

DIRECT CURRENT STANDARDISATION OVERVIEW

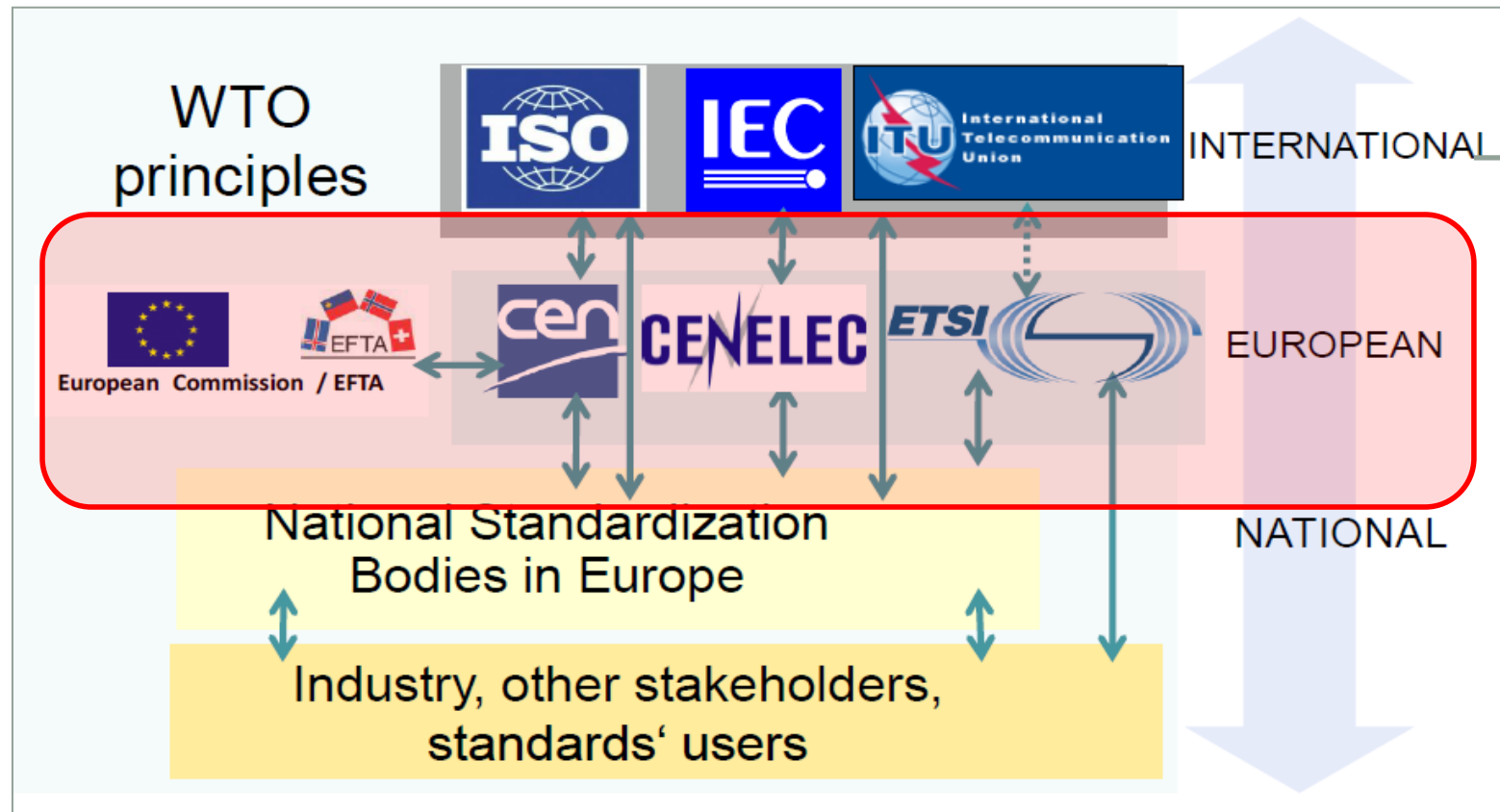


Global Gateway to
Electrotechnical
Standards in Belgium

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Development
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Standardisation bodies: Geographically & Sectors



What the European Commission has to do with standardisation?

