

An earth fault location scheme for isolated and compensated neutral distribution systems

Abstract

This paper proposes a scheme to locate an earth fault in an unearthed or a compensated neutral medium voltage (MV) network using the transient signal recorded from MV/LV substations. The algorithm applies continuous wavelet Transform (CWT) to locate the dominant charge transient frequency and then fast Fourier transform (FFT) to extract coefficients to be used in the fault location scheme. The fault location scheme managed to identify the correct path of fault location towards the position of the fault using the transient signal recorded from secondary side of the LV substation transformers. The results from intensive simulations and experiments in actual distribution network are also presented in this paper. The final results show that the fault location scheme is able to locate and identify the correct fault locations successfully.

Keywords

Charge transient; Compensated network; Continuous wavelet transform (CWT); Earth fault; Fault location; Isolated neutral network; Low voltage secondary substation