Application of Wavelet Theory and Neural Network on Ultrasonic Testing

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ABSTRACT

Weld flaws may be roughly classified into two categories, i.e., planar flaws and volumetric flaws. The former are highly unacceptable because they are very easy to propagate into cracks. Hence during construction, flaws of this kind should be removed regardless of their sizes. Therefore it is a critical issue for Ultrasonic Testing inspectors to distinguish this kind of flaws from others. In this research, we first used wavelet transform to extract feature parameters from digitized UT signals, and then planar flaws were recognized by neural network analysis. Preliminary results have shown correct recognition rates for planar flaws and volumetric flaws are 94% and 90.19% respectively. Therefore, it is reasonable to say that the proposed process may become a practical one through further improvement.

Keywords : Ultrasonic Testing ; Neural Network ; Wavelet Transform ; Planar Flaw

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