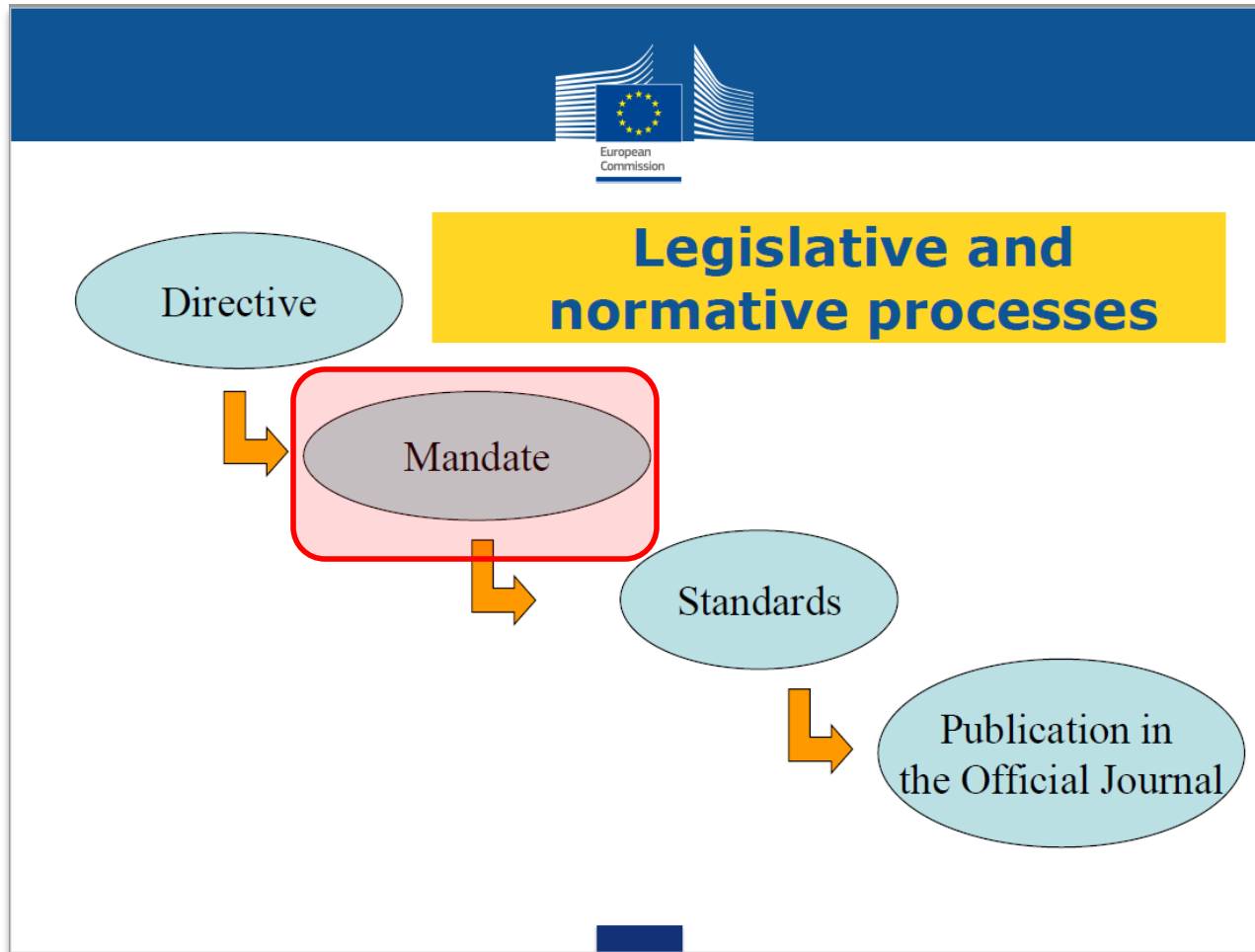


What the European Commission has to do with standardisation?

