

***Feasibility Study on the Development of an “On-Grid” Mini Hydro Power Plant
in a River Flow in Jatiroto Village, Jember Regency***

Ir. Michael JokoWibowo, M.T (Thesis Supervisor)

Achmad Dhimas Yudhistiratama

Study Program of Renewable Energy Engineering

Department of Engineering

ABSTRACT

Mini-hydro Power Plant (PLTMH) is an alternative source of electrical energy for the community. Mini-hydro power plants (PLTMH) provide many benefits for the community, one of which is that it does not cause air pollution or can be called environmentally friendly. The purpose of this study is to calculate the water discharge, calculate the potential for electric power, select the appropriate turbine and analyze the economic feasibility of constructing a Mini-hydro Power Plant (PLTMH). In this study, primary data was collected using direct observation and measurement methods. Observations were made based on data of flow velocity, cross-sectional area of flow and height difference from the river flow to the waterfall. The data obtained is used to determine the power generated and then sold to PLN and the village gets funds to build the village or if the Jatiroto village community wants to switch to new and renewable energy to reduce costs which are quite expensive. The results of the study found that the water discharge in the Kadungitan river in Jatiroto village, Darungan hamlet, Jember Regency with an average of 3 m³/s. The potential power generated is 441 kW. The suitable turbine type is the Crossflow turbine type. The construction of a Mini-hydro Power Plant (PLTMH) on the Kadungitan river in Jatiroto village, Darungan hamlet, Jember Regency is considered economically feasible.

Keywords: MHP, Feasibility of Development