


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

JWG* N° D1/B3.57	Name of Convenor : Claus NEUMANN (DE) E-mail address: claus.neumann@amprion.net
Technical Issues # ⁽²⁾: 3	Strategic Directions # ⁽³⁾: 1
The WG applies to distribution networks ⁽⁴⁾: No	
Title of the Group: Dielectric Testing of gas-insulated HVDC Systems	
<p>Scope, deliverables and proposed time schedule of the Group :</p> <p>Background :</p> <p>With the increasing use of renewable energy, e.g. large offshore wind farms, new centers of power generation are built which are often far away from load centers. Emerging HVDC technology is a reasonable option for reliable power transmission to the load centers. Today's HVDC systems are using air-insulated equipment for the switching and transition yards. The increasing demand on HVDC systems requires new innovative and reliable solutions with economic space saving design, especially in offshore installations and regions where underground connections are requested. The application of gas-insulated systems like HVDC GIS/GIL is required.</p> <p>Technical feasibility and first application of gas-insulated HVDC GIS is described by CIGRE Technical Brochure 506, but general agreed dielectric testing parameters and procedures as well as international standards are missing (except for DC bushings: IEC 62199).</p> <p>Scope :</p> <ul style="list-style-type: none"> • Clarification of fundamental phenomena in electrical gas-insulated systems under DC and transient voltage stress taking into account the properties of the involved materials. • Development of testing strategies for gas-insulated HVDC systems (e.g. HVDC GIS/GIL). This will include the parameters and procedures for type test, routine test and on-site test. • The pending question about necessity of prequalification tests (long-term tests) will be addressed and the relevant test procedure will be defined if applicable. • Consideration will be given to the applicability of the fundamental processes to other HV apparatus and recommendations made regarding the need for future activities <p>Deliverables: Report to be published in Electra or Technical Brochure with summary in Electra</p> <p>Time Schedule : 2014 Final report : 2016</p>	
Comments from Chairmen of SCs concerned : SC A3, SC B4	
<p>Approval by Technical Committee Chairman Date : 20/12/2013 </p>	

(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