PERFORMANCE OF LOW VOLTAGE ELECTRIC DISTRIBUTION NETWORK AT THE MICROHYDRO POWER PLANT OF MOUNT SAWUR 2 LUMAJANG

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ABSTRACT

Electrical energy is an important need for people's lives. One of the producers of electricity is a micro hydro power plant (PLTMH), such as the Gunung Sawur 2 PLTMH. The electricity produced by the PLTMH is distributed to consumers through the electricity distribution network. The amount of electrical energy that reaches consumers is not the same as the amount of electrical energy generated by the PLTMH due to electrical energy losses. Research on the loss of electrical energy in PLTMH Gunung Sawur 2 needs to be done so that efforts can be determined to minimize it. The research was conducted on the distribution network by measuring the current and voltage at the consumer as well as the length of the cable and then studied theoretically to find the possibility of electrical energy losses that occur in the electricity distribution network. The results of research conducted at PLTMH Gunung Sawur 2 Lumajang showed that the value of voltage losses was still within the SPLN standard except for houses 29 and 30 which were 11.471 Volts or 5.501%, power losses were 16.8906 watts and 16.812 Volts or 8.274%, power losses 36.2785 watts. The long distance and the small cross-sectional area of the line cause a voltage drop at the point where the consumer is connected. This is because the longer the conductor and the smaller the cross-sectional area, the greater the voltage drop across the conductor. Repair of house distribution cable sizes 29 and 30 need to be carried out from 10 mm² replaced with a minimum of 25 mm²so that the voltage received is still within the SPLN standard.

Keywords: distribution, electrical energy, PLTMH, losses