

가정용연료전지 전기적 안전성 평가 기법 개발

*한 운기, 박 찬엄, 정 진수, 고 원식

Development of Electrical Safety Evaluation Method about PEMFC 1kW

*Woonki Han, Chaneum Park, Jinsu Jung, Woonsik Ko

Fuel cell systems are a completely different form of electricity source that has been used so far and is an aggregation of multiple technologies with multidisciplinary features that can be operated safely only when gas and electrical safety are being considered. Since fuel cells generate through electrochemical reactions there are difficulties in ensuring electricity safety, power quality assessment, effective control and reliability standards for system faults using conventional inspection techniques and even though they are necessary as a primary means for reduction of CO₂ owing to the Climate Convention, electrical safety assessment and measures are required for the prevention of faults in residential facilities. Although small-scaled distributed power supplies can be utilized as important means of peak control and energy management measures, research is required for observing the effects on the system and the development of inspection technology to ensure stable operation, and the electrical safety of residential fuel cell systems need to be assessed and the problems derived for establishing electrical safety standards. From the year 2002, Japan has established laws on technical safety standards and development and rules on the product specifications and standards for the industrialization of hydrogen fuel cells. Also, a lot of effort have been made for the commercialization of fuel cells by building one-stop certification services. Internationally, the IEC TC 105 has established international standards based on fuel cells. In order to protect the national interest, the country should be able to respond accordingly meet global standards. In fact, in Korea, to comply with the international trend, Korea Energy Management Corporation is establishing a certified agenda for fuel cells and Korean Agency for Technology and Standards is enacting technical standards for fuel cells.

The current terms of fuel cells are that research has been focused more on the quality and performance of manufactured products rather than stable power operation and maintenance over time. In this paper, by considering the household fuel cell as a power device, the safety standards of the fuel cell system for a reliable operation with the existing power system is being proposed.

Key words : PEMFC, 전기안전, 평가기법, 전력품질, 가정용연료전지, 국제기준, 전기설비기술기준

E-mail : *powr@kesco.or.kr