



Wireless Power Transmission Outlet using Tesla Coil

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Abstract— *The Wireless Power Outlet via Wi-Fi or Bluetooth uses transmission energy from an electrical source to a Portable electronic device. Since 1890's Nicolas Tesla tried to make a wireless distribution of electricity via air and so the well known Tesla Coil was invented. The AC energies a copper wire coil in the transmitter, which generates a magnetic field. The proponents proposed device will be a good help in making the Wireless power come true. The Wireless power outlet will power the electronic devices at the same using the coils that's would release a magnetic field from the transmitter. The receiver would receive the energy via the magnetic field. To achieve this , DC supplied by a power source, is converted into a high frequency AC then to the transmitter.*

Keywords— *Wi-Fi, Bluetooth, Tesla Coil, AC/DC,*

I. PROBLEM AND IT'S BACKGROUND

INTRODUCTION

Wireless power has been lab experiment for Intel for a few yeas now, Companies such as Qi , Pma and some few to produce and get it on the market, but their is a problem the power transmission is only up to a few feet away. Energous is a start up engine which shows the wireless power transmission at the users electronics shows that could be a big changer, because a wireless power system called WattIp claimed by Energous, that up to 20 feet away it can power up a electronic device.

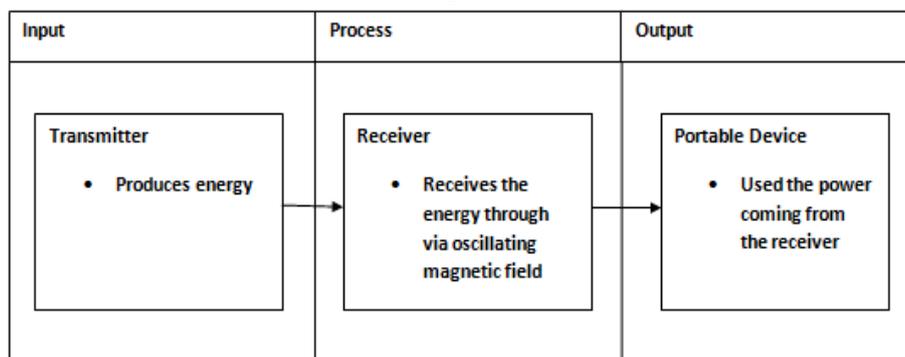
BACKGROUND OF THE STUDY

Wireless power is a technology which will power some electronic devices such as laptop or any home appliance via transmitting energy wirelessly through the air. Usage of power these days is demanding due to we are in the electronic age were everything is digital. The demand of power of some electronic device is high due to the usage of it or it's function. So to kept the demand of the power the wireless power outlet is a very good way to keep the electronic device run while not worrying about having the battery.

CONCEPTUAL FRAMEWORK

The conceptual framework shows the process of the device. In the diagram, the user will know how the device operates.

Table I Conceptual framework



The conceptual framework shows the action of the appointment ability from the transmitting appearance to the charging phase. The transmitted activity will be accept by the receiver and catechumen it into Direct Current (DC). Once the receiver converts it to DC the accessory can absorb the power.

SIGNIFICANCE OF THE STUDY

The proposed electronic device aims to improve the transfer of energy to provide the user a new power transmission but also were the users can experience a wireless life.

STATEMENT OF THE PROBLEM

1. wires are prone to short circuit, overload circuit, leakage current electrical contacts, electrical spark that would start a fire;
2. Most standard cord size are not long enough and users can only utilize the device being used;
3. Single Device powering;

OBJECTIVE OF THE STUDY

General Objective

The goal of this proposed project is to make a theory which would be some answer of consuming power problem and safety of cabled power electronics. It was to provide them a new to power the electronic devices using wireless transmission.

Specific Objectives

The following are the objectives of the proposed project which to make theories on specific objective.

1. To provide easy access into the power source without plugging in the device or appliances;
2. To power or charge the devices at the same time;
3. Electronics will experience reduce risk of corrosion due to elements such as water;
4. To transfer energy in distances with high efficiency;
5. Delivers reliable power transfer to critical situation like in wet and dirty environment;

SCOPE AND LIMITATION

The device that the proponents proposed is "Wireless Power Transmission Outlet using Tesla Coil" provides wireless capability and advantage for portable device users to a new power supply system wherein they can have the power supply without any direct contact to the device or equipment. The Wireless Power Supply is effortless to use, first make sure you have the Portable Socket this thing won't work without the socket, then plug the device or equipment to the Bluetooth Socket be sure that the Bluetooth Power Supply is in the center of the establishment to maximize its range But since the power supply has the Bluetooth connection it has a range limit up to 10ft to stay connected to the supply, any signal interference might occur connection problem to the Bluetooth connection that may cause power disconnection.

