LEISTER®

Customized Laser Welding System? Leister.

FOCUS | Depth of Integration Ensures Quality and Simple Plant Engineering

Laser Welding Technology | Mechanical Engineering Industry

swiss made

Laser Welding Technology from Leister for the Mechanical Engineering Industry

Custom-made Integration Systems for Laser Plastic Welding

For decades, Leister Technologies AG has been a technology leader in the development, production and sales of innovative laser systems for a range of industrial applications in the automotive sector, in medical engineering and electronics. As your experienced and reliable partner, Leister offers individual process development for the perfect welding result.

Leister. We know how.

Content

Precise Plastic Welding

Leister laser systems are used around the world for industrial production of plastic parts in a range of sectors. If you need precise, durable and contamination-free welding for sensitive parts, you will find the perfect solution from Leister. With help from our experts, you put together the perfect laser equipment for you and your application using the modular building block system from Leister.

Particle-free Plastic Welding

Laser welding is a precise process for permanently joining plastics. Leister offers a broad range of optics for diverse applications to securely weld your product. At the same time, optional process control will guarantee the desired welding quality.

Contamination-free Plastic Joining

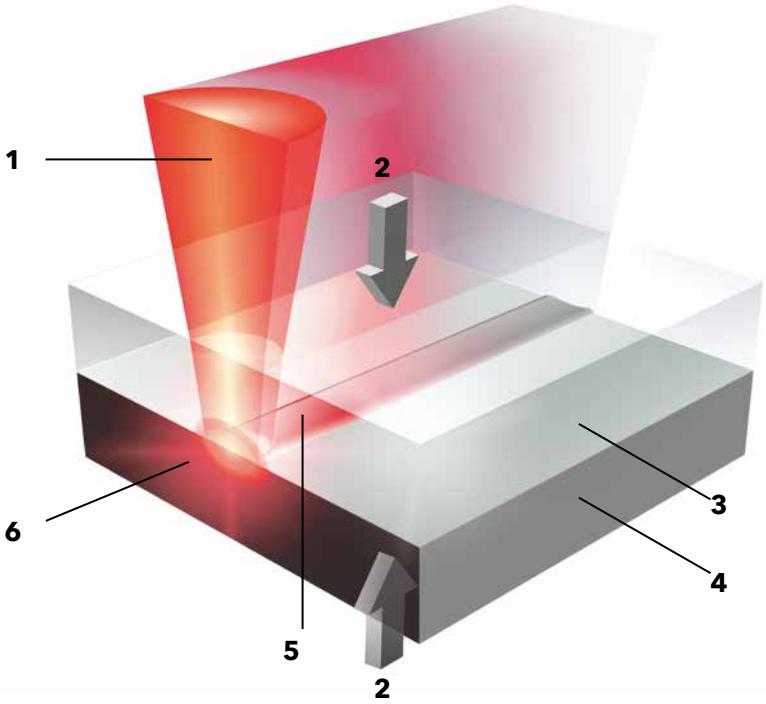
Laser transmission welding for contamination-free joining of thermoplastics has proven itself globally. The laser penetrates the polymer that is transparent to the radiation and is converted into heat when it comes into contact with the absorbent polymer. The absorbed energy melts the plastic. Simultaneously pressing together the parts with the right combination of energy, pressure and time generates a permanent weld. The welded material and the design of the part are also important when it comes to the weldability of the plastic components.

Advantages of Laser Transmission Welding of Plastics

- Minimum part deformation thanks to reduced thermal and mechanical load
- Optically perfect welding seam
- Particle-free joining of components
- Process stability through process control
- High precision and strength of the weld

Laser Transmission Welding Illustration

1. Laser beam
2. Joining pressure
3. Transparent joining partner
4. Absorbing joining partner
5. Weld seam
6. Melting zone



Flexible Depth of Integration

Based on the BASIC M modular building block principle, Leister offers you flexible solutions for laser plastic welding. Designed for integration in industrial production lines, we tailor the welding system perfectly to your needs. Using standards guarantees short lead times.

High Quality Welding through Perfectly Matched Components

The BASIC M integration system from Leister includes numerous encapsulated functional units for laser plastic welding. The different units are used as building blocks for the system and can be combined in numerous ways according to your requirements.

You decide how far you wish to integrate Leister into the process. If you decide for the highest level of integration, all components for the welding process come from Leister and are perfectly matched. The ideal premise for strong and homogeneous welding.

Advantages of the Leister Building Block Principle

- Short lead times thanks to the standard components design
- Ideally suited to customer-specific requirements
- High process responsibility from Leister with maximum depth of integration
- Various applications feasible thanks to different welding concepts
- Easily integrated into production lines
- Various interfaces for communication with the superordinate system
- Simple operation in a single HMI

"The great flexibility of BASIC M means Leister can always offer you the right laser system for your needs."

