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Potential Benefits of Diesel Aloe Vera Emulsified Fuel in A Non-Road Diesel Engine

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Abstract : In this paper, an experimental attempt has been made to improve the performance and emission of a non-road diesel engine using a diesel aloe vera emulsified fuel (A10). Two fuel samples such as neat diesel (D100) and diesel aloe vera emulsified fuel referred to as A10 (10% aloe vera, 89% diesel, 1% surfactant) was used to conduct the experiments and the obtained results were compared. The experiments were carried out on a single cylinder non-road Genset diesel engine at low load (BMEP 1.54 bar), mid load (BMEP 3.09 bar) and high load (BMEP 4.63 & 6.18 bar) conditions. The experimental results show that the diesel aloe vera emulsified fuel resulted in reduced nitric oxide (NO) with increased brake thermal efficiency (BTE). overall, a 19.24% reduction in NO emission and a 9.82% increase in BTE was observed. Also, it was noticed that the A10 prolonged the ignition delay and improved the air-fuel mixing inside the combustion chamber.

Keywords: Non-road diesel engine, Aloe vera, Emulsified fuel, NO, BTE.

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