

Comparative Analysis of Internal Combustion Engine Cooling Fins Using Ansys Software

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Abstract : Effective engine cooling can improve the engine's life and efficacy. The design of the fin of the cylinder head and block determines the cooling mechanism of air cooled engine. The heat conduction takes place through the engine parts and convection of heat from the surface of the fins takes place with air as the heat transferring medium. The air surrounding the cooling fins helps in removal of heat built up by the air cooled engine. If the heat removal rate is inadequate, it will result in lower engine efficiency and high thermal stresses in the engine. The main drawback of the air cooled engine is the low heat transfer rate of the cooling fins. This work is based on scrutiny of previous researches that involves enhancing of heat transfer rate of cooling fins. The current research is about augmentation of heat transfer rate of longitudinal rectangular fin profiles by varying the length of the fin and diameter of holes on the fins. Thermal and flow analysis is done for two different models of fins. One is simple fin without holes and the other is perforated (consist of holes). It can be inferred from the research that the fins with holes have a higher fin efficiency than the fins without holes. The geometry of the fin is done in CREO. The heat transfer analysis is done using ANSYS software.

Keywords : fins, heat transfer, perforated fins, thermal analysis, thermal flux

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