

Extra Ordinary Wind plus Solar Power Electrical Car

¹Sattyendrasing A. Seragi, ²Danish R. Shaikh, ³Harshal A. Bari, ⁴Rahul G. Bilade, ⁵Mahesh N.Bhadane

¹Assistant professor, ^{2,3,4,5}Final Year Student
Department of Electrical Engineering
RCPIT, Shirpur Maharashtra State, India

Abstract: Due to increase in demand of fossil fuel in last 5 year the demand increase the day by day damaging effect on the environment. There is a major problem faced in future for that purpose the alternative fuel source is to be developed. we design such a vehicle/car which totally work on the renewable energy source or non-conventional energy source the combination of the wind and solar energy the car is to be work the two generator are install in the car to convert the mechanical power to electrical power economically the system beneficial consume less cost of maintenance etc.

Keywords: fossil fuel, renewable energy, generator, alternative energy.

INTRODUCTION

According to problem statement:

- 1) Vehicle cost increase rapidly.
- 2) Air and sound pollution also increase day by day.
- 3) Demand of the vehicle increase.
- 4) Decrease the level of fossil fuel.

For the number of problems occur due to do burning of fossil fuel the by product carbon dioxide which leads to do greenhouse effect and harms the planet. If the environment keep growing use the some non-pollutant source which is helpful to grow the environment. Wind and Solar is the best option for the future transportation.

Therefore, the meaning of the advantage of the E vehicle due to the zero emission or emission free, The government of each country to promote the battery powered vehicle for electric vehicle which is the beneficial for the environment and Planet also the major focus of this vehicle is the increase the private transportation in the future as a result the people are becoming more aware of the energy related actions and have started looking for an alternative sustainable source the conventional electric car having a complex charging structure or difficult to be e face after some kilometres but we design the such vehicle/car wind and running condition of the car and Solar help at stop position to charge the battery. Due to wind and solar energy the maximum charging or charge with the minimum time and charge the battery very easily easily.

COMPONENETS OF ELECTRICAL CAR

The electric car consists of the following component:

1. Solar panel

Solar panel are those device which is used to absorb the sun rays and convert them into electricity or heat a solar panel is actually collection of the Solar or photoelectric cells which is used to generate for the conversion of solar energy directly to electricity using Photoelectric effect the photoelectric effect in wall conversion of electromagnetic radiation into electrical energy the photoelectric models constitutes the photoelectric array of the photoelectric system the majority of the modulus used woofer Based crystalline Silicon cells or thin flim cell the Solar cell are manufactured as model with sheet of glass on top to you are low light to pass and protect the semiconductor from the weather.

2. Lead Acid Battery

The lead acid battery is contain secondary cell that is meaning rechargeable battery is very common in car and bike and a bicycle at it it contain plates of lead and the lead oxide in the sulphuric acid solution the lead acid oxidize the lead plate making an electric current the electrical energy produced by the discharging lead acid battery can be e attribute to energy release when the storage chemical bonds of a water molecule formed from H + Ion of the acid during charging the battery acts as a water splitting device and in the charge state the chemical energy of the battery is mostly stored in the acid.

3. DC Gear Motor

- supply voltage 36 volt

-) Rated Power equal to 250 watt
-) Rated speed equal to 3300 RPM
-) Reduction ratio equal to 9.78
-) Torque constant equal to 8 N-m (80 kg-cm)
-) efficiency 78%
-) Full load current equal to 13.4 ampere
-) No load current equal to 2.2 ampere

A geared motor is electric motor couple with the gear train, gear motor used either AC alternating current or DC direct current power with gear actually transform shaft speed into torque at specific ratio with minimum efficiency losses the gear motor are using application that require lower shaft speed and higher torque output this describe a wide range of application.

4. DC Generator

A DC generator is an electrical machine which convert mechanical energy into electrical

INNOVATION

The wind power generation is the easy when the force of the wind is continuously in apply to the wind turbine so, the wind turbine is place on the front of vehicle and top site of the vehicle to get the more electrical power front turbine is and top side turbine is vertically couple with generator. when the vehicle is running condition then wind force on both turbines is high so the output electrical power is also high due to gear coupling of the Wind Turbine and generator the speed of the generator is increased to production of electrical power also solar power electrical vehicle is there but solar output is reduced at time of vehicle is running condition in that vehicle is running condition means that Car/Vehicle is more useful in stationary condition of the vehicle wind pressure is low but solar output is high and running condition of the vehicles wind force and Solar output is reduced so that vehicle is useful to stable as well as running condition to charge the batteries of the vehicle.

OBJECTIVE

1. The main objective is introducing a smart vehicle that is no requirement of any type of fossil fuel and operate on solar + wind energy.
2. Introducing pollution free vehicle because it does not make air and sound pollution in environment.
3. The another objective is provide a solution on the day by day increasing fuel cost this vehicle operated on freely available renewable energy source that is wind and solar energy.

Conversion of Energy

a) Wind to Electrical Energy

In this prototype model the wind pressure is strike on a turbine or fan that is place on the top side and front side of the vehicle. With gear coupling of generator due to wind pressure turbine is start to rotate then the generator is also rotate and rotate of generator is electrical energy and electrical energy is useful for charging of batteries of vehicle.

b) Solar to Electrical Energy

Solar power is arguably the cleanest and most reliable form of renewable energy in solar powered Photo voltaic this electricity is used for charging the batteries with the help of controller solar panel are placed on the top side of the vehicle and there are three solar panels connected in series then the output of that panels is given As shown in figure a indicates power flow diagram of extra ordinary solar + wind powered electrical vehicle in which which two sources are used for charging the batteries of electrical vehicle that is solar and wind

In stationary condition of the vehicle solar charging used for batteries and in moving condition of vehicle the Solar Panel is reduced their generation voltage or efficiency then wind pressure is high so the wind generator output is charging the batteries so the vehicle is operated on the renewable energy.

