

ABSTRACT

Water and electrical energy which are important needs in human life, gave birth an idea to get topic for the final project. One of the processes that involves both, the electrolysis process, involves the conversion of electrical energy into chemical reactions that produce mineral substances and hydrogen gas. According to WHO (World Health Organization) (2006), the pH standard for drinking water for daily consumption is 6.5 pH to 9.5 pH. To start the electrolysis process, of course, requires a stable and reliable power supply. Design and manufacture a power supply plus IoT features and study the large / small effect of the voltage used on the resulting pH value in the electrolysis container.

In designing a power supply, a basic understanding of electrical and electronic circuits is required in order to control the flow of electrical energy. Combining some basic power supply circuits / topologies such as rectifiers, dc converters, filters and others in the design is expected to achieve the required output parameters for electrolysis containers such as steady-dc voltage, also low ripple. The IoT switch / timer feature allows the power supply to function according to the needs of the electrolysis process. Reverse polarity is useful in changing the position of the anode and cathode terminals of the electrode.

The result of tool final project is (power supply) capable of supplying the electric voltage for the electrolysis container, with the result that the DC output voltage of 100 to 200 volts can be increased / decreased. The IoT feature is implemented in the device by utilizing the ESP32 as a Wifi module as well as the microcontroller. Thus, with 100 voltage the results of the electrolysis process can produce acidic water with a pH value of 4,56 (pH<5), and alkaline water with a pH value 8,16 (pH> 7) which is reached within 5 minutes, accomplished objective of final project .

Keywords: *Bridge Rectifier, Buck Converter, ESP32, Internet of Things, Electrolysis, Alkali Water.*