Emission Characteristics Effect on Rice Bran Oil Enriched with Diesel Fuel on Compression Ignition Engine

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Abstract Experimental work has been done to investigate emissions characteristics of a single cylinder diesel engine with the rice bran oil (RBO) diesel fuel mixture at various engine speed. The emission parameters evaluated were nitrogen oxide (NO_x, carbon dioxide (CO_2), hydrocarbon (HC) and carbon monoxide (CO). The results with rice bran oil based experiment, (RBO50, RBO75, RBO100) are compared with diesel (RBO00). The results exhibited that CO, CO_2, HC and NO_x emissions are lesser than diesel fuel; Hydrocarbon emissions for both RBO75 and RBO100 were observed at two engine speed (3500 rpm and 2000 rpm). Hydrocarbon emission for RBO75 were highest at 3500 rpm engine speed which is 211 ppm. RBO50 have less and better carbon monoxide (1.2% and 0.32% at 3500 rpm and 2000 rpm respectively) and carbon dioxide emissions (8.3% and 6.9% at 3500 rpm and 2000 rpm respectively) compared with diesel (RBO00) and other fuels mix at both engine speed; 75% load. Higher NO_x emissions in diesel (RBO00) was observed which is 499 ppm and 599 ppm at engine 3500 rpm and 2000 rpm respectively as compared to other fuels; RBO50, RBO75, RBO100. In a nutshell, emission characteristics for rice bran oil were improved compared to diesel and RBO50 can consider as optimum mixture blend in terms of CO_2, CO, NO_X and HC.

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