

Analysis and Study of Loading Patterns as Well as Details of Engineering Design PLTS Off-Grid 200 Wp Capacity Smart Machine Grass Tools

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ABSTRACT

A solar power plant (PLTS) is a power generation system that converts solar energy into electrical energy. The Off-Grid PLTS is a system that uses power storage in the form of a 100 Ah battery produced by solar panels without being connected to the PLN electricity network. This study aims to determine the ability of the device to generate electricity against the load that will be connected to the PLTS-Off grid system. This research is divided into several stages, namely: data collection, data processing, design and design simulation and conclusions. The application of this offgrid PLTS is applied to the Smart Machine Grass in the cowshed area at the Jember State Polytechnic Animal Husbandry Department. Based on the research on the Feasibility Study and Detailed Engineering Design for the Smart Machine Grass, the results of Operational Load in 1 day: 1,342.8 Wh, Voltage (VAC) : 221.0 V , Current (IAC) : 2.26 A Power (P) : 499.46 Watt , Total Power generated : 1,498.38 Wh, Irradiation (W/m^2) : 640.0 W/m^2 . Where from the calculation results show that the power generated can already meet the power requirements to be operated and the form of the mounting design and the frame used can be operated for a long time or it can be concluded that the service life of the tool is classified as suitable for use.

Keywords: Detailed Engineering Design, Offgrid, PLTS, Evaluation Study,