

International Energy Journal, Volume 13, Issue 2, June 2012[HOME](#)[ABOUT](#)[USER HOME](#)[SEARCH](#)[CURRENT](#)[ARCHIVES](#)[Home](#) > [Volume 13, Issue 2, June 2012](#) > [Arya](#)

Fuzzy Logic Based Load Frequency Control of Multi-Area Electrical Power System Considering Non-Linearities and Boiler Dynamics

Yogendra Arya, Narendra Kumar, S.K. Sinha

Abstract

This paper presents the Load Frequency Control (LFC) of four-area interconnected reheat thermal power system using fuzzy logic based PI controller (FLPI). The system is incorporated with governor dead band, generation rate constraint non-linearities and boiler dynamics. The conventional PI controller does not yield adequate control performance when considering the non-linearities and boiler dynamics. The aim of FLPI controller is to restore the frequency and tie-line power very smoothly to its nominal value in the shortest possible time. Four performance criteria i.e. settling time, peak overshoot, integral absolute error (IAE) and integral of time multiplied absolute error (ITAE) are utilized for the comparison. The comparison between the conventional PI controller and the proposed controller show that the proposed controller can generate the best dynamic response following a load perturbation. Robustness of the proposed controller is achieved by analyzing the system responses with varying system parameters.

Full Text: Subscribers Only