

Auttapol Wattanasakornkul 2014: Optimal Placement of Fault Indicators in Distribution Systems Using Cuckoo Search Algorithm. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor: Assistant Professor Dulpichet Rerkpreedapong, Ph.D. 133 pages.

This thesis presents a method for optimal placement of Fault Indicators (FIs) in power distribution systems to minimize the Total Cost of Reliability (TCR), which consists of the expected interruption cost (ECOST) depending on the types of customers, and the investment cost of FIs. This objective function is optimized by Cuckoo Search Algorithm (CSA). The process of CSA starts with a random set of locations for FIs installation. Then the locations are evaluated by the objective function. Next, the theory of Lévy Flights is used to generate new locations to achieve a better result. This process will continue iteratively until the best solution is found. In this paper, two test systems which are the Roy Billinton test system (RBTS2) and a real power distribution network of the Provincial Electricity Authority (PEA) are used to illustrate the performance of the proposed method. The results show that CSA can locate FIs better than an analytical technique.

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