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COMPARATIVE STUDY OF PARTICLE SWARM OPTIMIZATION AND REAL CODED GENETIC ALGORITHM FOR ZONAL CONGESTION MANAGEMENT TESTED ON IEEE-30 BUS

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Abstract

Congestion occurs frequently within a region. It is a very important to manage congestion as it result in rise in cost of electricity, market inefficiency and may cause to threaten the system security. The congestion management is a process to line up the transactions and commit to such a schedule which would not overload the system network. This paper represents the Zonal congestion management. The zones are formed separately by sensitive index called real power transmission congestion distribution factor (PTCDF) and reactive power transmission congestion distribution factor (QTCDF). The transaction of power to resolve the congestion is done in the zone of union of sensitive zone formed by these two indexes. These factors represent the sensitivity of power flow towards the congested line. More sensitive zone is of stronger and non-uniform indexes. The generators in sensitive zone are selected for their real and reactive power transaction to resolve the congestion. The optimal re-scheduling of sensitive generators is obtained by Particle swarm optimization and real coded genetic algorithm. In this paper supportive reactive power re-scheduling is taken into consideration for better control on voltage profile and for lesser congestion cost. The proposed method is tested on IEEE-30 bus

Keywords: Congestion zone, Cost equation PTCDF, QTCDF