

***DESIGN OF AN OFF-GRID SOLAR POWER PLANT IN PEMALIKAN HAMLET,
BATU PUTIH VILLAGE, SEKOTONG DISTRICT, WEST LOMBOK REGENCY***

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ABSTRACT

Pemalikan Hamlet, located in Batu Putih Village, Sekotong District, West Lombok Regency, is an area that has not yet been connected to the PLN electricity grid, resulting in limited energy supply for daily community needs. This condition serves as the basis for conducting a study aimed at designing an Off-Grid Solar Power Plant system as a reliable and sustainable primary energy source for the local community. The research methodology includes field surveys, collection of electrical load data, measurement of solar irradiation intensity, and energy demand analysis to determine the capacity of solar panels, batteries, and inverters based on PUIL 2011 and SNI 04-6958-2003 standards. The design results show that the community's daily energy demand reaches 16,580 Wh with a peak load of 5,805 W, supplied by a 5.55 kWp PLTS system consisting of 10 Trina Solar Vertex 555 Wp panels, an 8 kW Huawei SUN2000-8KTL-M1 inverter, and six Huawei LUNA2000 batteries with a total capacity of 30 kWh. The total estimated cost for the Off-Grid PLTS system design in Pemalikan Hamlet is IDR 167,000,000.

Keywords: *battery, capacity of solar panels, inverter, Off-Grid*