

Inception Voltage Of Corona In Bipolar Ionized Fields- Effect On corona Power Loss

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Summary

In this paper, an iterative finite element based algorithm is presented as a numerical tool for the solution of the bipolar ionized field around high voltage direct current (HVDC) transmission lines. The effect of including unequal values of the positive and negative corona inception voltages and ion mobilities on the corona power loss is investigated. In addition, the effect of ion penetration on reducing the positive conductor corona inception voltage is also studied. The present algorithm is applied to different laboratory and full scale transmission line configurations. Comparison with previously computed V-I characteristics showed that the present computed values were in better agreement with experiments. Also it has been found that the effect of unequal corona inception voltages on the corona power loss (or corona current) is noticeable at applied voltages very near to the inception values

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