

*ir*NDT

Composite-Check

Modular *ir*NDT Solution



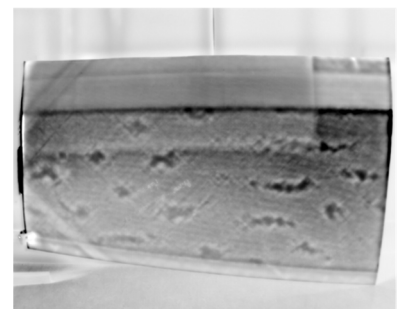
Composite-Check is a modular infrared non-destructive testing (*ir*NDT) system that uses active thermography for the reliable detection of delaminations, impact damages, “near side” defects, water inclusions, debondings, and other defects in composite materials. The system achieves precise measurements and is ideal for inspecting composite materials like carbonfiber reinforced plastics (CRP), glassfiber reinforced plastics (GRP), carbonfiber reinforced ceramics (CFRC), glassfiber reinforced aluminum laminate (GLARE), and honeycombs. Composite-Check accommodates a wide range of *ir*NDT measurement methods to include: Flash-Thermography, Lock-In Thermography, Transient Thermography, and Vibro-Thermography. It also works with multiple excitation sources and with cooled or uncooled infrared camera systems.

Features

- Non-contact *ir*NDT
- Works with cooled and uncooled IR Cameras
- Compatible with multiple *ir*NDT methods
- Effective on low emissivity targets
- Modular hardware and software
- Configurable for different geometries and materials



Small aircraft CRP wing section



*ir*NDT image showing inner structure of the CRP part with debondings between the CRP and foam core

Key Benefits - *ir*NDT

NON-CONTACT DEFECT DETECTION

Active thermography “sees” common composite defects.

- ✓ Structural Cracks
- ✓ Delaminations & Disbonds
- ✓ Impact Damage
- ✓ Moisture Ingress
- ✓ Voids & Porosity

FLEXIBLE AND EXPANDABLE

Upgrade a system by adding excitation sources, *ir*NDT methods, and higher end IR cameras.

- ✓ Compatible with Transient, Flash, Lock-in, Vibro and Thermal Stress Analysis
- ✓ Works with halogen, xenon, and ultrasound excitation sources
- ✓ Uses cooled or uncooled IR technology

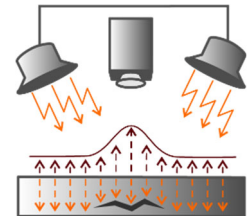
*ir*NDT MADE EASY

Complex analysis technology simplified for inspection.

- ✓ Effective measurement on low and varying emissivity targets
- ✓ No surface preparation required
- ✓ Large and small area measurement
- ✓ Quick and reliable defect detection

How does it work?

Composite-Check works utilizing active thermography. A heat source provides the inspected material with a thermal excitation. The flow of thermal energy through the material has a direct effect on surface temperatures. The surface temperature is recorded over a certain time period with an infrared camera and analyzed by the *ir*NDT software. The software produces an image that provides information about the internal structure of the material.



Composite-Check *ir*NDT Excitation Sources / Controllers



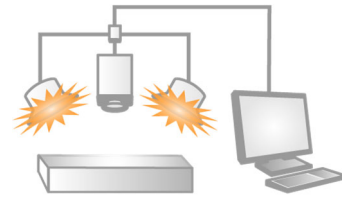
Composite-Check *ir*NDT Methods

Transient



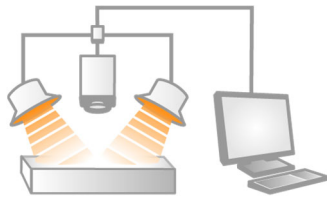
Halogen light is used to create an extended heat excitation. The *ir*NDT software analyzes the change in the thermal state of the target. Used to reveal deeper defects.

Flash



Uses a xenon light source for short intense excitation. Acquired IR Images are processed and shallow defects identified. Flash excitation is well suited for materials with medium and high thermal conductivity.

Lock-In



A periodical excitation source is synchronized with the IR camera image acquisition. The *ir*NDT software generates an amplitude and phase image to indicate the location and nature of the defect.

Vibro



Ultrasonic waves are used to excite the specimen. Friction between vibrating crack surfaces create heat signatures that are measured by the infrared camera.

*ir*NDT Configurations and Inspections


	Transient	Pulse	Lock-in	Vibro	Inspection Task
Halogen Lamp	✓	-	✓	-	Composite Materials (Disbondings, Delaminations, etc.) Foamed Materials (Cavities, etc.)
Xenon Lamp	-	✓	-	-	Metal (Welded Seams, Corrosion, etc.) Composite Materials (Disbondings, Delaminations, etc.)
Ultrasound	-	-	✓	✓	Detection of Cracks and Delaminations

Specifications

Uncooled Infrared Camera Options		Cooled Infrared Camera Options	
Available Resolutions	336 x 256 or 640 x 512	Available Resolutions	640 x 512 or 1280 x 1024
Image Rate	30 Hz / 60 Hz	Image Rate	60 Hz / 120 Hz / 181 Hz / 1000 Hz
Thermal Sensitivity	< 30 mK @ 30°C	Thermal Sensitivity	< 20 mK @ 30°C
PC			
PC Type		Office PC, Industrial PC, Laptop (for mobile use)	
Supported Operating Systems		Windows 10 Pro 64-bit	
Excitation Source			
Halogen Lamp		Up to 33kW, requires 3-phase power supply	
Xenon Lamp		6 kJ to 24 kJ	
Ultrasound		<ul style="list-style-type: none">Adjustment of Frequency from 15kHz to 25 kHzAdjustment of Amplitude from 0 to 100%	
IRX-Box			
Modulation Box for Synchronization of all Hardware and Software Components			
Enables Easy and Compact Measuring Setups			
irNDT-Software			
Software Evaluation Modules for Lock-in, Lock-in Online, Lock-in Ref. Online, TSA, Pulse/Flash, Transient			
Graphical User Interface for easy creation of customized solutions without programming skills			
Integrated MS Excel Report Generator for easy set-up of inspection reports, export of inspection data to Matlab, sorting of inspection parameters in workspaces, and storing of result images include measuring parameters			
Integrated VB Script-Engine for the creation of macros for solving automated inspection tasks			
Result Viewer App – Allows for calibrated spatial defect measurements, including depth			
Measuring and Analysis Properties			
Parameters for the Excitation Source		<ul style="list-style-type: none">Analysis Functions: Pulse, Sine, Trapezoid, Rectangle, Arbitrary WaveformRectangle Width at Rectangle Modulation: 0.1 – 0.9%Excitation Frequency: 1μHz – 50kHz	
Parameters for the IR Camera		Recording Frequency, Integration Time, Temperature Range, Average Temperature, Detector Window, etc.	
Parameters for the Analysis		<ul style="list-style-type: none">Several Analysis Methods / Lock-In Thermography / Pulse / Transient ThermographyAutomatic Noise Reduction Functions and Compensation of exterior interferences in all analysis modules	

*Specifications subject to change without notice. 11/2021

Get in Touch

 (949) 699-6600



info@movitherm.com
www.movitherm.com



15540 Rockfield Blvd, STE C-110
Irvine, CA 92618, USA