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Performance and Combustion Characteristics of a DI Diesel Engine Fueled with Jatropha Methyl Esters and its Blends

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Abstract : This study discusses the performance and combustion characteristics of a direct injection diesel engine fueled with Jatropha methyl ester (JME). In order to determine the performance and combustion characteristics, the experiments were conducted at the constant speed mode (1500rpm) under the full load condition of the engine on single cylinder 4-stroke CI engine. The result indicated that when the test engine was fuelled with JME, the engine performance slightly weakened, the combustion characteristics slightly changed when compared to petroleum based diesel fuel. The biodiesel caused reduction in carbon monoxide (CO), unburned hydrocarbon (HC) emissions, but they caused to increases in nitrogen oxides (NOx) emissions. The useful brake power obtained is similar to diesel fuel for all loads. Oxygen content in the exhaust is more with JME blend due to the reason that fuel itself contains oxygen. JME as a new Biodiesel and its blends can be used in diesel engines without any engine modification.

Keywords : biodiesel, combustion, CI engine, jatropha curcas oil, performance and emission
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