

ABSTRACT

There are many kinds of water that are good for human's health, among them are alkaline water, hydrogen water, and acidic water. The process to produce alkaline water, hydrogen water, and acidic water can use electrolysis process. One of the electrolysis process tools is water ionizer.

Water ionizer is already widely available in the market, however the price is quite expensive and the feature at water ionizer tool is not complete yet. Therefore, a tool is designed using power supply source by PLN whose the flow has been rectified by AC/DC Adaptor 12V \approx 3A with addition of INA219 sensors, pH4520C sensors, and DS18B20 temperature sensors which connect to ESP32 as data processor, then the datas from sensors will be presented on LCD (Liquid Crystal Display). Electrolysis current control system on water ionizer use Pulse Width Modulation in order to make the value of voltage can be set up to 12 V, the highest current flowing on electrode placed in water ionizer container, the highest optimal pH changed on water.

Within 180 minutes with a variative value of Pulse Width Modulation are 180, 210, 225, and 255 be found a different on pH changed on electrolyzed water. Based on the testing, when the value of Pulse Width Modulation is 255, the change of pH is the highest, with change of alkaline pH in the amount of 1,5 and acidic pH down to 1,85.

Keyword : *alkaline water, acid water, electrolysis, direct current, pH, water ionizer.*