

ABSTRACT

This study aimed to explore and compare the coefficients of power between the two models, namely windmill windmill smooth surface and rough surface (coated woven bamboo). This windmill horizontal windmill using models with three-blade propeller type.

This windmill has a diameter of 80 cm with a blade cross-sectional area of 0.50 m² and weighs 420 grams. This windmill blade using a variation of the slope of 10° and 15°. To measure and determine torque, power turbines, power coefficient and tip speed ratio at the windmill, windmill shaft attributable to the braking mechanism that serves as a variation of the load on the wheel. The magnitude of the braking load was measured with a spring balance wheel, the wheel rotation was measured using a tachometer and the wind speed was measured using an anemometer.

The results showed that the slope of the windmill blade windmill 10° obtained a smooth surface can result in a greater power than the rough surface of the wheel is equal to 15.2 watts, with a load torque of 0.40 Nm and 8.6% Cp. While the 15° blade tilt windmills obtained a rough surface can result in a greater power than the smooth surface of the wheel at 14 watts, with a load torque of 0.40 Nm and 8.2% Cp.

Keywords: torque, power windmill, power coefficient, tip speed ratio, blade made from woven bamboo.