METHODOLOGY

A. CONSTRUCTION

This vehicle consists of the some mechanical and electrical components to complete construction of this vehicle. This vehicle is acts as a base for all other components or chassis other some components mounted on it. it consists of two generating unit the first fan mounted on the front side of the vehicle and second fan is mounted at the top of the vehicle the DC gear motor is attached and back side of the wheels. solar panel is used at the top side of the vehicle and battery are used for the storing device handle side basic digital metre is to install which indicate the battery storage percentage and vehicle speed.

B. WORKING

The conversion of the wind energy into electrical energy and utilise it. we design search vehicle which totally operate on the natural source and run free source of energy two generator are used and front side and back side the front side the wind pressure is too high for the purpose the high efficient generator is to be used and second generator which is normal in Size a combination of these three inputs we calculate the requirement of the storage and all other similar parameter these two generator are connected in series with it. And storage is to be continued this is the storage working at the time of running condition of vehicle both the generator front and back side rotate and generate the electricity and storage at the running condition this is a simple working of this vehicle.

BLOCK DIAGRAM

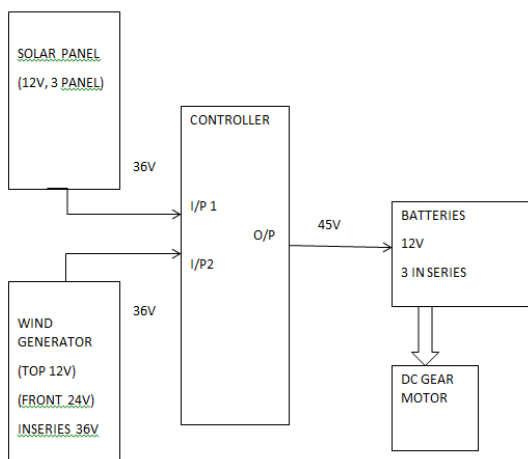


Fig 1. BLOCK DIAGRAM OF PROTOTYPE

PROTOTYPE MODEL



Fig 2. PROTOTYPE MODEL

FRONT VIEW



Fig 3. FIRST GENERATOR

TOP VIEW



Fig 4. SECOND GENERATOR WITH SOLAR PANEL

ADVANTAGES

1. This concept of E vehicle is introduced few less vehicle due to know any fossil fuel is required for operation.
2. Its help to reduce the use of fuel which is more profitable for future also it will help in reducing pollution.
3. No sound and air pollution.
4. Zero operating cost.
5. Low cost compared to other vehicle.
6. Free energy generation.
7. Two sources to charge the batteries it will charge their stationary and moving condition of vehicle

DIS-ADVANTAGES

1. The time required to charge the battery by solar and wind energy will be greater than conventional method.

2. Starting torque of the electric vehicle comparatively less.
3. Speed of electrical vehicle also Lays 30 to 40 kilometre per hour.
4. It is not used for long distance.

Conclusion

At this condition the prototype model is a working condition. Is operate on both of the Energy solar and wind power and generate electricity this paper gives the idea that vehical powerd with the help of solar energy and wind energy is more effective than fuel vehical.

REFERENCES

- [1] B.Sivaprasad, O.Felix, K.Suresh, G.PradeepReddy And E.Mahesh, "A New ControlMethods forOffshore Grid Connected Wind Energy Conversion Systemusing Doubly Fed-Induction Generator and Z-Source Inverter", International Journal of Electrical Engineering & Technology (JEET), Volume 4, Issue 2, 2013, pp. 305323, ISSN Print: 0976-6545, ISSN Online: 0976-6553.umar
- [2] Pallavi M. Mankar, Atul A. Ghute M.E.[EEJ student." Solar Powered Battery Operated Electric Vehicle as an Option for Fuel Vehicle", International journal of engineering sciences and research technology (UESRT) [Mankar, 4(4): April, 2015] ISSN: 2277-9655
- [3] R.F. Hirsh, Power Loss: The Origins of Deregulation and Restructuring in the American Electric Utility System, MIT Press, Cambridge, MA and London, 1999.
- [4] PJM's Board of Managers, PJM Annual Report 2002: Working to Perfect the Flow of Energy,2002.10.1016lj.enpol.2010.11.045.org/10.1016/j.enpol.2010.11.040.2009, 109-209.
- [5] "Design of a Wind Energy Capturing Device fora Vehicle"-Huei Chang Department of industrial Education National Taiwan Normal University Taipei, Taiwan-suggest the idea for the use of a portable wind turbine on a vehicle was obtained.
- [6] HYBRID SOLAR AND WIND POWER: An Essential ForInformation Communication Technology Infrastructure And People In Rural Communities by I.A. Adejumobil, S.G. Oyagbinrin, F. G. Akinboro & M.B. Olajide Electrical and Electronics Engineering Department, Agriculture, Abeokuta, Nigera Volumes/Vol9Issuel/(JRRAS)of University
- [7] M.Z. Jacobson, M.A. Delucchi, Energy Policy, No. 2009, Dec. 2010. <http://dx.doi.org/10.1016/j.enpol.2010.11.040>.
- I51 L. Brown, Plan B 4.0: Mobilizing to Save Civilization, Earth Policy Institute, Shekhar Malvi (International Journal of Scientific Engineering and Technology). Volume No.1, Issue No.4, pg: 139- 148(ISSN: 2277-1581) 01 Oct. 2012.