DG Enterprise and Industry, Unit C.5 Standardisation

- **Coordinates** the Commission's **standardisation policy** *(except on ICT standardisation)*
- **Promotes the use of European standards** to support EU legislation and policies to enhance the competitiveness of European industry
- **Coordinates** the Commission's standardisation **mandates** (requests) to CEN/CENELEC/ETSI
- **Funds** CEN/CENELEC/ETSI *(operating and action grants)*

European Commission issues Mandates to standardisation bodies




What is a Mandate?




What is a mandate?

- A **tool for the Commission** to get **standards** that support EU legislation or policies
- Given by the Commission
- An **invitation to the ESOs to develop standards**
- A **reference framework for standardisation**
- **Indispensable for harmonised standards** supporting New Approach and NLF legislation
- A means for **Member States to give political and technical acceptance** to standardisation work
- **Is not legally binding** – ESOs are free to respond

Stakeholders in the development of standards

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How we work

[Vision & mission](#)


[Management structure](#) | [Technical Committees](#) | [IEC Partners](#) | [Stakeholders](#) | [Processes and procedures](#)

Stakeholders

It is essential that all of the interested parties in the value chain are represented and active in the development of International Standards to ensure that the final deliverables correspond to market needs and fulfil user expectations.

Participation is principally channelled through the National Committees who nominate experts to work at the working group/ maintenance and project team level in the elaboration of documents which are then circulated in the technical committee for comments and vote by the National Committees. National Committee delegations representative of all the stakeholders in that country submit comments and votes and represent the National Committee's consolidated position at the technical and subcommittee level.

Stakeholders grouped in international or broadly based regional organizations along with manufacturers associations, industrial consortia and fora can participate via the various liaison possibilities offered by the IEC.



Typical stakeholders

The typical stakeholders active in the development of International Standards are:

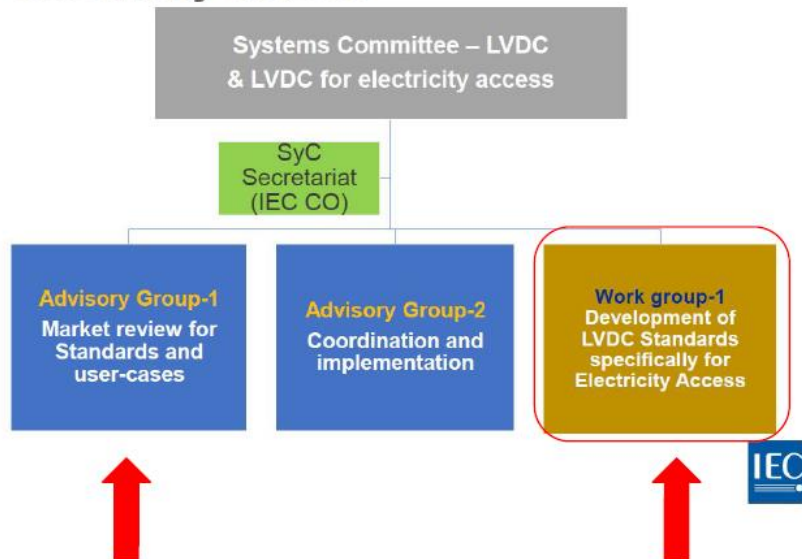
- **Industry** covering utilities, manufacturers, installers, suppliers etc. either at the company level or via trade associations, consortia and fora etc.
- **Consumers** normally organized at the national, regional or international level;
- **Academia** – universities and research institutes;
- **Test laboratories**
- **Governments and regulators**

