



2011 Activity Report

Study Committee B3

1. Highlights

SC B3 had a common event with IEEE Substation Committee in Chicago, May 15-19, coupled with SC B3 meeting. This event was considered by both organizations as a success. That was an opportunity of cross-information, of exchange of opinions through the proposed Tutorials, panel sessions or Round tables. It was agreed informally that the different approaches in IEEE and CIGRE were complementary. Two tutorials were presented by SC B3 members at Elecrama 2012 in Mumbai India in January 2012.

2. Working group changes since the last TC meeting :

a. New WG

- B3.31: Air insulated substations design for severe climate condition (February 2011)
- B3.32: Saving through optimized maintenance of Air insulated Substations (February 2011)
- JWG B3/B1.27: Factors for investment decision GIL vs. Cables for AC Transmission (March 2011)
- B3.36: Special Considerations for AC Collector Systems and Substations associated with HVDC connected Wind Powers Plants (October 2011)
- B3.34: Expected impact of future grid concept on substation management (May 2011)
- B3.24: Benefits of PD Analysis on GIS condition assessment (proposal for comment)

b. WG Disbanded

- B3.12: Obtaining Value from Substation Condition Monitoring (September 2011)
- B3.10: Primary/Secondary system interface modelling for total asset performance (August 2011)
- B3.26: Guidelines For The Design And Construction Of AC Offshore Substations For Wind Farms (December 2011)

c. Allocation of WG to the 10 Technical Issues of the Network of the Future and the 4 TC strategic directions

	Number	Title	TI	SD	Dx
1	B3/B1-09	Application of long high capacity Gas Insulated Lines in structures	TI 9	SD 1	
2	B3/B1-27	Factors for investment decision GIL vs. Cables for AC Transmission	TI 9	SD 2	
3	B3/C1/C2-14	Circuit configuration optimization	TI 8	SD 2	
4	B3-06	Substation Management	TI 10	SD 2	Yes
5	B3-10	Primary /Secondary system interface modelling for total asset performance optimization	TI 9	SD 2	Yes
6	B3-13	Reducing replacement time of HV Equipment	TI 9	SD 2	
7	B3-23	Uprating and upgrading of Substations	TI 9	SD 2	Yes



2011 Activity Report

	Number	Title	TI	SD	Dx
8	B3-24	Benefits of PD Analysis on GIS condition assessment (proposal for comment)	TI 8	SD 2	
9	B3-25	SF ₆ gas analysis for AIS, GIS and MTS condition assessment	TI 8	SD 3	Yes
10	B3-26	Guidelines For The Design And Construction Of AC Offshore Substations For Wind Farms	TI 9	SD 1	Yes
11	B3-29	Field tests technology an UHV substation during construction and operation	TI 10	SD 1	
12	B3-30	Guide to minimize the use of SF ₆ during routine testing of electrical equipment	TI 8	SD 2	
13	B3-31	Substations in Severe Climate Condition	TI 7	SD 3	Yes
14	B3-32	Saving through Optimized Maintenance of Air Insulated Substations	TI 8	SD 2	Yes
15	B3-34	Expected impact of future grid concept on substation management	TI 10	SD 1	Yes
16	B3-36	Special Considerations for AC Collector Systems and Substations associated with HVDC connected Wind Power Plants	TI 10	SD 1	

TI = Technical Issue

SD=Strategic Direction

Dx = applicable to Distribution

3. Publications

a. Publications since the last TC meeting (April 2011)

SC B3 publications in 2011 were following:

- Obtaining Value from on-line Substation Condition Monitoring : TB N° 462 issued in June 2011
- Primary/Secondary system interface modelling for total asset performance optimization : TB N° 472 issued in August 2011
- Guidelines For The Design And Construction Of AC Offshore Substations For Wind Farms : TB N°483 issued in December 2011

b. Publication plan for the coming year

Following SC B3 publications are planned for 2012:

- Integral Decision Process for Substation Equipment Replacement: TB N° 486 issued in February 2012.
- Residual life concepts applied to HV GIS: TB to be issued in June 2012.
- Guidelines for up-rating and upgrading of substations: TB to be issued in 2012.
- Field tests technology on UHV substations during construction and operation : Should be issued at the end of 2012

4. Tutorials and workshops in 2011

The Common IEEE/CIGRE Chicago event in May 2011 gave interesting Tutorial opportunities from both CIGRE and IEEE side.

