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Performance and Emission Characteristics of Blending Diethyl Ether in Cotton Seed Oil Methyl Ester Using a Direct Injection Diesel Engine

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Abstract

Most countries of the world faces crises of energy demand, rising petroleum prices and depletion of fossil fuels forces the researcher to find the alternate fuel for diesel engines. A lot of research work point out that biodiesel and its blends with diesel is employed as alternate fuel for diesel engine without any modifications in the existing diesel engine. Very few works have been done with the combination off two different biodiesel blends with the neat diesel fuel and leads to lot of scope in this area. This paper presents experimental results on dual fuel operation of a single cylinder diesel engine with diesel, cottonseed oil and mixture of cottonseed oil and diethyl ether (DEE) as primary fuels. Results on brake thermal efficiency, fuel consumptions and emissions, namely, un-burnt hydrocarbon (HC), carbon monoxide (CO) and NOx are presented here. The paper also includes vital information regarding performances of the engine at a wide range of load conditions with different blended fuel substitutions.

Keywords: Diethyl Ether (DEE); Biodiesel; Cottonseed oil; Trans-esterification; Diesel