



IEC/TC OR SC:	SECRETARIAT:	DATE:
105	Germany	2020-12-dd

Please ensure this form is annexed to the Report to the Standardization Management Board if it has been prepared during a meeting or sent to the Central Office promptly after its contents have been agreed by the committee.

A. STATE TITLE AND SCOPE OF TC

Are there any new or emerging trends in technology that will impact the scope and work activities of the TC? Please describe briefly.

Do you need to update your scope to reflect new and emerging technologies? If yes, will these changes impact another TC's scope or work activities?

If yes, describe how these will impact another TC(s) and list the TC(s) it would impact

Fuel cell technologies

"To prepare international standards regarding Fuel Cell (FC) Technologies for all FC types and various associated applications such as stationary FC power systems for distributed power generators and combined heat and power systems, FCs for transportation such as propulsion systems (see note below), range extenders, auxiliary power units, portable FC power systems, micro FC power systems, reverse operating FC power systems, and general electrochemical flow systems and processes."

NOTE: Projects with applications in the field of road vehicles will be coordinated with ISO/TC 22 and its relevant SCs using the cooperation modes defined in the ISO/IEC Directives."

The current Scope is flexible enough to include new trends and technologies.

B. MANAGEMENT STRUCTURE OF THE TC

Describe the management structure of the TC (use of an organizational chart is acceptable) (should be integrated by CO automatically) and, if relevant (for example an unusual structure is used), provide the rationale as to why this structure is used.

Note: Check if the information on the IEC website is complete.

When was the last time the TC reviewed its management structure? Describe any changes made. When does the TC intend to review its current management structure? In the future, will the TC change the current structure, for example due to new and emerging technologies, product withdrawal, change in regulations etc. Please describe.

Make sure the overview includes:

- any joint working groups with other committees,
- any special groups like advisory groups, editing groups, etc.

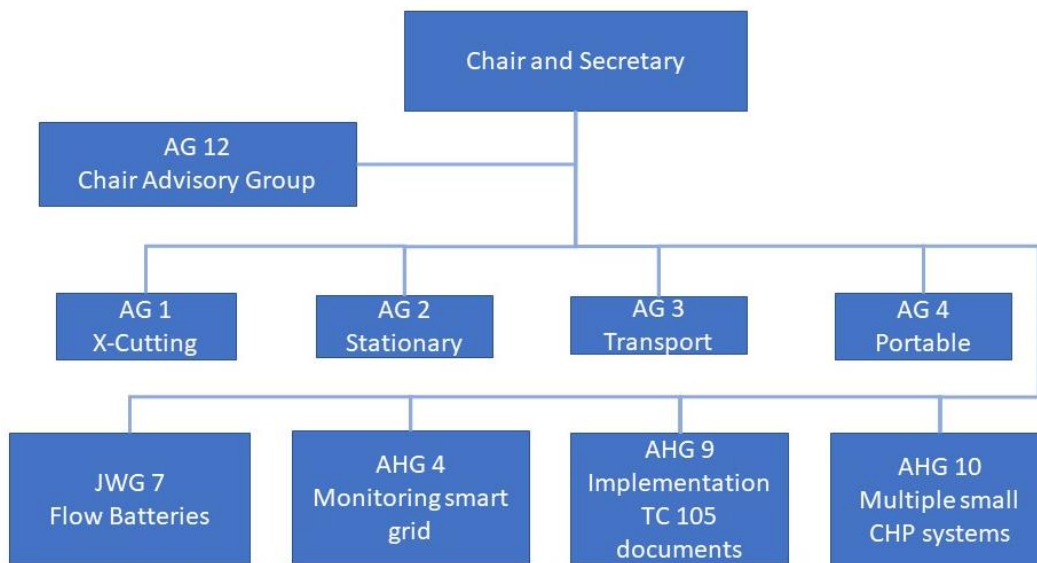
IEC TC 105 held its first plenary meeting in Frankfurt/Main in 2000 with the aim of developing safety and performance related standards for fuel cell appliances. The scope of IEC TC 105 has regularly been reconsidered and amended to reflect the demands of the business and technological environment in which IEC TC 105 operates to ensure that it continues to meet the demands of the industry sectors it serves.

Management structure:

- Chair
- Secretary

- Assistant Secretary
- Chair Advisory Group to advise the Chair on the orientations of the TC and specific actions to achieve WGs objectives
- Advisory Groups for four technical fields to facilitate the coherence between the standards developed in the individual WGs belonging to one application field
- WGs for elaborating international standards and Technical Specifications
- AHGs to draft NWIPs and/or to develop strategies
- JWG with TC 21 for flow batteries
- Liaison officers

Due to the flexible structure WGs, AHGs can be established to deal with new demands



C. BUSINESS ENVIRONMENT

Provide the rationale for the market relevance of the future standards being produced in the TC.

