Review on System Development In Eddy Current Testing And Technique For Defect Classification And Characterization

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ABSTRACT

Eddy current testing (ECT) is one of the non-destructive evaluation techniques widely used, especially in oil and gas industries. It characterized noisy data to the less-than-perfect detection and as an indication of serious false alarm problem. However, not many researchers have described in detail the intelligent ECT crack detection system. This paper introduces a review of ECT technique and factors that affect the signal fundamental according to the hardware and software development. First, describe the magnetic excitation resources including the sinusoidal and pulse exciting signal. Second, outlines explanation about the ECT probe. The explanations are more about the probes development for air core probe and giant magnetoresistance probe. Third, there is discussion on ECT circuit that used including ECT system, ECT rotating magnetic field and application measurement for optimal control parameters. The defect in characterizations and measurement are discussed on the fourth part of this paper. The fourth part discusses the ECT lift-off compensation including the lift-off and application of intelligent technique in ECT. The limitations of lift-off for coil probe and compensation techniques also discussed in this part. Finally, a comprehensive review of previous studies on the application of intelligent ECT crack detection in nondestructive ECT is presented.

KEYWORDS:

Eddy current testing (ECT); system development; oil and gas industries

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