Annals of R.S.C.B., ISSN:1583-6258, Vol. 24, Issue 2, 2020, Pages. 278 - 282
Received 24 October 2020; Accepted 15 December 2020.

# Power Generation Byair Wind Generator

Mr.Chetan Bhale [1] , Ms. Riya Meshram [2], Ms. Nikita Borkar [3] , Ms. Pranali.Bonde [4], Ms.Mayuri.Choudhari [5],Ms. Sakshi Sahare [6], Ms. Sneha Shende[7]

Department of Electrical Engineering,Jhulelal Institute of Technology,RTM Nagpur University.
Email: c.bhale@jit.org.in
Email: rhmeshram23@gmail.com
Email:nikitaborkar86@gmail.com
Email: pranalibonde2016@gmail.com
Email:mayuric1999@gmail.com
Email:Sakshisahare6@gmail
Email:snehashende089@gmail.com

**ABSTRACT:**

The objective of the project is to design a wind turbine to edians can be fitted with these wind turbines. Additionally, since the wind source will fluctuate, a storage system for the power generated will be designed to distribute and maintain a constant source of power.Ideally, the turbine can be used globally as an unlimited power sourcefor streetlights and other public amenities. For this project we are looking for "Vertical Axis Wind Turbine. The price of turbines is increasing in accordancewith the rising cost of energy and commodities. The cost of esigningthe turbine, calculated in energy savings must be recovered in a reasonable time period. Each vehicle on the highway offeran intermittent andcontrolled source of wind power. The design of thewind turbine must include storage of power and a system to distributethe generated power effectively. So review has been made in order t make this project successful.

## INTRODUCTION

On highways, vehicle moves faster than the usual. Moving vehicles on the highway create wind turbulence. When a vehicle moves on highway, it disturbs the wind present over that highway. Vehicle creates low wind pressure field and big vertex behind it while moving. The wind disturbed by the vehicle intend to cover that space created by the moving vehicle and creates huge wind turbulence at highways [1][4]. The direction of the wind turbulence is always moving along the vehicle to the centre of low pressure field. Turbulence presents at the highways along with normal breeze creates a strong wind effect near the highways. This wind effect can be easily feel by any one on the highway side.Wind turbulence at the highways is directly depends upon size and speed of the automobile along with the traffic frequency.

The motivation for this project is to contribute to the global trend towards clean energy in a feasible way. Most wind turbines in use today are conventional wind mills with three airfoil shaped blades arraigned around a horizontal axis. These turbines must be turned to face into the wind and in general require significant air velocities to operate. Another style of turbine is one where the blades are positioned vertically or transverse to the axis of rotation. These turbines will

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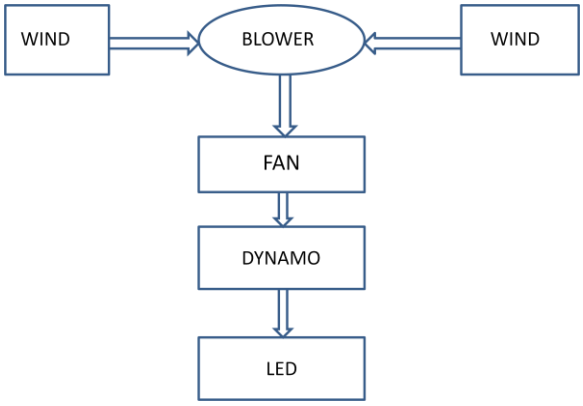
always rotate in the same direction regardless of the fluid flow. Due to the independence from the direction of the fluid flow, these turbines have found applications in tidal and surface current flows.

## BLOCK DIAGRAM



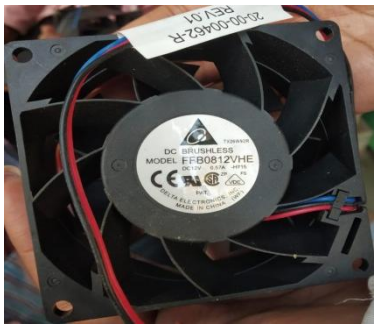

The designed methodology applied to the project in different phase are information gathering, concept generation, model generation, analysis and concept selection.

The vertical axis wind turbine is used to convert the kinetic energy to mechanical energy.The power is transmitted via shaft to a dynamo which is converts it into electrical energy.The electricity generated can be measured and stored in battery.

Light emitting diode is connected to direct current, which can be used for lighting the highway.

## COMPONANTS

1. Blower:- Blower is a device which increases the velocity of air when it is passed through equipped impellers. They are mainly used for flow of air required for exhausting, aspirating, cooling, ventilating, conveying etc.



