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CHARGE A MOBILE THROUGH WIRELESS POWER BANK

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Abstract: Wireless Power Transfer technology is a recent development in today's times. It removes the disadvantage of using the wired technology that is prevalent today. In this experiment, wireless power transfer would be used to charge the mobile handsets of people using public transportation system like buses. Certain drawbacks of wired power transfer technology being used currently call for the adopting of wireless power transfer technology .It is not feasible to obtain a charging point /plug point at all times or even keep the charger with oneself at all times. Electromagnetic induction is the underlying principle of wireless power transmission. The use of wireless transmission would eliminate the need of wires which pertaining to the situation may be complex or hazardous.

Keywords: WPT (Wireless Power Transfer (or) Transmission), Electromagnetic induction, charging mobile phones.

1. INTRODUCTION

An energizing source is required along with two antennas, one for transmission of the signal and one for receiving it. The receiving antenna would then energize the load. The energizing source sends a high power time varying signal to the transmission antenna.[3] The resulting electrostatic field produced around the transmitting antenna would also be time varying in accordance with the high power signal . The time varying power signal produces electromagnetic waves. These electromagnetic waves then move through air and the receiving antenna positioned at the appropriate location. Once the receiving antenna receives these electromagnetic waves, another signal would be induced in the receiving antenna based on its strength. This gives rise to current that feeds the load.

A. ELECTROMAGNETIC INDUCTION

An electric current flowing through a conductor, such as a wire, carries electrical energy. When an electric current passes through a circuit there is an electric field in the dielectric surrounding the conductor; magnetic field lines around the conductor and lines of electric force radically about the conductor.

B. PRINCIPLE OF ELCTROMAGNETIC INDUCTION:

A conductor placed in the vicinity of a changing electric field experiences flow of electric current through it.

2.PROPOSED SYSTEM MODEL

A mobile battery charger circuit is a device that can automatically recharge a mobile phone's battery when the power in it gets low. Nowadays mobile phones have become an integral part of everyone's life and hence require frequent charging of battery owing to longer duration usage.
Battery chargers come as simple, trickle, timer-based, intelligent, universal battery charger-analyzers, fast, pulse, inductive, USB based, solar chargers, and motion powered chargers. These battery chargers also vary depending on the applications like a mobile phone charger, battery charger for vehicles, electric vehicle batteries chargers and charge stations.

3.THEORY

Wireless Charging Techniques

Three major techniques for wireless charging are magnetic inductive coupling, magnetic resonance coupling, and microwave radiation. The magnetic inductive and magnetic resonance coupling work on near field, where the generated electromagnetic field dominates the region close to the transmitter or scattering object. The near-field power is attenuated according to the cube of the reciprocal of the distance. Alternatively, the microwave radiation works on far field at a greater distance. The far-field power decreases according to the reciprocal of the distance. Moreover, for the far-field technique, the absorption of radiation does not affect the transmitter. By contrast, for the near-field techniques, the absorption of radiation influences the load on the transmitter.

Magnetic Inductive Coupling: Magnetic inductive coupling is based on magnetic field induction that delivers electrical energy between two coils. Magnetic inductive coupling happens when a primary coil of an energy transmitter generates predominant varying magneticfield across the secondary coil of the energy receiver within the field, generally less than wavelength. The near-field power then induces voltage/current across the secondary coil of the energy receiver within the field. This voltage can be used by a wireless device. The energy efficiency is dependent on the tightness of coupling between two coils and their quality factor. The tightness of coupling is determined by the alignment and distance, the ratio of diameters, and the shape of two coils. The quality factor mainly depends on the materials, given the shape and size of the coils as well as the operating frequency. The advantages of magnetic inductive coupling include ease of implementation, convenient operation, high efficiency in close distance (typically less than a coil diameter) and safety. Therefore, it is applicable and popular for mobile devices.

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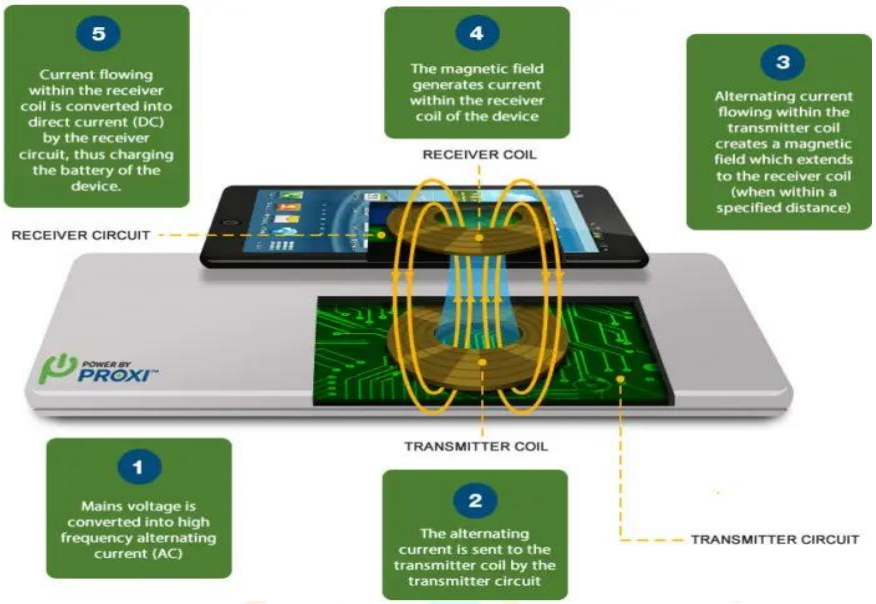
4.IMPLEMENTATION

Induction coil, an electrical device for producing an intermittent source of high voltage. An induction coil consists of a central cylindrical core of soft iron on which are wound two insulated coils: an inner or primary coil, having relatively few turns of copper wire, and a surrounding secondary coil, having a large number of turns of thinner copper wire. An interrupter is used for making and breaking the current in the primary coil automatically. This current magnetizes the iron core and produces a large magnetic field throughout the induction coil. When a current in the primary coil is started, induced electromotive forces are created in both the primary and secondary coils. The opposing electromotive force in the primary coil causes the current to rise gradually to its maximum value. Thus when the current starts, the time rate of change of the magnetic field and the induced voltage in the secondary coil are relatively small. On the other hand, when the primary current is interrupted, the magnetic field is reduced rapidly and a relatively large voltage is produced in the secondary coil. This voltage, which may reach several tens of thousands of volts, lasts only for a very short time during which the magnetic field is

changing. Thus an induction coil produces a large voltage lasting for a short time and a small reverse voltage lasting a much longer time.



5.MERITS OF WIRELESS POWER TRANSFER

a) Wireless Power Transmission system has the potential to eliminate the existing transmission network; this would reduce a lot of transmission losses and also eliminate the use of certain equipment thus saving cost [4].
b) It would enable transmission of power to places where the current transmission system fails to supply power. The system would also have higher efficiency than wired transmission system. [5]
c) Most of the faults would be eliminated due to absence of cable transmission wires.

6.CONCLUSION

By using the principle of magnetic Induction replaces transmitter with grid to connect a magnetic while receiver includes electric power the equipment that is load the user only puts electronic equipment these in order to, charging battery communication between charger and equipment is “Main point”.

By the analysis transmission of wireless power to a load device which may be vehicle battery or a mobile phone and explains the basic principle of Wireless Power Transmission and how it may change the scenario of charging electronics devices.

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