



SC B4
DC SYSTEMS AND POWER ELECTRONICS



SC B4 DC SYSTEMS AND POWER ELECTRONICS

CIGRE
Comitato Nazionale Italiano

Riunione del 29 Novembre 2018
c/o Auditorium TERNA - Roma

Sintesi delle attività



Presidente: Mohamed Rashwan (Canada)

Segretario: Jingxuan (Joanne) Hu (Canada)

Membro italiano: Stefano Malgarotti da agosto 2016

4 ADVISORY GROUPS

- **AG 01: Strategic Advisory Group**
- **AG02 DC Grid Coordination**
- **AG03 Communication and website**
- **AG04: HVDC system and FACTS Device Performance**

15 Working Groups attivi, di cui 3 *joint*

WGs attivi del B4

NAME	GIVEN NAME	STATUS	WG	
Koreman	Kees (C.G.A.)	convener	JWG B4/B5.59	Control and Protection of HVDC Grids
Beerten	Jef	Convener	B4.64	Impact on AC System Characteristics on the Performance of HVDC schemes
Parisot	Alexandre	Convener	JWG B4/C1.65	Recommended voltages for HVDC grids
Cattan Jusan	Fernando	Convener	B4.66	Implications for harmonics and filtering of the staggered installation of HVDC converter stations in proximate locations
Shore	Nigel	Convener	B4.67	Harmonic aspects of VSC HVDC, and appropriate harmonic limits
Shore	Nigel	Convener	B4.68	Revision of Technical Brochure 92 – DC Harmonics and Filtering
Woodford	Dennis	Convener	B4.69	Minimizing loss of transmitted power by VSC during overhead line fault
Dennetière	Sébastien	Convener	B4.70	Guide for Electromagnetic Transient Studies involving VSC converters
Mohaddes	Mojtaba	Convener	B4.71	Application guide for the insulation coordination of Voltage Source Converter HVDC (VSC HVDC) stations
An	Ting	Convener	B4.72	DC grid benchmark models for system studies
Saltzer	Markus	Convener	JWG B4/B1/C4.73	Surge and extended overvoltage testing of HVDC Cable Systems
Guo	Qi	Convener	B4.74	Guide to Develop Real-Time Simulation Models (RTSM) for HVDC Operational Studies
Rathke	Christian	Convener	B4.75	Feasibility Study for assessment of lab losses measurement of VSC valves
Jovic	Dragan	Convener	B4.76	DC-DC converters in HVDC Grids and for connections to HVDC systems
Walker	Kerry	Convener	B4.78	Cyber Asset Management for HVDC/FACTS Systems



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Partecipazione Italiana ai WGs attivi del B4

NAME	GIVEN NAME	STATUS	WG	WG Title	EMAIL ADDRESS
Pitto	Andrea	Member	JWG B4/B5.59	Control and Protection of HVDC Grids	andrea.pitto@rse-web.it
Sommantico	Gabriele	Member	JWG B4/C1.65	Recommended voltages for HVDC grids	gabriele.sommantico@terna.it
Valade	Ivan	Member	JWG C4/B4.38	Network Modelling for Harmonic Studies	ivan.valade@cesi.it
Agustoni	Alessandro	Corresp. member	B4.70	Guide for Electromagnetic Transient Studies involving VSC converters	alessandro.agustoni@cesi.it
Mattia	Pazienza	Member	B4.71	Application guide for the insulation coordination of Voltage Source Converter HVDC (VSC HVDC) stations	mattia.pazienza@terna.it
Colla	Luigi	Member	JWG B4/B1/C4.73	Surge and extended overvoltage testing of HVDC Cable Systems	luigi.colla@prysmiangroup.com
Crippa	Alessandro				alessandro.crippa@cesi.it
Parma	Ferdinando	Member	C2/B4.38	Capabilities and requirements definition for Power Electronics based technology for secure and efficient system operation and control	ferdinando.parma@cesi.it
Danelli	Aldo	Member	B4.74	Guide to Develop Real-Time Simulation Models (RTSM) for HVDC Operational Studies	aldo.danelli@cesi.it

Partecipazione Italiana a nuovi WGs del B4

Danelli	Aldo	Member	B4.79	Hybrid LCC/VSC HVDC Systems	aldo.danelli@cesi.it
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Standardization bodies (IEC)

- IEC 20 / WG 016 High Voltage Cables - **MEREGALLI SERGIO**
- IEC - PT 62895 High Voltage Direct Current (HVDC) power transmission cables with extruded insulation and their accessories for rated voltages up to 320 kV for land applications - Test methods and requirements, TC20 , 2014 – **UBERTO VERCELLOTTI**

ANTONIO ARDITO (IEC AND CENELEC OFFICER)

- IEC 77A/WG01 harmonics and other low-frequency disturbances,
- IEC77A/WG02 voltage fluctuations,
- IEC77A/WG08 description of the emc environment
- IEC77A/WG09 power quality measurement methods
- CEI Italian Electrical Committee, CT115/122 "HVDC (above 100 kV) and UHV AC (above 800 kV) Transmission Systems" (mirror of IEC/CENELEC): Chairman: **ANTONIO ARDITO**, Secretary: **STEFANO MALGAROTTI**
- IEC / TC 115 WG 5 System design of HVDC project - **MURGIA PIERO**
- CEI Italian Electrical Committee, CT22 "Power Electronics" (mirror of IEC/CENELEC): Chairman: Antonio Ardito – Secretary: **MIGUEL FICARRA**

