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RTIMES23051

Performance, Combustion and Emission Study for a Single Cylinder CI Engine with Cardanol oil Biodiesel

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Abstract

Increasing prices and depletion of fossil fuels creates the importance of finding an alternative fuel (biodiesel) from renewable natural resources. This research paper deals with the performance, combustion and emission analysis of cardanol oil biodiesel in a single cylinder CI engine at 1500 rpm and different load condition. The properties of produced biodiesels and their blend for different ratios (B10, B20, and B30) are comparable with properties of diesel and ASTM biodiesel standards. Tests have been conducted on the CI engine, which runs at a constant speed of 1500 rpm, injection pressure of 200bar, compression ratio 17.5, and varying load (0, 25, 50, 75 and 100% of full load). The use of cardanol Biodiesel in a CI engine results in lower CO, NOx and smoke opacity emissions compared to a conventional diesel fuel. The performance parameters include brake thermal efficiency and brake specific fuel consumption, are marginally lower than the neat diesel. Pressure crank angle plot gives B20 as better blend when compared to the other blend and diesel fuel.

Keywords: *Cardanol Oil, Performance, Emission, Combustion.*