STRATEGIC BUSINESS PLAN (SBP)

IEC/TC OR SC:	SECRETARIAT:	DATE:
TC 20	**Germany**	**2016-11**

A. State title and scope of TC

Technical Committee 20 - Electric Cables - covers a very broad product range from low voltage domestic installation wiring and appliance wires up to supertension transmission cables for 500 kV.

The current scope of TC20 is:

> *"To prepare international standards for the design, testing and end-use recommendations (including current ratings) for insulated electrical power and control cables, their accessories and cable systems, for use in wiring and in power generation, distribution and transmission.*
>
> *The applications cover an unlimited range of voltage and current, and includes applications such as cables for photovoltaic installations, charging cables for electric vehicles, HVDC cables (land and sub-sea), High Temperature Superconducting (HTS) cables and heating cables where the current is used to create heat.*
>
> *Cables specifically designed for marine applications covered by SC 18A are excluded. All cables for communication, data transmission and other non-power applications are covered elsewhere (TCs 46 and 86A).*
>
> *TC20 holds a group Safety Function for Fire Hazard testing on cables comprising:*
>
> *- flame propagation tests;*
> *- fire resistance tests;*
> *- smoke optical density tests;*
> *- corrosivity tests."*

Users of cables generally demand safe and reliable products with a long life expectancy. The pressures on such mature products are economic rather than technical. New and emerging technologies are not expected to affect greatly and quickly the scope and work of the TC.

Consequently, the scope of TC20 does not need modification at present.

B. Management Structure of the TC

IEC Advisory Committee No 20 "Electric cables" first met in Prague in October 1934. Preliminary work had been done at the High Tension Conference in June 1933. The early work was aimed at HV cables (then restricted to a maximum voltage of 66 kV). Later developments saw a split into two sub-committees, SC 20A for higher voltages and SC 20B for lower voltages. In 1990 a 3rd SC was added, SC 20C, for fire performance aspects of

cables. In 1998 the work was re-consolidated into a single TC 20, supported by permanent WGs. These are:

WG 16 High voltage cables (1 kV and above), their accessories and cable systems
WG 17 Low voltage cables (below 1 kV)
WG 18 Burning characteristics of cables
WG 19 Current ratings and short circuit limits

For specific tasks TC20 has now also in place:

MT20 Environmental Issues, involved with improvement of TR 62125
PT 62895 High Voltage DC cables
PT 63075 High Temperature Superconducting cables

There are at present no proposals to change the structure of TC20.

C. Business Environment

The total worldwide market size for electric cables is ca. 175 billion USD (2014) ; of which ca. Americas 20%, Europe 20%, China 30%, Japan 7 % and others 25%.

Company mergers (amongst manufacturers, contractors, users and certifiers), have enhanced the globalisation and the product and material rationalisation; new markets and manufacturing capabilities have emerged in developing countries. These trends will reinforce and enhance the importance of IEC standards in the sector.

Greater globalisation and the market growth in new areas will ensure that a.o. test houses and approval organisations remain strong users of TC 20's product and test standards.

At least 80 countries have some manufacturing capabilities. This number is growing especially for lower voltage cables used in basic infrastructure and domestic applications.

Excluding China, where statistics are hard to find and small enterprises may be numbered in hundreds, there are at least 600 individual manufacturers worldwide, of whom only a few a) manufacture for voltages above 150 kV, and b) have a global presence. Especially North American and European manufacturers have invested in the Middle and Far East and in South America.

Day-to-day cable business is affected by the economics of oil and metal prices. Global economic indicators such as for the developments of GDP and the building industry are indicative for cable market volumes.

The strong usage of TC 20 standards in the marketplace is manifest in different ways due to regional differences, and to differences in the type of standard (e.g. product standard or test method). Many major developed economies use the product standards as a baseline for their own national standards, but frequently impose additional requirements due to different network systems, local regulations and/or customer demands. In some industrially well-developed countries and regions, competing standards exist by virtue of historical infrastructure and regulatory influences. In other regions, and in the absence of such local

factors, the unchanged product standard serves well as the national standard and offers sufficient proof for regulatory compliance.

D. Market Demand

The customers of TC 20 standards are usually economic actors involved in development, materials supply, manufacturing, sales, trading, installation, testing, certification and usage of electric cables. The products range from LV domestic installation wiring and appliance wires through to EHV transmission cables up to 500 kV.

Especially for mechanical, electrical and fire test methods and current rating standards there is very wide usage, virtually regardless of region. This has the potential to be enhanced even further via the IEC global relevance programme.

