



1/2 Ceramic components such as aircraft engines or insulators can be tested non-destructively and in a contact-free manner using terahertz measurement techniques.

TECHNICAL CERAMICS NON-DESTRUCTIVE TESTING USING TERAHERTZ MEASUREMENT TECHNIQUES

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www.TeraTec.org/en

The testing of ceramic materials makes high demands on the selected test procedure.

Terahertz measurement techniques allow measurements on the surface and in the interior space of ceramic specimens. Terahertz measurements are contact-free and do not require any additional coupling medium, thus avoiding the not-uncommon problem of residue removal. In contrast to contactless X-ray techniques, terahertz measurement techniques present no health risks.

Variations in thickness, defects, cavities and pores can be reliably and clearly detected using this measurement technology.

The system

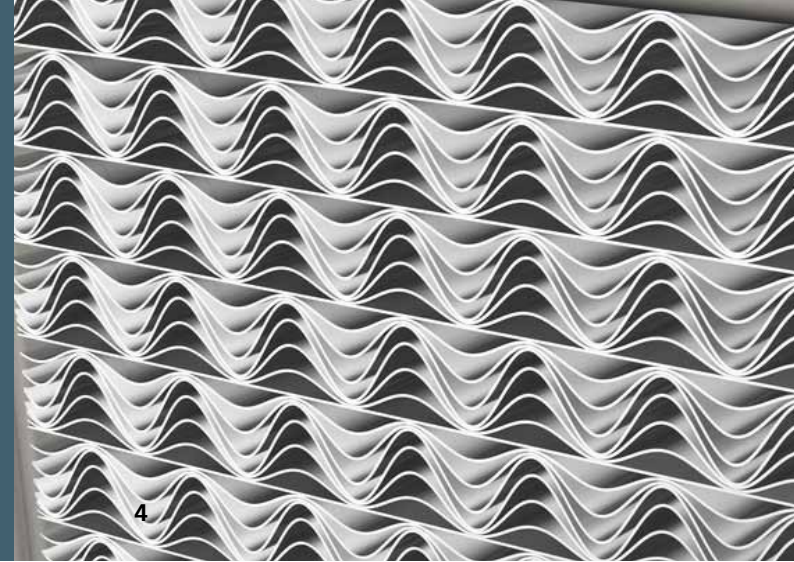
- Robust design with long-term stability
- User-friendly operator and analysis interface

The benefits

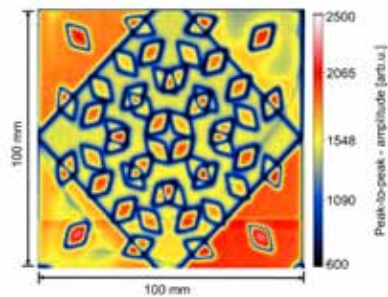
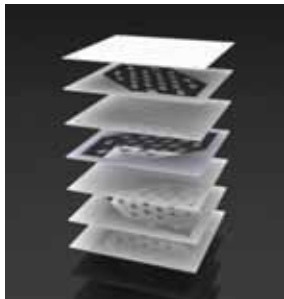
- Contact-free: the specimen does not come into contact with any coupling medium
- Specimens with internal cavities can be analyzed
- Inspection of green ceramics and sintered ceramics
- Measurement in transmission and reflection configuration
- Simple integration of compact measurement modules into existing production and quality systems

Radiation protection

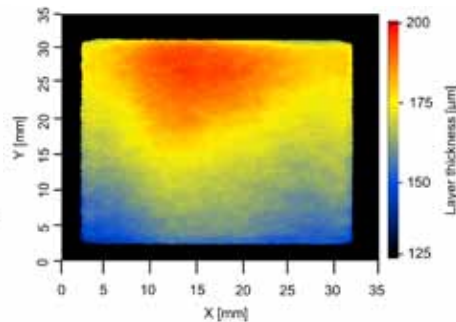
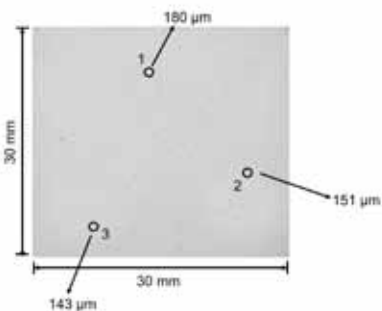
- Radiation harmless to health



Component made of aluminum nitride: inhomogeneities detectable due to faulty nitration.



Aluminum oxide reactor: the inner structure of the reactor can be inspected.



Ceramic layer on a steel plate: Thickness fluctuations can be measured.

Left: Specified measurements determined with the eddy current method.

Right: Thickness distribution quantitatively displayed.

Inspection of ceramics

Detection of

- Inhomogeneities
- Cracks
- Inclusions
- Cavities and defects on the inside of the specimen

- Measurement of green ceramics and sintered ceramics

- Thickness measurement of ceramic layers
- Real-time measurements in coating processes

Our offer

- Consultation – on technology and application aspects
- Initial tests – free measurements in our application lab
- Feasibility studies – technically and economically
- Measuring studies – for industry and research
- Development – from single components to individual complete systems
- Equipment rent – for limited-period tasks
- Measurements on customer's site – with mobile systems on any large objects

3/4 Tracking down defects: A technical ceramics example showing honeycomb specimens made from catalytically active material.