

Novel Technique for calculating Surface Potential Gradient of Overhead Line Conductors

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Abstract : In transmission line surface potential gradient is a critical design parameter for planning overhead line, as it determines the level of corona loss (CL), radio interference (RI) and audible noise (AN). With increase of transmission line voltage level bulk power transfer is possible, using bundle conductor configuration used, it is more complex to find accurate surface stress in bundle configuration. The majority of existing models for surface gradient calculations are based on analytical methods which restrict their application in simulating complex surface geometry. This paper proposes a novel technique which utilizes both analytical and numerical procedure to predict the surface gradient. One of 400 kV transmission line configurations has been selected as an example to compare the results for different methods. The different strand shapes are a key variable in determining.

Keywords : surface gradient, Maxwell potential coefficient method, market and Mengele's method, successive images method, charge simulation method, finite element method

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