


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

WG* N° D1.63	Name of Convener: Ronald PLATH (DE) E-mail address: plath@ht.tu-berlin.de	
Technical Issues # ⁽²⁾: 3		Strategic Directions # ⁽³⁾: 1
The WG applies to distribution networks ⁽⁴⁾: Yes		
Title of the Group: Partial discharge detection under DC voltage stress		
Scope, deliverables and proposed time schedule of the Group : Background : <p>Detection and evaluation of partial discharges (PD) is important for quality assurance and diagnosis of electrical insulation systems. With increasing use of DC voltages in electrical transmission and distribution systems the field of PD under DC voltage stress needs to be further investigated. The available knowledge and experience should be reviewed. In particular, the field distribution in insulation systems used in DC voltage systems, and the physical processes of the PD phenomena under DC voltage stress need to be clarified. Procedures for meaningful DC PD measurements of equipment need to be defined. And, guidance is needed how to deal with possible “external disturbances”, such as noise, transients due to switching actions, power electronics, corona and others.</p> <p>The topic is of high interest for application in research and development, quality control and quality assurance, as well as for standardisation. The Chairman of IEC TC 42 “High-voltage and high-current test techniques” has expressed explicit interest that the subject will be studied by CIGRE.</p> Scope : <ol style="list-style-type: none"> 1) Physical process: difference between AC and DC PD behaviour. 2) Operating conditions (polarization, temperature etc.) of different insulation systems under DC stress and effects on PD phenomena. 3) Basic PD parameters useful for PD measurements under DC voltage. 4) Preferred PD measurement techniques at DC voltage. 5) Procedures for measuring PD under DC voltage (suppression and/or discrimination of noise and other external disturbances from relevant PD). <p>Experts from interested equipment and subsystem committees (e.g. A2, A3, B1, B2, B3, B4) are welcome to join the group.</p> Deliverables : Technical brochure, summary report in Electra and Tutorial Presentation. Time Schedule : start in May 2015 Final report : 2018		
Comments from Chairmen of SCs concerned :		
Approval by Technical Committee Chairman : Date : 15/04/2015 		

(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