Analysis shows that cable manufacturers, test houses and users are represented on Working Groups and at TC level, but for the users this is mainly restricted to the transmission and distribution sector. In recent years there has been some decline in representation due to the economic crisis; there is participation from the developing industrialized countries, but this may require further encouragement.

The majority of the work covers the maintenance of existing standards, as these can accommodate most of the technological developments for the majority of cable types. A limited number of really new standards covering major extensions of new technology, or to satisfy new applications relating to renewable energy sources, will be required.

E. Trends in Technology and in the Market

There is a continued worldwide need for reliable, affordable and publicly acceptable electricity grids. In many countries the traditional grids with large central power stations and a one way flow of power from the network to the consumer are or will be adapted. As climate change is today one of the major concerns the challenge for the electrical power system is how to integrate the increasing number of non-carbon electricity sources. Electricity needs to be carried ashore from offshore wind farms or from remote onshore windmills and photovoltaic installations to the consumers. Smarter distribution lines are needed to serve private homes and industry installations more adequately; networks will be enriched with information technology such as sensors, digital meters and communication capabilities. More countries will move towards undergrounding to achieve more resilient distribution networks and less blackouts. HVDC cables will increasingly be the backbone of future systems of electricity highways securing power supply over long distances and enabling electricity trading across country borders.

Wire and cables are designed to function safely for a long period of time, sub-standard cables are dangerous and may cause malfunctioning of the equipment connected. For established cable standards from LV up to at least 400 kV, changes in technology derive mainly from production processes, materials and components, and must be seen as relatively small step-by-step improvements in a substantially mature situation. These developments, which improve the efficiency and durability of the cable, are incorporated into the standards via the maintenance procedure.

The newer infrastructure demands, such as from large developing countries, taken in conjunction with interconnection projects and use of renewable energy sources, means that the Technical Committee is now working on:

HVDC polymeric cables (PT 62895, publication expected mid 2017)
High temperature superconducting cables (6- 500 kV; with TC90 in PT 63075)
Submarine MV power cables up to 60 kV for offshore connections (IEC 63026, in WG 16)

The TC is also looking in particular to the effects for cable standards of the technical developments in:

UHV (in CIGRE)
LVDC (in SEG 4 and TC 64)
Charging of Electric Vehicles
Photovoltaic energy systems

Much technical development work of the last 20 years has been in the area of fire performance cables, for this subject TC20 (through its WG18) has a group safety function. In certain regions and countries there is already some maturity in the general domestic and industrial building sector for low fire hazard cables, which is often supported by national or regional regulations or installation standards. This is gradually influencing MV and HV applications. The demand of low fire hazard cable is supported via test method standards covering all important aspects of fire behaviour. These standards are actively refined further and, under the global relevance programme, assessed as tests where harmonisation across regions could be beneficial.

The TC is considering for many years the environmental aspects of its products and components both in relation to their end of life disposal, recycling and their in-service performance. TC20 published information several years ago on suitable cable design parameters to achieve lower transmission losses and reduced heating effects, and hence reduced carbon footprint. The revision and upgrading of a specific TC20 guidance document (IEC/TR 62125) on environmental issues is in progress. Guidance on environmental conductor size optimization will be provided in the new deliverable. TC 111 is seen as a source of information and inspiration for this activity and its work is considered as part of the review process.

There is a strong awareness of the potential impact of requirements and regulations relating e.g. heavy metal - or halogen free. Initiatives in particular in TC111 to set new test methods and requirements are carefully monitored to assess relevance to power cables and avoid conflicts with well-established cable material test methods.

F. Systems approach aspects (Reference - AC/33/2013)

TC 20 products, by their very nature, are generally not suitable for coverage by a horizontal system approach to standardisation. This is principally due to factors such as:

- the use of cables as products with a long life expectancy (many decades) and their installation in inaccessible places (e.g. buried);
- the wide variety of end-uses to which a single cable type can be put;

- the role of cables as connecting devices (often over long distances) between items of equipment.

However, TC20 is monitoring the work of the IEC System Evaluation Groups (SEGs), System committees (SyCs) and the System Resource Group (SRG). At present only the work in SEG4 (LVDC) is expected to have a direct effect on some LV standards of TC20.

