ISO/TC 197
Hydrogen technologies

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Item 11.1 IEC 105 liaison report Plenary

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Standardization activity in IEC/TC 105
Liaison Report

ISO/TC 197 Plenary Meeting

December 7, 2018 in Vancouver, Canada

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Standardization Work on Fuel Cells in Japan

International Organization for Standardization

ISO/TC 22 Road vehicles

ISO/TC 22/SC 37 Electrically propelled vehicles

HySUT

The Association of Hydrogen Supply and Utilization Technology

ISO/TC 197 Hydrogen technologies

The Japan Electrical Manufacturers' Association

IEC/TC 105 Fuel cell technologies

Japan Automobile Research Institute

SAE International

Fuel Cell Vehicles

Hydrogen Station, etc.

Fuel Cell Power Systems: Stationary, Portable, Micro
Test methods,
Terminology

International Standardization Activities on Fuel Cells

- 105th set up technical committee in the IEC

- Scope：Responsible all type of fuel cells except for vehicles

  To prepare international standards regarding fuel cell (FC) technologies for all FC applications such as stationary FC power systems, FC for transportation such as propulsion systems range extenders and auxiliary power units, portable FC power systems, and micro FC power systems and reverse operating FC power systems and general electrochemical flow systems and processes.

- Established：1999, started work May 2000

- Chairman： Mr. Laurent Antoni（France）：from Oct. 2017
- Secretary： Mr. Gerhard Imgrund（Germany）

- Participate Member：17
  Observer Member : 15

Standardization Work on Fuel Cells in IEC/TC105

WG1	Terminologies
WG2	Fuel cell modules
WG3	Stationary fuel cell power systems – Safety
WG4	Performance of fuel cell power systems
WG5	Stationary fuel cell power systems – Installations
WG6	Fuel cell system for propulsion and auxiliary power units (APU)
WG7	Portable fuel cell power systems - Safety
WG8	Micro fuel cell power systems - Safety
WG9	Micro fuel cell power systems - Performance
WG10	Micro fuel cell power systems - Interchangeability
WG11	Single cell test methods for PEFC and SOFC
WG12	Small stationary fuel cell power systems with combined heat and power output
WG13	Energy storage systems using fuel cell modules in reverse mode
WG14	Evaluation methodology for the environmental performance of fuel cell power systems based on life cycle thinking
TC21/JWG7	Flow Battery Systems for Stationary applications Managed by TC 21

Standards produced by IEC/TC105 on the market

For Common Items

- IEC 62282-1TS Terminologies
- IEC 62282-2 Fuel cell modules
- IEC 62282-7-1TS Single cell test methods for polymer electrolyte fuel cell (PEFC)
- IEC 62282-7-2TS Single cell/stack performance test methods for solid oxide fuel cells (SOFC)

For Stationary

- IEC 62282-3-100 Stationary fuel cell power systems - Safety
- IEC 62282-3-200 Stationary fuel cell power systems - Performance test methods
- IEC 62282-3-201 Performance test methods for small fuel cell power systems
- IEC 62282-3-300 Stationary fuel cell power systems – Installation
- IEC 62282-3-400 Small stationary fuel cell power system with combined heat and power output

For propulsions and APUs

- IEC 62282-4-101 Fuel cell power systems for industrial electric trucks - Safety
- IEC 62282-4-102 Fuel cell power systems for industrial electric trucks - Performance test methods

For Portable and Micro

- IEC 62282-5-100 Portable fuel cell power systems - Safety
- IEC 62282-6-100 Micro fuel cell power systems - Safety
- IEC 62282-6-200 Micro fuel cell power systems - Performance
- IEC 62282-6-300 Micro fuel cell power systems - Interchangeability
- IEC 62282-6-400 Micro fuel cell power systems - Power and data interchangeability

Current or Future project under IEC/TC105

For Flow Batteries Jointly with IEC/TC21

- **Project 62932-1** — **Terminologies**
- **Project 62932-2-1** — **Flow battery systems or stationary applications – Performance general requirements & methods of test**
- **Project 62932-2-2** — **Flow battery systems for stationary applications – Part 2-2: Safety requirements**

Project under preparation

- **Project 62282-8** — **Energy storage systems using fuel cell modules in reverse mode**
- **Project 62282-9** — **Life Cycle Assessment**

Clarification of IEC/TC 105/WG 13 activities

IEC/TC 105/WG 13 Work programme (The cell and stack performance tests for FC including reverse operation)	
IEC 62282-8-101 ED1	Fuel cell technologies - Part 8-101: Energy storage systems using fuel cell modules in reverse mode - Test procedures for solid oxide single cell and stack performance including reversible operation
IEC 62282-8-102 ED1	Fuel cell technologies - Part 8-102: Energy storage systems using fuel cell modules in reverse mode - Test procedures for proton exchange membrane single cell and stack performance including reversing operation
IEC 62282-8-201 ED1	Fuel cell technologies - Part 8-201: Energy storage systems using fuel cell modules in reverse mode - Power-to-power systems - Performance

Clarification of IEC/TC 105/WG 13 activities

- IEC/TC 105/WG 13 is focusing on the standardization of cell and stack performance tests for Fuel Cell (FC) including reverse operation.
  - The performance test for cell and stack
  - Application is for the energy storage systems using fuel cell modules in reverse mode.
  - They exclude a system for “one way” generation or production of hydrogen. Output is not hydrogen, but energy.
  - In the case of P2G, the gas should be blend or mixture.

Thank you very much for your attention!

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This presentation has been prepared under the collaboration with the Japan Electrical Manufacturers' Association (JEMA), the Japanese member body of IEC/TC 105.