

Development of Reference Specimen in Thermography for NDT

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Abstract

This paper describes lock-in thermography for NDT. This technique in NDT provides the diagnosis of invisible defects, whole field, non-contact and real-time inspection. Thermal phase image from IR camera gives a clue to determinate the size of a subsurface defect which depends on the relative difference of phase between the defect and its sound part. There is a question that how small a defect for a certain material can be detected under a given condition. Reference specimen, known about the shape, size, location, depth and thickness of a defect, is tested before the inspection of a target. Results from a reference specimen under a given condition guide in his inspection and give the reliability of inspection results. The aim of this paper is the development of a reference specimen. In experiment, stainless steel plate with various depths and sizes of a back drilled circular hole is

inspected. The diagram between the depth and the diameter of holes is plotted according to the excitation frequencies of optical heating. Based on the results, the condition of a reference specimen is proposed.

Keywords: Lock-in thermography, Reference specimen, Subsurface defect, Shearing phase

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