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WIRELESS SOLAR MOBILE CHARGER

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ABSTRACT

Wireless charging is a type of charging system that uses a magnetic field to transfer power to a magnetic field. Power is transmitted between devices (sender and receiver) through the same input process. Solar power is supplied to the input of the inductive transmitter coil, the inductive receiving coil receives power and converts it into electrical power to charge the battery. However, there are many challenges to using wireless charging on existing devices. In this paper, a framework for wireless charging methods and the latest developments is presented. In particular, the challenges of using wireless charging in network systems are discussed.

Keywords – Wireless charging.

I. INTRODUCTION

Wireless Power Transmission is a method of transferring electricity from a transmitter to a receiver (electrical load), such as a power grid or a consuming device, without the use of man-made conductors such as co-axial cable, or twisted cable, or copper. It is useful to power electrical devices in the event that connecting cables is not possible. This project is not the same as signal transmission using electromagnetic used on radio equipment such as FM radio, cell phones, routers, etc. In this mode of transmission, the force is transmitted by means of a magnetic field. Electromagnetic waves cause damage to humans and other living things, while the magnetic field does not cause harm to any living thing.

Common Wired Route: Copper cables are commonly used to supply electricity (AC Power) to residential, school, and commercial buildings. Power stations generate AC power which is transmitted over a large area using overhead cables to power meter chambers and eventually distributed to homes and offices via transmission lines (copper cables) and ground transformers. Many of our electrical appliances have AC cables/cables. If a cable method is used, the total number of chords (wired connection) will increase which will only make the cable network useless.

II. PROBLEM DEFINITION

- Ensuring that we have more power in the future, it is up to all of us to use power wisely.
- We must all save energy and use it wisely. And it belongs to those who will create the energy technologies of the future.
- Concerns about the effects of greenhouse gases, pollution, and energy security have led to increased interest and further advances in renewable energy sources such as solar, wind, geothermal, wave, and hydrogen energy. Therefore, we use an energy bank using a renewable energy source such as a solar panel and solar power provided by an inductive transmission coil, a flexible receiving coil for power, and conversion into a battery charging device without using wire.

III. BLOCK DIAGRAM

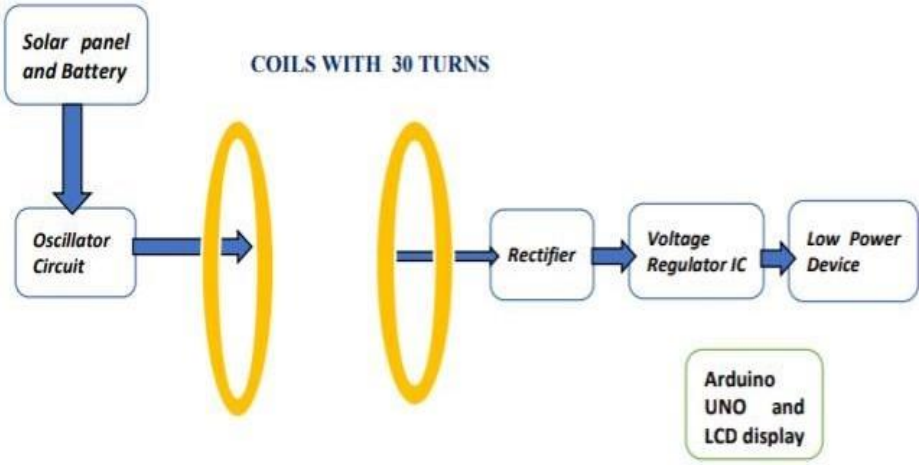

Fig No.1 Block diagram of the wireless solarmobile charger.

The proposed system as shown in Fig.1 consists of a solar panel that acts as a DC power source and is used to charge the battery. Battery discharge is a direct current signal. Wireless power transfers are based on the same presentation when the

current conductor produces a magnetic field. This magnetic field draws current voltage/power throughout the second coil. The current AC isproduced and transmitted by the transmitter coil. The current is received by the recipient coil and converted to the direct current by transferring the receiver coil out to the reset circuit. The repair cycle used in the system isa bridge fixer. The output of the bridge controller dc current is not controlled by passing through an electrical controller that maintains a constant voltage. Power output isused for charging low-power devices such asmobile phones, iPods, portable devices, etc. Arduino and LCD are used to display our project title.

IV. LITERATURE SURVEY

The concept of wireless transmission is not new. In fact, it has been very popular since the 19th century, when this method was usedby the wireless transmission system instead of using a resonance-based magnetic field totransfer electrical power without wires. As the path emitted radiation, a large amount of electrical energy was wasted [2]. Nikola Tesla has succeeded in lighting the electric lamp without using wires in his Colorado Springs Lab using electro-dynamic induction (resonant inductive coupling).

Three electric lamps are lit by a power source stored at a distance of 60 feet (18metres) away from the lights, and a complete displaywas correctly marked. Tesla had planned to transfer power-free wireless cable across theAtlantic Ocean with his Long Island-based Warden clyffe Tower. This has never been the case due to a number of issues, including time and funding. The wireless transmission system uses magnetic, electric, or electromagnetic fields that change time. This process can be used to power electrical and electronic equipment where cables may not be used or in areas where wiring is not possible or ineffective. In 1826, Andre-Marie Ampere introduced the ampere rotation law which states that electrical energy flowing to a conductor will produce a magnetic field [1, 4]. In 1831, Michael Faraday introduced Faraday's import law, defining E.M.F. enters the conductor when it encounters a fluctuating magnetic field [1, 4]. In 1862, James Clerk Maxwell made some changes to these laws and other observations, testing and mathematical calculations, magnetism and optics became a consistent theory, acquiring mathematics called Maxwell mathematics.

