

Nonlinear Pollution Modelling for Polymeric Outdoor Insulator

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Abstract : In this paper, a nonlinear pollution model has been proposed to compute electric field distribution over the polymeric insulator surface under wet contaminated conditions. A 2D axial-symmetric insulator geometry, energized with 11kV was developed and analysed using Finite Element Method (FEM). A field-dependent conductivity with simplified assumptions was established to characterize the electrical properties of the pollution layer. Comparative field studies showed that simulation of dynamic pollution model results in a more realistic field profile, offering better understanding on how the electric field behaves under wet polluted conditions.

Keywords : electric field distributions, pollution layer, dynamic model, polymeric outdoor insulators, finite element method (FEM)

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