



Общий вид зала МЭС.

Lev Travin, Secretary of IEC/SC 22F, All-Russian Electrotechnical Institute, Moscow, Russia;

Presenter: Olga Suslova, JSC «NIPT»

IEC SC22F — Power electronics for electrical transmission and distribution systems – 2019

IEC SC22F Power electronics for electrical T&D systems — General information

- **Established in 1970**

Converters for high-voltage direct current (HVDC) power transmission

- **Renamed in 1985**

Power electronics for electrical transmission and distribution systems

- **Secretariat** — Russian Federation

- **Chairman: Mr. Huigao Zhou, China**

- **Secretary: Mr. Lev Travin, Russian Federation**

- **Membership**

- **13 P-members (Participate actively in the work) countries:** China, Finland, France, Germany, Japan, Korea (Republic of), Netherlands, Norway, Russian Federation, Serbia, Switzerland (**new member**), Sweden, UK

- **21 O – members (Kept informed of the progress) countries:** Australia, Austria, Belarus, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Hungary, India, Iran, Italy, Malaysia, New Zealand, Poland, Portugal, Romania, South Africa, Spain, Thailand, Ukraine

IEC SC22F General information

— Statistics

- Number of IEC publications developed: **66**
- Number of Working Groups, Project Teams, Maintenance Teams, Ad Hoc Groups: **26**
- Number of experts: **153/234**
- Number of new projects submitted in the past 5 years: **7**
- Number of current active projects: **14**
- Number of meetings since the last 5 years: **5**

IEC SC22F

Established liaisons

Internal

- IEC/TC89 – Fire hazard testing (SC 22F/TC 89 JMT4– IEC/TR 62757, AMD1, ED.1)
- IEC/TC115 – High Voltage Direct Current (HVDC) transmission for DC voltages above 100 kV (SC 22F/TC 115 JMT3 – IEC/TR 60919-1, ED4; TC115/
- SC 22F JMT 1 IEC/TS 61973 AMD1 ED1; TC 115/SC 22F JWG 11 VSC HVDC.
- IEC/TC 99 - System engineering and erection of electrical power installations in systems with nominal voltages above 1 kV a.c. and 1,5 kV d.c., particularly concerning safety aspects (TC 99/SC 22F JMT7 IEC/TS 61936-2)

Proposed for discussion at SC 22F meeting in Shanghai (2019):

- IEC/TC 17 - High-voltage switchgear and controlgear
- IEC/SC 17A - Switching devices
- IEC/TC 95 - Measuring relays and protection equipment

External

- CIGRE SC B4 – HVDC and Power Electronics (Many IEC Publications produced by SC 22F are based on CIGRE B4 Reports/Brochures.).
- CENELEC TC 22X - Mr. Colin Davidson has been appointed by SC 22F secretariat as the SC 22F Liaison Officer in order to report at CLC/TC 22X level.

Results of CIGRE SC B4/IEC SC 212F cooperation in 2017-2019



CIGRÉ Technical Brochure	IEC Publication
TB 447 2011 B4-48 Components Testing of VSC System for HVDC Applications	IEC 62501, Ed.1.0: Voltage sourced converter (VSC) valves for high-voltage direct current (HVDC) power transmission - Electrical testing (Amendment 2)
TB 223 2003 SC B4 WG B4.28 Active filters in HVDC applications	IEC TR 62544, Ed.1.0: High-voltage direct current (HVDC) systems - Application of active filters (Amendment 2)
TB 136 1999 SC 14 TF 14.01.04 Fire aspects of HVDC thyristor valves and valve halls	IEC/TR 62757, AMD2, Ed.1.0: Fire Prevention Measures on HVDC, SVC and FACTS converters and their valve halls
TB 754 2019 SC B4 WG B4.67 AC side harmonics and appropriate harmonic limits for VSC HVDC	IEC TR 62001-5, Ed.1: AC side harmonics and appropriate harmonic limits for HVDC with voltage sourced converters (to be discussed at SC 22F meeting in Shanghai, China, October 2019)



New Publication:

- **IEC TR 63262, Ed1**, 2019-09-13: Performance of unified power flow controller (UPFC) in electric systems (PT 1, Convenor Mr. Zhicheng ZHOU, China);

