

Design of a Decentralized Control System of an MCFC using the Singular Value Decomposition and the Relative Gain Analysis

조준호, 이광순*, 김희용
서강대학교
(kslee@sogang.ac.kr*)

The molten carbonate fuel cell is a MIMO system where process variables are highly interacting with each other and in-depth system analysis is essential to set up a proper control strategy.

In this study, an MCFC system was analyzed using the singular value decomposition (SVD) and the relative gain analysis (RGA) to determine appropriate input-output pairs for design of a decentralized control system. In the analysis, relevant input and output variables were chosen first using the SVD from a pool of input and output variable candidates and then input-output pairing was conducted using the RGA for slow and fast dynamic controlled variable groups separately. PID control was applied to each input-output pair and the performance was investigated.