**PENGARUH PEMANASAN BAHAN BAKAR MENGGUNAKAN *HEAT EXCHANGER* SUMBER PANAS GAS BUANG KNALPOT TERHADAP KINERJA MESIN SEPEDA MOTOR 4 LANGKAH**

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## ABSTRAK

Penelitian ini bertujuan untuk mengetahui pengaruh pemanasan bahan bakar menggunakan heat exchanger berbasis panas gas buang knalpot terhadap torsi, daya, dan konsumsi bahan bakar pada sepeda motor 4 langkah. Metode yang digunakan adalah eksperimen dengan membandingkan kondisi standar dan kondisi pemanasan bahan bakar pada suhu 30°C, 40°C, dan 50°C. Pengujian dilakukan menggunakan dynotest untuk mengukur torsi dan daya, serta metode buret untuk konsumsi bahan bakar. Hasil penelitian menunjukkan bahwa pemanasan bahan bakar meningkatkan efisiensi pembakaran, yang ditandai dengan kecenderungan peningkatan torsi dan daya serta penurunan konsumsi bahan bakar. Nilai konsumsi bahan bakar mengalami penurunan seiring kenaikan suhu bahan bakar, menunjukkan proses pembakaran yang lebih optimal. Kesimpulannya, penggunaan heat exchanger efektif dalam meningkatkan performa dan efisiensi mesin melalui pemanfaatan panas gas buang.

**Kata kunci:** heat exchanger, pemanasan bahan bakar, torsi, daya, konsumsi bahan bakar

***THE EFFECT OF FUEL HEATING USING AN EXHAUST GAS-BASED HEAT EXCHANGER ON THE PERFORMANCE OF A FOUR-STROKE MOTORCYCLE ENGINE***

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## *ABSTRACT*

*This study aims to analyze the effect of fuel heating using a heat exchanger that utilizes exhaust gas heat on the performance of a four-stroke motorcycle engine. The research was conducted using an experimental method by comparing standard conditions and fuel heating conditions at temperature variations of 30°C, 40°C, and 50°C. The test object was a 2005 Honda Megapro motorcycle using Pertalite fuel. Engine performance was measured using a dynamometer to obtain torque and power, while fuel consumption was measured using a burette method.The results indicate that fuel heating improves combustion efficiency, which is reflected in the increase of torque and power, as well as the decrease in fuel consumption. Fuel consumption decreased with increasing fuel temperature, indicating a more optimal combustion process.In conclusion, the use of a heat exchanger utilizing exhaust gas heat is effective in improving engine performance and fuel efficiency in four-stroke motorcycles.*

**Keywords:** *heat exchanger, fuel heating, engine performance, torque, power, fuel consumption*