

FINAL PROJECT

HORIZONTAL WIND TURBINE WITH MAGNUS EFFECT

**Submitted as One of Requirement to Accomplish
Bachelor Degree Study**



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ABSTRACT

The wind turbine is one of the fluid machinery used to convert wind energy into mechanical energy. There was so much research that had been done in wind turbine development, which is by varying the shape of wind turbine blades by utilizing the Magnus effect. The Magnus effect is the lift forced when generated by a rotating cylinder that produces a pressure difference. The Magnus effects concept is used on turbine blades by modifying the turbine blade into a cylinder and adding a cup at the blade's tip. Then the diameter of the cup was varied. This research used a wind turbine model made by 3D printing for the cup tested in the wind tunnel of the fluid dynamics laboratory at Andalas University. The results obtained in this research are the optimum C_p (coefficient power) value and lift force of the Magnus effect wind turbine. After testing the Magnus effect wind turbine model, the results show that the larger diameter of the cup and the wind speed used at the end of the wind turbine blade, the greater the C_p (coefficient power) obtained. So in this research, the optimum C_p (coefficient power) is obtained in a cup with a diameter of 30mm.

Keywords: **Wind Turbine Magnus Effect, Coefficient Power, Lift Forced, 3D Printing.**