Development of 200W PEMFC system using Sodium Borohydride Hydrogen storage system

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Recently, people's interests about miniatured electric devices have been increased. Due to the high electric power density of fuel cells, the possibility that fuel cells can be applied to mobile devices as power sources was considered; however, at the same time fuel storage problem which hinders the application of fuel cell system to mobile devices arose. Hydrogen can be stored in many ways: liquified, metal hydride, and chemical hydride. The hydrogen storage system need to satiate the following requirements; safety and easiness of handling. Sodium Borohydride hydrogen storage system(SBH system) shows excellent performance in safety and controlling compared to other storage systems. In this research, 200W PEMFC system using SBH system was made. To drive 200W PEMFC, variables such as temperature, flow rate, pressure, humidity of fuel should be maintained in optimum level. Accordingly, the effects of the type of catalyst, concentration of SBH solution, and reaction temperature on above variables have been observed. In order to mount SBH system to mobile devices, volume, weight, and design of the system should also be considered. Hence, based on experimental data, optimum 200W SBH system was created and operated.