Reconfiguration of active distribution networks in the presence of static reactive compensators D-STATCOM with the aim of minimizing casualties using the artificial bee colony (ABC) algorithm

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Abstract Nowadays, with DG resources penetration and flexible ac transmission system appliance in distribution network, network reconfiguration convert to a more complex problem. This problem is considered as non-linear mixed integer programing in optimal operation planning. In this thesis, modeling of active distribution network reconfiguration based on graph theory in presence of D-STATCOM has been proposed by use of Artificial Bee Colony algorithm. Total active power losses is defined as objective function and it can be calculated by forward-backward power flow studies. To evaluate effectiveness of proposed model, simulation studies and sensitivities analysis are applied on the 13-bus and 30-bus IEEE distribution test feeders in presence and absence of DGs and D-STATCOM devices. Finally, simulation studies have been applied in two different case studies. Numerical results show that usually radial distribution feeder is ed so that maximum connection are created with DGs and D-STATCOM devices by goal of reliability increment in addition to current and voltage profile improvement.

Keywords : Keywords: Configuration, Distributed Networks, Static Reactor D-STATCOM, Intelligent Colonic Artificial Algorithm.