IEC Standardization for Low-Voltage DC Systems Committee LVDC (SyC LVDC)

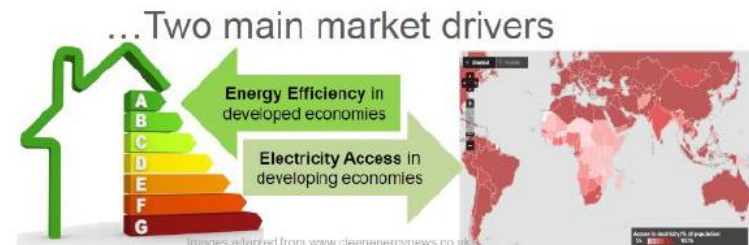
Two main market drivers:

- Energy Efficiency in developed countries
- Electricity Access in developing countries

Standardization of LVDC incl. for electricity access

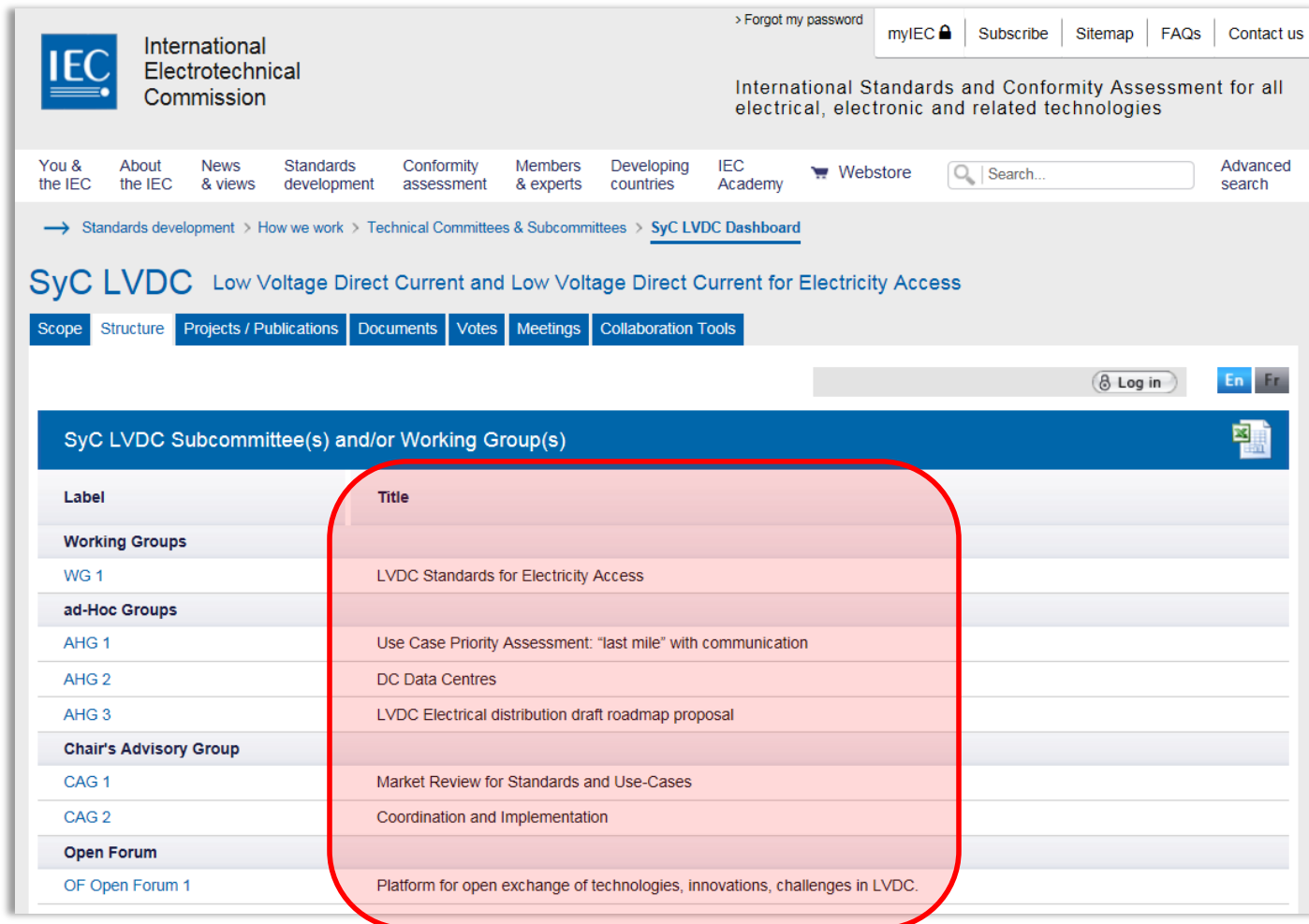


*SEG 4 (used) to be open for everybody:
SyC LVDC is for members only*



SyC LVDC

Subcommittees and Working Groups



The screenshot shows the IEC SyC LVDC dashboard. At the top, the IEC logo and name are on the left, and navigation links like 'myIEC', 'Subscribe', 'Sitemap', 'FAQs', and 'Contact us' are on the right. Below this is a secondary navigation bar with links like 'You & the IEC', 'About the IEC', 'News & views', 'Standards development', 'Conformity assessment', 'Members & experts', 'Developing countries', 'IEC Academy', 'Webstore', and a search bar. The main content area has a breadcrumb trail: 'Standards development > How we work > Technical Committees & Subcommittees > SyC LVDC Dashboard'. The title 'SyC LVDC Low Voltage Direct Current and Low Voltage Direct Current for Electricity Access' is followed by a tabbed interface with 'Scope', 'Structure', 'Projects / Publications', 'Documents', 'Votes', 'Meetings', and 'Collaboration Tools'. A 'Log in' button and language selectors 'En' and 'Fr' are also present. The main table is titled 'SyC LVDC Subcommittee(s) and/or Working Group(s)'. It has two