Abstract

The electric power industry need changes in various power system operation, control and planning activities. Generation companies (GENCOs) schedule their generators with an objective to maximize their own profit rather than compromising on social benefit. Power and reserve prices become important factors in decision process. GENCOs decision to commit generating units is associated with financial risks. This paper presents a hybrid model between Lagrangian Relaxation (LR) and Quantum inspired Particle Swarm Optimization (QPSO), to solve the profit-based unit commitment problem. The proposed approach is investigated on three unit and ten unit test systems and numerical results are tabulated. Simulation results shows that this approach effectively maximize the GENCO's profit when compared with existing methods.

References

- Mohammad Shahidehpour, Muwaffaq and Alomoush. 2000. Restructured electrical
A Novel LR-QPSO Algorithm for Profit Maximization of GENCOs in Deregulated Power System

- C. Christopher Columbus and Sishaj P Simon. 2011. Profit based unit commitment for GENCOs using parallel PSO in a distributed cluster. ACEEE Int. J. on Electrical and Power Engineering, Vol. 02, No. 03.
- K. Chandram, N. Subrahmanyam and M. Sydulu. 2009. Improved Pre-prepared Power Demand Table and Muller’s Method to Solve the Profit Based Unit Commitment Problem. Journal of Electrical Engineering & Technology Vol. 4, No. 2, pp. 159-167.

**Index Terms**

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Power Systems

**Keywords**

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