Determine the number and location of the installation of the input phase measuring equipment in order to observe the full power system using the Leap Frog Algorithm (SLFA)

Mehrban Amirpour*,Abdolreza Tavakoli,

The location of phasor measuring equipment in the network is considered as an optimization problem with the goal of minimizing the total installation cost of the PMU and the complete observability of the network. Today, smart methods are very common. Therefore, with a proper understanding of the importance of optimal positioning of phasor measurement units in the power system, the concept of the synchrophasor system, its components, and its various applications are described in this thesis. Modeling and coding of the problem of optimal location of phasor measuring equipment by ABC artificial beaginal colony algorithm and SFLA frog mutation algorithm with the aim of complete observation of the network was carried out. Simulation studies were performed to validate and validate the performance of the proposed model on the 14-Bass, 30-Bass, 57-Bass and 118-Base IEEE test networks. The results show that the proposed model is capable of fast and accurate accuracy. The number and location of the optimal installation of phasor measurement equipment in the power grid is determined to allow the network to be monitored with the least installation cost. Also, the number of installed PMUs varies one to the other.

Keywords : Frog mutation algorithm, artificial beehive colony algorithm, phasor measuring equipment, visibility