Ferro Umformtechnik®

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LASER WELDING

NEW PERSPECTIVES – COMMON PERSPECTIVES

CONNECTING WHAT BELONGS TOGETHER

Research, development and innovation – a triad that is both maxim and aspiration for Ferro Umformtechnik. We are breaking new ground to meet the challenges of welding technology.

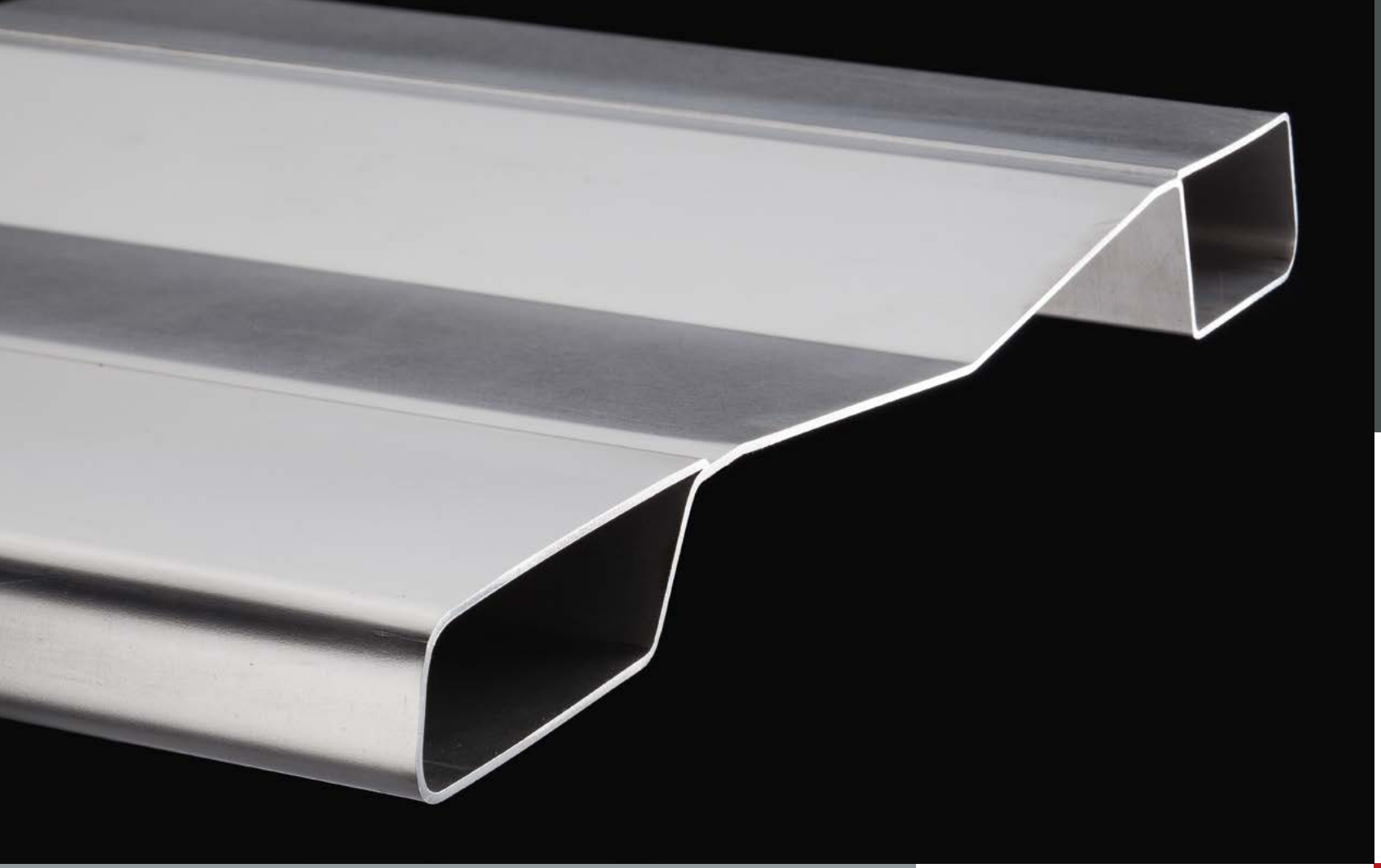
Our answers to pressing questions about feasibility and perfection: Laser welding. They convince in the welding of plates and shaped profiles by high welding speeds or a retrievable, optimised weld seam quality.

