SUMMARY

Fajar Junarto, Department of Mechanical Engineering, Faculty of Engineering, Brawijaya University, December 2016, *Effect of Blade Height Variation on the Performance Vertical Axis Darrieus Water Turbine NACA 0018 Profile*, Academic Supervisor: Rudy Soenoko and Suharto

Electricity is the most widely used energy in human life. However, the raw material for producing electricity today still remains heavily dependent on fossil fuels. Fossil fuels are fuels that can not be renewed and his whereabouts at this time dwindling. So it is necessary to find alternative energy that can replace fossil fuels as feedstock for power generation such as hydropower.

To boost the energy of the water, making tools necessary to increase hydroelectric power plant (HEPP), that is water turbines. Therefore, there should be research on water Darrieus turbine in order to obtain optimal performance. In this experiment, the independent variable is the variation of the blade height 25 cm, 30 cm and 35 cm and flow of water 50 m^3/h , 55 m^3/h , 60 m^3/h , 65 m^3/h and 70 m^3/h . The dependent variable is the water horse power (WHP), brake horsepower (BHP) and efficiency. While the controlled variable in this study is the number of blades 3 pieces, diameter of turbine 20 cm and turbine at 100 rpm.

The Results from the research show that with increasing height of the blade and increasing the flow of water causes the shaft power (BHP) and efficiency will increase. The value of Brake Horse Power (BHP) is the highest obtained at the turbine with height of blade 35 cm is 0,61 watt then the turbine blade height 30 cm is 0,56 watt and the turbine with blades height 25 cm is 0,51 watt. The value of efficiency is the highest obtained at the turbine with height of blades 35 cm is 29,30 % then the turbine with height of blades 30 cm is 26,96 % and the turbine with height of blades 25 cm is 24,61 %.

Keywords: darrieus water turbine, height of blade, brake horse power (BHP), efficiency.

