

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELGAUM**



**A PROJECT REPORT ON
“VERTICAL AXIS WIND TURBINE”**

(SPONSORED BY KSCST, BANGALORE)

Submitted in partial fulfillment for the award of Bachelor of Engineering in

MECHANICAL ENGINEERING

of Visvesvaraya Technological University, Belgaum during the year 2009-10

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DEPARTMENT OF MECHANICAL ENGINEERING

2009-10

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ABSTRACT

A vertical axis wind turbine, by definition, has its axis of rotation perpendicular to both the earth surface and the wind stream. On the other hand, the axis of rotation of a horizontal axis wind turbine is parallel to the direction of wind stream.

The Savonius wind turbine is a drag based VAWT, the speed at the tip of the blade can seldom exceed the speed of the wind. In short terms, the drag can also be described as the pressure or the thrust on the blades created by the wind as it passes through it.

As the wind flows over the turbine the air resistance occurs due to which the turbine rotates. The force of resistance is called drag force which depends the cross sectional area of blades..The turbine is coupled to the gear mechanism so that mechanical energy obtained from the turbine is converted to useful electric energy with the aid of electric generator.

This thesis is aimed at determining an alternative scope and measure for generating sufficient power output despite being mounted at ground level unlike horizontal axis wind turbines which are usually mounted on towers at higher altitudes. The data on the wind with respect to its magnitude and direction is essential. Both these factors change continuously and the change is unpredictable. Hence, it is necessary to establish this data. For proper utilization of wind power it is necessary to record its characteristics at the location of the wind mill. The working model was fabricated and put for field testing at one of the potential sites of ENERCON (INDIA) Pvt LTD. in Chitradurga by studying the local factors of Chitradurga and procuring the data from INDIA METEROLOGICAL DEPARTMENT, Bangalore.

As per the test, the rotation of the rotor meets the satisfactory concerns and can be improved by rectification of design and material selection for fabricating.

The scope and application of Vertical axis wind turbine is in the domestic use as roof top mounted power generating systems and also in urban and suburban areas and also in the areas where turbulence exist.