Study of Free Vibration Analysis of Laminated Composite Plates with Skew Cut-outs based on FSDT

Harsh Kumar Bhardwaj[1], Jyoti Vimal[2], Avadesh Kumar Sharma[3]

[1] . [2] . [3]*Department of Mechanical Engineering, Madhav Institute of Technology and Science, Gwalior, India*

ABSTRACT

This paper presents the free vibration analysis of a composite laminated plate with skew cut-out, using finite element method (FEM), based on first order shear deformation theory (FSDT). A number of examples concerning different aspect ratios, different thickness ratios, different values of material properties, different size of cutouts, different number of layers and different boundary conditions, for a cross-ply composite laminate with skew hole are considered. Convergence study has been carried out by comparing the results obtained to the numerical results of previous work available in the literature. Non-dimensional frequencies decrease with increasing the size of the plate and thickness ratio of the plate. Non-dimensional frequencies increase with increasing the cut-out size, the number of laminates of the plate and the modulus ratio of the plate.

Keywords: Free Vibration, FEM, Composite Laminated plate, Cut-out.