

Weekly High Voltage Laboratory Project Meeting

Minutes for July 22, 2019 | 14:00-14:35

Present: Prof Alan Clark, Prof Gomes, Dr Hunt, Prof Nyamupangedengu, Dr West, Prof Van Coller, Group 27, Group 36, Group 46, Group 47, Group 49

Absent: Group 22

Chair: Group 46

Agenda:

1. Progress made laboratory project during week 1
2. Challenges experienced during week 1
3. Goals for week 2

Progress on laboratory project

Group 19G46: Completed the wiring connections for Partial Discharge Experimental-Setup. This involved sending specifications needle and plane electrodes at the Genmin lab, removing residue oil in the prototype transformer tank using ethanol.

Group 19G47:

Refurbish and calibrate the miniature impulse voltage generator.

This entailed moving the generator to a suitable area to conduct the experiment, checking and fixing connections, measuring values of circuit components, testing firing capabilities, and testing the open circuit voltage and observing the output waveform.

Group 19G36:

Review the state of the 8/20 μ s Impulse Generator. Work on triggering part of the circuit, this involved evaluating its current state and redesign it. Finalise Simulations.

Group 19G49:

Changed from week 1's Objectives; Performed simulations, Implementing Soil Resistivity Method.

Group 19G27:

Create Design for airlock chamber. Begin online tutorials for the OpenCV language. Begin developing basic image sensing models for static images. Work with applying different filtering/masking algorithms to images. Source and order all materials.

Challenges experienced during week 1

Group 19G46:

Delivery of conductive glue which is essential for the experiment is set for 2 August 2019 which will result in a delay in the project schedule. An alternative method to mount the plane electrode to the bottom surface of the prototype transformer tank is required.

Group 19G47:

Waveform output did not conform to the standard lightning impulse 1.2/50 us expected.

Group 19G36:

Triggering of the spark gap could not be evaluated/ tested because all the power sources previously used for the generator are not working.

Group 19G49:

Obtaining Comsol Software.

Group 19G27:

Finding cost effective perspex. Sourcing a high fps camera within the budget. Using built in web-camera is not ideal for testing, but is effective to show prototype systems.

Goals for week 2

Group 19G46:

Perform PD Measurements in Mineral Oil.

Group 19G47:

Test PD detection setup and perform PD tests on parallel plate models.

Group 19G36:

Construct waveshaping components, redesign and build or purchase a 48V, 5A Power supply for effective testing of the spark gap triggering in the generator.

Group 19G49:

Receiving the soil and measuring its resistivity and permittivity. Perform more simulations for impulse voltage. Marx generator setup.

Group 19G27:

Begin monitoring processes in the brewery and obtaining data. Assemble airlock chamber with all acquired parts. Begin calibration of camera with developed algorithms, optimise camera settings for best results. Further develop algorithm to track moving objects. Test airlock chamber with carbon dioxide

Discussion Points

- Groups need to consult laboratory Manager (Sifiso) before energising experiments for the first time.
- Groups need to arrange a schedule for laboratory time
- Decide on whether or not to merge the two HV project groups into one group

Next Meeting: July 29, at 14:00