Wireless Power Transfer
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ABSTRACT
The ability to transmit power without wires has been the focus of many research papers and experiments ever since the possibility was first realised by Nikola Tesla. By utilising a number of these concepts coupled with some innovative ideas, a system based on the principle of resonant magnetic induction has been built, allowing power to be transferred wirelessly between two coils. A number of tests have been carried out, with specific focus on investigating the affect of coil geometry on the power transfer; best results were achieved by using flat coils, achieving efficiencies of up to 60% over a 20mm testing range. Based on these findings and knowledge about the subject, gained from background research and experimentation, some suggestions have been made with a view to improving the system; including changing the input signal and using intermediate resonant coils.

Figure 1. Coil geometries; (a) multi layer solenoid; (b) single layer solenoid; (c) flat coil

Figure 2. Test results for different coil geometries; (a) efficiency; (b) output power