Power System Design fo Dual Power Driving Vehicles

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ABSTRACT

The problem of global warming to animal and plant keeps getting worse, and energy such as petroleum become fewer and fewer. It is an important topic to make automobile less waste gas effectively and reduce the consumption of petroleum. In recent years, there are more and more hybrid electric vehicle (HEV) which has the characteristics of low pollution and zero emission. This kind of HEV combines a gasoline engine with an electric motor which has the opportunity to become the main car of automobile in the future. The central purpose of this thesis is to develop a power system of dual power driving vehicle, it can balance the two power source of dual power driving vehicles by combining electric control system, lithium iron phosphate (LiFePO4) battery charging system, and major controller management system. Electronic motor control systems used by extremely digital signal processor (DSP). This thesis applies the power system for a parallel hybrid system, it can investigate the position of rotator for conjecture the rotational speed and provide the change-over signal by the voltage and current of the stator. According to the conjecture of rotational speed, we develop a rotational speed control system of closed loop. Finally, the construction of the experiment platform has been established and real tests have verified the dual power function of the power system and control strategy.

Keywords: Hybrid electric vehicle (HEV) Power system Lithium iron phosphate (LiFePO4) Digital signal process (DSP)

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