



Study Committee A3

CIGRE A3 TC report to IEEE switchgear committee

Fall 2015 meeting, San Diego

Nenad Uzelac, CIGRE A3 USNC representative

What is CIGRE?



Founded in 1921, CIGRE, the Council on Large Electric Systems

An international Non-profit Association for promoting **collaboration** with experts from around the world by **sharing knowledge** and joining forces to **improve electric power systems** of today and tomorrow.



7729 individual members from 90 countries in 2013



CIGRE Technical Committee/ 16 Study Committees

A: Equipment

A1 Rotating electrical machines

N. Smith (S. Africa)

A2 Transformers

C. Rajotte (Canada)

A3 High voltage equipment

H. Ito (Japan)

Disseminate new technology and
Promote international standardization

Technical committee

Chairman: M. Waldron (UK)

Secretary: Y. Maugain (France)

Secretary General: P. Adam (France)

B: Sub-system

B1 Insulated cables

P. Argaut (France)

B2 Overhead lines

K. Papailiou (Switzerland)

B3 Substations

T. Krieg (Australia)

B4 HVDC and Power electronics

M. Rashwan (Canada)

B5 Protection and Automation

I. Patriota de Siqueira (Brazil)

Perform studies on topical issues of electric
power system and Facilitate the exchange of
information

C: System

C1 System development & economics

K. Staschus (Germany)

C2 System operation & control

J. Vanzetta (Germany)

C3 System environmental performance

F. Parada (Portugal)

C4 System technical performance

P. Pourbeik (USA)

C5 Electricity markets & regulations

A. Ott (USA)

C6 Distribution systems &
dispersed generation

B. Buchholz (Germany)

D: Common technology

D 1 Materials and emerging test technique

J. Kindersberger (Germany)

D 2 Information systems and telecommunication

C. Samitier (Spain)

What is Study Committee A3?

Founded in 1921 as SC 3 studied design and developments on circuit breakers. In 2002 the scope was extended to all substation equipment.

Includes MV and HV equipment



72.5kV 31.5kA 2500A VCB



145kV 31.5kA 3150A CO₂ GCB



1100kV Series-capacitor bank



800kV DC Bypass Disconnecter



1200kV AC MOSA



800kV DC MOSA



550kV LT-GCB



Internal arc failure



12kV, 800A Superconducting Fault Current Limiter

Coordination with IEC SC17A

CIGRE continues to explore the technical background for standards since CIGRE was founded on IEC demand for this purpose.

In particular, SC A3 keeps this service available and catches the standardization needs keeping in good contact with IEC SC 17A.

Coordination with CIREN

CIGRE expands the collaboration with CIREN.

A3 established JWG.A3.32/CIREN on Non-intrusive methods for condition assessment . CIREN experts participated in the JWG.

Relations with IEEE

Cooperate at WG investigations, US contributes a leadership of WGs
Tutorial to facilitate CIGRE investigations on common subjects;
UHV standardization, VCB, Non-intrusive condition assessment, etc

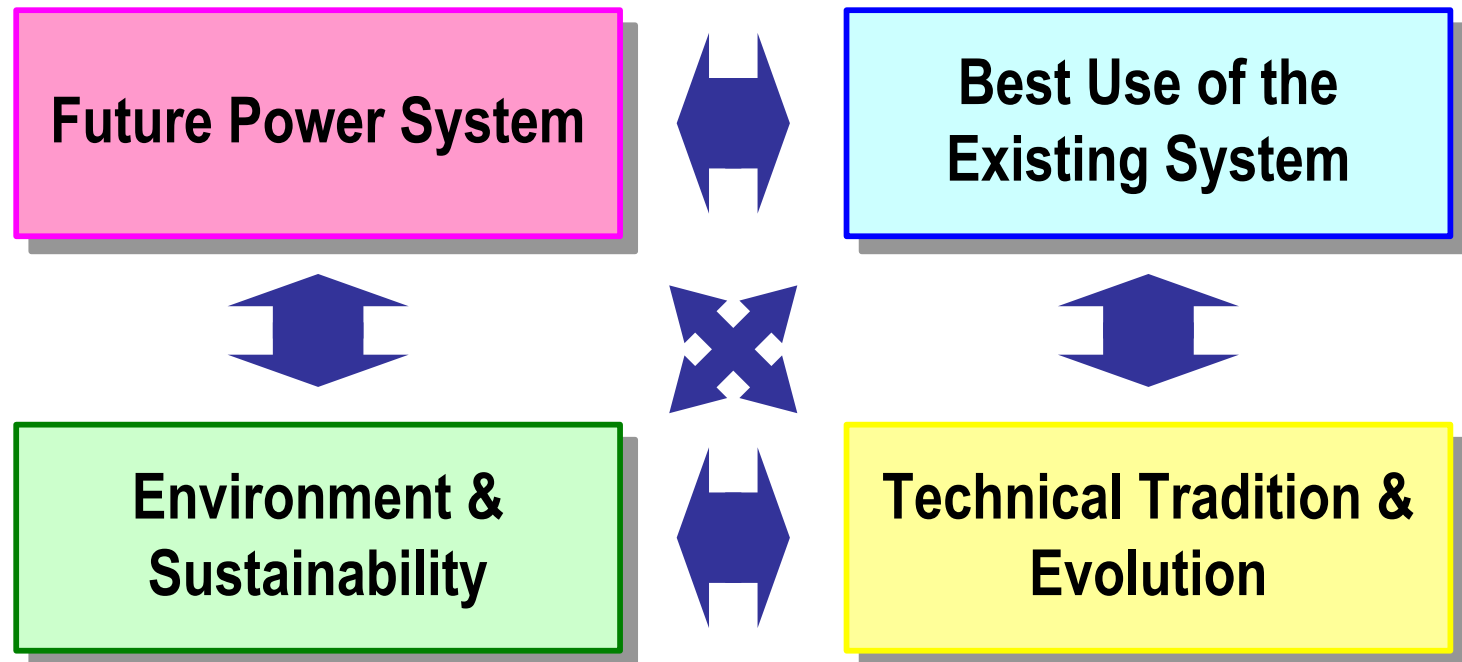
CIGRE Technical Committee Strategic Directions (SD)

