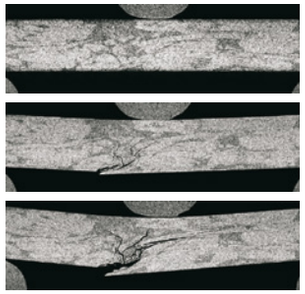

Service Offering

Damage analysis

- Localization of defects (e.g. cracks, pores, blowholes, foreign matter, cable contact or cable break)
- Detection of inhomogeneities or density variations
- Examination of samples in the protective container

Microstructural investigations

- Crack tracking and defect detection (resolution up to 2µm)
- Phase composition of multi-component systems
- Fiber orientation in composite materials
- Microstructure component and single pore analysis

In-situ measurements on components under load

- Examination with applied bending, tensile or compressive load
- Change due to thermal influences (up to 2000°C)
- Change due to chemical influences

Geometry measurement

- Measurement of the component geometry (incl. cavities)
- Target/actual comparison with existing CAD data
- Generation of STL data sets for further use, e.g. for rapid prototyping, FE analyses or reverse engineering
- Wall thickness evaluation

Reporting and documentation of results

- Display as 3D representation, sectional images, image stacks or as animation
- Detailed evaluation with interpretation of results
- Tabular data for statistical analysis

Fraunhofer Center HTL
is certified acc. to ISO 9001:2015

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Center for High Temperature Materials and Design HTL

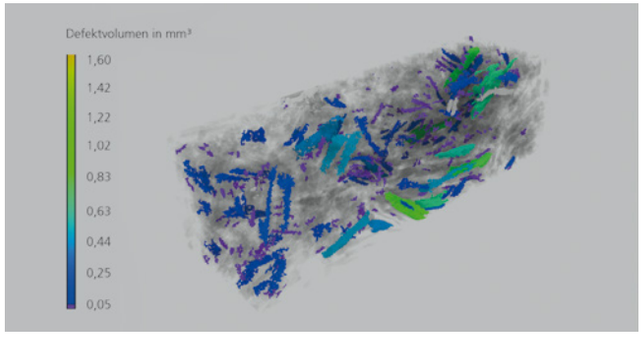
Computer Tomography (CT)

