

THERMAL ANALYSIS OF CYLINDER HEAD BY USING FINITE ELEMENT ANALYSIS

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ABSTRACT

Cylinder head is a critical part of an I C engines cylinder head is used to seal the working ends of the cylinder and accommodates combustion chamber in its cavity, spark plug and valves. The heat generated in combustion chamber is highly dynamic and allows very little time (few micro seconds) to transfer the heat if not distributed will lead to squeezing of piston due to overheating. Hence an effective waste heat distribution through cylinder head plays a very important role in smooth function of I C engine.

Heat Transfer through cylinder head consists of conduction through walls and convective heat transfer due to surrounding air flow. As the shape of cylinder head is complex and temperature within the combustion chamber is still fairly unknown. Conventional methods of evaluating heat transfer are very complex.

This project aims at evaluating heat transfer through cylinder head using finite element analysis. Geometrical models of Cylinder head with and without fins are developed in Auto CAD software. Thus developed models are exported to ANSYS software, and finite element model for thermal analysis done in ANSYS. Effect of fins on heat transfer through cylinder is evaluated.

KEYWORDS: Cylinder Head, I C Engines, Heat Transfer, ANSYS