The added value: Targeted use of materials, narrow weld seams with low heat-affected zone and minimal distortion.

Our customers use the potential of a visually and technologically perfect weld seam to avoid refinishing. Such an innovative welding technology ensures a high degree of efficiency and reliability compared to conventional welding processes.
Convincing arguments.

PERFECTION

Laser-welded octagonal profile made from S355J2+N, t = 4 mm, closed bending with one laser welding seam



perfect one®
by Ferro Umformtechnik

SERVICE

„perfect one® by Ferro Umformtechnik"
Side wall profile with edged top sections and final laser weld seam

WELL PREPARED

Two powerful laser welding systems at work

- Working range for sheet metals: 5,400 x 25,200 mm
- Working range for profiles: 1,500 x 4,000 x 17,000 mm

Seam depths

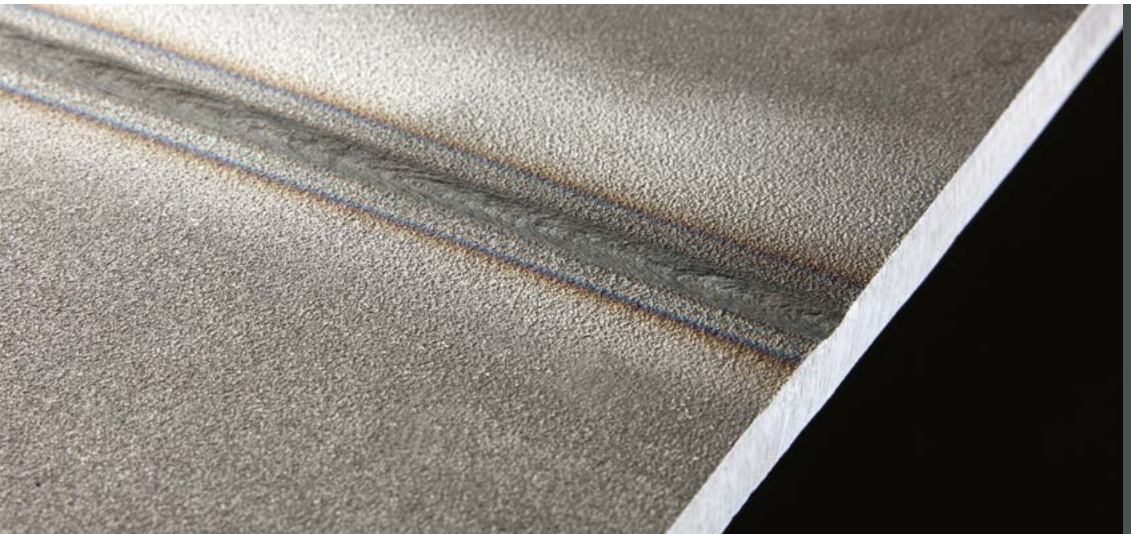
- Up to maximum 10 mm

LONGITUDINAL AND TRANSVERSE WELDING POSSIBLE

S1100QL material with a plate thickness difference from 7 mm to 8.5 mm

ARGUMENTS FOR STRONG CONNECTIONS

- High welding speed
- Very narrow welding seams (small seam volume in relation to the sheet thickness)
- Narrow heat-affected zone
- Minimum tensions, resulting in low distortion
- No additional material in the weld with pure laser welding
- Welding of tailored components and sheets
- Targeted modification of material thicknesses
- Targeted use of materials based on wear, strength and usage requirements
- New definition of sheet metal widths irrespective of rolling mills' production widths
- New design and weight-optimised options
- Improved marketability of own products
- Development of new markets



Laser-welding of ultra-high-strength steels up to tensile strength of 1,300 N/mm², t = 1.5 mm and more

The laser welding seam is especially narrow and flat, and due to the preservation of the mechanical-technological properties of the base material, it is particularly well-suited for products with high wear and usage requirements.

