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Intercontrôle

LTCAM

Active infrared thermography (TT) for the detection of through-defects and non-through-defects

LTCAM (Laser Thermography Camera) is a new Non-Destructive Testing (NDT) tool, industrial, efficient and reliable.



Challenge

Some Non-Destructive Tests involve components with complex surfaces or geometries, in difficult environments requiring techniques where conventional systems are less efficient in terms of quality and protection of personnel.

Solution

Intercontrôle has developed a new tool for Non-Destructive Testing that can be used alternately with penetrant sampling and magnetic particle testing for the detection of open defects.

This equipment allows the immediate implementation of thermographic controls (TT):

- LTcam is an equipment consisting of a laser (excitation source) and an infrared camera that measures the IR emission of the part
- a focused laser beam scans the part to be controlled and creates a transient heat flow
- this flow, disturbed by the presence of possible surface indications is analyzed by the IR (infrared) camera
- an image of the examined surface (showing any indications) is generated in real time
- The process can also detect underlying indications, such as delaminations in the case of Pelton wheels.

Customer benefits

- Modular, adaptable and scalable system
- Use in laboratory or production
- All types of materials and surface conditions
- Control method without contact with the part
- Automatic, semi-automatic or manual inspection
- Detection of small open defects
- Generation of the inspection report, data storage
- Compliant with environmental regulations (REACH)
- Help with diagnosis via two levels of analysis: infrared imaging and signal measurement

Optical characteristics

- Laser class 4
- Homogeneous laser line
- Adapted laser optics
- Laser power up to 200 W
- High Resolution Infrared Sensor
- Working distance: 200 mm to 1200 mm
- Adjustable laser line from 30 mm to 90 mm

Physical characteristics

- Weight: maximum 12 kg
- Dimensions: 360 x 320 x 140 mm
- Three mounting plates on robot arm
- System of multiple and removable handles
- Storage temperature from - 40°C to + 60°C
- Operating temperature from 5°C to + 40°C

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Performance

- Control rate: 2 m^2/h (variable depending on the application)
- Detection of open defects with low opening (a few microns)
- Inspection of large areas without moving the camera (up to 1 m^2)
- Possible inspection of difficult-to-access areas (cavities, bores, tubes...) thanks to an optical mirror system
- Detection capabilities demonstrated on different materials (ferritic and stainless steels, Inconel, aluminum...) and on different surface conditions (raw, ground, machined, polished...)

Security and Standards

- Possibility of organizing training sessions
- The LTcam complies with the standards: EN 60825-1 (safety of laser devices) ISO 14121-1 and 2 (safety of machines) Directive 2006/42/EC (machinery directive)
- The LTcam was co-developed in collaboration with THERMOCONCEPT and EDEVIS





User interface

- Industrial HMI (Human Machine Interface), integrated into the existing DisplayIMG software for acquisition and analysis developed by the company EDEVIS
- A single software to calibrate and parameterize the system, acquire and analyze data
- Laser pointer and integrated camera to direct the LTcam towards the area to be controlled
- Built-in rangefinder to set the distance camera / surface inspected
- Traceability ensured thanks to the storage of all data (calibration, configuration, acquisitions, analysis results)
- Partner companies :

THERMOCONCEPT edevis

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