

Thesis Title	Performance and Emissions of Indirect Injection Diesel Engine Fuelled by Biodiesel-Ethanol Blends
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ABSTRACT

This research is to study the performances and emissions of indirect diesel engine, fuel are diesel B5, biodiesel and biodiesel-ethanol blends. The ratios of blended fuel are 10, 30 and 50% by volume of ethanol. The engine speed is 1,000 , 1,300 , 1,600 , 1,900 and 2,200 rpm at full load condition. The experiment showed that the torque and brake power of the engine when using biodiesel and biodiesel-ethanol blends are lower than that of diesel B5 3.32-31.04% and 3.34-30.80%, respectively, and decrease with the percentage of ethanol in the blended fuel. Specific fuel consumption higher than diesel B5 14.18-37.20%. Thermal efficiency when using diesel 26.82-33.07%, biodiesel 25.53-31.85%, and biodiesel-ethanol blends 22.71-30.91%. The maximum pressure in main combustion chamber and pre combustion chamber lower than that of diesel B5 2.31-6.35% and 1.38-5.42%, respectively, because heating value of biodiesel and biodiesel-ethanol blends lower than diesel, thus decreasing the pressure in the combustion chamber, and result in reduced brake power. The biodiesel-ethanol blends also caused a ignition delay of fuel with air in combustion chamber due to ethanol has low cetane number, and ignition delay to increase with the percentage of ethanol in the blended fuel. Pollution showed that the amount of CO and HC when using biodiesel and biodiesel-ethanol blends decreases due to the oxygen in ethanol. Biodiesel emits NO_x higher than diesel but when blends biodiesel with ethanol will reduce the amount of NO_x compared with biodiesel.

Keywords: Biodiesel/Emissions/Ethanol/Performance