

Analysis of Addition of Turpentine Oil to Peralite Fuel on Motorcycle Performance and Emissions

by

Achmad Maltuf Alfian

Study Program of Automotive Engineering, Majoring of Engineering
The State Polytechnic of Jember

ABSTRACT

In recent years, the automotive world has experienced very rapid technological developments, especially motorcycles. Some of the technological developments that exist on motorbikes today are related to performance and exhaust emissions produced. Researchers in the field of oil and gas are trying to create fuels that are more environmentally friendly. Turpentine oil is one of the biological additives in fuel mixtures, which aims to reduce vehicle emissions. In this study, the motorcycle used was the 2015 Honda BeAT eSP 110 cc fueled with peralite with the addition of 3%, 4.5%, 6% and 7.5% turpentine oil. The performance tests in this study are torque, power and fuel consumption. The exhaust emission tests in this study were the levels of HC, CO, CO₂, O₂ and Lambda. The results showed that the variations of Peralite 97% + MT 3%, Peralite 95.5% + MT 4.5% and Peralite 94% + MT 6% had higher torque and power values compared to pure peralite. However, in the Peralite 92.5% + MT 7.5% variation, the torque and power values decrease when compared to pure peralite. At idle engine speed, the most economical fuel consumption value is obtained at the peralite variation of 92.5% + MT of 7.5%. At engine speed of 5000 rpm, the value of the most economical fuel consumption is obtained at the variation of peralite 92.5% + MT 7.5%. idle conditions HC levels for all fuel variations are still below the specified threshold. The best HC content obtained peralite 94% + MT 6%. The CO content of the Peralite sample 97% + MT 3% exceeds the specified threshold, while for the other variations it is still below the specified threshold, the lowest CO content is found in the peralite variation 92.5% + MT 7.5% in idle conditions. The highest CO₂ content was found in the Peralite variation of 92.5% + 7.5% at idle. The highest lambda (λ) value was found in the variation of peralite 92.5% + MT 7.5%.

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