Rectangular profile, closed edges with laser weld, material S700MC, t = 3 mm, W x H: 1,000 mm x 802 mm

Tailored plate, t = 8 mm to 15 mm

DIFFERENT YET FITTING

Customised components can be produced optimised for weight and cost. Here, different

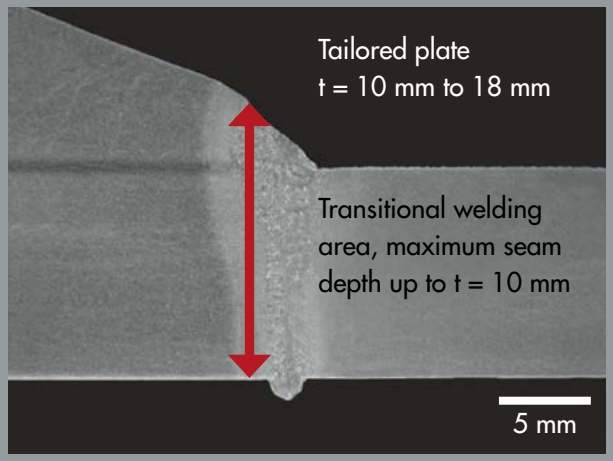
- plate thicknesses
- materials

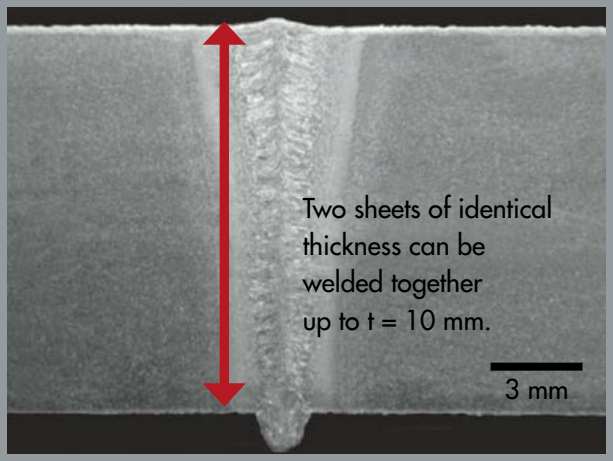
are welded together.

The combination of the sheets, so-called tailored plates, is made according to the various requirements of the component.

Sheets with thickness differences of up to 2 mm can be safely welded.

- Penetration depth up to 10 mm





COMPLETELY CLOSED PROFILES

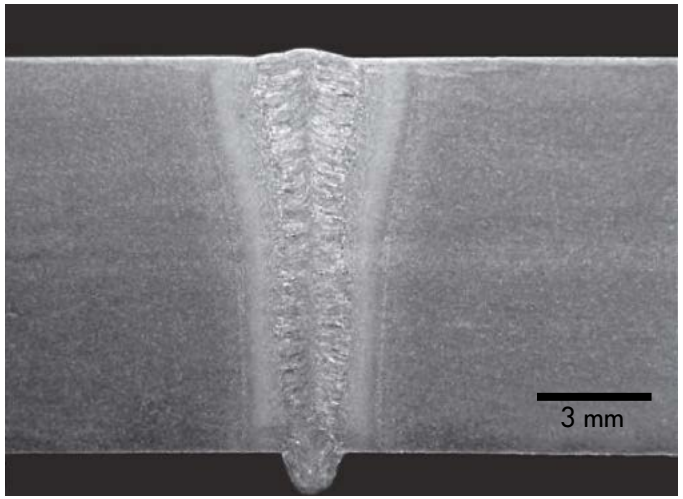
Individual profiles can practically be folded closed. The last remaining seam leading to the hollow profile can be efficiently executed using the laser welding process.

