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PERFORMANCE, COMBUSTION AND EMISSION EVALUATION OF VEGETABLE DE-OILED GROUNDNUT CAKE -DIESEL BLEND ON DIESEL ENGINE

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Abstract

Alternative sources for petroleum fuels have been the prime concern of most of the environmentalists. It is also a concern for economists due to the depletable nature of the fossil fuel. Vegetable oils are considered as good alternatives to Diesel as their properties are close to Diesel. At present bio Diesel is commercially produced from the vegetable oils by esterification processes and its cost restrict its uses. In this paper, studies on Groundnut de-oiled cake blends with Diesel performance is aimed. The fuel is prepared by just adding dry de oiled cake powder at various proportions with Diesel. Experiments were carried out in a single cylinder, water cooled, four stroke Diesel engine for various blends of ground nut de-oiled cake powder (GNDOCP) and Diesel fuel as 5%, 10%, 15%, 20% and 25% GNDOCP by weight in the fuel blend. The fuel has the potential to reduce smoke, CO emissions simultaneously with 3% increase in efficiency and a small increase in HC and NOx emission. The experimental results show that GNDOCP blend operation results in higher brake thermal efficiency with reduced emissions compared to the neat Diesel.

Keywords: Ground nut de oiled cake powder, blended fuel, performance and emission characteristics and bio-fuels.