

Thermo-Stress Analysis of Coated and Non-Coated Engine Piston To Find Effective Heat Barrier.

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Abstract: To avoid generation of heat by friction oil control ring is provided. It lubricates engine piston and avoid extensive friction and wear. But at the T.D.C. power stroke will generate the extensive heat and power which directly impinge on the piston top. During long term running of engine this heat on the engine top and thrust generated cause the piston material wear and damage. To avoid such damage, we can provide coating on the piston surface which will be thermal insulating material and tough enough to withstand on high impact loading.

In this project thermal analysis of coated and non-coated piston will be carried out with the help of ANSYS 2020 R1 software, which is FEM tool. For that purpose, CAD model of Piston will be created in CATIA V5R21 Software. The temperature, thermal stresses and heat transfer rate will be compared with each other to find effectiveness of the thermal barrier coating. For coating of piston ceramic will be used which is thermal insulator and good adhesive.

Keywords: T.D.C. power stroke

