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## Abstract

In this paper, a two-phase hybrid particle swarm optimization (PSO) approach is used to solve optimal reactive power dispatch (ORPD) problem. In this hybrid approach, PSO is used to explore the optimal region and direct search is used as local optimization technique for finer convergence. The performance of the proposed hybrid approach is demonstrated with the IEEE 30-bus and IEEE 57-bus systems and also the performance of this hybrid PSO is compared with that of PSO, Evolutionary Programming (EP) and hybrid EP. The performance of the proposed method is compared with the previous approaches reported in the literature. The performance of hybrid PSO seems to be better in terms of solution quality and computational time.

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**Index Terms**

Power Electronics

Control Systems

**Key words**

programming

Particle swarm optimization

evolutionary

direct search

optimal reactive power dispatch

hybrid approach