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# WIRELESS ELECTRICITY WITRICITY

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**Abstract –The main objective of this paper is to develop a system of wireless power transfer in 3D space. This project is formed out of an AC 230V 50Hz to AC20KHz at 12V circuit. The ac 50Hz is rectified by BR1 and the DC derived from that is again made to ac by an inverter by transistors switching near 40KHz which is fed to a resonating coil acting as primary of another air core transformer, the secondary of which is fed to 2$^{nd}$ rectifier to derive a DC load. The air core transformer operating near 40KHz is the main concept for wireless power transfer in 3D space as one cannot transfer 50Hz ac power by air core.**

**The secondary coil in resonance develops a voltage of 40KHz at about 12V while it is taken over the primary coil. The output of this secondary is given to a 10 watt lamp that glows at considerable distance from the primary coil. However, the overall efficiency of the power transfer is less than70% for all weakly coupled series resonators used in the project.**

## I.INTRODUCTION:

Approximate computing architectures exploit the fact that a small relaxation in output correctness can result in significantly simpler and lower power implementations. However, most approximate hardware architectures proposed so far suffer from the limitation that, for widely varying input parameters, it becomes very hard to provide a quality bound on the output, and in some cases, the output quality may be severely degraded. This paper adopts a different approach to addressing this problem by dynamically reconfiguring the approximate hardware architecture. Specifically, this paper makes the following contributions.

1) Wireless Power is commonly known by many terms, including Inductive Power Transfer (IPT), Inductive Coupling and Resonant Power Transfer. Each these terms essentially describe the same fundamental process – the transmission of energy from a power source to an electrical load, without connectors, across an air gap. The basis of a wireless power system involves essentially two coils – a
transmitter and receiver coil. The transmitter coil is energized by alternating current to generate a magnetic field, which in turn induces a current in the receiver coil.

2) We investigate, for the first time, that this invention was invented but it is not still implemented all over the world. we are trying to implement it in our society with some advance techniques.

3) We propose a design methodology to use this technology it within a specified bound.

## II.TECHNOLOGY INVOLVED:

1) The basics of wireless power involve the transmission of energy from a transmitter to a

 

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receiver via an oscillating magnetic field. To achieve this, Direct Current (DC) supplied by a power source, is converted into high frequency Alternating Current (AC) by specially designed electronics built into the transmitter. The alternating current energizes a copper wire coil in the transmitter, which generates a magnetic field. Once a second (receiver) coil is placed within proximity of the magnetic field, the field can induce an alternating current in the receiving coil. Electronics in the receiving device then converts the alternating current back into direct current, which becomes usable power. The diagram below simplifies this process into four key steps. This is shown in figure1.

2) The 'mains' voltage is converted in to an AC signal (Alternating Current), which is then sent to the transmitter coil via the electronic transmitter circuit.
3) The AC current flowing through the transmitter coil induces a magnetic field which can extends to the receiver coil (which lies in relative proximity)
4) The magnetic field then generates a current which flows through the coil of the receiving device. The process whereby energy is transmitted between the transmitter and receiver coil is also referred to as *magnetic* or *resonant coupling* and is achieved by both coils resonating at the same frequency.
5) Current flowing within the receiver coil is converted into direct current (DC) by the receiver circuit, which can then be used to power the device.

## III.EXISTING SYSTEM:

Till now the wireless electricity is not implemented in all the premises. The aim of our project is to implement in all the premises. The existing system has many problems in implementing so it has not been implanted in all premises. The main problem in wireless communication is that it cannot me transmitted over a long distance and the range of wireless electricity is mid range and the directivity is low. It is omni directional. The technology used behind this is resonant coupling. The frequency range is from few KHz-GHz in the existing system. Many research are been undergoing to increase the distance of wireless communication but it has been facing a continuous problems on increasing its distance and implementing it. But still it has been become impossible after many researches. Wireless technology can be hacked easily, till now to prevent this hacking any of the measures have not been taken till now.

