

***EFFECT OF PERTALITE AND ETHANOL BLEND PERCENTAGE
VARIATION AND COMPRESSION RATIO VARIATION
ON SINGLE CYLINDER ENGINE
PERFORMANCE***

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ABSTRACT

The depletion of fossil fuel energy sources is inversely proportional to human demand for high-quality fuel. Researchers conducted a series of experiments by adding ethanol to pertalite fuel as an alternative. This mixture alters fuel properties, including octane rating and calorific value. Researchers adjusted the compression ratio to enhance the performance of the mixed fuel, tested using a boom calorimeter and dynamometer. There are significant differences in torque and power for each fuel, with an increase at 4000 RPM but a decrease at high RPMs. Losses include friction and imperfect combustion due to incorrect ignition timing. The E10 blend exhibited the best results with a torque value of 15.20 Nm and power of 11.7 Hp at a compression ratio of 10. The compression ratio affects torque and power enhancement, especially with ethanol additions below 50%, to find the optimal engine compression ratio.

Keywords: Alternative fuels, Ethanol, Engine performance, Fuel properties, Compression ratio