

## RAYLASE releases the RAYDIME METER

### Precise OCT-based Distance Measurement for prefocusing beam deflection units

*Wessling, Germany – July 26<sup>th</sup>, 2024. RAYLASE, a renowned provider of laser technology solutions, announces the release of the RAYDIME METER, an OCT-based distance measurement sensor designed for pre-focusing beam deflection units. This combination offers precise metrology in a large working field and also enables other advantages of modern pre-focusing systems like integrated z-axis and high laser power. The RAYDIME METER is the missing link that allows such scan systems to be used also for welding processes that require reliable in-line OCT measurements. Thus, it represents a significant advancement in precision manufacturing and quality control.*

### PRECISE DISTANCE MEASUREMENTS ARE ESSENTIAL FOR VARIOUS PRODUCTION PROCESSES

Accurate distance measurement is crucial in many modern manufacturing processes, from welding thin sheets and bipolar plates to busbars in battery production. Precision in these applications ensures high-quality results, reduces errors, and enhances efficiency. Optical Coherence Tomography (OCT) has emerged as a leading technology for achieving such precision due to its ability to capture topographies with micrometer resolution. Recognizing the importance of precise distance measurement, RAYLASE introduces the RAYDIME METER, an OCT-based sensor designed to deliver unparalleled accuracy and integration capabilities for various industrial applications.

### SIMPLIFIED QUALITY CONTROL FOR DEMANDING APPLICATIONS

The RAYDIME METER uses a spectral domain OCT (SD-OCT), in which light interference of different wavelengths is analyzed to obtain distance information. In contrast to other OCTs in the market, the RAYDIME METER can be combined with pre-focus beam deflection units. This becomes possible thanks to a unique optical unit that corrects for the varying focal length of the scan system.

The RAYDIME METER allows precise distance measurement with an accuracy of  $<10\text{ }\mu\text{m}$  in a field of  $500 \times 500\text{ mm}^2$  necessary for accurate z-distance adjustments before laser processing. Thus, it is beneficial in scenarios where laser processing needs to stay within a small process window, such as welding thin sheets, welding bipolar plates, and welding busbars in battery production. Combined with a highly dynamic beam deflection unit like the RAYLASE AXIALSCAN FIBER RD-30, the RAYDIME METER enables a solution for highly automated welding processes with distance measurement and z-autofocus in less than 50 ms. Due to this automation, it can significantly improve the efficiency and results of these processes.

With the RAYDIME METER, it also becomes possible to measure the topography before and after laser processing. This capability enables precise quality control, essential in many modern manufacturing processes.

### KEY BENEFITS OF THE RAYDIME METER:

#### HIGH-PRECISION MEASUREMENT:

The RAYDIME METER provides z-distance measurement accuracy of  $< 10$  micrometers. This precision is crucial for laser processing applications that require exact control of the focal plane.

**LARGE MEASUREMENT AREA:**

Designed to operate in large working fields up to 500 x 500 mm<sup>2</sup>, the RAYDIME METER can handle extensive applications without necessitating the repositioning of workpieces or the scanning system.

**EFFICIENCY IN AUTOMATION:**

The RAYDIME METER is engineered for seamless integration with RAYLASE's pre-focus beam deflection units, such as the AXIALSCAN FIBER RD series and AM MODULE III. The integration via the SP-ICE-3 control card ensures synchronous control and OCT measurement data in the processing field and allows for fast autofocusing of the scan system in under 50 milliseconds.

**VERSATILE MEASUREMENT CAPABILITIES:**

Besides focus correction for process control, the RAYDIME METER can support quality control by performing topography scans before and after laser processing. This allows detailed inspections and enables real-time adjustments and re-working already during the manufacturing processes.

**RAYDIME METER: REDEFINING ACCURACY AND EFFICIENCY IN PRODUCTION**

With the RAYDIME METER, manufacturers can achieve unprecedented levels of accuracy and efficiency in their production processes. "The RAYDIME METER represents a substantial advancement in distance measurement technology," says Wolfgang Lehmann, Head of Product Management at RAYLASE. "Its ability to smoothly integrate with prefocussing beam deflection units makes it unique in the market. It allows to choose the optimum scan system for sophisticated laser processing applications and users will benefit from improved product quality, reduced error rates, and enhanced operational efficiency."

For more information about the RAYDIME METER, please visit

<https://www.raylase.de/en/products/image-processing-and-measurement-systems/raydime-meter.html> or contact our product experts at [sales@raylase.com](mailto:sales@raylase.com).

**ABOUT RAYLASE**

RAYLASE is a renowned solution provider for precise and efficient laser processing in an industrial environment. For its core markets, AM, e-mobility, electronics, and solar, it provides optimized laser scanning systems combining scan heads with cutting-edge optics, sensors, and intuitive software. Tools for adjacent processes like field calibration complete the portfolio. With its products, RAYLASE supports customers worldwide in building a reliable production based on the most efficient laser processes.

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