Energy Management Strategy (EMS) for Hybrid Electric Vehicles base on Safe Experimentation Dynamics (SED)

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Abstract:
This paper addresses optimization for hybrid electric vehicle (HEV) by using a single agent method to optimize the power losses and fuel consumption under a specific driving cycle base on Safe Experimentation Dynamics (SED) method. For optimization process, four gain are added in four main parts of the HEV system. Those main parts are engine, motor, generator and battery. These four gain are controlled the output for each components to give the minimum power losses. The design method is applied to free model of HEV by using Simulink/MATLAB software while M-File/MATLAB is used to apply the Safe Experimentation Dynamics (SED) method. The result from design method achieved minimum reduction of power losses and fuel consumption compared to original system. Thus, the comparison of the simulation results shown that the algorithm approach provides better performance

Keywords: HEV; Safe Experimentation Dynamics (SED); Energy Management Strategy (EMS)

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