

Graduation Design Project Proposal Form

Project # P12

Project Title: Influence of Electronic Scavenger Additives on Breakdown Voltage of Vegetable Oils

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Number of Students: One/Two

Brief Description of the Project

- 1- Designing and preparing an experimental set-up of discharge chamber containing high voltage electrodes and ground electrodes.
- 2- The experiments would be done under homogeneous as well as inhomogeneous electrical field.
- 3- Preparing different samples of oils (vegetable, mineral and synthetic oils) with different concentrations of additives (mainly electronic scavengers)
- 4- Measure the breakdown voltage according to IEC Standard
- 5- For each sample, one has to make 32 measurements (under AC, DC and lightning impulse voltages if it's possible) and to deduce the average value.
- 6- Make a statistical analysis of test data (normal law, Weibull distribution ...).

Objectives

- The design will consider improvement the dielectric properties performance of high voltage liquid insulators by adding few amounts of specific electronic scavengers into liquid insulation.
- Designing samples for increasing the breakdown voltages values as well as reducing partial discharge occurrence of insulating liquids under all voltage profiles.
- Getting an optimum volume concentration of electronic scavengers in the used liquid insulation.
- The design will help to select suitable scavengers considered for the study that gives the best performance for dielectric properties improvement of high voltage insulation liquids.

Technical Approach and Expected Deliverables

The design will be satisfied by theoretical, analytical and simulation approaches as possible.