



WIND TURBINES FOR ROADWAYS

Albert Francis A^{*1}, Hemanth Raj C² & Ajith Kumar R³

*^{1,2,&3}UG Students, Department of Mechanical Engineering, K.Ramakrishnan College Of Engineering, Tiruchirappalli, Tamilnadu, India-621112.

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Abstract

Our effective design of horizontal axis certain angled wind turbines are applicable for side and top of road ways, bridges and top roof. The curved shape six blades are designed to efficiently collect the wind velocity to attain maximum efficiency. The contact distance of the vehicle and blades are indirectly proportional to the power generation. In short distance maximum revolution of blades through wind velocity is obtained to produce maximum power. Our design produces constant power for all the time. The blade connected to the shaft is attached with generator. The device convert mechanical energy into electrical energy by the principle of electromagnetic induction. The direct current stored in a battery and an inverter is used to convert direct current into alternating current for the application of cc TV and lights.

Introduction

In our day to day life most off the electricity problems are reduced the usage of solar panels in top roof and various places. But many renewable resources are not utilized properly, such as wind and tidal energy etc.,. In tamilnadu [India] most of the wind turbines are placed nearly tucicorn and thirunelveli districts. So the remaining area of the south India is wasting this resource. The other impact of wind turbine in huge size, high cost and high rotating radius of angled blades. In most of the countries are utilized the wind energy harvesting foundation in hill areas and around the distance of ocean. In modern days there are many innovators introduced many turbine design to utilize the wind energy. But our innovative design mainly concerned the area of roadways and house roof top. In our study concerned that the transportation vehicle are moving in high speed. So the motion of air velocity is maximum. The velocity of air applicable for producing maximum electricity.

Scenario

India has world's largest second road network. It consist of around total 4320000 kilometers. An express ways 1000km and national highways having 79,243 km and state highways 1,31,899km and the remaining is local roadways.

In our design for every 50m a single turbine placed then around totally 4245 wind turbines are possible.

Existing wind turbine in roadways

The various types of existing wind turbines not completely controls the velocity of air into moving vehicle. But our design is to totally utilize the air velocity into useful form. There are various salient feature is included in the design. The capturing capacity is increased by using the curved blades at any kind of velocity.



Fig 3.1 and 3.2 existing wind turbines

Objective

- ◆ Producing electricity from vehicle speed at low cost and low maintenance.
- ◆ To reduce the usage of electricity
- ◆ To reduce the usage of finite resources
- ◆ To place the turbine for every individual house top roof,roadways and bridges.

