Flashover Due To Lightning Of Composite Insulators Used Ondistribution Line

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Summary

The problem of estimating lightning insulation strength of distribution line designs is complicated due to numerous factors. In general, classical techniques that account for air gap flashover do not apply. The fundamental reasons for these complications are still not precisely reported. Some researchers relate them to small distances between electrodes, others to the presence of wood insulation, insulator size, hardware size, shape, position of components, multiple arc paths, and probably not seen other factors. In this paper modern insulation materials used on distribution systems such as porcelain, fiber-glass reinforced plastics (FRP) and polymers and their composite combinations are considered. The study takes into account, not only the configuration of the composite insulators, but also the point of incidence of the lightning impulse that may cause flashover and location of grounding wires. The paper presents an empirical factor to estimate the flashover voltage due to lightning of composite insulators used on distribution overhead lines. The physical and the active length of composite insulators are also determined to evaluate the most effective configuration and material to be used. Factors that may affect the critical flashover voltage (CFO) of composite insulators are investigated and defined to evaluate different insulator types and material composites used. Physical explanations of the mathematical models are discussed to validate such a model