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ISO TC 197 Meets in The Netherlands 2016-12

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ISO/TC 197 Meets in The Netherlands

By Jim Ferrero, Secretary ISO/TC 197, and Karen Quackenbush, FCHEA

ISO/TC 197 recently held its annual plenary meeting, several working group meetings, and a strategic planning meeting in The Netherlands to advance the development of International Standards for hydrogen energy technologies.

WG 24, which is developing ISO 19880-1: *Gaseous Hydrogen - Fueling Stations – Part 1 - General Requirements*, met November 30, 2016 thru December 2, 2016 at Shell Research Center Amsterdam. Published in 2016 as a TS, the effort is now focused on development of an International Standard. As a result of a document review meeting last September to address input received from the community, the draft has changed significantly. This meeting was necessary to continue the preparation for a second Committee Draft on the route to an International Standard.

On Monday (Dec. 5) and Tues. (Dec 6) WG meetings were held for ISO/TC 158 JWG 7, ISO/TC 197 WG 22, ISO/TC 197 WG 27, and ISO/TC 197 WG5 at Shell Research Center Amsterdam. In addition, ISO/TC 197 WG 15 and ISO/TC 197 WG 26 meetings were held at the Hotel Zuiderduin aan Zee in Egmond ann Zee Netherlands.

Wednesday December 7, was the JRC-ISO Strategic Planning Meeting "H2@Market: Multi-fuel Stations and Power to Large Scale Hydrogen", which was by invitation only. (See related article above).

The ISO/TC 197 Plenary Meeting was held on December 8 – 9, 2016. Countries represented were Canada, China, Czech Republic, France, Germany, Italy, Japan, Korea, Netherlands, Norway, UK, and the US. Liaisons/guests present included the ISO Central Secretariat, the European Commission Joint Research Centre (EC JRC), the International Association for Hydrogen Safety (HySafe) and the European Industrial Gas Association (EIGA).

A review of operational progress noted circulation of a poll to evaluate performance of the TC 197 leadership. Additional questions were circulated on evaluation of the Strategic Planning Meeting and the Plenary meeting. Participants were encouraged to respond to these by January 31, 2017.

Recent changes to ISO Directives were covered by ISO Central Secretariat representative, Andy Dryden.

Key changes reported include the following:

- Obligation on P-members to vote on Systematic reviews.
- New ISO/IEC Directives Part 2 were published in May, 2016.
- Obligation on P-members to vote (including abstain) or they may be downgraded to O-members, and cannot attend WG meetings.
- ISO allows co-convenors from different TCs for joint working groups, it is believed that this is also the case for joint ISO/IEC working groups
- To aid with efficiency of development process, Webex for WGs and small meetings encouraged.

In addition, the following guidance was provided:

- Guidance on posting meeting documents (TC only, but indicated that there should be 6 weeks advance notice for WGs, and that these calling notices / agendas should be posted as N documents on Livelink).
- Access to normative references can be arranged through ISO central secretariat or the TC secretary – these should only be emailed out to working group members, not

posted as N documents. Jim will prepare some generic template text to be attached to the document.

- It was noted that meeting notices should use N-documents, as these are used to populate meeting calendars.

- Project leaders are encouraged to use ISO LiveLink for information such as published time tables.

The Plenary meeting provided a progress review of the four technical programs, with reports by the Technical Program Directors (TPDs) and Working Group Convenors.

Components and Vehicular Applications (TPD, Craig Webster)

Active WGs: WG5, WG 18, WG19, WG20, WG22, WG23

WG 5: Two meetings had been held, in February and December 2016. WG strategy is to review comments received with a few critical outstanding items to be addressed. As agreed in the previous plenary, the scope has been modified to include communications hardware into the standard. Changes to align with language used across all dispenser related component documents, and the over-riding dispenser information in WG19 and WG24. However, the language proposed did not align, therefore it was discussed that this needs to be discussed in the TC, so agreement is made by the end of the Plenary meeting. The DIS was anticipated in a few weeks, but it will wait until the pressure definitions and relevant requirements in the document are agreed.

