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Abstract
The objective of this thesis is to derive optimal switches planning for distribution feeders with the installation of a distributed generator (DG). By using the resource of the outage management system (OMS) and performing topology process, feeder configuration can be identified accurately. The hourly loading of each service zone is obtained according to the customer load consumption and load patterns obtained from the customer information system (CIS). It is important to obtain the interruption cost for various types of customers from load survey. The objective function is therefore formulated by including the customer interruption cost and investment cost. An immune algorithm (IA) has been proposed to find the optimum switch numbers and locations of distribution feeders by representing the objective function as antigen. After performing the genetic evolution, an antibody which fits the antigen best is determined to be the optimal switch numbers and locations. An IEEE distribution test system and one real Taipower distribution system are both selected for computer simulation to demonstrate the effectiveness of the proposed IA methodology. It is concluded that the proposed IA algorithm can determine the optimal switch numbers and locations effectively and accurately for the distribution system with a DG installation.
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