



SOLAR BASED ELECTRIC VEHICLE SMART CHARGING STATION

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Abstract:- Due to the depletion of fossil fuels associated with the climate crisis, sustainability is increasing. And electric cars are emerging as the new face of the field. A developing nation like India is rapidly becoming accustomed to the situation. Technology related to electric vehicles and phasing out petroleum derivative vehicles as a component of its arrangements to battle environmental change and increment metropolitan harming charging station is a significant wellspring of force for EV, s and their Location is significant for EV access, in the city. Along these lines, the requirement for plug charging in electric vehicles (PEVS). The public vehicle charging framework is developing. This paper reports the plan of a sun oriented photovoltaic (SPV) plug station for crossover electric vehicles. The point of this proposed program is to make a brilliant charging station fueled by the sunlight based charger for PHEVs in the working environment. Worldwide environmental change because of ozone depleting substances and the effect of low degrees of air contamination is a significant issue in our present reality. The expenses related with ozone harming substances and outflows, as well as their effect on human wellbeing, are the major and developing worries. The turn of events and establishment of a sunlight based controlled charger will diminish how much ozone depleting substances discharged, what's to come costs related with environmental change medical issues and thusly, the ecological, social and financial expenses related with the installation of a solar charger. The natural benefits of a solar-powered charging station are many. Without better air quality and dependence. In fossil fuels, the day-to-day running costs are lower.

Keyword: solar photovoltaics; electric driving car; charging station, monocrystalline; polycrystalline



I. INTRODUCTION

Solar-based charging system to generate power to charge battery packs for electric driving cars Renewable charging station contains solar photovoltaic (PV) modules. SCM significantly reduces the demand for fossil fuels to generate electricity leading to a significant reduction in CO₂ and related CO emissions. Renewable solar-like sources are modeled using a single diode model at the e-vehicle charging station.

The charging station is part of the infrastructure that provides electrical power for re-charging of electric vehicles, such as installed electric vehicles, including electric vehicles, plug-in hybrids, et cetera. Charging stations are an inevitable part of the electric car ecosystem. In the case of India, with a network of 54,72,144 KILOMETER, the country needs electric car charging stations nationwide as the government plans to sell only electric driving vehicles by 2030.

A smart charging station for electric vehicles which is a promising and sustainable solution for the environment to meet the energy crisis. As global resources dwindle, government. Institutions and non-governmental organizations are pushing for a green solution through the use of renewable energy sources, as energy must not depend too much on fossil fuels and transport must be electrically available to reduce carbon emissions and reduce climate change. So in order to reduce car pollution, electric cars were built and in order to run an electric car the fuel needed for electricity could be stored by solar power and run these electric cars by electric driving car. A smart charging station which is a promising and environmentally friendly solution to meet energy issues.

- A solar panel set is used to generate energy.
- This energy is store in to the battery unit through the voltage regulator
- The battery level indicator indicates the battery's charge level, and if the battery level is above 25%, the control system supplies power to all charge points.
- Whenever battery level is below than the 25% then cut-off the supply of normal charging point and only fed to emergency charging point to charge the emergency EVS.
- This whole controlling done by the micro controller atmega 328p
- Battery % level is input to the controller , as per the input controller switches the supply to the charging point

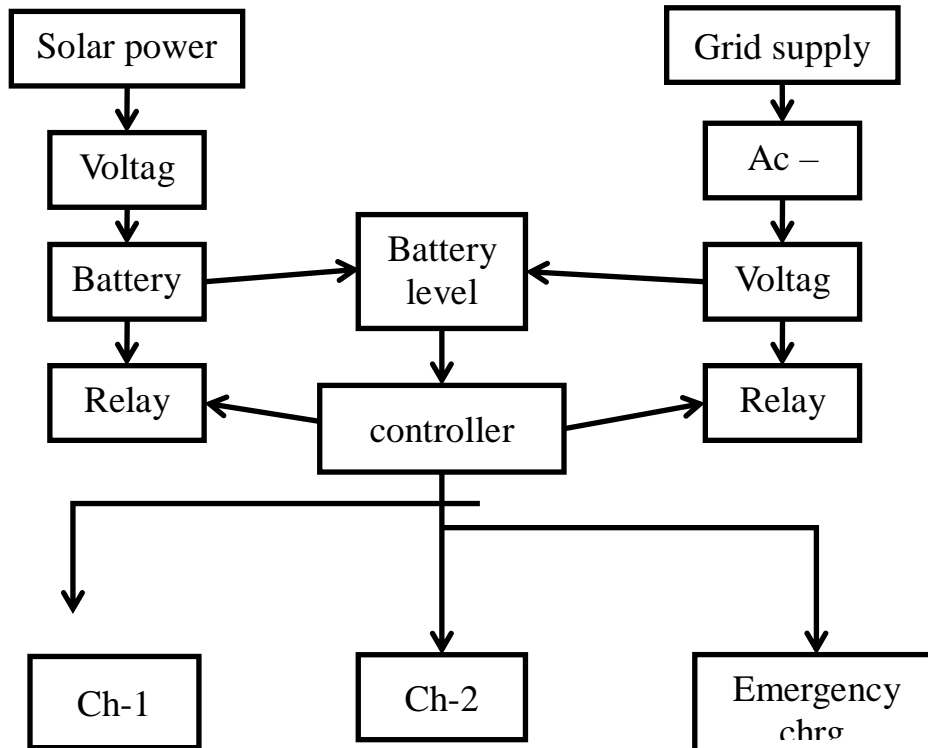


Fig. 1 Block diagram of charging station

- possibilities of providing electricity through a renewable hybrid energy system to a remotely located community,
- To eliminate the transmission loss and grid connectivity problems
- The main aim of the project is to provide charging to electric vehicle by solar power also in emergency case.

