ABSTRACT

This study aims to analyze the performance of the electrical system at the Jamus Microhydro Power Plant (PLTMH) located in Sine District, Ngawi Regency. The focus of the study includes measuring water discharge, analyzing electrical parameters of voltage, power, frequency, and power factor, and evaluating the suitability of transmission cables. The measurement results show that the average water discharge of 0.296 m^3/s and a head of 150 meters produces 137,204.6 Watts of power from two PLTMH units, which is able to meet the actual load needs of the tea factory. The electrical system shows stability with a voltage of 233–235 V, a frequency of 50.05–50.4 Hz, and a power factor between 0.82–0.89. The NFA2X 3x70+1x50 mm^2 cable used produces a voltage drop of 0.56%, still within safe limits. This study shows that the Jamus PLTMH has reliable and efficient electrical performance as a renewable energy source for local industry.