

## BUSINESS PLAN

CENELEC TC 99X	Secretariat Germany	Date 2024-05-28
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*Please ensure this form is annexed to the TC Report to the CENELEC Technical Board if it has been prepared during a meeting or sent to CCMC promptly after its contents have been agreed by the Committee by correspondence.*

**TC or SC title:** Insulation co-ordination and system engineering of high voltage electrical power installations above 1,0 kV AC and 1,5 kV DC

### A Background

#### A.1 General

CLC/TC 99X was established in April 1990 as CLC/TC 112 and renumbered in 1996 to CLC/TC 99X (according to new IEC/TC 99).

In 2018 IEC merged the former TC28 (insulation coordination) into TC99. As a consequence, the scope of former CENELEC SR28 is integrated into CENELEC TC99X.

There are 25 participating countries and 2 observers.

#### The scope of CLC/TC 99X covers:

To prepare European standards for insulation co-ordination for all type of high voltage electrical equipment and system engineering of high voltage electrical power installations above 1,0 kV AC and 1,5 kV DC located indoor or outdoor, including earthing.

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

The standards will specify common rules for the design requirements of the installations, protection of the environment and the selection and erection of electrical equipment in order to ensure the safety of property and persons, and the proper operation of the installations. The standards will not be applicable to factory built and type tested equipment but will be relevant to the installation of this equipment. The standards will not be applicable to overhead and underground lines between separate installations.

#### A.2 Sustainable development goals

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

#### A.3 Management structure of the committee

##### Officers:

There are 2 officers in TC99X:

- One secretary
- One chair

#### **Subcommittees:**

TC99X has no subcommittees.

#### **Working groups:**

- WG 1 Earthing aspects
- WG 2 Technical Details
- WG 3 Insulation Coordination

#### **Joint working groups:**

TC99X has no joint working groups.

## **B Business Environment**

### **B.1 General**

The safety of high voltage installations is of prime importance. Therefore, equipment must be designed, manufactured and installed to ensure –

- (a) protection against inadvertent contact with live parts; and
- (b) the safe operation of the equipment and the installation.

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.

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

### **B.2 Market demand**

Increasing service of supply for installation of electrical scheme and equipment necessitates the revision of existing standards and the development of new standards.

The European market for high voltage installations can be considered an open market. In this field CENELEC standards are accepted.

### **B.3 Trends in technology**

The energy systems of the future are increasingly decarbonized, distributed, and digitalized. This fundamental transformation is in full swing and poses a wide range of challenges for all stakeholders.

The ever-increasing use of the latest technology leads to the use of new or modified electrical equipment (e.g. compact solution, offshore installations, HVDC systems).

This drives the need to continual review of the high voltage installation requirements and to provide modifications or add new requirements.

### **B.4 Market trends**

Continued deregulation and privatisation of the electrical industry has led to an increased competition for the design and construction of all types of high voltage electrical installations, and for the connection of electrical installations owned by small companies to the electrical network. Hence there is a need for a high voltage electrical installation standard, concentrating on providing the fundamental requirements for safe installation of electrical equipment.

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.

### **B.5 Ecological environment**

CLC/TC 99X is concerned about the ecological aspects derived from emission of gases into the atmosphere (e.g., from equipment using SF6) and spillover of liquids into the soil (e.g. oil from transformers or other liquid filled equipment).

The subject of electromagnetic compatibility and its effect on the correct operation of components and nearby equipment is also of concern to the committee.

### B.6 Involvement of societal stakeholders

At national level societal stakeholders are involved to observe environmental and safety aspects.

### B.7 Involvement of SMEs

At national level small and medium sized enterprises are involved.

## C System approach aspects

CLC/TC 99X is to seek cooperation and contact with the following TCs:

System committees	CLC/TC 8X	System aspects of electrical energy supply
	CLC/TC 9X	Electrical and electronic applications for railways
	CLC/TC 11	Overhead electrical lines exceeding 1 kV a.c. (1,5 kV d.c.)
	CLC/TC 57	Power systems management and associated information exchange
Other committees	CLC/TC 22X	Power Electronics
	CLC/TC 64	Electrical installations and protection against electric shock
	CLC/TC 88	Wind Turbines
	CLC/TC 17AC	High-voltage switchgear and controlgear
	CLC/TC 18X	Electrical installations of ships and of mobile and fixed offshore units
	CLC/TC 44X	Safety of machinery: electrotechnical aspects

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 99X recognizes that there might be some common interests between TC 18X, 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 must be co-ordinated with existing TC 99 publications.

## D Objectives and strategies (3 to 5 years)

The objective of CLC/TC 99X is to define standards for the insulation-coordination and design and erection of high voltage electrical installations.

Strategy to achieve this objective is to update the existing basic standard, and to produce new standards in areas where there is a significant need (e.g. standardizing common rules for system engineering and erection of electrical power installations to optimize HVDC performance and a basic safety publication on HV installations).

CLC/TC 99X will meet its objectives by strengthening co-operation with other committees to ensure no overlapping of standardisation tasks with other technical committees.

## E Action plan

STRATEGIC OBJECTIVES 3-5 YEARS	ACTIONS TO SUPPORT THE STRATEGIC OBJECTIVES	TARGET DATE(S) TO COMPLETE THE ACTIONS
Generate a set of standards for DC insulation co-ordination	(i) IEC 60071-11 <i>Insulation coordination - Part 11: Definitions, principles and rules for HVDC system</i> (Proposed horizontal standard)	Published in 2022
	(ii) IEC 60071-12 <i>Insulation coordination - Part 12: Application guidelines for LCC HVDC converter stations</i> (Proposed horizontal standard)	Published in 2022
	(iii) IEC 60071-14 <i>Insulation coordination - Part 14: Insulation co-ordination for AC/DC filters of HVDC system</i>	Ongoing
	(iv) IEC 60071-15 <i>Insulation coordination — Part 15: Insulation co-ordination for DC transmission lines</i>	Ongoing
Define principles to be observed in preparation of safety publications - High voltage installations Seek recognition as a horizontal standard	IEC/TS 61936-0 <i>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</i>	Published in 2023
Maintenance of existing standard for design and erection of high voltage AC installation	Revision of IEC 61936-1 <i>Power installations exceeding 1 kV AC and 1,5 kV DC - Part 1: AC</i>	Published in 2021
Define standards for the design and erection of high voltage DC installation	Review current technical specification on DC (IEC/TS 61936-2 <i>Power installations exceeding 1 kV AC and 1,5 kV</i> )	Forecast publication date:2023

## F Digital transformation aspects

## G Useful links to CENELEC web site

TC home page giving access to Membership, TC/SC Officers, Scope, Publications, Work programme [password-protected area].

[https://standards.cenelec.eu/dyn/www/f?p=305:7:0::::FSP\\_ORG\\_ID:1258275](https://standards.cenelec.eu/dyn/www/f?p=305:7:0::::FSP_ORG_ID:1258275)

[Name or signature of the Secretary]