

Investigation on the Performance and Emission Characteristics of Biodiesel (Animal Oil): Ethanol Blends in a Single Cylinder Diesel Engine

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Abstract : Biodiesel can be considered as a potential alternative fuel for compression ignition engines. These can be obtained from various resources. However, the usage of biodiesel in high percentage in compression ignition may cause some technical problems because of their higher viscosity, high pour point, and low volatility. Ethanol can be used as a fuel extender to enable use of higher percentage of biodiesel in CI engine. Blends of ethanol-animal fat oil biodiesel-diesel have been prepared and experimental study has been carried out. We have found that B40E20 fuel blend (40% biodiesel and 20 % ethanol in diesel) reduces the specific fuel consumption and improves brake thermal efficiency of engine compared to B40 fuel blend. We observed that fuel characteristics improved considerably with addition of ethanol to biodiesel. Emissions of CO, HC and smoke were reduced while CO₂ emissions were increased because of more complete combustion of the blend.

Keywords : diesel, biodiesel, ethanol, CI engine, engine performance, exhaust emission

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