If readily available, provide an indication of global or regional sales of products or services related to the TC/SC work and state the source of the data.

Specify if standards will be significantly effective for assessing regulatory compliance.

Commercialization in stationary applications, transportation applications or as portable power applications has already taken off. It is therefore important to elaborate International Standards at this early stage in order to facilitate commercialization and international trade, and to harmonize and ease approval procedures for fuel cell units. On the other hand, there is a strong need for not restricting further development of the relatively young technology. TC 105 standards are elaborated at an early stage to avoid purely national standards and to facilitate commercialization and international trade, and to harmonize and ease approval procedures for fuel cell units. Safety standards, in particular for use and storage of FC systems in closed areas will be significantly effective for assessing regulatory compliance. According to the market demand safety standards are implemented in Europe as harmonized standards to give presumption of conformity under European law.

D. MARKET DEMAND

Provide a list of likely customers of the standards (suppliers, specifiers, testing bodies, regulators, installers, other TC/SC's etc.). Do not specify company names, only categories of customers.

IEC/TC 105 standards are intended to cover the market demand of:

- Component, sub-system and fuel cell suppliers

- Fuel cell and system installers
- Fuel cell and system manufacturers
- Testing and certification bodies
- Regulators, authorities, approval organizations

Original equipment manufacturers.

E. SUSTAINABLE DEVELOPMENT GOALS

INDICATE THE SUSTAINABLE DEVELOPMENT GOALS (SDGs) THAT ARE ADDRESSED BY WORK WITHIN THE TC/SC. INDICATE EACH SDG INDICATOR AFFECTED (REFERENCE SPREADSHEET AVAILABLE AT <https://www.iec.ch/SDG/>), AND PROVIDE SPECIFIC INFORMATION ABOUT HOW THE TC/SC IS ADDRESSING THE SDG. CONSIDER BOTH DIRECT AND INDIRECT IMPACTS OF THE WORK OF THE TC/SC.

- | | |
|--|--|
| <input type="checkbox"/> GOAL 1: No Poverty | <input type="checkbox"/> GOAL 10: Reduced Inequality |
| <input type="checkbox"/> GOAL 2: Zero Hunger | <input type="checkbox"/> GOAL 11: Sustainable Cities and Communities |
| <input type="checkbox"/> GOAL 3: Good Health and Well-being | <input checked="" type="checkbox"/> GOAL 12: Responsible Consumption & Production |
| <input type="checkbox"/> GOAL 4: Quality Education | <input type="checkbox"/> GOAL 13: Climate Action |
| <input type="checkbox"/> GOAL 5: Gender Equality | <input type="checkbox"/> GOAL 14: Life Below Water |
| <input type="checkbox"/> GOAL 6: Clean Water and Sanitation | <input type="checkbox"/> GOAL 15: Life on Land |
| <input checked="" type="checkbox"/> GOAL 7: Affordable and Clean Energy | <input type="checkbox"/> GOAL 16: Peace, Justice Strong Institutions |
| <input type="checkbox"/> GOAL 8: Decent Work & Economic Growth | <input type="checkbox"/> GOAL 17: Partnerships to achieve the Goals |
| <input type="checkbox"/> GOAL 9: Industry, Innovation & Infrastructure | |

F. TRENDS IN TECHNOLOGY AND IN THE MARKET

If any, indicate the current or expected trends in the technology or in the market covered by the products of your TC/SC.

Trends in technology

Fuel cell technologies are relatively new and fast developing technologies which are being commercialized. New technologies, components and materials are appearing and quickly developing on a global basis. Upcoming all-electric systems for power trains of transportation systems (ground vehicles, ships and aircrafts) can use fuel cell technologies ideally as their main power source. Fuel cell systems can extend the operating period of batteries and supercapacitors. An increasing need for off-grid systems and small-scale (co)generators with ever stricter requirements can be met with fuel cell systems. Rapid developments in grid infrastructures and off takers call for more intelligent and flexible systems, for which fuel cells are eminently suitable in combination with other energy storage systems. Fuel cells can also support renewable technologies such as wind turbines and photovoltaic by providing power and energy when the renewable resource is not available or it is not enough to feed the load or coupling to the electrical energy system or even by converting excess power produced by these renewable power generators into hydrogen or synthetic fuels through reversed operation of the fuel cell module.

Market trends

Fuel cell appliances contribute to reduce the impact on the environment and climate. The Hydrogen Council released during COP 23 (November 2017) a study of the hydrogen market by 2050 with 2030 milestones. Hydrogen should represent 18% of the worldwide primary energy, 2.5 Trillion USD of annual sales and save annually 6 Giga Tons of CO₂ while creating 30 million of jobs. Fuel cells should reach a market share of 65% for the forklifts, 40% of vans and minibuses, 35% of coaches and buses, 22% of trucks, 14% of trains and trams, 5% of planes, 4% of power generation and 17% of building heating and power.

