

ABSTRACT

The project mainly deals with the design, analysis of piston and connecting rod assembly. A piston is a component of reciprocating engines, reciprocating compressors and pneumatic cylinders among other similar mechanisms. In an engine, its purpose is to transfer force from expanding gas in the cylinder to the crankshaft via a piston rod or connecting rod. Here the piston and connecting rod assembly is designed, analysed and the manufacturing processes have been studied. The connecting rod primarily undergoes tensile and compressive loading under engine cyclic process. The forces acting on connecting rod are forces due to maximum combustion pressure that acting on top surface of the piston. This research addresses the computation of the strength and distortion characteristics of assembly. For this case, a fatigue and structural analysis will be performed. Fatigue analysis is done on different loads to determines, if design of assembly is safe or not.

In this project the piston and connecting rod is modelled with the help of SOLID WORKS and component is meshed and analysis is done in ANSYS workbench. Static structural analysis is studied and the result are tabulated. The various stresses acting on the assembly under various loading conditions has been studied. In the present thesis work has been taken up on the following aspects to cover the research gaps and to present the results based on the systematic studies.

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