

Wireless Charger with Timer

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Abstract— The main objective of Wireless Charger System is to provide you a methodology to charge your mobile phones without the use of cables. This technology will replace wires and being able to adjust power settings to charge different types of batteries. As per the existing system, it continues charging unless it is unplugged. It leads to the battery damage due to overcharging. So we modified the wireless charger with a timer. The technology provides convenience and better user experience. Using wireless charging has many benefits. Firstly, it improves user-friendliness. Different brands and different models of devices can also use the same charger instead of taking all kinds of cables. Secondly, it provides better product durability. Thirdly, it enhances flexibility for the devices which are replacing their batteries. Fourthly, it doesn't damage the battery due to overcharging.

Key words: Wireless Charger, Magnetic Flux, Mutual Induction

I. INTRODUCTION

Wireless charger or wireless charging is the most useful technique for current lifestyle. We can easily carry this thing with us wherever we go like to work place, at home itself, for office purpose etc. there is no wires in this which uses electricity that is no physical electrical wires. Nowadays most of the people wish to use wireless charging methods because it is user-friendly. This method saves money as well time of people. So it leads the production of more number of wireless charger. Nowadays the standard of living is increased so the peoples are more attracted towards new techniques like wireless charger. At present many people owned more than one handheld device so it is impossible to carry all the chargers. In this project we introduce something which can charge all the power hungry devices like phones, laptops etc. The aim of this project is to use magnetic flux to transfer energy in order to make wireless charger, which can charge all the power hungry devices like phones, laptops etc. there is less chances for electrical shock. The aim of this project is to use magnetic flux to transfer energy in order to make wireless charger.

II. PROBLEM STATEMENT

The aim of the project is to produce a demonstration of wireless power system for charging a mobile phone and illustrate how magnetic induction can be used to transfer energy wirelessly. Today, almost each and everything are wireless or cordless. With many users owning more than one handheld device, the resulting collection of bulky chargers is inconvenient to use. Inductive charging 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. Some of the devices won't require batteries to work because of inductive charging. Tangles of wires and bulky chargers are no longer required. The transmission of electric power without wires or connectors has been proven to be reliable and convenient.

The wireless chargers provide power to battery with lower efficiency compared by using the wires charger.

III. HARDWARE REQUIREMENTS

A. Magnetic Part of Speaker

The inner part is connected to an iron coil which is in front of a permanent magnet. Alnico, Ceramic and Neodymium are the materials used in speaker magnets. Speakers contain an electromagnet to translate the electric signal into an audible sound.

The electromagnet creates a magnetic field when an electric current flows through it. Magnet is capable of keeping magnetic field without the help of electricity.

B. Copper winding

20m of copper winding is required. Make a transmitter (primary coil) with 30(15+15) turns of copper wire. Also make a receiver (secondary coil) with 30 turns. We can remove the insulation with the help of a lighter.

C. CD OR DVD

- Place the transmitter on a damaged CD or DVD.
- 4.2N2222 TRANSISTOR
- 2N2222 Transistor can be used in switching application or low power amplifying. Stick the transistor on CD and solder the collector terminal and base terminal of the transistor. Solder the negative wire to emitter of the transistor.
- 5.Female USB pin
- Stick the female USB pin on CD. USB port provides power to the external devices.

D. SCOPE

A charger is one of the most important component that we use in our day to day life. Many of the companies does not encourage the overcharging of mobile phones as they result in severe battery problem which affects the life of the battery. So this charging mechanism provides a secure charging without over charging as the timer cuts the circuit automatically when it is fully charged. So we have a great scope in the industry.



E. Module Description

The user have to perform following functions:

- plug the device to the charger
- unplug when the buzzer sounds.

The user will plug the device to the wireless charger. Wireless charging uses an electromagnetic field to transfer energy between two objects through electromagnetic induction. Energy is sent through an inductive coupling to an electrical device, which can then use that energy to charge batteries or run the device. An arduino is connected to the device and programmed in manner to provide a signal once when the battery is full. Thus we can unplug the charger

F. BASED THEORY

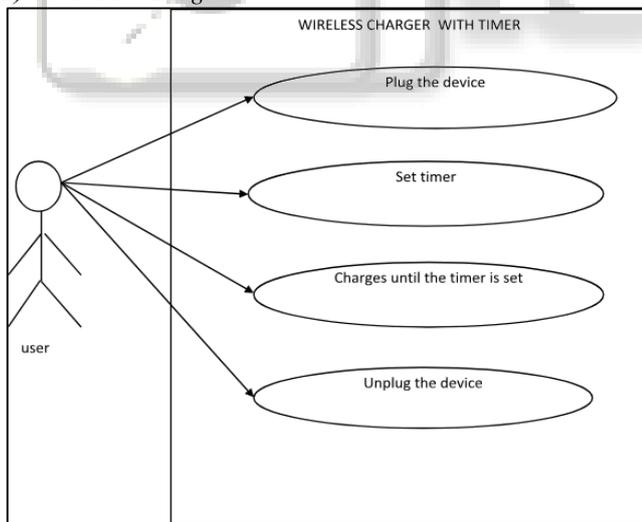
1) Electromagnetic induction

There is a production of voltage across an electric conductor in a changing magnetic field is called electromagnetic induction. It is discovered by Michael Faraday, this principle is used

Worldwide in many electrical components. Michael Faraday used electrical coil and magnetic bar for this experiment. Number of turns of coil, strength of the magnet as well as speed of relative motion are also the factors depends on the voltage that we are getting from this setup. We can increase the voltage produced by increasing number of turns of coil and increasing the speed of relative motion these are directly proportional.

$e = N \times d\Phi/dt$ this equation is used to calculate the induced voltage we use inductive charging technique our wireless charger, the main principle behind this is electromagnetic induction, that is transfer energy between two objects using electromagnetic field.

2) Use Case Diagram



IV. ADVANTAGES

A. Safe

Wireless charger is safe to use since there is no cable involved and there won't be any kind of data transfer like wired charger.

B. Convenience

Wireless charger does not require much handheld wires or components hence they are convenient to use.

C. Durable

Wireless charger does not incorporate any fragile or corroding material nor any substance which reduces the efficiency of the device.

D. Compatible

It can use any wires to charge thus wide in use.

V. DISADVANTAGES

A. Works slowly

The charging of the device takes place slowly as compared to normal charging methodology.

B. Contains connecting wires

VI. CONCLUSION

.What we hope to achieve in this project is a wireless charging system that is convenient in its operation, efficient in power transfer, smart in communication and data transfer. Using the concept of induction in strict adherence to Qi standards we should be able to successfully design wireless charger.

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