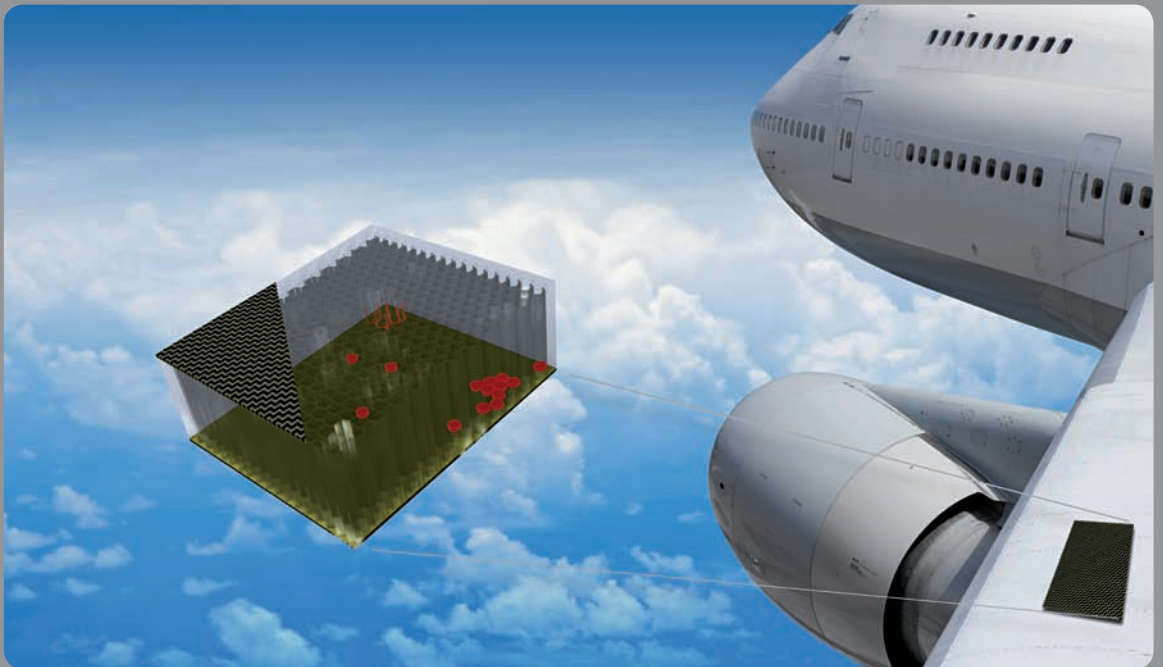


## SynViewEdge 3D Terahertz / Millimeter Wave Imaging

**Non - Destructive Testing for Industrial Applications**



## SynViewEdge Technology

The SynViewEdge system is a universal, customer and application specific 3D terahertz imaging solution. It is based on fast and reliable all-electronic technology.

Operating frequencies in the overlap region between millimeter and terahertz waves allow an inside view into many objects and an **excellent spatial and depth resolution**. The SynView technology is also efficient and quick. A 3D image of the full sample under test can be achieved in as less than one second, depending on the sample and the system configuration. This includes a depth scan of up to 30 cm.

THz imaging for non-experts    100% quality verification    80% less scrap

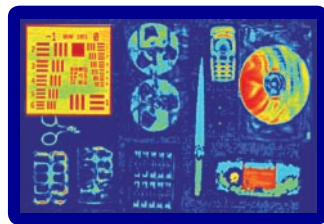
### Typical Applications:

- Package Inspection
- Quality Control: Identification of Hidden Defects
- Evaluation of Security Screening Applications
- Hidden Surface Characterisation
- On-line Thickness Control of Coatings
- Surface Tomography of Rough Surfaces

Photography:



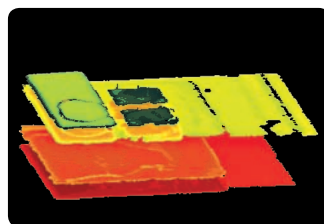
Terahertz Image:



Photography:



Terahertz Image:



#### Package Inspection:

This example shows the various display modes of data taken from several objects. The excellent 3D data in combination with the customized imaging software allows to identify and visualize the different objects. By further evaluating the obtained images, it is possible to check if the package contains the right quantity and the right quality of the product. Examples of using terahertz imaging for package inspection can be found in the pharmaceutical and food industry.

