World Academy of Science, Engineering and Technology
International Journal of Transport and Vehicle Engineering
Vol:17, No:07, 2023

Design of an Electric Vehicle Model with a Dynamo Drive Setup Using Model-Based Development (MBD) (EV Using MBD)

Authors : Gondu Vykunta Rao, Madhuri Bayya, Aruna Bharathi M., Paramesw Chidamparam, B. Murali

Abstract : The increase in software content in today's electric vehicles is increasing attention to having vast, unique topographies from low emission to high efficiency, whereas the chemical batteries have huge short comes, such as limited cycle life, power density, and cost. As for understanding and visualization, the companies are turning toward the virtual vehicle to test their design in software which is known as a simulation in the loop (SIL). In this project, in addition to the electric vehicle (EV) technology, we are adding a dynamo with the vehicle for regenerative braking. Traditionally the principle of dynamos is used in lighting the purpose of the bicycle. Here by using the same mechanism, we are running the vehicle as well as charging the vehicle from system-level simulation to the model in the loop and then to the Hardware in Loop (HIL) by using model-based development.

Keywords : electric vehicle, simulation in the loop (SIL), model in loop (MIL), hardware in loop (HIL), dynamos, model-based development (MBD), permanent magnet synchronous motor (PMSM), current control (CC), field-oriented control (FOC), regenerative braking
Conference Title : ICEVAD 2023 : International Conference on Electric Vehicles, Advantages and Disadvantages
Conference Location : Singapore, Singapore
Conference Dates : July 03-04, 2023