

Design and Analysis of Engine Fins

Vijay Sahu¹, Raj Kumar Yaadav²

Department of Mechanical Engineering^{1,2}

Adina Institute of Science and Technology, Sagar, Madhya Pradesh, India

Abstract: *The Engine cylinder is one of the major automobile components, which is subjected to high temperature variations and thermal stresses. In order to cool the cylinder, fins are provided on the surface of the cylinder to increase the rate of Heat transfer. By doing thermal analysis on the engine cylinder and fins around it. It is helpful to know the heat dissipation rate and Temperature Distribution inside the cylinder. We know that, By increasing the surface area we can increase the heat dissipation rate, so designing such a large complex engine is very difficult. The main aim of the present project is to analyze the thermal properties like Directional Heat Flux, Total Heat Flux and Temperature Distribution by varying Geometry(Circular,Rectangular),material(AluminumAlloy,MagnesiumAlloy) and thickness of Fin (3mm, 2mm) of an approximately square cylinder model prepared in SOLIDWORKS-2022 which is imported into ANSYS WORKBENCH-2024 R1 for Transient Thermal analysis with an Average Internal Temperature and Stagnant Air-Simplified case as Cooling medium on Outer surface with reasonable Film Transfer Coefficient as Boundary Condition.*

Keywords: Dissipation, Thermal conductivity, Film transfer coefficient, Internal Temperature, Stagnant Air-Simplified case, Boundary Conditions