FRI.1.B.1

Author : Daniel Chauveau – Institut de Soudure Industrie
Co-Author : Raynal (Institut de Soudure Industrie) | Ruppel (Institut de Soudure Industrie) | Chauveau (Institut de Soudure Industrie) | Hubert (P.E.I)

TITLE : ADVANCED THERMOGRAPHIC NDT APPLIED ON COMPOSITE AIRCRAFT COMPONENTS

ABSTRACTS
An advanced robotised thermographic NDT solution, usable as an alternative to ultrasonic squirter systems, is described.

The main innovations are based on:

- the analysis and processing of the thermal signal from each pixel of a thermal image. As a matter of fact, the thermal signal resulting of the thermal wave diffusion through the component is mathematically processed and treated using multiple derivatives. The final signal is then compared to the original signal obtained on a reference part in order to detect defects such as delamination, inclusion, void, porosity.
- the automation and integration in a fully robotic cell allowing industrial production control with consistency and reliable NDT analysis.

The system is designed to be able to perform daily inspection of flying aircraft parts with higher rate and lower costs compared to UT squirter devices. So the inspection rate is now suitable with the production rate. One of the main advantage of thermography is no coupling medium is necessary. There is no longer need of water in the shop and then to dry the parts.

Benefits, performance and limitations of the robotised technique are presented and discussed

KEYWORDS
Composite | NDT | aircraft | thermography |