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Design of circular inductive pad couple with magnetic flux density analysis for wireless power transfer in EV
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Abstract
As the population grows, people will consume more natural resources. This issue will lead to a low petrol supply for all land transportation, especially supplies for car consumption. Therefore, the electric vehicle (EV) has been introduced to overcome this issue. Currently, wired charging of EVs has been implemented in most of the developed country, including Malaysia. However, some drawbacks have been found from this technology. Therefore, wireless charging comes into the picture to solve this issue. Charging pad on the road and at the car are required for both wired and wireless charging. Various designs of charging pad are available. However, this paper will only focus on the circular design. There is many software that can be used to design the coil pad. Each software has a different procedure and steps to design the coil pad. In this paper, JMAG Designer software will be used to design the circular coil pad. Then, three coil pair were simulated using JMAG Designer to investigate the magnetic flux density between primary and secondary coil when varying the misalignment of 0 cm, 4 cm and 8 cm. From the simulation, there is no specific trend in the relationship between magnetic flux density and misalignment.

Author Keywords
Circular coil pad; Electric vehicle (EV); JMAG Designer; Magnetic flux density; Misalignment; Wireless charging

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