

# NON-CONVENTIONAL METHOD OF POWER GENERATION USING BLADELESS WIND TURBINE

Jeevitha L R<sup>1</sup>, Swathi Ramesh<sup>2</sup>, Bhagyashree<sup>3</sup>, Suchitra<sup>4</sup>

<sup>1,2,3,4</sup>Student, Dept. of Electrical and Electronics, Sri Siddhartha Institute of Technology, Karnataka, India

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**Abstract** -Today, India is top amongst the list of developing countries in terms of economic development. Hence the energy required is increasing rapidly. To meet its energy requirement, coal cannot be the primary source of energy. The next clean choice of energy is solar power, but due to its lower concentration per unit area, it is very costly.

India is having fifth largest installed wind power capacity in the world. As the region of high speed wind is limited and also the area required for installation of conventional windmill is high, bladeless windmill based on vortex induced vibrations can provide the solution for these disadvantages of the conventional windmill. The device is composed of a single structural component and given its morphological simplicity, its manufacturing, transport, storage and installation has clear advantages. The new wind turbine design has no bearings, gears. So the maintenance requirement could be drastically reduced. Generally structures are designed to avoid vortex induced vibrations in order to minimize the mechanical failures. But here, we try to increase the vibrations to increase the generation of electricity.

**Key Words:** Vortex, EMF, Mass, SWG, Diode MUR4100

## 1. INTRODUCTION

As we all know utilizing the wind energy by conventional wind turbine in lesser area and cost is not possible. Hence this criteria is achieved by bladeless wind energy. Generation of high power by bladeless wind turbine is more economical for rural electrification of India. This small structure of bladeless wind turbine satisfies the need of continuous generation of electricity [1].

Conventional turbines use moving blades to generate shaft power. Hence failure of a single blade affects the overall efficiency of the turbine. On the contrary, bladeless turbine moves back and forth by the movement of air around the structure. Once the construction begins to vibrate, an alternator at the base converts mechanical movement into electricity. Because of lesser moving parts it consumes less space and also safe for birds [2].

## 2. METHODOLOGY

When wind breaks against the mass, it starts to vibrate and captures the wind energy. The mass connected to the alternating system i.e. coils and magnets flux generated by the coil cut by the magnet and it will generate EMF. The generated voltage will be converted into dc by using diode

and it will be boosted using converter and it will be stored in the battery. It will be used for future application.

Neodymium magnets which are a member of the rare earth magnet family and are the most powerful permanent magnets in the world.

Coils: These are arranged in series to obtain maximum output voltage.

Mass: design was attained with triangular shape of sheet

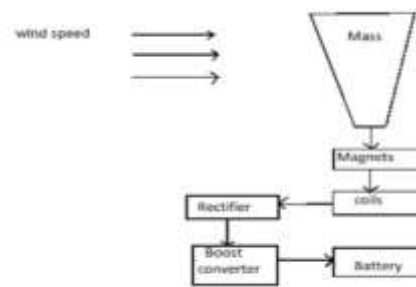


Fig. Block Diagram

## 3. COMPONENTS

### Mass



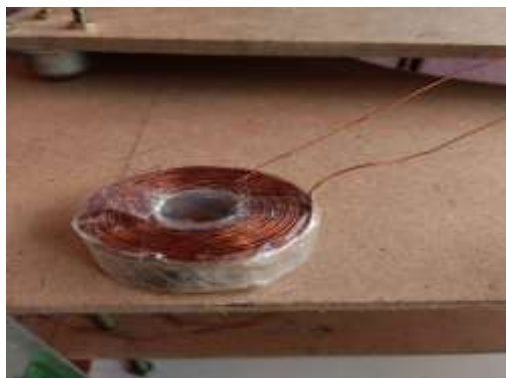
This is a conical shape rigid structure. Its height is about 4ft, upper diameter is 6inch, lower diameter is 2 inch and it has 20degree deflection.

**Magnets**



Neodymium magnets are the member of the rare earth magnet family. They are the most powerful permanent magnet in the world. They have 20mm diameter, 8mm depth. Total 25 magnets are used.

**Coil**



The winding forms a wave with its coil, that's why we call it as a wave winding. Since we connect the coils in series here we also call it series winding. Coil is of 24swg. Their winding numbers are 350 turns. Coil has 1 inch diameter

Total 52 coils are placed

**Rectifier**



Diode :mur4100. It is an electrical device which converts an AC into DC

**Battery**



SMF(sealed maintenance free battery) having 5 to 12 V, 7Ah

**4. CONCLUSIONS**

Depending upon the length of the mass, we get the mechanical power output. This can be converted into electricity by testing DC generator of suitable specifications. The power output also depend on the velocity of wind

The vortex induced vibration application in generating alternative energy is a viable solution of the current energy crisis. Topping the wind for renewable energy using new approaches is gaining momentum in the recent years. The purpose of this project is to provide some fundamental results on the bladeless wind system and solve as stepping stones for the future development of bladeless wind power generating system. Overall the project has been a success with all of the project requirements achieved . As the wind energy is powerful and consistent, the usage of conventional wind turbine for utilizing the wind energy in lesser area and cost is not possible. Hence bladeless wind energy helps us to achieve these criteria.

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