



IEC/TC OR SC: 36	SECRETARIAT: SWEDEN	DATE: 2021-06
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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

TC 36 Insulators

Scope: Standardization of insulators for high voltage systems and equipment including bushings, insulators for overhead lines and substations and their couplings.

SC 36A Insulated bushings

Scope: Standardization of insulated bushings, and of couplings of these insulators.

B. MANAGEMENT STRUCTURE OF THE TC

Technical Committee 36 was established in June 1949 to deal with "high-voltage testing, wall bushings and insulators". In 1955, the part of the scope regarding high voltage testing was assigned to the newly created Technical Committee 42 and the scope of TC 36 became "to prepare IEC recommendations on bushing insulators, line insulators and related equipment".

In 1966, TC 36 was reorganized and three Subcommittees established:

- Subcommittee A: "Insulated bushings";
- Subcommittee B: "Insulators for overhead lines";
- Subcommittee C: "Insulators for substations".

The present scope of TC 36, reworded in 1998, is "Standardisation of insulators for high voltage systems and equipment including bushings, insulators for overhead lines and substations and their couplings."

The field of activity of each Subcommittee regards the insulator types falling under their scope. The technical activity of the Parent Committee regards only the preparation of international standards on topics common to insulators for different use (bushings, lines, substations), such as general test methods (artificial pollution tests, power arc tests, etc.), general guidelines for the selection of insulators (for instance under polluted conditions).

In 2013, Subcommittees B (insulators for overhead lines) and C (insulators for substations) were merged in TC 36.

C. BUSINESS ENVIRONMENT

The demand for insulators and insulated bushings seems to be constant in developed countries with a trend to increase due to the large demand for electricity. Meanwhile moderate increase has been observed in some developing countries.

D. MARKET DEMAND

The customers of the issued and future standards developed by the Committee are:

- Utilities (private and public producers and distributors of electric power)
- Electrical equipment manufacturers (power and instrument transformers, circuit breakers, cable, GIS, capacitors, surge arresters etc.)

- Testing laboratories (electrical, mechanical and materials) and certification/ accreditation organisations.
- Design institutes and consulting organizations.

These customers are actively represented in the Committee.

The IEC Standards produced by the Committee are widely used at the regional and national level. Harmonisation with IEEE, ANSI and CENELEC is being done continuously.

E. SUSTAINABILITY 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 type="checkbox"/> GOAL 3: Good Health and Well-being | <input type="checkbox"/> GOAL 12: Responsible Consumption & Production |
| <input type="checkbox"/> GOAL 4: Quality Education | <input checked="" type="checkbox"/> GOAL 13: Climate Action |
| <input type="checkbox"/> GOAL 5: Gender Equality | <input type="checkbox"/> GOAL 14: Life Below Water |
| <input type="checkbox"/> GOAL 6: Clean Water and Sanitation | <input 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 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 | |

TC 36 are developing standards that are used for different electrical applications both in the distribution and transmission of electricity.

This work is in line with many parts of the Sustainability Development Goals. A review by TC 36 showed that standards handled by the technical committee addresses goals number 1, 2, 7, 9, 10, 11, 13, 16, and 17.

Goals 1 and 2 – the resilience of basic structure and the access to electricity is of importance to ensure no poverty and zero hunger, TC 36 have several standards that supports this.

Goal 7 and 9 – the supply of affordable and clean energy is depending on stable and good quality on the transmission and distribution of electricity, here the standards handled by TC 36 is supporting this goal by specifying requirements that ensures reliable transfer of electricity.

Goal 10 – being inclusive in the work of TC 36 and enabling utilities to adapt their national specifications.

Goal 11 and 16 – the access to electricity greatly affects sustainable urbanisation and the standards are continuously updated to ensure sustainable supply of electricity.

Goal 13 – some of the standards have requirements that are affected by changes in the climate and environment. TC 36 is continuously adapting the requirements in the standards to these changes.

GOAL 17 – STANDARDISED DIMENSIONS AND TESTING ENSURES ACCESS TO TECHNOLOGY AND INNOVATION

F. TRENDS IN TECHNOLOGY AND IN THE MARKET

Trends in technology

Ceramic, glass, and polymer insulating materials are used in the manufacture of insulators.

In addition, cellulose paper, polymeric foils, dielectric fluid, resin and gas insulating materials are used in the manufacture of insulated bushings.

Significant technical improvements are expected for polymer materials, which will enable insulators used outdoors to withstand better all the stresses occurring during their service life. Even though polymeric insulators were introduced some decades ago, materials and designs have greatly improved and the technology has been applied to relatively new products like station post insulators. For products using the latest technology, knowledge of reliability in service is still limited. This is in contrast to the considerable experience of the reliability of ceramic and glass insulators. Improvements are expected in the quality of raw materials and in the manufacturing processes.

