

BIPV (BUILDING INTEGRATED PHOTOVOLTAIC) PLANNING AT PANDEGA PANGANDARAN REGIONAL HOSPITAL

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ABSTRACT

This study discusses the planning of the Building Integrated Photovoltaic (BIPV) model at the Pandega Pangandaran Regional General Hospital (RSUD). BIPV is a technology that integrates solar panels into building elements to generate electrical energy, which aims to reduce energy consumption from conventional sources and support environmentally friendly initiatives. The results of the analysis indicate that the implementation of the BIPV system at the Pandega Pangandaran Hospital is feasible, with the ability to meet 15% of the RSUD's electrical energy needs. To achieve the target of saving 15% of the total annual energy consumption of 2,540,820 kWh, it is necessary to install 648 PV units with a capacity of 420 WP and 3 Huawei type inverters with a capacity of 90 kW, which are estimated to be able to produce annual energy production of 377,460 kWh. From a techno-economic perspective, this project is estimated to require an initial capital of Rp. 1,215,578,039 and a Life Cycle Cost (LCC) including operating and maintenance costs and inverter replacement of Rp. 1,334,989,780. This project is estimated to produce a Cost of Energy (COE) of Rp 317 per kWh. With the estimated potential energy produced, the Net Present Value (NPV) value is Rp. 82,315,829, the Profitability Index (PI) is 1.067, and the Discounted Payback Period (DPP) is achieved in the 20th year. This techno-economic analysis shows that the BIPV project at RSUD Pandega Pangandaran is feasible to implement.

Keywords: *Building Integrated Photovoltaic (BIPV), Rooftop PLTS, RSUD Pandega Pangandaran, Energy Efficiency, Cost Savings, Economic Analysis.*