International Standards Update of Fuel Cell(IEC TC105)

2024 IECEx Int'l Hydrogen Conference

Hongki Lee
Chair, IEC/TC105

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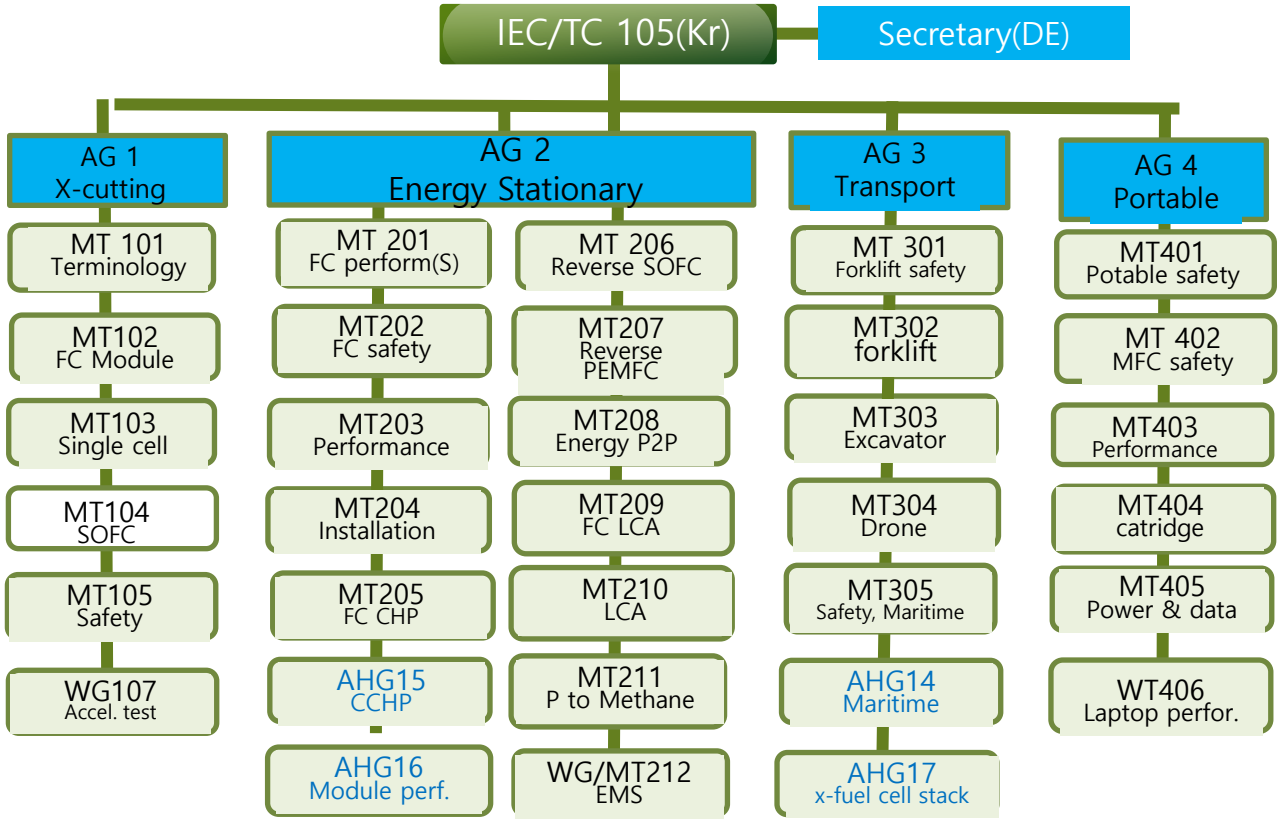
Contents

1 Information about IEC TC 105

1-1. IEC TC 105 Structure



1-2. Overview of facts and figures

	TC 105
Number of P-Members:	20
Number of experts:	220
Number of NPs submitted over the last 3 years:	7
Number of publications approved in the last 5 years:	15
Number of current active projects:	16
Number of meetings in the last 5 years:	7

		Nations
P members	20	Australia, Canada, China, Denmark, Egypt, Finland, France, Germany, Italy, Japan, Korea, Netherlands, Norway, Russian Federation, South Africa, Spain, Sweden, Switzerland, United Kingdom, United States of America
O members	11	Austria, Belgium, Czech Republic, Iran, Israel, Poland, Portugal, Romania, Serbia, Thailand, Türkiye

1-3. Definition and boundary of Fuel Cell Systems

	stationary	small stationary	portable	micro
power limit	no limit	10 kW	not limited	240 W
voltage limit	no limit	AC 1 kV, DC 1.5 kV	AC600V, DC850V	no AC, 60 V
feature	on/off grid	on/off grid	Movable off grid	wearable or easily carried by hand

fuel cells for portable devices are "micro fuel cell" as IEC's definition
portable fuel cells are "transportable but not permanently installed to a location or utilities!

2 Scope of TC 105 and market demands

2-1. TC 105 Scope

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

2-2. TC 105 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

3 Status and issues of IEC TC 105

3-1. Issues of IEC TC 105, Plenary meeting

- **IECEx/WG 19 *Hydrogen Technologies***

  TC 105 is pleased about the cooperation with IECEx and is currently working on establishing the liaison

- **Per- and polyfluoroalkyl substances (PFAS) in Fuel Cells**

  Current discussion about the EU Commission's announced plan to ban PFAS
  FCs / electrolysers directly affected, as membranes often made from PFAS
  So far no evidence of PFAS release through FC - possible exemption (?)

