Exemplary applications of Fraunhofer IZFP’s accreditation

New materials and joints
- Determination of fiber orientation and arrangement
- Detection and characterization of impairments in fiber compounds
- Characterization of adhesive joints
- Hardness determination

Inspection of welded joints
- High-frequency ultrasonic inspection of Laser-welded seams in automotive industry and aerospace
- Qualification and application of ultrasonic phased array technique for pressure vessel inspection and as a replacement of X-ray inspection
- Determination of weld geometry parameters for loop in / loop out control of welding processes
- Inspection of austenitic welds by EMAT technique

Materials characterization
- Hardness determination
- Degree of purity determination
- Grain size determination
- Pore size distribution

Some applications
- Eddy current and ultrasonic testing systems for inspection of new railroad wheels and maintenance of railroad wheels and wheel set shafts
- Ultrasonic testing systems for materials characterization (e.g. hardness gradients, hardness depth) of automotive components
- Automated systems to inspect Laser-welded seams in automotive industry

Contact and further information
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You are engaged in the manufacturing of parts and components, in joints, in the use of new materials or in the quality of manufacturing processes? Then you know the difficulties with supplier products and materials or problems concerning the adjustment of production processes and the quality assessment in current productions. You have to investigate process malfunctions, ensure their avoidance or find rapid solutions to complaints? Also, the development of service and maintenance concepts for your products is one of your duties?

To meet these challenges Fraunhofer Institute for Nondestructive Testing IZFP may support you with its services! Basing on over forty years of industrial experience in the development and application of nondestructive testing (NDT) methods, we offer our expertise in materials characterization, component and assembly testing and damage analysis.

While the institute’s classical inspection services comprise all NDT procedures and methods, we support you in the selection of inspection methods, integrate them in your production processes and train your employees in new activities. Due to our flexible accreditation we are able to transfer our newly developed methods without delay into the customer’s production.

Potential for application

For all industries (automotive, aerospace, railway, metal production and processing, energy, ...)

- Application of nondestructive testing methods along the value-added chain
  - Materials characterization
  - Production-integrated testing
  - Component and assembly inspection
  - NDT for life-time monitoring

Methods

- Classical nondestructive testing methods (ultrasound, magnetic particle, dye penetrant inspection, eddy current, X-ray)
- Novel methods (inductively induced thermography, X-ray CT, micro CT, computed laminography)
- NDT reference methods (materialography, Vickers)

Benefits

- Process integration, optimization, and control
- Condition statements concerning material properties, integrity of joint connections, ageing and wear of components and assemblies
- Determination of quality characteristics for life-time assessments

Procedural services

- Verification of inspection procedures and methods
- Qualification of device systems for customer-specific inspection tasks
- Development of briefings for procedures and methods
- Qualification of inspection procedures and methods in safety-related industrial applications by external appraisers
- Instructions and advanced training for inspection personnel

Fraunhofer IZFP’s flexible accreditation

The flexible accreditation of Fraunhofer IZFP comprises

- the validation of newly developed nondestructive inspection procedures and methods and
- the validation of existing nondestructive inspection procedures and methods outside the scope of application of standards.

The application can be carried out immediately after the validation without prior approval of the accreditation body.

Benefits of this approach are the application of NDT procedures and methods on an equal footing with standardized applications and a serious saving of time compared to standardization. The approach results in superior know-how.