

Study on Particulate Matter of Diesel Engine Using Waste Cooking Oil

N. F. Jaharudin, N. A. Ramlan, M. H. Hamzah, A. A. Abdullah, R. Mamat

Faculty of Mechanical Engineering, Universiti Malaysia Pahang, 26600 Pekan, Pahang Darul Makmur

ABSTRACT

Particulate matter (PM) is one of the major pollutants emitted by diesel engine which have adverse effects on human health. Accordingly, many researches have been done to find alternative fuels that are clean and efficient. Biodiesel is preferred as an alternative source for diesel engine which produces lower PM than diesel fuel. However, the manufacturing cost of biodiesel from vegetable oil is expensive. Therefore, using waste cooking oil (WCO) for biodiesel would be more economical and sustainable solution. The characteristics of direct injection diesel engine in term of the PM have been investigated experimentally in this study. The experiments were conducted using single cylinder diesel engine with different speed (1200 rpm, 1500 rpm, 1800 rpm, 2100 rpm, 2400 rpm) at constant load. PM emission of WCO B100 and diesel fuel was compared and the effect of PM components such as soluble organic fraction (SOF) and soot were studied. The result showed WCO B100 reduces the PM emission at all engine speed. Furthermore, both fuels showed highest reduction of PM concentration at moderate engine speed of 1500 rpm.

KEYWORDS: Biodiesel, Particulate Matter, Soluble Organic Fraction, Soot, Waste Cooking Oil (WCO)

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