

TECHNO-ECONOMIC ANALYSIS OF SOLAR POWER PLANT PLANNING, CASE STUDY ON DUAL AXIS SOLAR TRACKER WITH MIRROR REFLECTOR

Aradhea Yan Yuniar

*Electrical Engineering Study Program, Faculty of Science & Technology
University of Technology Yogyakarta
Jl. Ringroad Utara Jombor Sleman Yogyakarta
E-mail : arradheayan1115@gmail.com*

ABSTRACT

Electrical energy is a form of energy related to electric current. This energy is produced through various processes, such as generating electricity in thermal, nuclear, hydro, wind, solar power plants, or other renewable energy sources. Solar Power Plants (PLTS) are an electrical energy generation system that uses solar energy. The development of a Dual Axis Solar Tracker PLTS with the addition of mirror reflectors on solar modules can be one solution to increase the efficiency of PLTS. As for the connection, this research was carried out by analyzing the planning and economic investment of PLTS from these two off-grid devices. From the results of this analysis, it was obtained that the daily energy requirement with the experimental PJU light load was 2.25 Wh/day. For economic feasibility, the NPV (Net Present Value) is obtained with a value of IDR 62,135 over a period of 5 years, PI (Profitability Index) of 1.02 ($PI > 1$). From the Payback Period calculation, it is known that the return on investment occurred in the 4th year with a Cumulative PV Net Cash Flow of IDR 4,788,770. From the three results obtained, it was stated that the PLTS from the two tools was feasible. The output produced during the trial which lasted for 2 days was very clear. Adding a reflector greatly influences the resulting output value compared to using two actuators because it takes up quite a large load because it has to supply the voltage of two actuators.

Keywords: *PLTS, Off-Grid, Economy, Dual Axis, Reflector.*