columns: 'Label' and 'Title'. The table is divided into sections: 'Working Groups' (WG 1), 'ad-Hoc Groups' (AHG 1, AHG 2, AHG 3), 'Chair's Advisory Group' (CAG 1, CAG 2), and 'Open Forum' (OF Open Forum 1). A red rounded rectangle highlights the 'Title' column.

Label	Title
Working Groups	
WG 1	LVDC Standards for Electricity Access
ad-Hoc Groups	
AHG 1	Use Case Priority Assessment: "last mile" with communication
AHG 2	DC Data Centres
AHG 3	LVDC Electrical distribution draft roadmap proposal
Chair's Advisory Group	
CAG 1	Market Review for Standards and Use-Cases
CAG 2	Coordination and Implementation
Open Forum	
OF Open Forum 1	Platform for open exchange of technologies, innovations, challenges in LVDC.

SyC LVDC

Subcommittees and Working Groups

Title & Task

WG 1

LVDC Standards for Electricity Access

Federate specifications and standardization work on Electricity Access

- Develop Systems Level publications for electricity access
- Engage and Coordinate with TCs to embed Electricity Access provisions in existing publications.
- Engage electricity access practitioners to seek ground level experiences and expectations (from SyC LVDC)

Title & Task

AHG 1

Use Case Priority Assessment: "last mile" with communication

1. Validate the priority of the said Use Case
2. If considered significant, write use-case and scope for standardization (if needed) and which TC to do the work?
3. Review (list) current standards available in the area.

