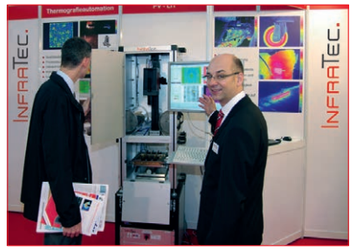
Advantages in Material Testing

- Non-destructive material testing prevents scrap
- Contact-free testing with low thermal stress
- Offers informative images of defects
- Large, curved surfaces are easy to inspect
- Categorisation of defect types
- Extensive inspection, even with a one-sided test

Applications of Active Thermography

- Detection of layer structures, delaminations and inserts in plastics, for instance of wind turbines or CFRPs of the automotive and aerospace industry
- Investigation of interior structures, for instance of breakage or impacts on Honeycomb lightweight constructions
- Recognition of deeper material deficiencies, such as blowholes or ruptured laser welding seams

Automated Inspection Systems in Quality Inspection



Inspection system PV-LIT for solar cells and modules

With more than 25 years of experience in thermography automation, InfraTec allows to convert flexible offline test stations into automated inline solutions for complete quality inspections. Short cycle times and quality components, which are suited for continuous operation, fulfil even the most demanding requirements.

- PV-LIT defect recognition in photovoltaics
- Dashboard tests
- Laser welding seam testing

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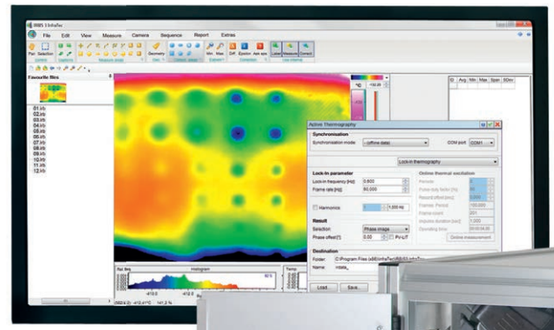
Latest information on the internet.

Active Thermography

For Research, Development and Quality Assurance

InfraTec.

Non-destructive and contact-free testing
Modular system for various inspection tasks
Ensuring effective use for reliable offline and inline solutions
Detection of smallest and deepest defects
Extensive imaging investigations



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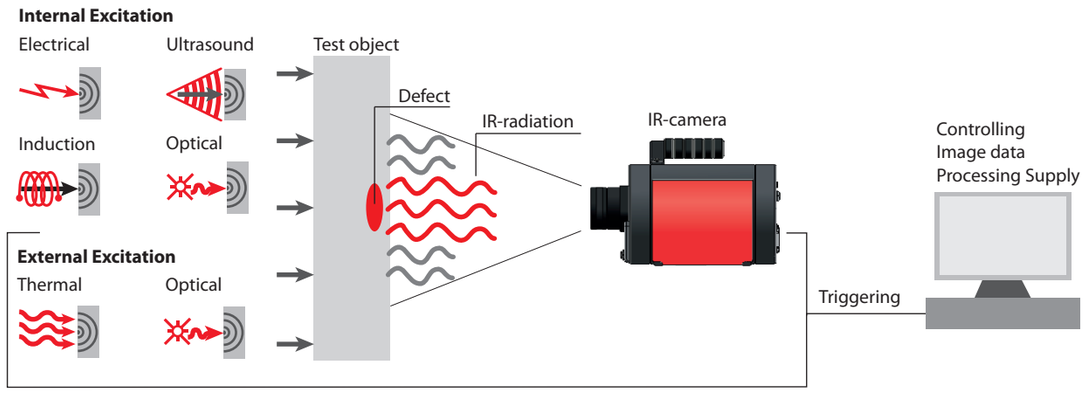
One-stop Solution for Excitation, Operation and Evaluation

Active Thermography – Flexible Solutions

Active thermography is an imaging procedure for non-destructive testing. A heat flow is induced by an energetic excitation of the test object, which can be done in a transmissive or a reflective setup. The resulting heat flow is influenced by interior material layers and defects. These inhomogeneities can be captured on the object surface by high-precision thermographic cameras. The additional application of different evaluation algorithms improves the signal-to-noise-ratio, which allows for detection of smallest defects.



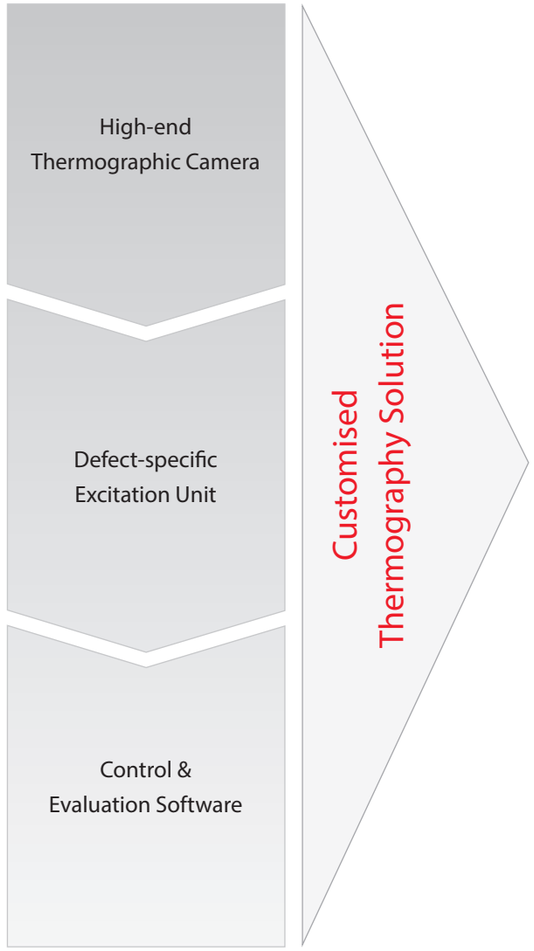
Thermographic Cameras with Highest Precision and Speed

