



UTvis

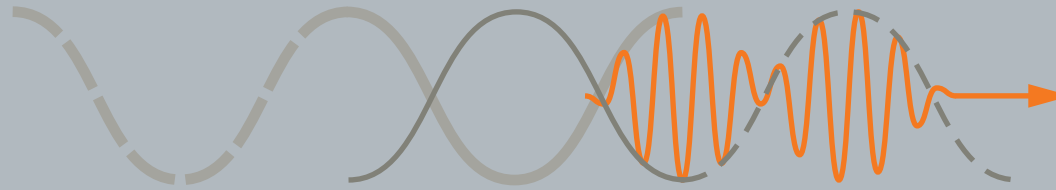
*Ultrasound
excited Thermography*

***Fully automated ultrasound thermography
in industrial series production***

*Ultrasound thermography is a powerful test
method for defect selective indication of cracks,
disbonds, or delaminations.*

*UTvis test stands are based on digital high-
power ultrasound generators and converters as
excitation sources and high-sensitive infrared
cameras. A temperature resolution of 16 mK and
frame rates up to 400 Hz (full frame mode) in
lockin or burst mode enables to detect smallest
dissipative effects and allow for a reliable flaw
detection with minimum of mechanical load for
the component.*





APPS/CONCEPT

Typical applications

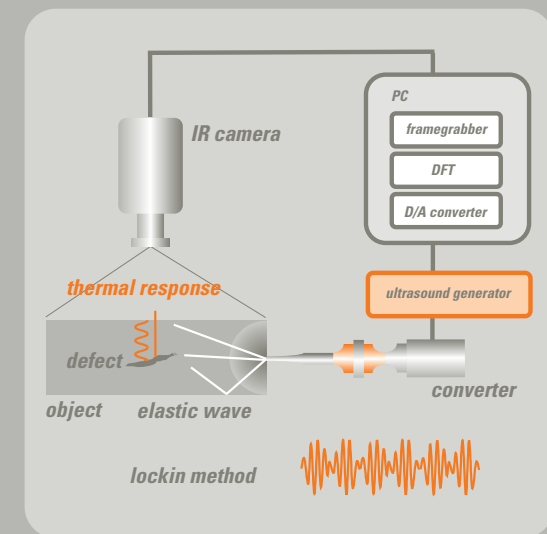
Ultrasound thermography is an excellent method for defect selective detection of material defects in the following applications.

- Crack detection (open as well as closed cracks, independent of their orientation in the material)
- Testing of adhesive, rivet, and welding joints
- Characterization of multi-material compounds
- Detection of delaminations and impacts in fiber composites

The principle of ultrasound thermography

Ultrasound Thermography uses the interaction of mechanical and thermal waves to detect material defects. If a defect in a component absorbs the injected, high-energetic ultrasound waves, it will locally heat up (**defect selective dark-field method**).

The resulting temperature gradient on the surface of the inspected specimen is measured by an infrared camera, visualizing the dissipated energy. Depending on the application, there are two derivatives of this method: the very fast burst phase analysis and the sensitive lockin method. In both cases the evaluation calculates the time delay between injected energy and the thermal response, resulting in a robust and reliable technique, which is invariant against surface properties or ultrasound distribution.





SPECIFICATIONS

UTvis is available as UTvis 2000/ UTvis 4000/ UTvis 6000 version

Excitation

Converter: piezo-ceramic actuator
 Power: up to 4 kW at 20 kHz or 0.8 kW at 40 kHz
 Frequency range: 15 kHz – 25 kHz or 30 kHz – 50 kHz
 Option: handgun with integrated start button
 Option: measurement table with pneumatic coupling system

Generator

Digital Ultrasound Generator
 2 kW / 4 kW / 6 kW version available as 20 kHz version
 Robust 19" industrial housing
 Supply: 220 V 16 A (2 kW), 400 V 32 A (4-6 kW)

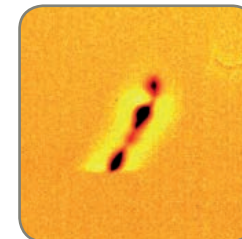
Software

Real-time-lockin	√	Sequence measuring	P
Arbitrary signals	P	Parameter files (xml)	√
Offline storing	P	Remote control (DDE)	P
Phase images	√	Frequency Analysis	P
Amplitude images	√		
Live image overlay	P		

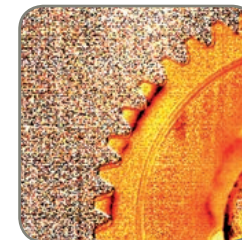
P= only for PRO version; √= Standard and PRO version

Camera (options)

Detector	InSb or MCT
Pixel	640x512 or 320x256 Pixel
Spectral response	3-5 μm oder 8-9 μm
Frame rate	max. 355 Hz @ 640x512
Interfaces	CamLink oder Gigabit Ethernet
Lens	12 mm, 25 mm, 50 mm, 100 mm, G1-G5



Crack in a piston



Gear wheel with cracks



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