

Modelica-Based Modeling and Application Framework on Hybrid Electric Vehicles

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Abstract

In order to meet low-emissions criteria outlined in Chinese regulations, which require a progressively increasing percentage of automobiles to be ultralow or zero emissions, in this paper a sort of light hybrid electric drivetrain is studied and modeled in detail using Modelica. An application framework is also designed to improve the usability and the efficiency of the models. Performance of the whole vehicle and some key components are analyzed. Comparison between simulation results and experiment results is performed, which validates the effectiveness of the models. Based on the comparison, we conclude that, the methods presented in this paper can support a rapid design of hybrid electric vehicles and further optimization.

Keywords: hybrid electric vehicles, Modelica, MWorks, application framework, signal bus