

# **APLIKASI TURBIN ANGIN SAVONIUS UNTUK PEMBANGKIT ENERGI LISTRIK DARI ENERGI ANGIN KENDARAAN YANG BERGERAK DI JALAN RAYA**

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## **ABSTRAK**

Dalam penelitian ini ditujukan mengetahui seberapa besar pengaruh banyaknya kendaraan yang melintas terhadap putaran yang dihasilkan turbin angin VAWT tipe Savonius, mengetahui seberapa besar pengaruh beda ketinggian penempatan turbin angin VAWT tipe Savonius terhadap putaran yang dihasilkan. Penelitian akan dilaksanakan pada bulan Mei sampai dengan selesai, bertempat di Laboratorium Program Studi Teknik Mesin, Fakultas Teknik, Universitas Islam Kalimantan Muhammad Arsyad Al- Banjari, Banjarmasin, Kalimantan Selatan. Dengan titik pengambilan data Pengujian kecepatan angin dilakukan selama pada tanggal 16 Juli, 23 Juli dan 30 Juli 2021 di Jalan Ahmad Yani KM 17. Banjarbaru Pengujian dengan menggunakan alat anemometer, pengujian dilaksanakan dari jam 8 WIB – jam 17 WIB. Dalam penelitian di mulai dengan mengidentifikasi kecepatan angin yang di haslkan dari jenis kendarraan yang melintasi turbin. Dari beberapa kelompok kendaakaan yang melintasi turbin dengan asumsi kecepatan kendaraan antara 70 km/jam sampai dengan 85 km/jam. Perancangan Turbin Angin Savonius mencakup beberapa alat, yaitu ada tiga sudu yang berbentuk setengah lingkaran, yang memiliki diameter 55 cm dan tinggi 110 cm, kemudian ada poros, yang berfungsi untuk meneruskan putaran bilah ke generator, poros disini berdiameter 1.2 cm dan panjang

90 cm, selanjutnya ada dudukan turbin angin, dudukan turbin angin ini terbuat dari pipa besi kotak yang mempunyai lebar 36 cm dan panjang 40 cm. Dari hasil penelitian bahwa temperature terbesar terjadi pada tanggal 29 Juli 2021 pada siang hari dengan nilai 32,7°C. Dan untuk nilai temperature terkecil pada tanggal 28 Juli 2021 pada pagi hari dengan nilai 25,0°C. Pengukuran temperatur di lakukan untuk mengetahui viscositas kinemati yang terjadi pada aliran fluida yang melewaati turbin dengan merujuk tabel 4.1., semakin tinggi temperatur akan semakin tinggi pula viscositas kinematiknya.

**Kata Kunci :** Putaran Turbin, Temperatur, Kecepatan Angin

## **ABSTRACT**

This study aims to determine how much influence the number of passing vehicles has on the rotation produced by the Savonius type VAWT wind turbine, to find out how much influence the height difference in the placement of the Savonius type VAWT wind turbine has on the rotation produced. The research will be carried out from May to completion, at the Laboratory of the Mechanical Engineering Study Program, Faculty of Engineering, Muhammad Arsyad Al-Banjari Kalimantan Islamic University, Banjarmasin, South Kalimantan. With data collection point Wind speed testing was carried out on July 16, July 23 and July 30, 2021 at Jalan Ahmad Yani KM 17. Banjarbaru Tests using an anemometer, testing was carried out from 8 am - 17 pm. The research begins by identifying the wind speed generated by the type of vehicle that crosses the turbine. From several groups of vehicles that cross the turbine with the assumption that the vehicle speed is between 70 km/hour to 85 km/hour. The design of the Savonius Wind Turbine includes several tools, namely there are three semicircular blades, which have a diameter of 55 cm and a height of 110 cm, then there is a shaft, which functions to continue the rotation of the blades to the generator, the shaft here is 1.2 cm in diameter and 90 cm long, Next there is a wind turbine holder, this wind turbine holder is made of box iron pipe which has a width of 36 cm and a length of 40 cm. From the results of the study that the largest temperature occurred on July 29, 2021 at noon with a value of 32.7°C. And for the smallest temperature value on July 28, 2021 in the morning with a value of 25.0°C. Temperature measurements are carried out to determine the kinematic viscosity that occurs in the fluid flow passing through the turbine by referring to table 4.1., the higher the temperature, the higher the kinematic viscosity.

**Keyword :** Turbine Speed, Temperature, Wind Speed

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