

Interaction of the Circumferential Lamb Wave with Delamination in the Middle of Pipe Wall

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Abstract : With aim for delamination type defects detection in manufacturing process of seamless pipe, this paper studies the interaction of the circumferential lamb wave with delamination in aluminum pipe. The delamination is located in the middle of pipe wall. A numerical study is carried out, the circumferential lamb wave used here is CL0 mode, which is generated with a finite element method code. Wave structures from the simulation are compared with theoretical results to verify the model's accuracy. Delamination along the circumferential direction is established by demerging nodes of the same coordinates. When CL0 mode is incident at the entrance and exit of a delamination, it generates new mode-CL1, undergoes multiple reverberation and mode conversions between the two ends of the delamination. Signals of different receptions are obtained to provide insight in using CL0 mode for locating the delamination.

Keywords : circumferential lamb wave, delamination, FEM, seamless pipe

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