

Design And Build A Portable Soil PH Meter Based Microcontroller Powered By Solar Cells

Ahmad Fahriannur, S.T., M.T. (Undergraduated Thesis)

Ichsan Faiq Choirudin

Study Program of Renewable Energy Engineering
Department of Engineering

ABSTRACT

Increasing rice productivity both in quality and quantity is highly expected by the Indonesian people, whereas efforts to increase the productivity of rice plants carried out by farmers encounter many obstacles, one of which is soil fertility. The country of Indonesia, which is located on the equator, has the potential to be developed, making the sun an environmentally friendly energy source. This research aims to design a soil pH meter based on a microcontroller by utilizing solar panel energy as an energy source. The research methodology was carried out by making a pH meter using an aluminum probe which will be plugged into the ground and produce an ADC value which is then managed by a microcontroller and will produce a pH value which is then displayed on a 16x2 LCD. The meter is supplied by a 12 V 5 Ah battery with a 10 Wp solar panel for charging. From these results, it is stated that the effectiveness of the artificial pH meter against the existing tools shows that it has a fairly high accuracy whereas the difference between the artificial pH meter and the existing tools has an average error of 2.10%. The input power generated by the solar panel is 5.12 Watt, higher than the power used by the controller load which is 0.72 Watt.

Keywords: *Soil pH, Solar Panels, Soil Fertility, Measuring Instruments.*