Analisis Pengaruh Sudut Kemiringan dan Penambahan Tutup Terhadap Performa pada Rancang Bangun Turbin Screw *(The Analysis of Effect of Slope Angle and Cap Addition on Performance of Screw Turbine Design). Supervised by :* Siti Diah Ayu Febriani, S.Si M.Si *and* Ir. M. Joko Wibowo, M.T.

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ABSTRACT

Indonesia is a country that has abundant water energy potential. One of the water energy potential is irrigation flow that can be used as a power plants. The water energy utilization is pico hydro power plants that produce electricity below 5 kW. Screw turbine is a suitable turbine for irrigation flow as a power plant installation. This research aims to determine the effect of slope angle and cap addition on performance of screw turbine design to know the voltage, frequency, current, torque, turbine power, and rpm by using experimental method. The screw turbine was tested in Cempaka, Pakis Village, Panti, Jember, that has water flow of 0.115m3 /s and flow height of 0,81 m. The results of this research show that turbines manufacturing has dimension diameter of blade is 38 cm, number of blade is 8 , length of turbine is 1.15 m, turbine pitch is 15.2 cm, and diameter of shaft is 2.6 cm. In the results of the test obtained the best slope is angle of 40˚ and maximum loading of 70 Watt that produces RPM of 127.62 , frequency of 45.33 Hz , voltage of 247 Volt , current of 0.196 A, torque of 17.05 Nm, and turbine mechanical power of 227.7 Watt.

Keywords : *Picoohydro, Slope Angle, Turbine Screw*