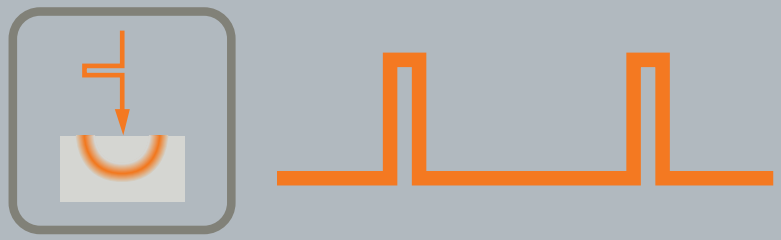
edevis®

PTvis

Pulse Thermography

Test system for laboratory use

Pulse thermography is a non-contact testing method which is well suited for characterization of thin films and coatings or for flaw detection. Extremely short test duration and high detection sensitivity makes PTvis a powerful tool in non-destructive testing. Powerful evaluation techniques allow for quantification of material thicknesses, porosities or thermal diffusivities. In addition, disturbances such as varying surface properties or inhomogenous heating are suppressed. With this fast and imaging method, interpretation and documentation of the test results is clear and simple. The test system is modular and extendable with other edevis excitation modules (e.g. OTvis, UTvis or ITvis).



APPS/FUNCTION

Typical applications

Automotive applications

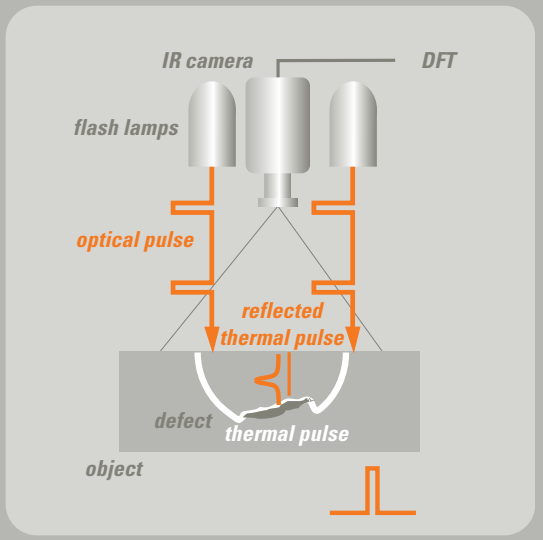
- Measurement of layer thicknesses in multi-layer systems (e.g. ceramic-coated metal)
- Characterization of paint
- Measurement of film and coating thicknesses
- Flaw detection on adhesive, welding and soldering joints

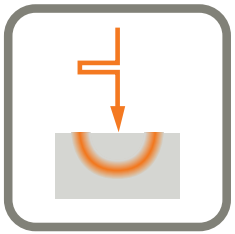
Aerospace applications

- Inspection of composite material (e.g. CFRP)
- Measurement of coatings (detection of delaminations and poor adhesion, measurement of thickness)

The principle of pulse thermography

Pulse thermography is used for analyzing interfaces, thicknesses and material defects in components and coatings. The thermal balance of a component is disrupted using a short pulse of energy. This disturbance decays rapidly by heat conduction. The decay behavior contains the desired information about many material properties. The heat is supplied by powerful xenon flash lamps. A fast infrared camera records the thermal image sequence following the energy impulse. The sequence is analyzed pixelwise online or in post processing. Optimized algorithms such as pulse-phase analysis allow for quantitative evaluation of the measured signal. Via Calibration, related physical quantities, e.g. coating thickness or thermal conductivity, can be determined.





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SPECIFICATIONS

Excitation

Flash Energy	3kJ up to 12kW
Connectors	2 Flashlamps
Supply	230 VAC, 16A, 50Hz
Cooling	Built-in ventilators
Fusing	16A
Overload protection	√

Flash Lamps

High-power flash lamps with robust aluminum housing
Xenon tube with maximum energy of 6 kJ
Optimized spectral emission
Ventilator cooled

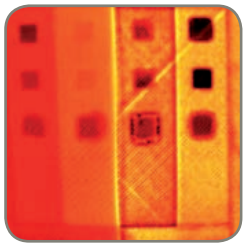
Software

Real-time lockin	√	Sequence acquistition	P
Parameter storing	√	Offline Storing	P
Phase representation	√		
Amplitude representation	√		
Complex representation	P		
Live image overlay	P		

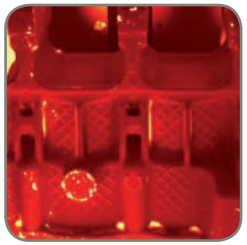
P= only for PRO version; √= Standard and PRO version

Camera (options)

Detector	InSb or MCT
Pixel	640x512 or 1280x1024 Pixel
Spectral sensitivity	3-5 µm or 8-9 µm
Frame rate	max. 355 Hz @ 640x512
Interfaces	CamLink or Gigabit Ethernet
Exchangable lenses	12mm, 25mm, 50mm, 100mm, G1- G5



CFRP component inspected with PTvis, carbon fiber honeycomb structure with metal inserts



Section of a coated engine block. Detection of film adhesion with PTvis

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