

PRESS RELEASE

## Reliable Quality Assurance for Arc Welding During the Welding Process

OCT technology enables precise seam tracking and inspection in a single pass

**Munich, Germany, February 5, 2026 – Lessmüller Lasertechnik GmbH, one of the leading manufacturers of quality monitoring systems for industrial welding processes, is expanding its range of solutions to include automated weld seam inspection for gas metal arc welding (GMAW). The OCT 250 stand-alone sensor system uses optical coherence tomography (OCT) as a measurement method for continuous seam tracking and weld seam inspection in real time for automated GMAW processes. The advantages for users are obvious: OCT methods are significantly more precise than conventional camera technology, the effort required for subsequent quality control is reduced considerably and the user-friendly software also enables the evaluation and documentation of analysis data. Productivity increases and scrap can be measurably reduced.**



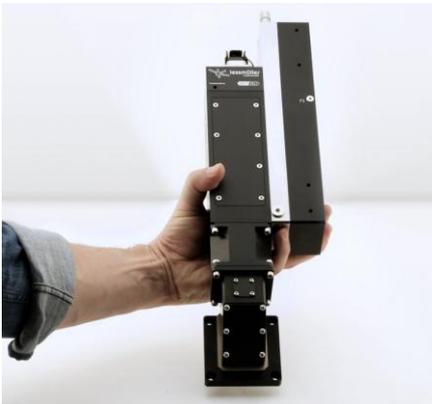
Arc welding, or GMAW, is widely used in the metalworking industry, in container and tank construction, in mechanical engineering, in rail vehicle and shipbuilding, but also in the furniture industry and other sectors. The process enables the joining of thin sheets as well as components with material thicknesses of up to 60 millimeters and is often used fully

automatically and robot-guided in industrial environments.

In order to significantly improve the productivity of automated GMAW welding and to reduce scrap caused by insufficient fusion of the welded joint, the welding process must be precisely controlled. Due to the high demands of robot-guided arc welding, previous process monitoring systems—with laser triangulation and CMOS cameras—are often considered inadequate. Lessmüller Lasertechnik's OCT technology now enables efficient quality assurance in arc welding for the first time.

### **Greater accuracy, better tracking, and significant time savings**

Similar to laser beam welding, the *OCT 250 stand-alone* welding sensor technology also enables pre-process seam tracking and post-process seam inspection during the ongoing welding process in automated MSG welding. Unlike conventional process monitoring systems with camera technology, the OCT sensor is completely insensitive to direct or diffuse light and blinding. It works reliable and with high precision despite the arc itself, ambient lighting, and reflective welding spatter. This insensitivity allows the measuring lines to be placed much closer to the TCP (Tool Center Point), thereby reducing passive travel distances which represent non-productive time.



The OCT scanner can be mounted directly on a robot-guided welding torch. For process monitoring, the system projects two OCT scan lines near the TCP. The first, ahead of the wire, captures the geometry to be welded and, if necessary, measures the dimensions of the gap. The second scan line runs behind the torch nozzle (after the arc) and scans the weld bead. This captures and maps quantitative and qualitative data such as weld seam length, profile, width, area, and groove of the weld bead, convexity and concavity of the seam surface, undercuts and

other defects, as well as surface porosity and craters.

The tailor-made application software allows all data relating to seam guidance and inspection quality assurance to be conveniently visualized, evaluated, and archived for tracking purposes. Based on the preceding seam tracking, the client software can issue control commands via fieldbus to the machine or robot control system and correct the robot's program sequence. For example, displacements, the welding angle, or a combination of both can be adjusted and individually tailored to the respective joint type, the gap and overlap size. The evaluation of the post-process seam inspection allows comparison with predefined tolerances and, if critical errors are detected, can mark the components as rejects and even abort the welding process. This eliminates the effort and necessity of additional downstream quality controls.

The OCT 250 *stand-alone* sensor system is a highly efficient, space-saving, and easy-to-integrate process and quality monitoring solution for automated GMAW that pays for itself in a short period of time. Users can avoid production downtime, ensure high welding quality, and increase the productivity of their welding processes. Additional control measures can be reduced and valuable working time saved. The reliability and industrial suitability of the system has already been successfully demonstrated in several test applications at research institutes and TIER1 automotive suppliers.

**Printable image material** can be found at

[Image 1: Arc welding](#)

[Image 2: OCT 250 stand-alone](#)

**About Lessmüller Lasertechnik GmbH:**

As one of the leading experts in quality monitoring for industrial laser processes, the technology company offers numerous solutions for precise process monitoring and control. Using photodiodes, camera systems with controlled external light, and optical coherence tomography (OCT), the systems enable users to perform comprehensive quality assurance of laser welding processes. The company, founded in 1990, has many years of experience in process monitoring and is driving technological progress in fully automated quality assurance and welding control in a variety of industries.

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