

Wireless Power Transmission-A State of Art Review

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Abstract: *In the modern era, electricity has become an indispensable component of daily life, with most technologies relying heavily on continuous power supply. Traditionally, electrical energy has been transmitted through wired connections, but recent advancements in science and engineering have introduced a revolutionary concept—WiTricity, or wireless electricity transmission. This innovation enables the transfer of electrical energy without physical conductors, offering transformative potential for consumer electronics and industrial applications alike.*

The foundation of wireless power transmission lies in the principles of electromagnetic induction and resonant magnetic coupling. Unlike wireless telecommunications—where signal integrity is paramount—wireless power emphasizes transmission efficiency, ensuring that a substantial portion of generated energy is received at the target location. Early scientific contributions, such as Maxwell's formulation of electromagnetic wave theory and Marconi's breakthroughs in wireless communication, laid the groundwork for this technology. While methods such as radio waves and lasers have been explored, they suffer from limitations including energy dispersion, line-of-sight constraints, and safety concerns. In contrast, resonant inductive coupling has emerged as a more practical and efficient alternative.

WiTricity offers significant benefits, including reduced reliance on batteries and the elimination of physical charging infrastructure. Its applications span across wireless charging of mobile devices to powering embedded systems in inaccessible locations. As research progresses, WiTricity holds the promise to redefine how energy is delivered and consumed, paving the way toward a truly wireless future.

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