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WIRELESS CAR CHARGING USING SOLAR

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Abstract: In our Project, we have developed Wireless car charging using solar. Our device/product is capable to charge the electric vehicle. We are using proteus software platform with C language Algorithm and PCB as hardware. The objectives of this work are to develop a model that may be used to simulate solar powered electric vehicle charging and to save electricity and money by using solar power to charge an automobile wirelessly.

KEYWORDS: Proteus software, Arduino UNO,6V Battery,12V Solar panel.

I.INTRODUCTION

The environmentally friendly vehicle is the global trend in the automobile industry. Compared to fuel vehicles, electric automobiles are the most environmentally beneficial option. The commercialization of electric vehicles is limited by their massive capacity, weight, high price, short battery life, and long charging times. An electric vehicle with wireless charging eliminates these concerns.

Our project's purpose is to develop solar powered wireless auto charging for electric vehicles, which has been offered as a viable alternative to decreasing oil use, air pollution emissions, and electricity costs.

The objectives of this work are:

- To develop a model that may be used to simulate solar powered electric vehicle charging.
- To improve the environment by reducing pollution, facilitating connectivity, and simplifying handling.
- To save electricity and money by using solar power to charge an automobile wirelessly.

The system consists of three main parts: -

- Solar panel used as an electric energy source.
- Bridge Rectifier used for converting pulsating AC into DC.
- Battery used as to store electric energy.
- Arduino UNO is use for power consumption and to show it on the display.

II. LITERATURE SURVEY

Professors S. Patil and Monalee S. Pawar [1] invented solar roads for wireless charging of electric automobiles. Wireless power distribution using a solar panel and an Arduino.

Rajbansi Devmani, Kamal Bahadur, Konar S. Suresh, and S.Prabhu Ram created a solar-powered charging station [2],that allows electric cars to be charged wirelessly. The ICPT principle of electromagnetic induction is used to transmit energy.

Manoj D. Patil and Ankita S. Patil used the WPT [3], approach to produce solar-powered wireless charging of batteries in electric vehicles.Using a solar PV-wind system[4], Bhuvanesh Arulraj and Marudavel Elumalai developed wireless charging for electric automobiles. This concept makes use of solar panels, windmills, and a wireless charging station.

III. COMPONENTS

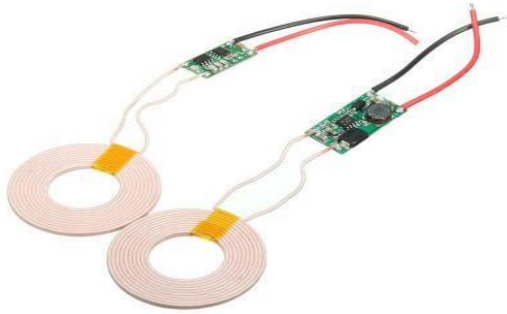
1. Solar cell –

Solar cell or solar panel, a set of photo-voltaic cells embedded in the input frame. To produce direct current electricity, solar cells use sunlight as a source of energy. A system of photovoltaic panels is called an array, and a photovoltaic panel is a collection of photovoltaic modules. In a photovoltaic system, an array provides electrical items with solar energy.

Through the photovoltaic effect, photovoltaic modules generate energy from photons from the Sun. Many modules use wafer based crystalline or small film silicon cells. The upper layer or the background layer of the module may be the structural (load) component. Mechanisms and moisture must be put out of cells' range. Based on the thin film cells which are available, many modules are strong but slightly flexible. To increase energy, cells are often electrically connected in a series, one to another at the desired voltage, and then in combination. The mathematical summation of a module's voltages (V) and currents (A) produces its power (w). Solar panel production specs are provided under ordinary situations, which is not the actual operating situation of the solar panels exposed in the installation area. An outgoing optical connector, the PV junction box serves as a connector to the rear of the solar panel. External connection of multiple photovoltaic modules uses MC4 connectors to facilitate weather-resistant communication throughout the program. That is feasible to use a USB virtual interface connector.

In order to better support the structure of the panels, solar panels also utilize metal frames that include items for mounting racks, brackets, reflector shapes, and tunnels. We used a 16w/12v, 1.5A solar panel in this case.

2. Wireless Power Transmitter-Receiver-



Wireless transmission (WPT), wireless transmission, wireless transmission (WET), or wireless transmission wireless transmission as a visual link. In a wireless power transmission system, a power transmission system, driven by power from a power source, produces a flexible electric field, which transfers energy from the universe to a receiver, which supplies energy to the field and supplies electricity. burden. Wireless transmission technology can eliminate the use of cables and batteries, thereby increasing the mobility, comfort, and safety of the entire electrical system. Wireless power transfers help to supply power to electrical appliances when connecting cables are faulty, dangerous, or ineffective.

