

An Experimental Study of the Performance and Emission Characteristics of a Compression Ignition (CI) Engine Fueled with Palm Oil Based Biodiesel

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Abstract. In recent years, many researches have been performed to find suitable alternative fuels to petroleum products. In the present investigation, an experimental work has been carried out to analyze the performance and emissions characteristics of a single cylinder compression ignition DI engine fuelled with the blends of biodiesel at the different engine speed. The performance parameters evaluated were torque, brake power (BP), brake mean effective pressure (BMEP) and the emissions such as carbon monoxide (CO), carbon dioxide (CO₂) and unburned hydrocarbon (UHC). The results of experimental investigation with biodiesel blends with diesel are compared with that of diesel. The performance parameter in terms of torque and BMEP are 12.5 % and 9% less for B5 and B10 than diesel respectively. BP for diesel was higher about 6 % compared to biodiesel blends. The results indicated that the UHC, CO and CO₂ emissions are slightly less than diesel; UHC emissions were also observed to be 4% less for B5 and B10 compared to diesel, CO emissions were also observed to be 5% less for B5 and B10 compared to diesel and CO₂ emissions were also observed to be 1% less for B5 and B10 compared to diesel. In a nutshell, performance characteristics for biodiesel were lower compared to diesel which not much significant difference, while emission characteristics for biodiesel blend were improved compared to diesel.