



2013 Activity Report

Study Committee D1

1. Highlights

- 3 new WGs were launched (2 WG D1, 1 JWG D1/B3)
- 1 Technical Brochure and 1 Intermediate-Report in Electra have been published
- 5 Tutorials/Workshops were held

2. Working group changes since the last TC meeting (March 2012):

- a. New WG/JWG
 - D1/B3.57 Dielectric Testing of Gas-insulated HVDC Systems
 - D1.58 Evaluation of dynamic hydrophobicity of polymeric insulating materials under AC and DC voltage stress
 - D1.59 Methods for dielectric characterisation of polymeric insulating materials for outdoor applications
- b. WG Disbanded
 - D1.28 Optimized Gas-insulated Systems by Advanced Dielectric Coatings and Functionally Graded Materials
- c. Total number of active WGs and JWGs: 29
- d. Allocation of WG to the 10 Technical Issues of the Network of the Future and the 4 TC Strategic Directions: see Appendix

3. Publications

- a. Publications since the last TC meeting (April 2013)
 - Electra Intermediate-Report: Retention of Hydrophobicity under DC voltage stress (WG D1.27), February 2014
 - CIGRE TB 571 Optimized Gas-insulated Systems by Advanced Insulation Techniques (WG D1.28), April 2014
- b. Publication plan for the coming year
 - TB xxx Diagnostics and accelerated life endurance testing of polymeric materials for HVDC application (WG D1.23)
 - TB xxx Application guide for pd detection in GIS using UHF or acoustic methods (WG D1.25)
 - TB xxx Degradation of silicone elastomers by surface discharges in outdoor insulation (WG D1.27)
 - TB xxx Fingerprinting methods for identification of polymeric materials for use in outdoor insulation (WG D1.27)
 - TB xxx Tracking and Erosion of polymeric materials under DC stress (WG D1.27)



2013 Activity Report

- TB xxx Partial discharges in transformers (WG D1.29)
- TB xxx Dielectric performance of insulating liquids for transformers (WG D1.31)
- TB xxx Condition assessment for oil-impregnated insulation used in ac cables (WG D1.34)
- TB xxx Past, present and future of IEC and IEEE high-voltage and high-current testing standards (WG D1.35)
- Electra Intermediate-Report: Requirements for UHV test techniques (WG D1.36)
- TB xxx Maintenance and evaluation of measuring procedures for conventional and unconventional partial discharge testing (WG D1.37)
- TB xxx Emerging test techniques common to High Temperature Superconducting power applications (WG D1.38)
- TB xxx Methods for Diagnostic/Failure Data Collection and Analysis (WG D1.39)
- TB xxx Functional Nanomaterials for Electric Power Industry (WG D1.40)
- TB xxx Radiation ageing of polymeric insulating material (WG D1.42)
- TB xxx Rotating machine insulation voltage endurance under fast repetitive voltage transients (WG D1.43)

4. Tutorials and workshops in 2013

- Workshop on “High Temperature Superconductors (HTS) for Utility Applications”, M. Noe & N. Hayakawa (WG D1.38), April 26, 2013, Beijing (CN)
- Workshop on “SF₆ – The Challenges for the Power System of the Future: Diagnostics and Condition Assessment Overview”, U. Schichler & W. Koltunowicz (AG D1.03), September 11, 2013, Brisbane (AU)
- Workshop on “Life Assessment of GIS Based on Service Experience and Diagnostics”, C. Neumann (AG D1.03), September 11, 2013, Brisbane (AU)
- Workshop on “SF₆ – Gas Mixtures and Alternatives”, Y. Kieffel (AG D1.03), September 11, 2013, Brisbane (AU)
- Tutorial on “Oxidation Stability of Insulating Liquids”, I. Hoehlein-Atanasova (WG D1.30), Sept. 11, 2013, Zurich (CH)

5. Strategic Plan and Action Plan :

still valid.

6. Planned SC meetings (in 2015 and next)

- In 2015 SC D1 will meet in Rio de Janeiro, Brazil, September 13-18, 2015
- In 2017 SC D1 will tentatively meet in Canada, September 2017



2013 Activity Report

7. Participation to Regional Meetings, colloquia and symposia :

- a. In 2013 (passed)
 - CIGRE UHV Colloquium in New Delhi, April 3-4, 2013
 - CIGRE SC B3 & D1 Colloquium 2013 in Brisbane (AU), Sept. 8-13, 2013
 - CIGRE Symposium Auckland (NZ), Sept. 16-20, 2013
- b. In 2014 and beyond (scheduled)
 - CIGRE SC D1 Colloquium 2015 in Rio de Janeiro (BR), Sept. 13-18, 2015
 - CIGRE SC D1 Colloquium 2017 tentatively in Canada, Sept. 2017, and probably jointly with B4.

8. Liaisons and Relations with other organisations

Good relations have been established to the relevant IEC Technical Committees; often CIGRE SC D1 experts are active in IEC working bodies and vice versa.

