

Laser

Hybrid

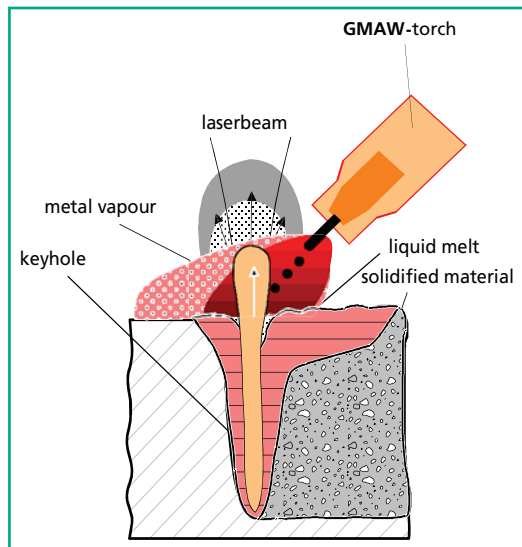
Welding

Center for Coatings and Laser Applications

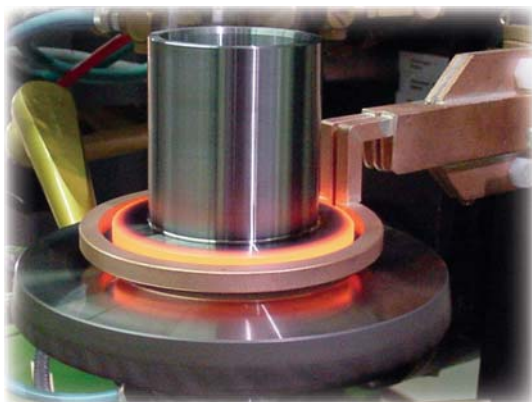
Fraunhofer CCL has state of the art hybrid welding equipment for:

- Laser + GMAW (MIG) Welding
- Laser + PAW (Plasma) Welding
- Laser + Induction Welding

Fraunhofer CCL has over 10 year experience working on Hybrid Laser Welding applications. Using our state of the art solid state fiber delivered lasers with up to 10kW power it is possible to achieve excellent weld quality at high speed with improved part fit up tolerances.



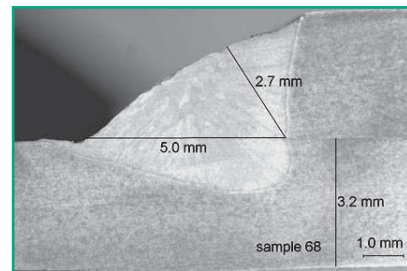
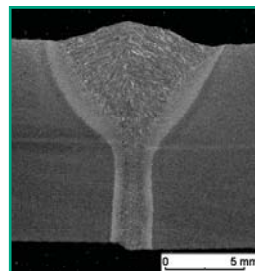
Basic Process Schematic - Laser / GMAW Hybrid Welding



Induction Assisted Laser Welding of Powertrain Components



Laser / GMAW Hybrid Welding at Fraunhofer CCL



Cross Section - Laser / MIG Hybrid Welding of Steel (left) and Aluminum (right)

Process Advantages

- Increased welding speed
- Improved fit up tolerance
- Optimized weld metal chemistry
- Reduced part distortion
- Reduced heat input

Applications

- Construction Equipment
- Ship Building
- General Fabrication
- Pressure Vessels
- Pipe Lines
- Structures / Assemblies
- Aluminum Joining
- Automotive



Construction Application - Concrete Pump Boom

Making innovation a reality