There are good reasons for it:

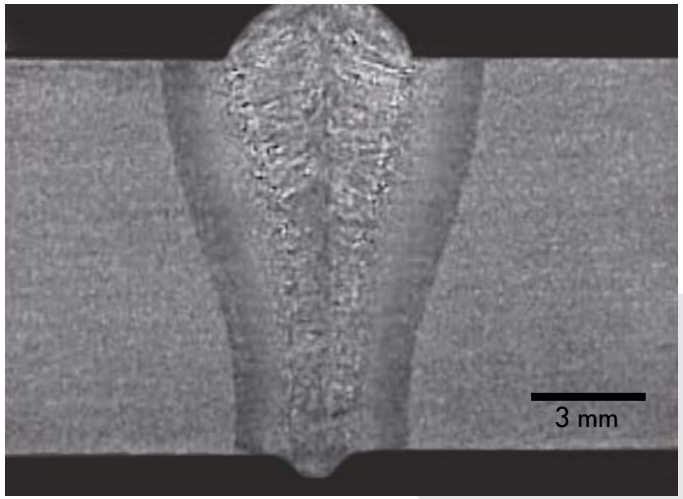
- No profile deformation thanks to low heat-affected zone
- No seam preparations, no clamping of components and not truing before the welding process required
- No post-treatment on the welding seam
- Instant use of the finished component at the highest production level

Laser-welded octagonal profile made from S690QL, t = 8 mm, closed bending with one laser welding seam

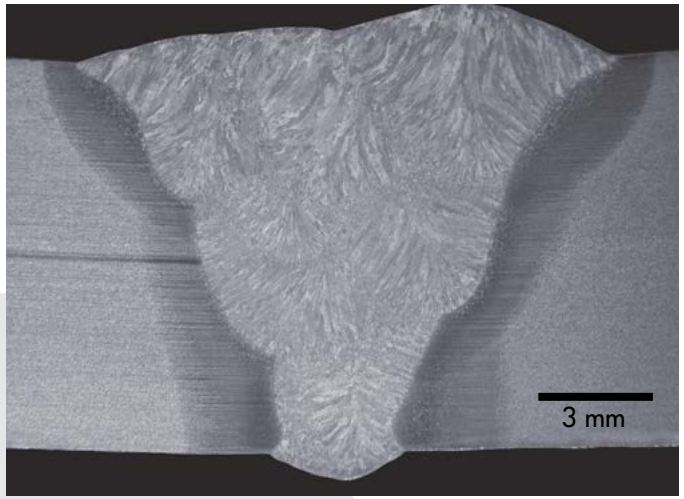
WELDING SEAMS IN COMPARISON



Laser welding seam



Laser hybrid welding seam



GMAW welding seam

TESTED QUALITY

The certifications according to

- DIN EN ISO 9001
- DIN EN ISO 3834-2
- DIN EN 15085-2:2008-01 Level CL1

permit the following welding processes

- GMAW welding
- MAG cored wire welding
- Laser welding
- Laser hybrid welding

Step by Step to the Result

All materials, sheet metal thicknesses as well as individual customer requirements with standard specifications that are to be joined by the laser welding process require a prior procedure approval, including sample validation, at the relevant institute. The required parameters are tested within a short period of time on the laser-welded material sample and then accepted as an approved welding procedure.

We meet the highest requirements in terms of applicable standards.

The advantages of the modern, dynamic laser welding process make it possible to create innovative and optimised designs. We are happy to offer samples in order to support imaginative solutions at any product development stage.

We look forward to further detailed consultations.

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