



IEC/TC or SC SC 17C	Secretariat Germany	Date 2005-03-11
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Title of TC High Voltage Switchgear and Controlgear Assemblies

<p>A. Background</p> <p>SC 17C: High Voltage Switchgear and Controlgear Assemblies</p> <p>Scope: To prepare international standards covering prefabricated assemblies which are combination of one or more parts of switchgear and controlgear exceeding 1 kV a.c., together with associated control and power equipment, measuring, signalling, protective, regulating equipment etc.</p> <p>Gas-insulated transmission lines are in the scope of SC 17C.</p> <p>Liaisons: TC 8, TC 14, TC 28, SC 32A, SC 36A, SC 36C, TC 38, TC 99 A) CIGRE SC B3 Eurelectric D) IEEE/PES Substation GIS (Gas insulated substations) - Subcommittee</p> <p>List of P-members: 28 Australia (AU), Austria (AT), Belgium (BE), Canada (CA), China (CN), Czech Republic (CZ), Denmark (DK), Egypt (EQ), Finland (FI), France (FR), Germany (DE), India (IN), Indonesia (ID), Italy (IT), Japan (JP), Korea (Republic of) (KR), Netherlands (NL), Poland (PL), Portugal (PT), Russian Federation (RU), South Africa (ZA), Spain (ES), Sweden (SE), Switzerland (CH), Turkey (TR), Ukraine (UA), United Kingdom (GB), United States of America (US)</p> <p>Publications: 16</p> <p>Projects under development: 8 (3 new work and 5 maintenance).</p>

<p>B. Environment</p> <p>B.1 Business environment</p> <p>The IEC standardisation of high voltage switchgear and controlgear assemblies has reached a high level of covering the various fields of technology. Nevertheless, new technologies emerge from building more compact equipment, and using electronics and information technology.</p> <p>As the development of electric power systems is a key issue for less industrialised and developing countries, and as these countries to a large extent lack experienced personnel, IEC standards on switchgear and controlgear also serve as means for the transfer of knowledge and as guideline for planning.</p> <p>In many cases high-voltage switchgear serves as the ultimate safety device in transmission and distribution networks. This aspect has great influence on the philosophy of work of the subcommittees dealing with high-voltage equipment and substations. Also, the interaction of high-voltage switchgear with networks and loads as well as the system's reaction to switching operations have to be taken into account.</p>
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High-voltage switchgear and controlgear assemblies is mainly used due to environmental constraints of various types. It has special advantages regarding safety for personnel and flexibility. Interfaces with connected equipment require collaboration with other equipment committees.

Gas-insulated transmission systems (GIL) have been developed in the recent years to replace lines and cables for very high transmission energies.

In SC 17C, the manufacturers of high voltage switchgear and controlgear are adequately represented, covering the major global and regional manufacturers. The support of users is sometimes not sufficient, but very important for the experiences made with the technology and the standards. SC 17C will invite users that are utilities, even in a deregulated energy market to participate on IEC standardisation work, for their own advantage.

The evolution of switchgear and controlgear technologies, the trends toward higher degrees of automation, the integration of various additional functions into primary equipment, the changing political environments – saving of energy, deregulation, etc. – and the growth of the international trade require the maintenance of the existing as well as the development of new IEC standards on high- and low-voltage switchgear and controlgear.

B.2 Market demand

Global market expansions continue to create high demands for international standards on switchgear and controlgear. Upon this background the harmonisation of existing national standards through their integration into IEC is of major importance.

B.3 Trends in technology and trade

The technology changes are driven by electronic and information technology on one side, and by low maintenance and compact design on the other side.

The standardisation activities are focussed on both fields with new working groups.

The maintenance of existing standards has its main focus on simplifying standards on the information and knowledge now available with the experience.

Political and economic constraints will reduce the safety margins, necessitate lower equipment and operational costs, and enforce development trends for higher reliability and availability.

Electromagnetic emission will have to be considered very carefully due to the higher complexity of the switchgear and controlgear and the extensive application of electronic devices.

The environmental aspects and life cycle cost evaluations are getting more important. The system view in standards is replacing by the more product/device orientated view of the past.

Deregulated energy market with a reduced number of experts left in the companies have large impact on the type of standards needed in the future.

SF₆ as an insulating gas is under special control to have a closed loop of using SF₆ with a reduction of SF₆ release to the atmosphere. Standards for gas handling and reuse of SF₆ are under review and consideration now.

B.4 Ecological environment

The nature of the primary technologies of switchgear and controlgear implies that practically all constructional elements can be recycled without limitations. There are no detrimental emissions during the switching process.

Care is taken to avoid the use of toxic materials or materials which may produce toxic by-products.

One of the extinguishing media used in high-voltage switchgear is Sulphur Hexafluoride (SF₆). This gas is listed as a greenhouse gas. This is recognised by establishing very low limits for permissible leakages and requiring the use of the gas in a closed cycle.

C. Work programme
Current work
The current status of programme of work of SC 17C can be found in the Annex A of this report.
C.2 Resources/infrastructure needed
The available resources are sufficient for the ongoing work.
Up to now, no real difficulties were experienced in recruiting WG members – apart from the fact that a more active co-operation is desired from the users' side – and in obtaining invitations for WG, SC and TC meetings.
The administrative support is considered adequate.
Liaisons within IEC, to external standardisation bodies, organisations of manufacturers and users, and scientific corporations are established according to the need from ongoing work, see clause A.

D. Future work
The future work of SC 17C is focussed on the following main activities:
<u>New Work</u> PNW 17C-344 Ed. 1.0 “Measurement or Calculation of EMF in High Voltage Switchgear and Controlgear Assemblies”
<u>Advisory Groups</u> During the IEC SC 17C meeting in Seoul on October 14th and 15th , it was decided to establish two Advisory Groups to support the work of SC 17C (see 17C/342/AC): Advisory Group High Voltage (AWG 20) and Advisory Group Medium Voltage (AWG 21).

E. Maintenance cycle SC 17C				
Publication no. (old number)	Date of publication	Review date	Maintenance result date	Responsibility (Maintenance Team)
IEC 62271-200	2003-11	2006	2009	MT14
IEC 62271-201 (60466)	1987-01	MWIP	2007	MT14 PT2
IEC 62271-202 (61330)	1995-12	MWIP	2004	MT14 PT1
IEC 62271-206 (61958)	2000-11	2005	2010	MT XX
IEC 62271-304 (60932)	1988-01	MWIP	2008	MT19
IEC 62271-203	2003-11	2007	2010	MT16
IEC 62271-204 (61640)	1998-07	2005	2008	MT XX
IEC 62271-207 (62271-2)	2003-03	MWIP	2008	MT22
IEC 62271-305 (60859)	1999-04	MWIP	2007	MT18
IEC 62271-306 (61639)	1996-12	2005	2008	MT XX

MWIP – Maintenance work in progress

Name or signature of the secretary
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