VisionLine OCT Check

Welding depth and seam geometry monitoring

TRUMPF

Machine tools/Power tools
Laser technology/Electronics

Welding in battery technology
In busbar welding, individual cells are joined to form modules or packs during battery production. In addition to reproducibility and minimal heat input, a defined welding depth plays an important role in the welding process. This can be guaranteed with VisionLine OCT Check.

Fully integrated

VisionLine OCT Check is fully integrated into the TRUMPF portfolio. This means that the OCT functions can be used optimally across the entire working range of the PFO. Apart from the familiar fieldbus interfaces, no other interfaces are required. In addition, the OCT is integrated into the laser's safety circuit and automatically controlled via TruControl.

Fast

VisionLine OCT Check is a fast, process-synchronized and efficient solution for weld seam inspection. You receive the results directly after a weld seam, e.g. via fieldbus. This allows you to assess components or individual seams immediately after welding.

The high measuring frequency ensures fast and accurate results and makes the device an ideal tool for production lines with high quantities and time-critical processes. Thanks to the speed of VisionLine OCT Check, the shortest cycle times can be realized and at the same time reliable quality measurement values can be generated, which you can convert directly into increased productivity.

Robust

VisionLine OCT Check is a robust solution for weld seam inspection. A sophisticated OCT design uses thermally robust interferometer measurement technology that delivers accurate and reliable results even in fluctuating ambient conditions. The temperature management is seamlessly integrated into our optical cooling system, which further increases the robustness of the system. The hardware, including the industrial-grade IPCs, is designed to withstand harsh conditions so that the system can operate effectively in industrial environments.

Transparent and traceable

VisionLine OCT Check is the optimal solution for 100 percent traceability of the welding depth and seam top bead geometry of each individual weld seam.

With our technology, you can reduce destructive testing, as you do not have to remove components for metallography and perform time-consuming evaluations during operation. Every component is inspected, giving you complete transparency, control and traceability at both seam and component level. Our system monitors both the weld depth and the geometry of the seam top bead, providing you with accurate data that enables real-time decision-making.

With the QDS 2.0 quality data memory, you can store the quality data from VisionLine OCT Check in the desired location for further use or long-term storage.

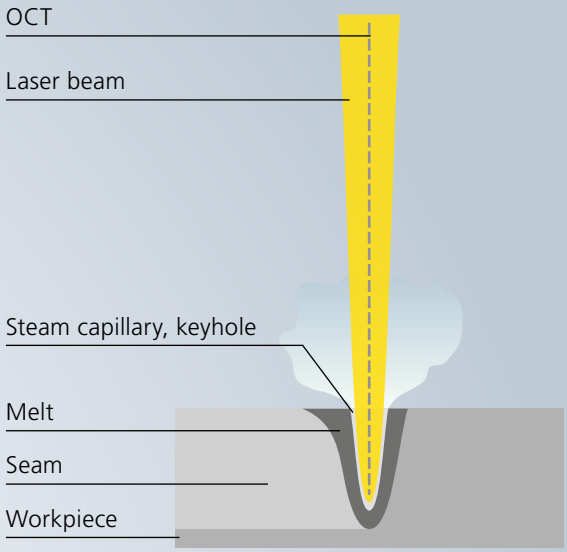
Easy to use

The user-friendly interface and the programming wizard make it easy for you to set up and get started with the system, plus they guide you through the programming process. The information relevant to production is displayed clearly so that you have all the data you need in one place. We also offer supporting functions to help you find the right parameters for the sensor system so that you get accurate and reliable results every time. Like all VisionLine products, VisionLine OCT Check also includes online help. This can be called up in the user interface and displays context-specific content.

