



IEC/TC OR SC: TC 109	SECRETARIAT: DE	DATE: 2021-04
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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 Central Office promptly after its contents have been agreed by the committee.

A. STATE TITLE AND SCOPE OF TC

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

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

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

Title: Insulation coordination for low-voltage equipment

IEC TC 109 provides IEC Technical Committees with rules for the determination of voltage ratings for insulation coordination and data for dimensioning of insulating parts to given voltage ratings.

IEC TC 109 has the Horizontal Safety Function for insulation coordination for voltages up to and including 1000 V .AC and 1 500 V.DC This includes:

- dimensioning of clearances and creepage distances
- requirements for solid insulation
- methods of dielectric testing

with respect to insulation coordination

IEC TC 109 prepares horizontal International publications on the principles of insulation coordination applicable to all low-voltage equipment according to ACOS guide 104.

The task of TC 109 is to set up rules for dimensioning for clearances and creepage distances and specify measures how to evaluate solid insulation. In the 1970s increasing demand for microelectronics required a more sophisticated design of products. Rules and coordination for miniaturization of the insulations were necessary without deteriorating reliability and safety. Comprehensive research was carried out on the withstand capability of clearances and on parameters influencing creepage distances and solid insulation. In recent years high-frequency voltage stress needed consideration.

TC 109, whose publications are mainly of horizontal nature, i.e. basic safety publications or horizontal standards, have a limited number of publications which are based on scientific mature knowledge and far from breakdown innovations and for that a lower level of activity. However, their standards are referenced to by many other IEC committees. These circumstances require a well-balanced approach considering consistency in the requirement and up-to-date demands considering the needs from product committees developing new technology for new applications.

In future TC 109 will essentially deal with the maintenance of existing publications or some may be added for special requirements as LVDC, or give guidance for voltages which are not fully covered by other standards, if needed (e.g. guidance for creepage distances and clearances up to 3 kV DC and 2 kV AC).

B. MANAGEMENT STRUCTURE OF THE TC

Describe the management structure of the TC (use of an organizational chart is acceptable) (should be integrated by CO 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 TC reviewed its management structure? Describe any changes made. When does the TC intend to review its current management structure? In the future, will the TC 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.

Role	Name	NC
Secretary	Mr Toni Hoffmann	DE
Chair	Mr Preben Holm Nielsen	DK
Editor	Ms Christine Peterkin	XC
Administrative Assistant	Ms Poh Luan Teo	XC
Technical Officer	Ms Suzanne Yap	XC
Convenor JWG 4	Mr Ton Clerkx	DE
Convenor MT1	Mr Pascal Lepretre	FR
Convenor MT2	Mr Charles Goetz	US
Convenor MT3	Mr Wolfgang Pfeiffer	DE

The current structure of TC 109 is suitable for the future work

C. BUSINESS ENVIRONMENT

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

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

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

Due to progress made in technologies over the last years there is a strong demand to reduce the size of equipment and at the same time increase the rated voltage, and/or mixing AC and DC in the equipment. This demand not only affects the size of components used in equipment but also leads to a reduction of all dimensions including those related to insulation distances and thickness of solid insulation. In addition to this it is noted that several types of insulation may be used within modern equipment in order to reduce the costs of production or to better take into account the influence of the environmental conditions. Also different kind of hazards has to be considered according to IEC guides 104 and 116.

It is the responsibility of TC 109 to develop the rules that allow a better design with a minimum dimensioning of insulation of products without impairing safety. The rules for insulation coordination as specified in the standards of TC 109 does not give requirement how to use the insulation coordination in the evaluation for specific hazards and their implication on safety. It applies to hazards in general and the rules shall be considered by the TC's in their development of product standards when considering relevant hazard. (examples of hazards are: electrical shock, fire, explosive atmosphere, electrical energy e.g. as described in IEC guides 104 and 116).

Many Technical Committees use the rules established by TC 109 that impact on the design of many low voltage equipment.

D. MARKET DEMAND

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

The technologies of data processing, telecommunication, and use and control of electrical energy, generation, conversion or storage are merging. Therefore, the market demands a principle of insulation coordination, which can be applied in each part of equipment.

Today's insulating materials and recent technologies of electrical engineering (e.g. electronic circuitry) call for insulation coordination based on external conditions. The market requires good applicability by easy reference in Product Standards.

E. SUSTAINABLE DEVELOPMENT GOALS

INDICATE THE SUSTAINABLE DEVELOPMENT GOALS (SDGs) THAT ARE ADDRESSED BY WORK WITHIN THE TC/SC. INDICATE EACH SDG INDICATOR AFFECTED (REFERENCE SPREADSHEET AVAILABLE AT <https://www.iec.ch/SDG/>), AND PROVIDE SPECIFIC INFORMATION ABOUT HOW THE TC/SC IS ADDRESSING THE SDG. CONSIDER BOTH DIRECT AND INDIRECT IMPACTS OF THE WORK OF THE TC/SC.

