

EDDY CURRENT THERMOGRAPHY FOR DEFECT DETECTION AND CHARACTERISATION IN NDT APPLICATION

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ABSTRACT

Eddy current thermography is one of the active thermography technique that can provide application in non-destructive testing for defect detection and characterisation. The method for defect detection in eddy current thermography has become reliable due to its mode of interactions i.e. eddy current heating and heat diffusion, acquired via an infrared camera. Such ability has given the technique the advantages for non-destructive testing applications. An overview of the eddy current thermography technique is presented which covers the physical principles of the technique, associated systems and its applications. The experimental parameters and settings which contributed towards optimum heating and defect detection capability are highlighted as the focus of research associated with the technique. In addition, the knowledge and understanding of the characteristics heat distribution surrounding a defect as an important factor for successful inspection results are discussed by experimental and 3D FEM simulation results. Thus, detection and the quantitative characterisation of defects by this technique are possible based on the changes of the induced eddy currents flow and the resultant temperature distribution captured by the infrared camera.