Sensitivity analysis and optimization of a MCFC system

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In the previous research, modeling of a molten carbonate fuel cell(MCFC) system and a brief parametric study were conducted. This study aims to carry out more detailed sensitivity analysis and optimize the MCFC system. In the sensitivity analysis, current density, fuelflow setpoint, and airflow setpoint are determined as major manipulated variables and power, excess oxygen ratio, fuel utilization, and system efficiency are observed with regard to change of the manipulated variables.

Based on the sensitivity analysis data and with some data processing, MCFC system is optimized using radial basis function(RBF) neural network model.