

## ABSTRACT

Microbial control of postharvest diseases is a problem in agriculture, so technology can be a feasible solution to overcome these problems. The results of the electrolysis of water have been shown to have significant bactericidal and *virucidal properties*, therefore the electrolyzed acid water can be a useful material in agriculture. Several studies have been conducted, saying that *water electrolyzer* can be used as a *sanitizer* for fruits and food utensils. In addition, it can also be used as a fungicide during the postharvest process of vegetables and fruit. Alkaline water production equipment has been produced in the market at a fairly high price. The use of renewable energy that is growing at this time can be applied to water electrolysis equipment, therefore the authors conducted research on the design of a water electrolyzer that produces alkaline water and acid water.

In this research, *a water electrolyzer has been designed* to produce acid water and alkaline water. To run the electricity source system from PLN. The components used in this final project include SEN-0161 pH sensor, multimeter, pH meter, electrolysis vessel, Arduino Uno microcontroller, 16x2 LCD and DC-DC converter voltage reducer. The electrolysis system uses three comparisons of power sources produced from three different diodes.

Electrolysis equipment with a voltage of 210VDC can produce a pH of 5.12 in the anode container and pH 9.94 in the cathode container in a duration of one hundred and eighty minutes. In this electrolysis process, the 4A diode bridge is faster than the 2 experiments using 3A diodes and 3A diode bridges so that they are then used to produce water to be tested on mustard plants.

**Keywords:** *Solar cell, Water electrolyzer, Acid water, Alkaline water*