



ChemTech

International Journal of ChemTech Research

CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.10 No.9, pp 322-332, 2017

Performance and Emission characteristics of Diesel-Rice bran biodiesel blend ratios using different piston dimensions in Diesel engine

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Abstract : The present investigation focuses on analyzing the evaluation characteristics of rice bran biodiesel (RBBD) in Diesel engine (KIRLOSKAR DM10) experimentally. The compression ratio of the Kirloskar engine is modified by changing the shapes of the piston compared to Hemispherical existing piston (HEP). The variable piston dimensions of the engine were differentiated by attrition and metal deposition to form Toroidal piston (TP) and Deep Toroidal Re-entrant piston (DTRP). The effects of engine investigation are studied using the blend proportions of RBBD with existing and modified piston dimensions. The engine performance characteristics show an increase in brake thermal efficiency (BTE) with brake power (BP) and marginal increasing specific fuel consumption. The emission characteristics of the CO and HC are originated to be decrease with TP where as DTRP demonstrates pessimistic perfection. The oxides of nitrogen emission are formed to increase with DTRP.

Keywords : Compression ratio, brake thermal efficiency, oxides of nitrogen, piston dimensions.

I.J.Isaac Premkumar *et al* /International Journal of ChemTech Research, 2017,10(9): 322-332.
