A Novel Method to Detect High Impedance Fault in Electric Vehicle Integrated Distribution System

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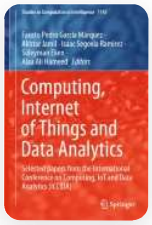

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Abstract

A fault is a typical state that alters the functioning of the power grid. An abrupt alteration in the current level is noted in the event of a fault due to the incorporation of the Electric Vehicle Charging Station. The distribution system is subject to various types of faults, including open circuit faults and short circuit faults such as L-L-L-G, L-G, L-L-L, and L-L-G faults. The majority of traditional over-current relays are capable of detecting these categories of faults. The over-current relays exhibited a deficiency in detecting high-impedance faults, as their fault current was found to be lower than the standard current value. The presence of high impudence faults can result in the occurrence of arcs and the potential for fire arcing within the distribution system. This results in significant loss of both property and human life. Accurately and promptly detecting these types of faults is imperative. This paper employs a new approach utilizing RADWT & SVM to identify and categories high-impedance faults in the electrical distribution network. The utilization of the rational dilation wavelet transform is employed for the purpose of feature extraction, while the support vector machine is utilized for the detection and classification of faults.

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