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Enhancement of Pulsed Eddy Current Response Based on Power Spectral Density after Continuous Wavelet Transform Decomposition

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Abstract : The main objective of this work is to enhance the Pulsed Eddy Current (PEC) response from the aluminum structure using signal processing. Cracks and metal loss in different structures cause changes in PEC response measurements. In this paper, time-frequency analysis is used to represent PEC response, which generates a large quantity of data and reduce the noise due to measurement. Power Spectral Density (PSD) after Wavelet Decomposition (PSD-WD) is proposed for defect detection. The experimental results demonstrate that the cracks in the surface can be extracted satisfactorily by the proposed methods. The validity of the proposed method is discussed.

Keywords : DT, pulsed eddy current, continuous wavelet transform, Mexican hat wavelet mother, defect detection, power spectral density.
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