Design

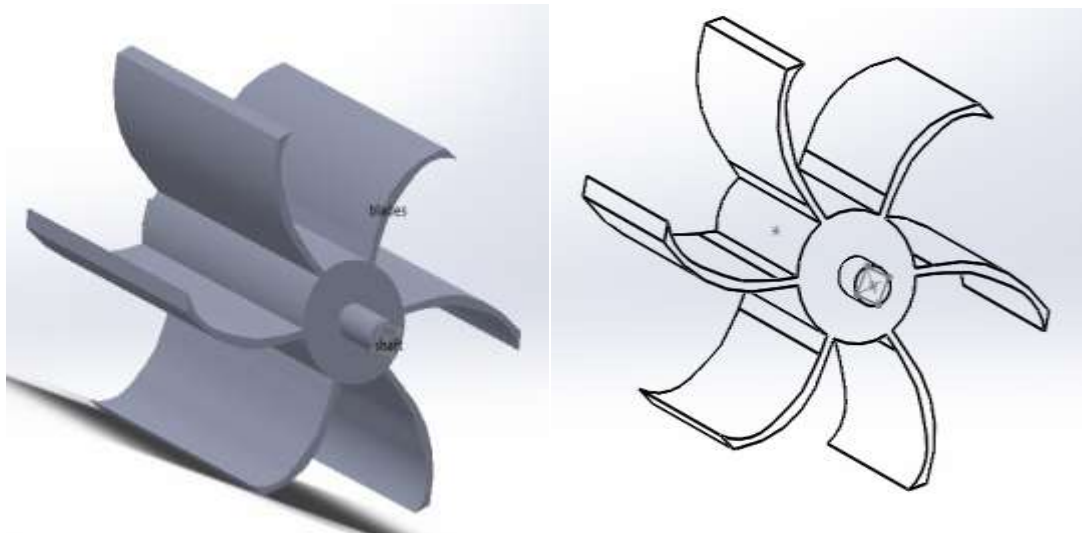


Fig 5.1 and 5.2 isometric view of blade

Methodology

In the national highways the vehicles are moving in very high speeds. So the aerodynamic design will increase the velocity of air at the side and top. So we have to utilize the maximum wind velocity at the free of maintenance and minimum initial investment cost. In our horizontal axis wind turbine blades are inclined to certain angle. The angle of blades are to capture the maximum amount of air in the bend portion of blades. The vehicle move in one direction and the blades are rotating in same the direction with respect to velocity of air. The design also applicable for roof top, bridges and national highways. The six blades are attached with the main shaft and the horizontal axis shaft is directly couples with the direct current generator. The generator is to convert the mechanical energy into electrical energy by the principle of electromagnetic induction. The outcome of direct



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current is convert into alternating current by using inverter.The direct current is stored in a battery.In roadways number of turbine of turbine output is stored in a battery

