

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP ⁽¹⁾

WG* N° D1.52	Name of Convenor : Ivanka Atanasova-Höhlein (DE) E-mail address: ivanka.hoehlein-atanasova@siemens.com	
Technical Issues # ⁽²⁾: 8		Strategic Directions # ⁽³⁾: 1
The WG applies to distribution networks ⁽⁴⁾: Yes		
Title of the Group: Moisture measurement in insulating fluids and transformer insulation – An evaluation of solid state sensors and chemical methods		
Scope, deliverables and proposed time schedule of the Group :		
Background :		
<p>Capacitive sensors for continuous monitoring of relative humidity in oil filled electrical equipment are increasingly taken into use. They are indispensable for the on-line evaluation techniques and will become still more important in future grids. On the other hand there is a long experience with the chemical determination of water concentration in oil using periodic monitoring using e.g. Karl Fischer titration. Since there are numerous manufacturers of capacitive sensors for moisture determination in insulating fluids, it is necessary to evaluate the reliability and accuracy of such sensors and the correlation of the results to conventional chemical methods. Other possible methods for moisture determination should also be evaluated.</p> <p>The results will give valuable information on evaluating methods for humidity assessment, e.g. in transformers, and will serve as basis for values to be used in practice, e.g. for consideration of IEC TC 10 and for recommendations to users.</p>		
Scope :		
<ol style="list-style-type: none"> 1. Verification of reproducibility and accuracy of Karl Fisher water measurement. 2. Evaluation of accuracy and performance of solid state sensors for determination of water in a transformer liquid 3. Description of correlation of the different techniques, considering that they will be used both for new and aged mineral oils and also for other insulating liquids. 4. Development of practical guideline for measurement and comparison of results achieved by different methods. 5. Description of how water content in transformer cellulose insulation can be derived from capacitive sensors measuring relative humidity in oil, considering solubility of water in the insulating liquid and temperature rises in insulation system. 		
Deliverables : Report to be published in Electra or technical brochure with summary in Electra		
Time Schedule : start : January 2013		Final report : 2016
Comments from Chairmen of SCs concerned : A2		
Approval by Technical Committee Chairman : Date : 1 st October 2012		

(1) Joint Working Group (JWG) – (2) See attached table 1 – (3) See attached table 2 – (4) Delete as appropriate

Table 1: Technical Issues of the TC project "Network of the Future" (cf. Electra 256 June 2011)

1	Active Distribution Networks resulting in bidirectional flows within distribution level and to the upstream network.
2	The application of advanced metering and resulting massive need for exchange of information.
3	The growth in the application of HVDC and power electronics at all voltage levels and its impact on power quality, system control, and system security, and standardisation.
4	The need for the development and massive installation of energy storage systems, and the impact this can have on the power system development and operation.
5	New concepts for system operation and control to take account of active customer interactions and different generation types.
6	New concepts for protection to respond to the developing grid and different characteristics of generation.
7	New concepts in planning to take into account increasing environmental constraints, and new technology solutions for active and reactive power flow control.
8	New tools for system technical performance assessment, because of new Customer, Generator and Network characteristics.
9	Increase of right of way capacity and use of overhead, underground and subsea infrastructure, and its consequence on the technical performance and reliability of the network.
10	An increasing need for keeping Stakeholders aware of the technical and commercial consequences and keeping them engaged during the development of the network of the future.

Table 2: Strategic directions of the TC (cf. Electra 249 April 2010)

1	The electrical power system of the future
2	Making the best use of the existing system
3	Focus on the environment and sustainability
4	Preparation of material readable for non technical audience