

عنوان مقاله:

Coordination of adaptive distance protection in transmission and wind farm collector lines under resistive fault conditions

محل انتشار:

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خلاصه مقاله:

Distance relays calculate the path impedance between the fault point and the relay location by sampling the voltage and current at the relay location. By using the ratio of the impedance estimated by the relay to the impedance of the line where the relay is installed, the location of the fault can be estimated by a distance relay. However, several factors influence the estimated impedance and proper operation of distance relays. The most important of these factors is the resistive fault occurrence, which results in an increase in the impedance and deviation of the impedance estimated by the relay as well as causes relay under-reach. Therefore, in the present study, an adaptive method is proposed to modify the protection zones of distance relays settings under different operating conditions and resistive fault occurrence. Furthermore, the adaptive distance protection of transmission lines, wind farm collector lines and the protection coordination of the relays in these lines are investigated. In this method, an adaptive coefficient is added to the conventional characteristics of distance relays to improve the accuracy and coordination. The proposed adaptive method can also maintain the coordination of different protection zones of primary and backup relay pairs. In addition to analytical verification, the numerical results obtained from simulation show the efficiency of the proposed method. The proposed method is implemented on a power system with transmission lines and wind farms and simulated in .MATLAB/Simulink environment

کلمات کلیدی:

Distance relay, Wind farm, Adaptive Characteristic, Coordination, Fault Resistance

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