

Development of 1kW air-cooling PEMFC stack for indoor applications

임성대*, 엄석기¹, 손영준, 이원용, 김창수, 함미숙², 이호준²
한국에너지기술연구원; ¹한양대학교; ²(주)효성
(jimmyim@kier.re.kr*)

A 1kW-class PEMFC stack for indoor applications was developed and tested on its operating characteristics. The stack was designed based on computational modeling considering flow distribution, pressure drop and water and thermal management. Air-cooling method was adopted to control the stack temperature and external humidifier was combined to the stack to maintain its optimal humidifying conditions inside the stack. Dead-end operation was selected in the hydrogen electrode side to maximize the utilization of hydrogen fuel and to use the stack indoor applications. The fabricated stack module was tested on its performance under various operating conditions and evaluated for its applications to portable power sources.