

***Analysis of Off-Grid Solar Power Plant Planning using Venturi Finebubble Portable Buoy Technology in Karangrejo Shrimp Ponds, Banyuwangi, Utilizing Pv Syst 7.2.4***

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***ABSTRACT***

*Indonesia is a tropical country with a significant potential for solar energy, particularly in regions that are exposed to intense sunlight such as Java, Bali, and Nusa Tenggara. Photovoltaic Solar Power Systems (PLTS) are renewable energy systems that convert solar energy into electricity using semiconductor photovoltaic modules. The location for the off-grid PLTS planning is in Karangrejo Village, Banyuwangi, with coordinates 8.25°S and 114.38°E, which has an average solar irradiation potential of 5.78 kWh/m<sup>2</sup>/day obtained from PVsyst 7.2.4 software. The objective of this research is to analyze the amount of energy that can be generated in the off-grid PLTS planning. The analysis involves a combination of theoretical calculations and simulations using PVsyst software. The components of the PLTS include a DXM5-36P-100Wp solar module, a PWM Power 20A SCC unit, and a 12V 65Ah NARADA battery. Based on mathematical calculations, the off-grid PLTS at that location can generate an annual energy output of 147.679 kWh/year, while the simulated energy output using PVsyst 7.2.4 software is 133.72 kWh/year. The test results of the off-grid PLTS conducted over a one-month period yielded an energy output of 10.042 kWh, whereas the simulation for the same data collection period resulted in an energy output of 12.09 kWh. Hence, there is a difference of 2.042 kWh between the energy generated from the test and the simulation.*

***Keywords:*** Energy, Off-grid PLTS, PV syst 7.2.4