Self-healing Protection algorithm for Minimization of Faults and Clearing Time in Distribution System using MATLAB

Dr. Reetu

Lecturer, Department of Electrical Engg.,
Pusa Institute of Technology

Abstract—*This paper presents self-healing protection algorithm for minimization of faults and clearing time using MATLAB software on a typical 32-bus Taiwan Distribution system. This technique was applied and tested on a distribution system with buses, loads and power sources considering various constraints and objective functions. The intelligent devices such as PMUs and IEDs were also incorporated to improve the protection algorithms, which are associated with future smart grids. To monitor and control the distribution network, wireless sensors were installed in the network. These sensors work uninterrupted and effectively by using wireless hierarchical clustering communication techniques during outages. Also, by using the intelligent and automated techniques in a smart grid, the duration of outages can be optimized by locating faults and restoring faulty areas using fuzzy Logic, which helps to clear the fault from the grid as early as possible. The system, as presented in the simulation results, worked successfully showed that the self-healing protection system could monitor and control the distribution system during blackout to locate fault, isolate the affected area and restore electricity.*

Keywords*: Self-healing protection system, smart grid, wireless sensor, distribution system protection, Fuzzy Logic.*