Study of Micro-Hydro Power Plant Potential in Kalirejo Village, Bangsalsari District, Jember Regency

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ABSTRACT

ABSTRACT This study aims to analyze the potential of Micro-Hydro Power Plant at Kalirejo River, Kalirejo Village, Bangsalsari District, Jember Regency through measurements of water discharge, water fall height (head), calculation of electric power potential, and selecting the appropriate type of turbine. The research method used is a quantitative method with primary data collection through direct measurements using a current meter and Automatic Level Telescope, as well as secondary data obtained from various scientific references. Analysis was conducted based on river cross-sectional area, flow velocity, water discharge, effective head, and calculation of PLTMH power potential. The results showed that the average discharge of Kalirejo River is 0.48 m³/s in the dry season and 0.54 m³/s in the rainy season with an effective head of 2.363 m. Based on the calculation results, the power potential is 7,778 kW in the dry season and 8,751 kW in the rainy season. The power potential is capable of meeting the electricity needs of the surrounding community, which is estimated at 6.75 kW. Based on the characteristics of flow and head, the Crossflow turbine is the most suitable type of turbine to be applied at the research site. Therefore, the Kalirejo River has potential that is feasible to be developed as a micro-hydro power plant to support the provision of renewable electricity for the community.

Keywords: *Micro-hydro power plant, Micro-hydro, Water Discharge, Head, Renewable Energy*