



IEC/TC OR SC: 105	SECRETARIAT: Germany	DATE: 2017-11-xx
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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
FUEL CELL TECHNOLOGIES

“To prepare international standards regarding fuel cell (FC) technologies for all FCs and various associated applications such as stationary FC power systems, FCs for transportation such as propulsion systems, 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 A new scope has been developed at the TC 105 plenary meeting in Seoul (2017-11) and submitted to the SMB for endorsement in a separate document (Question of principle). Once the proposed new scope is approved by the SMB, it will be recorded in the SBP.

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

B. MANAGEMENT STRUCTURE OF THE TC

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

WGs for elaborating international standards and Technical Specifications

AHGs to draft NWIPs and to develop strategies

JWG with TC 21 for flow batteries

Liaison officers

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

C. BUSINESS ENVIRONMENT

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 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.

Worldwide market (sales for 2025) –estimated by the experts of the TC 105 community vague estimations expect that for fuel cells the worldwide market is several billion US Dollar. Geographic segmentation could be: 40 % Asia/Pacific, 25 % North America, 25 % Europe (EU), and 10 % other regions.

Safety standards, in particular for use and storage of FC systems in closed areas will be significantly effective for assessing regulatory compliance. Safety standards are implemented as in Europe as harmonized standards to give presumption of conformity under European law.

D. MARKET DEMAND

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. TRENDS IN TECHNOLOGY AND IN THE MARKET

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 super 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.

F. SYSTEMS APPROACH ASPECTS (REFERENCE - AC/33/2013)

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 contribute to

SyC Smart cities

SyC Smart energies ((liaison to be established?))

IEC/TC 120 Electrical Energy Storage (EES) Systems

ISO/TC 197 Hydrogen technologies

ISO/TC22/SC37 Electrically propelled vehicles

CLC/TC6 Hydrogen in energy systems

.....TC 8 Systems aspects for electrical energy supply

G. CONFORMITY ASSESSMENT

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

H. 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.).	JWG with IEC/TC 21 and liaison with IEC/TC 120	on-going
To ensure that all relevant safety requirements are taken into account that the standards can be used by regulators	Guideline for the harmonization of safety aspects in the different parts of IEC 62282 series and to include an informative annex in the safety standards indicating which hazards have been dealt with.	on-going
To ensure that all relevant installation requirements are taken into account that the standards can be used by regulators	Guideline for the harmonization of installation aspects in the different parts of IEC 62282 series	on-going
To ensure that performance requirements are taken into account that the standards can be used by regulators	To develop a Guideline for the harmonization of performance aspects in the different parts of IEC 62282 series (Target date: asap)	asap

To provide a package of safety standards for micro fuel cells for all relevant fuels	WG 8 re-established with a new convenor	on-going
To standardize fuel cell systems of all technologies for distributed generation. This also includes combined heat and power systems (CHPs)	WG 12 and liaison with IEC/TC 5	on-going
To consider the standardization need for fuel cell systems and their interaction with electrical loads.	WG 13 was founded	3 years
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.	monitoring the market	on-going
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.	monitoring the market	on-going
To consider the standardization need for micro fuel cell systems and their interaction with electric storages, especially for medical technology, industrial service, logistic areas and the automotive sector.	monitoring the market	on-going
Note: The progress on the actions should be reported in the RSMB.		