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# Fabrication Solar Wireless Electric Vehicle Charging System

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**Abstract:** *Solar power for charging of Electric Vehicle that solves the key downside of fuel and pollution. Electrical vehicles have now hit the road worldwide and are slowly growing in numbers. A part from environmental benefits electric vehicles have also proven helpful in reducing cost of travel by replacing fuel by electricity which is way cheaper. Well here we develop an EV charging system that solves both these problems with a unique innovative solution. This EV charging system delivers following benefits:*

- *Wireless charging of vehicles without any wires.*
- *No need to stop for charging, vehicle charges while moving.*
- *Solar power for keeping the charging system going.*
- *No external power supply needed.*
- *Coils integrated in road to avoid wear and tear..*

**Keywords:** Solar Power, EV charging system, replace fuel, helpful in reducing cost of travel

## I. INTRODUCTION

Wireless charging of vehicle without any wires. No need to stop for charging, vehicle charges while moving. Solar power for keeping the charging system going.

The system makes use of a solar panel, battery, transformer, regulator circuitry, copper coils, AC to DC converter, atmega controller and LCD display to develop the system. The system demonstrates how electric vehicles can be charged while moving on road, eliminating the need to stop for charging.

The combination of solar energy and Electric Vehicle EV charging is the key in a drastically reducing our dependence on fossil fuels. Electricity comes from a variety of souls and its curricular that electric vehicles will be powered by renewables. Electric cars are becoming immensely popular and coming year we except nearly anyone who owns a solar energy system will install a solar charging station.

## II. LITERATURE REVIEW

Nikola Tesla was first who invented Wireless Power Transmission (WPT) technology in 1890. He wanted to create the supply system without use of wire thus he invented inductive and capacitive coupling system for WPT. He invented coil known as Tesla Coil. ErhuvwuAyisire has given the idea related charging system for Electrical Vehicle. N. UthayaBanu, U. Arunkumar, A. Gokulakannan, M. K. Hari Prasad and A. B. Shathish Sharma has given the knowledge about the battery charging by using solar energy and it also analysed primary and secondary side in detail. The most difficult and important part while designing wireless charging system that is designing part of the coil. This paper gives knowledge about the Wireless Charging in Electrical Vehicle by using Solar Energy.

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## III. COMPONENTS

Hardware Components:

- Solar panel
- Rectifier
- Filter
- Voltage Regulator
- Transistor
- LED
- 1Nf4007 (Diode)
- Resistor
- Capacitor
- Atmega 328p
- IC 4047
- Coil
- 16 X 2 LCD display

**Solar Panel (12Volt):**

Solar cell is a key device that converts light energy into electrical energy in photovoltaic energy conversion. Solar panel are classified according to their rated power output in Watts. Solar panel capture sunlight as a source of radiant energy, which is converted into electric energy in the form of direct current (DC) electricity.

**Rectifier:**

A rectifier is an electrical device that converts alternating current (AC), which periodically reverse direction, to direct current (DC), current that flows in only one direction, a process known as rectification. Rectifiers have many uses including as components of power supplies and as detectors of radio signals. Rectifiers may be made of solid state diodes, vacuum tube diodes, mercury arc valves, and other components.The output from the transformer is fed to the rectifier. It converts A.C. into pulsating D.C. The rectifier may be a half wave or a full wave rectifier. In this project, a bridge rectifier is used because of its merits like good stability and full wave rectification.

**Filter:**

Electronic Filters are electronic circuits which perform signal processing functions, specifically to remove unwanted frequency component from the signal, to enhance wanted ones, or both.

Capacitive filter is used in this project. It removes the ripples from the output of rectifier and smoothens the D.C. output received form this filter is constant until the mains voltage and load is maintained constant. However, if either of the two is varied, D.C. voltage received at this point changes. Therefore, a regulator is applied at the output stage.

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**Voltage Regulator:**

**Features –**

- Output Current up to 1A
- Output Voltages of 5,6,8,9,10,12,15,18,24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

A voltage regulator is an electrical regulator designed to automatically maintain a constant voltage level. A Voltage regulator may be a simple feed-forward design or may include negative feedback control loops.

**Transistor:**

The BC transistor is an NPN Epitaxial Silicon Transistor. The BC547 transistor is a general-purpose transistor in small plastic packages. It is used in general-purpose switching and amplification BC847/BC547 series 45 V, 100 mA NPN general-purpose transistors.

**LED:**

LEDs are semiconductor devices. Like transistor, and other diodes, LEDs are made out silicon. What makes an LED give off light are the small amounts of chemical impurities that are added to the silicon, such as gallium, arsenide, indium, and nitride. When current passes through the LED, it emits photons as a byproduct.

**Diode (IN4007):**

Diodes are used to convert AC into DC these are used as half wave rectifier or full wave rectifier.

**Resistor:**

Resistor is a two-terminal electronic component designed to oppose an electric current by producing a voltage drop between its terminals in proportion to the current, that is, in accordance with Ohm`s low: V=IR
Resistor are used as part of electrical networks and electronic circuits.

**Capacitor:**

A capacitor is a passive electronic component consisting of a pair of conductors separated by a dielectric. When a voltage potential difference exists between the conductors, an electric field is present in the dielectric. This field stores energy and produces a mechanical force between the plates.

**IC:**

The CD 4047 IC is one kind of mltivibrator including a high voltage. The operating of this IC can be done in two models like Monostable & Astable. This IC reqirs an exterior resistor & capacitor to decide the output pulse width within the monostable mode & the o/p frequency within the stable mode. This IC operates at 5Volts, 10volts, 15Volts & 20Volts.

**Coil:**

A circle, a series of circles, or a spiral made by coiling. A long copper thin material that is wound into circles

**LED Display (16 X 2):**

A very popular standard exists which allows us to communicate with the vast majority of LCDs regardless of their manufacturer. The standards is referred to as HD44780U, which refers to the controller chip which receives data from an external source and communicates directly with the LCD.

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## IV. CONCLUSION

Transportation is a major concern in the development of any country. Whereas electric vehicle is the future of the transportation industry. From our project, we conclude that a wireless charging system is implemented by our group. Our project only represents the prototype of Automation in the wireless charging of electric vehicle system.

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