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Owens Design
Your Design & Build Partner

30 Years of Innovative Solutions

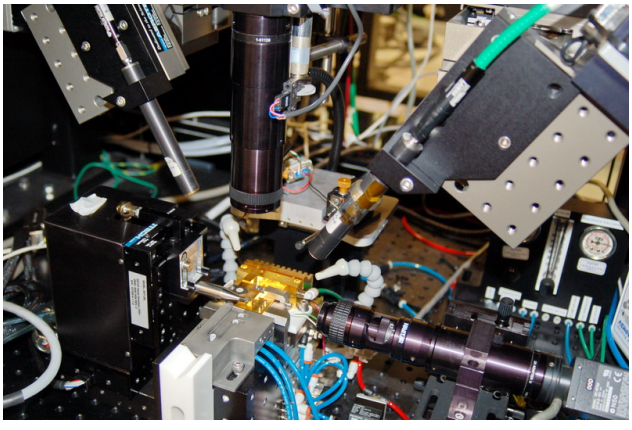
Fiber Optic Alignment and Laser Welding

The Situation

A fiber optic startup needed to ramp production for their fiber optic transponder modules. Their current equipment for aligning and fastening the fiber optic to the transponder was not scalable.

The Challenge

Automating the fiber optic alignment and welding process requires integrating many technologies in a carefully controlled environment. The alignment process is extremely vibration sensitive yet the motion stages need to move with high speed to meet production throughput requirements. Nearly a dozen axes of motion are required to control the fiber optic, laser weld head, and vision alignment systems.



Precision Alignment Achieved using Vision and Micropositioning Stages

The Solution

Owens Design worked closely with the OEM's internal process engineers to develop a production worthy platform for the automated alignment process. The platform integrated high precision stages, vision alignment, Nd:YAG fiber laser, beam delivery, and test instrumentation. The mechanical structure was engineered for outstanding vibration isolation performance. The enclosure was designed to provide a Class 1 laser safe mini-environment while also meeting the company's goal for a "showcase" fully automated manufacturing line.

Micropositioning Nd:YAG Fiber Laser Welder for Fiber Optic Transponder