The consequence of these market trends will be that IEC TC 105 fosters its activities to increase worldwide applicability of its standards encouraging National Committees to actively contribute to the IEC TC 105 standardization work and to implement these International Standards identically at national and regional levels.

G. SYSTEMS APPROACH ASPECTS (SEE DIRECTIVES PART 1 ANNEX SP)

Does your TC/SC have a need for a systems approach?

If so:

- Will the Systems work be in a single TC or in multiple TCs?
- Will a Standardization Evaluation Group (SEG), Systems Committee (SyC), or Systems Resource Group be required?
- Is your TC/SC work of relevance to ISO?
- Is or are there fora or consortia working in parallel to IEC? Is there a chance to integrate this work in your TC/SC?

This should not only be restricted to the customer/supplier relationships with other TC/SCs indicating types of co-operation (e.g. liaisons, joint working groups) but be of a more generic nature.

IEC TC 105 takes care that the fuel cell standards are duly developed taking the system approach into account to assure that all borderlines and interfaces of internationally standardized fuel cell products are compatible with other internationally standardized products/systems used in conjunction with these fuel cell systems.

TC 105 will interface with:

- IEC/SyC Smart cities
- IEC/SyC Smart energies
- IEC/TC 8: System aspects for electrical energy supply
- IEC TC 9 Electrical equipment and systems for railways
- IEC/TC 31: Equipment for explosive atmospheres
- IEC/TC 108: Safety of electronic equipment within the field of audio/video, information technology and communication technology
- IEC/TC 120: Electrical Energy Storage (EES) Systems
- ISO/TC22/SC37: Electrically propelled vehicles
- ISO/TC110: Industrial trucks
- ISO TC 127 /SC 3 Machine characteristics, electrical and electronic systems, operation and maintenance
- ISO/TC 197: Hydrogen technologies
- CEN/CENELEC/JTC6: Hydrogen in energy systems

H. CONFORMITY ASSESSMENT

With reference to Clause 33 of Part 2 of the ISO/IEC directives, are all your publications in line with the requirements related to conformity assessment aspects?

Will the TC/SC publications be used for IEC Conformity Assessment Systems (IECEE, IECEx, IECQ, IECRE)?

Will any of your standards include test specifications, reproducible test requirements, and test methods?

Are there likely to be special conformity assessment requirements generated by any standards projects? If yes, list which projects.

The standards are in line with the ISO/IEC Directives and IEC supplement.

TC 105 monitors the development of IECRE and will seek for contact with the Technical Officers of IECRE.

TC 105 standards are focussing on include test specifications, reproducible test requirements, and test methods.

I. 3-5 YEAR PROJECTED STRATEGIC OBJECTIVES, ACTIONS, TARGET DATES

STRATEGIC OBJECTIVES 3-5 YEARS	ACTIONS TO SUPPORT THE STRATEGIC OBJECTIVES	TARGET DATE(S) TO COMPLETE THE ACTIONS
To consider the standardization need for fuel cell systems and their interaction with the different types of electric storages (as e.g. batteries, flywheels etc.) and to exchange with activities on electrical propulsions as e.g. FCEVs.	JWG with IEC/TC 21 and liaison with IEC/TC 120	Ongoing consideration of the IEC/TC 21 and TC 120 work
To ensure that all relevant safety requirements are taken into account that the standards can be used by regulators.	<p>Guideline for the harmonization of safety aspects in the different parts of IEC 62282 series is available and to include an informative annex in the safety standards indicating which hazards have been dealt with.</p> <p>A new standard for the general safety requirements will be elaborated to harmonize the safety aspects in all TC 105 documents</p>	<p>on-going</p> <p>4 years</p>
To ensure that the standards contain performance measurement procedures that lead to results acceptable to regulators.	To apply the now existing Guideline for the harmonization of performance aspects in the different parts of IEC 62282 series.	4 years
To standardize fuel cell systems of all technologies for distributed generation. This also includes combined heat and power systems (CHPs).	<p>To develop with IEC/TC5/JWG 16 a road map for CHPs including FCs.</p> <p>Note: the road map is under the leadership of IEC/TC 5.</p>	Asap
To consider the standardization need for fuel cell systems and their interaction with all-electric systems on board ships, trains, aircraft, UAVs and special vehicles.	<p>In the meantime two projects are under development:</p> <p>Excavators</p> <p>UAVs</p> <p>For trains an NP is proposed by CN NC.</p> <p>Note: will be done in a JWG with IEC/TC 9.</p>	<p>3 years</p> <p>3 years</p>
To consider the standardization need for fuel cell systems and their hybridization with heat engines as e.g. gas turbines or Stirling engines on a longer term.	As soon as the road map of IEC/TC 5/JWG 16 will be available the decision can be taken.	2 years
Note: The progress on the actions should be reported in the RSMB.		