عنوان مقاله:

A new multi Objective strategy for Allocation of Distributed Generations and Capacitor Banks via Improved Honey Bee mating Optimization

محل انتشار:

پنجمین کنفرانس بین المللی رویکردهای نوین در نگهداشت انرژی (سال: 1394)

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نویسندگان:

Hossein Ghadimi - *Ardebil Province Electricity Distribution Co, Ardabil, Iran*

Adel Akbarimajd - *Electrical Engineering Department, Faculty of Engineering, University of Mohaghegh Ardabili, Ardabil, Iran*

Noradin Ghadimi - *Young Researchers and Elite club, Ardabil Branch, Islamic Azad University, Ardabil, Iran*

خلاصه مقاله:

This paper has developed a novel multi objective strategy for optimal sitting and sizing of Distributed Generation (DG) units and capacitor banks in simultaneous mode to improve reliability and reduce energy losses. The proposed function consists of four objectives: Cost of Energy Not Supplied (CENS), System Average Interruption Duration Index (SAIDI), costs of energy loss and investment. Improved Honey Bee Mating Optimization (IHBMO) has been used to solve the nonlinear complex problem. In addition to the novel objective function, the other contribution of this study is proposing a new model for load and energy cost. Three types of DGs, i.e., wind turbine, solar cell and diesel generator have been employed in placement process. To verify the comprehensiveness of the proposed function, three scenarios have been introduced: Scenario i) First, placement of DGs, and then capacitor banks, Scenario ii) First, placement of capacitor banks, and then DGs, and Scenario iii) simultaneously placement of DGs and capacitor banks. Simulations have been carried out on one part of practical distribution network in Metropolitan Tabriz in North West of Iran. The results of simulations have been discussed and analyzed by the use of five novel indices. The obtained simulation results using proposed function shows that the simultaneous placement of distributed generations and capacitor banks result in much more reduction of the energy losses, and increase improvements of reliability indices as well as voltage profile.

کلمات کلیدی:

Capacitor banks placement, Distributed generation placement, IHBMO algorithm, Reliability improvement, Practical radial distribution network