

Design Study for the Rehabilitation of a Retaining Structure and Water Intake on Site

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Abstract : In addition to a considerable amount of machinery and equipment, intricacies of the transmission pipeline exist in Petrochemical plants. Long term corrosion may lead to pipeline thinning and rupture, causing serious safety concerns. With the advances in non-destructive testing technology, more rapid and long-range ultrasonic detection techniques are often used for pipeline inspection, EMAT without coupling to detect, it is a non-contact ultrasonic, suitable for detecting elevated temperature or roughened e surface of line. In this study, we prepared artificial defects in pipeline for Electromagnetic Acoustic Transducer testing (EMAT) to survey the relationship between the defect location, sizing and the EMAT signal. It was found that the signal amplitude of EMAT exhibited greater signal attenuation with larger defect depth and length. In addition, with bigger flat hole diameter, greater amplitude attenuation was obtained. In summary, signal amplitude attenuation of EMAT was affected by the defect depth, defect length and the hole diameter and size.

Keywords : EMAT, artificial defect, NDT, ultrasonic testing

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