Updated Publications

- **IEC 60633 ED3**, 2019-04-25: Terminology for high-voltage direct current (HVDC) transmission (MT 13, Convenor Mr Colin C Davidson, Great Britain);
- **IEC 62747, AMD1, ED1**, 2019-01-24: Terminology for voltage-sourced converters (VSC) for high-voltage direct current (HVDC) systems (MT 33, Convenor Mr Marcus Haeusler, Germany);
- **IEC 62751-2, AMD1, ED1**, 2019-08-23: Power losses in voltage sourced converter (VSC) valves for high-voltage direct current (HVDC) systems - Part 2: General requirements (MT 31, Convenor Mr. Colin Davidson, Great Britain).

Updated Publications

- **IEC TR 62757, AMD1 ED1, 2019-07-04:** Fire prevention measures on converters for high-voltage direct current (HVDC) systems, static var compensators (SVC) and flexible AC transmission systems (FACTS) and their valve halls (SC22F/TC89 JMT 4, Convenor Mr Baoliang Sheng, Sweden);
- **IEC 62823, AMD1 ED1:** Thyristor valves for thyristor controlled series capacitors (TCSC) – Electrical testing (MT 34, Convenor Mr Baoliang Sheng, Sweden);
- **IEC TR 62544 AMD2 ED1:** High-voltage direct current (HVDC) systems - Application of active filters (MT 29, Mr Gearoid Sean O'Heidhin, Great Britain).

IEC SC22F - Projects for discussion in Shanghai, China, October 2019



(1/2)

- **IEC TR 60919-1 ED4: Performance of high-voltage direct current (HVDC) systems with line-commutated converters - Part 1: Steady-state conditions** (SC22F/TC115 JMT 5 Convenors Mr Weimin Ma, Mr. Hong Rao, China) - **Draft Technical Report;**
- **IEC TR 60919-2 AMD2 ED2: Performance of high-voltage direct current (HVDC) systems with line-commutated converters - Part 2: Faults and switching** (SC22F/TC115 JMT 5 Convenor Mr Weimin Ma, China) - **Committee Draft for Comments;**
- **IEC 61803 ED2: Determination of power losses in high-voltage direct current (HVDC) converter stations with line-commutated converters** (MT 14 Convenor Mr Sanjay Mukoo, Germany) - **Committee Draft for Comments;**
- **IEC/TR 62544, AMD2, ED1: High-voltage direct current (HVDC) systems - Application of active filters** (MT 29 Convenor Mr Gearoid Sean O'Heidhin, Great Britain) – **Draft Technical Report;**



IEC SC22F - Projects for discussion in Shanghai, China, October 2019



(2/2)

- **IEC TR 63259 ED1: Water cooling system for power electronics used in electrical transmission and distribution systems** (PT 2 Convenor Mr. Guangtai ZHANG, China) – **Committee Draft for Comments;**
- **IEC 60700-3 Ed.1.0: “Thyristor valves for high voltage direct current (HVDC) power transmission - Part 3: Essential ratings (limiting values) and characteristics** (AHG 3, Convenor Mr Yantao LOU, China) – **Voting Report on a New Work Item Proposal;**
- **PWI 22F-11 Ed.1: Performance of power electronic reactive power shunt compensators in high-voltage alternating current (HVAC) systems** (AHG 1, Convenor Mr. Marcio Magalhaes de Oliveira, Sweden) – **Report on PWI;**
- **PWI 22F-15 Ed.1: Control and protection systems for high-voltage direct current (HVDC) power transmission systems - Functional performance tests** (SC22F/TC115 JAHG1, Mr. Hong RAO, China) - **Report on PWI**

IEC SC22F - Preliminary Work Items to be discussed at SC 22F meeting in Shanghai, China, in October 2019

- Condition assessment for sub-modules of modular multilevel converter based high voltage direct current (MMC-HVDC) power transmission;
- Unified power flow controller (UPFC) installations – System commissioning;
- Performance of bypass switch for series transformer in unified power flow controller;
- Interface between VSC-HVDC control and protection system and valve control units;
- Performance of power electronics transformer for flexible transmission and distribution system;
- AC side harmonics and appropriate harmonic limits for HVDC with voltage sourced converters

Thank you

Lev Travin
Secretary IEC/SC 22F