

Are you already familiar with our industry-standard services?

- Accredited testing laboratory in accordance with DIN EN ISO/IEC 17025 for various NDT methods
- Certificate of competence of the accredited laboratory to qualify and validate (new) nondestructive testing methods for industrial testing practice in the field of ultrasonic testing
- Rapid transfer to market readiness for qualified, standard-compliant use in industrial applications, both for new developments (in-house developments) or for adaptations
- Our associated quality management system is certified in accordance with DIN EN ISO 9001

Contact

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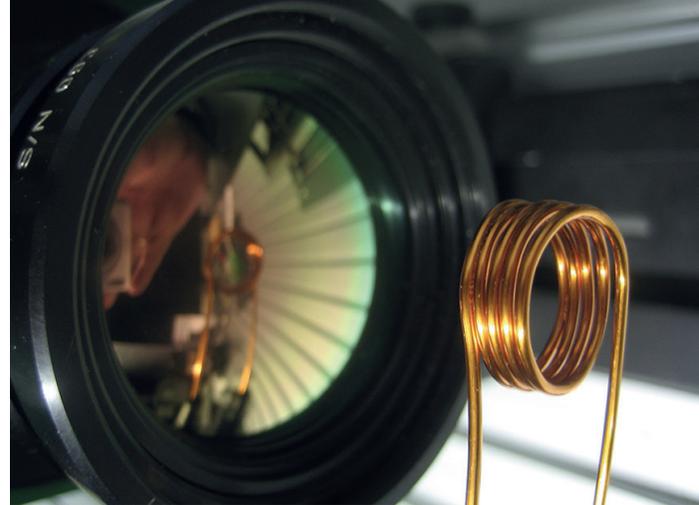


Sensor and Data Systems
for Safety, Sustainability and Efficiency



Nondestructive testing and characterization of
lightweight construction materials

Simplifying the complex



Testing CFRP components using sampling phased array

Middle: active thermography for detecting surface defects; right: Robot-assisted 3MA-II system for determining micromagnetic material characteristics and parameters

Nondestructive testing and characterization of lightweight construction materials

Given the need to conserve resources and increase efficiency while simultaneously improving functional characteristics, the development of lightweight systems has gained enormous importance. This applies not only to “conventional” lightweight construction industries such as aerospace, but also to the automotive industry and the entire field of renewable energy.

Lightweight construction is possible only if nondestructive testing (NDT) processes are a consistent and integral part of the product and process development chain.

For this reason, methods and systems for testing lightweight structures represent an important focus of the Fraunhofer IZFP R&D activities, which are supplemented

by research into targeted life cycle management.

We thus rely on a holistic approach that takes into account the entire value chain, from development of the materials, components and production processes, to operation, service and recycling.

Lightweight-specific adaptations, new technologies and developments

Ultrasound

- Established processes in a variety of applications such as the standard for approving safety-relevant aerospace technologies
- Sampling phased array-ultrasound tomography: Using synthetic

reconstruction algorithms, fiber-reinforced components can be inspected for defects by means of ultrasound-based 3D imaging. The result is significantly better resolution and very high testing speeds.

Active thermography

- Imaging system for the detection of near-surface flaws and defects, such as delaminations in FRP components

Micromagnetics

- 3MA (micromagnetic, multiparameter microstructure and stress analysis) for characterizing new high-performance steels and for the nondestructive determination of parameters such as yield strength, tensile strength and hardness.

Other processes and methods

- Multifrequency eddy current system
- Microwave
- Shearography (speckle interferometry)

In addition to its focus on certifying technology, Fraunhofer IZFP offers a series of courses designed to educate technical specialists and managers and to sensitize them to the area of lightweight technology quality assurance.

Close cooperation with the Chair for Lightweight Systems at the University of Saarland gives Fraunhofer IZFP in-depth insights into basic research involving the entire lightweight construction value chain, from initial design to prototype applications.

In order to deploy reliable nondestructive testing technologies in industrial applications, they must be certified. Fraunhofer IZFP's flexibly accredited test laboratory is fully equipped to validate test methods and applications to determine if the underlying processes and corresponding instruments are suitable for carrying out defined inspection tasks.