ABSTRACT

Water electrolysis is a process of decomposing water compounds (H2O) to produce hydrogen gas (H2) and oxygen (O2). In this process, water will be mixed with a catalyst to accelerate the production of HHO gas. In this process, the electrode which is submerged in water will be given a DC voltage and current so that it can produce HHO gas. In the process to produce HHO gas, water will decrease over time. For this reason, a system is needed to monitor DC voltage and current, water volume levels, and HHO gas concentration values in the HHO generator. In addition, a system is needed that can control the HHO generator.

To be able to support this need, a system is needed that can monitor HHO generators with specifications that can detect DC voltage with an accuracy of more than 90%, detect DC electric current with an accuracy of more than 90%, detect water volume levels with an accuracy of more than 90 %, detects gas concentration values with a measurement range of 100-10k ppm., The system can monitor DC voltage values, DC electric currents, water volume levels and HHO gas concentration values in the HHO generator tank in real time with a delay value of less than 450ms, performs control controlling the HHO generator when the water volume is below a predetermined level, and giving notifications to the user when the water volume level in the HHO generator tank is about to run out.

To detect DC voltage this system will use the INA219 sensor with the tests that have been carried out to obtain an accuracy rate of 99.01 %. To detect DC electric current this system will use the ACS712 30A sensor with the tests that have been carried out to get an accuracy rate of 99.25 %. To detect the water volume level in the HHO generator this system will use the HC-SR04 ultrasonic sensor with the tests that have been carried out to get an accuracy rate of 98.32 %. The system successfully displays all values read by the sensor with a delay of 0,08 s or 80 ms and can control the HHO generator through the application. Apart from that, the application can also send notifications to users and turn off the HHO generator automatically when the water in the HHO generator cylinder runs out.

Keywords: HHO generator, HHO gas, monitoring, controlling.