

THE INFLUENCE OF PLANE TILT AND AZIMUTH SOLAR PANELS ON THE POTENTIAL OF UTILIZING ON-GRID PLTS USING PVSYST SOFTWARE IN CILEGON ANGGREED PHARMACY AND CLINIC

Naufal Izzudin Al-Qosam

*Electrical Engineering Study Program, Faculty of Science & Technology
University of Technology Yogyakarta
Jl. Ringroad Utara Jombor Sleman Yogyakarta
E-mail: naufal.izzudina167@gmail.com*

ABSTRACT

The energy crisis is one of several main problems faced by almost all countries in the world, including Indonesia. Utilization of New Renewable Energy is one source of energy that can be utilized optimally. Indonesia itself is one of the countries with a large use of fossil energy, especially oil and coal as primary energy sources in power plants. From the results of peak power calculations in PLTS planning with the ON-Grid system in the Cilegon Orchid pharmacy and clinic building, the result was 9.4 kWp, where this value was obtained from calculating the daily electrical energy usage in the building, namely 34.41 kWh divided by the average The average daily solar radiation in the building is 4.59 kWh/M2. From the calculation results, the number of solar panels needed is 17 panels, and from the inverter calculation results, 3 inverters are needed. And from the PV Area calculation, the result is 89.52 m2, where this value is sufficient because the condition of the Cilegon pharmacy and orchid clinic building covers an area of 178.28 m2. The method used is a system simulation using PvSyst software to determine the average radiation received by solar panels on an inclined plane with varying tilt angles between 0° to 90° and azimuth angles of 0° facing north and 90° facing east.

Based on the simulation results using PvSyst software, it was found that the optimal plane tilt angle was 10°, and the azimuth was 0°. From the results of a plane tilt of 10° and an azimuth of 0°, the value of solar irradiation received is 1,762 kWh/m2 and the electrical energy that can be produced for one year is 14,660 kWh.

Keywords: *New Renewable Energy, PLTS ON-Grid, PvSyst, Plane Tilt, Azimuth*