

Research Work Title

Grip Tank



Representative | Maziar Navahan Esmaeili

Collaborators | Hamidreza Zahir Emami, Alireza Zahir Emami

Collaborating Organization | Farapox Company

Abstract

When designing vertical and horizontal tanks, as well as atmospheric composite parts under internal pressure, it is crucial to ensure their strength and safety during both the design and operation phases. One common method to achieve this is by increasing the thickness of the shell, cap, and other components. However, if reinforcement sections are not utilised or used incorrectly in tanks, the desired strength may not be attained against all types of loads.

To tackle this issue, the use of FEM analysis can aid in the design of tanks and composite parts with both longitudinal and peripheral reinforcement sections inside and outside. This analysis helps identify high-risk areas in all parts of the tank, enabling the designers to determine the necessary number, location, arrangement type, and physical dimensions of the reinforcement sections required. By incorporating longitudinal and peripheral longitudinal reinforcement sections, the tank body and its components are interconnected, dividing the body into smaller segments and enhancing its resistance against external loads such as wind, earthquakes, and sudden shocks, as well as internal loads like hydrostatic pressure and internal pressure. As a result, stress distribution is improved throughout the tank body, reducing maximum stress ranges.

