



# A REVIEW ON ELECTRIC CAR WITH SOLAR PANEL

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**ABSTRACT:-**The electrical solar vehicle is a two-seated vehicle powered by 250 W BLDC hub motor. Fabricate a safe, high performance, cost-efficient electric solar vehicle. Now a day, Natural resource dealers, such as fuel and coal dealers, are struggling to keep up with rising demand; as a result, energy and electricity are essential to meet this demand. As a result, sunlight is now regarded as a source of energy that is used in a variety of everyday applications. Solar energy is used to generate electricity from the sun. In our paper, we plan to use this technology to create a solar-powered car. The main component to build a solar car is the solar panel. The solar cells collect a portion of the sun 'energy and store it into the batteries of the solar car. Before that happens, power trackers convert the energy collected from the solar array to the proper system voltage, so that the batteries and the motor can use it.

*Keyword :-* solar, electrical, fuel, energy, sunlight

## I. INTRODUCTION

In recent years, greenhouses gas emission and exhaustion of natural fossil resources have become serious global issue. 'Also, air pollution from automobiles contributes to global environmental issues such as climate change as a result of CO<sub>2</sub> emissions, rather than regional environmental problems such as human health effects.' .All-electric vehicles (EVs), also referred to as battery electric motor instead of an internal combustion engine. The vehicle uses a large battery pack to power the electric motor also called electric vehicle supply equipment (EVSE). For this causes solution we are use 24v 250 W motor powered by Li-ion battery its basically Plug in charging system also uses a 250 W solar panel for charge the battery.

### 1.1 Basic Functional diagram

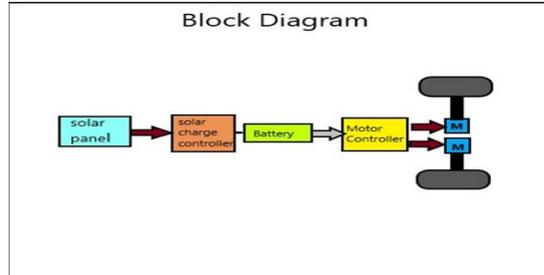


Fig.1- Basic Functional diagram

The above diagram gives an overview of the working of electrical car with solar panel vehicle. Sun and grid power is the main source of the vehicle. Energy from Sun and from grid power is captured by the solar panels and is converted to electrical energy. The electrical energy thus formed is being fed to the batteries that get charged and is used to run 24 V DC high torques DC series motor. The shaft of the motor is connected to the rear wheel of the vehicle through chain sprocket. The batteries are initially fully charged and thereafter they are charged by panels. This helps in completing the charging-discharging cycle of the batteries, which is very important for proper working of batteries

## II. BASIC CIRCUIT DIAGRAM

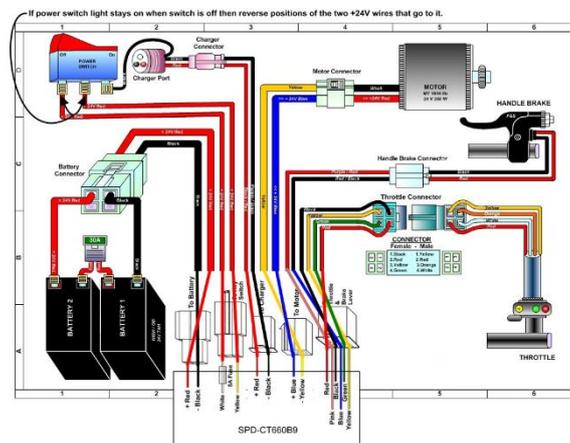


Fig.2- Basic Circuit diagram

It is a four wheeler, two seater vehicle. In this vehicle we have used a belt pulley mechanism. The solar energy is harnessed using solar panels which are used for charging the batteries. The batteries run the motor which drives the wheel of the vehicle. The vehicle we built for our project uses a belt pulley mechanism, which connects the shaft of the engine to the belt pulley system. The power supplied to the batteries is from the solar panels which are giving a total output of 250W and this output is used for charging the batteries. The batteries which we are using are lead acid batteries which are of 24V rating each of 24V. The belt used in our project is a timing belt which has teeth that fit into a matching toothed pulley.

When correctly tensioned, they have no slippage, run at constant speed, and are often used to transfer direct motion for indexing or timing purposes. They are often used in lieu of chains or gears, so there is less noise and a lubrication bath is not necessary

### III. COMPONENTS USED

Various types of electrical components were used for making the electric car with solar panel. A list of these components used with their range and the specific quantities that were required for making electric car with solar panels is given in the following table.

Table no.-1 Components used

SR.No	Name of components	Quantity
1	BLDC motor	2
2	Battery	1
3	Motor controller	1
4	Solar panel	1
5	Solar charge controller	1
6	Battery charger	1
7	PVC pipe	-
8	Tyres	4

Apart from the above listed components the main component that is BLDC motor and solar panel.

#### A. BLDC motor

A BLDC motor is an electric motor which converts electric energy into mechanical energy.

We are using 250 W power motor and its voltage level is 24 V. This is sufficient for our project as well as we are using 2 BLDC motors because that motor has more torque and speed. The motor controller controls the whole functions and controlling like break, acceleration and many more.

The parameters depend on the motor side by battery also.

#### B. SOLAR PANEL

Solar cells are solid state semiconductor devices which convert light energy directly into electrical energy. A solar cell contains a low voltage typically about 0.45 volts per cell; cells are connected in series to increase voltage. The model of solar cell can be categorized as P-N



semiconductor junction, when exposed to light, the DC current is generated. The generated current depends on the solar irradiance, temperature and load current .

Solar panel :-24V,250W

#### **IV. WORKING OF THE VEHICLE**

After giving an overview of the cars which are already in use, here is a detailed description of our electric car with solar panel is a sunlight and grid powered vehicle. It is a four wheeler, two seater vehicle. In this vehicle we have used a belt pulley mechanism. The solar energy is harnessed using solar panels which are used for charging the batteries. The batteries run the motor which drives the wheel of the vehicle. The vehicle which we have made as our project uses a belt pulley mechanism in which the shaft of the motor is connected through the belt pulley system. The solar panels provide power to the batteries, producing a total output of 250W, which is utilised to charge the batteries. The batteries which we are using are lead acid batteries which are of 24V rating each of 24V. The motor's rating is of 24V which gets charged through the three 24V batteries. The belt used in our project is a timing belt which has teeth that fit into a matching toothed pulley. When correctly tensioned, they have no slippage, run at constant speed, and are often used to transfer direct motion for indexing or timing purposes. They are often used in lieu of chains or gears, so there is less noise and a lubrication bath is not necessary. Timing belts need the least tension of all belts, and are among the most efficient. We have laid emphasis on the economical part so that it can be used to cover short distances without consuming energy from external sources and at the same time it keeps the environment pollution free .

##### **4.1 Advantage of solar electric car**

1. Using solar energy means fossil fuels (a limited resource) will be used less.
2. Solar energy is free.
3. Solar energy doesn't cause pollution. Fossil fuels (which Solar energy will never run out).

##### **4.2 Disadvantages of solar electric car**

1. Recharge Points Electric fueling stations are still in the development stages.
2. Short Driving Range and Speed Electric cars are limited by range and

#### **V. CONCLUSION**

The solar vehicle solves many problems related to the environment and is the best pollution free method. Solar vehicles do have some disadvantages like small speed range, initial cost is high. Solar cells that give about 30-35% efficiency. The solar automobiles have a huge prospective.