

INSPECTION WITH INFRARED THERMOGRAPHY OF LAYERED AND HIBRYD COMPOSITE MATERIALS USING LOCKIN METHOD

**Andreea Borîtu, Viorel Anghel, Nicolae Constantin, Mircea Găvan,
Dragoş Tănase & Dan Codruţ**

The University “Politehnica” of Bucharest, Laboratory for integrity evaluation of composite structures (LEISC).
Corresponding author: Andreea Borîtu, andreea10delia@yahoo.com

Abstract: In order to prevent catastrophic failure, reliable inspection methods are required for the maintenance of sensitive mechanical structures, such as aerospace equipment and vehicles, where defects/damages have to be detected in early stages of manufacturing or during service life. Nowadays, composite materials like carbon fibre reinforced plastics (CFRP), glass fibre reinforced plastics (GFRP) or fibre metal laminates (FML) are used extensively in aircraft structures. For these materials, delaminations, impact damages, ruptures and cracks are usual damages, which can severely harm their mechanical performance. Therefore, suitable assessment methods are needed for the health monitoring of such composite structures, one of them being infrared thermography (IRT).

Lockin thermography (LT) has some advantages as compared to other active IRT techniques, especially in the case of polymeric composites. The paper describes the basic principles of this NDE technique and some applications. Lockin thermography method has been used to inspect composite samples after they have been subjected to low velocity impact.

Key words: IR Termography, Lockin method, advanced composites, reinforced plastics, GLARE.