



ISO/TC 197  
Hydrogen technologies

Email of secretary: [jonathan.lafontaine@bnq.qc.ca](mailto:jonathan.lafontaine@bnq.qc.ca)  
Secretariat: SCC (Canada)

**IEC105 liaison report TC197 Plenary 19 12 13**

Document type: Other committee document

Date of document: 2019-12-18

Expected action: INFO

Background: Please find attached the liaison presentation made by M. Tomioka and M. Antoni for IEC 105, see item 11 of the agenda.

Committee URL: <https://isotc.iso.org/livelink/livelink/open/tc197>



# Standardization activity in IEC/TC 105 Liaison Report

ISO/TC 197 Plenary Meeting  
December 13, 2019 in Grenoble, France

Hidenori Tomioka  
ISO/TC197 Technical Program Director  
Liaison Officer for IEC/TC 105



## International Standardization Activities on Fuel Cells

- 105<sup>th</sup> 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 : 19 (Russia new P Member)  
Observer Member : 13





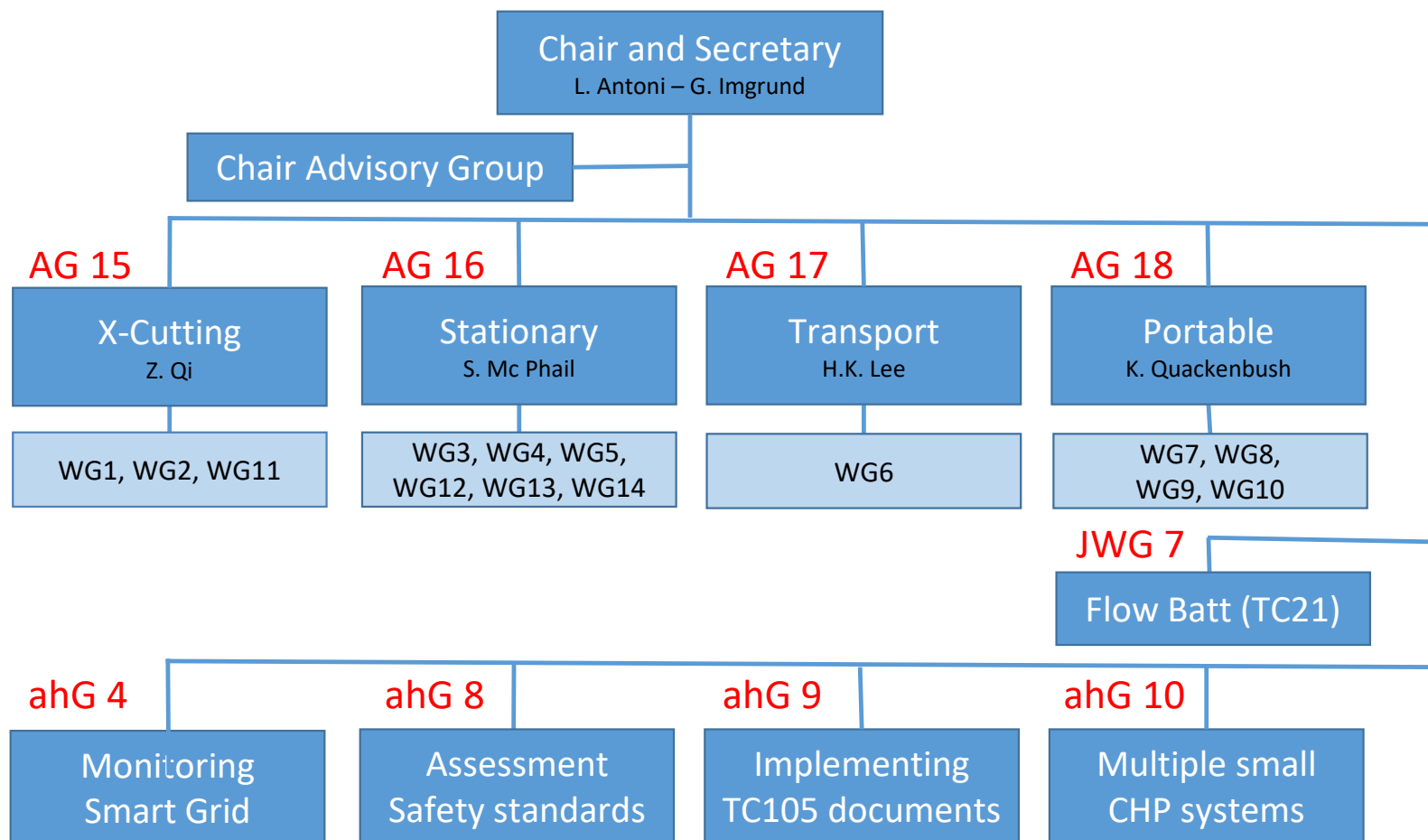
## Standardization Work on Fuel Cells in IEC/TC105

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





# IEC TC 105 New Structure





## Standards produced by IEC/TC105 on the market



For  
X-cutting

- 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  
Transport

- 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

- 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 projects under IEC/TC105



For  
Flow  
Batteries  
Jointly with  
IEC/TC21

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

For  
Reverse  
mode  
LCA

- **Project 62282-8 (FDIS)** Energy storage systems using fuel cell modules in reverse mode (3 documents)
- **Project 62282-9 (ADTS)** Life Cycle Assessment (TS) (2 documents)

For  
Transport

- **Project 62282-4-600** Fuel cell and battery hybrid power pack systems performance test methods



## 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)

<b>IEC 62282-8-101 ED1</b>	<b>Fuel cell technologies - Part 8-101: Energy storage systems using fuel cell modules in reverse mode - Test procedures for the performance of solid oxide single cells and stacks, including reversible operation</b>
<b>IEC 62282-8-102 ED1</b>	<b>Fuel cell technologies - Part 8-102: Energy storage systems using fuel cell modules in reverse mode - Test procedures for the performance of single cells and stacks with proton exchange membrane, including reversing operation</b>
<b>IEC 62282-8-201 ED1</b>	<b>Fuel cell technologies - Part 8-201: Energy storage systems using fuel cell modules in reverse mode – Test procedures for the performance of power-to-power systems</b>





## 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.
- **Requesting liaison for the standard proposed in ISO/TC197**
  - Testing protocols for electrolyser systems performing electricity grid services IEC/TC 105/WG 13 would take care of this liaison action.



**Thank you very much for your attention!**

**Contact: Hidenori TOMIOKA**  
**The Association of Hydrogen Supply and Utilization Technology (HySUT)**  
[hi-tomioka@hysut.or.jp](mailto:hi-tomioka@hysut.or.jp)

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