Development of 100kW Motor Driver for Electric Vehicles

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ABSTRACT

The global warming has been getting seriously for years, and this brings people worldwide to pay much attention to the concept of the environmental protection, and seek any possible solutions to reduce the unpredictable problems. However, the key issue of the vehicle industry for the globalization is to find out the solutions such as reducing the pollution, and solving the overuse of energy. Taiwan, in particular, is one of the densest vehicles uses in the world; therefore, developing low-polluted, energy-saved, and recycled electric cars has become the most urgent work to do in the vehicle field. However, it is rather difficult to develop electric cars and high power motor drivers at the same time here in Taiwan because of strict requirement on both safe and endurance for the electric cars and this makes motor modules have to be imported from other countries. As a result, this might block the advanced development and competition in the vehicle industry. In order to achieve the electric cars development, all we have to do is to carry on the research and establish the motor drivers to reach higher technology, doing so, we have the opportunity to play an important role on electric cars industry in the future for sure. Building high power motor drivers rated 35kW and peaked 105kW on electric cars will be introduced in the dissertation. Design rules include isolation circuit, the gate drive circuit, the power module circuit , the protection circuit and cooling system of five large. In conclusion, the high power motor driver has been established in the experimental platform. According to the experiment, the efficiency is closed to 95%; therefore, the development of high power motor drivers 100kW on electric cars is well completed and efficient.

Keywords : High Power Motor,、105kW Drive、Liquid Cooling Systems、Digital Signal Processor

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