

An Optimal LFC in Two-Area Power Systems Using a Meta-heuristic Optimization Algorithm

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Abstract:

In this study, an optimal meta-heuristic optimization algorithm for load frequency control (LFC) is utilized in two-area power systems. This meta-heuristic algorithm is called harmony search (HS), it is used to tune PI controller parameters () automatically. The developed controller (HS-PI) with LFC loop is very important to minimize the system frequency and keep the system power is maintained at scheduled values under sudden loads changes. Integral absolute error (IAE) is used as an objective function to enhance the overall system performance in terms of settling time, maximum deviation, and peak time. The two-area power systems and developed controller are modelled using MATLAB software (Simulink/Code). As a result, the developed control algorithm (HS-PI) is more robustness and efficient as compared to PSO-PI control algorithm under same operation conditions.