#### Quality Control (Defect Identification):

One of the main applications of millimeter und terahertz imaging is the possibility to look into objects, i.e. to obtain a full a full three dimensional image of the object under test. The SynViewEdge allows the visualization of individual layers to ensure the identification of hidden defects like holes, cracks, missing glue, and many others. The included SynViewEdge imaging software is easy to use and allows a detailed investigation of the full 3D data set.

*plug-and-play*

*easy to use*

*30% less material used*

As opposed to expensive research systems, the SynView base technology allows the cost-efficient use of THz imaging for scientific and industrial applications.

Our all-electronic approach, in combination with our synthetic viewing Technology, leads to **quick and efficient measurement times** while maintaining an **excellent image quality**. This allows our customers to explore and apply this new technology in their laboratory and their quality control process.

A decisive advantage of THz radiation over x-rays is its non-ionizing nature. X-rays are ionizing and therefore pose significant health risks for humans and animals.

THz radiation has a very low photon energy, meaning there is no danger that chemical bonds are broken up or the examined material is modified in any way. Also, the power being emitted is very low, leading only to insignificant heating. Therefore, THz radiation **can principally be used close to humans**.

*customized setup for each application*    *perfect fit into production line*

## What's your application?

### In-Situ Coating Thickness Measurement

The SynView terahertz technology allows the precise measurement of the coating thickness of non-conductive coatings. Due to the contact-free set-up, the thickness can be measured while the coating is applied in the production process. In the example shown on the right, the thickness of different plastic coatings on a metal block is measured. The SynView technology measures the coating thickness with a precision that leads to an error margin of less than 20 micrometer.

Photography



Terahertz Image



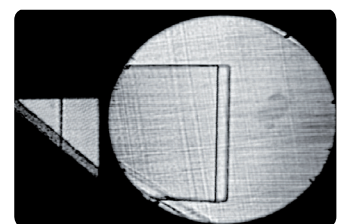
### Hidden Surface Characterisation:

Terahertz waves easily penetrate foam and plastic structures. It is therefore possible to characterize the layers and materials hidden below such structures. One example is the surface characterization of carbon fiber reinforced plastic (CFRP). The layer structure of the CFRP is clearly visible in the Terahertz image even under a thick layer of many centimeters of heat insulation foam. In addition, the glue between the CFRP and the foam can be inspected for any irregularities.

Heat insulation foam above CFRP:



Terahertz Image of CFRP surface:



# SynViewEdge

## Key Features



DESCRIPTION	VALUE	COMMENT
Operation mode	coherent FMCW + Synthetic Viewing Technology	
Frequency range	0.07 - 0.11 THz (SynView Head 100) 0.23 - 0.32 THz (SynView Head 300)	other frequency ranges are available on request
Dynamic range	better than 50 dB	
Spatial resolution	3 mm (SynViewHead 100) 1 mm (SynViewHead 300)	depends on optical configuration
Range-, depth- and thickness resolution	better than 20 $\mu\text{m}$ (typ.)	for any single interface within a +/- 1 mm window
Scan area	will be customized for application	depending on the application
Depth penetration	many centimeters	depending on the material under test
Measurement time (full scan area)	less than one second to several seconds	depending on the system configuration

*The SynViewEdge-THz-Imaging-System can be customized in a wide range to meet the specific application requirements.  
The user software interface is operator-friendly and can be easily integrated into the existing production environment.*

**Please contact us now for further information and a quotation.**

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