عنوان مقاله:

Interaction Analysis and Comparison of UPFC's Controllers With The Uncertainty in The Transfer Function for Power Flow Control

محل انتشار:

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خلاصه مقاله:

Most of the real systems are of Multi-Input Multi- Output (MIMO) nature. In order to reach the desired performance, therefore, MIMO system theory and control are of high importance. Since input-output unwanted interactions are the principle difficulty with MIMO systems, this leads to the most practical MIMO approach called decentralized control which is based on nonexistence of interactions. Thus, the first step to MIMO problems is to recognize the available interactions and input-output pairing as well as comparing controllers based on Diagonally Dominance (DD) concept. For the purpose of interaction analysis, use can be made of existing analytical tools in both time and frequency domain such as step response, static and dynamic relative gain array (RGA), RGA number, Gershgorin circles, etc. In this paper, one of the most useful Flexible AC Transmission System (FACTS) devices called Unified Power Flow Controller (UPFC) that plays a vital role in power systems nowadays, while being a complicated MIMO system, is evaluated regarding internal interactions and analysis of Dynamic Decoupled (DD) and Singular Value Decomposition (SVD) and Linear-Quadratic-Gaussian (LQG) controllers With The uncertainty in the transfer function for active and reactive power flow control of UPFC, based on MIMO analytical tools is made. In order to compare, simulation results using MATLAB software have been provided. It can be seen that the more unwanted input-output interactions omitted by controllers, the more independent active and reactive power flow control and better.

کلمات کلیدی: