DESIGN ANALYSIS OF SOLAR POWERED PUBLIC ROAD LIGHTING ON KARTASURA-BOYOLALI ROAD

Imam Bachtiar Aji Kurniawan

Program Studi Teknik Elektro, Fakultas Sains & Teknologi Universitas Teknologi Yogyakarta Jl. Ringroad Utara Jombor Sleman Yogyakarta E-mail : <u>apaancee@gmail.com</u>

ABSTRAK

This paper discusses the format of the paper and a guide for scientific paper writers. Papers must be submitted in a print-ready format and limited to a minimum of 6 (six) pages and a maximum of 8 (Eight) pages. Abstract is a synopsis of the work that contains the problem under study, information and methods used to solve the problem, what has been done to solve the problem, benefits for the organization and conclusions. Abstracts are limited to 300 words and may not contain equations, pictures, and tables. Abstract written in one paragraph. The font size for the abstract, keywords, and body of the paper is 10 pt.

PJU (Public Street Lighting) Solar Power is a public street lighting where the electric power for the lamp is supplied by an independent system which is obtained from solar energy. This study aims to describe the design and calculation of PJU on the Kartasura-Boyolali road based on solar power and LEDs, with the durability of the solar panel and LED modules, independent, without an electric power grid and the lighting specifications used in PJU lights on Jalan Diponegoro, Boyolali are lamps. led Philips solar led with 50 W power.

This study contains a method for determining the specifications of the lamps that will be used in public street lighting, on the Boyolali – Kartasura road which is the primary collector road, the operating hours of the PJUTS lamps last 12 hours a day, from 18.00 to 06.00, the things that It is also necessary to pay attention to the size of the solar panel module that will be used, the battery capacity and also the charger control

In this study, the results showed that for LPJU Jalan Kartasura-Boyolal currently still using SON-T 150 W lamps which are on for 12 hours a day (18.00-06.00) so that a day costs Rp. 5,200.92 (with a tariff per KWh of Rp. 1,444.70), If a solar-based lamp is to be replaced, the materials needed for the initial investment for each pole are Philips greenVision Xceed V2 Gen 4.0 solar BRP381 50 W lamps, 300 WP solar panels, two voz VRLA 12V 150 Ah batteries, MPPT Solar Charge Controller 12v -30A with a total initial cost of 20,380,000, Investment Costs can be covered from operational cost savings with BEP for 10 years 7 months.

Keywords: Street lighting, Solar panels, Boyolali.