

Thesis Title	Performance and emission From C.I. engines using plant oil blends
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ABSTRACT

Predictions of combustion rates of oil single droplets were attempted for the crude palm oil blended with diesel oil. A mass transfer theory based on forced convection was used for comparison between predicted and experimental combustion rates. Experiments to determine combustion rates were conducted on droplet models of 5 and 10 cm diameter. Measured results on the model agreed fairly well to the predicted values. The deviations of experimental values from predicted values are about -0.28 to -4.08 %

The mass transfer theory is extended to predict the performance of a compression ignition engine (C.I.engine). Based on forced convection of air in the engine cylinder, tests power ratios of blended oil to diesel oil correspond fairly well to predicted values. Observed power ratios differ from predicted values by -0.31 to -6.23 %. When correction factors based on engine torque are used to improve the predicted results, deviations of the observed values from the predicted values are about -2.58 to 2.92 %.

Emissions from the engine consisted of carbon monoxide, nitrogen oxide and black smoke. The emission ratios of blended oil to diesel oil were found to increase when the quantity of crude palm oil in the blended fuel and the engine speed increased.

Keywords : C.I. engine / Combustion / Emission / Mass transfer / Power ratio