

# Thermo-Elasto-Plastic Analysis of Functionally Graded Spherical Reservoirs Subjected to Temperature Gradient

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چکیده :

Thermo-Elasto-Plastic analyses of thick-walled spherical tanks made of functionally graded materials are investigated analytically. These tanks are subjected to positive or negative temperature gradient loadings. The power law modeling has been used for through-the-thickness variation of mechanical and thermal properties of reservoirs. von Mises yield criterion and Elastic-Perfectly-Plastic assumption are used for description of material behavior in plastic zone. Comparing the results of Elasto-Plastic analyses of FG vessels made of AL A359/SiCp with those of isotropic vessels, it is concluded that these vessels have improvement in Thermo-Elasto-Plastic behavior. The validity of results is confirmed by simplifying the results for the special case of isotropic vessels

کلید واژه : Analytical Analysis, Thermo-Elasto-Plastic Stresses, Functionally Graded Materials, Spherical Thick-Walled Tanks, Temperature Gradient

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