II. PROPOSE METHODE

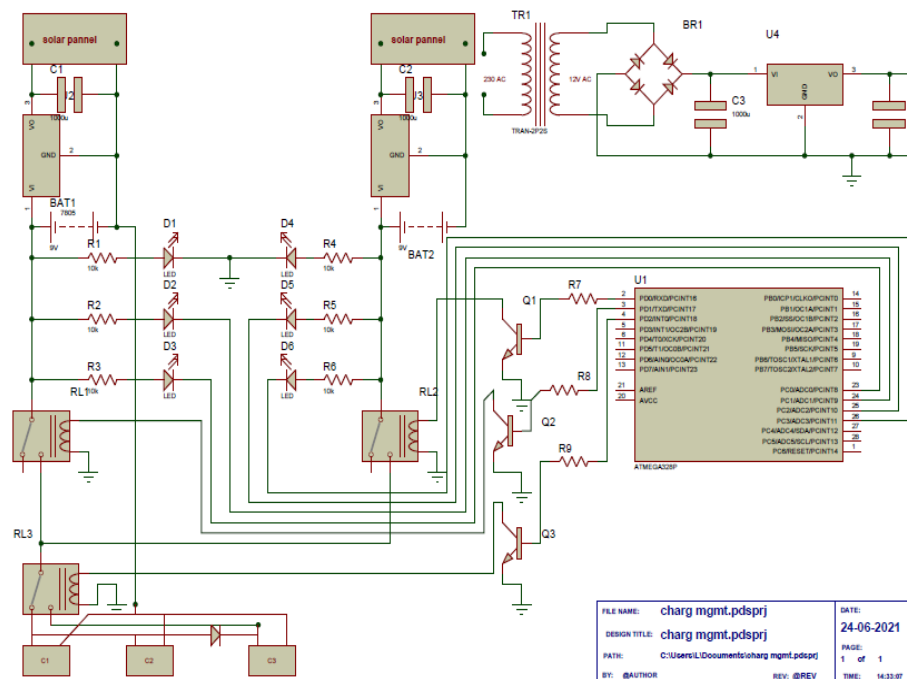


Fig..2 Propose Methode

- In normal EV charging station uses the grid supply to charge EVS, Incase of grid failure charging station goes out of service.
- In normal charging station there is no provision for charging emergency vehicle in emergency case, in our station some % of battery level is reserve for emergency electric Vehicles.
- The possibilities of providing electricity through a renewable hybrid energy system to a remotely
- To eliminate the transmission loss and grid connectivity problems
- The main aim of the project is to provide charging to electric vehicle by solar power also in emergency case.



2.1 Calculation

Solar PV cell is used to generate electricity from the sun's rays

The solar panel rating says,

- High voltage = 18V, Current with maximum power = 0.28A, Power = $V * I$

$$= 18 * 0.28W$$

$$\text{Power} = 5.04W$$

Battery ratings,

- Electrical power = 5V, Current = 1Amp

$$P = V * I$$

$$P = 5 * 1 \text{ Watt}$$

$$P = 5 \text{ Watt}$$

Total Power Unit Battery 1 = $5W * \text{no. Battery}$

Time required to charge solar energy,

$$T = \text{Battery} / \text{Solar Power}$$

$$T = 5W / 5W$$

$$T = 1 \text{ hour}$$

Used element

1. Arduino uno
2. Transfers
3. Opponent
4. LED
5. Diode
6. Director
7. Battery
8. Solar panel

2.2 Arduino uno

- The Arduino microcontroller is a simple but powerful single-board computer that has received a lot of attention in the entertainment and professional markets
- Arduino is open source, which means that the hardware has a decent price and the development software is free.



Fig. 3. Arduino uno

The arduino board has an Atmel ATmega328 microcontroller that works on a 5 V with 2 Kb of RAM, 32 Kb of flash system storage memory and 1 Kb of EEPROM storage parameters. Clock speed is 16 MHz, which translates to using 300,000 lines of source C code per second. Arduino programming language is a simplified version of C++ / C .If you know C, the Arduino system will be known. If you do not know C, there is no need to worry as a few commands are needed to perform useful tasks



III. RESULTS

By installing solar-powered charging stations, eventually the demand for power on the grid decreases to some extent. An increase in the number of solar charging station will automatically encourage citizens to use EVE. It stays better than an ic engine as it reduces greenhouse gases and a positive move to make India green.

IV. CONCLUSION

High costs are one of the reasons customers are reluctant to buy EVs. Although electric vehicles (EVs) are an acceptable alternative to the Indian automotive industry, much of the electricity used to power you comes from fossil fuels. Therefore, to ensure a cleaner future, widespread adoption of solar EV chargers for personal and commercial use is an hour requirement

REFERENCE

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