

**Perancangan Pembangkit Listrik Tenaga Piko hidro (PLTPH) Di Dusun
Cempaka Desa Pakis Kecamatan Panti Kabupaten Jember** (*Design of
Picohydro Power Plant in Cempaka Village, Pakis Village, Panti District, Jember
Regency*)

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ABSTRACT

Streams that stretch across several regions of Indonesia need to be utilized to the maximum, including tributaries and irrigation channels. General irrigation channels do not have sufficient height difference (head), so the potential energy possessed is in the form of kinetic energy from the flow of water flowing. Based on this, it can be seen that the type of turbine that is effective to be applied to irrigation channels is a vertical water turbine that does not require height or elevation. Vertical water turbines can act as generators for the Piko hidro Power Plant (PLTPH). Experiments without the addition of an LED lamp load - the average voltage generated 218.33 Volts, the number of turbine turns 109.66 rpm and the number of rotators 479.79 rpm. The experiment using the addition of several variations of the load of LED lights and fans - the average voltage decreased respectively 197.33 volts, 182.67 Volts, 168.66 and 146.33 Volts, respectively. The average current increases respectively 0.050 A, 0.109 A, 0.178 A and 0.30 A. The average power increases respectively 9.92 Watt, 19.89 Watt, 29.940 Watt and 44.6 Watt. The average number of turns of the generator decreases respectively 403.66 rpm, 339.79 rpm, 296.04 rpm and 237.62. The average number of turbine turns decreased respectively 92.33 rpm, 77.66 rpm, 67.66 rpm and 54.33 rpm.

Keywords: *River Flow, Picohydro, Voltage, Current, Power, Rotate speed, Torque*