

ABSTRACT

In this thesis analysis, model design and system simulation are carried out to determine the feasibility of implementing a hybrid solar power plant. Using the Home Energy Management System (HEMS) technology platform will be applied to housing in Indonesia which consists of hardware and software to allow users to monitor energy use and production regularly both conventionally (manually) and automatically (automatically). The goal is not only to assist government programs in implementing regional electricity networks and programs to accelerate the use of electric vehicles, in the form of analysis, design models and system simulations, but we can also find out the feasibility of the HEMS platform and get energy. efficiency gains in Indonesian people's homes later. By using the Homer Pro software, the design of the Hybrid Solar Power Plant can work to meet the load on the electricity grid. With an average CoE value of Rp. 403.00/kWh with an NPC value of Rp. 140,412,000.00 with a return duration of 9.4 years. Then to maximize the PLTS components, the use of the HEMS platform was implemented using the Matlab Link Dispatch provided by the Homer Pro software, the system behaviour was successfully changed according to the author's wishes, where the simulation results with Homer Pro software and Matlab software with the lowest purchase limit tested was 50% of the total purchasable grids. Hybrid PLTS rods can work to meet the needs of the electricity load with an average CoE value of Rp. 226.95 /kWh. With an NPC value of IDR 82,205,540.00 with a payback duration of 5.6 years. Yields are influenced by how much and how much of these components are used, then how much energy is purchased from the provider and how much excess is resold.

Keyword: Home energy Management System, HEMS, Electricity, Solar Power Plant, HOMER, Photovoltaic, PLTS, PLTS Hybrid, Microgrid, Matlab Link Distpatch.