

عنوان مقاله:

Load Frequency Control of Multiple-area Power Systems Using Imperialist Competitive Algorithm

محل انتشار:

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خلاصه مقاله:

Load-Frequency Control (LFC) is a major subject in electrical power system design/operation. In practice, simple proportional–integral (PI) controllers are used for the LFC systems. In the past, PI controller parameters were tuned based on classical approaches. With increasing renewable energy sources (RESs) and complexity in interconnected power systems, however, optimal tuning of PI-based LFC systems is vital. In this paper, a new optimization method, Imperialist Competitive Algorithm (ICA), is used to fine-tune the PI controller parameters in the LFC systems. The effectiveness of the proposed approach is verified using two case studies; a three control area power system and an updated ۳۹-bus IEEE system with wind farms. The results are compared with the results of an approved Particle Swarm Optimization (PSO) algorithm and two recently presented robust control strategies for the same system. The impact of high penetration of wind power on the frequency regulation is also examined.

کلمات کلیدی:

Imperialist Competitive Algorithm; Load frequency control; Particle Swarm Optimization; power system; wind power

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