

Experimental investigation of diesel engine performance fuelled with the blends of *Jatropha curcas*, ethanol, and diesel

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Abstract

Non-renewable fossil fuels show increased demand and with fossil fuels at a rapid depleting stage, there seems to be an increase in requirement for alternative fuels too. Biofuels and blended fossil fuels are one of a kind. Nonedible *jatropha* (*Jatropha curcas*) oil-based methyl ester was produced and mixed with ethanol and blended with conventional diesel in various compositions. *Jatropha* biodiesel is used because of its great blending capacity with diesel. Sodium hydroxide is used as a catalyst which allows miscibility between ethanol and diesel. In present epoch, the paucity of fossil fuels and its adverse impact have driven researchers to focus on alternative fuels. Biodiesel is one of the most favorable and promising alternatives in the application of automobiles, boilers, gas turbines, etc. This study targets at finding the engine performance and emission characteristics under various load conditions on Kirloskar single-cylinder VCR research engine by blending both *jatropha* biodiesel and ethanol with base diesel at various compositions. Both *jatropha* biodiesel and ethanol have high calorific value which is a most important factor for engine power production. The performance analysis showed that the biodiesel blend of 98% diesel with 1.5% *jatropha* biodiesel and 0.5% (D98J1.5E0.5) of ethanol had a significant improvement in the engine performance than the conventional diesel.




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