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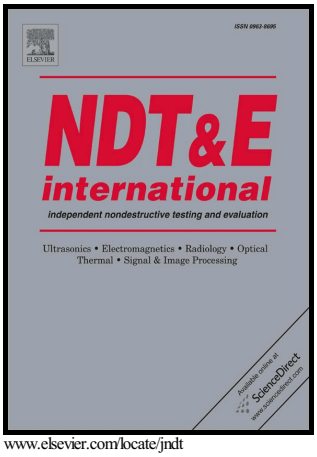

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Abstract

The use of guided waves is now widespread in industrial NDT for locating metal loss in pipelines, that manifests as pitting, corrosion and general wall thinning. In this paper, a screening technique is assessed in terms of defect detection and defect sizing capability. Shear Horizontal (SH) guided waves propagate circumferentially around the pipe whilst the scanner is moved axially along the length. This type of tool is preferable to other methods, being applied to the exterior of the pipe, without requiring full circumferential access, and is able to operate through thin coatings (up to 1 mm thick). It is designed to provide a pipe screening tool for petrochemical pipelines both topside and subsea, particularly for detecting defects at pipe support areas. The system's efficacy in terms of detection and sizing of defects is considered via experimental measurements on artificially induced defects and in service corrosion patches, with results compared to finite element modelling of the interaction of the guided waves with artificial defects. Finite element modelling has been used to better understand the behaviour of different wave modes when they interact with defects, focusing on the mode conversions and reflections that occur.