

ABSTRACT

Renewable energy sources are sources of energy that are abundant in nature and will not run out if managed properly. One of the renewable energy sources that has the potential to be developed in Indonesia is solar energy. As a form of seriousness in realizing Net Zero Emissions (NZE), the Jember State Polytechnic PKM-PI team in 2022 built an off-grid PLTS type system that is used for lighting and as a driving energy source for pond aerators that operate 24 hours. The PLTS system uses 1 monocrystalline type solar module with a capacity of 100 Wp. The installation of the PLTS system aims to reduce the cost of using PLN electricity. The off-grid PLTS performance evaluation research was conducted for 31 days starting September 22-October 22 2022. The stages of this research included literature study, data collection consisting of daily energy and solar irradiation data, data processing and analysis, and conclusions. The off-grid PLTS installation is installed on the roof of the warehouse, where the solar panels are placed on the roof with a tilt angle of 6° and an azimuth angle of 180° facing north. Monitoring daily energy data generated by solar panels is carried out using the blynk application. The highest energy value was achieved on September 24 2022 of 440 Wh, which on that day the weather was sunny with solar irradiation of 2.12 kWh/m²/day. Meanwhile, the lowest energy was found on October 7 2022, which was 48 Wh, which on that day was cloudy with solar irradiation of 2.12 kWh/m²/day. The total losses for the PLTS system are 26.2%. The PR value generated by the PLTS system in 1 month is 73.8%, so it can be concluded that the PLTS system in Mr Suparman's shrimp pond is feasible to operate.

Keywords: *off-grid, performance, PLTS*