

FEA Analysis of Rectangular Pressure Vessel Boxes

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Abstract: Extensive experimental & theoretical contributions have been made to the study of open box structures, but few references dealing with closed boxes have been found. When a rectangular box structure is subjected to certain pressure, stress analysis of rectangular box is necessary to avoid the failure during working condition. In this work, it is proposed to evaluate the stresses in rectangular box by changing L/B ratios 1, 1.5, 2 for different thicknesses of 2.5, 5, 7.5 mm & varying fillet radius, using finite element method. To validate finite element stresses, it is necessary to compare these stresses with analytical approach. From the FE analysis of rectangular box, it is seen that cubical box having the lesser stresses & better for stress distribution due to symmetry. The stiffeners further reduce the stresses in boxes.

Keywords: FEA Analysis

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