Title & Task

AHG 2

DC Data Centres

Title & Task

AHG 3

LVDC Electrical distribution draft roadmap proposal

SyC LVDC

Subcommittees and Working Groups

Title & Task

CAG 1

Market Review for Standards and Use-Cases

Provide recommendations about the following matters:
Scan and review external environment and industry for needs for standardization

- Highlight areas for future external cooperation with external stakeholders
- Promote IEC's LVDC standardization work and standards
- Use-case listing, mapping and prioritization
- Participate to define Program of Work (PoW) and Strategic Business Plan (SBP)

Title & Task

CAG 2

Coordination and Implementation

Provide recommendations about the following matters:

- Coordinate between TCs/SCs and other groups in IEC
- Review and highlight overlap of work
- Support work of the SyC
- Coordination of Maintenance of Existing publications
- MT for Existing standards to harmonize Voltages
- Participate to define Program of Work (PoW) and Strategic Business Plan (SBP)

Current Work in progress: domains

Topic	Expert	Organization or Company
LVDC Voltages and Systems Aspects	Herve Rochereau	Chair, IEC/TC8
Protection Technology and Development Trend of LVDC Equipment	Jisheng Sun	Technical director, SEARI
DC Devices and Safety	Wim de Kesel	Secretary, IEC/TC23
Application of DC Energy Storage Technology in Grid-connected Photovoltaic system	Yunfeng Liu	Director of energy R&D department, Huawei Technologies Co., Ltd.
The status of LVDC in Solar Inverter Application	Jun Xu	Technical director, Sungrow Power Co.,Ltd

Current Work in progress : domains

LVDC Safety of Installations	Jacques Peronnet	Chair, IEC/TC 64
LVDC Technology Application in Micro Grid	Zhao Ma	Chief expert, State Grid, China
New Systems Approach of Standardization	Gennaro Ruggiero	Secretary, IEC/SyC LVDC
LVDC device R&D Or LVDC application usecase	Bai Li	Technical director, Shanghai Liangxin Electrical Co., Ltd.
LVDC for Electricity Access, Opportunities and Standards	Rajeev Sharma	Chair, IEC/SyC LVDC /WG1
LVDC Distribution Standardization	Xiaodong Yuan	State Grid, China

Current work in progress

Electricity Access

MB/NC	Line number (e.g. 17)	Clause/ Subclause (e.g. 3.1)	Paragraph/ Figure/ Table/ (e.g. Table 1)	Type of comment	Comments	Proposed change	Observations of the secretariat	CAG1 Meeting 2018-03-28
IN		Clause 73(LVDC for Electricity Access)		Ge	Subjects to be taken up for LVDC standardisation on priority needs to be elaborated.	<ol style="list-style-type: none"> 1. As an urgent requirement, an International Standard addressing requirements of Electricity Access for 48V ELVDC System of Tier-2 and Tier 3 SEforALL multi-tier framework needs to be developed. 2. Subsequently following subjects related to LVDC standardization need to be taken-up on priority. 	<p>Suitable text will be included in the SBP as 'future areas of standardization'. We also encourage WG1 to review this information in its SBP and PoW.</p>	<p>To address in the CAG1, together with highlighting the needs of developing use cases in SyC LVDC (explore possibilities of large workshop to invite relevant TC to develop use cases)</p> <p>The comment from India should be part in the SBP in parts regarding electricity access</p> <p>To convey from WG1</p>


Current work in progress

Grid Connected LVDC


MB/NC	Line number (e.g. 17)	Clause/ Subclause (e.g. 3.1)	Paragraph/ Figure/ Table/ (e.g. Table 1)	Type of comment	Comments	Proposed change	Observations of the secretariat	CAG1 Meeting 2018-03-28
						2. Standards for Grid connected LVDC systems. 3. Standards for DC appliances; <ul style="list-style-type: none"> • Desert coolers • Fans • LED lighting • Domestic kitchen appliances such as Mixer, Grinder etc. • Small TV set • Mobile charger • Plugs and sockets • Wires can cables 	Ref your comment c) These standards may be referred to respective TCs. If appropriate TCs do not exist, please highlight and this can be discussed in SyC LVDC to see how to take such matters forward.	SyC LVDC secretariat to invite the TCs to come Hangzhou

