DESIGN WATERTANK COVER USING FIBRE REINFORCED PLASTIC (FRP)

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ABSTRACT

For most storage tanks it is necessity to provide a roof cover to protect the contents from contamination. In some cases additional insulation from the atmosphere is provided by covering. So it is not main structures of storage tank .

The cost of this roof will amount generally to about one – third of the overall cost of the structure and considerable care is required in making a choice of form and method of construction to employ the most economical solution appropriate to the particular project.

In this work ,finite element analysis approach is employed to study the strength of the regular shape of water tank under concentrated loads. It is intended to check the strength based on the load displacement relationships.

To simulate the process , several application software can be used .In this study ANSYS version 5.0 is adopted to three computer model of Cone , Dome , and Flat with equal radius, thickness and height. The height is 300 mm, radius is 3000 mm and the thickness is 15mm under 1 loading point of 2 KN.

From the finite element analysis , the result showed more different strength behaviour between different type of material

CHAPTER ONE

1.0 INTRODUCTION

1.1 GENERAL

Many shell theories have been developed to analyze the behavior of shells. The factor influencing the assumptions and the domain of applications of individual shell theory have been the material type and behavior, the loading condition ,the desired shell behavior and computational means

Gol'denveizer and Naghdi proposed three principles which have particular signficance in the analysis of shells.[A.T Morris,1976].The three principles proposed were:

- Consistency.

  Any set of constitutive equations should be consistent with the principles of energy and equilibrium.

- Rigid displacement invariance.

  The equation should be remain invariant under rigid body displacement ,which requires that such displacement give rise to zero strain energy.

- Coordinate invariance

  The equation should be stated as a rule which holds equally well in all coordinate systems.