عنوان مقاله:

Effect of non-linear internal variable pressure and thermalloading on stresses of thick cylindrical shells

محل انتشار:

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خلاصه مقاله:

A semi-analytical solution has been derived using the multi-layersmethod (MLM) to determine stresses in a thick cylindrical shell undernon-uniform pressure and bi-directional thermal. Due to the presence ofshear stress in the thick cylindrical shell caused by pressure along theaxial direction, the governing equations are derived based on first-ordershear deformation theory (FSDT) and first-order thermal theory (FTT).The material properties of the cylinder are assumed to vary along theaxial direction according to a power law form. The solution of this setof equations, applying the boundary conditions and continuityconditions between the layers, provides stresses. The effects of firstorderapproximations on the radial displacement and stress have beenstudied. Finally, the displacements and stresses along the axial havebeen plotted to illustrate their variations at the middle layer ofthickness. These plots provide a detailed analysis of the mechanicalbehavior of cylindrical shells under non-uniform pressure, enabling amore precise evaluation of the structure's strength and stability.

کلمات کلیدی:

Shells; Multilayer Method; Bi-directional thermal; Nununformpressure