**TABLE I**

Components used in transmitter:

| Component's Name | Component's Value or code |
|---|---|
| Voltage Source, Vdc | 15V |
| Capacitor, C | 10nF |
| Resistor, R1 | 39 ohm, 5watt |
| Resistor, R2 | 39 ohm, 5watt |
| Resistor, R3 | 39 ohm, 5watt |
| Resistor, R4 | 39 ohm, 5watt |
| Resistor, R5 | 5.6k ohm |
| Resistor, R6 | 5.6k ohm |
| Diode, D1 | 1N4148 |
| Diode, D2 | 1N4148 |
| MOSFET,Q1 | IRF540 |
| MOSFET, Q2 | IRF540 |

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| | |
|---|---|
| Radio Frequency Choke,L1 | 120 µH |
| Radio Frequency Choke, L2 | 120 µH |
| Transmitter coil, L | 8 Mh |

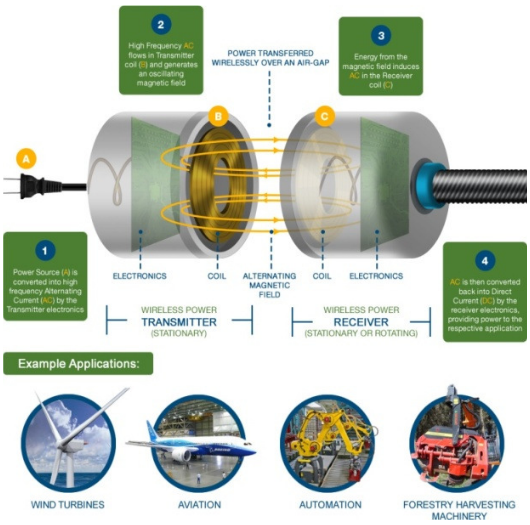


**Fig.1.Industrial application of wi-tricity.**

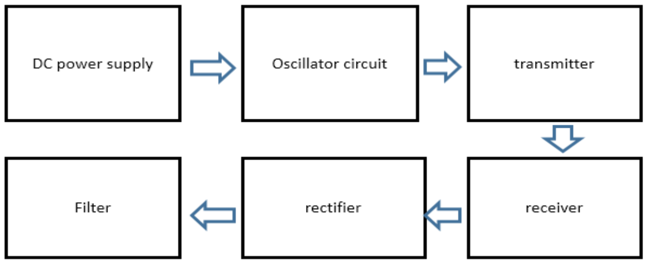


**Fig.2.Blockdiagram.**

**TABLE II**

Components used in receiver:

| Component's Name | Component's Value or code |
|---|---|
| Diode, D1 | OA79 |
| Diode, D2 | OA79 |
| Diode, D3 | OA79 |
| Diode, D4 | OA79 |
| Capacitor, C1 | 10 Nf |
| Capacitor, C2 | 100 µF |
| Voltage Regulator IC | IC LM 7812 |
| Receiver coil, L | 8 Mh |

## IV.PROPOSED SYSTEM:

- This section contains the system proposed by my new ideas. wireless electricity has been invented but not still implemented in the society in all the premises. So I'm trying to overcome the disadvantages of present system. The first measure of my project is to provide security for the wireless electricity which will be transmitted. So following ways can be use to prevent our system from hacking
  - **Time tested Wi-Fi security change your router admin username and password.**
  - **Change the network name.**
  - **Activate encryption.**
  - **Double up on firewalls.**

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- **Turn off guest networks.**
- **Use VPN.**
- **Turn off WPS.**
- **Don't broadcast network name.**
- **Debunked options.**
- **Disable DHCP.**
- **Filter on MAC addresses.**
- **Turn down the broadcast power.**

So the above measures are used to prevent the hacking of our system.

