Abstract

This paper proposes an optimal congestion management approach under hybrid electricity market using Self organizing hierarchical particle swarm optimization with Time Varying Acceleration Coefficients (SPSO-TVAC). The aim of the proposed work is to minimize deviations from preferred transaction schedules and hence the congestion cost under hybrid electricity market. The values of Transmission Congestion Distribution factors (TCDFs) are used to select redispatch of generators. Generator reactive power support is considered to lower the congestion cost. Numerical results on IEEE 57 bus system is presented for illustration purpose and the results are compared with Particle swarm optimization (PSO) in terms of solution quality. The comprehensive experimental results prove that the SPSO-TVAC is one among the challenging optimization methods which is indeed capable of obtaining higher quality solutions for the proposed problem.
Congestion Management under Hybrid Electricity Market using Self-organizing Hierarchical Particle Swarm Optimization

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- http://www.ee.washington.edu/research/pstca/

**Index Terms**

Computer Science

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**Keywords**

Congestion Management; Congestion cost; Transmission Congestion Distribution Factors (TCDFs); Particle Swarm optimization (PSO); Self organizing hierarchical Particle swarm optimization with Time Varying Acceleration Coefficients (SPSO-TVAC)