

***Losses and Performance Analysis Solar Power System SMPN 04 Tempurejo in Village Curahnongko District Jember***

Risse Entikaria Rachmanita, S.Pd., M.Si. *as a counselor*

***Tio Alfian Nirvanto***

*Study Program of Renewable Energy Engineering  
Department of Engineering*

**ABSTRACT**

*The new renewable energy transition in Indonesia is increasingly encouraged, even the mixed energy target by 2025 for renewables is 23% and 31% by 2050. However, there are still many Indonesian households that have not experienced PLN electricity, especially in the backward, outermost, and remote areas. Implementation of off-grid solar power plant with a capacity of 150 WP at SMPN 04 Tempurejo school by PKM-PM Polytechnic State Jember in 2022 is part of the solution to support school activity by exploiting the potential of its environment. This phase of research includes literature study, data collection consisting of solar irradiation and daily energy data, data processing and analysis, and conclusions. Data collection is obtained through direct measurement process and data collection through MPPT PLTS system. The highest energy output was 780.7 Wh on 28 February 2024, compared to the highest irradiation of 7.6 kWh/m<sup>2</sup>/day on the same day. Total PLTS losses were 19.47%. The highest losses are found on the inverter at 9% and the cable voltdrop at 3.67%. The performance ratio value generated over 4 days is 81% which indicates that the PLTS SMPN 04 Tempurejo system has good system performance and deserves to be operated.*

**Keywords:** *Off-Grid Solar Power Plant, Performance Ratio, Voltdrop, Losses, School.*