

ABSTRACT

Smart plant nursery monitoring system is a control system that can be used to control the temperature and humidity in the tea plant nursery hood. The power supply used to turn on the smart plant nursery monitoring system itself still uses a power source from PLN (220V). The use of a power source from PLN is less effective because it faces several obstacles, including the original nursery location is far from the PLN electricity source and if a blackout occurs, the monitoring system will stop working.

In this final project, the author designs an off grid solar power plant that can be a source of power supply for a smart plant nursery monitoring system. This system will convert energy from sunlight into electrical energy which will be stored in the battery and then flowed to the load. The method used to determine battery capacity is the Open Circuit Voltage (OCV) method.

The system built is able to turn on the smart plant nursery monitoring system without relying on PLN electricity. This is proven by testing solar panels with two sunny and rainy conditions from 08.30 to 16.00 every 15 minutes, the maximum power value is 149.14 W in sunny conditions at 13.30 while the minimum power generated is 5.13 W at 15.30 in rainy conditions. Battery testing was carried out for 8 days in sunny, cloudy, cloudy and rainy conditions, the highest SOC value was 86.90% in sunny conditions while the lowest SOC value was 56.55% in rainy conditions. Based on two tests that have been carried out, the off grid solar power generation system can keep the smart plant nursery monitoring system on to maintain the condition of the tea plant nursery in sunny, cloudy, cloudy and rainy conditions.

Keywords: *Solar Power Plant, Off-Grid system, smart plant nursery monitoring system*