CIGRE Study Committee N° D1

PROPOSAL FOR CREATION OF A NEW WORKING GROUP

WG* N° D1.31	**Name of Convenor :** Lars Lundgaard (NO)

Title of the Group: Dielectric Performance of insulating liquids for transformers

Scope, deliverables and proposed time schedule of the Group :

Background :

Many new liquids are proposed for transformers to reduce flammability, increase environmental properties etc. Also conventional mineral oils are changing in composition (e.g. reduced polyaromatic content). There is a need for learning how compatible these liquids are with conventional oils and transformer designs. Also during the last ten to fifteen years several studies have been performed on topics like streamer initiation and propagation in various field geometries, distances and oil volumes. These studies and their implications have only to a limited degree been reported in forums frequented by end users of electric apparatus. In principle the dielectric performance of liquids have a relevance for design, testing, maintenance and insulation coordination for power transformers

Scope :

The objective is to give a state of the art review of dielectric breakdown mechanisms in liquid insulants for transformers with weight on mineral oils, and the testing methods for such liquids. This comprises:

1. Breakdown initiation and propagation under various voltage stresses and geometries relevant for a transformers. Background for V-t curves. Non conventional stresses.
2. Behaviour of contaminants (electrophoresis etc.) relevant for withstand of a liquids.
3. Dependence on particles, moisture, chemical and composition.
4. Behaviour of other liquids than mineral oils.
5. Review of today's standardized test methods for liquids.
6. Review of alternative test methods
7. Discussion of equivalent and special needs for liquids for capacitors and relevance of test methods for transformer liquids in this case.

Deliverables : Report to be published in Electra or technical brochure with summary in Electra Tutorial

Time Schedule : start : 2008 **Final report** : 2010
Comment: Transfer from a former TF to a WG

Comments from Chairmen of SCs concerned : A2

Approval by Technical Committee Chairman : Klaus Fröhlich **Date** : 15/12/2009