

## **Control action based on steady-state security assessment using an artificial neural network**

### **ABSTRACT**

In this paper, the application of an Artificial Neural Network (ANN) for remedial action of a power system is presented. The aims of this study are to find the significant control action that alleviates a bus voltage violation of a power system and to demonstrate the ability of a neural network in terms of evaluating the generation re-dispatch and load shedding amounts. The remedial action is based on a steady-state security assessment of the power system. The proposed algorithm has been successfully tested on a 9-bus test system. The results are compared with other conventional methods and it reveals that an ANN can provide the required amount of generation re-dispatch and load shedding accurately and instantaneously compared to other methods. On average, remedial actions were shown to have a positive effect for reducing the number of bus voltage violations and improving system security.

**Keyword:** Steady-state security assessment; Artificial neural network; Back-propagation; Remedial control action; Contingency analysis