Model Predictive Control Approach Based Load Frequency Controller

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Abstract:

The present paper investigates the design of Load-Frequency Control (LFC) system for improving power system dynamic performance over a wide range of operating conditions based on model predictive control (MPC) technique. The objectives of load frequency control (LFC) are to minimize the transient deviations in area frequency and tie-line power interchange variables. Also, steady state error of the above variables forced to be zeros. The two control schemes namely Fuzzy logic control and proposed model predictive control are designed. Both the two controllers employ the local frequency deviation signal as input signal. The dynamic model of two-area power system under study is established. To validate the effectiveness of the proposed MPC controller, two-area power system is simulated over a wide range of operating conditions. Further, comparative studies between the fuzzy logic controller (FLC), and the proposed MPC load frequency control are evaluated.

Keywords:

Model predictive control - Fuzzy logic controller, Load Frequency Control, Two area power system.

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