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Numerical Evaluation of Adhesive Bonding Quality using Electromechanical Impedance Technique
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Abstract

A joint is a crucial approach in the engineering field, especially when it comes to the completion of a structure. Engineers must inspect the structure's quality so that damage can be avoided. Many academic and industry researchers have recently expressed interest in the creation of a real-time, in-service, and smart material-based Structural health monitoring (SHM) technique. Recently, piezoceramic (PZT) transducers have developed into an effective smart material that is frequently used in guided ultrasonic wave propagation and electromechanical impedance (EMI) procedures. This paper will investigate the adhesive bonded structure with the presence of stiffener and lap joint in good and damaged condition. ANSYS software will be used to develop a finite element model to determine the impedance signal of the structure and validate the simulation results with results from the literature. The result will be shown in terms of impedance signal and the differences in the condition will be determined by RMSD value. © 2024, Semarak Ilmu Publishing. All rights reserved.

Author Keywords

adhesive bonding; Electromechanical impedance; finite element analysis; lap joint; stiffener

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