Publicazioni 2017-2018 (Tech. Brochures) 1/3

Reference: **675**



Type:
TECHNICAL BROCHURES

Title:
General guidelines for HVDC electrode design

Reference: **683**



Type:
TECHNICAL BROCHURES

Title:
Technical requirements and specifications of state-of-the-art HVDC switching equipment

Reference: **684**



Type:
TECHNICAL BROCHURES

Title:
Recommended voltages for HVDC grids

Publicazioni 2017-2018 (Tech. Brochures) 2/3

Reference: **697**



Type:

TECHNICAL BROCHURES

Title:

Testing and commissioning of VSC HVDC systems

Reference: **699**



Type:

TECHNICAL BROCHURES

Title:

Control methodologies for direct voltage and power flow in a meshed HVDC grid

Reference: **713**



Type:

TECHNICAL BROCHURES

Title:

Designing HVDC grids for optimal reliability and availability performance

Publicazioni 2017-2018 (Tech. Brochures) 3/3

Reference: **717**



Type:
TECHNICAL BROCHURES

Title:
Protocol for reporting operational performance of FACTS

Reference: **739**



Type:
TECHNICAL BROCHURES

Title:
Protection and local control of HVDC-grids

Publicazioni 2017 (Electra)

Electra
Control methodologies for
direct voltage and power...



Ref.: ELT_294_5
2017

Electra
Commissioning of VSC HVDC
systems



Ref.: ELT_294_3
2017

Electra
Recommended voltages for
HVDC grids



Ref.: ELT_292_2
2017

Electra
Technical requirements and
specifications of...



Ref.: ELT_292_1
2017

Electra
General guidelines for HVDC
electrode design



Ref.: ELT_290_7
2017


Electra
Connection of wind farms to
weak AC networks



Ref.: ELT_290_3
2017

Publicazioni 2018 (Electra)


Electra
Protection and local control
of HVDC-grids



ELECTRA
#300

Ref.: ELT_300_4
2018

Electra
Protocol for reporting
operational performance...



ELECTRA

Ref.: ELT_297_2
2018

Electra
Designing HVDC grids for
optimal reliability and...



ELECTRA

Ref.: ELT_296_6
2018

Publicazioni 2017 (Colloquia Paper)

Reference: **COLL_WIN_2017**



Type:
COLLOQUIA

Title:
Colloquium - Winnipeg 2017 - A3, B4 & D1

Green Book (pubblicazione futura 2019/20)

SC B4 Green Book on FACTS

Risultati tecnici principali della Session 2018

La sessione ha visto la presenza di oltre 250 delegati. Sono stati presentati 45 papers. La discussione ha visto 67 “prepared contributions” and 27 “spontaneous contributions” . Come sempre l’elevato numero di paper (e relative “contributions”) riflette il grande interesse per l’HVDC e più in generale per la Power Electronics.

Preferential Subject 1: “HVDC systems and their applications” con i seguenti argomenti di discussione:

- Planning and implementation of new HVDC projects (including, need, justification, design, integration of wind generation, environmental and economic assessment)
- Application of new technologies in HVDC, HVDC Grids / Multi-Terminal HVDC
- Refurbishment and upgrade of existing HVDC systems
- Service and operating experience

Risultati tecnici principali della Session 2018

Preferential Subject 2: “DC and other Power Electronic (PE) systems for distribution systems” con i seguenti argomenti di discussione:

- PS2-1: Medium voltage HVDC and its applications in distribution systems
- PS2-2: Planning and implementation of new distribution projects
- PS2-3: New concepts, designs

Preferential Subject 3: “FACTS and other Power Electronic (PE) systems for transmission systems” con i seguenti argomenti di discussione:

- Planning and implementation of new projects (including, need, justification, FACTS devices for Renewables, environmental and economic assessment)
- Application of new technologies in FACTS and other PE equipment
- Refurbishment and upgrade of existing FACTS and other PE systems
- Service and operating experience



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Next Meetings 2019

- **April 23 - 26, 2019 - Hakodate (Japan) CIGRE/IEC UHV & EHV (AC&DC) Symposium A2/A3/B1/B2/B3/B4/C4/D1**
- **June 4 - 7, 2019 - Alborg (Denmark) - Symposium C4/B1/B4/C1/C2**
- **September 28 – October 3, 2019 - CIGRE B4 International Colloquium – Johannesburg (South Africa)**

Preferential Subjects 2020

Special reporters : Ting An and Les Brand

PS 1 : HVDC systems and their applications

- Planning and implementation of new HVDC projects including, need, justification, design, integration of renewables, environmental and economic assessment
- Application of new technologies in HVDC, HVDC Grids / Multi-Terminal HVDC, and hybrid dc systems
- Refurbishment and upgrade of existing HVDC systems
- Service and operating experience of converter stations including off shore platforms.

PS 2:DC and Power Electronic (PE) for distribution systems

- DC deployed in distribution systems
- PE and FACTS devices applied in distribution projects including the economics and reliability
- New concepts and designs
- Power electronics interfacing generation and storage to the network

PS 3: FACTS

- Planning and implementation of new projects including, need, justification, FACTS devices for renewables, environmental and economic assessment
- Application of new technologies in FACTS and other PE equipment
- Refurbishment and upgrade of existing FACTS and other PE systems
- Service and operating experience