

***Design Of Pju-Cam Solar Cell Control System Using Esp32-Cam For Mobility
Security In Jerukan Hamlet***

Risse Entikaria Rachmanita, S.Pd., M.Si. (*Thesis Supervisor*)

Moch. Arief Febrianto

Study Program of Mechatronic Engineering Technology

Majoring in Engineering

ABSTRACT

Public Street Lighting (PSL) is a crucial infrastructure that serves to enhance community mobility and safety, especially at night. Jerukan Hamlet, is an area that lacks access to public street lighting and electricity from national power grid (PLN). As an effect, residents rely on petromax lamps as their light source. To address this issue, this study designed a Solar Cell-based PJU-CAM control system utilizing ESP32-CAM, equipped with a PIR sensor for motion detection and a camera for real-time security monitoring. The research method used is an experimental method with quantitative and qualitative approaches. The design process includes a literature review, component selection, system assembly, performance testing, and an evaluation of the system's effectiveness in the target environment. The test results indicate that the PIR sensor can detect objects at distances of up to 400 cm, while the ESP32-CAM camera captures images effectively for monitoring purposes. The implementation of the system at four strategic points in Jerukan Hamlet showed significant improvements mobility and security. The results of a survey of the local community showed that the majority of respondents felt helped by the PJU-CAM Solar Cell system, especially in terms of lighting and environmental monitoring.

Keyword: *ESP32-CAM Public Street Lighting, PIR sensor, Solar Cell,*