

Design solution for HEV powertrain systems

The HEV Design Suite provides a quick solution to design and simulate a complete hybrid electric vehicle (HEV) powertrain system from scratch.

A HEV powertrain system is highly complex, and designing such a system is a non-trivial task. A series/parallel HEV powertrain system, for example, consists of PMSM generator and converter, PMSM traction motor and converter, bi-directional dc/dc converter, lithium-ion battery, internal combustion engine, and vehicle load with clutch. Furthermore, a generator controller and traction motor controller may include multiple control blocks, such as Maximum-Torque-Per-Ampere control, field weakening control, torque control, speed control, and voltage control.

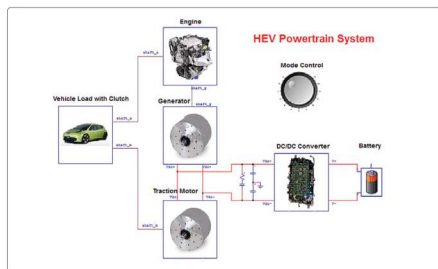
One major advantage of the HEV Design Suite is that, based on input system specifications, it will design all the controllers automatically with minimum user intervention and effort. In a very short time, users will have a functional HEV powertrain system set up and ready to simulate.

The HEV Design Suite can handle multi-mode operations of a HEV powertrain system, such as charging mode, battery drive mode, engine and motor drive mode, engine drive with charging mode, engine and motor drive with charging mode, full power mode, and regeneration braking mode.

The HEV Design Suite helps significantly shorten the development of a HEV powertrain system.

FEATURES & BENEFITS

- ◆ Complete powertrain system design and simulation
- ◆ Controllers for generator and traction motor
- ◆ Controller for bi-directional dc/dc converter
- ◆ Dynamic battery model for charging and discharging
- ◆ Multi-mode operations



Above: HEV powertrain system in Design Suite interface.

Right: Traction motor and controller.