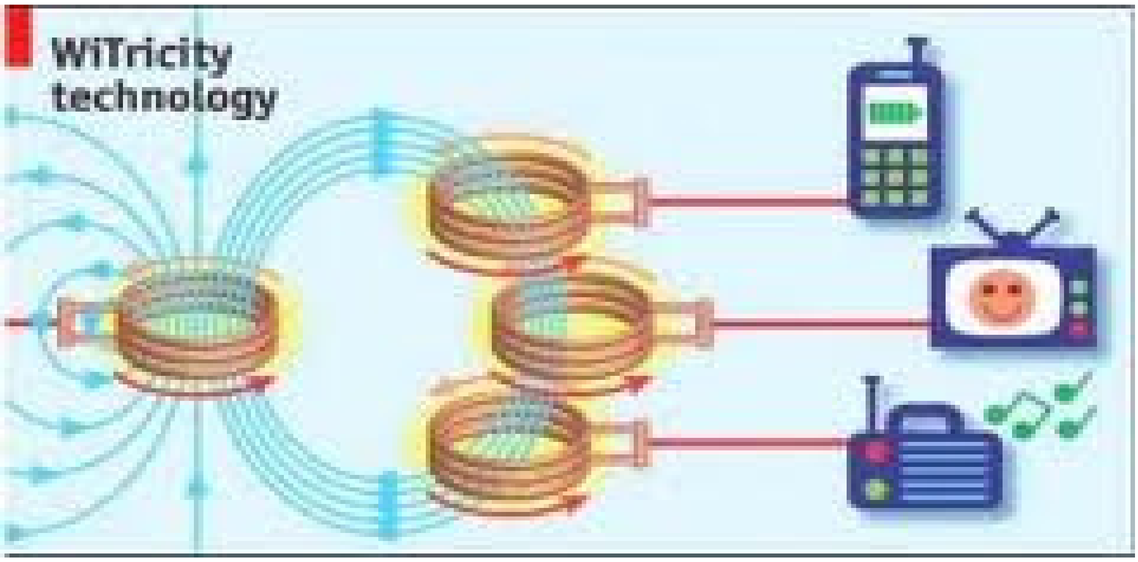


Fig.3. TECHNOLOGY USED

## V.BENEFITS OF WIRELESS POWER:

- Reduce costs associated with maintaining direct connectors (like those in the tradtional slip ring).
- Greater convenience for the charging of everyday electronic devices
- Safe power transfer to applications that need to remain sterile or hermetically sealed
- Electronics can be fully enclosed, reducing the risk of corrosion due to elements such as oxygen and water.
- Robust and consistent power delivery to rotating, highly mobile industrial equipment
- Delivers reliable power transfer to mission critical systems in wet, dirty and moving environments.

Whatever the application, the removal of the physical connection delivers a number of benefits over traditional cable power connectors, some of which aren't always obvious. The video below highlights just some of the benefits and advantages of wireless power and offers an insight into a world where wireless power is widely integrated into industrial and mission critical environments.

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## VI. POSSIBLE FUTURE INNOVATIONS:

The interest in highly resonant wireless power transfer comes from many markets and application sectors. There are several motivations for using such technology, and these often fall into one or more of the following categories:

1. Make devices more convenient and thus more desirable to purchasers, by eliminating the need for a power cord or battery replacement.

2. Make devices more reliable by eliminating the most failure prone component in most electronic systems—the cords and connectors.

3. Make devices more environmentally sound by eliminating the need for disposable batteries. Using grid power is much less expensive and more environmentally sound than manufacturing, transporting, and using batteries based on traditional electro-chemistries.

4. Make devices safer by eliminating the sparking hazard associated with conductive interconnections, and by making them watertight and explosion proof by eliminating connector headers and wires that run through roofs, walls or other barriers (even skin tissue).

5. Reduce system cost by leveraging the ability to power multiple devices from a single source resonator.

## VII.SCALABILITY:

The high degree of scalability of power level and distance range in solutions based on highly resonant wireless power transfer enables a very diverse array of configurations. Applications range from very low power levels for wireless sensor and electronic devices needing less than 1 watt, to very high power levels for industrial systems and electric vehicles requiring in excess of 3 kilowatts. Furthermore, systems can be implemented for either or both a) "Wireless Direct Powering" of a device, in which the captured energy is directly connected to a load (e.g., LED lights) and any existing battery or energy storage component in the device is not providing power or is providing back-up power; or b)"Wireless Charging", in which a battery or super capacitor is charged with the received energy.

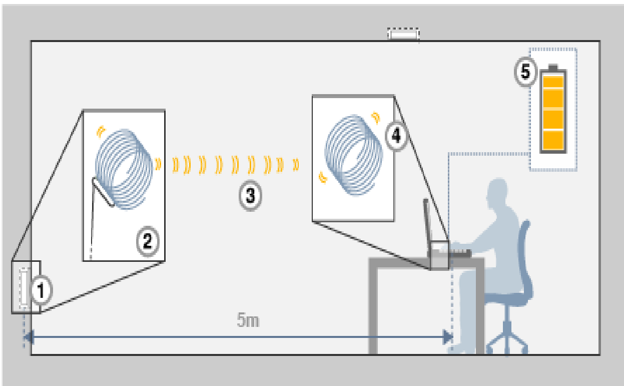


Fig.4.pictorial representation.

