

ABSTRACT

The potential of piko hidro energi in Indonesia until now is still not being utilized optimally. Bathing of springs which have a 3 meter high water with water that never dries even though the dry season. The purpose of this study is due to several constraints such as the absence of piko scale turbines on the market and the lack of public knowledge about water turbines. The use of Piko Hydro energi into mechanical energi can be done in several ways such as making waterwheels and making water turbines. The use of Piko Hydro energi using turbines must be easy and inexpensive to manufacture and maintain, but to produce high efficiency is a challenge in its development. Centrifugal wind blowers that are modified to function as water turbines are expected to be an alternative in the development of Piko scale water turbines.

This research was conducted with several modifications to the wind blower, so that it can be used to utilize the existing piko hydro energi. Some modifications made include: removing the drive motor, making the shaft, turning and cutting the blade reinforcement on the impeller, also making a cover on the hole and mounting the seal bearing on the spiral case. Turbine performance data retrieval uses a brake belt dynamometer with variations in valve openings for large turbine supply discharges. The variations in valve openings include 1/2, 3/4 and 1 (full). The parameters taken from this study are the amount of discharge used, the amount of force on the turbine and the turbine shaft rotational speed. From these parameters can be calculated the amount of torque, power and efficiency produced to determine the performance of the turbine.

From the modification of a wind blower, this turbine can produce an efficiency of 2.53%. Turbine performance data collection is carried out in Belik (spring water) in Tempuran, Kasihan, Bantul which has a 3 meter high water fall (head). The maximum power that can be produced by this turbine is 1,214 Watts at discharge $Q = 98$ Lpm with rotational speed $n = 447$ rpm.

Keywords: *Water Turbine, Centrifugal Blower, Efficiency, Power.*