Study of Energy Management Strategy of New Parallel Hybrid Electric Power System

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ABSTRACT

This research has designed study of energy management strategy of new parallel hybrid electric power system, which is characterized by the power integration distributing mechanism. When the electric motor and engine provide the power in the power integration distributing mechanism, the power source can provide power to the power integration distributing mechanism by oneself or at the same time. Moreover, a one-way clutch can prevent the actuated power source from reversion, so any output power source will not be affected by another inactive power. Also, two input power sources can be integrated into a bigger power source via the power integration distributing mechanism, thus resulting in twice the output energy and obtaining necessary the tractive power. A dynamic equation is therefore derived from this system to obtain the flow direction of power source. Furthermore, dynamic equations of various system components can be established by modularized software Matlab/simulink, and fuzzy logic is used to control and develop the energy management strategy of new parallel hybrid electric power system. It can be found from system simulation, the energy of the engine or the electric motor is controlled by the fuzzy logic. The electric motor and engine are adjustable to go to the best operating conditions by controller. The engine can maintain an optimum state under various operating conditions.

Keywords : energy management strategy of new parallel hybrid electric power system, the power integration distributing mechanism, optimum state

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