Performance Evaluation of 100 Wp Solar Electricity Power Plant System *Off Grid* in Batu Ampar Village, Silo Sub District, Jember Regency

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ABSTRACT

Power Generation solar power with a capacity of 100 WP off grid in Batu Ampar Village, Silo sub District, Jember Regency, is used as a means of charging emergency as lighting for the community in their activities at night due to the unavailability of electricity access from PLN. PLTS 100 Wp off grid has been installed for approximately 1 year so it is necessary to check and evaluate whether it has decreased performance or not. The method used is direct data collection, literature study and PVsyst simulation. Based on the results of measurements and calculations, the highest irradiation value is 1101 W/m² in sunny weather conditions with an output power of 68.77 Watts and an average solar module efficiency of 11%. The average performance ratio during the measurement is 47% and the total energy produced from 07.00-15.00 WIB is 361.03 Wh, while from the PVsyst simulation the potential energy that can be generated for 1 year is 142.75 kWh.solar power plant is off-grid expressed in the form of a performance ratio with a feasibility standard of >70%. The results of measurements and calculations show that the performance ratio below 70% and requires maintenance and replacement of inverter components with better efficiency.

Keywords : performance evaluation, off grid solar power plant, performance ratio