

Description for the general public

The main purpose of the proposed research work is to evaluate partial discharge (PD) phenomenon lasting time influence, as well as spark gap material and geometry, insulation oil condition and type, and voltage level, on various parameters describing the phenomenon changes. PD is across the board issue causes serious problems and faults of high voltage insulation systems nowadays. Precise knowledge and description of PD phenomenon, especially its time variability, may cause significantly rise of high voltage apparatus operation safety as well as significant fault costs reduction.

Proposed research work have are proceeded under laboratory conditions. Various configurations of PD generation sources in insulation oil are applied. Three measuring methods are proposed: acoustic emission method, electrical method, UHF method. The highest quality, professional measuring tools are also supplied. Simultaneous registration of selected quantities is provided, which allows the analyzed phenomena precise and multiparametric description. Contemporary statistical and numerical methods are used for results analysis. Authors own observations made during previous research have made them focus on proposed study area as well as minor amount of information about such an approach to the PD problem delivered by contemporary scientific literature.