

Evaluation of lightning induced voltage due to the effect of design parameters on medium voltage distribution line

ABSTRACT

This paper investigates the effect of design parameters on the induced voltages on a distribution power line. This investigation is based on perfect ground conductivity, single stroke lightning and lightning without branches. The design of the parameters includes, d , the striking distance of the lightning, h , the height of the conductor, and r , the diameter of the conductor, all of which are elements that produce the variations in the induced voltage on a distribution power line with respect to a vertical or an inclined lightning channel. Thus, the outcome of this investigation can act as a guide for utility companies or other power engineers in order to plan an appropriate protection scheme for a distribution power line.

Keyword: Lightning; Induced overvoltage; Striking distance; Vertical lightning channel; Inclined lightning channel