EuroSciCon

10th Edition of International Conference on

Biofuels and Bioenergy

March 04-05, 2019
Barcelona, Spain

Arch Chem Res 2019, Volume 3
DOI: 10.21767/2572-4657-C1-015

Experimental Evaluation of the effect of compression ratio on Performance and emission of CI Engine fuelled with Argemone Biodiesel blend with diesel at different loads

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In this experimental work, by varying the compression ratio, the performance and emission characteristics were analyzed for a different argemone methyl ester blends (AB10, AB15, and AB20) and diesel fuel in a diesel engine. The experiments were conducted for different compression ratio CR14, CR16, and CR 18 with argemone biodiesel blends (AB10, AB15, and AB20) with pure diesel fuel at different load conditions part load and full load conditions. The performance parameters such as brake power, brake thermal efficiency and brake specific fuel consumption and emission parameters like as carbon monoxide, carbon dioxide, nitric oxide, unburnt hydrocarbon were measured and compared with diesel fuel. The experimental results shows that the compression ratio CR18 for AB15 blended fuel (15% argemone methyl ester + 75% diesel) give better performance and lower emission level as compare to pure diesel fuel. The results indicate that the performance characteristics brake power and brake thermal efficiency 2-3% were slightly higher, brake specific fuel consumption 1-2% lower than that of diesel fuel for AB15 at compression ratio CR18. The emission level of UHC, CO, CO_2, NOx were lower (5-10%) for AB15 at compression ratio CR18 as compared to diesel fuel. From this investigation shows that increase the compression ratio increases the brake thermal efficiency and brake power and decreases BSFC and having lower emission level without any engine modification.

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