عنوان مقاله:

Assessment of the Performance and Exhaust Emission of a Diesel Engine Using Water Emulsion Fuel (WEF) in Different Engine Speed and Load Conditions

محل انتشار:

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خلاصه مقاله:

The performance characteristics and exhaust emission of a diesel engine using Water Emulsion Fuel (WEF) have been investigated under different engine speeds (۱۶۰۰ to ۲۴۰۰ rpm) and load conditions (۲۵ to ۱۰۰ %). The experiments were carried out on an air-cooled diesel engine of single cylinder using the WEF containing ۵ % water, ۲ % surfactant with Hydrophilic-Lipophilic Balance (HLB) of ۶.۸. The engine performance and exhaust emission using WEF were also compared with the Neat Diesel Fuel (NDF). According to the results, average reduction of ۹.۷ % in the engine torque and brake power was observed using WEF at all engine speeds. In addition, a ۷.۹ % increase in the Brake Specific Fuel Consumption (BSFC) and a ۳.۷ % increase in the Brake Thermal Efficiency (BTE) were observed for WEF in comparison with NDF in all loading conditions. In case of emission, significant lower hydrocarbon emission (i.e., ۱۴.۶ % on average) was observed for WEF comparing to NDF at all engine speeds. Moreover, a considerable reduction in the NOx emission (i.e., ۳۱.۱ % on average) was observed for the WEF comparing to the NDF in every engine load. In summary, the application of WEF leads to the reduction in the emission of different pollutants with a positive impact on .the environment

کلمات کلیدی:

Water emulsion fuel, Engine Performance, Exhaust emission, Engine speed, Engine load