The main partners within IEC are:

TC 2 “Rotating Machines”,

TC 10 “Fluids for Electrotechnical Applications”,

TC 14 “Power Transformers”,

TC 36 “Insulators”,

TC 42 “High Voltage Test Techniques”,

TC 90 “Superconductivity” (Category A liaison to IEC TC 90, since Nov. 2012),

TC 112 “Evaluation and Qualification of Electrical Insulating Materials and Systems”

The chairman of SC D1 happens to be chairman of IEC TC 36; the chairman of TC 42 is the past chairman of SC D1. SC D1 has also good relationship to the relevant IEEE organisations mainly by the same members in the two organisations.

9. Specific action for the recruitment of young experts, Place of Women in SC

Special attention is paid to these subjects. There is consensus that SC D1 shall be open to young experts in as many groups as possible, and female experts are most welcome.

10. SC website : on-line contents and date of last update

The D1 Website contains relevant information for D1 members and (WG-)experts. The website will be updated latest in March 2014, when relevant access has been granted to the D1 Secretary.

In future, the D1 website will be updated whenever modifications need to be done.

11. Miscellaneous



2013 Activity Report

Appendix : Allocation of Working Groups to the four TC strategic directions

	Type	WG No	Title	Main TI	Main SD	Distrib. issues
1	WG	D1.23	Diagnostics and accelerated life endurance testing of polymeric materials for HVDC application	3	SD 1	Yes
2	WG	D1.25	Application guide for PD detection in GIS using UHF or acoustic methods		SD 1	No
3	WG	D1.27	Material Properties for New and Non-ceramic Insulation		SD 1	Yes
4	WG	D1.29	Partial Discharges in Transformers		SD 2	Yes
5	WG	D1.31	Dielectric Performance of insulating liquids for transformers		SD 3	Yes
6	WG	D1.34	Condition assessment for oil-impregnated insulation used in ac cables		SD 2	Yes
7	WG	D1.35	Performance of high-voltage and high-current measurement systems for high voltage testing		SD 1	Yes
8	WG	D1.36	Special requirements for dielectric testing of Ultra High Voltage (UHV) equipment		SD 1	No
9	WG	D1.37	Maintenance and evaluation of measuring procedures for conventional and unconventional partial discharge testing		SD 2	Yes
10	WG	D1.38	Emerging Test Techniques Common to High Temperature Superconducting (HTS) Power Applications		SD 1	Yes
11	WG	D1.39	Methods for Diagnostic/Failure Data Collection and Analysis		SD 2	Yes
12	WG	D1.40	Functional Nanomaterials for Electric Power Industry		SD 1	Yes
13	WG	D1.42	Radiation Ageing of Polymeric Insulating Materials		SD 2	Yes
14	WG	D1.43	Rotating machine insulation voltage endurance under fast, repetitive voltage transients		SD 2	Yes
15	WG	D1.44	Testing of naturally polluted insulators		SD 2	Yes
16	WG	D1.45	Testing of insulator performance under heavy rain		SD 2	No
17	JWG	D1.47	New Frontiers of Dissolved Gas Analysis (DGA) Interpretation for Power Transformers and their Accessories		SD 2	Yes
18	WG	D1.48	Properties of insulating materials under VLF voltages		SD 2	Yes
19	JWG	D1.49	Harmonised test for the measurement of residual inflammable gases in insulating materials by gas chromatography	8	SD 3	Yes
20	WG	D1.50	Atmospheric and altitude correction factors for air gaps and clean insulators	4	SD 1	Yes
21	WG	D1.51	Dielectric performance of eco-friendly gas insulated systems	7	SD 3	No
22	WG	D1.52	Moisture measurement in insulating fluids and transformer insulation – An evaluation of solid state sensors and chemical methods	8	SD 1	Yes
23	WG	D1.53	Ageing of upgraded cellulose and cellulose impregnated in ester liquids and other liquids (Revision of Technical Brochure No 323)	8	SD 1	Yes
24	WG	D1.54	Basic principles and practical methods to measure the AC and DC resistance of conductors of power cables and overhead lines	9	SD 2	Yes
25	WG	D1.55	Partial discharge detection under DC stress	3	SD 1	Yes
26	WG	D1.56	Field grading in electrical insulation systems	3	SD 1	Yes
27	JWG	D1.57	Dielectric Testing of Gas-insulated HVDC Systems	3	SD 1	No
28	WG	D1.58	Evaluation of dynamic hydrophobicity of polymeric insulating materials under AC and DC voltage stress	3	SD 1	Yes
29	WG	D1.59	Methods for dielectric characterisation of polymeric insulating materials for outdoor applications		SD 1	Yes

+ Technical Issues (cf. Electra 256 June 2011):

* Strategic Directions (cf. Electra 249 April 2010):

1 : The electrical power system of the future

3 : Focus on the environment and sustainability

2 : Making the best use of the existing power system

4 : Preparation of material readable for non technical audience