



2013 Activity Report

Study Committee C4

1. Highlights

- a. Created five (5) new WGs and disbanded eight (8) WGs with successful completion of their work and publication of TBs
- b. Updated and posted the new SC Strategic Plan
- c. Established the new Advisory Group structure under SC C4 with newly appointed advisors
- d. Started new initiative within the SC to collect short biographies and liaison activity information from SC C4 members and post this information on the SC C4 member's area.

2. Working Group changes since the last TC meeting

a. New WG

Five new WGs:

- i. JWG C4.24/CIRED Power Quality and EMC Issues associated with future electricity networks
- ii. WG C4.34 Application of Phasor Measurement Units for monitoring power system dynamic performance
- iii. JWG C4/C6.35/CIRED Modelling and dynamic performance of inverter based generation in power system stability studies
- iv. WG C4.36 Winter Lightning – Parameters and Engineering Consequences for Wind Turbines
- v. JWG A2/C4.52 High-frequency transformer models for non-standard waveforms

b. WG Disbanded

Eight WGs disbanded:

- i. C4-502 Power system technical performance issues related to the application of long HVAC cables
- ii. C4-407 Lightning Parameters for Engineering Applications
- iii. C4.408 Lightning Protection of Low-Voltage Networks
- iv. C4-303 Pollution and environmental influence on the electrical performance of power systems
- v. C4.605 Modelling and aggregation of loads in flexible power networks
- vi. C4.307 Resonance and Ferroresonance in Power Networks and Transformer Energization Studies
- vii. C4.409 Lightning Protection of Wind Turbine Blades
- viii. JWG A2/C4.309 Electrical Transient Interaction between Transformers and the Power System

c. Total number of active, WGs, JWGs

C4 currently has 23 active WGs

d. Allocation of WG to the 4 TC Strategic Directions and the 10 Technical Issues of the Network of the Future (only one SD and TI per WG)

- i. Technical Issues:



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1. Four (4) WGs on Technical Issue 1
 2. Two (2) WGs on Technical Issue 2
 3. One (1) WG on Technical Issue 3
 4. One (1) WG on Technical Issue 5
 5. Ten (10) WGs on Technical Issue 8
 6. Two (3) WGs on Technical Issue 9
 7. Two (2) WGs on Technical Issue 10
- ii. Strategic Directions:
1. 15 WGs on Strategic Direction 1
 2. 7 WGs on Strategic Direction 2
 3. One (1) WG on Strategic Direction 3

3. Publications

- a. Publications since the last TC meeting (April 2013)

Published:

- i. CIGRE TB on Pollution and environmental influence on the electrical performance of power systems, WG C4.303
- ii. CIGRE TB on Power system technical performance issues related to the application of long HVAC cables, WG C4.502
- iii. CIGRE TB on Modelling and aggregation of loads in flexible power networks, C4.605
- iv. CIGRE TB on Resonance and Ferroresonance in Power Networks, WG C4.307
- v. CIGRE TB on Transformer Energization in Power Systems: A Study Guide, WG C4.307
- vi. CIGRE TB on Lightning Parameters for Engineering Applications, WG C4.407
- vii. CIGRE TB on Lightning Protection of Low-Voltage Networks, WG C4.408

Submitted, pending publication:

- i. CIGRE TB on Lightning Protection of Wind Turbine Blades, WG C4.409
- ii. JWG A2/C4.309 Electrical Transient Interaction between Transformers and the Power System (submitted by A2, the lead SC)

- b. Publication plan for the coming year

Very soon to be disbanded (TB is currently under review)

- i. WG C4.206 Protection of the high voltage power network control electronics against intentional electromagnetic interference (IEMI)

WG expected to complete their tasks in the next twelve months

- i. WG C4.111 Review of LV and MV Compatibility Levels for Voltage Fluctuation
- ii. WG C4.207 EMC with communication circuits, low voltage systems and metallic structures in the vicinity of power systems



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- iii. WG C4.305 Practices in Insulation Coordination of Modern Electric Power Systems Aimed at the Reduction of the Insulation Level
- iv. WG C4.410 Lightning Striking Characteristics to Very High Structures
- v. WG C4.503 Numerical techniques for the computation of power systems, from steady-state to switching transients
- vi. WG C4.603 Analytical Techniques and Tools for Power Balancing Assessments

4. Tutorials and workshops in 2013

Two tutorials in 2013:

1. Tutorial on Resonance and Ferroresonance in Power Networks, Working Group C4.307 in Zurich, Switzerland at the Joint A2/C4 Colloquium, September 2013.
2. Tutorial on Electrical Transient Interaction between Transformers and the Power System, WG A2/C4.39 in Zurich, Switzerland at the Joint A2/C4 Colloquium, September 2013.

- 5. Strategic Plan and Action Plan:** The new strategic plan for SC C4 was presented at the TC meeting in Charlotte, NC, USA in October 2013 and approved by the TC chairman. It is presently published on the SC C4 public website:

<http://c4.cigre.org/Technical-activities/Strategic-Plan>

6. Planned SC meetings

- a. 2015 SC C4 meeting will be at the Lund Symposium, Sweden, May, 2015
- b. 2017 SC C4 meeting (not yet selected)

7. Participation to Regional Meetings, colloquia and symposia :

- a. International Colloquium on UHV, India, April 3-4, 2013 (SC C4 helped organize one of the sessions)
- b. CIGRE International Symposium, Lisbon, Portugal, April 22-24, 2013 (SC C4 organized five of the paper sessions)
- c. CIGRE 3rd International Colloquium on EMF, October 15-16, 2013, Nara, Japan (SC C4 helped organize one of the paper sessions)
- d. CIGRE International Colloquium on Lightning and Power Systems, Organized by SC C4, Lyon, France, May 12-14, 2014

8. Liaisons and Relations with other organisations

1. Pouyan Pourbeik, Chairman of SC C4 is also Vice-Chairman of IEEE PES Power System Dynamic Performance Committee and a member of IEC TC88 WG27
2. We have several joint WGs with CIRED
3. William Radasky, Convenor of WG C4.32 and WG C4.206, is Chairman of IEC SC 77C (EMC: High Power Transient Phenomena).
4. Shigeru Yokoyama, Convenor of WG C4.409, is a member of IEC TC 81.



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5. Hideki Motoyama, Secretary of SC C4, is a member of IEC JWG22/TC28, TC42, TC36, TC115 and a member of IEEE PES Lightning Performance of Overhead Lines WG.

In addition, we started an initiative within the SC to collect information about all activities of SC C4 members in other professional organizations and to post this in the member's area of our website so as to have a good idea of relationships with other organizations.

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

We make every effort, where possible, to encourage and select young experts and women to get engaged in the SC WGs and activities. Currently, one of the SC C4 members is a female expert; two of the selected Advisory Group members are female experts, and several of our WG conveners are young experts. Many of our WG members are also young experts. We do not have a good estimate of the number of female WG members.

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

The URL of the SC C4 website is <http://c4.cigre.org/>. The website provides the standard information about scope, strategic plan, structure, the organization chart and the list of members of the SC, as well as WGs, and recent or upcoming meetings. In the membership area, the following items are uploaded: the zip file of all TORs of approved and active WGs, the member list of all active WGs, all proposed WG TORs under review, the minutes of recent meetings, as well as other pertinent documents (e.g. TBs to be reviewed by the SC for approval and publication). In addition, the website of active WGs is provided at <http://c4.cigre.org/WG-Area>. Each website is managed by each WG convener and the SC C4 web master.

The website was last updated in February, 2014.

11. Miscellaneous

No other items to report.