THE EFFECT OF ADDITIONAL DIETHYL ETHER (DEE) AND JATROPA ON THE POWER AND THE FUEL CONSUMPTION OF DIESEL ENGINE WITH AN EGR SYSTEM

**Abstract.** The high demand for diesel engines accelerates the enhancement of diesel fossil fuels and air pollution. This case can be reduced by utilizing Jatropha. The cetane number and the high oxygen content are the main considerations. However, the enhancement of soot emissions and the reduction of thermal efficiency are the problems that have to be solved urgently. Diethyl ether has an oxygen content, a high cetane number, and a low viscosity. The properties of diethyl ether are predicted to be the solution to lower the problem of jatropha. This study aimed to observe the power and the fuel consumption of a 4JB1 diesel engine with an EGR system which was the mixture of jatropha-diethyl ether fuel. The used of Jatropha was 10% and 20%, while the used of diethyl ether was 5%, 10%, and 15%. All fuels were tested at 2500 Rpm engine operation. The test results showed that the power on the J20 without EGR had the highest decrease of 4.488% with a 25% load, whereas the power on the heat of DJ20DEE15 EGR produced the lowest decrease of 0.116% with 100% load compared to using pure diesel. In addition, the J20 fuel consumption without EGR resulted the highest decrease that was 27.183% at the 25% load, while the power on the heat of DJ20DEE15 EGR showed the reduction of 16.537% with 75% load compared to using pure diesel.