

# DESIGN AND FABRICATION OF POWER GENERATION IN HIGHWAYS USING FAST MOVING VEHICLE

Mrs.V. Sundara Jeyalakshmi<sup>1</sup>, Suresh Rao M<sup>2</sup>, Vikraman S<sup>3</sup>, Vivek V<sup>4</sup>, Giri P<sup>5</sup>

Assistant Professor<sup>1</sup>, U.G Scholars<sup>2,3,4,5</sup> Department of Electronics and Communication Engineering,  
Adhiyamaan College of Engineering, Hosur, Krishnagiri, Tamil Nadu, India.

<sup>1</sup>sundarajeyalakshmi.v@gmail.com, <sup>2</sup>sureshrao.ac@gmail.com, <sup>3</sup>vikramanvikraman457@gmail.com,  
<sup>4</sup>vivekvijayaguna@gmail.com, <sup>5</sup>girigb75@gmail.com

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**Abstract** - Wind Energy is a very important aspect in our every day's life. The resources we use are limited where because the population consuming the identical is increasing day by day. Nowadays the necessity of electricity is far more than its generation, hence the most objective of our work is to provide electricity in low cost with no effect on environment. The target of the work is to style a turbine to recapture wind energy from vehicles on the highway. A substantial amount of wind energy is produced thanks to the pressure difference created by the moving vehicles on the highways. This wind energy may be utilized for the generation of power with the assistance of vertical axis wind turbines. This work aims to extract this energy within the best manner. Vertical axis turbine is often installed on the median of the roads in order that the wind from each side of the median will act tangentially in other way on either side of the turbine thereby increasing effective wind speed functioning on the turbine. This wind flow will depend upon the speed of the vehicle, size of the vehicle and intensity of the traffic. Supported the studies made an optimal turbine design must be made. The alternative energy harnessed through this method will be used for street lighting, light lighting, toll gates etc.

**Key Words:** vertical axis wind mill, spur gear arrangement, dc generator, battery, inverter.

## 1.INTRODUCTION

Environmentally friendly power from wind and sun based is supportable and doesn't cause increment nursery outflows. The prospect of a train having the ability to use its very foundation to return up with power is extraordinarily captivating. Producing power by tackling the breeze energy made by quick moving trains can be a substitution thought. This cycle doesn't include any refined system and guarantees total wellbeing.

This technique for power creation clears on account of less industriousness and can be delivered inside where we dwell. The long for elective assortments of energy proceeds and afterward we have created trust. Wind result from air moving. Air moving emerges from a pressing factor slope. On

a world premise one essential constraining capacity causing surface breezes from the shafts toward the equator is convective flow. Radiation warms the air close to the equator, and this thickness warmed air is lightened. At the surface it's uprooted by cooler thicker higher pressing factor air moving from the posts. Inside the upper environment close to the equator the air along these lines will in general stream back toward the poles and much from the equator.

The online outcome's an overall convective dissemination with surface successes from north to south inside the half of the globe. Wind ranches are working effectively and have effectively taken care of more than 150 lakes units of power to the separate state networks.

The estimation of force age from wind ranches has now become underneath diesel force and love nuclear energy in a few spaces of our nation particularly close to the coasts. Energy tasks of total limit of 8 MW including 7 breeze ranches undertakings of limit 6.85 MW are set up in a few pieces of the nation of which 3 MW limits has been finished in 1989 by DNES. Under exhibit software engineer 271 breeze siphons are introduced up to February 1989. Sixty little wind battery charges of limits 300 watts to 4 kw are under establishment. Similarly, to independent breeze electric generators of 10 to 25 kw are under establishment.

## 2.RELATED WORK

By Reviewing a few papers and interfacing every one of them during this paper. [1] Electricity is created by supplanting the standard speed breakers with some straightforward component. As vehicles bounce over the speed breakers, rack and pinion instrument works and with the help of high-pressure springs progressively produce power. [2] Small-scale wind turbines produce more expensive power than huge and medium-scale wind turbines, particularly in helpless breeze destinations and in self-sufficient applications that need a significant degree of unwavering quality. This paper explains the look and advancement of such a turbine sharp edge for homegrown application. [3]

The flip plate component is utilized for the transformation of the energy; the flip plate plays out the back-and-forth movement due to the speed of the vehicles and consequently the flip plate is associated with the stuff through shaft so to the battery to store the power. While the battery is associated with the street light. [4] The proposed project comprises of a motivation of executing a route for creating power utilizing air current pressing factor produced by high-speed vehicles diverting the initiated wind inside the heading of the breeze turbine; changing over the energy of the breeze into energy by utilizing wind turbine; and changing over the energy into power by utilizing a dc generator and force moved to the battery and put away inside for additional utilizations.

