Abstract

This paper proposes the application of artificial bee colony (ABC) algorithm to the load flow computation in power systems. The proposed algorithm is based on a metaheuristic searching technique and it's used to avoid the ill-conditioning problem of Jacobain matrix. The load flow problem is addressed as an optimization problem. ABC algorithm is considered as a new computational model for the system power flow obtainment, where this model provides a strong convergence. The results obtained reveal the importance of the proposed algorithm in finding a load flow solution of a highly stressed power system and ill-conditioned system as compared with traditional methods such as the Newton-Raphson method, where the Newton-Raphson method diverges due to problems of the Jacobian matrix in these situations. The proposed algorithm is applied for 6-bus and 14-bus systems.

References


Index Terms

Computer Science  Algorithms

Keywords

Load Flow Studies, Newton-Raphson Method, Artificial Bee Colony Algorithm, highly loaded system, Ill-conditioned system.