

ABSTRACT

EFFECT OF USING CLOVES OIL AS BIO-ADDITIVE FUELS ON THE PERFORMANCE OF A 4 – STROKES PETROL MOTORCYCLE

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Increase of fuel consumption at present, is caused by the growth of motor vehicles increase. An effort to use the vehicle without using fuel has not greatly been done. So, it is required efforts to save fuel. Such as use of essential oils as bio-additive fuels. The use of essential oils is done because it serves as a provider of oxygen in petrol contributing to increase the octane number, so that the combustion becomes more complete. Cloves oil itself is one of the essential oils that contain high euganol.

The research was done with some variations those were fuel consumption test and acceleration test. Fuel consumption test was conducted by two variations, Those were road test (by a distance of 2,5 km was constantly operated at 50 km/hour) and stationary tests (performed at 1500 rpm, 2500 rpm and 4000 rpm). The acceleration tests was conducted by the road test taking trough speed 0-70 km/hour and 40-70 km/hour used cloves oil and without cloves oil. Cloves oil used in this study consist of several volume variation (1 %, 2 %, 3 %, and 4 %). Cloves oil was mixed into petrol at a ratio of 1: 99 for 1% cloves oil percentage in which 10 ml of cloves oil is mixed with 990 ml of petrol. Petrol-additive mixture of 250 ml was filled into artificial fuel tank. This fuel tank was mounted in the front side of Yamaha Vega ZR 115 cc.

After the experiments, the use of cloves oil could improve the performance of the motorcycle, reduced fuel consumption and increased acceleration. In this research, it was proved that use of cloves oil could reduced fuel consumption by 30,07 % at road test through the distance of 2,5 km. For stationary test, use of cloves oil could also reduce fuel consumption by 30,30 % at 1500 rpm. Meanwhile, the travel time could also be shorted by 9,96 % at the acceleration test of 0-70 km/hour, and by 23,44 % at 40-70 km/hour.

Keywords: essential oils, cloves oil, and petrol additive.