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Title:

**Risk-based Design Methodology for the Selection of Insulation Level Against Lightning-Induced Overvoltages in Medium Voltage Networks**

## Abstracts

Suitable selection of insulation in the medium voltage (MV) overhead lines is vital for network design because lightning-induced over voltages are one of the major causes of faults and damages results into supply interruption. The appropriate level of insulation strength against lightning-induced overvoltages is obtained by balancing the cost of insulation against the reduction in risk of failure in the protected area. This paper presents a novel risk-based design approach to determine the optimum level of insulation strength required against lightning-induced overvoltages. The risk of the insulation flashover is calculated using the probability distributions of lightning-induced overvoltages and the insulator flashover voltages. Furthermore, cost-benefit analysis has been also performed for cost optimal selection of insulation level. In this way, the proposed methodology offers a valuable application in the line design by proposing changes in the existing design or measures to mitigate lightning-induced overvoltages to improve the power system reliability.

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More Informations :

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