

Frequency Analysis of Delaminated Smart Composite Structure

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The frequency response of smart composite plate with delamination at layer interfaces is analyzed in this paper. Mathematical modeling adopts an improved layerwise theory and follows by finite element implementation. The FEM uses a four-node element with linear Lagrange and Hermite cubic interpolation functions. The delaminations not only weaken the strength of structure, but also affect dynamic characteristics. The effects of delamination to natural frequencies are studied by the frequency analysis of piezoelectric sensor output. The effects of delamination location and size are also studied by analyzing piezoelectric sensor output.

Keywords: Frequency analysis, Smart Composite, Delamination, Piezoelectric sensor