ABSTRACT

VerticalAxisWind Turbine(VAWT) hassomeadvantages,one of themis itscapability toattachwindfromevery direction.Oneofitstypethathasmany studiesinvolvedis Savonius WindTurbine. SavoniusTurbine hasasimple constructionyetitcouldrotate atlowerwindspeed.InthisUndergraduateThesis discussed about the effect of the wind velocity and the gap between blades towards the optimal power generated by the double stepped Savonius wind turbine.

Turbine wasdesigned with 2 mm thick of aluminium plate. It has boundary circlediameterof40cmandturbineheightof50cm.Semicircular blades are designedas much as4 pieces, ortwoblades perturbinestep.Variations of gapusedwere 4cm,4,5cm,5cm,and5,5 cm.The turbine testswasheldin LAGG-BPPTPuspiptek,Serpong.Incollecting thedata,Savoniuswindturbine was placed in theback ofthewind tunnel (e*xhaust*).

Theresultsofthestudy ofdoublesteppedSavoniuswindturbineobtained thehighestpowerof1,76Wattonthegapvariationof5,5cmatwindvelocityof 15m/s. While the greatestpower coefficient(Cp)isobtainedonthegapvariation of5,5cmatwindvelocity of14m/s,whichisequalto6,31x10^{-3}.Thegreatest drag coefficient(Cd)of2,52obtainedongap6cm.Whilethesmallestdrag coefficientis obtained onthe gap variationof4,5cm, which is equal to0,06.

Keywords:VAWT,Savoniuswindturbine,gapvariation,powercoefficient(Cp),
        dragcoefficient(Cd)