SD1: Prepare the “strong and smart” power system of the future

SD2: Make the best use of the existing equipment and system

SD3: Answer the environment concerns

SD4: Develop knowledge and information



CIGRE Events

Paris Sessions
(even years)



...
2010
2012
2014
2016

...

...
2009

2011

2013

2015

...



Symposia
(odd years)

- Calgary (CA)
- Guilin (CN)
- Bologna (IT)
- Recife (BR)
- Lisbon (PT)
- Auckland (NZ)
- Lund (SE)
- Capetwon (ZA)

Colloquia & Regional events

A3 activities in accordance with TC strategic directions

- SD1: Prepare the strong & smart power system of the future
 - WG A3.25: MOSA/varistors for emerging system
 - WG A3.26: Capacitor bank switching
 - WG A3.31: NCIT with digital output
 - WG A3.33: Equipment for series / shunt compensation
 - JWG A3/B4.34: DC switching equipment
 - JWG A3/B5/C4.37: Out-of-phase experience
- SD2: Make the best use of the existing equipment and system
 - WG A3.29: Deterioration and ageing process of HV equipment
 - WG A3.30: Overstressing aspects of substation equipment
 - WG A3.32: Non-intrusive methods for condition assessment
 - WG A3.35: Commissioning practices of controlled switching
 - WG A3.36: Multi-physic simulation for temperature rise test
- SD3: Answer the environment concerns
 - SF6 alternatives
- SD4: Development knowledge and information
 - All WGs, Tutorials and Green book

