

## The Impact of Space Charges on the Electromechanical Constraints in HVDC Power Cable Containing Defects

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**Abstract :** Insulation techniques in high-voltage cables rely heavily on chemically synapsed polyethylene. The latter may contain manufacturing defects such as small cavities, for example. The presence of the cavity affects the distribution of the electric field at the level of the insulating layer; this change in the electric field is affected by the presence of different space charge densities within the insulating material. This study is carried out by performing simulations to determine the distribution of the electric field inside the insulator. The simulations are based on the creation of a two-dimensional model of a high-voltage cable of 154 kV using the COMSOL Multiphysics software. Each time we study the effect of changing the space charge density of on the electromechanical Constraints.

**Keywords :** COMSOL multiphysics, electric field, HVDC, microcavities, space charges, XLPE

**Conference Title :** ICEPC 2023 : International Conference on Electrical Power Cable

**Conference Location :** Istanbul, Türkiye

**Conference Dates :** June 22-23, 2023