

A method for ground fault distance computation in unearthed medium voltage distribution network

Abstract

In networks with unearthed or compensated neutral, earth fault signals consist of different frequency components, which result from charging and discharging of the network capacitances. The charge transient which usually is of higher amplitude and lower frequency than the discharge transient is most suitable for fault location. This paper discusses a method for estimating a single phase to ground fault location in radially operated unearthed distribution network. The proposed method is based on correlation of undamped charge transient frequency with the fault distance. The undamped complex frequency is defined from the development of single phase to ground fault bus impedance matrix of the circuit network in complex frequency domain. The accuracy of the method was tested using a simulation model and the network example with overhead lines. The analysis was performed using the EMTP-ATP software.