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Injection Timing Impact on Calophyllum inophyllum linn oil (Honne Oil) / Diesel Fuelled Diesel Engine

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Abstract

The present work examines the use of a non-edible vegetable oil namely honne oil, a new possible alternative fuel for diesel engine. Viscosity of honne oil can be reduced by blending it with diesel fuel. A direct injection (DI) diesel engine typically used in agricultural sector was operated on neat diesel (ND) and a blend of 50% honne oil with 50% diesel fuel (H50). Injection timing was changed to study the performance, emission and combustion characteristics. It was observed that advancing the injection timing with H50 from the rated injection timing (23°bTDC) increased the brake thermal efficiency and reduced CO, HC and smoke opacity emissions. However, NO_x emission was increased. The ignition delay with H50 was higher than that with ND for all the injection timing under consideration. Improved premixed heat release rates were observed with H50 when the injection timing was advanced. The best injection timing was found to be 27° bTDC for H50 based on brake thermal efficiency (BTE).

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