

عنوان مقاله:

Adaptive Superconducting Fault Current Limiter for Preserving Over-Current Relays Coordination in power distribution system

محل انتشار:

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خلاصه مقاله:

Increasing penetration of dispersed generation (DG) units in power distribution systems may cause maloperation of coordinated over-current relays; and consequently deteriorating the desirable level of reliability and power quality. Re-setting of the protection relays for the new configuration with DGs is time consuming and inefficient; therefore, maintaining the protection coordination of distribution network with presence of DG without handling original setting of protection relays is not worthy. More DG penetration lead to more increment in short circuit level of the distribution system. Superconducting fault current limiter (SFCL) has been presented to moderate the circuit breaker's burden. On the other hand, the SFCLs are known as an effective way to preserve the relay coordination in presence of DG units. In this paper, an adaptive SCFCL is proposed to preserve protection coordination of distribution system in presence of DG without handling of original setting of protection relays. In the proposed scheme, SFCL is connected in series with each DG units in the network and its impedance is adjusted by an algorithm to adaptively control the fault current level. In addition the proposed algorithm is regulated in a way to keep the network in islanded operation safe and reliable. The proposed approach is tested and verified on the IEEE 34 distribution system in DIGSILENT and the results show the integrity of the proposed scheme.

کلمات کلیدی:

Protection coordination, distributed generation, adaptive superconducting fault current limiter, relay, distribution network

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