TC 64 (safety) ad hoc Group 35

http://www.iec.ch/dyn/www/f?p=103:14:7327299677510:::FSP_ORG_ID,FSP_LANG_ID:6625,25

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TC 64 Electrical installations and protection against electric shock

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Subcommittee(s) and/or Working Group(s) > [TC 64/AHG 35](#)

AHG 35 Convenor & Members

Convenor	National Committee
Mr Joakim Grafström	SE
Member	National Committee
Mr Gérard Couty	FR
Mr Geoffrey Cronshaw	GB
Mr Enric Fajula	ES

Title & Task

AHG 35

Review of TC 64 publications


To review all TC 64 publications as to whether the level of requirements for DC applications is of the same quality as for AC.

[Log in](#) [En](#) [Fr](#)

TC 23 WG 8

Electrical Accessories for DC

http://www.iec.ch/dyn/www/f?p=103:14:7327299677510:::FSP_ORG_ID,FSP_LANG_ID:1887,25



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TC 23 Electrical accessories

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WG 8 Convenor & Members

Convenor	National Committee
Mr Wim De Kesel	BE
Member	National Committee
Mr Abdulrahman Abdullah Alabdulkarim	SA
Mr Jonas Bachmann	CH
Mr Uwe Blossfeld	DE
Mr Jun Cai	CN
Mr Mounir DIABAGATE	MA

Title & Task


WG 8

Electrical accessories for direct current

To prepare guidelines for safety requirements and standards for electrical accessories for household and similar purposes intended for use in d.c. circuits, the word ?similar? includes locations such as offices, commercial and industrial premises, hospitals, public buildings.

Note. This work is of interest for information technology applications, renewable energy applications etc.

TC 115 HVDC transmission for DC

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TC 115 High Voltage Direct Current (HVDC) transmission for DC voltages above 100 kV


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TC 115 Scope

Standardization in the field of HVDC Transmission technology above 100kV. The task includes HVDC system oriented standards as design aspects, technical requirements, construction and commissioning, reliability and availability, and operation and maintenance. Standards of HVDC equipment so far related to the system aspects will be prepared in close collaboration with the relevant Technical Committees and Subcommittees.



Further information

Secretariat	China
Strategic Business Plan	
Contact	TC 115 Officers

HVDC Structure ^{1/2}

Strategic Business Plan HVDC: <http://www.iec.ch/public/miscfiles/sbp/115.pdf>

Advisory Group, Working Groups and Maintenance Teams:

AG 1: Road map on standardization of HVDC technology

WG 2: Reliability and availability evaluation of HVDC systems

WG 3: Electromagnetic performance of high-voltage direct current (HVDC) overhead transmission lines

WG 4: Guidelines on Asset Management for HVDC Installations

WG 5: Guideline for the System Design of HVDC Converter Station with Line-commutated Converters (LCC)

WG 6: Guidelines for operation and maintenance of line commutated converter (LCC) HVDC converter station

WG 7: DC side harmonics and filtering in HVDC transmission systems

MT 8: Design of earth electrode stations for high-voltage direct current (HVDC) links - General guidelines

WG 9: High voltage direct current (HVDC) power transmission- System requirements for DC-side equipment - Part 1: Using line-commutated converters

WG 10: Planning of HVDC systems

HVDC Structure ^{2/2}

WG 11: Performance of voltage sourced converter based high-voltage direct current transmission
– Part 1: Steady-state

JWG 22: Atmospheric and altitude correction (managed by TC 42)

JMT 1: High voltage direct current (HVDC) substation audible noise (linked to SC 22F)

JMT 3: Maintenance of IEC 60919-1 Ed.3 Performance of high-voltage direct current (HVDC) systems with line-commutated converters - Part 1: Steady-state conditions (managed by SC 22F)

JMT 7: Revision of IEC/TS 61936-2 Power installations exceeding 1 kV a.c. and 1,5 kV d.c. - Part

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