Title of TC
INSULATORS
SC 36A - Insulated bushings
SC 36B - Insulators for overhead lines
SC 36C - Insulators for substations

A Background
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). This activity will be performed in strict co-ordination with the Subcommittees.

B Business Environment
B.1 General
The demand for insulators and insulated bushings seems to be constant in developed countries. Meanwhile moderate increase has been observed in some developing countries.

B.2 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.

These customers are actively represented in the Committee.

The IEC Standards produced by the Committee are widely used at the regional and national level. Competing standards are ANSI and CENELEC when not harmonised.
B.3 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.

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

B.4 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.

B.5 Ecological environment

Insulators do not contain toxic products and are partly recyclable.

The committee pays serious attention to environmental aspects (e.g. the recent replacement of certain dyes).

C System approach aspects

TC 36 and its Subcommittees 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.
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**D Objectives and strategies (3 to 5 years)**

TC 36 has the following objectives:

a) To produce the appropriate documents required by the electricity supply industry in a timely manner;

b) To establish and maintain relationships with other Technical Committees and external organizations undertaking work relevant to TC 36’s mission;

c) To endeavour to have committee and subcommittee constitutions that are representative of the industry;

d) 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;

e) To prepare additional guidance documents for engineers to have as reference material, when appropriate.

**E Action plan**

For the items outlined in D above:

Objective D-(a)

- 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 Subcommittees within the IEC TCs and use the results to improve efficiency.

Objective D-(b)

Continuously improve quality and effectiveness of Joint Work with the liaison organisations listed in C above.
Objective D-(c)
To regularly review TC and SC organization and structure to achieve the best closest possible representation of stakeholder interests.

Objective D-(d)
- 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;
- 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, through vehicles including e-TECH.

Objective D-(e)
Review annually the possibility of preparing guidance documents taking into account resources available.

**F Useful links to IEC web site**
[IEC/TC 36 dashboard](https://www.iec.ch/) giving access to Membership, TC/SC Officers, Scope, Liaisons, WG/MT/PT structure, Publications issued along with their Stability Dates, Work Programme and similar information for SCs.

Name or signature of the secretary

_Brian Lester_