

## BUSINESS PLAN

|                                    |                          |                           |
|------------------------------------|--------------------------|---------------------------|
| CENELEC/TC or SC<br><b>TC 17AC</b> | Secretariat<br><b>DE</b> | Date<br><b>2018-03-14</b> |
|------------------------------------|--------------------------|---------------------------|

**TC title: High-voltage switchgear and controlgear**

### A Background

The scope of TC 17AC is to establish and maintain standards for rated voltages > 1 kV AC or > 1.5 kV DC on

- high-voltage switchgear and controlgear
- including switching devices and assemblies
- high voltage gas-insulated transmission lines.

IEC standards are subject of the parallel voting process according to the Dresden/Frankfurt agreement to be transferred into EN standards. Technical Specifications or Report transferred into EN on single decisions. In principle the strategy of CENLEC TC 17AC is to standardize on international IEC level prior to the European level. TC 17AC observes and supports European activities related to standardization on high-voltage switchgear and control gear in order to ensure the availability of standards suitable to cover the essential requirements of the relevant European Directives (e.g. on EMC).

### B Business Environment

#### B.1 General

Electric power systems are a key issue for all countries. Besides its electric power supply function high-voltage switchgear devices and assemblies also act as safety equipment to protect transmission networks, distribution networks and power generation plants in operation and in case of faults. This aspect as well as the interaction between switchgear and networks is of vital influence on the philosophy of the committee work.

The share of enclosed switchgear is increasing due to advantages regarding personnel safety, reliability and environmental impact. The interfaces of switchgear to connected equipment require collaboration with other standardisation committees.

#### B.2 Market demand

Global markets demand international standards for switchgear and control gear. EN standards follow IEC standards through the Dresden/Frankfurt Agreement where appropriate. In Europe EN standards harmonize national standards.

#### B.3 Trends in technology

There is no trend in short and midterm for fundamental changes regarding the technology of high-voltage switchgear and controlgear. However, there is ongoing evolution in detail, in order to optimize space, initial investment values and operational costs, introduce new insulating gases with reduced environmental impact, promote DC equipment (DC GIS and, DC GIL). Fast changing power generation in particular renewable energy sources lead to new requirements of high-voltage switchgear and controlgear. More flexibility of the network operation may introduce more digital technology and

monitoring in substation. This may influence the existing EN standards e.g. endurance tests. In this context, the EU requirements, e. g. EMC Directive, have to be followed.

EN standards contribute to reducing the environmental impact of the use of high-voltage switchgear and controlgear by increasing their energy efficiency, by promoting a quantification of their environmental impact on their whole life cycle.

In a longer term view, new standard developments may be expected in the following fields:

- Alternative gases to SF<sub>6</sub>
- Smart grids with integration of renewable energy generation
- European network codes
- Offshore substations
- DC gas-insulated technology as DC GIS and DC GIL
- Vacuum circuit breakers for higher voltage level up to 170 k
- Impact on breaking capacity of network connected storage (batteries, capacitors)
- Monitoring environmental impact by smart phones (making available information for preventive maintenance)

#### **B.4 Market trends**

As a key component in the electricity supply chain, switchgear and controlgear also plays major role in future smart grids. Therefore technical and legislative developments of grid issues must be thoroughly observed and assessed regarding the maintenance of existing or the drafting of new standards.

At the transmission level the rated short circuit currents are increasing and the structure of the network is changing in an aging European network. In addition at the distribution level micro-grids are introduced and the local short circuit rating will be modified.

#### **B.5 Ecological environment**

The nature of high-voltage switchgear and controlgear design implies that almost all components and structural elements can be recycled. Switching processes do not cause detrimental emissions. However, care is taken to avoid the use of materials which may produce toxic by-products.

Replacement of SF<sub>6</sub> in cases when appropriate is under investigation in field tests now and will have impact on future switchgear equipment and assemblies.

The high performance and quality of the products following CENELEC standards and thus the equipment of TC 17AC makes them the most ecological solution for power transmission and distribution.

#### **B.6 Involvement of societal stakeholders**

TC 17AC has permanent representation in business associations and are connected to national authorities and regulators. While manufacturers of switchgear and controlgear are adequately represented in TC 17AC Technical Committees, it would be desirable to have a more active participation from the users and operators of high-voltage switchgear equipment and assemblies including its controlgear.

#### **B.7 Involvement of Small Manufacturing Enterprises (SME)**

SME are involved as delegates of their National Committee. Moreover, SBS<sup>1</sup> is entitled to participate in TC17AC.

---

<sup>1</sup> Small Business Standards, an association (linked to UEAPME, the European Association of Craft, Small and Medium-sized Enterprises) to represent European SME in the standard making process.

## **C System approach aspects**

TC17AC operates by consensus and maintains the exchange with other relevant committees. At WG level convenors are free to invite external experts who provide sound experience.

TC 17AC monitors the developments in electricity systems, the relevant technical European regulations (e.g. ENTSO-E network codes) and the activities of the technical committees involved in order to take further action if required.

For implementing European Directives close contacts with the EU Commission and CENELEC committees like JTC 10 are kept.

## **D Objectives and strategies (3 to 5 years)**

- To continuously review and maintain existing standards
- To adapt, when needed, the IEC TC 17AC new standards for the European context
- To develop new standards as technological need arises

## **E Action plan**

- Plenary meeting (date published on the collaboration platform)
- Parallel voting process on IEC TC 17, SC 17A and SC 17C standards in place
- Maintenance of EN 50052 Cast aluminium alloy enclosures (published)
- Maintenance of EN 50064 Wrought aluminium and aluminium alloy enclosures (in progress)  
EN 50068 Wrought steel enclosures (in progress)  
EN 50069 Welded composite enclosures of cast and wrought aluminium alloys (in progress)
- Assessment of standards for enclosures and compartments of gas-insulated switchgear for required changes and maintenance  
EN 50089 Cast resin partitions  
EN 50187 Gas-filled compartments
- Assessment of standards for compact equipment of distribution substations for required changes and maintenance  
EN 50532 Compact Equipment Assembly for Distribution Substations (CEADS)

## **F Useful links to CENELEC web site**

TC home page giving access to Membership, TC/SC Officers, Scope, Publications, Work programme [password-protected area].

<http://www.cenelec.eu>

<http://collaborationclc.iec.ch>

Hermann Koch  
TC 17AC Secretary