WG 18: Livio Gambone presented on two documents – fuel container, and thermally activated relief device. Awaiting circulation of both as DIS. The meeting for addressing comments for both documents will be scheduled for the same time, following the DIS ballot, but expected to be at least 6 months' time.

WG 19: Shogo Watanabe presented. Comments from the CD circulation are being addressed, plus where appropriate, clarification language from ISO 19880-1 incorporated into ISO 19880-2. DIS now aimed for early-2017. The next WG19 meeting is anticipated for September 2017, with WG24, to discuss the DIS comments.

WG 20: Shogo Watanabe presented. DIS results were nine countries in favor, 1 against (US). Result is approve, but the disapproval is from a very big market, so effort will include a DIS 2. In March 2017. The UK noted the DIS had no N-document associated with it, so the UK experts did not see it to comment and vote. The UK requested that this document, and DIS documents in the future are also posted on Livelink as an N document to the TC, in addition to the document that is circulated by ISO Central Secretariat.

WG 22: Karen Quackenbush provided a status report. Two meetings have been held since last Plenary. Many comments on the CD were received, and in the process of being addressed. Next stage will be CD2. Hervé Barthélémy indicated that the ISO 16964 had been published, and queried if alignment with this document was being addressed where possible. Karen advised that this was being worked on.

The next meeting is planned for February/March 2017. The WG 22 is targeting a 2-day meeting the week of February 22, 2017, pending a formal invitation from Japan.

WG 23: Harmonization meeting to be held Friday following plenary meeting, with draft moving to CD early in 2017, and DIS in late 2017. Meeting held in July, also identified need for close co-ordination with WG20 & WG24.

The TC agreed to extend the lifetimes of WGs 21, 22 and 23 due to the extraordinary circumstances at the start of the projects (the original convenor

leaving the work area, leaving a new convenor to be required, and the time needed for her to be formally appointed and schedule meetings of the WGs).

TPD report: Craig Webster briefly indicated his appreciation for the support from national entities.

Built Environment and Safety (TPD, Jay Keller)

Active WGs: WG24, including approval of new co-convenor (ref. N 786)

Guy de Reals will continue as acting Co-Convenor from France. Glenn Scheffler was unanimously approved as Co-Convenor from the US.

Work is progressing on the standard, with a ISO CD 19880-1 ballot taking place in the first half of 2016 – although this passed ballot, the decision was made to take it to CD2 to address the significant comments before moving forward. 5 meetings have taken place since the last plenary meeting, and it is anticipated that the CD2 will be circulated in early 2017. A meeting to discuss the CD2 comments is scheduled for Korea in June, also in the US in September, which will be held in conjunction with a WG19 meeting in order to work on the overlapping areas. It is the target to have the DIS released for ballot prior to the next plenary meeting.

WG24 also reported that there was interest in developing the section of ISO 19880-1 concerning the dispenser fueling protocol into a separate document to cover in more detail the requirements for fueling protocols. (This would most likely be anticipated after the initial publication of ISO 19880-1)

Issues that a relevant to numerous working groups were raised:

- harmonization of pressure (& temperature) ratings and terminology for components being used in dispensers

- working on a justification as to why the dispenser over-pressure protection can be set at 138%, and ensuring the relevant vehicle component standards reflect this

- working on avoiding any duplication regarding minimum requirements for components between the ISO TC 197 working groups

Glenn Scheffler presented an approach that could be taken forward on "Pressure Terminology and Corresponding Component Rating" to address the issues that are being encountered with a common approach across the dispenser component standards with regards to pressure ratings. This briefly put across an understanding for all - this was to be followed up by the harmonization meeting on the Friday afternoon for a few of the WG convenors and associated TPDs. It was noted the issue with pressure terminology and set points may require follow on as a cross-cutting issues, and needs experts on the regional regulations involved.

