

عنوان مقاله:

Effect of Vertex Angle on Elastic-Plastic Stability of a Steel Open Conical Shell

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خلاصه مقاله:

In this paper, the stability of a conical shell panel in elastic-plastic domain is considered. The shell is made of an isotropic material (A36 steel) with linear work hardening behavior. The shell is placed on simply supported end constraints and the acting loads are in the form of longitudinal compressive force and lateral pressure. The incremental Prandtl-Reuss plastic flow theory and von Mises yield criterion are used in the analysis. The problem is formulated based on classical shell theory and nonlinear geometrical strain-displacement relations are assumed. The stability equations are derived using the principle of the stationary potential energy. Using Ritz method the equations are solved and the numerical results obtained for different values of semi vertex and subtended angles. The obtained results show that there is a distinct semi vertex angle in which the shell has the best stability conditions. Also, there will be a limiting condition for the semi vertex angles beyond which the instability will not occur.

کلمات کلیدی:

Elastic-plastic, Buckling, deformation, Conical shell, Stability

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