

Modeling and Computational Validation of Dispersion Curves of Guide Waves in a Pipe Using ANSYS

Authors : A. Perdomo, J. R. Bacca, Q. E. Jabid

Abstract : In recent years, technological and investigative progress has been achieved in the area of monitoring of equipment and installation as a result of a deeper understanding of physical phenomenon associated with the non-destructive tests (NDT). The modal analysis proposes an efficient solution to determine the dispersion curves of an arbitrary waveguide cross-sectional. Dispersion curves are essential in the discontinuity localization based on guided waves. In this work, an isotropic hollow cylinder is dynamically analyzed in ANSYS to obtain resonant frequencies and mode shapes all of them associated with the dispersion curves. The numerical results provide the relation between frequency and wavelength which is the foundation of the dispersion curves. Results of the simulation process are validated with the software GUIGW.

Keywords : ansys APDL, dispersion curves, guide waves, modal analysis

Conference Title : ICAIME 2019 : International Conference on Artificial Intelligence and Mechanical Engineering

Conference Location : Paris, France

Conference Dates : June 25-26, 2019