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ملخص البحث الاول

ملخص البحث باللغة الإنجليزية :

High impedance faults (HIFs) are difficult to detect by conventional protection devices such as distance and overcurrent relays. This paper presents a scheme for high impedance fault detection in extra high voltage transmission line by recognizing the distortion of the voltage waveforms caused by the arcs usually associated with HIFs. The proposed scheme is based on combined wavelet transform and Prony's method. The discrete wavelet transform (DWT) based analysis, yields three phase voltages in the high frequency range which are fed to a classifier for pattern recognition and also fed to the Prony's method for correct discriminating of switching with and without fault cases. The classifier is based on an algorithm that uses a recursive method to sum the absolute values of the high frequency signal generated over one cycle by shifting one sample, while switching cases discrimination is based on Prony's amplitude changing with time. Characteristics of the proposed fault detection scheme are analysed by extensive simulation studies that clearly reveal that the proposed scheme can accurately detect HIFs in the EHV transmission lines. Results of extensive simulations using ATP/EMTP on 500 kV Egyptian transmission line clearly reveal that the proposed scheme can accurately detect HIFs in the EHV transmission lines systems as well as its ability to discriminate clearly between HIFs and various switching conditions.