II. RELATED STUDIES AND LITERATURE

A. Local Studies

1. Relay Effect of Wireless Power Transfer Using Strongly Coupled Magnetic Resonances

Wireless power transfer using strongly coupled electromagnetic resonators is a recently explored technology. Although this technology is able to transmit electrical energy over a much longer distance than traditional near field methods, in some applications, its effective distance is still insufficient. In this paper, the researchers investigate a relay effect to extend the energy transfer distance. Theoretical analysis is performed based on a set of coupled-mode equations. Experiments are conducted to confirm the theoretical results and demonstrate the effectiveness of the relay approach.

2. Wireless electricity (Power) transmission using solar based power satellite technology

In the near future due to extensive use of energy, limited supply of resources and the pollution in environment from present resources e.g. (wood, coal, fossil fuel) etc, alternative sources of energy and new ways to generate energy which are efficient, cost effective and produce minimum losses are of great concern. Wireless electricity (Power) transmission (WET) has become a focal point as research point of view and nowadays lies at top 10 future hot burning technologies that are under research these days. In this paper, we present the concept of transmitting power wirelessly to reduce transmission and distribution losses. The wired distribution losses are 70 – 75% efficient. Imagine the world without electric power which is efficient, cost effective and produce minimum losses is of great concern. This paper tells the benefits of using WET technology specially by using Solar based Power satellites (SBPS) and also focuses that how to make electric system cost effective, optimized and well organized. Moreover, attempts are made to highlight future issues so as to index some emerging solutions.

3. Short-range wireless power transmission and reception

A short-range wireless power transmission and reception system and method are provided. Power is transmitted from the electrical utility mains power supply to electrically powered appliances via electromagnetic radiation. The appliances are capable of receiving the transmitted power, converting it into electricity and storing it for subsequent use, as well as using it directly to power the appliances.

4. Power without wires

This commodity presents the history of WPT and the assorted technologies and applications of this agitative technology. In the abreast future, acclimation and adjustment will be of accent to acumen WPT based articles for bartering applications. The WPC has authentic a accepted for anterior coupling and associates of this accumulation accept appear befitting products. There are, as yet, no standards or adjustment for beating coupling and MPT technologies. In Japan, a abstruse appointment accepted as Broadband Wireless Appointment has been accustomed to altercate the approaching of WPT. SPS advisers accept as well submitted a angle for WPT to the International Telecommunication Union (ITU). In the IEEE MTT Society, the Abstruse Committee MTT-26 Wireless Energy Transfer and Conversion was accustomed in June, 2011 to altercate the approaching of WPT.

5. Design of Retro directive Antenna Arrays for Short-Range Wireless Power Transmission

Application of awakening charge antenna arrays in wireless ability manual is proposed in this paper. The time change about or appearance conjugate access and architecture considerations of the arrangement factors are advised in GHz

administration and beat range. The wireless ability manual ability is analysed in the 2-D case with full-wave electromagnetic (EM) band-aid and accurate by analytic arrangement theory. The architecture factors of arrangement size, arrangement spacing, aspect size, and specific best of the industrial, accurate and medical (ISM) bandage abundance are advised to optimize the manual focus. Architecture guidelines are provided for those factors and the appulse of accomplishment air headedness is discussed. The proposed access can aswell be continued to wireless ability alteration with alive awakening charge rectangle arrangement and acquiescent RFID systems.

B. Foreign Studies

1. Wireless recharging for mobile phone

Fujitsu, the Japanese technology company, has created a system able of accompanying charging assorted carriage able cyber banking accessories such as mobile phones, agenda cameras and laptop computers after the allegation for able connections. Electric cars users may else eventually be able to allegation their cars wirelessly application the aforementioned technology according to Fujitsu, which apparent a ancestor system at an convention of electronics, Information and Communication Engineers appointment at Osaka Prefecture University. Claiming to be the world's of its kind, the technology works on the base of manual of electricity application alluring fields amid the charger and the cyber banking device.

2. POWERMAT Charging Mat

The Power mat Wireless Charging System provides a simple, fast and efficient way to keep all of the favourite personal electronic devices charged. Enabling the devices with power mat Receivers allows to Drop and Charge them on any Power Mat to experience wireless charging.

3. WiTricity-WIRELESS ELECTRICITY

WiTricity is transmission of electrical energy form one object to another without the use of wires is called WiTricity. WiTricity will ensure that the cell phones, laptops, iPods and other power hungry devices get charged on their own, eliminating the need of plugging them in. Even better, because of Witricity some of the devices won't require batteries to operate.