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

THE MAIN APPLICATION LIMIT OF TC 109 PUBLICATIONS IS THE APPLIED VOLTAGE UP TO 1000V AC AND 1500 V DC. THAT MEANS A MINIMUM INDIRECT IMPACT OF THE GOALS CANNOT BE EXCLUDED.

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.

Physical data are available for dimensioning clearances. For creepage distances, dimensioning data for resistance to tracking had been evaluated from experience, whereas printed circuit board creepage distances were based on research. Dimensioning data for maintaining minimum insulation resistance is available from a research programme, giving also information for a critical review of the earlier experience with regard to tracking. An increasing amount of equipment is designed using printed circuit boards with various designs of surface protection with regard to insulation coordination. Application of fast switching techniques, such as voltage converters or switched mode power supplies etc., cause high-frequency voltage stress in equipment. This requires basic safety standards to give guidance for dimensioning and tests.

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

Does your TC/SC have a need for a systems approach?

If so:

- Will the Systems work be in a single TC or in multiple TCs?
- Will a Standardization Evaluation Group (SEG), Systems Committee (SyC), or Systems Resource Group be required?
- Is your TC/SC 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 TC/SC?

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

TC 109 is not a System committee. For that it is no need for a System approach.

Committees (IEC TC 109 - role of a customer)	IEC TC 8	Systems aspects for electrical energy supply
	IEC TC 42	High-voltage and high-current test techniques
	IEC TC 64	Low-voltage surge protective devices (supply the over voltage categories)
	IEC TC 70	Degrees of protection provided by enclosures
	IEC TC 112	Evaluation and qualification of electrical insulation materials and systems
Other committees (IEC TC 109 - role of a supplier)	IEC TC 2	Rotating machinery
	IEC TC 9	Electrical equipment and systems for railways
	IEC TC 13	Electrical energy measurement and control
	IEC SC 17 A	High-voltage Switching devices
	IEC SC 17 C	High-voltage Assemblies
	IEC TC 22	Power electronic systems and equipment
	IEC SC 22 E	Stabilized power suppliers
	IEC SC 22 G	Adjustable speed electric drive systems incorporating semiconductor power converters
	IEC SC 22 H	Uninterruptible power systems (UPS)
	IEC TC 23	Electrical accessories
	IEC SC 23 B	Plugs, socket-outlets and switches
	IEC SC 23 E	Circuit-breakers and similar equipment for household use
	IEC SC 23 H	Plugs, Socket-outlets and Couplers for industrial and similar applications, and for Electric Vehicles
	IEC TC 31	Equipment for explosive atmospheres
	IEC TC 34	Lighting
	IEC SC 37A	Low-voltage surge protective devices
	IEC TC 38	Instrument transformers
	IEC SC 48B	Electrical connectors
	IEC TC 61	Safety of household and similar electrical appliances
	IEC TC 62	Electrical equipment in medical practice
	IEC TC 64	Low-voltage surge protective devices
	IEC SC 65 B	Measurement and control devices

IEC TC 66	Safety of measuring, control and laboratory equipment
IEC TC 69	Electric road vehicles and electric industrial trucks
IEC TC 72	Automatic electrical controls
IEC TC 82	Solar photovoltaic energy systems
IEC TC 88	Wind energy generation systems
IEC TC 91	Electronics assembly technology
IEC TC 94	All-or-nothing electrical relays
IEC TC 96	Small Power Transformers, Reactors, Power Supply Units and Similar Products for Low Voltage up to 1100 V
IEC TC 99	Insulation co-ordination and system engineering of high voltage electrical power installations above 1,0 kV AC and 1,5 kV DC
IEC TC 105	Fuel cell technologies
IEC TC 108	Safety of electronic equipment within the field of audio/video, information technology and communication technology
IEC TC 120	Electrical Energy Storage (EES) Systems
IEC TC 121	Switchgear and controlgear and their assemblies for low voltage
IEC SC 121 A	Low-voltage switchgear and controlgear
IEC SC 121 B	Low-voltage switchgear and controlgear assemblies

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 TC/SC 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.

THERE IS NO NEED FOR TC 109

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
Keep TC 109 standards up to date to reflect new/changing technologies and user requests both in the marketplace and customer IEC and ISO committees.	Maintenance of existing publications. Extension on requirements for DC.	On-going process

TC 109 will continue to promote the establishment of liaisons to other committees, in particular system committees, to take into account their needs.	Encourage TC 109 Liaison Officers to participate in Plenary Meetings of the Liaison Committees. Establish new liaison where appropriate.	On-going process
Consult IEC product committees in the application of IEC TC 109 standards on request by product TCs. Promote TC 109 standards	Give fast feedback on requests	On-going process
Update the ACOS agreement between TC 64 and TC 109 about the responsibility of Overvoltage categories. Ensure harmonization and stability of OVC I - IV in close cooperation with TC 64	Maintenance together with TC 64	On-going process
Note: The progress on the actions should be reported in the RSMB.		