

ABSTRACT

This research presents mathematical modeling and simulation of the electric field occurring within high-voltage power systems to study the effects of the electric field on the electrical insulation. In addition, this work also studied the electric field distribution within the various electrical insulators. The electric power transmission system used for test is a typical 230-kV transmission line. The simulation methods conducted in this research were the finite difference methods (FDM) and the finite element methods (FEM), in 2D. For insulator studies, glass suspension insulator, solid core suspension insulator, line-post insulator, post insulator, and pin-post insulator were employed for test. Furthermore, this research also considered the thermal infrared images of the electrical insulation. The test measurements with thermal imaging cameras with infrared radiation was investigated. The main breaker president of the Research Buildings, Suranaree University of Technology was used as a test example.