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04-09-4006
Transmission of electrical energy or power from one object to another object without the use of wires is called witricity.

Because of witricity some of the devices won't require batteries to operate.
In 1891, 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.

In 2005, Dave Gerding coined the term WITRICITY which is being used today.

Forgotten invention was reborn in 2007 by MIT (Massachusetts Institute of Technology) researchers.
Basics of Witricity

- Electricity
- Magnetism
- Energy coupling
- Magnetic induction
- Resonance
- Electromagnetism
ELECTRICITY
The flow of electrons (current) through a conductor (like a wire) or charges through the atmosphere (like lightning).

MAGNETISM
A fundamental force of nature, which causes certain types of materials to attract or repel each other.
Is the production of voltage (induced current) across a conductor moving through a magnetic field?

For example, it turns out that an oscillating magnetic field produces an electric field and an oscillating electric field produces an magnetic field.
ELECTROMAGNETISM

A term for the interdependence of time varying electric and magnetic field.

ENERGY/POWER COUPLING

It occurs when an energy source has a means of transferring energy to another object.
The Transfer of Electricity from one place to another without wires is known as "Witricity".

There are witricity power sources (transmitter) and capture devices (receiver).

*Power source* provides power to the devices where as *capture device* captured it to work.

*Power source* and *capture devices* are specially designed magnetic resonators.

*Magnetic resonators efficiently transfer power over large distance via the magnetic near-field.*
PRINCIPLE BEHIND WITRICITY
HOW WIRELESS POWER WORKS

1. Magnetic coil (Antenna A) is housed in a box and can be set in wall or ceiling.
2. Antenna A, powered by mains, resonates at a specific frequency.
3. Electromagnetic waves transmitted through the air.
4. Second magnetic coil (Antenna B) fitted in laptop/TV etc resonates at same frequency as first coil and absorbs energy.
5. Energy charges the device.
Witricity in our daily life.

How it works:

When electric current is passed through a coil of wire, a powerful electromagnetic field is created around it. Electronic devices would pick up the power when brought into the room.

Copper coil hidden in the ceiling

Desk lights would have no trailing wires

Laptops and portable game players could operate without batteries

Mobile phones and MP3 players would charge their batteries automatically
### Features and benefits

<table>
<thead>
<tr>
<th>Witricity’s Technology</th>
<th>Technology Benefit</th>
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<tbody>
<tr>
<td><em>Highly resonant strong coupling</em></td>
<td>High efficiency over distance</td>
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<tr>
<td><em>Energy transfer via magnetic near field</em></td>
<td>Can penetrate and wrap around obstacles</td>
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<td><em>Non radiative energy transfer</em></td>
<td>Safe for living beings and other environmental objects</td>
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<td><em>Scalable design</em></td>
<td>From mW to kW</td>
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<td><em>Flexible geometry</em></td>
<td>Device that can fit into OEM (original equipment manufactures) products</td>
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APPLICATIONS

- Consumer electronics
- Industrial
- Transportation...
No need of line of sight.
No need of power cables and batteries.
Does not interfere with radio waves.
Production of 40 Billion Disposable Batteries / Yr can be reduced
DISADVANTAGE

- Wireless power transmission can be possible only in few meters.
- Efficiency is only about 40%.
REFERENCES


- Efficient wireless non-radiative mid-range energy transfer Aristeidis Karalis*, J. D. Joannopoulos, and Marin Soljačić Center for Materials Science and Engineering and Research Laboratory of Electronics Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, MA 02139, USA.

- http://www.witricity.com
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GOOD BYE WIRES 😊....