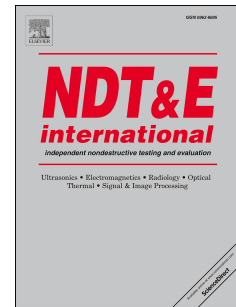


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Optimised Dynamic line scan thermographic detection of CFRP inserts using FE updating and POD analysis

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Abstract

The detection of delaminations in composite laminates using automated thermographic scanning is a quite challenging task. The set-up parameters are not only dependent on the equipment, but on the inspected component as well. In this work, a methodology is discussed to use Finite Element (FE) model updating to automatically establish the most suitable inspection parameters for a given combination of the structure and the investigated delamination depths. The optimised results are compared using binary Probability of Detection analysis and are benchmarked with parameter sets retrieved by an expert using the regular trial & error approach. The results show an improvement of the accuracy and scanning speed which significantly increases as the POD decreases and the complexity of the samples increases.

Keywords: Dynamic line scan, FE updating, Inverse problem, automated NDT, Quantitative Non-destructive Evaluation, CFRP, Probability of Detection

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