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Keynote-3

ABSTRACT

PRESENTATION

PAPER

Nicolas P. Avdelidis is a professor and head of the Integrated Vehicle Health Management (IVHM) Centre at Cranfield University since July 2020. The Centre is funded by a number of industrial partners such as Boeing, BAe Systems, etc. Nico is also a professeur associe (visiting professor) at Universite Laval in Quebec, Canada, where he does a lot of his research activities there in collaboration also with other organizations in Canada including the National Research Council (NRC Canada). He has contributed extensively to several research areas, such as non-destructive monitoring and diagnostics, robotic and autonomous systems in MRO, advanced sensing technologies, advanced IR imaging and image fusion using non-invasive techniques, and aircraft structures and/or systems monitoring.

INFRARED THERMOGRAPHY AS A TOOL IN MRO ACTIVITIES FOR A SUSTAINABLE AIRCRAFT

Infrared Thermography (IRT) is a technique that could be applied efficiently for the inspection of composite materials and an emerging NDT tool in the aviation sector with specific characteristics that make it attractive, such as being fast and effective. Thermography is effective in imaging a wide area in a single acquisition and detecting the presence of defects. Therefore, the technique can be applied as a fast full-scale inspection technique, by identifying promptly deficiencies like delamination, cracks, voids, and impact damage. In this talk, aircraft inspections for maintenance operations using IRT are discussed in order to determine the reliability and repeatability of the technique as a Non-Destructive Testing (NDT) tool. The advantages of IRT for fully automated and/or autonomous assessments in aircraft structures are presented. Furthermore, the limitations of the technique are pointed out and suggestions to overcome such challenges are conferred. Specific examples – applications discussed include hangar and UAV inspections for automated damage assessment for the future of Maintenance, Repair and Overhaul (MRO), the use of Machine Learning (ML) for damage assessment and decision making, and in parallel the aim to improve operational efficiency by eliminating unplanned maintenance and reduced time in hangar using such tool is also defined.