

Guided Wave Sensitivity for De_Bond Defects in Aluminum Skin_Honeycomb Core

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Abstract :

Sandwich plates are finding an increasing range of application in the aircraft industry. The inspection of honeycomb composite structure by conventional ultrasonic technique is complex and very time consuming. The present study demonstrates a technique using guided Lamb waves at low frequencies to predict de_bond defects in aluminum skin_honeycomb core sandwich structure used in aeronautics. The numerical method was investigated for drawing the dispersion and displacement curves of ultrasonic Lamb wave propagated in Aluminum plate. An experimental study was carried out to check the theoretical prediction. The detection of unsticking between the skin and the core was tested by the two first modes for a low frequency. It was found that A0 mode is more sensitive to delamination defect compared to S0 mode.

Keywords—Damage detection, delamination, guided waves, Sandwich structure.