

## **EXPERIMENTAL INVESTIGATION OF PERFORMANCE PARAMETERS OF SINGLE CYLINDER FOUR STROKE DI DIESEL ENGINE OPERATING ON NEEM OIL BIODIESEL BLENDS**

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### **ABSTRACT**

Lack of Power supply, increasing oil prices, and global warming activates the research and development of substitute energy resources to maintain economic development. The methyl esters of vegetable oil, known as biodiesel are becoming popular because of their low ecological effect and potential as a green substitute for compression ignition engine.

The main objective of this study is to investigate the performance of neem oil methyl ester on a single cylinder, four strokes, direct injection, and 8 HP capacity diesel engine. The Experimental research has been performed to analyze the performance of different blends 20%(BD20), 50%(BD50), and 100%(BD100) of neem oil biodiesel. Biodiesel, when compared to conventional diesel fuel, results showed that the brake specific fuel consumption and brake specific energy consumption are higher and brake thermal efficiency less during testing of engine. The brake specific energy consumption is increased by 0.60% to 8.25% and brake thermal efficiency decreased by 0.57% to 7.62% at 12 kg engine brake load as compared to diesel fuel. When the fuel consumption of biodiesel is compared to diesel fuel it observed that the fuel consumption was increased by 2.5% to 19.5% than that of diesel fuel for B20, B50 and B100 blends at 12 kg engine brake load. It is observed that the performance of biodiesel blends is less as compared to plain diesel and during testing of diesel engine run normally for all engine loads. It is investigated that the neem oil biodiesel 20% blend showed very close performance when compared to plain diesel and hence can be used as an alternative fuel for conventional diesel in the future.

**KEYWORDS:** Diesel Engine, Alternate Fuel, Neem Oil Biodiesel, Engine Performance