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WIRELESS POWER TRANSMISSION

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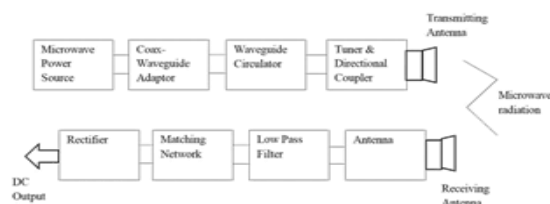
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Abstract:

We are aware to that the utilization of technology is being magnified day by day. Also, the techniques to implements this technology is additionally increasing speedily. The foremost common drawback is charging the gadgets or what therefore ever. Typically you'll have the utilization of charging multiple devices at a time that is not possible with one wired charger connected to one plug. To beat this, a replacement technology referred to as wireless power transmission has emerged. Power will be transferred through an influence former with none contact between the electrical device and receiver that reduces the complexness during this method and is additionally use in charging quite one device at a time.

Introduction:

Generally, power transmission is completed exploitation cables, wires, cords etc. we have a tendency to most likely have a number of dust-covered wire tangles around our home. This is often one amongst the downfalls of electricity. Whereas it will build people's lives easier, it will add heaps of litter within the method. You will have even had to follow one explicit wire through the on the face of it not possible snarl to the outlet hoping that the plug you pull are the proper one. Emerging science and technology have brought techniques to avoid large usage of wires and cables for power transmission and those we say it wireless power transmission. This technique of transmission is largely relied on the space between the transmitter and also the receiver.



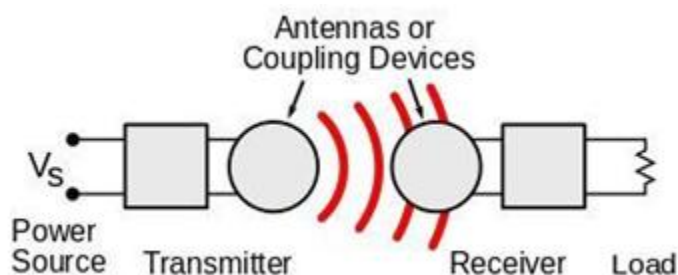
The classification goes as:

- SHORT DISTANCE RANGE
- MODERATE DISTANCE RANGE
- LONG DISTANCE RANGE

Short Distance Range:

This transmission technique is completed typically once the transmitter and receiver square measure distanced at few centimeters. The action of electrical device is basic would like for wireless energy transfer.

The electric toothbrush charger is Associate in nursing example of however this principle may be used. A toothbrush's daily exposure to water makes a standard plug-in charger doubtless dangerous. Standard electrical connections may additionally enable water to flow into the toothbrush, damaging its parts. Due to this, most toothbrushes recharge through inductive coupling.



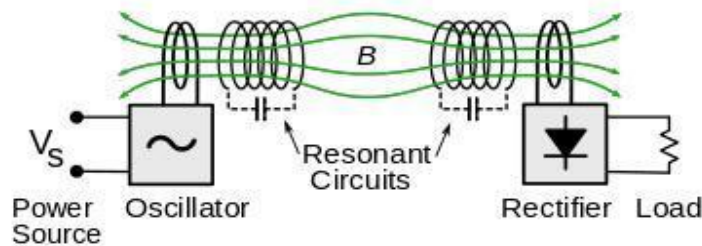
Moderate Distance.

Range:

This transmission technique is completed sometimes once the transmitter and receiver are distanced at few meters. The devices used for domestic functions have terribly low magnetic fields. For this reason the coils are placed close. A larger, stronger field may induce current from farther away; however the method would be extraordinarily inefficient. Since a field of force spreads altogether directions, creating a bigger one would waste plenty of energy. To beat this extra property known as RESONANCE is extra to this system.

Induction will surface a bit otherwise if the magnetism fields round the coils resonate at constant frequency. The idea uses a falcate coil of wire as associate electrical device. A capacitance plate, which might hold a charge, attaches to every finish of the coil. As electricity travels through this coil, the coil begins to resonate. Its resonant frequency could be a product of the inductance of the coil and also the capacitance of the plates.

As long as each coils are out of vary of 1 another, nothing can happen, since the fields round the coils aren't robust enough to have an effect on abundant around them. Similarly, if the 2 coils resonate at completely different frequencies, nothing can happen. However if 2 resounding coils with constant frequency get among a couple of meters of every different, streams of energy move from the transmission coil to the receiving coil. Consistent with the idea, one coil will even send electricity to many receiving coils, as long as all of them resonate at constant frequency. The researchers have named this non-radioactive energy transfer since it involves stationary fields round the coils instead of fields that unfold altogether directions. According to the idea, one coil will recharge any device that's in varying, as long because the coils have constant resonant frequency.



