



## LSO

### Lens Shifting Optics for laser welding

#### Seam tracking – Process monitoring – Quality control

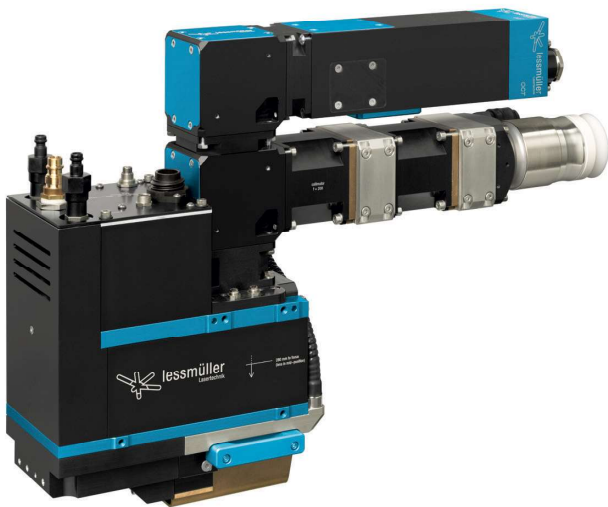
**Lessmüller Lasertechnik** is one of the leading providers of real-time quality control systems for laser welding. The innovative **LSO** welding optics is breaking new grounds ensuring precise laser welding by adjusting automatically welding position in combination with the smart tracking and monitoring system like **OCT**.

#### Advantages of LSO:

- High accuracy welding with solid state laser up to 6 kW
- Compact lightweight system; easy integration into various welding and motion systems
- Reduced positioning time due to real-time control of lateral and vertical focus position
- Precise and fast alignment of TCP with integrated pilot lasers
- Temperature monitoring of protection glass, focusing and collimation lenses
- Integrated remote maintenance (Industry 4.0)

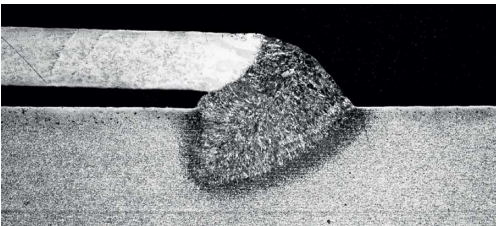
#### Advantages with OCT:

- Fast and accurate seam tracking regardless of the joint form
- Automated adjustment of the OCT focus position
- Real-time measurement of weld penetration depth
- Flexible setting of scanning area for active seam tracking and quality assessment
- Reliable detection of weld faults and immediate fault reporting
- Monitoring of the welding process by recording and documenting all measured data and process parameters



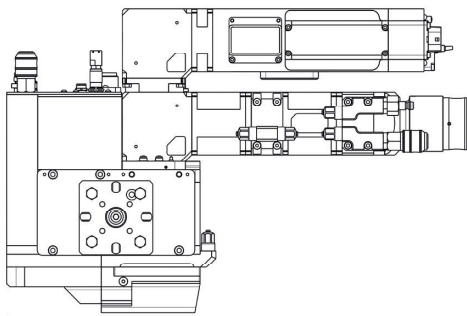
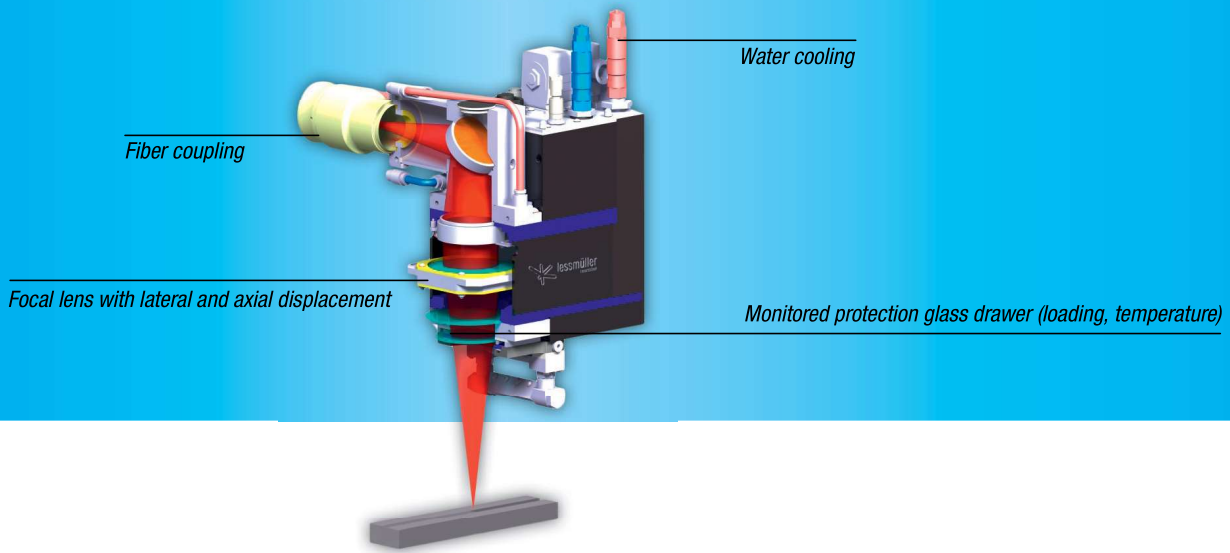
*LSO welding optics*

#### Bridging gaps with LSO:



#### Real-time positioning:





### Technical data:

<b>LSO</b> laser power	up to 6000 W
Wavelength of process laser	1030 nm to 1080 nm
Positional accuracy	10 µm
Seam tracking accuracy (by v = 4.5 m/s)	50 µm
Positioning control frequency	up to 100 Hz
Lateral adjustable range	+/- 2.5 mm
Axial adjustable range	+/- 15.0 mm
Collimation system focal distance	200 mm
Focusing system focal distance	200 mm or 280 mm
Operating gap	102 mm or 182 mm
Standard protection glass	Ø 55 mm, 1.5 mm thick
Crossjet	6 bar, 500 l/min
Fiber coupling	QBH, Q5 / LLK-B, QD / LLK-D
External fieldbus interfaces	Profinet, Profibus, Ethercat, Devicenet
Internal data interface (incl. 8 m and 15 m cable)	Ethernet
Internal sensor/actor interface (with <b>OCT</b> )	CAN-BUS
<b>OCT</b> scan area (with <b>LSO</b> optics)	+/- 15.0 mm around TCP
Size of <b>LSO</b> optics with <b>OCT</b> scanner	438 mm x 289 mm x 129 mm
Weight of <b>LSO</b> optics with <b>OCT</b> scanner	10.5 kg
Size of control box H x W x D	600 mm x 460 mm x 450 mm
Weight of control box	45 kg
Internal power supply	24 V / max. 4.5 A
External power supply	115 V / 230 V / 16 A
Design	Dustproof IP64

Our team supports you during and after the integration on- and off-site.



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