

TRANSIENT BEHAVIOUR OF A HORIZONTAL GROUNDING GRID UNDER IMPULSE CURRENT

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In this paper the authors attempt to study the behaviour of grounding grids under impulse lightning current. For the simulation of their transient behaviour, the program PSCAD/EMTDC (Power Systems Computer Aided Design / ElectroMagnetic Transients for DC) has been used. The mathematical model elaborated for the PSCAD/EMTDC is characterised by a circuit approach, which is based on the π nominal circuit. The inductance and the capacity of the equivalent circuit have been programmed in Pascal code. The resistance and the conductance have been estimated using formulas given in the relevant literature. Different simulations have been carried out altering the shape of the impulse current and the value of the conductance. Numerical results are presented for two extreme cases: in the first case the current is injected in the centre of the grid and in the second one it is injected in one corner of the grid. The aim of this work is to verify the applicability of this approach in the behaviour analysis of grounding systems injected by high impulse currents and compare to each other the numerical results obtained using different simulations.