**ABSTRACT**

In this project a ladder is designed and analyzed using different design considerations, different load conditions and by applying different materials to the ladder. The ladder is a mechanical component which is mostly used for climbing and transferring loads vertically. Therefore different loads act on the ladder which have to be analyzed using the FEM method. The ANSYS software which is based on finite element methods is used to analyze the static load conditions on the ladder using different materials. Finally we will be selecting the best appropriate material for the design and manufacturing of the ladder. The aim of the project is to find the best material for the required design of ladder at specified load conditions because ladder has to be light weight design and the ladder has to bear maximum loads.