**ELUMALAI POLYTECHNIC COLLEGE**

VILLUPURAM

**DEPARTMENT OF EEE**

**RECENT TRENDS IN POWER SYSTEM**

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Recent trends in power system

Witricity(**wireless electricity**)

**ABSTRACT**

*WiTricity* technology *is*—transferring electric energy or power over distance without wire .In 1899, Sir Nikola Tesla Proposed a method of Wireless Power Transmission. As it is in radioactive mode, most of the Power was wasted and has less efficiency. The efficient midrange power transfer concept is Witricity.

The basic principle involved in Witricity concept is, Two objects having same resonating frequency and in Magnetic resonance at Strongly coupled regime tend to exchange energy, while dissipating relatively little energy to the extraneous off-resonant objects. But thanks to a group of MIT scientists, "WiTricity" (as these scientists call it) is now one step closer to practical reality.

In future the developments in this power transmission will minimize the losses in the distribution system. In this paper we are going to highlight some important points of this type of power transmission

**Recent trends in power system**

Power system consists of four major divisions. They are

1. Generation
2. Transmission
3. Distribution
4. Utilisation

**Generation:-**

The energy is available in various forms from different natural sources such as pressure head of water, chemical energy of the fuel, nuclear energy of radioactive substance etc. All these forms can be converted into electrical energy by the use of suitable arrangements.

The arrangement essentially employs an alternator coupled to a prime mover is driven by the energy obtained from various sources such as burning of fuel , pressure of water , force of wind etc . For example chemical energy of a fuel can be used to produce steam at high temperature and pressure.

The steam is fed to a prime mover which may be a steam engine or steam turbine. The turbine converts heat energy of steam into mechanical energy. Which is further converted into electrical energy by the alternators. Similarly other form of energy can be converted into Electrical energy by employing suitable machinery and equipment.

**Transmission:-**

The conveyance of electric power from a power station to consumer premises is known as electric supply system.

An electric supply system consists of three principal components. They are power station, transmission lines and distribution lines. Electric power is produced at the power stations which are located at favourable places, generally quite away from consumers. It is then transmitted over large distance to load centres with the help of conductor is known as transmission lines. Finally it is distributed to a large number of small and big consumers through a distribution network.

The electric supply system can be broadly classified into D.C or A.C system.

Now a days 3phase 3wire a.c system is universally adopted for generation and transmission of electric power as an economical proposition. However, distribution of electric power is done by 3phase 4wire a.c system.

In transmission there are many types. But one important is wireless power transmission .

Now we discusses about it .the recent trend in wireless power transmission is witricity.it is none other than wireless electricity.

*WiTricity* technology *is*—transferring electric energy or power over distance without wire

In this paper....

1. History of Wireless power
2. Need of Witricity
3. Basic Principle
4. Range & Rate of Coupling
5. Design of Parameters and Simulation
6. Pros and Cons

HISTORY OF WIRELESS POWER:-

In 1899, Sir Nikola Tesla proposed a method of Wireless Power Transmission.As it is in Radiative mode, most of the Power was wasted and has less efficiency. Due to line transmission there are huge amount of loss will be there so to avoid these losses.The new concept was introduced. In this method of transmission the efficient midrange power transfer concept is Witricity. In this model source and load are in Magnetic resonance so there is low power loss.

BASIC PRINCIPLE:-

The basic principle involved in Witricity concept is, two objects having same resonating frequency and in Magnetic resonance at strongly coupled regime tend to exchange energy, while dissipating relatively little energy to the extraneous off-resonant objects.

NEED OF WITRICITY:-

Now a days there is a Rapid development of autonomous electronics like *Laptops*, *Cell-phones*, *House-hold robots* and all those devices typically rely on chemical energy storage(Battery) As they are becoming daily needs to present generation, Wireless energy transfer would be useful for many applications as above and they need midrange energy.

EXPERIMENTAL DESIGN:-

The experimental scheme consists of two Self-resonant coils. One coil (source coil) is coupled inductively to an oscillating circuit; the other (device coil) is coupled inductively to a resistive load. Self-resonant coils rely on the interplay between distributed inductance and distributed capacitance to achieve resonance.

ADVANTAGES:-

Significant decluttering of office space. No need for meter rooms and electrical closets. Reduction of e-waste by eliminating the need for power cords. Need more light in your office, no need for electrician. Simply place the lamp where ever you need it.

DISADVANTAGES:-

Need for standardization and adaptation. So no overheating occurs because of different voltages. Retrofitting old equipment or purchasing new equipment could become a very expensive endeavour. Possibility of “energy theft”. Wi Fi, someone can be using your internet or your power.

CONCLUSION:-

Further improvements in this method of power transmission will lead to minimized loss network in the distribution we conclude that this is an high performing power transmission.