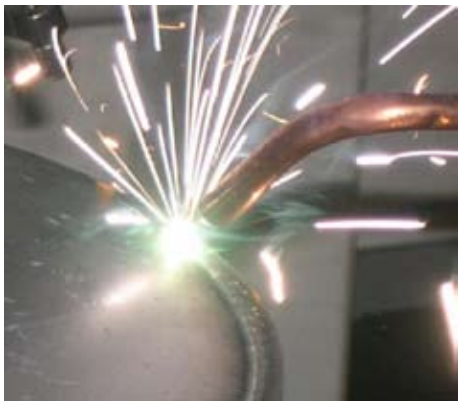
LASER WELDING

High productivity, high quality



Aluminium laser welding

Laser welding is a well established process and is integrated into a variety of applications worldwide. Through the use of this technique, the joining of parts can be improved in terms of mechanical strength, speed and economics. Laser welding has many advantages over conventional welding techniques.

Properties

The main target of laser welding is the optimisation of the joining metals through:

- Improved weld properties
- Reduction in component distortion
- Increased automation

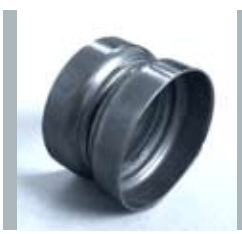
Laser-welded planetary gear

Process

Laser welding belongs to the group of liquid-phase joining. The necessary energy is obtained from a focussed laser beam which locally creates a melt pool that is moved along a joint resulting in a weld seam. Through the use of a local gas shield, the laser beam absorption can be increased and the oxidation of the workpiece reduced. The resulting joint often has a higher strength than the base material.

Applications

Examples of welded components are found in the fields of automobile, engineering, medical and aerospace. An important application is the welding of car bodies and tailored blanks, where examples are found in both steel and aluminium, and in the welding of transmission parts where the shorter cycle time compared to electron beam is a significant advantage. Especially important is the aspect of low distortion which due to the low heat input offers a distinct advantage when welding sensitive components.



Laser welding: We have the know-how

Facts

Laser weld in steel (3 kW at 9 m/min)

Advantages

- High depth:width ratio compared to conventional processes. Typical values 2:1 to 5:1
- Low energy input creates low distortion reducing post-treatment costs
- High welding speeds result in low process times and part price
- High heating and cooling rates produce fine microstructures which improve the mechanical properties and reduce the heat-affected zone
- Good control of welding parameters increases reproducibility and readily allows process automation
- A wide variety of weld forms are possible, increasing freedom of design

Laser-weldable materials

Weldable materials range from normal and high-strength constructional steels through to high-alloyed stainless steels. Titanium, aluminium and nickel base materials can also be problem-free welded.

Equipment

Ionbond Lasertechnik in Nürnberg employs various laser systems in the power range 300 to 5000 W and robotized beam / workpiece handling with large capacities.

Our service

Ionbond offers a long experience in the field of laser welding. Our experts are ready with their knowledge to offer you concrete solutions to your welding problems, from evaluation studies through to series production. Ionbond also offers the necessary quality support and is certified to ISO 9001:2008.

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07.2010