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EFFECT OF OXIDIZED METHYL ESTER OF PALM OIL BLENDS ON ENGINE PERFORMANCE AND EMISSION OF MULTICYLINDER CI DIESEL

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ABSTRACT

One of the significant routes to tackle the problem of increasing prices and the pollution problems of petroleum fuels is by the use of vegetable oil fuels known as biodiesels. However, biodiesel-fueled engines produce less carbon monoxide, unburned hydrocarbons, and particulate emissions compared to diesel fuel shown by previous researchers but, one drawback of biodiesel is that it is more prone to oxidation than petroleum-based diesel fuel. In its advanced stages, this oxidation can cause the fuel to become acidic and to form insoluble gums and sediments that can plug fuel filters. The objective of this study was to evaluate the effect of oxidized methyl ester of palm oil on engine performance and emissions. A Hindustan motor 37.3 kW variable speed diesel engine as fueled with oxidized and un-oxidized methyl ester of palm oil blends with diesel and the performance were compared with diesel fuel. The test was conducted at steady-state conditions at a rated rpm by varying the loads. The engine performance of the neat methyl ester of palm oil and their blends up to 30 % was compatible to that of diesel fuel with almost similar brake power, Indicated Power and brake thermal efficiency of engine, but higher fuel consumption. While comparing the oxidized and un-oxidized methyl ester of palm oil the performance of brake thermal efficiency and fuel consumption were little bit on higher side for oxidized methyl ester of palm oil and less smoke density than un-oxidized methyl ester.

KEYWORDS: Diesel Engine, Methyl Ester of Palm Oil, Performance, Emission, Oxidation

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