

# EV CHARGING STATION WITHOUT USING BATTERY

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**Abstract:** The Solar Charging stations for charging electric bikes and electric motorcycle is a fundamental and practical application of using solar PV modules to convert solar energy to DC voltage. This project will enable us to acquire an essential foundation toward show to design and build the solar PV systems for various applications. Based on the available components, the target of this pilot project is to build solar charging station. Station is for charging electric bikes. The design consideration will be discussed in the following sections. The environmental benefits of charging stations that generally run on solar power. Reduced dependence on fossil fuels. The load on conventional grids also gets reduced in a suitable way.

**Keywords :** harvest, erected, interdisciplinary etc.

I.

## INTRODUCTION

Population wise India stands second inside the global. The primary source of earnings for maximum of the population remains farming in India. Current agriculture systems are operated manually which consumes huge amount of time, cash and power. In India there is massive difference among overall electricity deliver & demand to the farming. In many regions strength reduce down maintains for extra than 8hrs.[1] The current era makes use of fossil gasoline in many elements of India, which creates air pollution. So, it higher to use renewable supply of electricity authorities also encourages its use in various sectors, including automation irrigation gadget for the farming. Solar power is the maximum ample source of power inside the world solar electricity isn't always simplest an answer to today strength crisis but also an environment pleasant shape of power photovoltaic generation is and efficient approach for the use of the sun strength.[2]

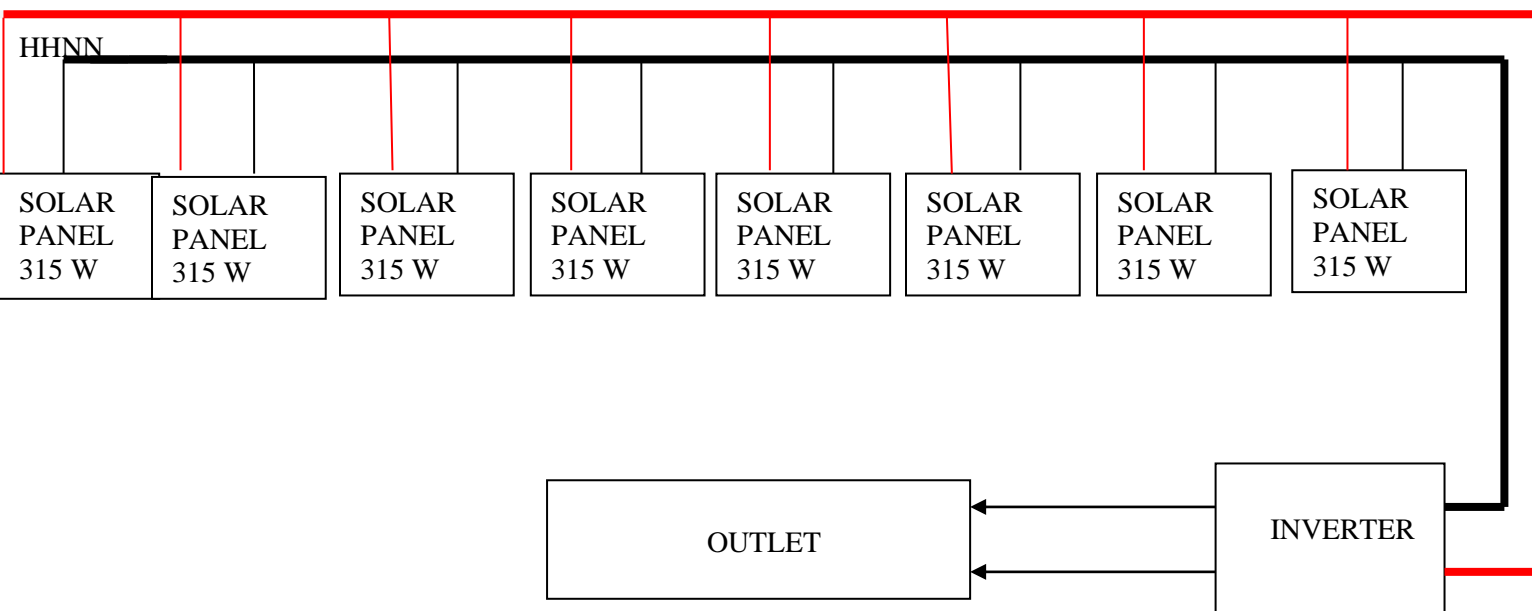
The environmental blessings of charging stations that commonly run on sun energy. Decreased dependence on fossil fuels, Every day jogging expenses honestly are for all intents and purposes lower in a suitable way.[3] The load on traditional grids also receives reduced in a main manner. Apart from this, pretty large scale implementation will boom employment opportunities without a doubt because of the need for educated human beings for installation, preservation and operation of those stations, virtually opposite to famous notion. Considering the blessings and the supply of the sort of system, pretty many corporations actually are making an investment on this concept, which within reason considerable. Tesla Motors, a subsidiary of Tesla, The critical part is building solar-powered charging stations in handy locations for its EV clients, which is quite considerable.[4] This assignment will similarly efforts to reducing our dependence on fossil fuels. If our charging station can price greater devices without having outside strength from the countrywide grid, it will likely be capable of lessen a number of the call for electricity. Most of the peoples aware about the outcomes of the use of oil and herbal gas as a shape of strength. These strategies do create masses of electricity, however they may be non-renewable and they effects in broken the environment and earth environment.[5] The objective of this undertaking is to rate the vehicles environmentally secure in an effort to assist to lessen the demand of strength from different techniques. Our goal for this task will generate electricity from sun energy.

