SMB/8042/R

STRATEGIC BUSINESS PLAN (SBP)

IEC/COMMITTEE:	SECRETARIAT:	DATE:
TC 99	**Australia**	**2023-10-25**

Please ensure this form is annexed to the Report to the Standardization Management Board if it has been prepared during a meeting or sent to the IEC Secretariat promptly after its contents have been agreed by the committee.

A. STATE TITLE AND SCOPE OF COMMITTEE

Are there any new or emerging trends in technology that will impact the scope and work activities of the committee? Please describe briefly.

Do you need to update your scope to reflect new and emerging technologies? If yes, will these changes impact another committee's scope or work activities?

If yes, describe how these will impact another committee(s) and list the committee(s) it would impact

TITLE:

Insulation co-ordination and system engineering of high voltage electrical power installations above 1,0 kV AC and 1,5 kV DC

SCOPE:

Standardization of -

a) insulation co-ordination for high voltage systems in specifying basic principles of insulation co-ordination, definitions and standard insulation levels for all type of electrical equipment considering field of applications, minimum air clearances, test requirements and test procedures; and

b) common rules and particular requirements for system engineering and erection of high voltage electrical power installations for power generation, transmission, distribution, and consumer premises, in both indoor and outdoor situations, with particular consideration of safety aspects.

High voltage (HV) covers nominal voltages above 1,0 kV AC and 1,5 kV DC and includes the voltages referred to as medium voltage (MV), extra-high voltage (EHV) and ultra-high voltage (UHV).

HORIZONTAL FUNCTIONS:

Advisory or Management Committee	Category	Aspect	Description	Publications
ACTAD	Basic	-	To maintain basic publications on HV insulation co-ordination both for AC and DC systems (above 1 000 V AC and 1 500 V DC). When needed, to develop and maintain additional horizontal publications on the same topics.	3

Concerning insulation co-ordination, a close cooperation with TC 115 is necessary to establish the field of standardization in respect of HVDC systems.

Concerning system engineering, TC 99 recognizes that there might be some common interests between TC 18, TC 88, TC 115 and TC 99 in the development of standards in the area of off-shore HVDC and HVAC installations, to manage and optimize the performance of electrical transmission systems as well as renewable generation platforms (e.g. wind, PV) or multi-terminal junction

platform as they evolve and expand off-shore. Furthermore, the requirements out of TC 122 have to be co-ordinated with existing TC 99 publications.

B. MANAGEMENT STRUCTURE OF THE COMMITTEE

Describe the management structure of the committee (use of an organizational chart is acceptable) (should be integrated by IEC Secretariat automatically) and, if relevant (for example an unusual structure is used), provide the rationale as to why this structure is used.

Note: Check if the information on the IEC website is complete.

When was the last time the committee reviewed its management structure? Describe any changes made. When does the committee intend to review its current management structure? In the future, will the committee change the current structure, for example due to new and emerging technologies, product withdrawal, change in regulations etc. Please describe.

Make sure the overview includes:

- any joint working groups with other committees,
- any special groups like advisory groups, editing groups, etc.

Chair: Mr Michael Schwan (DE)

Vice Chairs: Mr Mark Kuschel (DE) and Mr Jiansheng Wang (CN)

Secretary: Ms Erandi Chandrasekare (AU)

Assistant Secretary: Ms Naomi Setukavalar (AU)

Maintenance Teams:
MT 4 Maintenance of IEC 61936-1
MT 9 Maintenance of IEC 60071-2
MT 10 Maintenance of IEC 60071-1
MT 12 Maintenance of IEC TS 61936-0
MT 14 Maintenance of IEC TR 60071-4

Joint Maintenance Teams:
JMT 7 Maintenance of IEC 61936-2 (linked to TC 115, SC 22F)
JMT 10 Maintenance team for IEC 62477-2 (managed by TC 22)

Joint Working Groups:
JWG 13 Insulation co-ordination for HVDC systems (linked to TC 115)
JWG 22 Atmospheric and altitude correction (managed by TC 42)

Advisory Groups:
AG 11 Advisory Group on Strategy

C. BUSINESS ENVIRONMENT

Provide the rationale for the market relevance of the future standards being produced in the committee.

If readily available, provide an indication of global or regional sales of products or services related to the committee work and state the source of the data.

Specify if standards will be significantly effective for assessing regulatory compliance.

a) The activities in insulation co-ordination are determined by the extension of system voltages into the UHV range. From the developing application of HVDC systems arises the necessity of standardization of procedures and rated values.

b) The safety of high voltage installations with a lifetime of more than 30 years is of prime importance. Therefore, equipment must be designed, manufactured and installed to ensure
   - protection against inadvertent contact with live parts; and
   - the safe operation of the equipment and the installation.

The responsibility for the components of the power system remains with the relevant product committees.

