

ANALYSIS OF ENGINE BLOCK SYSTEM

ABSTRACT

An engine block is the structure which contains the cylinders, and other parts, of an internal combustion engine. In An engine block is the structure which contains the cylinders, and other parts, of an internal combustion engine. The purpose of the engine block is to support the components of the engine. Additionally, the engine block transfers heat from friction to the atmosphere and engine coolant. In other words, A cylinder block is an integrated structure comprising the cylinder(s) of a reciprocating engine and often some or all of their associated surrounding structures. The term engine block is often used synonymously with "cylinder block" The analysis of the combustion chamber is done by using different materials. By conducting the analysis on the combustion chamber combustion rate, pressure and temperature gradient conditions are found and the best material for the combustion chamber is suggested. Material used for the study are AL7475, Nickel Aluminium Bronze Alloy, Graphite Cast Iron, Sand Cast Magnesium Alloy.

Transient analysis is conducted to find the strength of the engine block for the firing order is the sequence of power delivery of each cylinder in a multi-cylinder reciprocating engine for all the above-mentioned materials to check for stress, deflection & strain.

Thermal analysis is conducted to find heat dissipation rate in engine block with the variation of materials Structural and fatigue analysis(dynamic) is conduct on engine block at working load conditions to evaluate and compare stress, strain, deformation and fatigue life with the variation of materials.

Frequency analysis is conducted on engine block with the variation of materials to evaluate frequency, using these values material selection will be done.

Keywords: Engine block, Cylinder block, Transient, thermal, frequency, ANSYS, model