Long Distance Range:

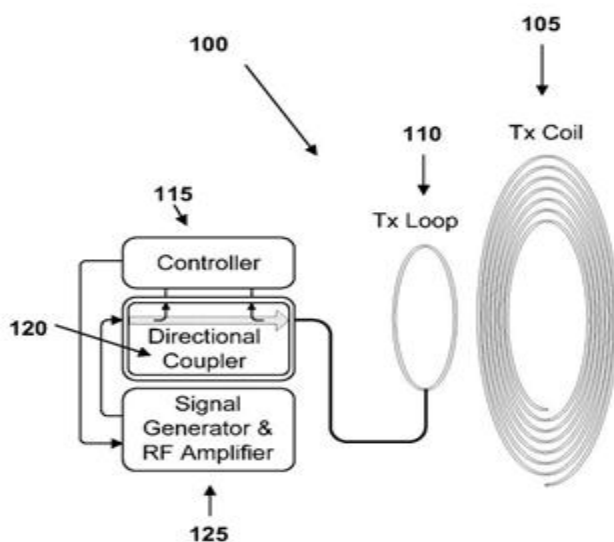
This transmission technique is completed typically once the transmitter and Receiver area unit distanced at few meters. Induction typically sends power over comparatively short distances. However some plans for wireless power involve moving electricity over a span of miles. A within the Nineteen

Eighties, Canada's Communications analysis Centre created a tiny low aero plane that would escape power beamed from the world. The unmanned plane, known as the Stationary High Altitude Relay Platform (SHARP), was designed as a communications relay. Rather flying from purpose to purpose, the SHARP may fly in a circle 2 kilometers in diameter at associate altitude of regarding thirteen miles (21 kilometers).

The secret to the SHARP's long flight time was an outsized, ground-based microwave transmitter. The SHARP's circular flight path unbroken it in vary of this transmitter. A large, disc-shaped rectifying antenna, or rectenna, simply behind the plane's wings modified the microwave energy from the transmitter into direct-current (DC) electricity. As a result of the microwaves' interaction with the rectenna, the SHARP had a relentless power offer as long because it was in vary of a functioning microwave array. Rectifying antennae area unit central to several wireless power transmission theories. They're typically created associate array of dipole antennae that have positive and negative poles. These

antennae hook up with shot key diodes. Here what happens:

- Microwaves, that area unit a part of the spectrum reach the dipole antennae.
- The antennae collect the microwave energy and transmit it to the diodes.
- The diodes act like switches that area unit open or closed also as turnstiles that allow electrons flow in precisely one direction. They direct the electrons to the rectenna’s electronic equipment.
- The electronic equipment routes the electrons to the elements and systems that require them.



Conclusion:

The crucial advantage of victimization the non-radioactive field lies within the incontrovertible fact that most of the facility not picked up by the receiving coil remains absolute to the neighborhood of the causation unit, rather than being radiated into the setting and lost. With such a style, power transfer for laptop computer-sized coils are quite ample to run a laptop is transferred over room-sized distances nearly Omni-directionally and with efficiency, no matter the pure mathematics of the encompassing area, even once environmental objects fully impede the line-of-sight between the 2 coils. As long because the laptop computer is in an exceedingly space equipped with a supply of such wireless power, it might charge mechanically, while not having to be obstructed in. In fact, it might not even would like battery to control within such a space.” within the long haul, this might cut back our society’s dependence on batteries that are presently serious and overpriced. At a similar time for the long vary power transmission, power is sent from supply to receivers in a flash while not wires, reducing the price.

Reference:

1. Benson, Thomas W., “Wireless Transmission of Power currently Possible”
2. U.S. Patent 787,412, “Art of transmittal voltage through the Natural Mediums”.
3. U.S. Patent 2,415,688, “Induction device”.
4. Joldzic, O. V., &Vukovic, D. R. (2013). The impact of cluster characteristics on HiveQL query optimization. 2013 21st Telecommunications Forum Telfor (TELFOR), 837–840. doi:10.1109/TELFOR.2013.6716360
5. Olaf Hartig , Christian Bizer, Johann-Christoph Freytag. Executing SPARQL Queries over the Web of Linked Data, ISWC 09, 2009.
6. Park, S. (2013). Visualization of Resource Description Framework, Ontology Using Hadoop, 228–231. doi:10.1109/IMIS.2013.46
7. (Online Resource) The Lehigh University Benchmark (LUBM). <http://swat.cse.lehigh.edu/projects/lubm/>