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Parameter Study for Effective Wireless Power Transmission through Inductive Coupling

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Wireless Power Transmission (WPT) has been recorded more than 100 years ago during Nikola Tesla's era. However, this technology has not been utilized until recently due to various limitations exist in WPT technology. Hence, the aim of this paper is to investigate the effect of the parameters of an inductive coupling wireless power transmission system on its performance. Basic electromagnetic principles are used to obtain the relationship among different parameters under investigation. For the hardware experiments, circular copper coils are used as the transmitter and the receiver. Various tests are conducted to analyse the influence of the parameters such as diameter, gauge, number of turns of the transmitter and receiver coil and the transmission distances. The experimental results show that those parameters are dependant each other and need to be compromised in order to have an optimum design. Hence, the paper summarized experimental results and provides the guidelines for optimum design of a wireless power transmission system.

Keywords: inductive coupling, wireless power transmission