

PLANNING ANALYSIS OF OFF-GRID SOLAR ELECTRICITY POWER PLANT SYSTEM AT JAGATNATA PURA, YOGYAKARTA

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ABSTRACT

The development of power plants in Indonesia is very intensively carried out by the government which continues to increase in all fields. One of them is to meet the electricity needs in Pura Jagatnata Yogyakarta, therefore it is necessary to plan renewable and environmentally friendly alternative energy. The PLTS system is the use of solar energy that can develop in the future. As for the relation, this research was conducted by analyzing the economic calculations for PLTS with the Off-Grid method, namely PLTS that are not connected to the PLN network or stand alone, as well as by calculating the economic feasibility. From the calculation results, the energy load consumption is 38.6 kWh per day. With an energy requirement of 32 solar panels, 2 6600 W solar charge controllers, 72 2 V 1000 Ah VRLA batteries and 2 6,800 W inverters. Based on the economic feasibility analysis, the Net Present Value (NPV) was Rp. for 20 years the age of the PLTS project, the Profitability Index (PI) is with a value of 1.017 ($PI > 1$), and the initial investment taking period of the Payback Period (PP) occurs in the 8th period of the project life. All three stated that the PLTS Off-Grid that had been designed was feasible to be implemented.

Keywords: *PLTS, Off-Grid, Energy, Economy, Jagatnata Temple*