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EVOLUNTARY PROGRAMMING (EP) BASED OPTIMAL POWER FLOW

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Abstract

This paper presents efficient and reliable EP based optimal power flow (OPF) problem by taking constraints within limits. The objective in the OPF problem formulation is the minimization of total cost of real power generation. The proposed method solves the OPF problem subject to the power balance equality constraints, limits on the control variables such as active power generations, controllable voltage magnitudes; limits on the dependent variables namely load bus voltage magnitude. The individual costs of each generating unit are assumed to be function, only of active power generation and are represented by quadratic curves of second order. The OPF solution is obtained using EP for the IEEE-30 bus system. The most important advantage of EP is that it uses only the objective function information and hence independent of the nature of the search space such as smoothness. The optimization algorithm based on EP revolves around three processes namely natural selection, mutation and competition. Depending on the characteristics of the optimization problem each process could be modified and configured to achieve the optimum result.

Key Words : *EP, Optimal power flow, OPF, Power generation.*