

RAYLASE records strong interest in SCAN-FIELD-CALIBRATOR at Formnext

The laser technology company impresses trade visitors with fast and highly precise process field calibration for larger components in additive manufacturing



During the four days of the trade fair from 16-19 November, Formnext 2021 in Frankfurt am Main registered a lively interest in the topic of "Additive Manufacturing" with 17,859 experts and executives and over 600 exhibitors from 36 nations - for the first time again as a presence event. "Everyone was happy to finally exchange ideas on the topic in person again after two years off," said Harnesh Singh, Director Marketing & Sales at RAYLASE, describing the positive mood at Formnext. The big highlight at the stand of the laser technology provider was the digital SCAN-FIELD-CALIBRATOR. It calibrates process fields for laser processing in larger dimensions, which is particularly in demand in additive manufacturing. Manual laser process field calibration quickly reaches its limits here.

Instead of the usual manual calibration, the SCAN-FIELD is automatically measured and digitally corrected with the SFC. This means that problems literally disappear into thin air - no considerable

expenditure of time, no limited correction accuracy, and no risk of error. With the SFC, fields of up to 600 x 600 mm² can be calibrated and even overlapping scan fields are simply aligned with each other automatically. "The accuracy of the measurement results with the SFC are unsurpassed. The average measurement accuracy with the SFC is $\pm 4 \mu\text{m}$ with a standard deviation of $2 \mu\text{m}$. This means that an average process field correction accuracy of $\pm 15 \mu\text{m}$ is achievable. And all this happens in only about 12 minutes per scan field, in contrast to the very labour-intensive, error-prone manual laser process field calibration in several hours or even days," RAYLASE CTO Berthold Dambacher emphasises the advantages of the SFC. The company, which specialises in high-precision opto-mechanical components, control cards and software for the rapid deflection and modulation of laser beams for laser material processing, thus primarily supports machine builders and manufacturers and operators of machine parks, who can use the SFC to achieve automatic and simple operation during the commissioning of laser systems and greater speed in production while at the same time improving the quality of laser processes. "With the SFC, we offer the AM industry a technology to produce larger quantities of larger components," confirms Harnesh Singh, "that makes sense in terms of cost and process.

The increase in production in additive manufacturing was also the subject of a RAYLASE cooperation, which was followed with interest by the trade audience. A fourfold increase! Prof. Dr.-Ing. Katrin Wudy, expert and professor for laser-based additive manufacturing at the TUM/iwb - Institute for Machine Tools and Industrial Management, Munich, reported in a presentation at Formnext on the unique interaction between RAYLASE's patented AM MODUL Next Gen with zoom axis, which already leads to a doubling of the spot diameter with optimal focus position, and the programmable fibre laser nLight AFX-1000 laser, which is distributed in Germany by Optoprim. The two products in combination open unique possibilities in the generation of different beam profiles:

"Here, the intensity distribution of the beam sources, consisting of a single-mode centre beam and a ring beam, can be switched from a typical Gaussian profile to six different ring-shaped profiles in the blink of an eye. The different powers of the two superimposed laser beams thus produce an extremely attractive homogeneous energy input while avoiding spatter and heat cracks and considerably accelerate AM production," says Wolfgang Lehmann, Product Manager at RAYLASE, pleased with the promising initial results at TUM.

In addition, the RAYLASE AXIALSCAN-FIBER laser deflection units with the RAYSPECTOR monitoring unit found wide acceptance. They enable AM machine builders to design their 3D components even better and to display the processing of multi-scan fields or overlapping fields precisely and quickly. "We draw a positive balance of the first presence event, and are already looking forward to the next Formnext, which will hopefully take place again in "real life", says Harnesh Singh and continues, "our digital opto-mechanical laser deflection units optimise and significantly improve numerous laser processes in additive manufacturing. They are easily integrated into machine builders' production lines and allow for easier scaling at high production speeds and outstanding precision."

Ultimately, RAYLASE's technological solutions lead to greater output in less time with significantly reduced costs in many crucial production steps of additive manufacturing.

About RAYLASE

RAYLASE GmbH is a highly innovative, international laser company based in Wessling near Munich. Founded in 1999, the Bavarian company offers high-precision opto-mechanical components, control cards and software for the rapid deflection and modulation of laser beams for laser material processing in industrial manufacturing. With over 130 employees worldwide, the RAYLASE Group stands for innovative technology of the highest quality. Since 2007, the company has a subsidiary and its own production facility in Shenzhen, China, as well as several international representatives in the US, Italy, Japan, Korea, and Taiwan.

The laser deflection units comprise opto-mechanical scanners and digital control electronics with an intuitive software interface. These form the core of industrial laser systems and enable more flexible, economical, and precise processing of a wide variety of materials such as metal, plastic, paper, textiles and many more. Opto-mechanical deflection units also offer excellent image processing for better calibration, simple automation, and exact monitoring of a range of laser processes.

Customers come from the electronic, automotive, photovoltaic, textile and packaging industries. RAYLASE's current focus markets are electromobility, for example, in battery production, solar wafer production for photovoltaics in the solar industry and additive manufacturing. RAYLASE supports its customers primarily in four core applications: laser cutting, laser welding, laser surface processing and selective laser sintering or welding for additive manufacturing. In each of these areas, the company drives digital innovations by combining these with established technologies.

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