

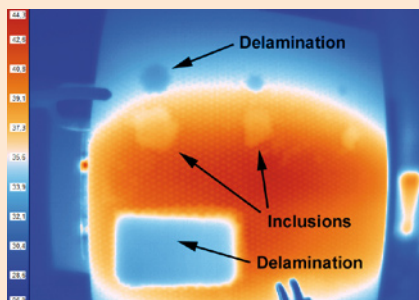
# System for nondestructive testing of composite materials using active thermography

## Application

Fast, integral examination of large surface areas for detection of concealed flaws.

- Detection of impact damages in composite materials for aviation components and wind power plants
- Detection of cracking and delaminations for high-load materials, e.g. turbine blades

Utilization of low-cost and durable uncooled infrared cameras; improvement of resolution and detail sharpness using "lock-in" pulse thermography.

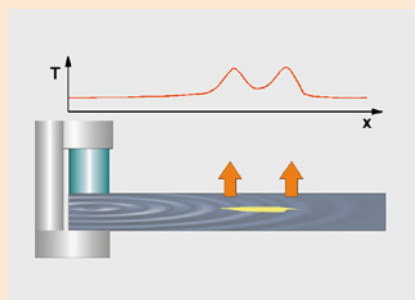


Heat flux thermography of a sandwich plate with aluminium honeycomb structure

## Dark ground thermography

An ultrasonic wave, generated by an ultrasonic crystal, propagates into the sample under inspection. Flaws, characterized by friction surfaces, induce a local temperature increase, which can be observed in the thermographic image.

- Inspection of carbon and glass fiber reinforced plastics for impact damage that may lead to fiber cracking and delaminations of sandwich layers

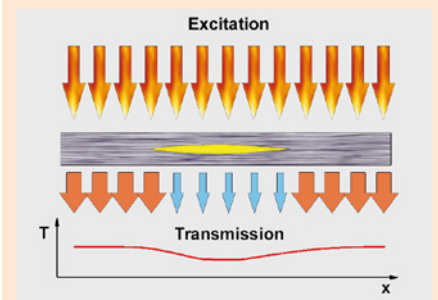


Principle of the dark ground thermography

## Bright field thermography

The infrared emitter produces a heat wave that penetrates into the test sample. Cavities, inclusions and delaminations are detectable by their influence on the thermal conductivity characteristics of the material.

- Inspection of carbon and glass fibre reinforced plastics, sandwich plates with honeycomb structures, and material coatings of aviation components and wind power rotor systems



Principle of the bright field thermography

## Project Partners

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## Components

- PYROVIEW 380 compact, uncooled infrared camera
- Ultrasonic excitation for "dark ground" thermography
- Thermal excitation for "bright field" thermography
- Acquisition & analysis software