The use of insulators and insulated bushings in high-voltage direct current systems is increasing. Experience in this area is not yet as extensive as it is for insulators used in alternating voltage systems. Progress in the standardization of test requirements and guidelines for application under service conditions

is expected.

The performance of insulators under exceptional ambient and emergency conditions has not been sufficiently investigated. The present Standards were developed for insulators to be used in temperate areas.

Hybrid insulators, which are combinations of ceramic and glass and polymeric materials, are increasingly used for the purpose of achieving special properties e.g. for improved pollution and mechanical performance.

Coated insulators mostly for ceramic and glass insulators are increasingly being used for improved pollution performance.

The use of insulators in desert, tropical or polar regions has not been sufficiently considered. Development in this direction will be considered, when possible.

The trend to increased installations of wind farms will change the environment for bushings in terms of harmonics and transients.

Offshore windfarms and substations might affect the mechanical and environmental conditions for insulators.

Non-traditional installation of insulators on transmission lines (more compact or aesthetically pleasing) will have an impact on the requirements in the standards.

Changes in design of insulators new materials, non-metallic fittings, etc. can influence the requirements in the standards.

Market trends

The Technical committee is aware that there is a shift in market demand toward developing countries where conditions are different to those in developed countries. It has been found difficult to get expert representations from developing countries because they have limited knowledge of IEC standards.

Maintenance of existing standards is an important activity of the committee and revision of old standards requires a great effort of development.

New installations in UHV levels require extension of existing standards to higher AC and DC voltage systems (UHV).

Requirements for increased ratings, reduced visual impact and conversion of existing lines from AC to DC may require future developments e.g. insulated crossarms.

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

TC 36 and its Subcommittee are principally component committees dealing with insulators and their fittings.

TC 36 will actively continue to promote the establishment of liaisons to other committees and cooperation with system committees. 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.

System committees (TC 36 as a supplier of standards)	TC 11	Overhead lines
	TC 14	Power transformers
	TC 17	High voltage switchgear and control gear
	TC 17A	Switching devices
	TC 17C	Assemblies
	TC 37	Surge arresters
	TC 115	High voltage direct current (HVDC) transmission for DC voltages above 100 kV
System committees	TC 1	Terminology

(horizontal committees that produce standards used by TC 36)	TC 10	Fluids for electrotechnical applications
	TC 15	Solid electrical insulating materials
	TC 42	High voltage and high current test techniques
	TC 99	Insulation co-ordination and system engineering of high voltage electrical power installations above 1,0 kV AC and 1,5 kV DC
	TC 112	Evaluation and qualification of electrical insulating materials and systems
	TC 122	UHV AC transmission systems
Other committees (committees that produce standards similar to TC 36 to be in liaison with for technical consistency)	TC 9	Electrical equipment and systems for railways
Liaison with other organisations	CIGRÉ	Category A liaison
	IEEE	TC 36 (SC 36A) has developed a dual logo standard on bushings

H. CONFORMITY ASSESSMENT

Conformity assessment requirements are not contained in TC 36 documents

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
To produce the appropriate documents required by the electricity supply industry in a timely manner	Review TC and SC organization, structure, frequency, and location of meetings to ensure improved efficiency and optimum use of expert time and resources. Note the number of Standards published, the average time for completion of projects, the number of late projects and the overall ranking of TC 36 and Subcommittee within the IEC TCs and use the results to improve efficiency.	Next plenary
To establish and maintain relationships with other Technical Committees and external organizations undertaking work relevant to TC 36's mission	Continuously improve quality and effectiveness of Joint Work with the liaison organisations listed in C above.	Continuous
To endeavour to have committee and subcommittee constitutions that are representative of the industry	To regularly review TC and SC organization and structure to achieve the best closest possible representation of stakeholder interests.	Next plenary
To keep TC 36 standards up to date to reflect new and changing technologies and user requirements in the marketplace, paying attention to environmental and safety aspects	Review annually the industry market leaders in the areas addressed by TC 36 Working Groups, with a goal of attaining increased representation of the major market manufacturers and users.	Next plenary

	<ul style="list-style-type: none"> • Pay attention to environmental and safety aspects for each project • Seek participation by new market participants, especially those from emerging economies and developing countries • Market the work and capabilities of TC 36 in conjunction with the IEC communications department. 	
To prepare additional guidance documents for engineers to have as reference material, when appropriate.	Review annually the possibility of preparing guidance documents taking into account resources available.	November 2022
Note: The progress on the actions should be reported in the RSMB.		