

## ABSTRACT

*Public street lighting (PJU) is essential infrastructure for rural safety and comfort, but is often constrained by high energy consumption and low efficiency. In Indonesia, especially in remote rural areas with limited power grids, renewable energy solutions are urgently needed. This research proposes a hybrid PJU system that integrates Solar Power Plant (PLTS) and Microhydro Power Plant (PLTMH)*

*The method used in this research includes the design stage of the PLTH system, the assembly of solar panels and microhydro turbines, and testing the performance of the system in two conditions, namely without load and with load. The tests were conducted by recording the variables of voltage (V), current (A), power (W), and efficiency (%), both on the solar panel system and the micro hydro system, taking into account the time of data collection and environmental conditions.*

*The test results showed that in the solar panel system without load, the highest voltage generated was 8.01 V with a current of 0.34 A and efficiency reached 21.45%. Meanwhile, under load conditions, the panel produced a maximum power of 11.16 W with a voltage of 6.0 V and a current of 1.86 A at a light intensity of about 101,748 lux. For the micro hydro system without load, Level 1 produces a voltage between 14.4-17.5 V with a current of 0.004-0.02 A and a maximum efficiency of 0.47%. While at Level 2, the voltage increased to 18.7-21.5 V with the highest efficiency reaching 0.96%.*

**Keywords:** *Hybrid Power Plant, Solar Panel, Micro hydro, Public Street Lighting, Renewable Energy, Energy Efficiency*