ABSTRACT

Brown's gas (HHO) is the result of splitting water into hydrogen gas (H2) and oxygen (O2) by electrolysis process. In the water electrolysis process, water (H20) will be split into its constituent elements, namely Hydrogen and Oxygen in gas form, with the composition of Hydrogen 2 and Oxygen 1. The HHO generator (Hydrogen-Hydrogen-Oxygen) produces HHO gas through the electrolysis of water, which then used as a fuel additive in internal combustion engines. The HHO generator is a potential technology to produce hydrogen and oxygen as alternative fuels. However, to ensure optimal performance and safe use, an efficient monitoring and control system is required.

This research focuses on the design of monitoring and control systems for HHO generators. The system is designed to measure and monitor critical parameters such as current, voltage, and power in real-time. In addition, the system uses warning mechanisms to detect malfunctions, such as abnormal voltage drops or voltages that exceed the permissible range of 2 to 12 Volts. In this study, the system was divided into three sub-systems, namely the data acquisition sub-system, the control sub-system, and the monitoring sub-system. The data acquisition sub-system has a function to collect, process, and transmit data obtained by sensors to the control sub-system and monitoring sub-system. The control sub-system functions to control the voltage entering the system. The Monitoring sub-system serves to display data received from the data acquisition sub-system.

In the tests conducted, the acquisition sub-system obtained an average voltage of 2.92 V, an average current of 3.67 A, an average power of 10.67 W. In the Cut-Off control sub-system works at a voltage below 2V or above 12V and can turn on/off the HHO generator every 5 minutes. In the Monitoring sub-system, by testing Quality of Service (QoS) obtained a troughtput value of 0.68 data / second, packet loss of 0%, and a delay of 60.33 ms.

Keywords: Generator HHO, Control, Monitoring, Data Acuisision