

## **HEAT RESISTANCE CATALYTIC COATED PISTON ON LEAN BURN S.I ENGINE CHARACTERISTICS**

**M. P. RANGAIAH<sup>1</sup> AND B. UMA MAHESWAR GOUD<sup>2</sup>**

<sup>1</sup> Department of Mechanical Engineering, JNTUACE Anantapur, AP., India.

<sup>2</sup> Professor & Rector, JNTUA Anantapur, AP., India .

### **Abstract**

The demand for more efficient automobiles has kept alive the interest in the potential of improved economy and reduced emission of a lean combustion engine. Numerous research papers in recent years describe the theoretical benefits obtained from the use of ceramic components in reciprocating engines; the amount of literature that describes partial results is very limited. Several strategies for extending the limit of lean operation have been studied, such as mechanical modifications, the use of additives, alternate fuels and stratified charge. This article presents the work completed on a low heat rejection engine. Extensive experiments were conducted on a single cylinder high compression ratio spark ignition engine to investigate the concept of thermal insulation of the piston crown with a layer of catalytic coating (copper). Thermal insulation was provided using a composite piston-Ni-resist insulating material machined in a cup form and fitted onto a hemispherical recess on the piston top using a set of stainless steel screws. On the top surface of this thermal insulating material catalytic coating was provided. Measurement and comparison of engine performance, in particular fuel consumption, were made before and after the application of catalytic coating deposited onto the piston crown. The peak pressure during the combustion process along with exhaust emissions of CO and HC were also investigated.

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