 

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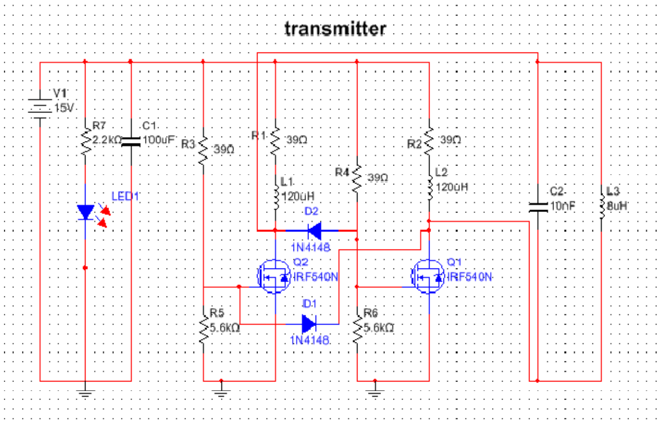


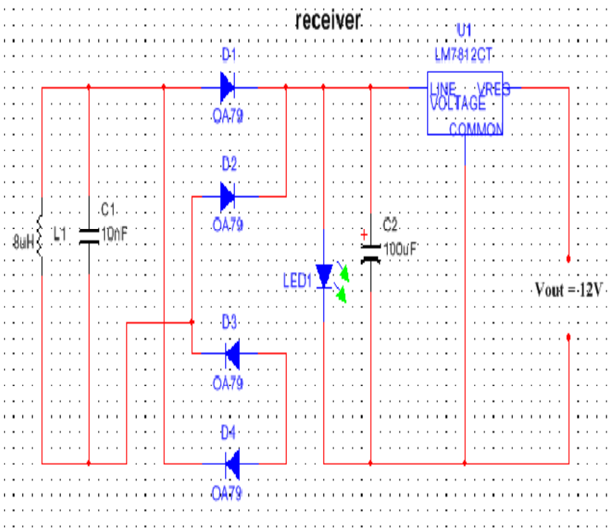


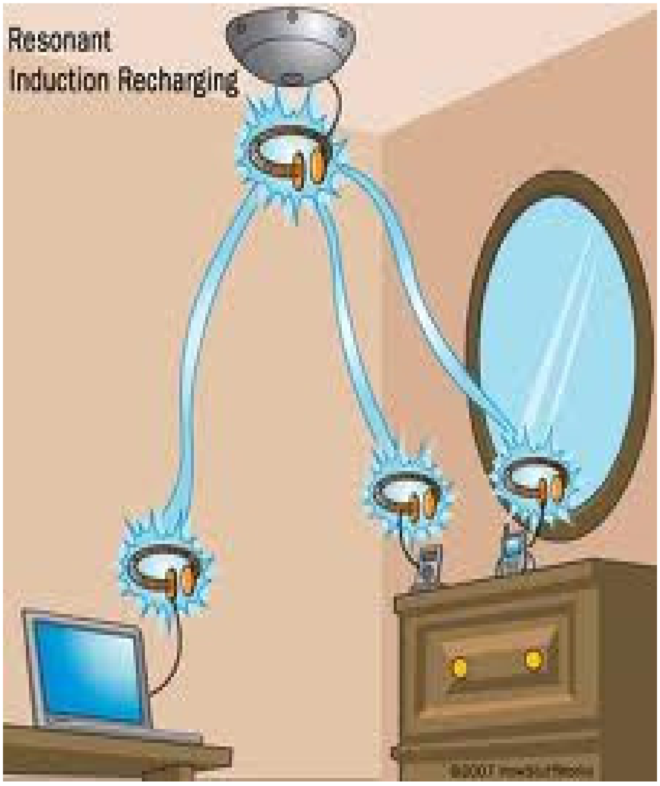


Fig.5.Circuit diagram of sender and receiver

## VIII. CONCLUSION :

Hereby I conclude that this technology will be soon implemented in the society based on economic factors such as cost, reliability and technology. However it is only really in the last decade that the technology has been harnessed to the point where it offers real, tangible benefits to real world applications. In particular, the develop-

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ment of resonant wireless power technology for the Consumer Electronics market has seen wireless charging deliver new levels of convenience for the charging of millions of everyday devices.

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