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Pulsed eddy current imaging of inclined surface cracks (Article)

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Abstract

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Inclined fatigue cracks can potentially cause severe damage to metallic structures as they affect larger region in the tested structure compared to crack perpendicular to the sample surface. The ability to detect and characterize such cracks is paramount in non-destructive testing (NDT). Pulsed eddy current testing (PEC) is known to offer a broadband of excitation frequencies, which in conjunction with C-scan imaging, may offer discrimination of inclination angles of cracks. Finite element modelling (FEM) was carried out to study the effects of different crack inclination angles, while experimental results were used to verify the FEM results. Selection of both time and frequency domain features for C-scan image construction was also presented, where C-scan images of peak value and amplitude at 200 Hz were shown to be potentially capable in determining different inclination angles. Nevertheless, between these two signal features, the amplitude at 200 Hz was found to be more effective in the discrimination of inclined cracks. © 2017, Institute of Advanced Engineering and Science. All rights reserved.

Author keywords

[Inclined cracks](#) [Non-destructive testing](#) [Pulsed eddy current testing](#) [Temporal and spectral analysis](#)

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