

TORQUE AND POWER TESTS ON ENERGY-EFFICIENT VEHICLES OF PANDALUNGAN FUELED BY ETHANOL

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ABSTRACT

The depleting availability of fossil fuels and increasing energy needs are driving the development of alternative energy sources that are more environmentally friendly. One of the renewable energy sources that has the potential to be an alternative fuel for internal combustion engines is ethanol, which comes from biomass, has a high Octane number, and produces cleaner exhaust emissions than gasoline. This study aims to determine the torque and power produced by ethanol-fueled Pandalungan energy-efficient vehicles, by analyzing the effect of variations in ignition degrees of 10°, 15°, and 20° on the torque and power produced, as well as comparing the performance of ethanol with gasoline fuel in the same vehicle. The research method used is an experimental method by testing engine performance using a dyno test. The results show that the variation in the degree of ignition has an influence on the performance characteristics of the engine. The highest maximum torque value is obtained at a 20° ignition variation of 7.68 N·m at 5500 rpm, while the highest maximum power is obtained at a 15° ignition variation of 7.49 HP at 7500 rpm. Based on the results of a comparison with previous research that used gasoline fuel in the same vehicle, it was found that the performance of vehicles with ethanol fuel was able to compete with the performance of gasoline fuel. Based on the results of the study, it can be concluded that ethanol fuel has good potential as an alternative fuel for internal combustion engines because it is able to produce competitive engine performance and support the use of renewable energy that is more sustainable

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