



Fraunhofer IPM

FRAUNHOFER INSTITUTE FOR PHYSICAL MEASUREMENT TECHNIQUES IPM



1/2 Plastic components for vehicle interiors or foils and pipes can be tested contact-free and non-destructively using terahertz measurement technology.

ENGINEERING PLASTICS NON-DESTRUCTIVE TESTING USING TERAHERTZ MEASUREMENT TECHNIQUES

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www.ipm.fraunhofer.de/en/terahertz



www.TeraTec.org/en

The testing of plastic components makes high demands on the selected test procedure. Terahertz measurement techniques allow measurements on the surface and in the bulk material. 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 contact-free X-ray techniques, terahertz measurement techniques achieve better image contrast with these materials – and present no health risks.

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

measuring task

- User-friendly operator and analysis interface

The benefits

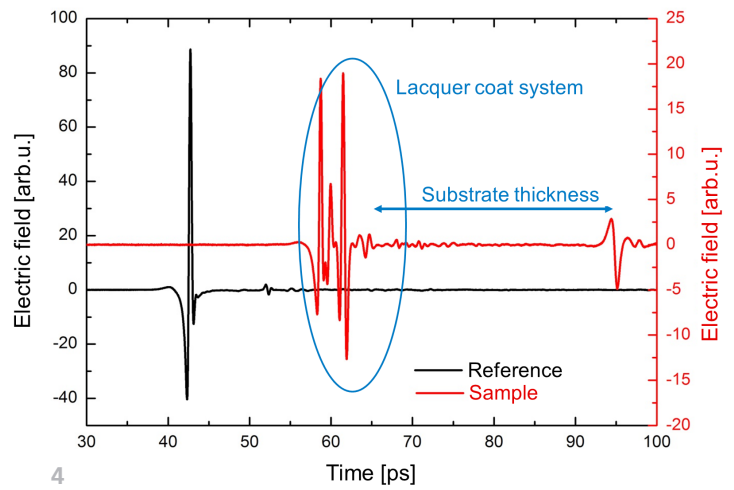
- Contact-free: the specimen does not come into contact with any coupling medium
- Specimens with internal cavities can be analyzed
- Inspection of metal/plastic combinations
- Measurement in transmission and reflection configuration
- Simple integration of compact measurement modules into existing production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

Radiation protection

- Radiation harmless to health

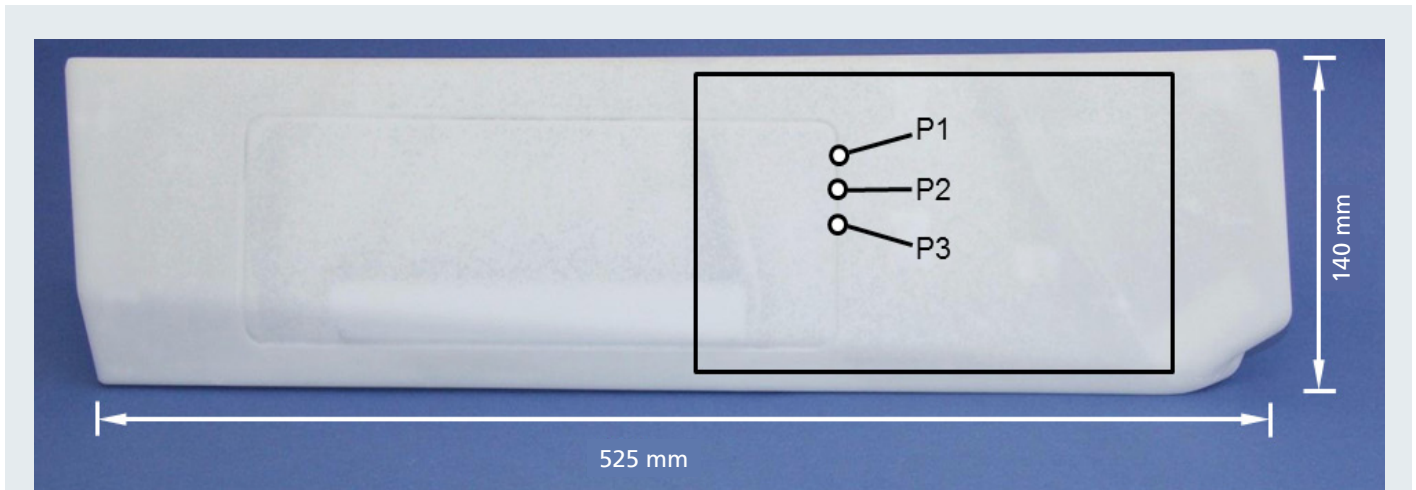
The system

- Robust design with long-term stability
- Can easily be tailored to the

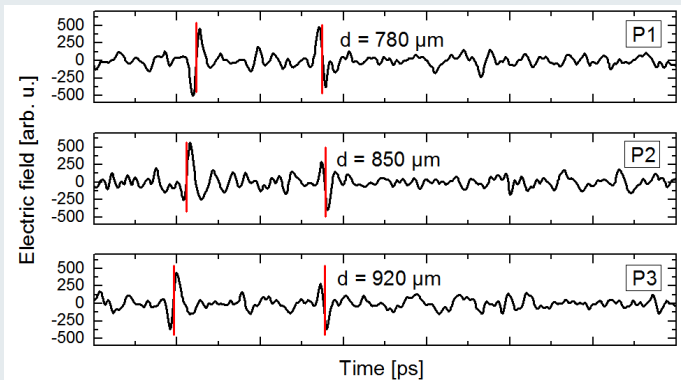


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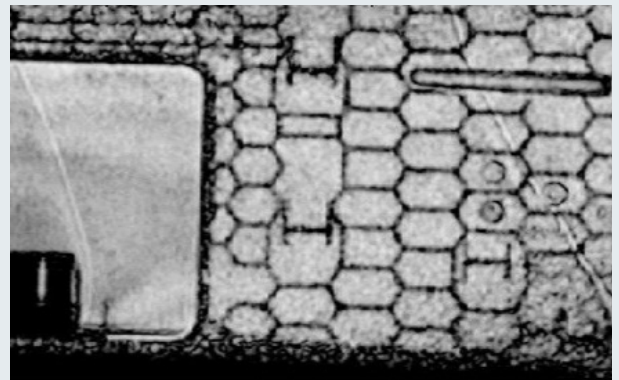
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Airbag cover as an example of engineering plastics.



Different thicknesses of the predetermined breaking point of an airbag cover can be measured.



Airbag cover: material thickness fluctuations and defects verifiable inside the component.

Inspection of plastic components

Detection of

- inhomogeneities
- cracks
- cavities and defects in the bulk material

Measuring the thickness of

- plastic components
- coatings on plastics

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: multi-layered system on plastic can be measured.