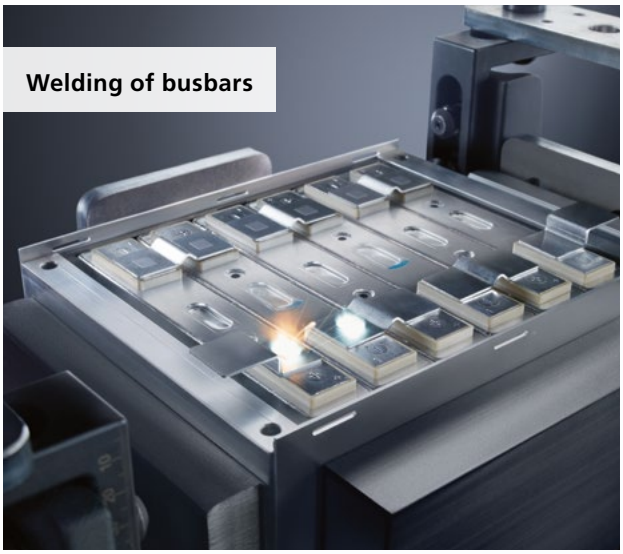
Process-synchronized quality control during welding

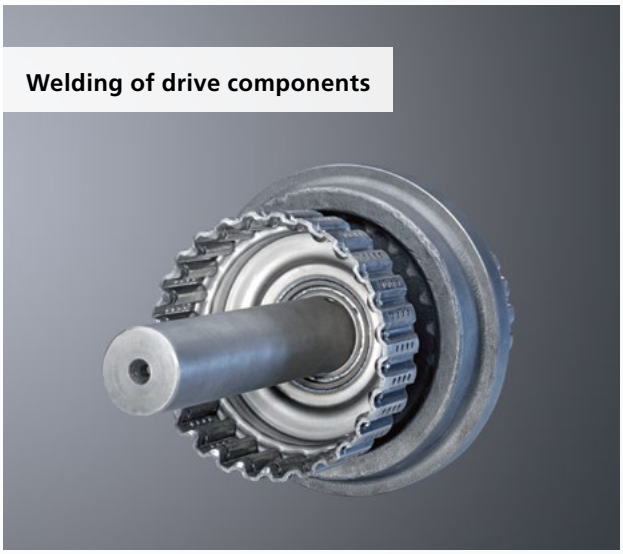
The VisionLine OCT Check process sensor system uses optical coherence tomography (OCT) to measure the depth of the vapor capillary during the deep welding process.

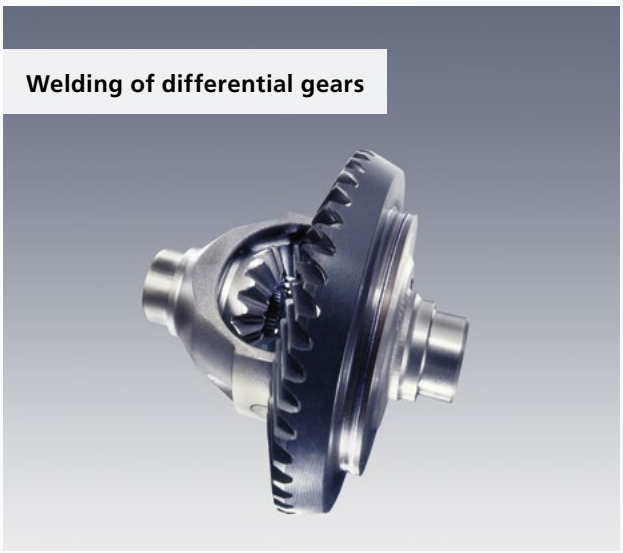
An additional OCT scan scans the solidified weld seam and can thus measure features of the seam surface.

