Abstract

Generation system reliability assessment is an important task which can be performed using deterministic or probabilistic techniques. The probabilistic approaches have significant advantages over the deterministic methods. However, more complicated modeling is required by the probabilistic approaches. Power generation model is a basic requirement for this assessment. One form of the generation models is the well known capacity outage probability table (COPT). Different analytical techniques have been used to construct the COPT. These approaches require considerable mathematical modeling of the generating units. The units' models are combined to build the COPT which will add more burdens on the process of creating the COPT. This paper proposes the utilization of the Genetic Algorithm (GA) to sample the states of the COPT without engaging in analytical units modeling. The simple binary representation, “0” and “1” is used to model the states of generating units. The effect of the GA parameters is examined. The proposed technique is proven to be an effective approach to build the generation model. The proposed technique is applied to the RBTS.
Reference


Index Terms

Power Engineering  Power Systems

Key words

Genetic algorithm
power system reliability
power generation modeling