

عنوان مقاله:

Optimization for pressure capacity in thick spherical vessels using multilayer design

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خلاصه مقاله:

In this paper, a new method is proposed for increasing pressure bearing capacity of thick spherical vessels using multilayer design. Using elastic analysis for thick spherical pressure vessels, the maximum pressure capacity for up to five-layered vessel is obtained for different radii ratios. For a constant mass, the results show a significant improvement (up to 80%) as compared to the capacity of a single-layered vessel. It is shown that in a range of 0.01 to 0.025 for fluid layer thickness to inner radii ratio, the pressure bearing capacity will be decreased slightly and linearly. Also, the effect of layer's material over pressure bearing capacity is investigated for a three-layered vessel for different sets of Steel and Aluminum layers.

کلمات کلیدی:

Thick pressure vessel – Elastic analysis – Multilayer design

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