



Autonomous sensor module
with high temperature sensor

Service Offering

- Selection and qualification of measurement methods, which are suitable for the production environment
- Concept development for customer-specific measuring systems
- Construction of customized measuring systems for process or product control
- Development and production of high temperature sensors
- Development and construction of measuring furnaces for high temperature investigations



Fraunhofer-Center HTL ist certified
acc. to ISO 9001:2015

Contact

Jan-Marcel Hausherr
Phone +49 921 78510 250
jan-marcel.hausherr@isc.fraunhofer.de

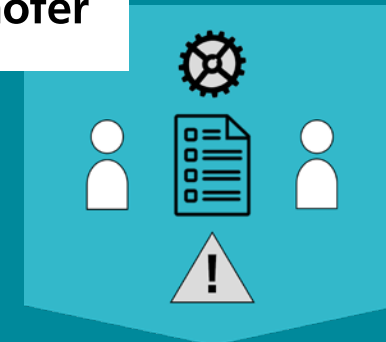
Rainer Richter
Phone +49 931 4100 418
rainer.richter@isc.fraunhofer.de

Fraunhofer-Center for High Temperature Materials and Design HTL
Gottlieb-Keim-Straße 62
95448 Bayreuth
www.htl.fraunhofer.de



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Center for High Temperature Materials and
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Special Devices for the Product Control





The ThermoOptic Measuring System TOM_{air} is used for the investigation of dimensional and weight creep and cracking of samples at high temperatures up to max. 1750°C.

Customer Benefits

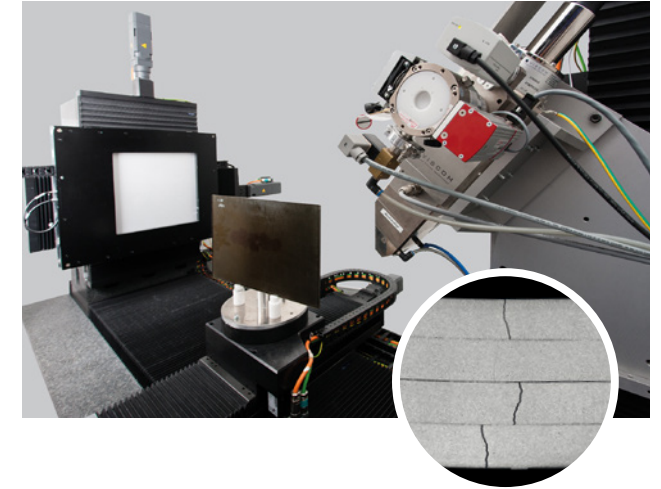
Customers receive systems that are precisely tailored to their requirements. This concerns the measurement sensor technology as well as the throughput and the integration into the production process. The software for data evaluation can also be developed customer-specifically.

Special Devices for the Product Control

Fraunhofer-Center HTL develops customer-specific measurement methods for process and product control. Depending on customer requirements, these can be designed for inline, online, atline or offline measurements. The customer defines the requirements for the process with regard to the desired throughput, costs, boundary conditions and the product or process characteristics to be measured. The HTL then draws up a concept and agrees it with the customer. This is followed by design, construction and commissioning of the devices.

Concept Creation

Often, investigations must first be carried out using more precise laboratory methods. For example, component defects can be detected very precisely using computer tomography. Unacceptable defects can be typified by mechanical testing or by analyzing the effect of the defect. Concept generation can be supported by simulation calculations of component or process properties. Tests are then carried out using less complex measurement methods suitable for industrial use. Procedures are identified that can check warning and intervention limits in the time available and with the desired level of automation. The resulting specifications are agreed with the customer.



Computed tomography (CT) at Fraunhofer-Center HTL: The CT image shows a ceramic with detected cracking.

Machine Construction and Commissioning

This is followed by the thermal, mechanical and electrical design of the machine components. The required CAD plans and the specifications for the machine software are created. The measurement software is developed – if not commercially available – including the user interface and the interface to the process control system at the customer's site. If needed, AI algorithms can be used to automate the interpretation of the measurement data. A hazard analysis and CE marking are also performed, as well as an EU declaration of conformity if required. The measurement system is built using commercially available standard components as well as custom parts made in-house at the machining center, the 3D printers or in the HTL workshops. After acceptance, the measuring system is handed over to the customer and training is carried out.