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## Resonant coils analysis for inductively coupled wireless power transfer applications (Conference Paper)

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### Abstract

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This paper proposes Wireless Power Transfer (WPT) system, consisting of transmitter-receiver coils along with some conditioning and stabilizing circuits. The transmitter circuit is designed with a simple H bridge circuit to supply the pulses to source coil. The efficiency variation or performance with respect to the coil size has been demonstrated in this paper, which is not well demonstrated experimentally in the past. It is about an inductive link efficiency calculation as a function of the geometrical dimensions. The efficiency has been derived analytically, and analytical results are validated experimentally. From the results observed the effect of geometrical dimensions (area, distance, shape, and size) is explored. The performance analysis evaluated analytically against experimentally, infers that the inductive coupling with same sized coil has achieved maximum power transfer wirelessly, for a shorter distance with applied input voltage of 24 V at resonance frequency of 180 kHz. This proposed system is practically tested for applications such as charging of devices or providing wireless sensor networks with energy supplied. The results have got useful utility for Electric Vehicles automobile industry. © 2016 IEEE.

### Author keywords

Inductive coupling power transfer efficiency resonant coils wireless power transfer

### Indexed keywords

Engineering controlled terms: Automotive industry Bridge circuits Electromagnetic coupling Electromagnetic induction Reconfigurable hardware Transmitters Wireless sensor networks

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