Savonius Type U Wind Turbine With The Addition of Guide Vane

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ABSTRACT

The purpose of this study was to determine the angle of the guide vane of the Savonius wind turbine. Guide vanes are placed around the Savonius turbine to reduce negative torque generated from the convex blades and direct the wind to the concave blades of the turbine to generate positive torque. The variation of the tilt angle of the guide vane was tested in this study. The results showed that the Savonius turbine with guide vane produces more power than the Savonius turbine without guide vane. The increase in maximum power occurs at variations in the angle of the guide vane 300. Turbines without a guide produce a rotating speed of 254.6 rpm while the variations in the addition of a guide vane produce a turbine rotational speed of 289.2 rpm, the percentage increase in turbine rotation between without a guide and using a guide vane of around 13.5%. The power generated by the Savonius turbine without a guide produces 0.077 watts, while the power generated by the Savonius turbine with a guide is 0.103 watts, the increase in power generated by the guide vane in this variation reaches 32.6%. The performance of the Savonius turbine can be improved by applying a guide vane with a certain tilt angle.

Keywords *: Savonius, guide vane, Power*