ABSTRACT

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ANALYSIS OF THE EFFECT OF INJECTOR PRESSURE VARIATIONS ON CAT D399 DIESEL ENGINE ON FUEL CONSUMPTION OF SOLAR AND SOLAR DEX

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One type of motorized vehicle engine that is very suitable for transportation and heavy equipment vehicles is the diesel engine, because of its high combustion efficiency, reliability, fuel flexibility, and low fuel consumption, making diesel widely used in several countries. This study was conducted to examine the effect of differences in nozzle or injector pressure on fuel consumption in the CatD399 diesel engine using 2 variations of fuel, namely diesel bisa and diesel dex. The diesel motor used in this study is Caterpillar with serial number D399 and the following specifications: Diesel Engine: Caterpillar brand, type D339, 4 stroke, fuel capacity 64.4 liters, length 186 in (4720 mm), Width 63 in (1600 mm), Height 90 in (2250mm), Total Weight 17,660 lb (8009 kg), and Engine Power 1000-1250 HP. Supporting equipment: tachometer, stop watch, measuring cup and measuring cylinder, tool set, Nozzle tester and Fuel Ratio Consumption Fuel.

The main object of this research is the difference in fuel consumption on the Cat D399 when the injector/nozzle pressure is at 180 and 200 bar. The independent variable in this study is the consumption of fuel used, namely diesel fuel and Solar Dex. The dependent variable is the variable that is influenced by the independent variable. The dependent variable in this study is the variation of engine speed (rpm) which is 2200 and 2700 rpm, and the variation of the opening of the nozzle/injector injection which is 180 and 200 bar, and the fuel used is diesel and Solar Dex.

The data obtained from testing and calculations show that there are differences in fuel consumption for both diesel and diesel fuel, this shows that variations in injector pressure affect fuel consumption.