Abstract

This paper presents the analysis of the load frequency control (LFC) of a realistic two area interconnected power system having diverse sources of power generation. A Thyristor Controlled Phase Shifter (TCPS) is used in series with AC tie line for improving the dynamic performance of the LFC system. The power system simulation is done using MATLAB Simulink and control problem is solved using MATLAB programming. An optimal output feedback control strategy using TCPS with pragmatic viewpoint is presented. Optimal gain settings of the output feedback controller with and without TCPS are obtained following a step load perturbation in either of the areas by minimizing the quadratic performance index. Simulation results show that due to the presence of TCPS, the dynamic performance in terms of settling time and overshoot is greatly improved. The system with TCPS is capable of suppressing the area frequency and tie line power deviations more effectively under the occurrence of area load perturbations.

References

LFC of an Interconnected Power System with Thyristor Controlled Phase Shifter in the Tie Line

- Working group on prime mover and energy supply models for system dynamic

**Index Terms**

Computer Science  
Control Systems

**Keywords**

Load Frequency Control  
Matlab Simulink  
Output Feedback  
Thyristor Controlled Phase Shifter