

# ANALYSIS OF ELECTRIC FIELD OF THE ELECTRODE SYSTEM USED IN CTI TEST BY USING FEM

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Comparative tracking index (CTI) is an index used for electrical insulating materials which is defined as the numerical value of that voltage which will cause failure by tracking during standard test. Tracking is the process that produces a partially conducting path of localized deterioration on the surface of an insulating material as a result of the action of electric discharges on or close to an insulation surface. CTI is the voltage, which causes tracking on a material after 50 drops of 0.1% ammonium chloride solution have fallen on the surface of a specimen between two electrodes.

In this study, a set of analyses and CTI tests are performed to evaluate and examine the surface discharge behavior of different solid insulating materials in inhomogeneous field. The tests are performed on five different plexiglass samples to examine tracking. After the test results are examined in the laboratory, the mathematical model is built by using FEMM 4.0 (Finite Element Method Magnetics). As a result of this FEMM application, the geometry of the electrodes (Fig. 1), the mesh, the distribution of potential and electrical field, the distribution of equipotential lines (Fig. 2), the difference of the potential on the surface between the electrodes and the tangent of electrical field are observed clearly.

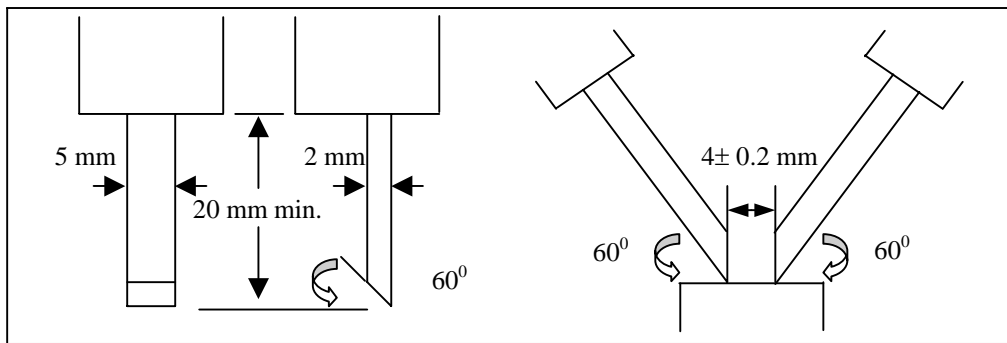


Figure 1: The electrodes used in CTI Test

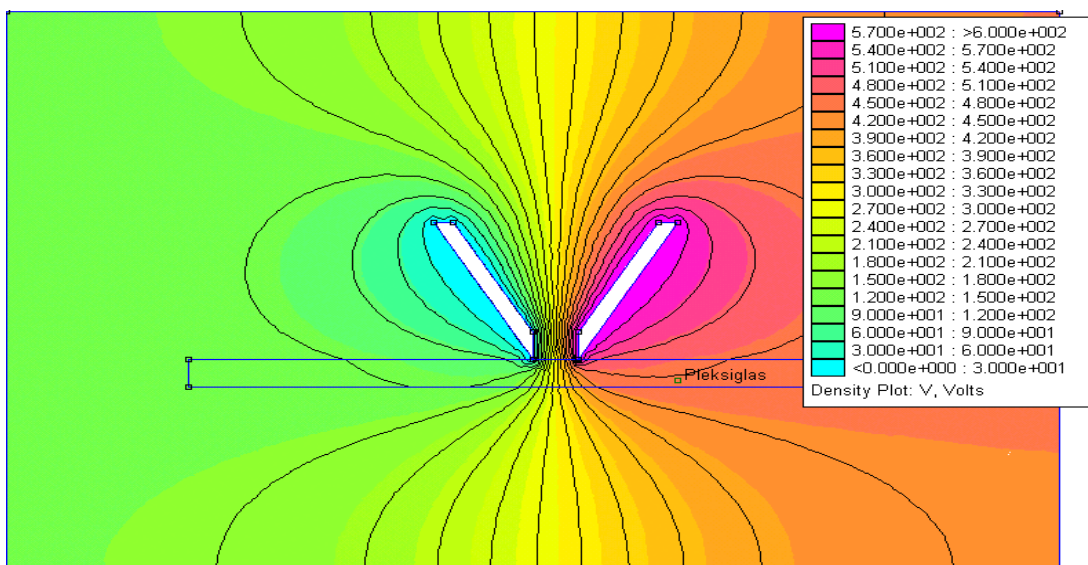


Figure 2: One of the electric potential distributions obtained in this study