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Biodiesel Production from Rabbit Fat Oil Using Transesterification and Experimental Evaluation

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Abstract: The global energy consumption is expected to grow at a faster rate than the population growth. By 2030, an increase of 53% of global energy consumption and 39% of greenhouse gases emissions from fossil fuels is anticipated. Therefore, it becomes a global agenda to develop clean alternative fuels, which are domestically available, environmentally acceptable and technically feasible. Energy consumption is constantly increasing all over the world in spite of the rationalization measures that have been undertaken. Liquid fossil fuels are the main and most frequently used fuels for automobile and mobile machinery. The studies have been focused on discovering the fuel that would be adaptable to the existing engine constructions and that would meet the criteria regarding renewability, ecology and reliability of use. During the last decade biodiesel has become the most common renewable liquid fuel. As an alternative fuel, biodiesel seems as one of the best choices among other sources due to its environment friendly behavior and similar functional properties with diesel. Nowadays, the production of biodiesel from Animal Fat oil is gaining more attention to replace diesel fuel. Biodiesel, a clean, renewable fuel, has recently been considered as the best for a diesel fuel substitution because it can be used in any compression ignition engine without any modification.

The main objective of this work is to discuss the impact of biodiesel from Rabbit fat oil. In this study, the effect of bio-diesel from Rabbitfat, oil and its blends on a single cylinder Kirloskar TV-1 diesel engine were investigated. In this work, the performance and emission analysis were conducted. The test fuel was prepared in the ratio of B25, B50, B75 and B100, which represent the blend ratio of Rabbit fat oil biodiesel and the rest diesel fuel. The aim of this investigation was to reformulate the fuel to utilize the biodiesel and its blend to enhance the fuels performance, characteristic and to reduce the pollution from the engine.

The experimental results reveal a marginal decrease in brake thermal efficiency when compared to that of sole fuel. In this investigation, the emission test was conducted with the help of the AVL DI gas analyzer, in which CO HC and smoke density are marginal increased on the other hand CO_2, O_2, and NOx are appreciable reduced when compared to that of sole fuel. Cylinder pressure and H.R.R. We also perform with the help of AVL DI Gas Analyzer.

Key words: RB : Rabbit fat, oil, Transesterification, Biodiesel, Oxides of nitrogen, Smoke

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