ABSTRAK

Penelitian ini bertujuan untuk menganalisis pengaruh variasi perilaku akselerasi dan komposisi campuran bahan bakar Pertamax *Green* dengan Pertalite terhadap performa mesin sepeda motor Honda Beat 110 cc. Parameter performa yang dianalisis meliputi *Brake Torque, Brake Power, Brake Specific Fuel Consumption,* dan *Brake Thermal Efficiency*. Pengujian dilakukan pada tiga jenis pola akselerasi: lambat, normal, dan agresif, dengan variasi campuran bahan bakar 100% Pertamax *Green*, 90:10, 80:20, dan seterusnya hingga 100% Pertalite. Hasil penelitian menunjukkan bahwa akselerasi agresif menghasilkan nilai torsi dan daya paling tinggi, terutama saat menggunakan campuran 80% Pertamax *Green* dan 20% Pertalite. Campuran ini juga memberikan efisiensi bahan bakar terbaik berdasarkan nilai BSFC terendah pada akselerasi lambat dan normal. Selain itu, nilai BTE tertinggi tercapai pada campuran yang sama, mencapai efisiensi termal sekitar 35–36%. Peningkatan proporsi Pertalite di atas 30% cenderung menurunkan performa dan efisiensi mesin. Secara keseluruhan, campuran 80% Pertamax *Green* dan 20% Pertalite dinilai paling optimal dalam menjaga keseimbangan antara tenaga, torsi, dan efisiensi konsumsi bahan bakar pada berbagai pola akselerasi.

Kata kunci: akselerasi, efisiensi termal, honda beat 110 cc, konsumsi bahan bakar, performa mesin, pertalite, pertamax *green*.

ABSTRACT

This study aims to analyze the influence of varying acceleration behaviors and fuel mixtures of Pertamax Green and Pertalite on the performance of a Honda Beat 110 cc engine. The evaluated performance parameters include Brake Torque, Brake Power, Brake Specific Fuel Consumption, and Brake Thermal Efficiency. Experiments were conducted using three different acceleration patterns slow, normal, and aggressive—across several fuel blends ranging from 100% Pertamax Green to 100% Pertalite in incremental ratios (e.g., 90:10, 80:20). The results indicate that aggressive acceleration yields the highest torque and power values, especially with the 80% Pertamax Green and 20% Pertalite mixture. This combination also demonstrated the most efficient fuel consumption based on the lowest SFC values under lambat and normal acceleration modes. Additionally, the highest thermal efficiency, approximately 35–36%, was recorded with the same fuel ratio during both lambat and aggressive driving. Performance and efficiency notably declined as the proportion of Pertalite exceeded 30%. Overall, the 80% Pertamax Green and 20% Pertalite blend was identified as the most effective in balancing engine power, torque, and fuel efficiency across various acceleration behaviors.

Keywords: acceleration behavior, engine performance, fuel consumption, honda beat 110 cc, pertamax green, pertalite, thermal efficiency.