

***(Blade Taperless Design Airfoil NACA 6412 on Horizontal Axis Wind Turbine
(HAWT) 500 Watt Generator***

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ABSTRACT

Indonesia's dependence on the use of fossil energy continues to increase, Indonesia needs to utilize renewable energy. An Alternative energy that can be utilized is wind energy. There are fluctuations in wind speed so that the wind speed profile in Indonesia changes that affect the design of a wind turbine, so a design is needed. Blade is a component of a wind turbine that converts wind energy into mechanical energy. The research conducted was the design of a taperless horizontal axis wind turbine blade for a wind speed of 9m/s with mahogany material. NACA 6412 Performance tests are performed on wind tunnels and blowers as the source of the wind. Data retrieval is done manually without a data logger with a data retrieval time interval of 15 seconds and repetition 10 times. The maximum power output is obtained at a wind speed of 6.2 m/s of 14.37 Watt at a blade rotation speed of 1057 rpm and it takes torque as much as 14.37 Watts. The minimum power obtained at wind speed of 2.6 m/s of 0.64 Watts can be achieved at a blade rotation speed of 262 rpm and requires torque of 12.02 Nm. The maximum cp obtained in real circumstances is 24.41% on TSR 2.4.

Keywords : *HAWT, blade, taperless, airfoil NACA 6412, wind tunnel.*