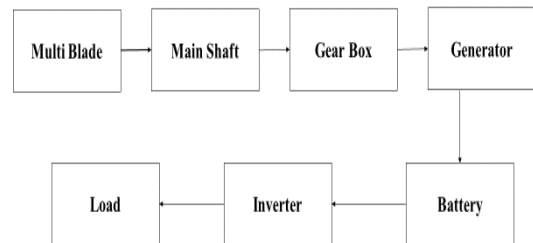
### 3. EXISTING METHOD

Natural gas is burned to provide pressurized gas which spins the blades of a turbine connected to a generator. Inside the generator, magnets spin, causing the electrons in wires to maneuver, creating an electrical current, generating electricity. Coal-fired plants produce electricity by burning coal in an exceedingly boiler to supply steam. The steam produced, under tremendous pressure, flows into a turbine, which spins a generator to make electricity. The steam is then cooled, condensed back to water and returned to the boiler to start out the method over. Solar thermal power plants are electricity generation plants that utilize energy from the Sun to heat a fluid to a hot temperature. This fluid then transfers its heat to water, which then becomes superheated steam.

### 4. PROPOSED SYSTEM

When the vehicles on the highway moves at an awfully fast rate the atmospheric pressure from the vehicle force is created to exert on the items on the perimeters of the roads. When this windmill is kept at the perimeters of the road the atmospheric pressure forces the windmill to rotate. The wind mill blades or fan are connected to the shaft of the wind mill which rotates when the blades rotate through the force of the atmospheric pressure. The shaft of the generator is directly plus the shaft of the wind mill. When the shaft of the generator rotates a number of the electrical power is produced inside the generator which can be transferred through the wires. The power produced will be transferred to the battery and might be stored inside for further usages. The battery successively is connected to the inverter for the inversion of the ability supply.

### 5. BLOCK DIAGRAM



**Fig:5.1 Block Diagram for Proposed System**

### 6. WORKING PRINCIPLE

A fast-moving vehicle compresses the air within the front of it and pushes the air from its sides thereby creating a vacuum at its rear and its sides because it moves forward. Here the K.E. from wind force produced because of the fast-paced vehicles from both lanes, forces the turbine to rotate in clockwise direction with certain rpm. This successively forces the alternator to rotate in same clockwise direction with 10 times faster than the turbine speed, thus generating electricity which is stored in 12-volt automobile battery. This energy is often multiplied by implementing a series of wind turbines. The stored energy may be utilized for smart tollbooth system, smart toilets, highway lightening, etc.

### 7. RESULTS AND DISCUSSION

The wind mill blades or fan are connected to the shaft of the wind mill which rotates when the blades rotate through the force of the gas pressure. The shaft of the generator is directly including the shaft of the wind mill. When the shaft of the generator rotates the electrical power produced inside the generator are transferred through the wires. The facility produced are transferred to the battery and stored inside for further usages. The battery successively is connected to the inverter for the inversion of the ability supply.



**Fig 7.1:** Experimental setup



**Fig 7.2:** Load connected directly to the generator



**Fig 7.3 :** Load after charged from battery

## 8.CONCLUSION

By using this technology all the highways are often lightened without use of nonrenewable energy resources. Also, if this method is implemented altogether national highways, it can ready to produce great deal of power. And it also can provide job for several educated fellowship. By increasing numbers, it can develop more energy & illuminate the highways so the proportion of accidents gets minimized. The project "Highway Wind Mill" was designed specified to deliver power to change on the emergency head lamp. The dynamo uses electromagnetic principles to convert mechanical rotation into electricity (DC) using wind energy. The system generates wattage as non-conventional method by wind energy power using turbine founded. A careful selection needs to be made for the blade profile in order

that the losses are minimum and also the power generation are often enhanced. Since the wind energy isn't constant in the slightest degree the time therefore the operation of the wind machine is going to be intermittent and also the power production rate also will vary; the component should be design in such a way in order that the losses should be at minimum.

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## BIOGRAPHY:



Mrs. V. Sundarajeyalakshmi,  
Assistant Professor,  
Engineering Department,  
Adhiyamaan College of Engineering,  
Anna University.