

TECHNICAL AND ECONOMIC ANALYSIS OF BUILDING ROOF AS A SOURCE OF ON-GRID SYSTEM SOLAR POWER GENERATION (PLTS) USING HELIOSCOPE SOFTWARE

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ABSTRACT

The rate of energy demand is higher than the growth rate of energy supply so that the longer the deficit will be even greater. Therefore, alternative energy sources are needed that are renewable (renewable energy), sustainable (sustainable energy) and environmentally friendly (green energy). Based on the measurement results by identifying the layout of the PT. Widodo Makmur Poultry Palm Layer Farm Unit, then made an ideal design and the design shows that there are two building areas that can be used for PLTS design, from these areas 230 units of 350Wp capacity solar panels can be installed, 3 for inverters using 20kW. From the calculation results the resulting output power is 274kW/day and the total power required for building operations is 255kW/day. This design requires a total investment of Rp. 1,387,979,837 and the potential savings that can be Rp. 95,978,196 per year. Data from the ROI calculation results show that the Pay Back Period will be achieved for 14 years and 4 months. Compared to the estimated average usage life of solar panels which reaches 25 years, it can be concluded that making PLTS using this design is feasible to develop.

Keywords : PLTS, Solar Panels, Pay Back Period