

VIBRATION STUDY OF THERMALLY STRESSED FUNCTIONALLY GRADED CIRCULAR AND NON- CIRCULAR CYLINDRICAL SHELLS

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Abstract—*The free vibration characteristics of functionally graded circular and non-circular cylindrical shell are studied using finite element method. The higher order shear deformation theory is used to approximate the thickness of both in plane and transverse displacement. Eight noded doubly curved shell element is used to study the dynamic behavior of thermally loaded FMG shell. The finite element used in the study is based on field-consistency approach and free from shear and membrane locking problem. 1D heat conduction equation is solved for the evaluation of the temperature distribution in the thickness direction.*

The effect of Non circularity, radius to thickness ratio, material composition on free vibrational frequencies and mode shape behavior of functionally graded shells is studied.

Keywords: *Free Vibration; FEM; FMG; Cylindrical shell; 1-D Heat Conduction.*