

Fuel Cell Automobile Performance Analysis and Power Distribution

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ABSTRACT

There are two most important factors that effect the automobile industry hugely: the increase of the price of the gasoline and people's realization of the environmental protection. Therefore, the development of the fuel cell cars will help to solve the problems of lacking gasoline and serious environmental pollution in the future. Fuel cell is different from traditional engine. It does not need to combustion to release power. It releases power by electrolytic reverse reaction of water. After the reaction, it only produces water, which will not pollute the environment. Furthermore, we can use water to refine hydrogen and oxygen. It is easy to obtain fuel, so the development of the fuel cell cars is crucial for people to live more comfortable in the near future. In this paper, we will briefly introduce each unit of the fuel cell cars and its various controlling systems. Use advance vehicle simulator, input necessary variables are: car model, motor type, battery model, exhausting system, transmission system, car tire, loading capacity, and control function of transmission system into program. It goes through computer calculation to quickly get necessary simulation result. This makes fuel cell designers easier to choose the best test model in the future. It also will shorten the design time. According to a research, it is better for fuel cell cars to have Lithium-Ion Battery than any other battery. When the hybrid ratio increases, the fuel cell cars are more efficient; the cost will increase a well. According to the above mentioned facts, when the price of the battery is lower than 25US\$/kW, the hybrid ratio is higher, and the fuel cell cars are more efficient, which means lower cost for building fuel cell cars.

Keywords : fuel cell car, efficiency, cost, simulation calculation

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