

PERFORMANCE AND EMISSION CHARACTERISTICS OF A CI ENGINE FUELED WITH BIODIESEL EXTRACTED FROM WCO-MUSTARD OIL

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ABSTRACT

Substitute for conventional diesel fuel by biodiesel is widely considered to have more societal benefits, such as reducing greenhouse gas emissions and supporting rural agriculture economies. Biodiesel is a natural fuel extracted from various feedstock or vegetable oils or from animal fats. This is defined as a biodegradable matter formed from fatty acid methyl and ethyl esters. Nowadays, most of the biodiesel fuels are extracted from edible oils such as palm oil, soya bean oil, sunflower oil etc., due to their eco-friendly characteristics.

The present work includes the production of Biodiesel from Waste cooking oil and Mustard oil by transesterification process and mixed in 1:1 ratio followed by performance and emission characteristics of 3.675 kW C.I engine with extracted biodiesel as fuel. This experimental investigation includes blending of said biodiesel with diesel at three different proportions as B10, B20, B30 and 2% of ethanol to enhance the ignition quality of fuel and cold starting of the Engine. The performance parameters such as brake power (BP), brake specific fuel consumption (BSFC), and emission characteristics about NO_x, HC, CO₂ and CO of above specified engine at three injection pressures as 180bar, 200bar, and 220 bar respectively, are studied and compared with convention Diesel as a fuel at an injection pressure of 180 bar. The Biofuel sample title as B10 is found optimum from efficiency and economy point of view compared to rest two B20 and B30 samples.

KEYWORDS: *Biodiesel Blends, Mustered Oil, Pressure Injectors, Transesterification and Waste Cooking Oil*

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