4. Wireless charging if electric vehicle

Wireless-Induction charging of cars and constituent hybrids is acceptable to become accepted aural the automotive industry. Inductive charging will become actual accepted carefully because of convenience. With this blazon of charging, one would not accept to bethink to bung in the car afterwards use. Inductive charging sends electricity wirelessly amid two coils.

III. METHODOLOGY

A. Research Design

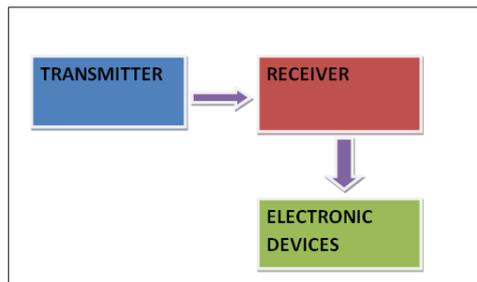


Fig. 1. Research Design

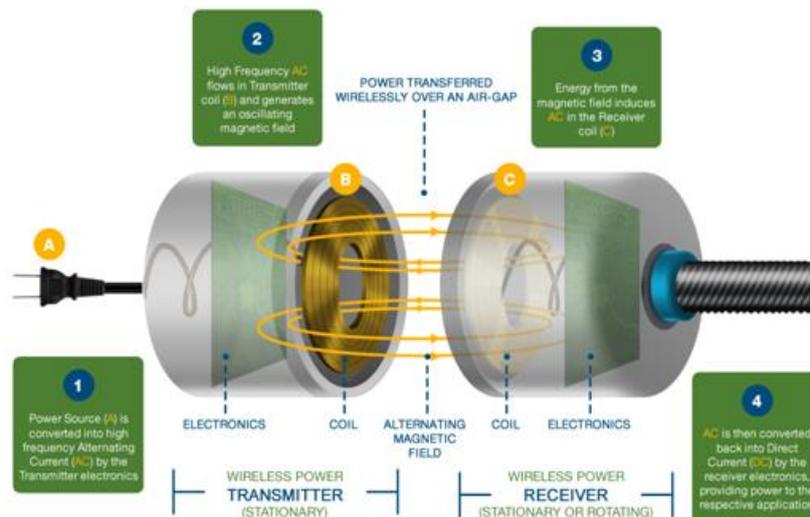


Fig. 2. Wireless Power Transfer Diagram Source Power byProxi

The illustration represents how the Wireless power by using tesla coil works as a wireless power provider. Transmitter sends out energy in forms of magnetic or sound waves that a receiver can convert to supply certain devices.

C. Methods used in developing the Hardware product

Wireless transmission or inductive charging used for transferring electrical energy from a outlet to a device without the need of physical wire connection.

D. Prototype design and Development

Transmitter and receiver devices have both magnetic coil. An magnetic coil release a magnetic field due to high DC voltage and convert it into AC. The receiver receives the AC from the magnetic field and convert it into DC to power the electronic devices.

E. Operational Environment

Wireless manual of ability anon appealing because it allows the users to ability cyber banking accessories by not active in to the outlet. Just abode the electronic accessory on a wireless aperture and it will alpha charging you can as well abode it any where. The wireless aperture itself accept to still be acquainted into the wall. Wireless ability manual is added accurately declared as “inductive powering” because it uses alluring induction. The abbreviate account is that it uses allure to address energy. The accepted advancing from the bank ability aperture moves through the wire in the wireless charger, creating a alluring field. The alluring acreage creates a accepted in the braid central the device. This braid is affiliated to the array and the accepted accuse the battery. Accessories accept to accept the adapted accoutrements in them to abutment wireless charging a accessory after the adapted braid can’t allegation wirelessly.

IV. SOFTWARE REQUIREMENT

Portable accessories such as android phones, tablets, astute phones and laptop can use the wireless adeptness outlet. Standard wireless protocols are authentic by the IEEE 802.11 a/b/g/n and the newest 802.11ac protocol. Accessories alive in Android system, IOS, accustomed adjustable fizz adjustment or even Windows software can use the wireless adeptness breach as connected as able charger atrium is used.

Hardware Requirement

The power station (emitter) it will release a magnetic field which the electricity could travel. The socket (receiver) will receive the electricity from the magnetic field which the transmitter send then change it into consumable energy.

V. CONCLUSION

While the coil release a magnetic field from the transmitter because of high DC voltage, the converted DC current into AC goes into the air and flow through it. The receiver which have a coil, the AC current will flow on it. A circuit designed to convert the AC into DC, there for you need only one wireless outlet and the electronics device that have socket inserted with it can gain electricity.

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