عنوان مقاله:

ASSESSMENT OF FEEDER RECONFIGURATION AND CAPACITOR SWITCHING UNCERTAINTIES IN INTELLIGENT DISTRIBUTION NETWORKS USING FIREFLY ALGORITHM

محل انتشار:

هفتمین کنفرانس بین المللی مهندسی برق ،الکترونیک و شبکه های هوشمند (سال: 1401)

تعداد صفحات اصل مقاله: 13

نویسنده:

Moaiad Mohseni - *Khuzestan regional electric company-Ahvaz- Iran*

خلاصه مقاله:

Distribution systems with feeder reconfiguration capability (FR) are able to change their topology under normal and abnormal conditions based on load changes and distributed generation (DG) changes. These benefits can be increased by proper control and switching of capacitive banks (CBs). In this paper, using the firefly (FA) algorithm, a new method for dynamic and simultaneous scheduling of FR and CB switching in the presence of distributed generation units that have uncertain and variable production over time is presented. The purpose of this method is to minimize the overall operating costs of the network, including the cost of power purchased from substations, the cost of power outage damages to the consumer, the cost of transformer life reduction (TLoL) and switching costs. In addition to reconfiguration, another strategy that is widely used to improve the operating conditions of power networks is switching capacitive banks. Installation of these banks reduces the reactive power flow in the network, which leads to reduced power losses and voltage drops. It is also possible to use this strategy to achieve financial benefits, increase feeder capacity, reduce congestion, and so on. For this study, the planning period is divided into several time intervals, for each of which the network topology and reactive power of the CBs are determined to meet the objective function. The efficiency of the proposed method is validated by applying it to an IEEE ۱۱۸-bus distribution system and evaluating its economic and operational characteristics.

کلمات کلیدی:

Feeder reconfiguration, Capacitor switching, Firefly algorithm, Distribution networks.