Master Thesis Proposal – Characterization of Insulation material for High Voltage DC transformer application

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Goal

To evaluate the suitability of different liquid and solid insulation materials for HVDC medium frequency power transformer application by reviewing their technical specifications and performing characterization measurements.

Background

Many standards have presented methods for characterization of liquid or solid insulation materials. A comprehensive study shows that none of the standard methods guarantee both reproducible and comparable results with the real condition under HVDC test or service. Based on the guidelines presented in the references, test setups shall be prepared, and corresponding electrodes shall be manufactured. In addition, true conductivity measurements on the solid and liquid insulation materials (planned to be used in designing a prototype HVDC MFHP transformer) should be performed.

Scope

1. Study previous literature on the characterization methods and standards and on the series of eco-friendly liquid and solid insulation materials that can be used to produce an offshore HVDC power transformer.
2. Arrange a reliable and safe test setup, perform the characterization tests at different voltages and temperatures and analyse the results. Compare the results with the existing figures from literature and report the possible deviations.

This project is part of a Ph.D. study performed by Mohammad Kharezy at RISE Research Institutes of Sweden, more information about the back ground of this study can be found here – http://www.diva-portal.org/smash/get/diva2:970269/FULLTEXT01.pdf.

Your Profile(s)

We are looking for 2 students who are self-motivated and ambitious with excellent knowledge in High Voltage and Measurement Technology. Previous Practical High voltage Lab experience is preferred.

Location & Duration

This master thesis will be done at RISE Research Institutes of Sweden in collaboration with Chalmers University of Technology from January to June 2019 mostly at RISE’s HV lab in Borås and at Chalmers.

Contacts

- Mohammad Kharezy, Ph. D. Student at RISE Research Institutes of Sweden (kharezy@chalmers.se)
- Thorbjörn Thiringer, Professor Electrical Engineering at Chalmers University of Technology (torbjorn.thiringer@chalmers.se)

Key Words

HVDC, Electrical Conductivity, Insulation Material, High voltage Medium frequency Power transformer

Deadline

Personal letter, grade transcript and CV shall be sent to Mohammad Kharezy and Torbjörn Thiringer no later than November 9th.