- **Collaboration with IEC/TC 9 on FC-systems for railway application**

  Joint development of IEC 63341-series on 'Hydrogen and fuel cell systems for rolling stock'

- **FC-systems for propulsion**

  Various parts of IEC 62282 series in principle suitable for use in automotive sector
  Consultation with ISO/TC 22 necessary

3-2. TC 105 Liaisons

Committee	Description	Incoming liaison	Outgoing liaison
	Internal IEC Liaison		
TC 8	System aspects of electrical energy supply	Mr Toshiki SHIMIZU	Mr Toshiki SHIMIZU
TC 9	Electrical equipment and systems for railways	Mr Julien D'ARBIGNY	
TC 18	Electrical installations of ships and of mobile and fixed offshore units		Mr Noel Dunlop
TC 21	Secondary cells and batteries		Mr Nobuo SHIGA
TC 108	Safety of electronic equipment within the field of audio/video, information technology and communication technology	Mr Bob Griffin Mr Jos Remy	Mr Toshiki SHIMIZU
TC 120	Electrical Energy Storage (EES) systems	Mr Toshiki SHIMIZU	Mr Toshiki SHIMIZU
SyC LVDC	Low Voltage Direct Current and Low Voltage Direct Current for Electricity Access		
SyC Smart Cities	Electrotechnical aspects of Smart Cities	Mr Kazuo SHIBATA	Mr Kazuo SHIBATA
SyC Smart Energy	Smart Energy		Mr Kazuo SHIBATA
IECEx-WG19			
	Liaison ISO		
ISO/TC 22	Road vehicles	Mr Kelvin Hecht	
ISO/TC 110	Industrial trucks	Mr Sylvain Cadou and 3	Mr Akio Matsuura
ISO/TC 127	Earth-moving machinery	Mr Chuck Crowell	
ISO/TC 127/SC 3	Earth-moving machinery - Machine characteristics, electrical and electronic systems, operation and maintenance	Mr Minpei SHODA	Mr Hong Ki Lee
ISO/TC 197	Hydrogen technologies	Mr Hidenori Tomioka	
	Liaison A		
EC	European Commission	Mr Thomas Malkow	

❖ 3-3 105 Work programme

Project reference(16)	WG	Project leader	Due Date
PWI 105-1 General safety standard		ESchwendemann	2024-03
PNW 105-1032 ED1 Fuel cell technologies - Multi-generation of fuel cell systems for electricity, hydrogen generation and cooling - Performance test methods		Seokhee Park	2026-07
PNW 105-1035 ED1Unmanned aircraft systems -- General requirements and test methods for the hydrogen fuel gas pipes of gaseous hydrogen fuel cell powered UAV		Dong-woo Kim	2026-03
PNW 105-1036 ED1Unmanned aircraft systems -- General requirements and test methods for the attachable hydrogen cylinders of gaseous hydrogen fuel cell powered UAV		Dong-woo Kim	2026-03
IEC 62282-2-400 ED1 Fuel cell modules - Calculation of Rated Power and Power Density of a PEM stack and PEM module	WG 106	Pierre LOIRET	2024-06 2025-06
IEC 62282-3-100 ED3 : Stationary fuel cell power systems - Safety	MT 201	Stephen Maurer	2025-10
IEC 62282-3-200 ED3 - : Stationary fuel cell power systems - Performance test methods	MT 202	N。 Hashimoto	2025-06
IEC 62282-3-201 ED3 - Stationary fuel cell power systems - Performance test methods for small fuel cell power systems	MT 203	Noboru Hashimoto	2025-06
IEC 62282-3-202 ED1 - Stationary fuel cell power systems - Performance test methods for small fuel cell power systems that can be complemented with a supplementary heat generator for multiple units operation by an energy management system	WG 212	Yasushi Yamaguchi	2024-07 2025-03
IEC 62282-4-401 ED1Fuel cell technologies - Part 4-401: Fuel cell power systems for propulsion and auxiliary power units - Maritime sector - Safety of PEMFC-Systems	WG306	Takehiro Maruyama	2026-11
IEC 62282-6-401 ED1 - Power and data interchangeability - Performance test methods for laptop computers	WG 406	Hong Ki lee	2024-07 2025-01
IEC TS 62282-7-1 ED3 - T est methods - Single cell performance tests for polymer electrolyte fuel cells (PEFC)	MT 103	Shinji Kinoshita	2024-05 2025-04
IEC 62282-7-2 ED2 - T est methods - Single cell and stack performance tests for solid oxide fuel cells (SOFCs)	MT 104	Y。Mugikura	2024-12 2025-03
IEC TR 62282-7-3 ED1Fuel cell technologies - Part 7-3: Test methods - Status of accelerated tests for fuel cell stacks and components and perspectives for standardisation		Stephen Mc Phail	2025-01
IEC 62282-8-201 ED2 Energy storage systems using fuel cell modules in reverse mode - Test procedures for the performance of power-to-power systems	MT 208	Tsuneji Kameda	2024-05
IEC 63341-3 ED1 Railway applications - Rolling stock - Part 3: Fuel cell systems for propulsion - Performance test methods	TC 9/ JWG 51	min Li	2024-08 2025-04

3-4. Participation in TC 105

- **Broad range of topics:**
  From micro fuel cells to large-scale power-to-power plants
- **Multinational group of experts:**
  Currently >200 individual experts from 20 different countries
- **Diversified work programme:**
  At present, 12 different active projects (e.g. Safety of stationary FC, PEMFC for maritime applications, Performance test of P2P-systems)

- **If you are interested in participating in TC 105, please contact your national standardisation organisation (NSO).**

Making electrotechnology work for you.

Thank you for your attention !

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Chair, IEC/TC105

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