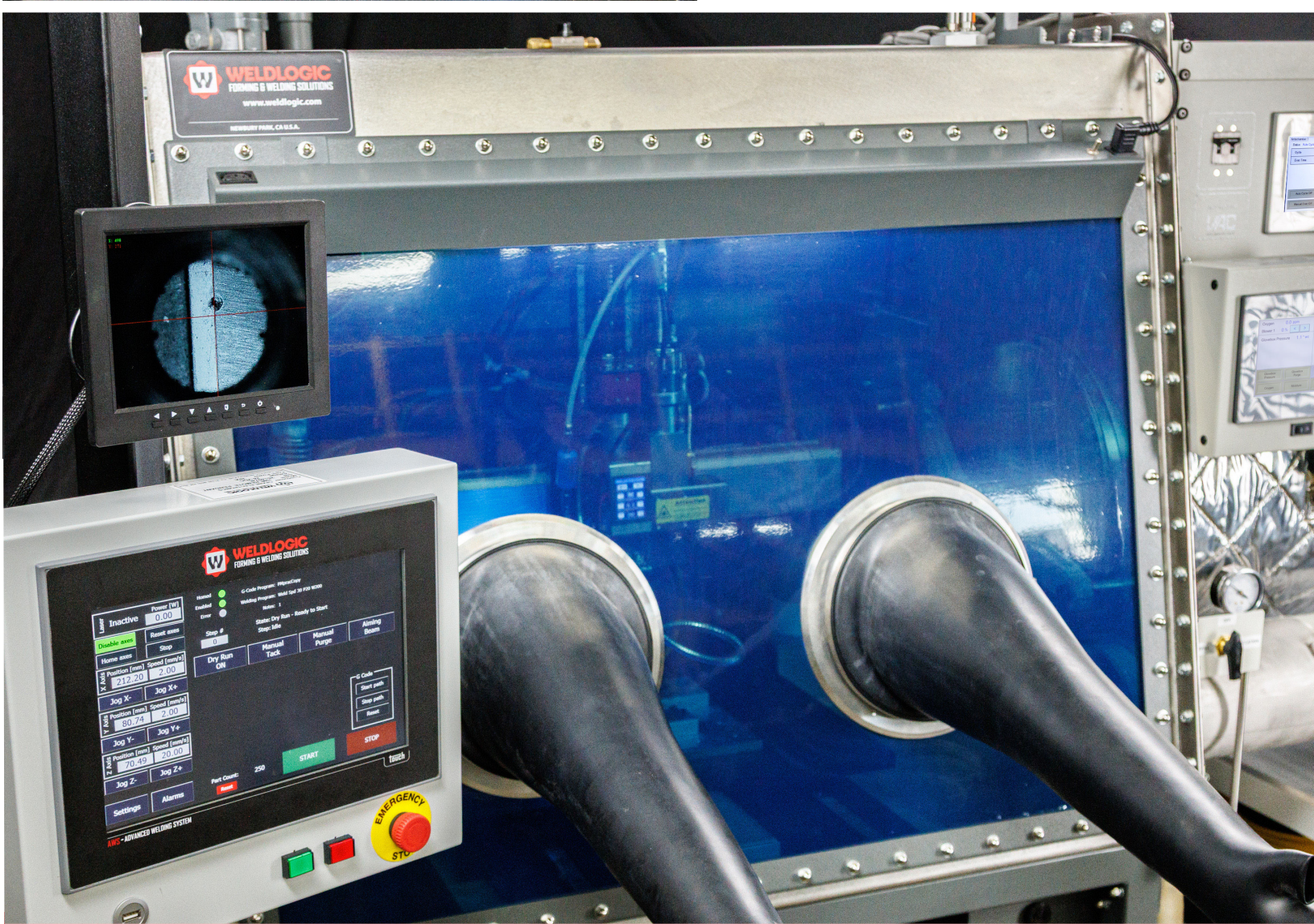
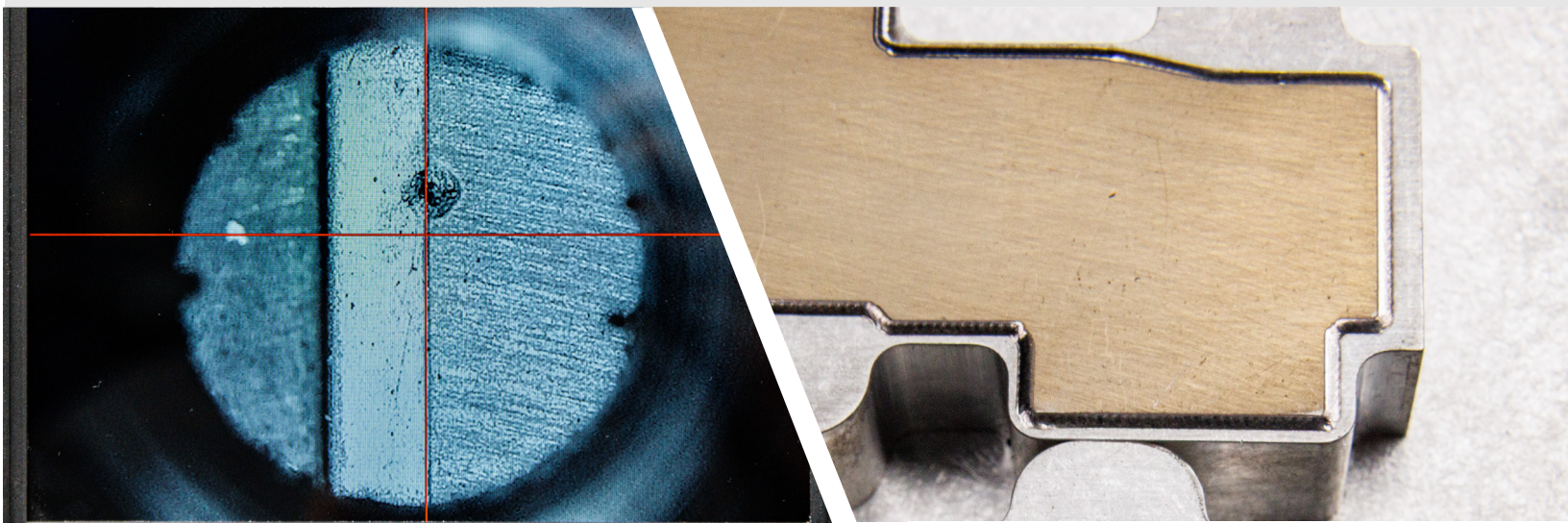
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