

ANALYSIS OF WET CELL FUEL CELL CATALYST TYPE VARIATIONS ON THE PERFORMANCE AND FUEL FLOW RATE OF A 183 CC FOUR-STROKE VEHICLE

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ABSTRACT

This study aims to analyze the effect of catalyst type variations of Sodium Chloride (NaCl) and Potassium Hydroxide (KOH) in a wet cell HHO generator on the performance (power and torque) and fuel flow rate of a Yamaha Mio 183 cc engine. The testing was conducted using a dynamometer at engine speeds ranging from 3.000 to 10.000 RPM with three repetitions for each treatment condition. The measured parameters included power (HP), torque (Nm), and fuel flow rate (ml/min). Power analysis was focused at 9000 RPM (peak power), while torque analysis was focused at 8000 RPM (peak torque). The results showed that the addition of HHO gas with NaCl catalyst increased power by 6.03% and torque by 5.40%, while the KOH catalyst increased power by 5.24% and torque by 5.73%. In the fuel flow rate test, the NaCl catalyst provided a fuel saving of 6.06%, while the KOH catalyst provided a saving of 14.77%. In conclusion, each catalyst has advantages in different parameters. NaCl is superior for increasing power at high engine speeds, while KOH is superior for increasing torque at medium engine speeds and for fuel savings.

Keywords: HHO generator, NaCl catalyst, KOH catalyst, engine performance, fuel flow rate

