# Evaluation of Diesel Engine Performance and Exhaust Emission Characteristics Using Waste Cooking Oil

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**ABSTRACT**

The depletion of fossil fuels as well as the rises of greenhouse gases had caused most government worldwide to follow the international energy policies for the use of biodiesel. One of the economical sources for biodiesel production is waste cooking oil. The use of waste cooking oil is more sustainable if they can perform similarly to conventional diesel fuel. This paper deals with the experimental study carried out to evaluate the engine performance and exhaust emission of diesel engine operated by biodiesel from waste cooking oil at various engine speed. The biodiesel used are known as B5, which contains of 5% of waste cooking oil and 95% of diesel fuel. The other one is B20, which contains of 20% of waste cooking oil plus 80% of diesel. Diesel was used as a comparison purposes. The results show that power and torque for B5 give the closest trend to diesel. In terms of heat release, diesel still dominates the highest value compared to B5 and B20. For exhaust emission, B5 and B20 showed improvement in the reduction of $NO_x$ and PM.

**KEYWORDS:** Alternative Fuel, Biodiesel, Engine Performance, Exhaust Emission, Waste Cooking Oil (WCO)

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