Johannes Eckstädt
Product Manager Laser Plastic Welding
Leister Technologies AG

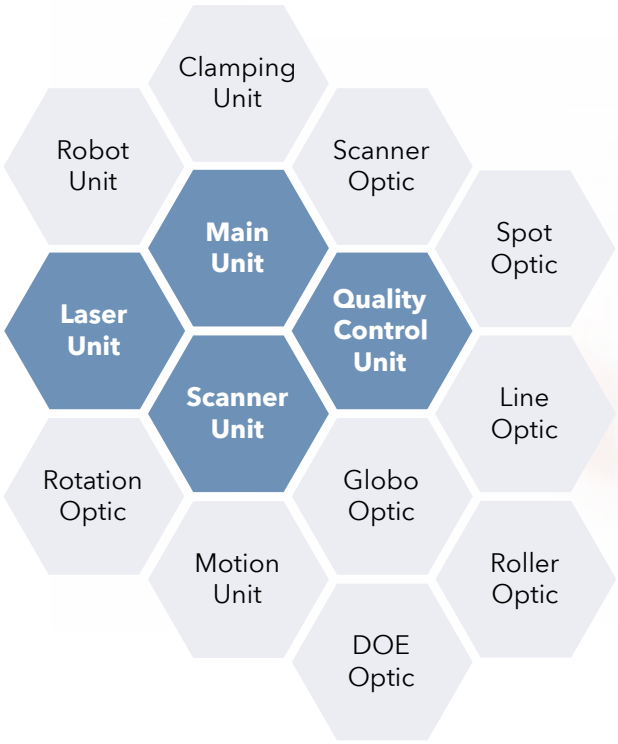
Request a free expertise now

Transferring Process Responsibility

Laser plastic welding is a complex process combining various sub processes. When several suppliers are involved in the welding process, responsibility for the process is divided amongst them. This makes commissioning and troubleshooting more complicated and reduces welding quality, depending on the circumstances.

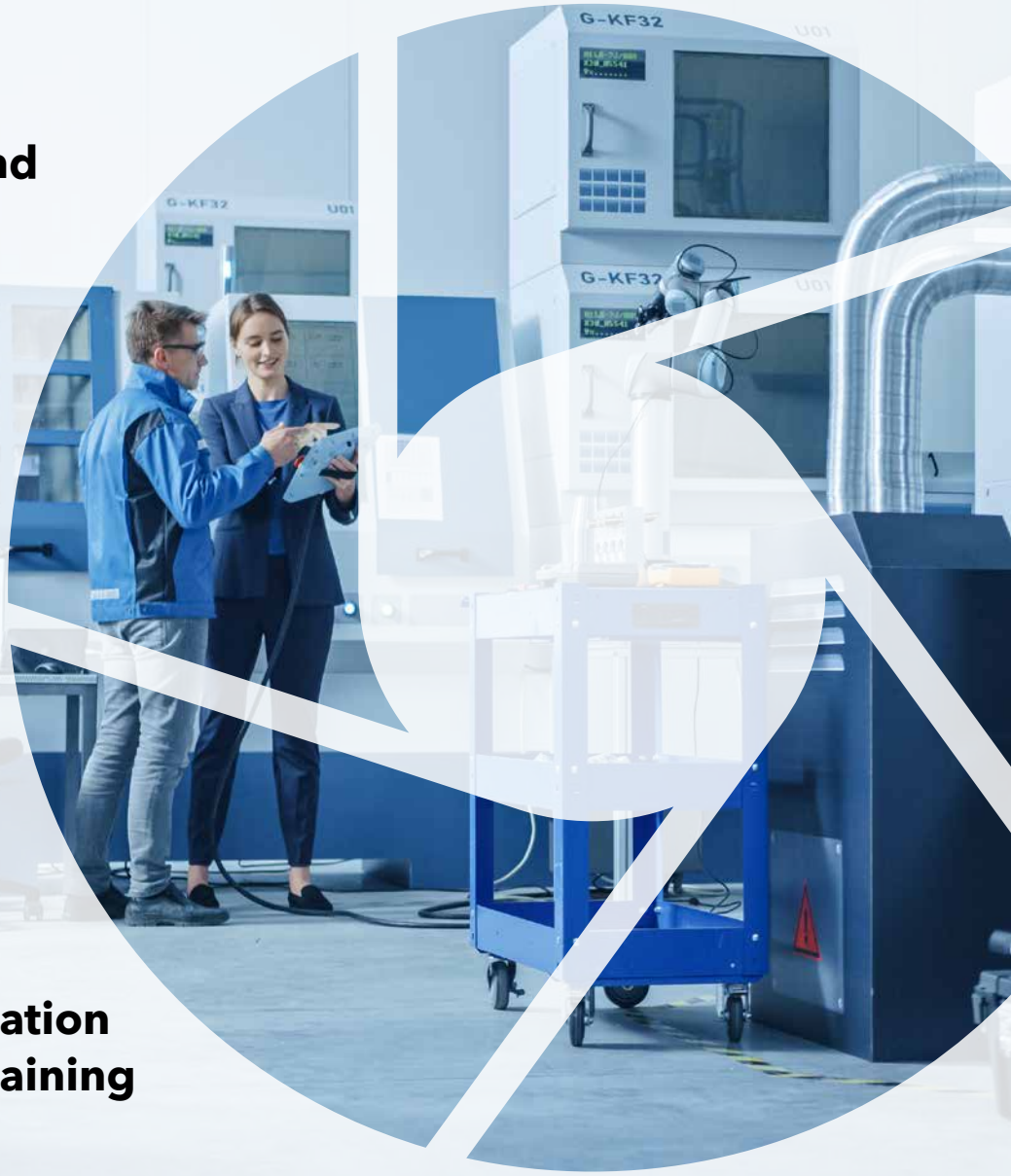
Depending on your welding concept, in addition to operating the laser, the components are clamped and the laser beam is guided along the outline of the part, for example. Additionally various sensors can monitor and control the process. The hardware components have a direct influence on welding quality.