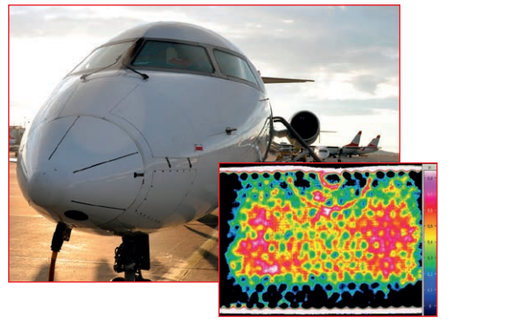
InfraTec's high-end thermographic cameras are the centrepiece of active thermography solutions. Highest spatial resolutions up to (1,920 × 1,536) IR pixels and thermal resolutions up to 0.015 K are the basis for a precise detection of smallest material defects. Because of its high image acquisition rate, active thermography can easily be used for measurements of high-heat conductivity materials, such as metal. The exact and repeatable trigger interfaces for synchronisation of image acquisitions and energetic excitation of test objects complete the technical specifications of high-value thermographic cameras made by InfraTec:

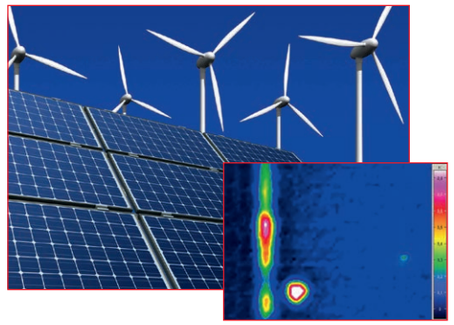
- Superior cooled ImageIR® camera series equipped with high-speed ultra-precision photon counting detectors
- Latest generation of uncooled maintenance-free camera series VarioCAM® High Definition and VarioCAM® HDx
- Extensive optical assortment for imaging large test objects as well as microscopic structures

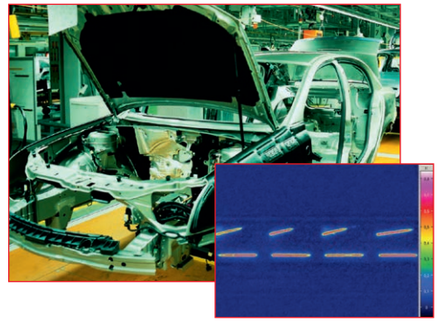
Modular System Design for Precisely Fitting Inspections

The versatile application options of active thermography require an elaborate configuration of every single inspection system. InfraTec offers a wide variety of necessary components along with a modular system architecture. The high-resolution cameras, efficient control and evaluation software as well as the continuously operable excitation sources and controllers are interchangeable within the system and therefore allow a flexible adaptation to upcoming requirements.



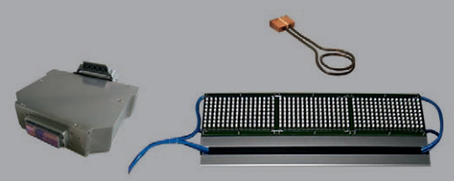




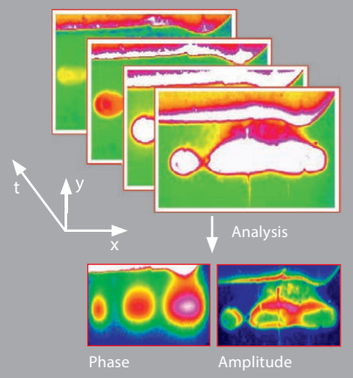


Defect-specific Excitation Sources and Controllers

Various types of defects of different materials can optimally be detected by applying specific energetic excitation units. The range of possibilities includes high-performance flashes, inductive units, hot- and cold air blowers and homogeneous halogen radiators along with many others. InfraTec chooses the suited excitation source for the respective testing situation. These excitation sources as well as the thermographic cameras can be operated via fully digital controllers from the IRBIS® 3 active software. The system integration into the customer's already existing solutions is not a problem.



Efficient Control and Analysis Software



The software IRBIS® 3 active offers comfortable access to the entire active thermography data, starting with the selection and setting of the excitation parameters through to the analysis data.

- Comfortable evaluation of image sequences
- Analysis with different excitation methods and evaluation algorithms: pulse-phase-, quotient- or lock-in method
- Algorithms independent from the degree of emission
- Calculation of phase- and amplitude images
- System integration via LabVIEW or Matlab interfaces, SDK