2D DESIGN

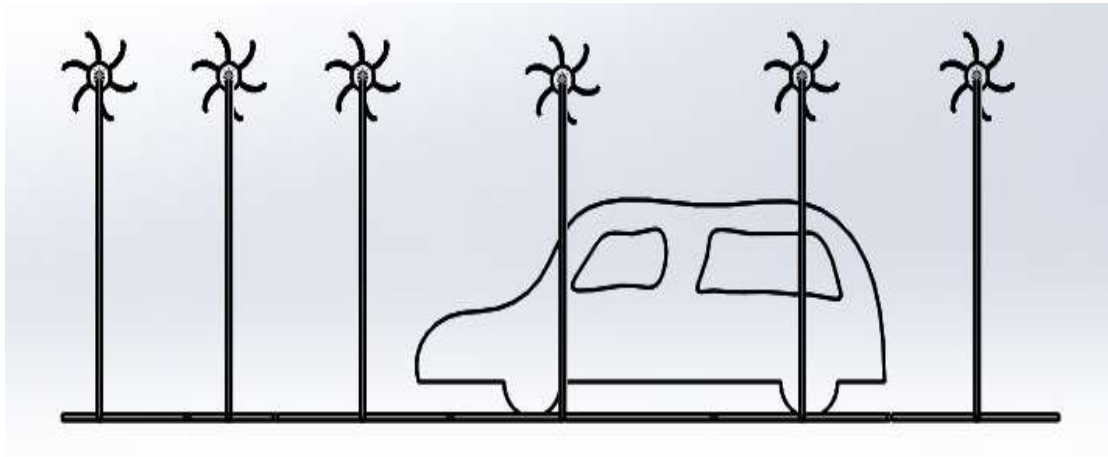


Fig 7.1 side view

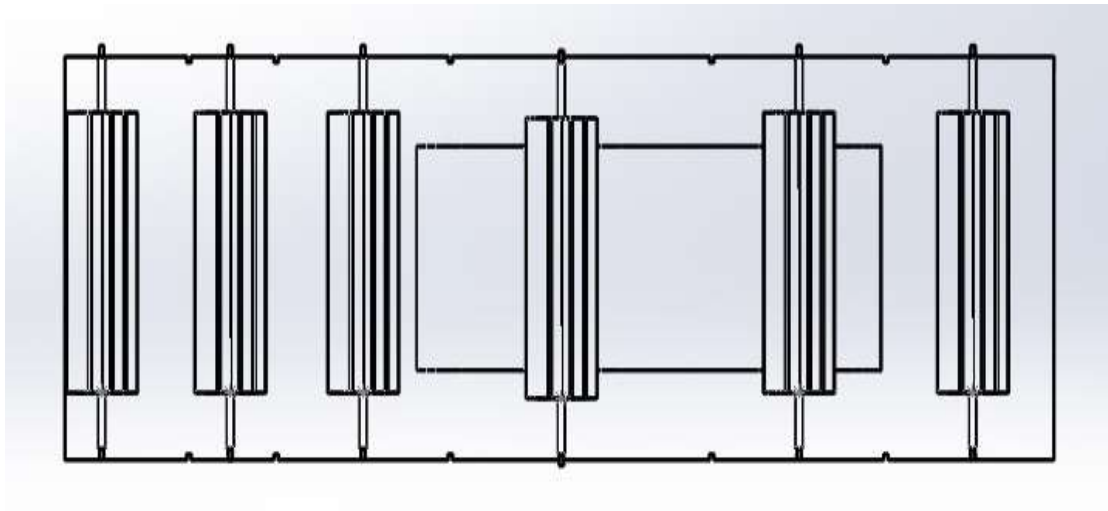
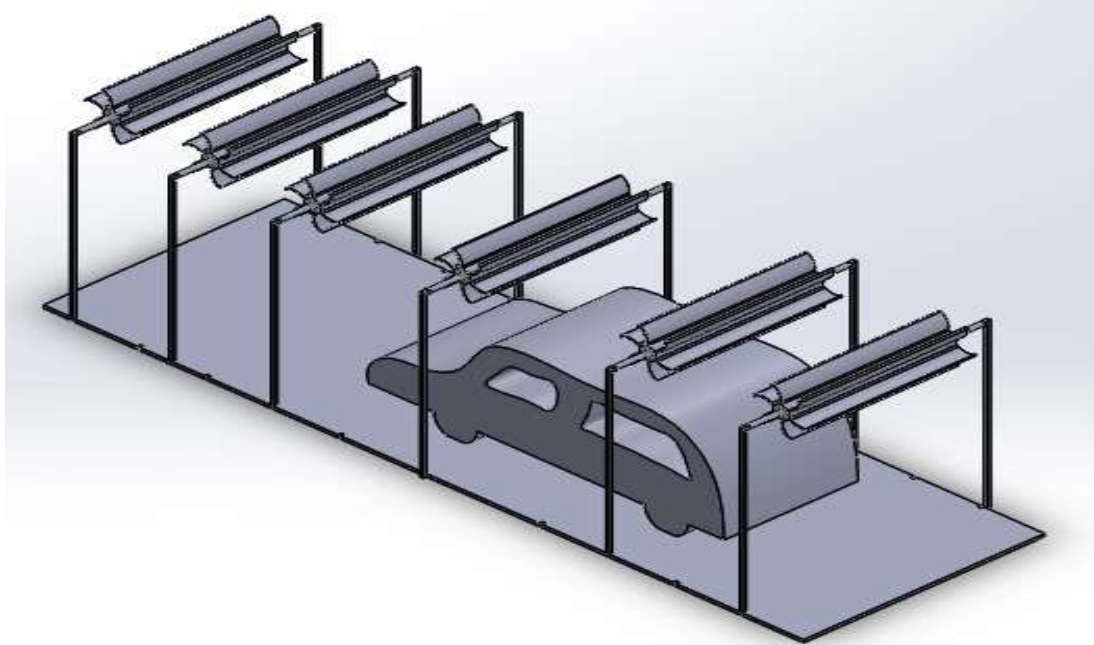


Fig 7.2 top view

Specification

In our design of wind turbine in horizontal axis at the ends of the blades are inclined to the certain angle.The height of the turbine shaft is adjustable according to our requirement.The blade length is also adjustable for increasing the distance of roadways and reduce the distance of house and bridges.The stored power is utilized for night times in lights,toll plaza and power stations.

**3D DESIGN***Fig 9.1 isometric view of design***Conclusion**

The number of installed capacity of our design of wind turbines in the roadways and top roof will be produce electricity .It will be reduce the usage of fossil fuels and generates power from environment friendly at free of maintenance cost.The design of system will increase the employment requirements.

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