

PERFORMANCE IMPROVEMENT OF A POLYMER ELECTROLYTE FUEL CELL BY ANODE WATER REMOVAL TECHNIQUE

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ABSTRACT

WITH THE MERITS OF HIGH ENERGY DENSITY, EASY TO START AND SHUTDOWN, LONGEVITY, POLYMER ELECTROLYTE FUEL CELL (PEFC) IS THE MOST PROSPECTIVE ONE AMONG LOW-TEMPERATURE FUEL CELLS. PEFC FITS FOR THE USE ON ELECTRIC VEHICLE, LAPTOP COMPUTER, CELLULAR PHONE, AND IT GOES WITHOUT SAYING THAT PEFC WILL BECOME VERY POPULAR IN THE NEAR FUTURE. "WATER MANAGEMENT" IS CLOSELY RELATED TO THE PERFORMANCE OF PEFC. GOOD WATER MANAGEMENT ENSURES HIGHER EFFICIENCY AND GOOD PERFORMANCE. SO WATER MANAGEMENT IS ONE OF THE CRUCIAL TECHNOLOGIES OF PEFC. THE PRESENT RESEARCH IS ABOUT THE WATER MANAGEMENT OF PEFC. THE OBJECTIVES OF THIS RESEARCH ARE TO CONSTRUCT A MATHEMATICAL MODEL OF PEFC AND TO SET UP A COMPUTER CODE FOR SIMULATION. THIS COMPUTER CODE WAS THEN USED TO SIMULATE THE OPERATION OF A PEFC. THE VARIATION OF WATER CONTENT IN THE PEM AND THE FLOODING IN THE CATHODE WERE INVESTIGATED. IN ADDITION TO THAT, THE IMPROVEMENT OF PEFC PERFORMANCE BY APPLYING THE TECHNIQUE OF ANODE WATER REMOVAL WAS STUDIED.

Keywords : PEFC、THE TECHNIQUE OF ANODE WATER REMOVAL、WATER MANAGEMENT、FLOODING、PERFORMANCE

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