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Modelling of scanning pulsed eddy current testing of normal and slanted surface cracks (Article)

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Abstract

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Thanks to its wide bandwidth, pulsed eddy current (PEC) has attracted researchers of various backgrounds in the attempt to exploit its benefits in Non-destructive Testing (NDT). The ability of modelling PEC problems would be a precious tool in this attempt as it would help improve the understanding of the interaction between the transient magnetic field and the specimen, among others. In this work, a Finite Element Modelling (FEM) has been developed and experimental test data have been gathered for its validation. The investigated cases were simulated surface cracks of different sizes and angles. The study involved looking at time-domain PEC signals at different spatial distances from the cracks' faces, which would particularly be useful for modelling scanning PEC probes. The obtained results show a good agreement between the FEM and experiment, demonstrating that the modelling technique can be used with confidence for solving similar problems. In addition, the extracted features from signals were also studied to discover the influence of crack geometries to the PEC responses. Copyright © 2019 Institute of Advanced Engineering and Science. All rights reserved.

Author keywords

[C-scan images](#) [Finite element modeling](#) [Pulsed eddy current](#) [Slanted cracks](#)

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