

A Novel Method For Predicting Critical Flashover (CFO) Voltagesinsulation Strength Of Multiple Dielectrics On Distribution Overheadlines

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Summary

Electric utilities are striving to improve the appearance of distribution lines, apply different combinations of insulating components to establish the necessary insulation for such lines, by the use of new insulators and simultaneously reduce lightning outages. The impulse critical flashover (CFO) voltages of many overhead line insulators are determined for single and multiple (porcelain, fiberglass, polymers and wood). Laboratory investigation and studies relating to the evaluation of CFO values of distribution lines for multiple dielectrics are reported. Data used by the industry for transmission lines are not fully applicable to estimate CFOs for distribution lines. Many engineers concerned with the design or operation of high voltage transmission lines have devised methods to estimate the performance of lightning impulse. There is, at present, no such method available on estimating the insulation strengths of multiple dielectrics of distribution lines subjected to impulse CFO. This paper presents a method of estimating the CFO insulation strengths of two and three dielectric combinations used on distribution overhead lines using the developed extended multi curves (EMC). The proper use and evaluation of the insulation level by this novel method has a major influence on the design and cost of distribution line construction, application, also improving the performance of specific line designs

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