The Application of Neural Network on The Contingency Analysis of Iraqi Super Grid Network

Dr. Afaneen Anwar Al-Khazragy * & Muthanna Abdulkareem Hasan*

Received on: 11/1/2009
Accepted on: 1/10/2009

Abstract

Many of the problems that occur on electrical power system can cause serious trouble with in such a quick time period that the operator (in control room) could not take action fast enough. This is often the case with cascading failures. Because of this aspect of power system operation, modern operation computers are equipped with contingency analysis programs that model possible system troubles before they arise. Therefore, this work has developed an Artificial Neural Network technique to alarm the operators in control room to any outage in power system elements (Generating unit or Transmission line) depending upon the results of AC load flow after each separation in these elements.

The aim of this work is to improve the database system of Iraqi Control Centers by adopting the facility of the Artificial Neural Network (ANN) technique to identify the transmission line or the generation unit separate’s in the electrical network. The work comprises four major parts which are; the development of the load flow program using Newton-Raphson Method, building the structure of Neural Network program (Radial Basis Function Neural Network), the engagement between the two programs, and the development of Visualization Technique for presenting the results via using Matlab language (Version 6.5). After the Engagement between the Visualization and other programs, the network under consideration (Iraqi Super Grid Network 400Kv) was studied and analyzed.
الكهرباء. يشمل البحث أربعة أجزاء رئيسية وهي تطوير برنامج سرين الحمل باستخدام طريقة (Radial Basis Function )، بناء هيكلية الشبكة العصبية (Newton Raphson)، ربط بين البرنامجين السابقين وتطوير تقنية مرنية لتقدير النتائج بالاعتماد على Network Visualization، تحليل الشبكة الكهربائية العراقية (400Kv) باستخدام البرامج السابقة.