ABSTRAK

Penggunaan kendaraan roda dua telah meningkat secara signifikan dalam beberapa tahun terakhir dibandingkan dengan tahun sebelumnya. Salah satu aspek yang mengalami dampak signifikan akibat peningkatan jumlah kendaraan bermotor adalah konsumsi bahan bakar. Salah satu pendekatan yang banyak dikaji adalah penggunaan campuran bahan bakar Pertamax RON 92 dan Pertalite RON 90. Penelitian ini bertujuan untuk menganalisis pengaruh variasi campuran bahan bakar dan perilaku akselerasi berkendara terhadap *Brake Torque, Brake Power, Brake Specific Fuel Consumption* (BSFC), dan *Brake Thermal Efficiency* (BTE) pada sepeda motor 110 cc. Pengujian dilakukan dengan empat campuran bahan bakar: 100% Pertamax, 90 % pertamax + 10% pertalite, 80% Pertamax + 20% Pertalite dan 70% Pertamax + 30% Pertalite, serta tiga perilaku berkendara: *aggressive*, *normal*, dan *slow*. Hasil menunjukkan bahwa pada mode *aggressive*, campuran 80:20 menghasilkan *Brake Torque* awal tertinggi sebesar 21,59 N.m, sementara campuran 70:30 mencatat *Brake Power* awal tertinggi 6,90 kW dan *Brake Thermal Efficiency* tertinggi 24,26%. Namun, performanya menurun setelah 10–15 detik. Campuran 70:30 juga mencatat BSFC awal terendah (0,35 kg/kWh) pada akselerasi *aggressive* dan 0,41 kg/kWh pada mode *slow*. Di sisi lain, Pertamax murni menunjukkan kestabilan performa dan *Brake Thermal Efficiency* terbaik secara konsisten dalam mode *normal* dan *slow*. Kesimpulannya, campuran oktan menengah (70:30) cocok untuk efisiensi awal, sedangkan Pertamax murni lebih direkomendasikan untuk performa jangka panjang.

Kata Kunci : jenis bahan bakar, konsumsi bahan bakar, perilaku berkendara, performa mesin.

ABSTRACT

The use of two-wheeled vehicles has increased significantly in recent years compared to the previous year. One aspect that has been significantly impacted by the increase in the number of motorized vehicles is fuel consumption. One approach that has been widely studied is the use of a fuel mixture of Pertamax RON 92 and Pertalite RON 90. This study aims to analyze the effect of fuel mixture variation and driving behavior on Brake Torque, Brake Power, Brake Specific Fuel Consumption (BSFC) and Brake Thermal Efficiency (BTE) of a 110 cc motorcycle. Tests were conducted with four fuel blends: 100% Pertamax, 90% Pertamax + 10% Pertalite, 80% Pertamax + 20% Pertalite and 70% Pertamax + 30% Pertalite, and three riding behaviors: aggressive, *normal* and slow. Results showed that in the aggressive mode, the 80:20 blend produced the highest starting torque of 21.59 N.m, while the 70:30 blend recorded the highest starting brake power of 6.90 kW and the highest thermal efficiency of 24.26%. However, the performance declined after 10-15 seconds. The 70:30 blend also recorded the lowest initial BSFC (0.35 kg/kWh) under aggressive acceleration and 0.41 kg/kWh under slow mode. On the other hand, pure Pertamax showed the best performance stability and Brake Thermal Efficiency consistently in *normal* and slow modes. In conclusion, the mid-octane blend (70:30) is suitable for initial efficiency, while pure Pertamax is more recommended for long-term performance.

Keywords : driving behavior, engine performance, fuel type, fuel consumption.