

Modelling of Partial Discharge Activity in Cavity within a Dielectric Insulation Material

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The pattern of partial discharge (PD) occurrence at a defect site within a solid dielectric material is influenced by the conditions of the defect site. This is because the defect conditions such as its size and location determine the electric field distributions at the defect site which influence the patterns of PD occurrence. A model for a spherical cavity and ellipsoidal cavity within a homogeneous dielectric material has been developed by using Finite Element Analysis (FEA) software. The model is used to study the influence of different conditions of the cavity on the electric field distribution in the cavity and the PD activity. Also, experimental measurements of PD in spherical cavity and ellipsoidal cavity of different size within a dielectric material will be displayed.

At present, only the model for the PD has been prepared. The cavity in the silicon rubber is now produced. The pre-cure time, post-cure time and temperature for the product of cavity are being determined by researchers now. And the bubbles in the small sample with silicon rubber are easier to be made than in the bigger sample. Once cavity in silicon rubber is successful to be made, PD measurement will proceed. Figure 1 shows the schematic diagram of the object test for the research.

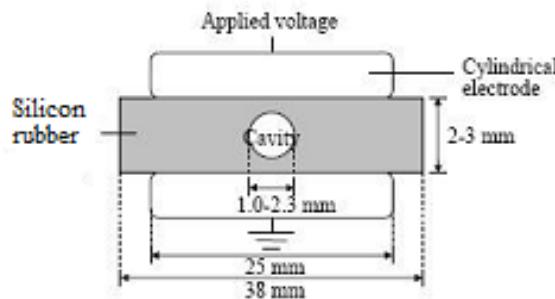


Figure 1: schematic diagram of the object test