CIGRE Study Committee B3

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

WG N° B3.50	**Name of Convenor:** Mark Reuter (GERMANY) **E-mail address**: mark.reuter@siemens.com
Strategic Directions #[2]: 2	**Technical Issues #[3]:** 8
The WG applies to distribution networks[4]: No	
Potential Benefit of WG work #[6]: 3	
Title of the Group: Concepts for on-site HV testing of GIS after installation, extension, retrofit or repair	

Scope, deliverables and proposed time schedule of the Group:

Background:

On-site high-voltage (HV) testing of the main circuit of gas-insulated switchgear (GIS) constitutes an important point in quality assurance of the GIS installation and commissioning procedures. For various rated voltage levels, different test voltage waveshapes are used to detect irregularities that may be detrimental to the dielectric integrity of the GIS. Varying relative effectiveness of these test procedures is assessed for different types of defects. Frequently on-site HV testing of GIS containing SF_6 or non-SF_6 gas is performed in conjunction with partial discharge (PD) measurements. Present information regarding procedures given in standards is also subject to agreement between the manufacturer and the user, especially when deviating from Standards or when simplified procedures are applied due to technical and/or practical reasons. Sometimes this can result in different viewpoints and potential disagreement. The choice of the final test procedure is mainly based on a combination of requirements in Standards, previous experience and up-to-date quality assurance concepts to balance the best possible compromise when looking at costs, feasibility and defect detection sensitivity. The results of this work will help the collaboration of user and manufacturer to establish a common understanding in the realization of on-site HV testing procedures of GIS in a quality-based, cost and time efficient way.

Scope:

The aim of this work is:

1. To review present Standards and recommendations for on-site HV testing of GIS,
2. To evaluate technical and practical reasons for deviations from recommendations and instructions given in corresponding Standards (e.g. IEC 62271-203 cl. C3.2.2),
3. To evaluate current practice for repetition procedures of on-site HV testing when assessing the test, for on-site HV testing of GIS in case of extensions and/or repair comprising different or same GIS generations of one OEM or even of different OEMs, and for considering GIS (modules) affected by on-site HV testing of HV cables connected to GIS,
4. To evaluate requirements for on-site HV testing equipment and testing staff,
5. To collect case studies and to compare with present reliability data in CIGRÉ TBs.

Deliverables:

☒ Technical Brochure and Executive summary in Electra

☒ Electra report

☐ Tutorial[5] (Note: uncertain, tbd. in WG)

Time Schedule: start November 2017 **Final Report**: 2021

Approval by Technical Committee Chairman:

Date: 17/11/2017

Notes: [1] or Joint Working Group (JWG), [2] See attached Table 2, [3]See attached Table 1,

[4] Delete as appropriate, [5] Presentation of the work done by the WG, [6] See attached table 3

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
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 (ref. 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

Table 3: Potential benefit of work

1	Commercial, business or economic benefit for industry or the community can be identified as a direct result of this work
2	Existing or future high interest in the work from a wide range of stakeholders
3	Work is likely to contribute to new or revised industry standards or with other long term interest for the Electric Power Industry
4	State-of-the-art or innovative solutions or new technical direction
5	Guide or survey related to existing techniques. Or an update on past work or previous Technical Brochures
6	Work likely to have a safety or environmental benefit