Abstract

This article presents a Particle Swarm Optimization with time-varying acceleration coefficients (TVAC-PSO) technique for the design of Integral (I) controller for the Load Frequency Control (LFC) system. The LFC modeling is carried out for Multi-area interconnected power systems (MAIPS). The power system comprises non-reheat thermal unit in each control area. The controller gains have been optimized using an efficient TVAC-PSO technique. Two MAIPS models have been considered for the LFC analysis. The dynamic responses have been obtained by giving step load perturbation (SLP) in control area-1. Area frequency and tie line power deviations settle with zero steady state errors. Area frequencies and tie line powers attain their corresponding nominal values. The dynamic responses obtained are as per the LFC requirements.
LFC System of Multi-Area Interconnected Power Systems using TVAC-PSO based Controller

2008.
- Bevrani H. Robust power system frequency control. New York: Springer; 2009.
- Parmar KPS, Majhi S, Kothari DP. Multi-area load frequency control in a power system using optimal output feedback method. In: IEEE conference on proceedings, PEDES. New Delhi, India; 2010.
- Padhan DG, Majhi S. A new control scheme for PID load frequency controller of single area and multi area power systems. ISA Transactions, vol. 52, pp. 242-251, 2013.
- The MathWoks, Inc. MATLAB control toolbox, version 7.13 (R2011b), MATLAB software

**Index Terms**

Computer Science Control Systems

**Keywords**

Integral Controller Load Frequency Control Load Perturbation Multi-area