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Design and Analysis of Electric Vehicle Conversion Kit

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Abstract: *Development of electric vehicle (EV) conversion process can be implemented in a low- cost and time-saving manner, along with the design of actual components. Model- based system design is employed to systematically compute the power flow of the electric vehicle propulsion and dynamic load. Vehicle specification and driving cycles were the two main inputs for the simulation. As a result, the approach is capable of predicting various EV characteristics and design parameters, such as EV performance, driving range, torque speed characteristics, motor power, and battery power charge/discharge, which are the necessity for the design and sizing selection of the main EV components. Furthermore, drive-by-wire (DBW) ECU function can be employed by means of model- based design to improve drivability. For the current setup, the system components are consisted of actual ECU hardware, electric vehicle models, and control area network (CAN) communication. The EV component and system models are virtually simulated simultaneously in real time. Thus, the EV functionalities are verified corresponding to objective requirements. The current methodology can be employed as rapid design tool for ECU and software development. Same methodology can be illustrated to be used for EV tuning and reliability model test in the future. The conversion process of an internal combustion engine to an electric vehicle powered by batteries comprises many steps from choosing the vehicle, sizing a motor, and the type of batteries. This project takes a 2012 Hero Honda Splendour and converts it to an all-electric Bike with a DC motor and lead acid batteries.*

Keywords: Electric Vehicles, Fossil Fuel, Intelligent Commute, etc.

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