

Yield Onset of Thermo-Mechanical Loading of FGM Thick Walled Cylindrical Pressure Vessels

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Abstract : In this paper, thick walled Cylindrical tanks or tubes made of functionally graded material under internal pressure and temperature gradient are studied. Material parameters have been considered as power functions. They play important role in the elastoplastic behavior of these materials. To clarify their role, different materials with different parameters have been used under temperature gradient. Finally, their effect and loading effect have been determined in first yield point. Also, the important role of temperature gradient was also shown. At the end the study has been results obtained from changes in the elastic modulus and yield stress. Also special attention is also given to the effects of this internal pressure and temperature gradient in the creation of tensile and compressive stresses.

Keywords : FGM, cylindrical pressure tubes, small deformation theory, yield onset, thermal loading

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