D. MARKET DEMAND

Provide a list of likely customers of the standards (suppliers, specifiers, testing bodies, regulators, installers, other committee's etc.). Do not specify company names, only categories of customers.

The standards on insulation co-ordination are a reference for the Product committees, which have to elaborate Product standards on the same common basis. In these standards the evolution of techniques has to be integrated to provide advice for the limitation of overvoltages by using appropriate overvoltage limiting devices and test methods. However, concerning atmospheric air insulation, guidelines are provided since no other standards are available.

The world market for high voltage installations can be considered an open market. In this field IEC standards are accepted world-wide. Many countries that do not have a national standard for high voltage installations will benefit by the work of TC 99.

There is a market need for the development of standards in the area of off-shore HVDC and HVAC installations, to manage and optimize the performance of electrical transmission systems as well as renewable generation platforms (e.g. wind, PV) or multi-terminal junction platform as they evolve and expand off-shore. Customers of the standards are utilities, manufacturers, Engineering Procurement Construction (EPC) and industry, certification bodies and insurances. TC 99 recognizes that there might be some common interests between TC 18 and TC 99 in developing the standards in this area.

E. SUSTAINABLE DEVELOPMENT GOALS

Indicate the Sustainable Development Goals (SDGs) that are addressed by work within the committee. Indicate each SDG Indicator affected (reference spreadsheet available at https://www.iec.ch/SDG/, and provide specific information about how the committee is addressing the SDG. Consider both direct and indirect impacts of the work of the committee.

- ☐ **GOAL 1:** No Poverty
- ☐ **GOAL 2:** Zero Hunger
- ☐ **GOAL 3:** Good Health and Well-being
- ☐ **GOAL 4:** Quality Education
- ☐ **GOAL 5:** Gender Equality
- ☐ **GOAL 6:** Clean Water and Sanitation
- ☐ **GOAL 7:** Affordable and Clean Energy
- ☐ **GOAL 8:** Decent Work & Economic Growth
- ☒ **GOAL 9:** Industry, Innovation & Infrastructure
- ☐ **GOAL 10:** Reduced Inequality
- ☐ **GOAL 11:** Sustainable Cities and Communities
- ☐ **GOAL 12:** Responsible Consumption & Production
- ☐ **GOAL 13:** Climate Action
- ☐ **GOAL 14:** Life Below Water
- ☐ **GOAL 15:** Life on Land
- ☐ **GOAL 16:** Peace, Justice Strong Institutions
- ☐ **GOAL 17:** Partnerships to achieve the Goals

TC 99 PUBLICATIONS ARE HIGHLY RELEVANT FOR DEVELOPING AND BUILDING THE ELECTRICAL POWER INFRASTRUCTURE, WHICH IS ONE OF THE VERY ESSENTIAL INFRASTRUCTURES.

F. TRENDS IN TECHNOLOGY AND IN THE MARKET

If any, indicate the current or expected trends in the technology or in the market covered by the products of your TC/SC.

The insulation co-ordination level has extended to the field of voltage systems exceeding 800 kV AC and 600 kV DC which have to be covered by appropriate standards and guidelines. The increased application of HVDC systems leads to the demand of basic standardization of HVDC insulation co-ordination.

The ever-increasing use of the latest technology leads to the use of new or modified electrical equipment (e.g. compact solution, storage, subsea installations). This drives the need to continual review of the high voltage installation requirements and to provide modifications or add new requirements.

G. SYSTEMS APPROACH ASPECTS (SEE DIRECTIVES PART 1 ANNEX SP)

Does your committee have a need for a systems approach?

If so:

- Will the Systems work be in a single committee or in multiple committees?
- Will a Standardization Evaluation Group (SEG), Systems Committee (SyC), or Systems Resource Group be required?
- Is your committee work of relevance to ISO?
- Is or are there fora or consortia working in parallel to IEC? Is there a chance to integrate this work in your committee?

This should not only be restricted to the customer/supplier relationships with other committeess indicating types of co-operation (e.g. liaisons, joint working groups) but be of a more generic nature.

Customer – Committees that use standards produced by TC 99

Supplier – Committees that produce standards used by TC 99

Other committees – Committees to be in liaison with TC 99 for technical consistency

Concerning insulation co-ordination, horizontal standards are provided in the field of transmission and distribution to be used in all high voltage product committees. Therefore, a wide system approach is given with other TCs and organizations as follows:

Liaison committee		**Role of the liaison committee**
TC 8	System aspects of electrical energy supply	Customer
SC 8A	Grid Integration of Renewable Energy Generation	Other
SC 8B	Decentralized electrical energy systems	Other
SC 8C	Network Management in Interconnected Electric Power Systems	Other
TC 9	Electrical equipment and systems for railways	Other
TC 10	Fluids for electrotechnical applications	Other
TC 11	Overhead lines	Customer
TC 14	Power transformers	Other
TC 17	High-voltage switchgear and controlgear	Other
TC 18	Electrical installations of ships and of mobile and fixed offshore units	Other
TC 20	Electric cables	Customer
TC 22	Power electronic systems and equipment	Supplier
TC 33	Power capacitors and their applications	Customer
TC 36	Insulators	Customer
TC 37	Surge arresters	Customer
TC 38	Instrument Transformers	Customer

TC 42	High-voltage and high-current test techniques	Other
TC 64	Electrical installations and protection against electric shock	Supplier
TC 66	Safety of measuring, control and laboratory equipment	Other
TC 78	Live working	Other
TC 81	Lightning protection	Other
TC 89	Fire hazard testing	Supplier
TC 109	Insulation co-ordination for low-voltage equipment	Other
TC 115	High Voltage Direct Current (HVDC) transmission for DC voltages above 100 kV	Customer
TC 122	UHV AC transmission systems	Customer
PC 127	Low-voltage auxiliary power systems for electric power stations and substations	Other
PC 128	Operation of electrical installations	Customer
Liaison A:		
CIGRE	International Council on Large Electric Systems	Supplier
CIGRE/SC A3	Transmission and distribution equipment	Supplier
CIGRE/SC B3	Substations and electrical installations	Supplier
CIGRE/SC C4	Power system technical performance	Supplier
CIGRE/SC D1	Materials and emerging test techniques	Supplier
Working Group Liaisons:		
MT 9 Maintenance of IEC 60071-2 and IEEE SPDC WG 3.4.18		
MT 10 Maintenance of IEC 60071-1 and IEEE SPDC WG 3.4.18		

H. CONFORMITY ASSESSMENT

With reference to Clause 33 of Part 2 of the ISO/IEC Directives, are all your publications in line with the requirements related to conformity assessment aspects?

Will the committee publications be used for IEC Conformity Assessment Systems (IECEE, IECEx, IECQ, IECRE)?

Will any of your standards include test specifications, reproducible test requirements, and test methods?

Are there likely to be special conformity assessment requirements generated by any standards projects? If yes, list which projects.

TC 99 publications will not be used for IEC Conformity Assessment Systems.

I. 3-5 Year Projected Strategic Objectives, Actions, Target Dates

Strategic Objectives 3-5 years	Actions to support the strategic objectives	Target Date(s) to complete the actions
Maintenance of existing standard as a horizontal publication	Revision of IEC 60071-1 I*nsulation co-ordination - Part 1: Definitions, principles and rules* (Horizontal standard)	Agreed to start maintenance.
Bring up-to-date AC insulation co-ordination taking into account new techniques and test methods	Revision of IEC 60071-2 *Insulation co-ordination - Part 2: Application guidelines* (Horizontal standard)	Agreed to start maintenance.
Revision and addition of modern calculation/simulation methods and techniques of insulation coordination. Update the modelling of networks.	Revision of IEC TR 60071-4 *Insulation co-ordination - Part 4: Computational guide to insulation co-ordination and modelling of electrical networks*	CD target: 2023-12
Generate a set of standards for DC insulation co-ordination	(i) IEC 60071-11 *Insulation co-ordination - Part 11: Definitions, principles and rules for HVDC system* (Proposed horizontal standard)	Published in 2022-11
	(ii) IEC 60071-12 *Insulation coordination - Part 12: Application guidelines for LCC HVDC converter stations* (Proposed horizontal standard)	Published in 2022-10
	(iii) IEC 60071-14 *Insulation co-ordination - Part 14: Insulation co-ordination for AC/DC filters of HVDC system*	CD target: 2024-06
	(iv) IEC TR 60071-15 *Insulation co-ordination — Part 15: Insulation co-ordination for DC transmission lines*	CD target: 2023-12
Define principles to be observed in preparation of safety publications - High voltage installations Seek recognition as a horizontal standard	IEC/TS 61936-0 *Power installations exceeding 1 kV AC and 1,5 kV DC – Part 0: Principles to be observed in the design and erection of high voltage installations - Safety of high voltage installations*	Published in 2023-05 Agreed to start maintenance to convert TS 61936-0 to an IS
Maintenance of existing standard for design and erection of high voltage AC installation	Revision of IEC 61936-1 *Power installations exceeding 1 kV AC and 1,5 kV DC - Part 1: AC*	Published in 2021-07 Preparation for next revision in progress

Define standards for the design and erection of high voltage DC installation	Review current technical specification on DC (*IEC/TS 61936-2 Power installations exceeding 1 kV AC and 1,5 kV DC - Part 2: DC*) and convert to a standard	IEC 61936-2 was published in 2023-09
Note: The progress on the actions should be reported in the RSMB.		