Abstract

Power system stabilizers (PSS) are now regularly used in the industry to damp out power system oscillations. High performance excitation system have become very important as limited generation capacity and consumer desires for power continue to increase. In this work, enhanced Artificial Bee Colony (ABC) technique is applied to design a robust power system stabilizer (PSS) in order to improve transient and dynamic stabilities of a turbo-alternator connected to an infinite bus system. The design problem of the proposed controller is formulated as an optimization problem and enhanced ABC is employed to search for optimal controller parameters. The robust power system stabilizer (RPSS) is designed using enhanced ABC for designing the controllers for dynamical systems in electrical engineering. Comparisons are also made between the Conventional power system stabilizer with a strong action (CPSS) and PSS with $H_{\infty}$ optimization. The simulation results show the effectiveness of proposed method for a stabilizer by enhancing the performance and robustness.

References
27. Oriol Gomis-Bellmunt, Fernando Bianchi, Andreas Sumper, “Power System Stabilizer Control for Wind Power to Enhance Power System Stability”.

Index Terms

Computer Science

Power Systems

Keywords

Stability of Synchronous Machines, Robust Control, Power System Stabilizer (PSS), Stability and Robustness, Artificial Bee Colony (ABC)