There is obviously interdependence between the TC20 work and the activities of other TC/SCs in several areas. Therefore, TC20 has liaisons and interfaces with many TCs and SCs as illustrated below:

TC 20 as a customer for standards of other TCs	TC 15	Solid electrical insulation materials
	TC 28	Insulation co-ordination (specifically on HVDC)
	TC 42	High voltage and high current testing techniques
	TC 89	Fire hazard testing
TC 20 as a supplier of standards to other TCs	TC 14	Power Transformers
	SC 17C	HV Switchgear
	SC 18A	Electric cables for ships and mobile and fixed offshore units
	TC 34	Lamps and related equipment
	TC 46	Cables, wires, waveguides, R.F. connectors, R.F. and microwave passive components and accessories
	TC 61	Safety of household and similar electrical appliances
	TC 69	Electric road vehicles and electric industrial trucks

TC 20 as a supplier of standards to other TCs (continued)	TC 82	Solar photovoltaic energy systems
	TC 86A	Fibre optics. Fibres and Cables
	TC 90	Superconductivity
	TC 108	Safety of electronic equipment within the field of audio/video, information technology and communication technology
	TC 115	HVDC transmission for voltages above 100 kV
Other horizontal committees that produce standards used by TC 20	TC 1	Terminology
	TC 64	Electric installations and protection against electric shock
	TC 111	Environmental standardization for electrical and electronic products and systems
	TC 112	Evaluation and qualification of electrical insulating materials and systems

TC20 has liaison officers and experts participating in committees: TC 64, TC 82, TC 89, IEEE-PES-ICC and CIGRE SC B1.

Experts reporting to TC 20 but working in other TC/SCs are in: SC 17C, SC 18A, SC 23A

G. Conformity Assessment

TC20 test method and product standards are well recognized in the market place. They are in daily use for conformity assessment and certification of cables and cable materials. IEC conformity assessment schemes for cables do not exist and/or are not used. Typically IEC test methods are directly used or are the basis to qualify local or regional products and often IEC product requirements are called up for national or regional approvals and market access.

H. 3-5 Year Projected Strategic Objectives, Actions, Target Dates

Objectives

1 Maintain the time for development of TC 20 work within requested timescales.

2 Ensure that those standards that have had no review since the introduction of the formal maintenance process are addressed.

3 Regularly review TC 20 product standards to reflect changing technologies and user requirements, including in the area of fire performance, but ensure maximum stability for associated test methods.

4 Ensure that work is prioritized in relation to the available resources.

5 Continue to respect targets for global relevance of standards without creating non-homogeneous deliverables.

6 Promote the existing high awareness of TC 20's work and standards, especially towards newer members and associate members of IEC.

7 Build upon the environmental considerations already developed in TC 20.

General Actions

1 Encourage Convenors and Project Leaders to plan work, meetings and schedules up to three years ahead.

2 Ensure that Convenors, project leaders and experts are aware of Best Working Practices, and have access to all tools to work efficiently.

3 Monitor, with assistance of TC 20's Strategic Planning Group, emerging market and technological trends.

4 Engage with IEC Central Office at the earliest stage of any procedural or structural problems likely to cause delay.

5 Maximise consensus for both new work and amendments/revisions before formal entry into the procedures:

6 Regularly review target dates for all work.

Specific Actions

The latest version of TC 20's work programme can be found on the relevant web page for the committee (see IEC TC20 Dashboard). The items listed below are the most significant ones, and should all be completed or have made significant progress by the time of the next plenary meeting.

1 Continued assessment of the work of CIGRE SC B1 for relevance towards future standardization; WG 16 and WG 19 to report at least at the next plenary meeting.

2 Review the work in CIGRE SC B1 on UHV.

3 Revival of liaison of WG17 to SEG4 (LVDC).

4 Finish the work on MV AC submarine cable standard asap.

5 Start the work on cables for Mode 4 charging for Electric Vehicles (IEC 62893-4).

6 Continue preparation of HTS cable testing standard by a Joint Project Team TC20-TC90, based on the CIGRE SC B1 recommendation TB 538 (future 63075).

7 Conclude the standardization work on 62895 (HVDC land cables).

8 Continue review on 60502-1, 60840 and 62067 (HV and EHC cable systems, WG16).

9 Conclude standardization on 62930 (cables for Photovoltaic energy systems).

10 Conclude standardization on 62893 (Part 1, 2, 3) on charging cables for Electric Vehicles (Mode 1, 2, 3).

11 Conclude the 63010 series on halogen-free cable standard series (without smoke requirements, for 300/300V) to comply with the requests for halogen-free thermoplastic flexible cables for use with small devices and for short connection to desktop appliances.

12 Conclude review on 60331 and 60332-3 series.

13 Continue work on 60754-3 Ion Chromatography.

14 Continue work on an upgraded TR62125 on environmental aspects including conductor size optimization; share relevant matters with TC111.

Name or signature of the secretary

H Myland

20/(PM Rosslyn 2016 – DL)
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2016-10-27

INTERNATIONAL ELECTROTECHNICAL COMMISSION

Technical Committee No. 20: ELECTRIC CABLES

Decision list from the Plenary Meeting of IEC TC20 Rosslyn, VA , USA - 27+28 Oct 2016

Reference is given to the updated Agenda items (see 20/1667A/DA)

Summary of Decisions

		Agenda item No
1	Confirmation of Agenda	2
2	Inform ACOS about limited use of recommended fire tests by TC46 and TC86	6.1
3	CO to take action about the missing activity of Algeria as a P Member	6.2
4	Confirmation of work plan on 63026	8 / §2
5	Confirmation to start revision of 60502-1	8 / §3
6	Confirmation to extent Stability Date of 60502-1 to 2018	8 / §3
7	Confirmation to start revision of 60840	8 / §3
8	Confirmation to extent Stability Date of 60840 to 2018	8 / §3
9	Confirmation to start revision of 62067	8 / §3
10	Confirmation to extent Stability Date of 62067 to 2018	8 / §3
11	Confirmation to extent Stability Date of 61238-1 to 2018	8 / §3
12	Confirmation on 60230 to go to FDIS	8 / §3
13	TC20 to ask CIGRE SC B1 to work on update of 1980 recommendation about superimposed impulse voltage testing	8 / §3
14	Confirmation of new Stability Date for 60055 → 2024 reconfirmed unchanged 60229 → 2019 60502-2 → 2019	8 / §5
15	Start withdrawal process of 60885-2	8 / §5

16	No support from TC20 for the proposal from DENC to separate the standardization work on LV and MV accessories from WG16 into a new WG	8 / §6
17	Support from TC20 for membership in ACTAD, liaison to move from Secretary to WG16 after further consideration in WG16	8 / §6
18	Confirmation of Convenor (Mr Novak) and Co-Convenor (Mr. Zaccone)	8 / §7
19	Confirmation on 60811-501 to proceed to CD2	9 / §3.2
20	Confirmation of the title of 63010 to avoid any delay in the process	9 / § 3.5
21	Confirmation to start the review work on 60227 series, 60245 series, 60800, 62440 in 2017	9 / §4
22	Confirmation of new SD 2020 in accordance to work load for 60227 series, 60245 series, 60800, 60811-100, 60811-602, 62440	9 / §4
23	Confirmation of Convenor (Mr Gol) and Co-Convenor (Mr. Granheim)	9 / §5
24	Extension of the scope of 60331-3 by incorporating the UK comment on inclusion of larger diameter cables	10 / §4.1.1
25	Confirmation of 60332-2 in case of no input from users (SC46C and 86A) of the parts for 2025 or start of maintenance.	10 / §4.3
26	Confirmation to start the review of 60754-1 and 60754-2	10 / §4.5
27	Confirmation to extend the stability period to 2018 for 60754-1 and 60754-2	10 / §4.5
28	Confirmation to start the review of 61034 series	10 / §4.6
29	Endorsement to continue the project 60754-3 with CDV	10 / §5
30	Endorsement to start a preliminary NWI (PWI) on circuit integrity test for MV cables with support of WG 16	10 / §6
31	Confirmation to extend the stability period to 2022 for 60332-1 series	10 /
32	Confirmation of Convenor (Mr. Kobilsek)	10 / §9
33	Endorsement to stop the activities on updating 60287-2-2	11 / §3d
34	Endorsement to start the development of a TR covering Guidance on use of 60287-2-3 on cables in tunnels	11 / §3e
35	Confirmation of Convenor (Mr Gaspari) and new Co-Convenor (Mr. Trisán)	11 / §4
36	Confirmation to continue with the development of an International Standard replacing TR62125, with improved content (compared to NP content)	14.1 / §3

37	Endorsement of a response to TC9: - No transfer of railway rolling stock EN standards to IEC TC20 - No guidance possible on installation rules for railway rolling stock cables from IEC TC20 - Liaison to be maintained by Secretary and expert from CLC/TC9X	15
38	Initiation of liaison to TC28 through Dr. Frohne	15
39	Amendment of the liaison list with TC42 (proposal Mr Boev), TC112 and TC115	15
40	Clarification of the Terms of Reference on TF B1.63 “Specifications for HVAC Dynamic Cables above 36kV”	15
41	Amendment of the list of actions in SBP according to the outcome of the meeting and add HTS cables in the Scope	17
42	Adjustment of Clause F about liaisons in the SBP	17
43	Re-Confirmation of TS 62100 for 5 years and to start considering technical changes (see TC97)	19
44	Confirmation of invitation by Chinese NC for next TC20 Plenary meeting to be held in Shanghai in the week starting 5 November 2018	20
