

**THREE AXISYMMETRIC INDUCTORS CONFIGURED
FROM CIRCULAR CURRENT LOOPS
FOR
WIRELESS POWER TRANSFER**

By

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Three different fundamental geometries of inductors are considered: the solenoid, the “pancake” coil and a winding of rectangular cross-section. These are basic configurations commonly used in both electrical and radio engineering. Each coil can be modeled as a series of circular current loops arranged axisymmetrically. Wireless power transfer is achieved through coupling between an energized primary coil and a remote, identical secondary coil. Resonance effects increase the range and efficiency of this mechanism. It is instructive to consider both physical and circuit-based models of these inductors. These models can be verified by experiment. Different methods exist for maximizing the % energy transfer using two additional coils to isolate the primary and secondary from load and source influences. Noise, distance, frequency spectrum allocations and many other considerations must be considered in the design of the wireless power transfer system.