

**DESIGN A SAVONIUS TYPE VERTICAL WATER TURBINE WITH
VARIATIONS IN THE NUMBER OF SUDU FOR HOUSEHOLD
LAMP LOAD IN PANTI VILLAGE JEMBER REGENCY**

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ABSTRACT

The supply of energy sources of petroleum, natural gas and coal is very limited, if continuously used then one day the energy source will run. Microhydro is also known as "white resource" (white energy) is a power plant using resources that have been provided by nature. Vertical water turbine type savonius application is used for small and simple purposes. This study aims to find out the design and manufacture and results of vertical water turbines savonius, , the effect of increasing load power on turbine performance, and know the performance of turbines. The research was conducted in Cempaka Village Pakis Sub-District Panti Jember by utilizing irrigation flow. Research method used in the form of experimental method by making turbines based on potential. The results of turbine manufacture are then tested to find out the performance of vertical turbines savonius. Turbine design based on the potential obtained from the survey results of energy potential of 365 watts. The result of a 256.75 watt vertical water turbine test by the savonius vertical water turbine. Test results at an average water speed of 1.0 m/s obtained a loadless voltage result of 46.21 volts, frequency of 35.61 Hz, turbine rotation of 54.92 rpm, torque of 18.10 Nm and turbine efficiency of 70%. Along with the addition of load power to the generator resulted in turbine rotation, the turbine's voltage, frequency, torque, and power decreased.

Keywords: *Energy, Vertical Water Turbine, Savonius, Performance*