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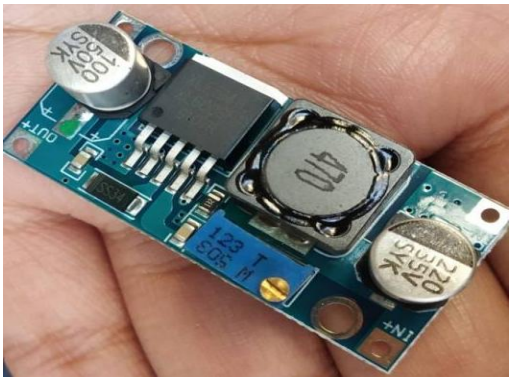
2.Turbine / Dynamo :- A turbine is a rotary mechanical device that extracts energy from a fluid flow and converts it into useful work. The work produced by a turbine can be used for generating electrical power when combined with a generator.

3. Dc motor 5.9 volt :-The basic working principle of a DC motor is: "whenever a current carrying conductor is placed in a magnetic field, it experiences a mechanical force". Otherwise, the direction of force would have reversed every time when the direction of movement of conductor is reversed in the magnetic field.

4.LDR (light dependent resistor):- Working Principle of LDR. These devices depend on the light, when light falls on the LDR then the resistance decreases, and increases in the dark. When a LDR is kept in the dark place, its resistance is high and, when the LDR is kept in the light its resistance will decrease.



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6.Battery:- A battery is a device that stores chemical energy and converts it to electrical energy. The chemical reactions in a battery involve the flow of electrons from one material (electrode) to another, through an external circuit. The flow of electrons provides an electric current that can be used to do work.


7.Step up converter:- A boost converter is a DC-to-DC power converter that steps up voltage from its input to its output It is a class of switched-mode power supply containing at least two semiconductors and at least one energy storage element: a capacitor, inductor, or the two in combination.

RESULT:

| Sr. No. | Speed (RPM) | Output current (mA) | Output voltage(V) |
|---|---|---|---|
| 1 | 1000 | 18.85 | 2.01 |
| 2 | 1100 | 19.01 | 2.15 |
| 3 | 1300 | 19.15 | 2.53 |
| 4 | 2000 | 20.50 | 2.97 |

Table 1: Result of wind generator

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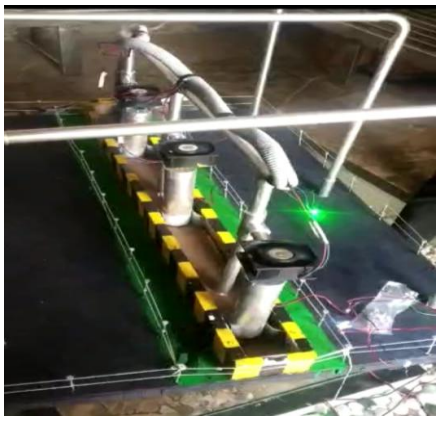

Fig. Air wind generator system

## CONCLUSION

The main aim of this project is to build a small scale vertical axis wind turbine to generate power. These turbine are easier to construct and less investment is needed. the implementation of vertical axis wind turbine on road dividers, on side of train tracks and power supply for isolated area would be a great asset to the ministry of non conventional energy resources as it would reduce the burden on the consumption of conventional energy sources. They can be installed on any highway with the width being the only constraint.

## REFERENCES

1. Chongyang,Zhao,Jun Luo, "Experiment Validationof Vertical AxisWind Turbine Control Systembased on Wind Energy Utilization Coefficient Characteristics, IEEE June 2010.
2. Aravind, Rajparthiban, Rajprasad, “Mathematical Toolbox and its application in the Development of Laboratory Scale Vertical Axis Wind Turbine”, IEEE Dec 2012.
3. Yan Li, Fang Feng, “Computer Simulation on thePerformance of a Combined-type VerticalAxis wind Turbine”, IEEE Mar 2010
4. Madani, Cosic, Sadarangani, “A Permanent Magnet Synchronous Generator for a Small Scale Vertical Axis Wind Turbine” (ICCDA 2011).
5. Chongyang Zhao, “Experiment Validation of Vertical AxisWind Turbine Control System based on Wind Energy Utilization Coefficient Characteristics”, IEEE, Mar 2015.
6. IACSIT International Journal of Engineering and Technology, Vol. 4, No. 2, April 2012 .
7. International Journal of Engineering Research andDevelopment e-ISSN: 2278-067X, p-ISSN: 2278-800X, www.ijerd.com Volume 3, Issue 12 (September 2012), PP. 04-09 4 .