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Damage Assessment of CFRP Stiffened Panels by Electro-Mechanical Impedance Method

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In this work, a portable electro-mechanical impedance, EMI, analyser is designed and developed, allowing a frequency range of 0.1-100 kHz and 10000 points per scan. Piezoelectric active patches were bonded on the surface of a stiffened CFRP plate. The optimal sensor location was determined by computer simulations using finite element analysis code ABAQUS. EMI method was used for the identification of damage on the plate, adopting a damage metrics based on the Correlation Coefficient Deviation, CCD. Damage location was varied with respect to the PZT sensor position. The damage metric is able of detecting damage on the plate. However, its localization depends upon the distance from damage point to the PZT sensor and upon the position of the PZT with respect to the Z-shape stringers. The portable and cost-effective EMI analyser is a valuable tool for damage assessment in composite components.

Ключевые слова:

Содержание.

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