The SC B3 Tutorial topics were:

- “Application guidelines for turnkey substation projects”
- “Uprating and upgrading of existing substations and equipment”
- “Responsible use of SF₆; Challenges and options”



2011 Activity Report

- “Substation circuit configuration optimization”
- “Introduction to substation concepts”
- “GIS/AIS/MTS: overview of substation technology”
- “HV substations”
- “Substation solutions enabling a smart grid”
- “Offshore substations”

Two members of SC B3 attended the Elecrama, January 2012, Mumbai India. The SC B3 tutorial topics were:

- “Responsible Use of SF6 – Challenges and Options”
- “Standardisation vs. innovation in substation design”

5. Strategic Plan and Action Plan :

The WG Strategic Plan was revised and updated in 2009 in accordance with TC Strategic Plan. It considers 4 Strategic technical directions, one is dealing with the Impact of new communication standards and Smart Grids on existing and new substations:

- T1. New substation concepts: Development of new concepts including bus arrangements, hybrid solutions, new applications and functions including specification of corresponding design/layout criteria for substations constituting integral parts of totally optimised networks
- T2. Substation management issues: Organisational aspects including human resource and training needs, in-service support, software management including quality control and maintenance. Asset management including technical, financial and regulatory requirements.
- T3. Life cycle management and maintenance: Monitoring in-service experience including digital and sophisticated measuring equipment, substation condition assessment, aspects of maintenance outsourcing, short-and long-term needs, opportunities for cost reduction, spare parts. Increased utilisation (life extension, upgrading, dynamic loading), refurbishment / renovation concepts, investment strategies, principles for combining existing and new equipment - taking into account specific demands from network-reliability and customer demand-side points of view.
- T4. Impact of new communication standards and Smart Grids on existing and new substations: New technologies to be used in substations, impact of distributed generation and power flow control systems, increased use of advanced information and communication technologies under HV conditions.

Review of the SC B3 Strategic plan is on-going, was a topic of the Strategic Advisory Group meeting in Manchester in December 2011 and will also be a topic for review and update in May 2012 in Baden, Switzerland.

6. Planned SC meetings (in 2011 and next)

In 2011 SC B3 meeting was held in Chicago on May 18th, 2011. The next meeting will be held in Paris on August 30th, 2012. The following meeting will be held in Brisbane Australia in September 2013.



2011 Activity Report

7. Participation to Regional Meetings, colloquia and symposia :

a. In 2011 (passed)

- Elecrama 2012 in Mumbai India in January 2012

b. In 2012 and beyond (scheduled)

- 2nd IEEE-CIGRE Expert Round table on On-Line Condition Monitoring, Raleigh, NC, USA in 10 May 2012;
- A joint B3/D1 Colloquium associated with the SC meeting will be held in Brisbane in September 2013.

8. Relations with other organisations

In addition to interchange with other Study Committees and working groups, SC B3 maintains contact and relations with other organisations including:

- IEC
- IEEE
- CIRED

These interchanges are reported at annual SC meetings and other forums.

9. Specific actions for the recruitment of young experts

Young experts are a key focus for Study Committee B3. In Chicago, young attendees were encouraged to attend the meeting and especially the tutorial presentations to assist in developing understanding of the work of the SC. In some member countries, young local members are invited to attend meetings held in home regions to assist in exposing potential new members and scholarships offered to assist in attending Paris sessions.

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

This is on-going. SC Secretary, Claude Counan is nominated web contact point for the SC and keeps the site updated and content fresh. Further expansion of the site and its functionality is expected with the new format.

11. Miscellaneous

Franz Besold (Chairman, SC B3) has been unable to attend a number of meetings since the TC meeting in 2011. Claude Counan has maintained communications and Terry Krieg has carried out some functions as required.

Terry Krieg
Claude Counan

20 March 2012