

Complete assessment of impact of lightning strikes on buried cables

Analyse exhaustive de l'impact de la foudre sur les câbles enfouis

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Electric utilities are concerned about the possibility of damage to underground power distribution cables due to lightning strikes impacting the earth's surface and terminating on the cable. Assessment of such occurrences is important in the design of suitable protection schemes and mitigating strategies. Existing models focus on individual aspects of the problem only and therefore do not provide a complete assessment. In this paper, a complete model that links elements of existing models is proposed. The model provides information on current in and overvoltage on struck cables, with soil characteristics and geometrical configuration as parameters.

Les compagnies de distribution d'électricité s'inquiètent des dommages potentiels pouvant être causés par la foudre aux câbles de distribution enfouis dans le sol. L'analyse exhaustive de tels événements est importante pour la conception de systèmes de protection comme pour l'élaboration de stratégies de réduction des dommages. Les modèles actuels ne se concentrent que sur un aspect spécifique du problème et ne permettent pas une analyse complète. Cet article propose un modèle complet rassemblant des éléments tirés des modèles existants. Le modèle fournit de l'information sur le courant et la tension sur les câbles frappés par la foudre en tenant compte des propriétés du sol de même que de la configuration géométrique.

Keywords: lightning, buried cable, model

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