ABSTRACT

Petroleum-based fuels are the primary energy source for motor vehicles. The use of alternative fuels, such as Liquefied Petroleum Gas (LPG), is one approach to reducing dependence on petroleum-based fuels. This study aimed to investigate the effects of Pertalite, non-refill portable gas, and refill portable gas on the performance, fuel consumption, and fuel usage costs of a 110 cc *four-stroke gasoline motorcycle. An experimental method was employed using a Suzuki Shogun* 110 cc *motorcycle. Engine performance was evaluated by measuring power and torque using a chassis dynamometer at engine speeds ranging from 3,000 to 7,000 rpm. Fuel consumption was measured over a distance of 570 m at a speed of 20 km/h using second gear. The results showed that refill portable gas produced the highest maximum power of 3.56 HP at 6,000 rpm, while non-refill portable gas produced the highest maximum torque of 5.49 Nm at 4,000 rpm. The average fuel mass consumed over the 570 m test distance was 14 g for Pertalite, 9 g for non-refill portable gas, and 7 g for refill portable gas. The corresponding fuel usage costs were IDR 182, IDR 954, and IDR 147, respectively. These results indicate that refill portable gas produced the highest maximum power and the lowest fuel consumption and usage cost, whereas non-refill portable gas produced the highest maximum torque.*

Keywords: *fuel consumption, LPG, Pertalite, portable gas, power, torque.*