

Numerical Modeling And Simulation In Electromagnetic Transient Program For Estimating Line Backflashover Performance

ABSTRACT

This paper presents a numerical modeling and simulation of 132 kV transmission line in electromagnetic transient program and later predicts the critical backflashover current, probability of the transformer damage and backflashover rate (BFR) when the lightning strikes close to the substation. The electromagnetic transient program, later referred as PSCAD/EMTDC is used to model and simulate the high voltage transmission line. Various parts of transmission line such as overhead transmission line, tower, footing resistance and insulators are modeled to study the effect of lightning overvoltage, at very high frequency, on the BFR when these parameters are varied. This technique is useful in helping the utility for conducting an insulation coordination studies as the outcome can be used in technical evaluation and financial planning of the transmission systems.

Keyword: Electromagnetic transient, line backflashover, numerical modeling, PSCAD/EMTDC