Wireless Electric (Motor)Cycle Charging

Status: Available

Group Members:

Sponsor(s):

Supervisor(s): Patrick Palmer, PhD, Professor, Mechatronic Systems Engineering

Project Description

Electric cycles are becoming very common and motorcycles are also appearing. They can be charged from the normal domestic electricity supply. However, to charge them during the working day brings up issues of safety with trailing electricity cords everywhere and in adverse weather conditions. Wireless charging could be a solution, but this requires consideration regarding the placement of the transmit and receive coils. Poor alignment can result in poor coupling and possibly weak charging. Good power electronics design and should mitigate this problem to some extent. Innovative mechanical design should reduce the misalignment. For example, an electrically isolated mechanical plug and socket arrangement like that of electric toothbrushes could be considered, but the trailing cord would need handling in some manner. Waterproofing adds some constraints. Ideally the solution should also be backwards compatible, so it should produce 110V AC for a retrofit. A number of concepts should be investigated and a prototype designed, simulated and built.