


CIGRE Study Committee D1

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

WG* N° D1.62	Name of Convenor : Bernd KOMANSCHEK (DE) E-mail address: bkomansc@te.com	
Technical Issues # ⁽²⁾: —		Strategic Directions # ⁽³⁾: 2
The WG applies to distribution networks ⁽⁴⁾: Yes		
Title of the Group: Surface Degradation of Polymeric Insulating Materials for Outdoor Applications		
Scope, deliverables and proposed time schedule of the Group :		
Background : There is an increasing use of polymeric insulators in AC and DC outdoor applications. Some concerns were communicated by insulator users regarding degradation of material surface that may limit the life-time of these products. Presently there is no scientific explanation for the root cause of this effect as well as the physico-chemical mechanism(s) involved. Therefore, it is important to gather more information about the phenomenon, to elucidate the involved degradation mechanism(s) and to derive potential countermeasures for various material groups.		
Scope : Explore root cause and mechanism(s) of surface degradation in polymeric materials for outdoor use. Assess risks imposed by the degradation on material performance, e.g. by means of Failure Mode Effect Analysis (FMEA):		
<ol style="list-style-type: none"> 1. Literature survey. 2. Gathering and selection of service aged samples from the field. 3. Investigation of degradation mechanism(s). 4. Definition of potential laboratory test procedures allowing to reproduce the surface degradation occurring under field conditions. 5. Performance of Round Robin Testing (RRT) on selected samples. 6. Derivation of possible improvements for the materials (if possible). 7. Comparison to improved materials (if possible). 		
Deliverables : Technical brochure, summary report in Electra and Tutorial Presentation.		
Time Schedule : Start : 2015		Final report : 2018
Comments from Chairmen of SCs concerned :		
Approval by Technical Committee Chairman : Date : 03/10/2014		

(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