Together with the laser and process optics, the control unit forms the minimum configuration of the BASIC M. This configuration can be expanded with more units until the complete welding process is finally represented by Leister. A higher integration depth means that you transfer more responsibility to Leister. The highest level of integration gives Leister responsibility for your entire welding process. Welding process integration and commissioning is considerably easier for you because all components involved are perfectly matched. Service cases are also much more efficiently processed because Leister is familiar with all components.



Set up a consultation with experts

① Consulting



⑤ Service and Support

④ Installation and Training

② Welding Tests

③ Planning and Implementation

Integration Systems

Laser Optics

BASIC M

The modular system BASIC M is a laser welding system for integration into industrial production plants. The basic configuration BASIC M includes the MAIN UNIT, optics, and a laser.

Technical Data

Wavelength	970–1100 nm
Laser type	Diode laser; Fiber laser
Beam guidance	Fiber coupled
Laser power	47–300 W
Coolant laser	Air; Air (Leister)
Multilaser	Yes
User interface	Leister HMI
Control interface	Digital/Analog I/O
Ambient temperature	15–35 °C 59.0–95.0 °F
Humidity	69 % at 35 °C/95 °F or 80 % at 32 °C/89.6 °F, non-condensing
Laser class	Laser class 4
Laser class Pilot laser	Laser class 2M
Noise emission level	< 70 dB(A)

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Spot Optic L

The Spot Optic L for the Leister S/M/L welding systems focuses the laser beam to a spot and is mostly used for precise accurate contour welding. It has integrated monitoring electronics.

Technical Data

Beam shape	Spot	
Welding concept	Contour	
Laser spot diameter	0.2–3.75 mm	7.87–147.63 mil
Process monitoring	Fibre plug monitoring; Laser power measurement; Pyrometer	
Working distance	34–254 mm	1.33–10.0 in
Ambient temperature	10–40 °C	50.0–104.0 °F
Length	45.0 mm	1.77 in
Width	115.0 mm	4.52 in
Height	190.0 mm	7.48 in
Weight	0.93 kg	2.05 lb

Customized solution upon request

Configure product

DOE Optic L

Thanks to the drawer system, the DOE Optic L can be equipped with special optical components that form the point-shaped laser beam as desired. In addition, it has electronic components for quality monitoring.

Technical Data

Beam shape	DOE	
Welding concept	Contour; Simultaneous	
Laser spot diameter	0.05–3.1 mm	1.96–122.04 mil
Process monitoring	Fibre plug monitoring; Laser power measurement; Pyrometer	
Working distance	34–254 mm	1.33–10.0 in
Ambient temperature	10–40 °C	50.0–104.0 °F
Length	45.0 mm	1.77 in
Width	115.0 mm	4.52 in
Height	205.0 mm	8.07 in
Weight	1.08 kg	2.38 lb

Customized solution upon request

Configure product

Scanner Optic L

The Scanner Optic L is primarily used for quasi-simultaneous welding. It is characterised by an integrated motion system and an internal pyrometer.

Technical Data

Beam shape	Spot	
Welding concept	Quasi-simultaneous	
Laser spot diameter	0.02–7.5 mm	0.79–295.28 mil
Process monitoring	Fibre plug monitoring; Laser power measurement; Pyrometer	
Scan field (X-direction)	100–350 mm	3.93–13.77 in
Scan field (Y-direction)	100–350 mm	3.93–13.77 in
Working distance	190–657 mm	7.48–25.87 in
Ambient temperature	10–40 °C	50.0–104.0 °F
Length	369.0 mm	14.53 in
Width	219.0 mm	8.62 in
Height	173.0 mm	6.81 in
Weight	5.645 kg	12.45 lb

Customized solution upon request

Configure product

Field Optic M

The Field Optic M for Leister S/M/L laser welding systems is suitable for laser welding of rectangular geometries and is adjustable to specific requirements in the production process.

