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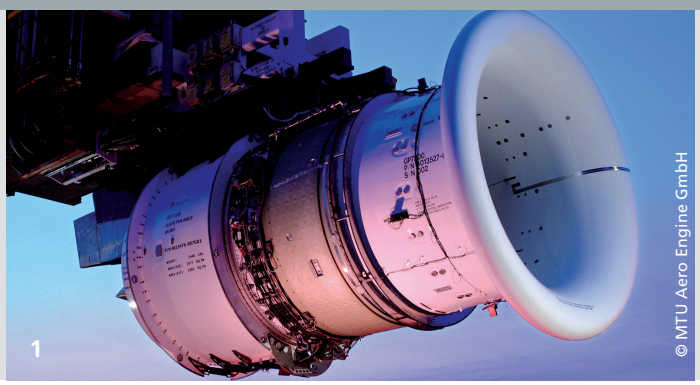

TeraTec
Application Center for Terahertz Technology

LAYER CONTROL WITH TERAHERTZ TECHNIQUES

1 *Inspection of coated parts for aircraft engines*

2 *Coating control in painting processes*

Similar to all other electromagnetic waves, terahertz waves are also partially reflected at any interface where there is a change in refractive index. This effect can be employed to determine layer thickness using terahertz waves. Simultaneously, the good transmission characteristics of terahertz waves through materials which are opaque in the visible area can be exploited.

The benefits

- **Controlling processes:** detecting and correcting deviations in an early stage
- **Saving material:** reduce safety margins
- **Increasing quality:** avoiding faulty coatings and component thicknesses

The system

- Robust design with long-term stability
- Fiber-coupled terahertz systems
- User-friendly operator interface
- Simple integration of compact measurement modules into existing production and quality systems

Applications

- **Paint coating –** Single or mulit-layer, wet or dry
- **Ceramic coatings –** PVD or thermally sprayed
- **Plastic layers –** soft or solid
- **Component thickness –** single layer or multi-layer

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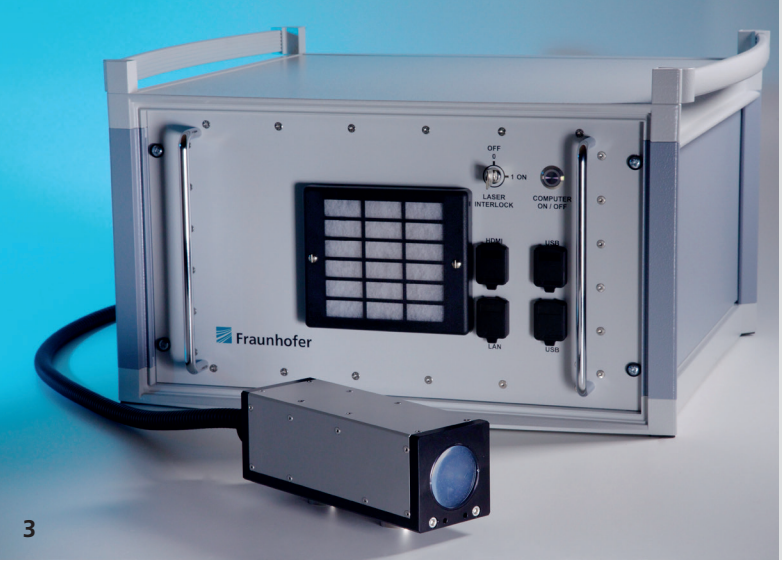

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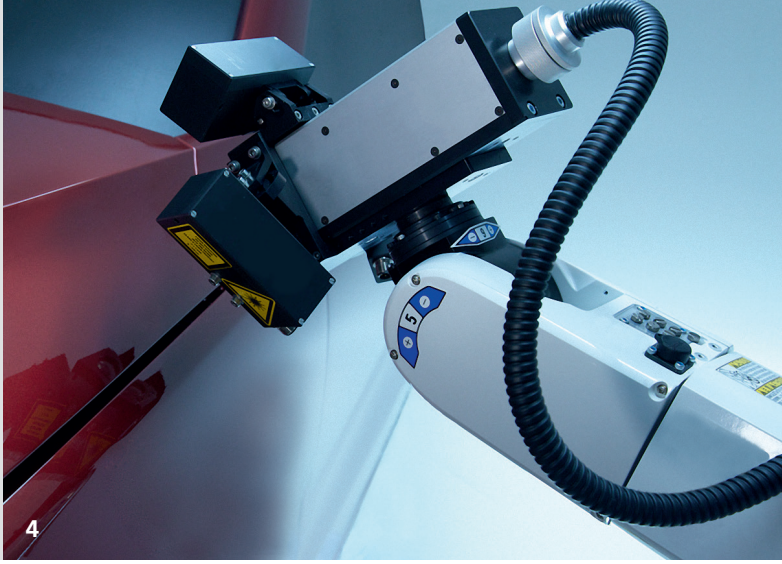

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3 *Supply unit of the fiber-coupled terahertz system*

4 *Robot-assisted terahertz system*

Our offer

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

System properties

- Contact-free and non-destructive measurement of layer systems
- Resolution of multilayer systems
- Measuring range from 10 µm to several mm, depending on the material
- Accuracy of up to 1 µm
- Measuring time below 1 sec.

Simple calibration

- Use of reference samples

Radiation protection

- Terahertz waves are harmless to health