Wireless transmitter convert DC to pursuiting AC and generates magnetic field and Wireless receiver convert pursuiting AC to DC and generates magnetic field.

3. Arduino UNO –

The Microchip ATmega328P microprocessor serves as the basis for the Arduino Uno. Different types of extension boards (shields) and other circuits can be joined to the board's sets of digital terminals and analog input/output (I/O). The board includes 14 digital I/O pins (six capable of output PWM), 6 I / O analogs, and configured via Arduino IDE (Integrated Development Zone), with a USB cable type B. Although it accepts volumes of between 7 and 20 volts, It can be powered by a USB cable or an external 9-volt battery. Same with Leonardo and Arduino Nano. On the Arduino website, hardware reference ideas are still made available under a Creative Commons Attribution Share-Alike 2.5 license. For other hardware versions, There are construction and production files available.

IV. METHDOLOGY

The wiring diagram for our project; when exposed to sunlight, the first solar panel generated up to 12 volts. The generated voltage is sent to the bridge rectifier since it stabilizes the voltage. The filtered voltage is applied to the battery to charge it.

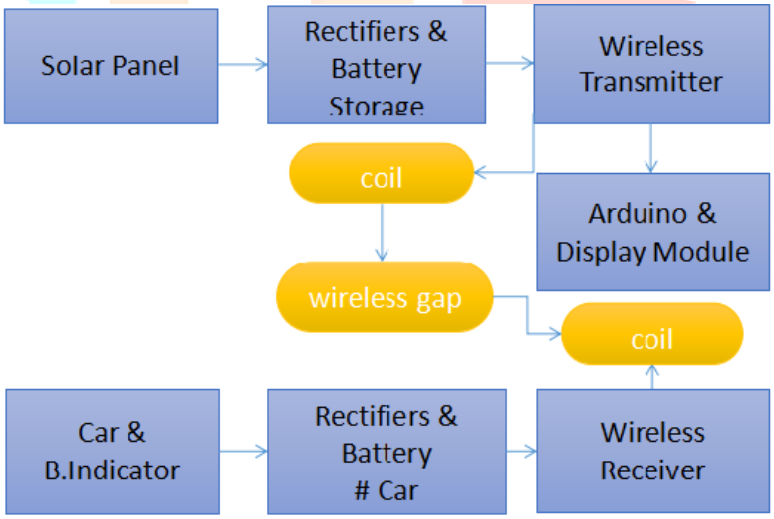


Fig: - Block Diagram

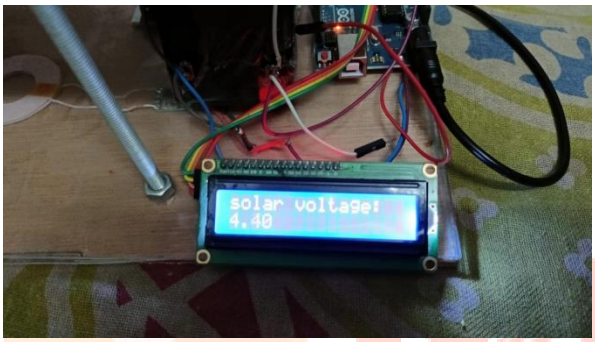
A 6-volt, 4-amp battery is being used. The battery will be charged, and the energy will be stored. A wireless transmitter attached to a battery sends the produced magnetic field around the coil.

For transmission, the transmitter circuit transforms DC electricity into AC voltage. A magnetic field forms as a result. A voltage sensor is connected to the battery, which displays the battery and solar voltages. This also shows both alternatives, such as the remaining battery power. We can display the voltage using an Arduino UNO and a 16x2 LCD. The coil on the receiver side generates magnetic fields, and the voltage is in AC format. It converts AC to DC and thereby stabilizes the voltage. This voltage is applied to the battery in the car, which stores energy and charges it. An LED indicator shows how much charge is left in the battery.

V. RESULTS AND DISCUSSION

Stage-1: Car is in no charging stage.

Stage-2: LCD displays the Solar voltage.



Stage-3: Car is charging.

VI. CONCLUSION

The charging stations can be controlled based on signals like local energy needs if they are cloud-connected. Intelligent charging stations allow us to find charging stations rapidly, charge better and safely, save money and as well as the environment, and reduce problems with our neighbors.

VII. REFERENCES

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