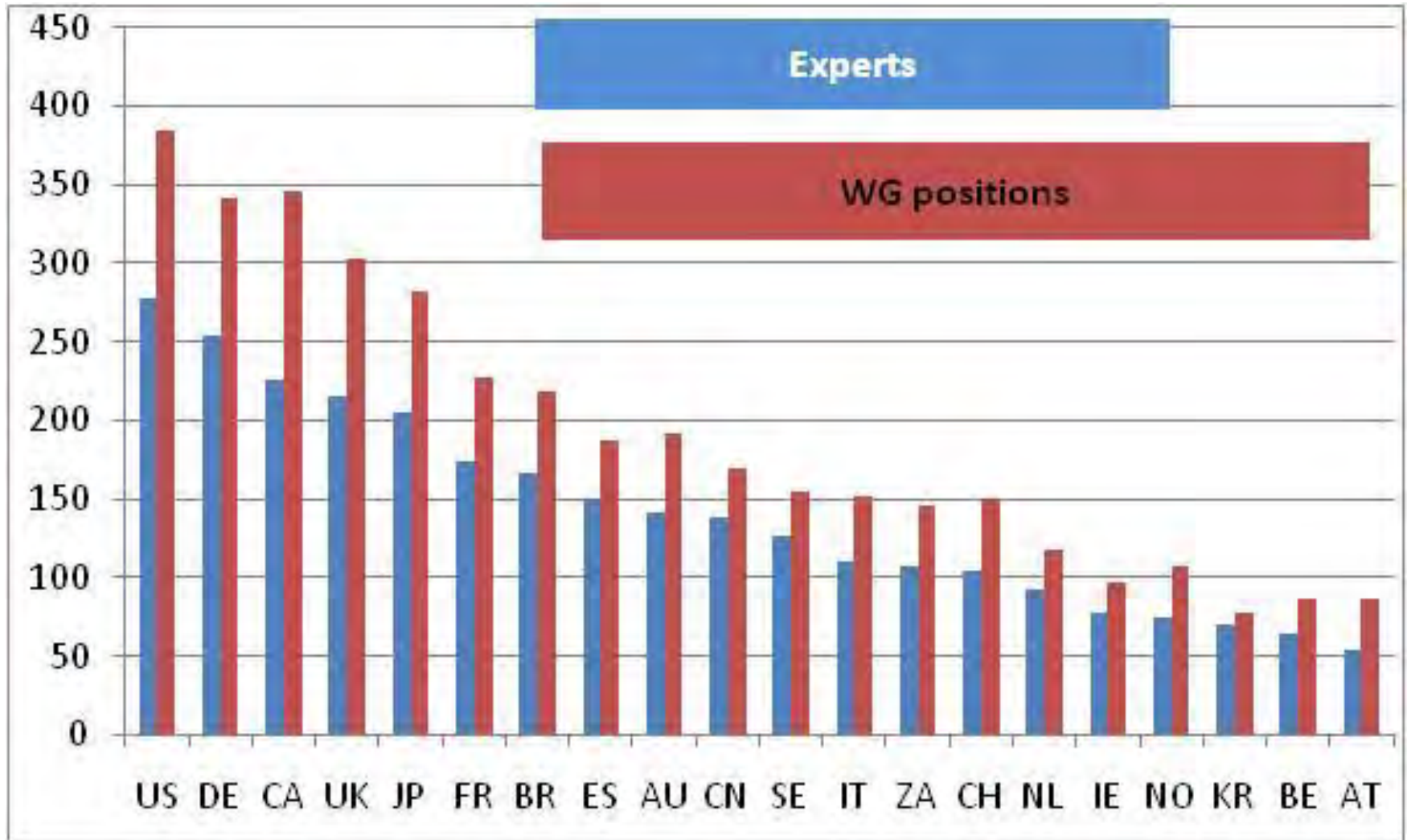
CIGRE TB publications

- TB 624 Influence of shunt capacitor bank on CB fault interruption duties : WG A3.26
- TB 602 Tools for simulation of the internal arc effects in HV & MV switchgear : WG A3.24
- TB 589 Vacuum Switchgears at transmission voltages : WG A3.27
- TB 570 Switching Phenomena for EHV and UHV Equipment : WG A3.28
- TB 544 Metal Oxide (MO) Surge Arresters - Stresses and Test procedures : WG A3.17
- TB 514 Reliability of High Voltage Equipment - Part 6: GIS Practices
- TB 513 Reliability of High Voltage Equipment - Part 5: Gas Insulated Switchgear
- TB 512 Reliability of High Voltage Equipment - Part 4: Instrument Transformers
- TB 511 Reliability of High Voltage Equipment - Part 3: DS & Earthing Switches
- TB 510 Reliability of High Voltage Equipment - Part 2: SF6 Circuit Breakers
- TB 509 Reliability of High Voltage Equipment - Part 1: General Matters : WG A3.06
- TB 497 Applications and Feasibility of Fault Current Limiters in Power Systems: WG A3.23
- TB 456 Background of technical specifications for UHV substation equipment: WG A3.22
- TB 455 Application of composite insulators to high voltage apparatus : WG A3.21
- TB 408 Line fault phenomena and their implications for 3-phase SLF/LLF clearing : A3.19
- TB 394 State of the art of instrument transformer : WG 12.16 / SC A3
- TB 368 Operating environment of voltage grading capacitors applied to HV CB : WG A3.18
- TB 362 Technical requirements for substation equipment exceeding 800 kV AC: WG A3.22
- TB 339 Guideline on the Impact of FCL devices on protection system : WG A3.10

U.S. Representatives to CIGRÉ Study Committees

- A1-Bill Moore (National Electric Coil)
- A2-Raj Ahuja (Waukesha Electric Systems)
- A3- Nenad Uzelac (G&W Electric)
- B1-Mohammad Pasha (United Illuminating)
- B2-Jennifer Havel (BPA)
- B3-John Randolph (PG&E)
- B4-Sebastian Achilles (GE Digital Energy)
- B5-Rich Hunt (GE Digital Energy)

US representatives



Working Groups/Task Forces

Member Selection Process

- Interested candidates must have dues paid and send CV
- Obtain email address for new WG Convener and submit candidates' CVs directly to Convener
- Request Convener to confirm candidates' membership
 - Can have two USNC members on each WG
- If no USNC candidates interested in a new WG, will ask new WG Convener for knowledge of US experts, and will contact them to see if they are interested in joining
- If more than two candidates are interested in same WG, set up a “shadow WG” within the USNC

2016 Synopses Selection Process

- 48 Abstracts Received
- Abstracts Reviewed and Scored with Following Criteria:
 - Relevance to SC Preferential Subjects
 - Technical Content
 - Clarity of Synopsis
 - Avoid Commercialism
- 30 Synopses Submitted to Paris; 26/30 (87%) Accepted for 2014 and 83% Accepted for 2012

Future CIGRÉ Meetings

- **2015 Grid of the Future (GOTF) Symposium**
 - Chicago, IL - October 11 – 13, 2015

REGISTER AT

cigre-usnc.org

- **2016 Events**

- USNC Annual Meeting - July
 - Coincident with IEEE PES Summer Mtg
- Paris – CIGRE Session 46 – August 21-26
- Philadelphia – Joint GOTF/Colloquium – Late October or Early November

Interested to learn more?

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