

Impact of split factor value on the safe design of distribution substation earth grid

ABSTRACT

Split factor is a fundamental consideration when designing a distribution substation earth grid. Arbitrary choice of split factor in earth grid design process may lead to technical and economic implications resulting in underestimated or overestimated designs. In this paper, a distribution substation earth grid was designed using SESCAD and executed in MALT module of CDEGS. The energization current was varied by 100%, 75%, 50% and 25% of the short circuit current available at the secondary terminals of the upstream transformer to determine the impact on safety criteria of the earth grid. Results indicated that, the EPR for 100% fault current was higher, whereas the step and touch voltages were lower. It was also revealed that, there was no difference in step and touch voltages when energization current was set at 75%, 50% and 25%.

Keyword: Split factor; Safety criteria; Distribution substation; CDEGS