

ABSTRACT

THE ANALYSIS OF CATALYST INFLUENCE TO THE SIMPLE BROWN GAS INSTRUMENT IN IMPROVING 4 STROKES MOTORCYCLE ENGINE PERFORMANCE

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The energy crisis problem and air pollution are big problems and need to solve immediately. Many efforts have been done to overcome the energy crisis, and one of the efforts is finding alternative fuel (new and renewable energy). One of innovations to improve energy efficiency in automotive is by injecting HHO gas (or brown gas) to the combustion chamber together with the fuel. The objective of this research is to compare between 4 strokes motorcycle engine performance that uses electrolyzer and conventional 4 strokes motorcycle engine performance.

This research was conducted with some test variations including fuel consumption tests in stationary and road condition, the acceleration level and emission test. The road test was conducted by running in 3 kilometers with steady speed. The acceleration test in conducted by speeding the engine from 0 to 80 km/h and 40 to 80 km/h with gear shifting, and from 40 to 70 km/h without gear shifting. Test ware divid into two part; test in normal condition and test in using electrolyzer. The electrolyzer used two catalys variation; KHO and H₂SO₄. The KOH variation ware 1 grams, 2 grams, and 3 grams. H₂SO₄ variation ware 1 ml, 2 ml and 3 ml. These catalys ware diluted into 300 ml distilated water.

The results show that the use of electrolyzer is able to reduce fuel consumption up to 27,3% in stationary engine test in 4500 rpm, and 27,5% in road test whitin 3 kilometers. The acceleration teset show that electrolyzer is able to speed up distance time up to 13,7% in 0 to 80 km/h acceleration. 2 grams KOH electrolyzer is able to reduce HC content up to 44,1% in 3000 rpm, and reduce 30% of CO pollutan concentration. KOH as catalys is consuming lower electric eurrent compared with H₂SO₄ in electrolysis test.

Key words: electrolyzer, brown gas, HHO gas, fuel consumption, air polution