V. METHODOLOGY

A. Solar Panel

Solar panels convert solar energy into electricity. They use the concept of the photoelectric effect, electron emission when light falls on the solar panel. Solar panels arebuilt of silicon cells, silicon has an atomic number of 14. When light falls on silicon cells, many external electrons silicon i.e. twoelectrons set to motion. This is just the beginning of the electrical flow.

Silicon has two distinct cellular structures: monocrystalline and polycrystalline. Monocrystalline solar panels are made of one large silicon blocks and are made in silicon wafer formats. Polycrystalline solar cells and silicon cells, are produced by high melting silicon crystals together.

B. Batteries:

The lithium-ion battery is a rechargeable battery. During discharging lithium ions move from the negative electrode to the positive electrode, during charging lithium ions move from the negative electrode to the positive electrode. Electrolyte provides the conductive medium for lithium ions to movefrom positive electrodes to negative electrodes.

C. Transmitter:

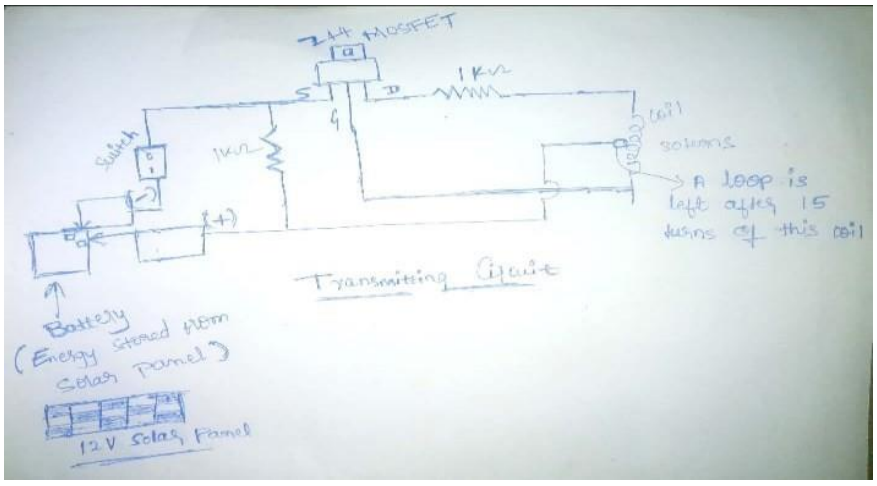

Fig No.2 Transmitter Circuit

Transmitter Circuit is shown in above fig.2, In the transmitter part, as earlier wind the copper wire 15 times first, then leave a loop hanging after 15 turns so we can connect thewire at this point. And then wind another 15 turns to

make a complete 30 turns coil. Because we are applying DC voltage, electrical and magnetic fields are perpendicular to each other then the whole magnetic field is at the center of the coil (the primary coil is center-tapped), and this generated magnetic field induces voltage/current across the secondary coil. Now add the Z44 MOSFET to the transmitter circuit as shown. resistors and the switch with Batteries as per the circuit diagram. Transmitting coil has the dimensions 12.9*13*13 cm.

D. Receiver:

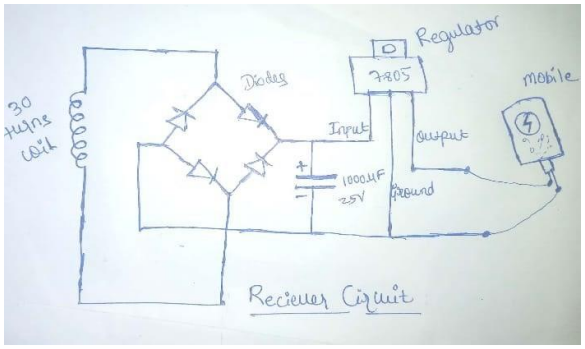

Fig No.3 Receiver Circuit

The receiver Circuit is as shown in above fig.3 at the Receiver side wind the copper wire 30 times around any round object like abottle. Make a rectifier circuit as shown in thecircuit diagram. A rectifier circuit consists of
4 diodes and one capacitor. The current generated in the coil will be Alternating Current(AC). But mobile phones charge on Direct Current(DC), so we need a rectifier circuit to convert that AC to DC current. Adda 5V Voltage Regulator(LM7805) after the rectifier circuit because mobile phones use 5V DC current. The receiver coil hasdimensions 12.9*15*13 cm.

VI. CONCLUSION

- Solar energy is renewable and can beused for the simplest of purpose i.e wireless solar mobile charger.
- These are simple, portable and can beused by anyone especially in remote areas and normally wireless chargers are so much power consuming, but we use renewable source of energy so there is no such issue arises. It has vey less chance of mobile overcharging, less chance of mobile accident. It willbe also providing safety from electric shock and it will be very much user and environment friendly.

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