

ABSTRAK

Hydroponics is one of the urban methods suitable for planting without using soil media (soiless) but by using nutritional mineral solutions or other materials that contain nutrients. There are various techniques that can be done for plant cultivation by hydroponics including the DFT (Deep Flow Technique) technique which uses a continuous water pump. To ensure that the nutrients of hydroponic plants are met, many hydroponic systems use monitoring systems that monitor the levels of available nutrients. This system requires sustainable electrical energy so that it increases the use of carbon energy. To support the government in reducing carbon energy use, renewable energy sources are needed.

This final project aims to design and realize a hybrid solar system in a hydroponic system. In the hybrid PLTS system, there is a monitoring system to determine the voltage and current from the PLTS system to the hydroponic system. The data will be displayed and viewed on the LCD.

The main source of electrical energy regulated in the ATS is the source of PLTS where when the PLTS cannot power the electric needs ATS will change the source of electrical energy to PLN. However, when the PLTS can power the load, the ATS will immediately move the energy source to the PLTS. The results of the test of the error rate value on the INA 219 sensor at the DC error rate voltage value of 1.5% and the DC error rate current value of 2.724%. In the PZEM 004T sensor, the AC voltage error rate value is 0.266 % and the AC error rate current is 0 %. In testing the ATS electrical energy changeover delay, an average delay of 43.392 milliseconds was obtained.

Keyword : Solar Panel, Automatic Transfer Switch, PLTS, Inverter.