ABSTRAK

Seiring dengan pertumbuhan penduduk Indonesia yang terus meningkat, konsumsi akan sumber energi di Indonesia mengalami peningkatan yang signifikan. Faktor meningkatnya konsumsi bahan bakar di Indonesia adalah dipengaruhi oleh meningkatnya populasi kendaraan di Indonesia. Tujuan penelitian ini adalah untuk mengetahui pengaruh variasi perilaku akselerasi berkendara agresif, normal, dan *slow* terhadap performa mesin sepeda motor 160 cc injeksi menggunakan bahan bakar Pertamax Turbo RON 98. Penelitian dilakukan secara kuantitatif menggunakan metode eksperimen dengan alat uji dinamometer, dan parameter yang diuji meliputi *Brake Torque*, *Brake Power*, *Brake Specific Fuel Consumption* (BSFC), serta *Brake Thermal Efficiency* (BTE). Pengujian dilakukan dengan variasi akselerasi dengan kecepatan mencapai 80 km/jam pada waktu 10, 40, dan 55 detik. Hasil penelitian menunjukkan bahwa nilai *brake torque* tertinggi sebesar 16,36 Nm dicapai pada perilaku berkendara agresif dengan RON 98 pada awal akselerasi. Nilai *brake power* tertinggi mencapai 4,26 kW, diperoleh pada perilaku agresif. Nilai *brake specific fuel consumption* terendah dicapai oleh perilaku agresif dengan hasil 0,49 kg/kWh, sedangkan nilai tertinggi ditunjukkan oleh perilaku *slow* sebesar 1,54 kg/kWh. *Brake thermal efficiency* tertinggi diperoleh dari perilaku normal di awal pengujian, dengan nilai 17,74%. Berdasarkan hasil tersebut, dapat disimpulkan bahwa perilaku berkendara memiliki pengaruh signifikan terhadap konsumsi bahan bakar dan performa mesin, dengan akselerasi agresif menghasilkan efisiensi dan daya tertinggi dalam waktu singkat, namun tidak berkelanjutan.

Kata Kunci: Perilaku berkendara, akselerasi, RON 98, konsumsi bahan bakar, performa mesin

ABSTRACT

With the growth of Indonesia's population, the consumption of energy sources in Indonesia has increased significantly. The factor of increasing fuel consumption in Indonesia is influenced by the increasing population of vehicles in Indonesia. The purpose of this study was to determine the effect of variations in aggressive, normal, and *slow* driving acceleration behavior on the performance of a 160 cc injection motorcycle engine using Pertamax Turbo RON 98 fuel. The research was conducted quantitatively using an experimental method with a *dynamometer* test tool, and the parameters tested included Brake Torque, Brake Power, Brake Specific Fuel Consumption (BSFC), and Brake Thermal Efficiency (BTE). Tests were carried out with acceleration variations with speeds reaching 80 km/h at 10, 40, and 55 seconds. The results showed that the highest brake torque value of 16.36 N.m was achieved in aggressive driving behavior with RON 98 at the beginning of acceleration. The highest brake power value reached 4.26 kW, obtained in aggressive behavior. The lowest brake specific fuel consumption value was achieved by aggressive behavior with a result of 0.49 kg/kWh, while the highest value was shown by *slow* behavior at 1.54 kg/kWh. The highest brake thermal efficiency was obtained from normal behavior at the beginning of the test, with a value of 17.74 %. Based on these results, it can be concluded that driving behavior has a significant influence on fuel consumption and engine performance, with aggressive acceleration producing the highest efficiency and power in a short time, but not sustainable.

Keywords: Driving behavior, acceleration, RON 98, fuel consumption, engine performance