Our layout changed into confined to what assets had been available for us. Luckily, the majority of the device for this device became provided through our main and the Electrical Engineering Department. We firstly estimated a much larger system with a couple of sun panels and batteries to offer a quick price time for the electric car. [6] We ended up the use of best 444W, 12 sun panels and 40 Ah deep cycle.

## II. BLOCK DIAGRAM

Figure below shows the block Diagram of EV Solar Charging Station Without Battery . For charging electric vehicle, we design and develop the system. For this system we use 8 solar panel of 315 watt. All Eight solar panel are connected in parallel connection. Connection of solar panel is given to Inverter. We use 1225W capacity Inverter . The connection of solar is given to the inverter. The main function of inverter is to convert DC voltage into AC voltage. Inverter convert the 12 volt DC into 230 volt AC. This converted 230Volt AC supply is given to the outlet board .By this outlet we can charge the electric vehicle .

Figure 1: Block Diagram



## III. METHODOLOGY AND DESIGN

Before we continue to the method involved with assembling, it's important to have some information about the task plan vital for plan the undertaking prior to beginning the assembling. When a new product or their elements are to be designed, a designer may proceed as follows:

1. Make a detailed statement of the problems completely; it should be as clear as possible & also of the purpose for which the system is to be designed.
2. Select the material best suited for each element of the system.
3. Determine the allowable or design stress considering all the factors that affect the Strength of the system part.
4. Identify the importance and necessary and application of the system.
5. Problems with existing requirement of the system productivity and demand.
6. Determine the size of each element.
7. Drawing of system.

As per design procedure the solar charging station work has been carried out.

The prime units are Solar Panel, Inverter, MC4 Connector. The specifications and motive of some major components used in the project are presented in Table I.

**TABLE I: PROPERTIES OF MAJOR COMPONENTS**

Name	Purpose and Rating
Solar panel	315Watt ,8 solar panel are used in this system. Its output voltage and current are 220V and 4.5A AC , respectively.
Inverter	We use UTL 1735Volts Inverter.
MC4 Connector	For the connection of Solar Panel we use MC4 two in one connector.

IV.

#### HARDWARE IMPLEMENTATION

The proposed EV Charging Station Project is handmade. Simple block diagram of our project is shown above. We design Solar Charging Station of 2 KV. At one time we can charge minimum 1 electric vehicle by using the solar. solar panel module is used here which provides an output voltage of 220V (open circuit voltage). The output of the solar panel depends on the sunlight.

##### A. Solar Panel

In this project we have used 330watt 3 solar panel. Solar panel are made up of Silicon, glass, Aluminum Material. They are half –cut 120cellsolar panel but have twice as many solar cells .The average dimensions of a 315 watt solar panel are about 65” \*39\*1.4\*,Rated Peak Power is 315 watt per Solar Panel. The operating voltage of solar panel is 12Vand open circuit voltage is 11-21V.



Figure 2: Solar panel

##### B. Inverter

Power inverter, inverter is a power electronic device or circuitry that changes direct current (DC) to alternating current (AC). The subsequent AC recurrence got relies upon the specific gadget utilized. Inverters do something contrary to rectifiers which were initially enormous electromechanical gadgets changing AC over completely to DC. The information voltage, yield voltage and recurrence, and by and large power dealing with rely upon the plan of the particular gadget or hardware. The inverter creates no power; the power is given by the DC source. We utilize the Inverter of 1200V. Model is HL1650. The DC voltage is 24 Volts DC. The result voltage is 230 Volts single stage.



Figure 4: Inverter

### C. MC4 Connector

MC4 connectors are single-contact electrical connectors commonly used for connecting solar panel. The MC in MC4 stands for the manufacturer Multi-Contact. The specification on the MC4 Connector are as following :

TABLE I: SPECIFICATION OF MC4 CONNECTOR

Maximum Current	45 A for 4 sq.mm
Maximum Voltage	1000 V
Rated Impulse Voltage	8 KV
Test Voltage	6 kV (50 Hz, 1 min)
Protection Class	Class II
Application Class	Class A
Flammability Class	UL94-V0
Upper limit temperature	100 deg C
Connecting cable cross section area	2.5, 4, 6 sq. mm
Temperature range	40 deg C to + 105 deg C
Lock mode	Self locking
Contact material	Copper Tin Plated



Figure 5: MC4 Connector

### D. Installed EV Charging Station



Figure 6: Installed Charging Station

V.

## RESULTS

Output Result In this project we successfully charge the electric vehicle . The charging time required for full charging of electric vehicle is around 8 hours. In one day we can charge maximum 2electric vehicles. By using solar energy we can charge the electric vehicles. So we can save money which are spend for electricity. It is eco-friendly,pollution free. For this no need of special space, we can install this project on roof of our house .

VI.

## CONCLUSION

We have taken up this undertaking as real venture, as we greater inquisitive inside the discipline. We began our paintings in this assignment going through new hurdles first of all. After the of completion of the mission work we attempted its operating in our college machine keep and we have been pleased to be aware that it does meet the necessities for what it is supposed. The maneuverability of the mission is pretty suitable. For industrial motive you'll beable to improve the efficiency of the gadget correctly by way of increasing the scale of the machine.

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