

Optimal Capacitor Placement in Distribution Using Cuckoo Optimization Algorithm

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Abstract : Shunt Capacitors have several uses in the electric power systems. They are utilized as sources of reactive power by connecting them in line-to-neutral. Electric utilities have also connected capacitors in series with long lines in order to reduce its impedance. This is particularly common in the transmission level, where the lines have length in several hundreds of kilometers. However, this post will generally discuss shunt capacitors. In distribution systems, shunt capacitors are used to reduce power losses, to improve voltage profile, and to increase the maximum flow through cables and transformers. This paper presents a new method to determine the optimal locations and economical sizing of fixed and/or switched shunt capacitors with a view to power losses reduction and voltage stability enhancement. For solving the problem, a new enhanced cuckoo optimization algorithm is presented. The proposed method is tested on distribution test system and the results show that the algorithm suitable for practical implementation on real systems with any size.

Keywords : capacitor placement, power losses, voltage stability, radial distribution systems

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