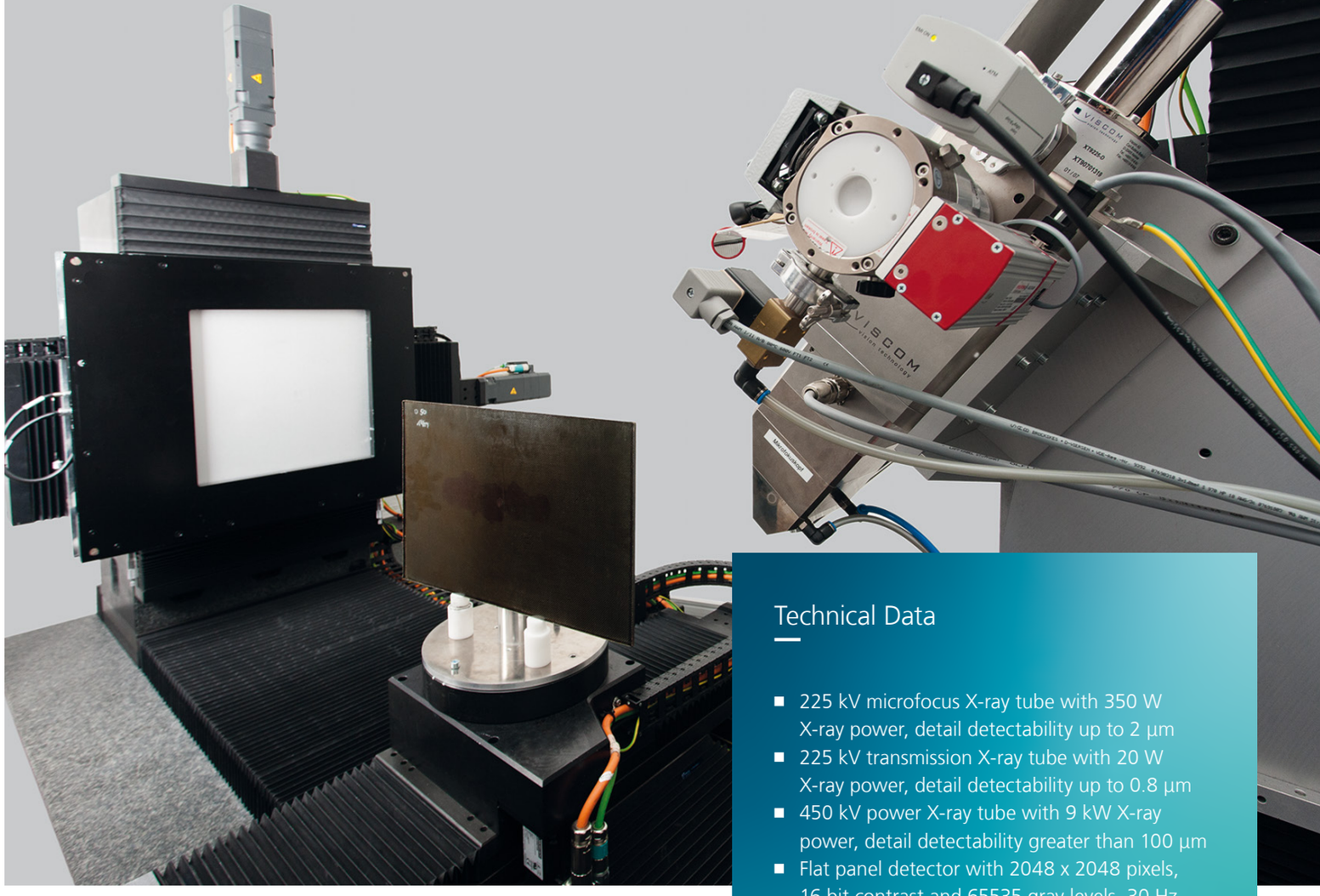
Computer Tomography (CT)

For the non-destructive testing of a wide range of materials and components, Fraunhofer Center HTL operates a state-of-the-art computed modern computer tomography (CT) system. The system consists of a combination of three X-ray tubes and a fast area detector, allowing both examinations of large components and microstructural analyses of small material samples. In addition, the CT is used as a coordinate measuring machine to enable dimensional measurement of complex components – especially internal structures. With the aid of an automatic sample changer, serial examinations can also be carried out, e.g. for quality monitoring.

Measuring Principle

With CT, the complete component volume is recorded non-destructively and reconstructed in a computer as a three-dimensional model. This volume model consists of a three-dimensional grid of individual volume elements (so-called voxels), each of which represents the local X-ray attenuation coefficient or the local absorption of X-ray radiation. Special software algorithms are used to evaluate this volume data to obtain further information.





CT Measurements as a Service

Fraunhofer Center HTL offers the use of CT as a research and service. According to customer requirements, components or samples made of any material can be examined without contact and without time-consuming processing or preparation, e.g. polymers, glass, metal, ceramics or composites.

Technical Data

- 225 kV microfocus X-ray tube with 350 W X-ray power, detail detectability up to 2 µm
- 225 kV transmission X-ray tube with 20 W X-ray power, detail detectability up to 0.8 µm
- 450 kV power X-ray tube with 9 kW X-ray power, detail detectability greater than 100 µm
- Flat panel detector with 2048 x 2048 pixels, 16 bit contrast and 65535 gray levels, 30 Hz frame rate
- Max. Component dimensions: Ø 700 mm / height 2200 mm
- Robot for automatic sample change during serial measurement
- In-situ loading fixtures for tensile, compression and flexure testing of specimens with resolutions down to 5 µm
- Special furnaces for in-situ CT measurements at temperatures up to 2000 °C with resolutions up to 5 µm