CIGRE Study Committee D1

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP [1]

WG* N° D1.61	**Name of Convenor :** Nishal Mahatho (ZA)
Technical Issues # [2]: ---	**Strategic Directions # [3]:** 2
The WG applies to distribution networks [4]: Yes	
Title of the Group: Optical corona detection and measurement	

Scope, deliverables and proposed time schedule of the Group :

Background :

Currently there are a few ultra-violet (UV) cameras available internationally, and the meanings of the "measurements" that are taken by these cameras have been questioned by the industry for some time. Measurement of corona activities is something that needs further clarification for users of these technologies, especially as it relates to the proper identification of defective equipment.

From the user perspective, the value of being able to relate a quantity and severity to discharges that are observed on various pieces of equipment, such as insulators, hardware, etc., is of utmost importance. There are currently some suppliers/manufacturers that are claiming that a photon count is an accurate way of measuring the radiant energy generated by the corona discharge and hence indicating severity of the problem. However, if the camera instrument is not radiometrically calibrated and the influence of environmental factors such as distance and humidity on the transmission of the photons to the cameras is not taken into account, as well as the factors that affect the generation of the discharges from the defective equipment, no correlation can be made to the actual defect or cause of discharge.

The requirements of the users, the electrical industry and the camera industry should be defined to be able to provide sound scientific information and direction with regards to camera calibration and measurements.

Scope :

1. To develop or create the parameters for the development of corona measurements.
2. To define the necessary requirements for proper corona calibration sources that should be used. Preferably, comparative measurements should be performed on different sites and laboratories and by application of different types of cameras.
3. Based on established relationships and analysis of the necessary components, develop objective methods and indicators which can be used for corona detection on HV lines and equipment.
4. To consider and include recommendation where UV camera should be used as a tool for study or problem location, not necessarily a criterion for corona free design.

Deliverables : Technical brochure, summary report in Electra and Tutorial Presentation.

Time Schedule : start in January 2015 **Final report** : January 2017

Comments from Chairmen of SCs concerned :

Approval by Technical Committee Chairman :

Date : 26/09/2014

(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