Abstract

This paper deals with those measures against overvoltage taken when protecting buildings occupied by people or animals. Such overvoltages can appear in the case of ground fault if the grounding system of the building is located within a potential funnel of a transmission tower's grounding system. This paper presents an entire concept regarding protection against any potential rise within the building. Computations of electrical potential on the grounding system having been performed using data obtained by measurements. This includes equipotential bonding, overvoltage protection of the building, and a transformer substation with metal–oxide varistors and gas-discharge arresters installed on the low-voltage line. A simulation model for the entire overvoltage protection based on known mathematical models has been merged within this paper. Adequate overvoltage protection elements were selected for protection against potential rises in the grounding systems of buildings on the basis of computation results. Index Terms—Gas-discharge arrester (GDA), grounding electrodes, grounding system, metal-oxide varistor, overvoltage protection.

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