Technical Data

Beam shape	Field	
Welding concept	Simultaneous	
Laser edge length	6–43 mm	0.23–1.69 in
Process monitoring	Fibre plug monitoring; Laser power measurement	
Working distance	34–254 mm	1.33–10.0 in
Ambient temperature	10–40 °C	50.0–104.0 °F
Length	45.0 mm	1.77 in
Width	115.0 mm	4.52 in
Height	210.0 mm	8.26 in
Weight	0.98 kg	2.16 lb

Customized solution upon request

Configure product

Line Optic M

The Line Optic M forms the laser beam into a straight line in different lengths and widths. It can be installed in all Leister S/M/L laser welding systems and can be adjusted according to customer specifications.

Technical Data

Beam shape	Line	
Welding concept	Contour	
Laser line length	6.4–43.0 mm	0.25–1.69 in
Laser line width	0.3–1.4 mm	11.81–55.11 mil
Process monitoring	Fibre plug monitoring; Laser power measurement	
Working distance	34–254 mm	1.33–10.0 in
Ambient temperature	10–40 °C	50.0–104.0 °F
Length	45.0 mm	1.77 in
Width	115.0 mm	4.52 in
Height	210.0 mm	8.26 in
Weight	0.98 kg	2.16 lb

Customized solution upon request

Configure product

Ring Optic M

The Ring Optic M generates a ring from a spot laser beam and is used for simultaneous welding. It impresses with short cycle and process times and has integrated monitoring electronics.

Technical Data

Beam shape	Ring	
Welding concept	Simultaneous	
Ring diameter middle	1.6–74.0 mm	0.06–2.91 in
Ring width	0.25–3.2 mm	9.84–125.98 mil
Process monitoring	Fibre plug monitoring; Laser power measurement	
Working distance	34–254 mm	1.33–10.0 in
Ambient temperature	10–40 °C	50.0–104.0 °F
Length	45.0 mm	1.77 in
Width	115.0 mm	4.52 in
Height	205.0 mm	8.07 in
Weight	0.955 kg	2.1 lb

Customized solution upon request

Configure product

Radial Optic 38 M

The Radial Optic 38 M is designed for rotationless laser welding. An additional clamping device is not required. Suitable for radial welding of rotationally symmetrical components of up to ø 38 mm/1.5 in.

Technical Data

Beam shape	Radial	
Welding concept	Simultaneous	
Ring diameter middle	2.0–38.0 mm	0.07–1.49 in
Ring width	1.2–2.0 mm	47.24–78.74 mil
Process monitoring	Fibre plug monitoring; Laser power measurement	
Ambient temperature	10–40 °C	50.0–104.0 °F
Length	87.0 mm	3.42 in
Width	136.0 mm	5.35 in
Height	322.0 mm	12.67 in
Weight	2.005 kg	4.42 lb

Customized solution upon request

Configure product

Radial Optic 68 M

The Radial Optic 68 M welds rotationally symmetrical components simultanously. It stands out by a high throughput and short cycle times.

Technical Data

Beam shape	Radial	
Welding concept	Simultaneous	
Ring diameter middle	4.0–68.0 mm	0.15–2.67 in
Ring width	1.2–1.5 mm	47.24–59.05 mil
Process monitoring	Fibre plug monitoring; Laser power measurement	
Fiber connection	Collimator ø 14 mm; Collimator ø 28 mm	
Ambient temperature	10–40 °C	50.0–104.0 °F
Length	155.0 mm	6.1 in
Width	155.0 mm	6.1 in
Height	355.0–373.0 mm	13.97–14.68 in
Weight	4.7 kg	10.36 lb

Customized solution upon request

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Globo Optic L

The Globo Optic L is designed for endless welding of 2- and 3-D contours. The optics air-bearing glass ball is used as a focus lense and for pressure application. Aditionally, the optics are equipped with laser power measurement and a pyrometer.

Technical Data

Beam shape	Spot	
Welding concept	Contour	
Laser spot diameter	1.0–3.2 mm	39.37–125.98 mil
Process monitoring	Fibre plug monitoring; Laser power measurement; Pyrometer	
Working distance	0 mm	0.0 in
Fiber connection	Collimator ø 14 mm	
Ambient temperature	10–40 °C	50.0–104.0 °F
Length	58.0 mm	2.28 in
Width	152.0 mm	5.98 in
Height	258.0 mm	10.15 in
Weight	2.0 kg	4.4 lb

Customized solution upon request

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Contents

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