Sunyoung Park et al., Adv Automob Eng 2015, 4:1
http://dx.doi.org/10.4172/2167-7670.C1.002

OMICS International
conferenceseries.com

International Conference and Exhibition on
Automobile Engineering

September 01-02, 2015 Valencia, Spain

A comparative study on power characteristics and mode control algorithm for plug-in hybrid electric vehicles

Sunyoung Park, Hanho Son, Youngeun Kim, Wonbin Lee and **Hyunsoo Kim**
Sungkyunkwan University, Korea

In this paper, a comparative analysis was performed on power characteristics and mode control algorithm for plug-in hybrid electric vehicles (PHEVs): Honda Accord and Toyota Prius+. The power characteristic analysis of the target PHEVs was conducted to obtain the operating range of the possible vehicle velocity and driveshaft torque for each driving mode such as EV, HEV mode and Series mode. For each mode, the system efficiency was calculated by considering the powertrain component (motor, generator, engine, planetary gear set and clutch) efficiency and vehicle driving condition such as vehicle velocity and driveshaft torque since the powertrain component efficiency changes depending on the vehicle driving condition. Using the calculated system efficiency, a mode shift map was developed for each driving mode. Based on the developed mode shift map, the mode control algorithm was proposed to obtain the improved system efficiency. The vehicle performance simulator and control algorithm such as regenerative braking control and engine optimal operating line control were developed for target PHEVs. The proposed mode control algorithm was applied to each target PHEVs. Through the simulation results, a comparative analysis was performed on the power characteristics and mode control algorithm for the target PHEVs. This comparative analysis can be used to design the power-split PHEV configuration and to develop the optimal mode change algorithm.

Biography

Sunyoung Park received BS degree in Mechanical Engineering from Sungkyunkwan University, Suwon, Korea, in 2014, where she has been working towards MS degree. Her research interests include the powertrain system, control strategy of electric vehicles, hybrid electric vehicles and plug-in hybrid electric vehicles.

bwbw6387@hanmail.net, hskim@me.skku.ac.kr

Notes: