Title of TC

Switchgear and controlgear and their assemblies for low voltage

TC 121 has the following subcommittees:

   SC 121A: Low-voltage switchgear and controlgear
   SC 121B: Low-voltage switchgear and controlgear assemblies

A. Background

A.1 TC 121

TC 121 was set up in December 2013 (see document 121/1/AC). It includes all activities of the former SC 17B and SC 17D.

TC 121 coordinates the work between its subcommittees and its work between other technical bodies within and outside IEC. To this end it will establish ad hoc groups, working groups etc., as appropriate. A Chairmen Co-ordinating group, including all officers of TC 121 and its SCs, as well as TC 121 WGs convenors, and MT or PT leaders, prepares the decisions which have to be agreed at TC level.

The aim is to ensure TC 121 and its subcommittees developing all relevant international standards for low-voltage switchgear and controlgear and their assemblies for industrial, commercial and similar use with rated voltages up to 1 kV a.c. or 1,5 kV d.c.

A.2 SC 121A

SC 121A continues the work of former SC 17B, which was established in 1953.

SC 121A covers all features of low-voltage switchgear and controlgear devices:

- Product requirements (characteristics, product information, normal service conditions, mounting and transport conditions, constructional and performance requirements) and the associated test requirements;
- Physical and logical interfaces to the control systems (Controller-device interfaces and device profiles);
- Product data and properties for information exchange (e-commerce).

SC 121A considers the horizontal topics and system aspects that impact low-voltage switchgear and controlgear and also contributes to the improvement of the associated horizontal standards, for example the following topics:

- Energy efficiency;
- Environmental aspects;
- Functional safety;
- Electromagnetic compatibility (EMC);
- Smart grid aspects.

SC 121A also issues publications dealing with the correct association of low-voltage switchgear and controlgear (short-circuit, selectivity...).

SC 121A has issued 66 publications within which the main series is IEC 60947. The following topics are currently covered:
- Topics covered by product standards:

### Power circuit equipment

| Circuit-breakers with the exception of those which are in the scope of SC 23E "Circuit-breakers and similar equipment for household use"
| Switches, disconnectors, switch-disconnectors, fuse-combination units and similar equipment (with the exception of switches for household and similar fixed-electrical installations which are in the scope of SC 23B "Plugs, socket-outlets and switches")
| Electromechanical contactors, overload relays, motor-starters and similar equipment, including electromechanical contactors for household and similar purposes. It covers as well the electronic relays with extended functions that may also be called in the field with other designation such as: "motor management system", "motor protector"...
| AC semiconductor motor controllers and starters (excluding variable speed drives which are in the scope of SC 22G)
| AC semiconductor controllers and contactors for non-motor loads

#### Multiple function equipment:
- Transfer switching equipment, with the exception of static transfer systems which are in the scope of SC 22H "Uninterruptible power systems (UPS)"
- Control and protective switching devices (or equipment) (CPS).
- Control units for built-in thermal protection (PTC) for rotating electrical machines

### Control circuit devices and switching elements

#### Electromechanical control circuit devices:
- Manual control switches (for example pushbuttons, rotary switches, foot switches);
- Electromagnetically operated control switches, either time-delayed or instantaneous (for example contactor relays);
- Pilot switches (for example pressure switches), temperature sensitive switches (thermostats) and programmers;
- Position switches (for example control switches operated by part of a machine or mechanism);
- Associated control circuit equipment (for example indicator lights).

#### Proximity switches including proximity switches with defined behaviour under fault conditions (PDF)

#### Method of assessing the performance of low-energy contacts - Special tests

#### Electrical emergency stop device with mechanical latching function

#### DC interface for proximity sensors and switching amplifiers (NAMUR)

#### Requirements for proximity devices with analogue output

#### Three-position enabling switches

#### Flow-rate switches

### Terminal blocks

| Terminal blocks for copper conductors
| Fuse terminal blocks
Printed board terminal blocks for copper conductors

### Clamping units

Safety requirements for screw-type and screwless-type clamping units for conductors above $35 \text{ mm}^2$ up to $300 \text{ mm}^2$

- **Topics covered by technical reports:**
  - **Overcurrent protective devices**
    - Application of short-circuit ratings
    - Selectivity under over-current conditions
  - **Application specific equipment**
    - Controllers for drivers of stationary fire pumps
    - Enclosed switch outside the scope of IEC 60947-3 for various applications, to provide isolation of electrical equipment during repair and maintenance work
  - **Controller-device interfaces (CDIs)**
    - General rules
    - Actuator sensor interface (AS-i)
    - DeviceNet
    - CompoNet
  - **Device profiles for networked industrial devices**
    - General rules for the development of device profiles
    - Root device profiles for starters and similar equipment

### e-commerce

Product data and properties for information exchange

SC 121A is in charge of the following standard, which belongs to Safety Group Function:

- IEC 60999-2 (2003-05): Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 2: Particular requirements for clamping units for conductors above $35 \text{ mm}^2$ up to $300 \text{ mm}^2$ (included).

### A.3 SC 121B

SC 121B continues the work of former SC 17D, which was established in 1969.

SC 121B covers the product requirements (characteristics, product information, normal service conditions, mounting and transport conditions, constructional and performance requirements...) and the associated verification requirements for stationary or movable low-voltage switchgear and controlgear.
assemblies. These assemblies incorporate low-voltage switchgear and controlgear, generally complying with standards prepared by SC 121A or SC 23E, and associated equipment.

The fundamental series of assembly standards (IEC 61439) is based upon Part 1 with “General rules”. Subsidiary product parts with requirements for specific assembly types are prepared as appropriate. Ancillary documents supporting the application of these assembly standards are issued as Technical Reports.

SC 121B has issued 11 publications within which the main series is IEC 61439.

The following topics are currently covered:

- Topics covered by product standards:
  - Power switchgear and controlgear assemblies
  - Distribution boards intended to be operated by ordinary persons (DBO)
  - Assemblies for construction sites
  - Assemblies for power distribution in public networks
  - Busbar trunking systems (busways)
  - Empty enclosures for assemblies

- Topics covered by technical specification:
  - Assemblies for specific applications such as marinas, camping sites, market squares, electric vehicles charging stations

- Topics covered by technical reports:
  - Temperature rise verification of assemblies by calculation
  - Guidance to specifying assemblies
  - Guide for testing under conditions of arcing due to internal fault

B  Business Environment

B.1  General

B.1.1 TC 121

The global market expansion continues to create high demands for international standards for switchgear and controlgear and their assemblies, which are used in various environments such as power generation, industrial, commercial, residential, infrastructure and buildings.

The importance of these products is increasing due to a growing degree of automation and control in factories, buildings, construction sites, offices etc.

Due to the wide range of applications and depending on the particular type of product possible handling by unskilled operators cannot be excluded and has to be taken into account. Therefore, increasing demands including those for safety necessitate the development of new standards and the adaptation of existing standards.

Requirements for upmost product safety and reliability lead to high levels of performance verification during development and manufacturing, all based on the provisions of the relevant product standards.

B.1.2 SC 121A

Manufacture of switchgear and controlgear is mostly undertaken by global players, although some regional manufacturers take significant market share.
The products are manufactured by serial or mass production. Therefore performance verification is generally based on testing (type and routine tests).

B.1.3 SC 121B
Switchgear and controlgear assemblies are produced by local, regional and global manufacturers.

Assemblies are generally manufactured or assembled on a one-off basis; incorporating various combinations of devices and components, to suit the needs of the particular customer application and safety requirements. Verification of the assembly design solely by test is therefore not always feasible.

In many cases the design and manufacture of an assembly is made by different parties. One manufacturer may provide a basic design and possibly also supply a kit of parts to another manufacturer, who completes the design and produces the final assembly for the particular application. Alternatively the complete design and manufacturing process can also be executed under the control and responsibility of a single manufacturer.

B.2 Market demand

B.2.1 TC 121
The worldwide market for industrial applications, machinery and big infrastructural projects requires components, devices and assemblies which are designed, verified and produced in compliance to internationally harmonized, readily accessible and easy to understand standards.

The IEC standards developed by TC 121 and their subcommittees are used at regional and local levels. They are adopted and/or translated to local languages, e.g.:

- In Europe, harmonized EN standards are accepted through a parallel voting procedure with IEC. These standards fulfill the requirements of the applicable European directives;
- In China, modified IEC standards are adopted in Chinese language as GB standards;
- In the United States, a number of IEC standards have been modified to varying degrees and adopted as National Standards.

The international standards published by TC 121 and its subcommittees are a reference for many parties, for example:

- low-voltage switchgear and controlgear manufacturers
- assembly manufacturers/panel builders;
- certification bodies and test houses;
- contractors;
- insurance companies;
- other users of the products, for example electrical utilities and major industrial organisations.

B.2.2 SC 121A
As most manufacturers of low-voltage switchgear and controlgear devices and components supply their products worldwide, harmonization of these product standards is of upmost importance.

SC 121A hosts harmonization projects, e.g. task forces which are actively working on the harmonization of the IEC and UL standards. UL 60947-1 and UL 60947-4-1 are already issued.
B.2.3 SC 121B
Major industrial companies acting internationally today often require assemblies for their sites which are assembled and maintained locally, but which are of the same design, according to the IEC 61439 series.

Also, for the majority of applications where local assembly designs are accepted and/or required there is a need for harmonized safety requirements, taking into account the basic safety publications of IEC. Additionally the nature and characteristics of the incorporated components and devices have to be taken into account. These are defined in the standards of SC 121A, SC 23E and other IEC committees and reflected as far as necessary in the IEC 61439 series.

IEC standardization for switchgear and controlgear assemblies has reached a high level of application worldwide. SC 121B strives to achieve full coverage of all applications.

B.3 Trends in technology

B.3.1 TC 121
The development of mechanical switching devices and of assemblies has been relatively stable in recent years. This has made it possible to effectively define and verify the functionality of highly-efficient products. Fundamental changes in these core technologies are not anticipated in the medium-term future.

Renewable energy sources are creating an increasing demand for d.c. applications. This is necessitating the review of the corresponding design and verification rules in some standards.

New techniques in arc-flash detection and arc extinguishing will also be considered for application in industrial, commercial and infrastructures environments.

B.3.2 SC 121A
Electronic and semiconductor technologies have created new devices and hybrid devices, combining mechanical, electronic and semiconductor technologies. These new technologies bring new functionality to the products and an improved ability for communication.

B.3.3 SC 121B
As a result of an increasing use of electronic equipment in the main and control circuits assemblies will continue to grow in complexity. This may result in a review of the associated environmental and electromagnetic aspects in standards.

B.4 Market trends

B.4.1 TC 121
The market for switchgear and controlgear continues to evolve.

Current market trends generally require:

- increased product safety and reliability;
- increased “intelligence” within the products (automation functions, communication etc.);
- increased power-handling capability (load currents, fault currents, voltage);
- optimization in the use of natural resources;
- increased international trade;
- continuous cost reduction.
B.4.2 SC 121A
There are divergent tendencies:

- high-volume production of the devices bringing cost reduction, and
- devices suitable for a specific environment,

Both need to be optimized by standards. The increased demand for reliability clearly creates a need for rigorous standards. It also creates the necessity for:

- more effective quality monitoring;
- more engineering improvements.

International organizations, for example machine manufacturers and their customers, require ready access to devices complying with international standards.

Growing e-commerce is increasing interest for data exchange in electronic format describing products through a defined structure for the information.

The continuous need to increase the energy efficiency pushes the market of electronic intelligence capable of providing more information to the monitoring and control systems.

Bi-directional energy flows due to decentralized power generation increases the need for protection devices with adaptive parameters.

B.4.3 SC 121B
The growing safety demands in conjunction with growing load currents and powers to distribute and the demand for increased packing density inside the assemblies increases the importance of appropriate design and verification rules (e.g. temperature rise, short circuit strength).

The evolution of switchgear and controlgear technologies, the trends towards higher a.c. and d.c. voltages, more compact assemblies, higher degrees of automation, dependability and the growth of international trade all require the maintenance of existing as well as the development of additional IEC standards for low-voltage switchgear and controlgear assemblies. The growing amount of incorporated electronic devices in Assemblies requires further considerations of installation rules with regards to EMC.

B.5 Ecological environment

B.5.1 TC 121
The need to reduce any adverse impact on the natural environment by a product during all phases of its life is recognized. This includes environmental-conscious design of TC 121 products and the contribution of TC 121 products to the efficiency of their associated systems.

B.5.2 SC 121A
SC 121A is always considering environmental issues and therefore carefully follows the development of standards within TC 111 (Environmental standardization for electrical and electronic products and systems).

SC 121A is striving to improve energy efficiency by implementing standards that reflect the evolution of the regional or national regulations, for example:

- European Directive "ecodesign for energy-related products";
- Chinese standard of energy efficiency grades for a.c. contactors.
SC 121A is participating in horizontal projects involving low-voltage switchgear and controlgear in control systems and other interacting devices, for example Electrical Energy Efficiency in Industrial Automation & Industrial Process Control (TC 65 JWG14).

B.5.3 SC 121B

Environmental aspects are of growing importance for low-voltage switchgear and controlgear assemblies. The environmental aspects of assemblies are to a greater extent determined by the incorporation of devices and components that have already taken environmental aspects into account.

The nature of the primary technologies used for assemblies in such that their constructional elements can in general be recycled. During operation detrimental emissions are considered not to occur.

C System approach aspects

C.1 TC 121

Liaisons are currently solely established at SCs level. Establishment of liaisons at TC level will be considered when relevant.

The following tables identify:
- System committees for which one SC is supplier of (our product is part of their system);
- Component committees for which one SC is customer to (their product is part of our system);
- Other committees.

C.2 SC 121A

SC 121A, as a component supplier for many systems, is linked to many other committees. It is crucial to harmonize the requirements coming from all these different applications.

Therefore SC 121A is in favour of a few well-implemented horizontal standards and group safety standards.

Note: Some TCs (or SCs) appear twice in the spreadsheet below, because SC 121A has several types of relationship with these TCs (or SCs). I.e. TC 22/SC 22G is a system committee for SC 121A because contactors are used in Power Drive Systems, and also an interacting/partner committee, because included in the same industrial control systems.

<table>
<thead>
<tr>
<th>SC 121A</th>
<th>Committee</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component committees</td>
<td>TC 32/SC 32B</td>
<td>Low-voltage fuses</td>
</tr>
<tr>
<td>(IEC SC 121A - role of a customer)</td>
<td>TC 32/SC 32C</td>
<td>Miniature fuses</td>
</tr>
<tr>
<td></td>
<td>TC 94</td>
<td>All-or-nothing electrical relays</td>
</tr>
<tr>
<td>System committees</td>
<td>TC 18</td>
<td>Electrical installations of ships and of mobile and fixed offshore units</td>
</tr>
<tr>
<td>(IEC SC 121A - role of a supplier)</td>
<td>TC 22/SC 22G</td>
<td>Adjustable speed electric drive systems incorporating semiconductor power converters</td>
</tr>
<tr>
<td></td>
<td>TC 22/SC 22H</td>
<td>Uninterruptible power systems (UPS)</td>
</tr>
<tr>
<td></td>
<td>TC 44</td>
<td>Safety of machinery - Electrotechnical aspects</td>
</tr>
<tr>
<td></td>
<td>TC 64</td>
<td>Electrical installations and protection against electric shock</td>
</tr>
<tr>
<td></td>
<td>TC 65</td>
<td>Industrial-process measurement, control and automation</td>
</tr>
<tr>
<td></td>
<td>TC 82</td>
<td>Solar photovoltaic energy systems</td>
</tr>
<tr>
<td></td>
<td>TC 121/SC 121B</td>
<td>Low-voltage switchgear and controlgear assemblies</td>
</tr>
<tr>
<td>Other committees</td>
<td>TC 2</td>
<td>Rotating machinery</td>
</tr>
<tr>
<td>(interacting/ partner</td>
<td>TC 3</td>
<td>Information structures, documentation and graphical symbols</td>
</tr>
<tr>
<td>committees,)</td>
<td>TC 3/SC 3C</td>
<td>Graphical symbols for use on equipment</td>
</tr>
<tr>
<td></td>
<td>TC 3/SC 3D</td>
<td>Product properties and classes and their identification</td>
</tr>
</tbody>
</table>
Effective liaison with system committees is important so as to avoid conflicting requirements and tests for assemblies. To remove possible discrepancies between IEC 61439 and IEC 60204 in respect of assemblies as part of machinery, liaison with TC 44 has been established.

A similar cooperation has been established with TC 69 (the system committee in charge of electric vehicles) to avoid any overlap between IEC 61439 and IEC 61851. Liaison with TC 82 (the system committee in charge of solar photovoltaic energy systems) is under consideration to avoid any overlap between IEC 61439 and IEC 61683.

<table>
<thead>
<tr>
<th>SC 121B</th>
<th>Committee</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component committees  (IEC SC 121B - role of a customer)</td>
<td>CLC TC 121A</td>
<td>Low-voltage switchgear and controlgear</td>
</tr>
<tr>
<td></td>
<td>TC 23/SC 23B</td>
<td>Plugs, socket-outlets and switches</td>
</tr>
<tr>
<td></td>
<td>TC 23/SC 23E</td>
<td>Circuit-breakers and similar equipment for household use</td>
</tr>
<tr>
<td></td>
<td>TC 121/SC 121A</td>
<td>Low-voltage switchgear and controlgear</td>
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<td>TC 44</td>
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<tr>
<td></td>
<td>TC 69</td>
<td>Electric road vehicles and electric industrial trucks</td>
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<tr>
<td></td>
<td>TC 82a</td>
<td>Solar photovoltaic energy systems</td>
</tr>
<tr>
<td>Other committees (interacting/partner committees, committees providing generic guidance or horizontal standards, boundary committees, etc.)</td>
<td>TC 64</td>
<td>Electrical installations and protection against electric shock</td>
</tr>
</tbody>
</table>

a Liaison under consideration
D Objectives and strategies (3 to 5 years)

D.1 TC 121

The overall objective is to ensure TC 121 and its subcommittees are developing all relevant standards for low-voltage switchgear and controlgear and their assemblies. These shall cover all the necessary aspects and be valid worldwide. The vision is “tested once, accepted everywhere”.

To this end TC 121 coordinates the work of its SCs, provides a framework for exchange of knowledge and harmonization of requirements and establishes ad hoc groups, working groups etc. for topics of common interest and relevance for both SCs.

The target for the next years is to build up the structure of the new TC, identify topics for common work (e.g. environmental aspects, functional safety, EMC…) and establish the necessary working structures, without disturbing the ongoing standardization work that have been transferred from the previous SC 17B and SC 17D.

First step is the creation of a new TC 121 WG dedicated to Energy Efficiency. Basic aim is to provide necessary recommendations, requirements and testing procedures for low voltage switchgear and controlgear and their assemblies in the field of Energy Efficiency.

D.2 SC 121A

The objectives of the work within SC 121A are:

- To keep the SC 121A standards portfolio updated, reflecting the impact of:
  - new technologies (e.g. semiconductor technology);
  - new requirements (e.g. safety, environmental-conscious design, energy efficiency);
  - ecodesign regulations (e.g. high-efficiency lighting, high-efficiency motors, etc.).
- To provide standards for new products based on new technologies and/or applications that:
  - improve safety;
  - improve sustainability (environmental-conscious design and energy efficiency).
- To provide standards to simplify business:
  - simplify integration of SC 121A devices into systems (e.g. communication, device profiles);
  - simplify e-commerce (e.g. product properties).

The corresponding strategy is defined as follows:

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Strategy</th>
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<tbody>
<tr>
<td><strong>Simplify the business</strong></td>
<td></td>
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<tr>
<td>Simplify interoperability</td>
<td>To publish standards on device profiles</td>
</tr>
<tr>
<td>Facilitate e-commerce</td>
<td>To publish standards on product classification and properties</td>
</tr>
<tr>
<td>Increase the application of the SC 121A IEC standards worldwide</td>
<td>To continue the harmonization projects with UL To involve all regions of the world in the IEC SC121A work program</td>
</tr>
<tr>
<td><strong>Help economies to grow</strong></td>
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<tr>
<td>Smart grid</td>
<td>To participate in joint working groups with system committees</td>
</tr>
<tr>
<td><strong>Reduce the harm on environment</strong></td>
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<tr>
<td>Increase the energy efficiency</td>
<td>To participate in joint working groups with system committees</td>
</tr>
<tr>
<td>To accelerate environmental conscious design</td>
<td>To apply as fast as possible the outcome of TC 111</td>
</tr>
<tr>
<td><strong>Provide standards for new products</strong></td>
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</tr>
<tr>
<td>To maintain the appropriate safety level</td>
<td>To use basic safety standards and group safety standards, especially functional safety standards (i.e. IEC 61508)</td>
</tr>
</tbody>
</table>

The objectives and strategy of the work within SC 121B are:

1. Establishment of re-structured series of assembly standards
   The requirements of the outdated IEC 60439 series of assembly standards have been transferred into the restructured and substantially revised new IEC 61439 series. Following the current Edition 2 of IEC 61439-1 with "General rules" SC 121B activities are focused on the subsequent maintenance of all product parts.

2. Improvement of the user-friendliness
   The series of assembly standards is not easy to apply for those parties not involved in the development and verification process, in particular persons/bodies specifying assemblies for the end-user. This matter is being addressed by SC 121B. In a first instance a guidance document for specifying assemblies, IEC 61439-0, is incorporated in the IEC 61439 series as a Technical Report.

3. Improvement of design verification methods
   For assemblies which are to a large extent customized, design verification solely by test is not always feasible. To increase the application of the standards so as to include all assemblies the design verification methods, other by test, will be further reviewed, taking care to ensure safety and reliability are not impaired.

4. Reduction of standards development time
   The difficulties in establishing the first edition of IEC 61439-1 with the "General rules" for the new series of assembly standards resulted in severe delays to this project and resulted in immediate maintenance work and the subsequent publication of the second edition of IEC 61439-1. In the medium-term future the regular development of the IEC 61439 series is envisaged.

5. Potential works
   Future considerations may include use of Aluminium conductors, derating for altitude and specific frequencies.

6. Miscellaneous
   Currently there is sufficient support from industry, since obviously the relevance of assembly standards developed by SC 121B is considered important, and the quality of the standardization activities is appreciated.

E Action plan

E.1 TC 121
TC 121 will have a plenary meeting every 2 years together with the plenary meetings of its subcommittees. At the plenary meetings, the necessary degree of coordination and cooperation between the SCs, maintenance teams, working groups etc. is monitored and the long-term and medium-term actions agreed.

To adequately reflect the restrictions associated with the global economic situation, the working groups and maintenance teams will keep the expenses for delegates within tight limits. This will be achieved by grouping meetings of TC and SCs, of several WGs and MTs, and arranging meetings in conjunction with the TC 121 plenary sessions. Moreover, suitable electronic means (correspondence by e-mail, web or video conferences, conference phone-calls) will be utilized to further reduce travel costs.

E.2 SC 121A
SC 121A has a plenary meeting every 2 years where the long-term and medium-term actions are agreed, immediately before the TC 121 plenary.
Typically working groups, maintenance teams meet twice or 3 times a year.

Project teams and tasks forces meet at the frequency suitable for their objectives.

The Advisory Group of SC 121A reviews the short-terms actions (check the progress of the projects) and proposes the long-term decisions.

The major objectives of SC 121A for the next 3 to 5 years are the followings:

- Product data and properties: to cover the majority of SC 121A devices;
- To specify requirements for switching devices for PV applications;
- To specify test requirements for terminals for the use of Aluminium conductors;
- To adopt different switching behaviour on high-efficiency motors;
- To evaluate the functional safety level of electromechanical devices;
- To specify tests for integrated electronics.

**E.3 SC 121B**

SC 121B has a plenary meeting every 2 years where the long-term and medium-term actions are agreed, immediately before the TC 121 plenary.

Typically working groups, maintenance teams meet twice or 3 times a year.

Project teams and tasks forces meet at the frequency suitable for their objectives.

Following the radical re-structuring and revision of the IEC 60439 series of standards now the maintenance of these new and existing standards is the most important activity of SC 121B. The work on the third editions of IEC 61439-1 "General rules" and IEC 61439-2 “Power switchgear and controlgear assemblies" has now started. Other product parts (IEC 61439-3 to IEC 61439-6) will begin maintenance when the work on the CDV IEC 61439-1 Ed. 3 is in progress.

Two new activities are considered:

- Part 7 “Assemblies for specific applications such as marinas, camping sites, market squares, electric vehicles charging stations” has been published as TS and will be further developed to change it into a standard;
- Part 8 “Assemblies for machinery (cabinets, boards or panels)”.

Additional product parts are developed when there is an obvious need from the marketplace.

Technical reports complementing these assembly standards are to be incorporated as appropriate.

**F Useful links to IEC web site**

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<td>SC 121B</td>
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