

Determine the location and capacity of D-STATCOM compensator in distribution networks in order to reduce losses and improve voltage profile using gravitational algorithm

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Despite the limitations in construction of power lines in Iran, D-STATCOM compensator can be used in parallel in the distribution network. Efficient use of production and reduce of energy losses, improve of voltage profile in the distribution network was been guaranteed. In this study, by using the gravity algorithm to determine of locations and optimum capacity of compensator in reducing of losses and improving voltage profile in distribution network in a network of 33 buses examined and It is simulated the results. In addition to the elimination of time limits of DC power supply D-STATCOM compensator, by using of a portable electric generator connected to the D-STATCOM compensator as a constant source of D-STATCOM reactive power put in the placement network. In this approach, increase of productivity in reduce of energy losses have followed. DC voltage source plays an important role in compensator. One of the problems of D-STATCOM DC, is time limit of DC voltage supply power during a power outage in distribution network. For this purpose, a portable backup power generator has been used for reactive power of compensator. To compensate for the time limit of energy storage D-STATCOM, nutrition and capacitor voltage stabilization by using electrical generator, external power of compensator keeps independent of distribution network adequate and D-STATCOM reactive power injection in distribution network will provide permanent. Therefore, using intelligent gravitational search algorithm in MATLAB programming environment was simulated on 33 IEEE-bus network. The simulation results show that Placement and determine the optimal capacity of D-STATCOM, can present as voltage profile modifying, energy through the distribution network presents more

economically. By releasing the power distribution network, restrictions of the transfer of power will be somewhat relieved, also, in the event of unexpected disaster as an DC energy source, support D-STATCOM and in Passive Defense crisis management in areas required to be used.

Keywords : gravitational search algorithm, forward / backward swept load flow, D-STATCOM

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