

## WIRELESS POWER TRANSMISSION

### ABSTRACT

Wireless power transmission is nothing but wireless electricity. Transmission of electrical energy from one object to another without the use of wires is called as Wireless power transmission.

One of the major issue in power system is the losses occurs during the transmission and distribution of electrical power. As the demand increases day by day, the power generation increases and the power loss is also increased. The major amount of power loss occurs during transmission and distribution. The percentage of loss of power during transmission and distribution is approximated as 26%. The main reason for power loss during transmission and distribution is the resistance of wires used for grid. The efficiency of power transmission can be improved to certain level by using high strength composite overhead conductors and underground cables that use a high temperature super conductor. But, the transmission is still inefficient. According to the World Resources Institute (WRI), India's electricity grid has the highest transmission and distribution losses in the world – a whopping 27%. Numbers published by various Indian government agencies put that number at 30%, 40% and greater than 40%. This is attributed to technical losses (grid's inefficiencies) and theft.

Any problem can be solved by state-of-the-art technology. The above discussed problem can be solved by choose an alternative option for power transmission which could provide much higher efficiency, low transmission cost and avoid power theft. Microwave Power Transmission is one of the promising technologies and may be the righteous alternative for efficient power transmission.

Wireless power transmission is the means to power devices without a built in power source such as a generator or battery. There are multiple needs and uses for such

technology. One initial use of such technology is found in powering small devices where much of the size of the device is in the battery itself. By eliminating the battery in a small device it would be possible to compact the device even further. Furthermore, on a larger scale as consumable energy sources on the planet are dwindling in number it remains an important task to look to the future. If it was possible to transmit power wirelessly it would be economical to retrieve power from outer space and simply transmit it back to the planet's surface as an endless power source. In our initial research we discovered many have looked into the feasibility of wireless power transmission and there are many solutions that all offer promise. Our team chose to research the feasibility of wireless power transmission through inductive coupling. This consists of using a transmission and receiving coils as the coupling antennas. Although the coils do not have to be solenoid they must be in the form of closed loops to both transmit and receive power. To transmit power an alternating current must be passed through a closed loop coil. The alternating current will create a time varying magnetic field. The flux generated by the time varying magnetic field will then induce a voltage on a receiving coil closed loop system. This seemingly simple system outlines the major principle that our research investigated. The primary benefits to using inductive coupling are the simplicity of the transmission and receiving antennas, additionally for small power transmission this is a much safer means of conveyance. To demonstrate the success of our team research, we created a receiving circuit to maximize the amount of received power and light an LED.