Defect localization in plane composite: a non intrusive automated procedure based on active thermography

Titre	Defect localization in plane composite: a non intrusive automated procedure based on active thermography
Type de publication	Communication
Type	Communication avec actes dans un congrès
Année	2015
Langue	Anglais
Date du colloque	15-18/06/2015
Titre du colloque	18th International Conference on Composite Structures
Auteur	Perez, Laetitia [1], Lascoup, Bertrand [2], Autrique, Laurent [3]
Pays	Portugal
Ville	Lisbonne
Résumé en anglais	This communication is focused on the implementation of a local pulsed thermography method in order to locate a defect in a plane composite. For such a local approach, the investigated plane composite is periodically heated on a small surface (several square centimeters) and thermal waves propagation is observed up to three thermal diffusion length on the same material surface (in reflexion). Both modulus and phase lag of the measured periodic signal are modified by the defect neighborhood and the seek for the most effective area leads to the defect localization. The contrast between the composite thermal behavior with or without defect is a relevant tracker of the defect proximity. Several criteria are proposed in order to quantify the contrast. Issued from cartographies differences, they are based upon usual functional norms and do not induce the same sensitivity to defect neighborhood. A simplex method is proposed for the automated procedure leading to the defect localization. Such method is based on an iterative process in order to explore the material surface (using an infrared camera) considering the investigation of new points (potentially better candidates for the defect location). New point coordinates are calculated from the previous points which are weighted considering the above mentioned criteria. Experimentations are performed according to the following steps : heat flux calibration, reference measurements, heat source shifting for automated scan.
URL de la notice	http://okina.univ-angers.fr/publications/ua15585 [4]
Lien vers le document en ligne	http://www.lamp-project.eu/events/iccs18-18th-international-conference-o... [5]

Liens

[1] http://okina.univ-angers.fr/publications?f%5Bauthor%5D=1862
[2] http://okina.univ-angers.fr/publications?f%5Bauthor%5D=2373

[3] http://okina.univ-angers.fr/l.autrique/publications
[4] http://okina.univ-angers.fr/publications/ua15585
[5] http://www.lamp-project.eu/events/iccs18-18th-international-conference-on-composite-structures