ABSTRACT

Indonesia is in a tropical area which has enormous potential for solar energy with an average daily irradiation of 4.5 kWh/m2, but only around 71.02 MWp has been utilized. The use of solar energy into a PLTS system needs to be developed to create environmentally friendly energy in Indonesia. This study aims to design an off-grid PLTS (Solar Power Plant) system with a power capacity of 100 Wp in the Karangrejo Banyuwangi vaname shrimp pond. This system consists of the main components of an off-grid type solar power plant starting from solar panels, Solar Charger Controller (SCC), batteries, inverters, and an integrated protection system. The stages of this research method include studying literature, determining components, making layout designs, installing and testing off-grid PLTS systems. The results of the design, the specifications for the PLTS components that will be used are a 100 Wp monocrystalline solar panel, a 20A 12V SCC, a 300 Watt inverter, and a 12V 65Ah battery. In this design, solar panels are installed on the roof of the shed which is located next to the pond. The steps in installing the PLTS system include assembling panel boxes, installing solar panels, inverters, batteries, and installing integrated cables. Based on the results of tests carried out on July 13, 2022 starting at 08.00 - 18.00 WIT, the resulting power values were 7.90 W; 26.20W; 9.70W; 5.30W; 0.9 W and 0.00 W.

Keywords: *Solar energy, off-grid PLTS, Engineering*