

ABSTRACT

STUDY ON WATER RESOURCES FOR MICRO HYDRO POWER PLANT IN SUMBER AGUNG VILLAGE THE DISTRICT OF SUOH WEST LAMPUNG

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To meet the demand for electricity in rural areas far from the power grid, the local energy potential can be harnessed to generate electricity. Local energy source potential of which is hydropower which can be used for micro- hydro power plants (MHP). Technology of micro hydro power plant is the most mature technology to be developed in rural areas beyond the reach of the electricity grid. Source of electrical energy with micro hydro including clean and environmentally friendly. Diversity micro hydro technology enables integrated with the existing network and can be distributed to remote areas and can be used commercially on a small scale in order to encourage development activities that can improve the lives of rural communities.

The location of this research is on Batang Ireng River tributary Way Semaka, Sumber Agung Village of Suoh District of West Lampung. The data used in this study is the hourly flow data at the outlet dam Way Besai for 9 (nine) years, rainfall data for 11 (eleven) years, cross-sectional area of data streams and watersheds, as well as the data area of the watershed . Due to the limitations of the data in the study site, then used the data from a nearby watershed that has characteristics similar to the Way Semaka Watershed with regionalization method. The methods to be used in calculating the amount of discharge is a method Rational design, Measured Unit Hydrograph method (HST), and the method of Flow Duration Curve (FDC). Flow design was used to determine the design of micro hydro power plant (MHP).

From the analysis of regionalization method can be used to estimate the discharge Way Semaka and Batang Ireng, because of data limitations hydrology and hydraulics in both basins. This is evidenced by the amount of discharge is calculated by the method of regionalization is not much different from the magnitude of the discharge measured in the field. Rational discharge calculation method can not be used because the resulting value is too large discharge, and far different from the discharge measured in the field. Similarly, the calculation of the discharge hydrograph method Measured Unit (HST), where phi index gained greater than the intensity of the rain, so this method can not be used. Discharge calculation method that can be used is the method of FDC (*Flow Duration Curve*), because the discharge calculation results using this method the measured value is approaching discharge in the field. Q80 % with FDC method (*Flow Duration*

Curve) to Way Semaka River at 15.34 (m³/sec), while the measured discharge 21.75(m³/sec). For Batang River Ireng magnitude Q80 % with FDC method (*Flow Duration Curve*) of 0.069 (m³/sec), and the discharge measured at 0.063 (m³/sec). From the calculation of the electric power in Batang Ireng, obtained power with an efficiency of 60 % amounting to 3.246 kW, while the electric power with an efficiency of 80 % amounting to 4.328 kW. Therefore Batang Ireng River potential to be micro hydro power plants (MHP).

Keywords : Watershed, regionalization , FDC , MHP