CIGRE Study Committee B3

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

WG N° B3.39	**Name of Convenor:** Robert Luescher(Switzerland) **E-mail address**: robert.luescher@ge.com	
Technical Issues # (2): 10		**Strategic Directions # (3): 1**
The WG applies to distribution networks (4): No		
Title of the Group: Impact of NCIT applications on HV Gas Insulated Switchgear		

Scope, deliverables and proposed time schedule of the Group:

Background: NCIT's (Non-Conventional Instrument Transformers) have been available for some time and a few applications within GIS (Gas Insulated Substations) are in service. However the number of installations is still low and typically executed as pilot or trial applications; often in parallel with conventional instrument transformers. Nevertheless the interest in use of the technology is increasing.

The current service experience of NCIT's within GIS is promising. In the beginning proprietary solutions were dominant. Now the level of standardization is increasing. In particular the introduction of the standard IEC 61850-9-2 LE simplifies the integration of NCIT's and the use of standard secondary equipment for metering, control and protection. The impact of the use of NCIT's in GIS has not yet been discussed in detail by CIGRE. The aim of the working group is to collect current experience, provide information about impact and application to GIS, give guidance for implementation of NCIT's to GIS, discuss technical advantages and drawbacks and show some best practice examples.

Scope:

1. Review the performance and experience of the currently used technologies for NCIT's in GIS (Rogowski coils, optical, capacitive, Pockels or RC sensors, …)
2. Definition of NCIT-solution (system and interface)
3. Provide information and available experience about the advantages and drawbacks of NCIT used for GIS (manufacturer and customer aspects) including comparison to conventional IT (i.e. lifetime)
4. Evaluation of the impacts on Single Line Diagram (SLD) and layouts for GIS applications
5. Guidance for test and validation of NCIT-applications as part of the GIS, incl. calibration, factory routine tests, site acceptance tests, interoperability, redundancy concepts and interchangeability and maintenance
6. Guidance for regulatory aspects (i.e. tariff metering); certification for protection, metering and power quality purposes
7. Influence to the GIS operation and lifetime (safety, EMC, ferro-resonance, cable-line discharge, lifetime of components and lifetime management of the elements: sensors, primary converters, merging units)
8. Recommendations and case studies of NCIT applications to GIS

The current WG activities of A3.31 and B5.25 dealing with NCIT issues will be considered.

Deliverables: Report to be published in Electra or technical brochure with summary in Electra

Time Schedule: start: Start 2014 **Final report**: 2017

Comments from Chairmen of SCs concerned :
Approval by Technical Committee Chairman: **Date** :24/04/2014

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

Update 14/02/2020: Change Convener

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