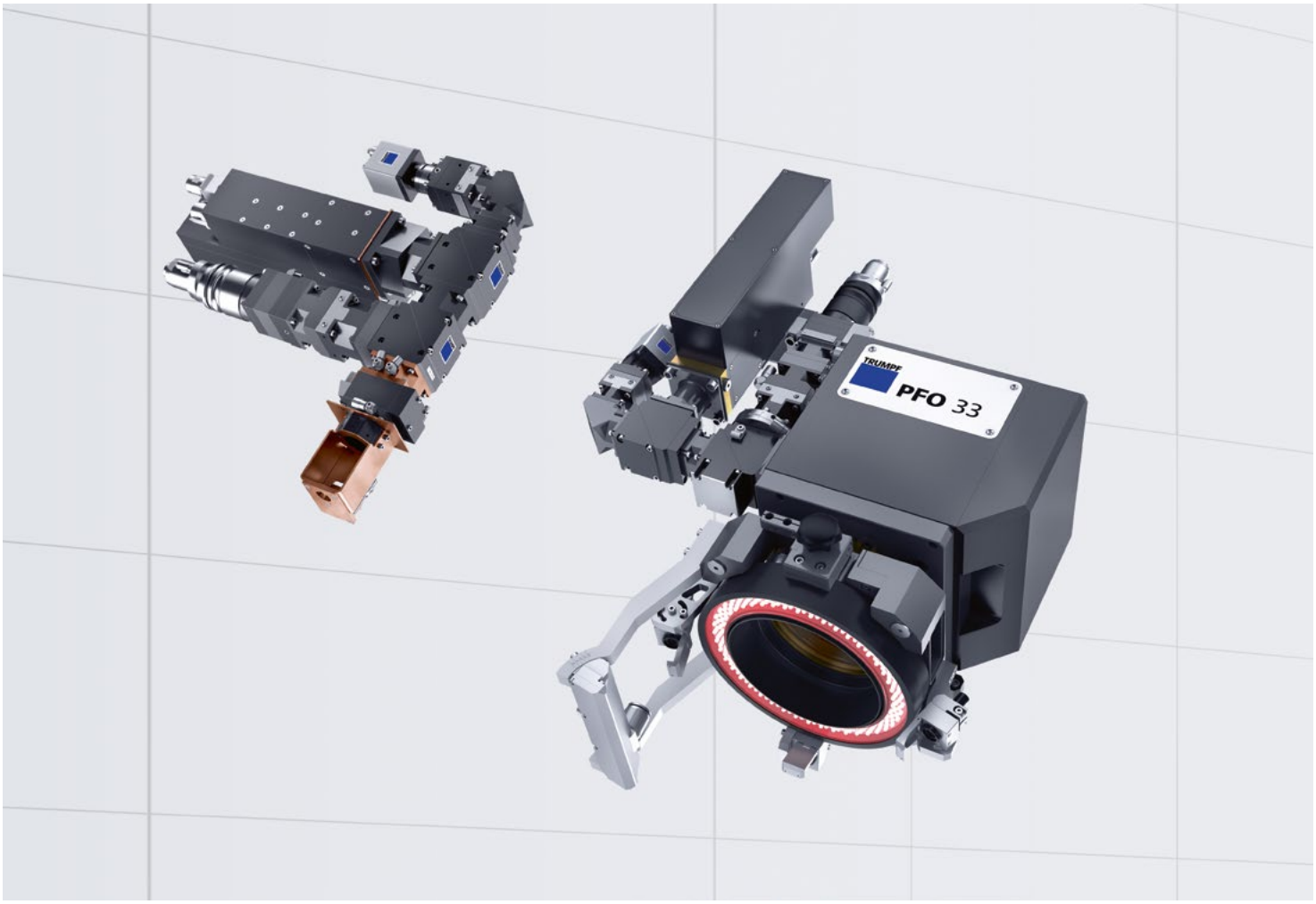


Reliable welding depth monitoring with VisionLine OCT Check









Technical data		
VisionLine OCT Check		
Available lasers		TruDisk (1030 nm, 515 nm), TruFiber (1075 nm, Multi Mode)
Available optics		PFO 33[1, 2]
Parameters		
OCT wavelength range (laser class)	nm	λ = 820–860 (class 3B)
Measuring rate OCT sensor	kHz	250
Axial measuring range	mm	± 5 (depending on focal length)
Lateral measuring range	mm	∅ 15–25 (depending on focal length)
Axial resolution	µm	12
Lateral resolution	µm	≥ 2 (depending on parameters and optical setup)
Typical measuring range welding depth monitoring	mm	0.5–5 (depending on process design and optical setup)

[1] Only available with PFO generation 3.
[2] Depending on focal length, other focal lengths and lenses on request.
We reserve the right to make changes. The specifications in our offer, our customer documentation and our order confirmation are authoritative.

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