

DESIGN AND CONSTRUCTION OF MICROHYDRO POWER PLANT (PLTMH) USING ARCHIMEDES SCREW TURBINE BASED ON IOT

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ABSTRACT

Many areas around the world have underutilized water flow potential for power generation. The use of microhydro energy is an environmentally friendly and sustainable solution to utilize existing natural resources by using an Archimedes screw turbine. In microhydro energy with an Archimedes screw turbine, a generator is used as a power plant. The placement of the PLTMH with an Archimedes screw turbine can be placed in a tributary that has a small water flow and then the Archimedes screw turbine rotates to drive the generator so that it can produce electrical energy. The output power on the generator is stored in a battery that will be used to light the sheep pen, using an Archimedes screw turbine as a tool for converting mechanical energy into electrical energy by utilizing a small water flow. This study uses a voltage sensor that is used as battery monitoring. A small water flow can rotate the Archimedes screw turbine which drives the pulley to the DC generator so that the DC generator rotates and produces electricity. When the water flow in the pond is full, it will produce maximum voltage output from the generator. Electricity is stored in a 12 Volt 8 Ah battery which is used to light the sheep pen. To turn the lights on and off in the sheep pen, use a manual switch. The voltage sensor on the system with a comparison of measurements using a multimeter and Arduino IDE serial measurements has an average error of 0.017%. The blynk application on the Microhydro Power Plant prototype with an Archimedes screw turbine can monitor battery voltage and battery percentage.

Keywords: *Power Plant, Monitoring, Archimedes Screw Turbine*