

Laser welding with the novel dynamic beam shaping approach

Description

The application of lasers as tools has increased significantly over the past decade. Laser welding is one of the permanent joining technologies that is widely accepted in industry. The aim of this work is to systematically study laser welding using a state-of-the-art laser welding system.

This research topic will begin with a literature review. Then, hands-on experience will be gained in laser welding, grinding, polishing, and metallurgical analysis of samples. Optical microscopy, hardness measurements, and photodiode-based process monitoring may also be part of the activities.

By the end of this research thesis, you will be prepared to conduct independent research and will have gained sufficient knowledge to work in laser welding technology. If you are motivated and ready to work hard, you can complete your bachelor's or master's thesis with us.

Methodology

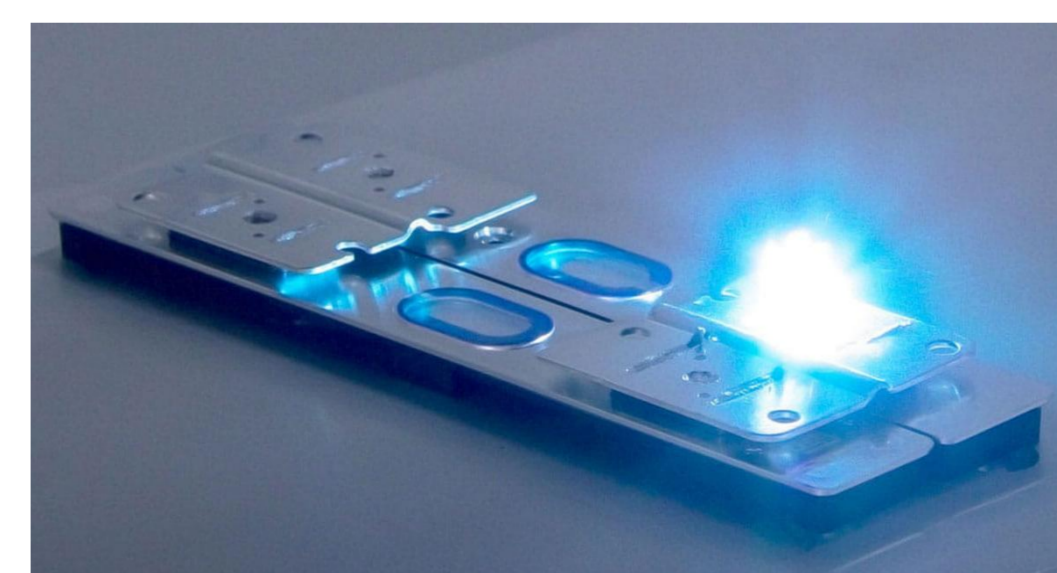
- Literature review of laser welding
- Laser welding
- Process monitoring
- Grinding and polishing
- Optical microscopy
- Hardness measurement



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Tasks

- Research on the laser welding of samples using a beam shaping approach
- Part production
- Preparation of sample for metallurgical analysis
- Data acquisition (optical microscopy and hardness measurement)
- Analysis of process monitoring signals



High Precision Welding