Production, Storage and Handling (TPD, Hervé Barthélémy)

Active WGs: WG15, WG17, WG21, WG25, WG 26

WG 15: Hervé Barthélémy presented CD ballot results. There were 4 negative votes, 9 positive votes (including 3 with comments) and 6 abstentions. All comments received had been implemented by the convenor, with a draft circulated to the WG for any further comment. Any remaining concerns were requested, and addressed in the WG meeting immediately prior to the plenary meeting.

The WG reviewed membership, and agreed to circulate revised draft to full WG list for Go/No-Go decision (CD 2 versus DIS). Circulation of the revised draft in January to WG15 experts, with a review period of 3 weeks, following for a Webex meeting.

WG15 was approved to move from a 36 month timeframe to 48 months.

WG 17: Yuchan Gao could not attend, so his assistant Luo Ying Qi gave the report.

The draft TS has been voted on, and is expected to be published in January 2017. There was an agreement that the initiating country (China) desires some time to use the document before progressing to a standard, and so will pause the development process for an IS for a short time to gain some experience with the document.

WG 21: Karen Quackenbush presented a brief report. Two WG 23 meetings have been held since the last Plenary- one in July and one in November. The document is now more inclusive of different compressor types, though further clarification is required for testing. Anticipate CD & DIS in early and late 2017 respectively. Next meetings are anticipated to be in March and July 2017.

WG 25: Hervé Barthélémy presented the report on behalf of Dominique Perreux.

Results of the CD ballot were 12 yes, 1 no and 7 abstentions. The "no" comments led to the Annexes being removed, a draft ready for circulation as DIS has recently been "approved" by WG25 experts to move to DIS ballot.

In parallel, for the applications not covered by ISO 16111, a TR would be prepared in the WG, based on recommendation from the Chair. This was queried by Hervé, as to whether it could be prepared as a TS. Andrei clarified that no NWIP was required for a TR, but a new TS would need an NWIP and CIB. A ballot was taken in the plenary meeting on the TR being commenced in parallel to the DIS ballot.

WG 26: Larry Moulthrop presented a progress report. Second meeting held immediately prior to plenary. Worked on half of the comments. There will be 3 subgroups, TG1: confirming applicability of normative references, TG2: Standardizing pressure terminology used, TG3: Arrange risk assessment related sections into a clearer section.

2017: Webex meetings anticipated, and May meeting in the US.

Sept 2017: CD ballot intended

Indicated need for extra time to include new elements into document. Request to move from 36 month timetable to 48 months was agreed by the TC.

Stationary and Fuel Cell Applications (TPD, Kazuo Koseki)

Active WGs: WG27, WG 28, TC 158/WG 7 (Hydrogen analytical methods)

WG 27: Yasuo Takagi and Osamu Tajima

Takagi-san presented on WG27 TG1. 3 meetings had been held, with a revised WD 14687 circulated on 7th Nov 2016. CD to be prepared based on consensus achieved at the recent December meeting. The "other applications" (Part 1) will not be amended. The proposal is for the CD and DIS to be circulated in early and late 2017 respectively. Next meeting will be in May 2017, in Seoul, to review CD comments.

As a result of the task of consolidating ISO 14687-2 and 14687-3 into 14687-1, the scope is proposed to be similar to the published original scope, but including "in vehicular and stationary applications". Yuko Yasutake (Japan) and Nick Hart (UK) to agree on wording to be added to scope, which describes exclusions.

Tajima-san presented on TG2 – the table has been reviewed, and analytical methods harmonized with Part2. Input has been requested on the incorporation of the Part 3 document into the combined document, in order to enable circulation as a CD in February.

A questionnaire has been circulated to solicit experts. Input in advance of May 2017 meeting in Korea.

WG 28: Hidenori Tomioka reported that a CD ballot had taken place, with 14 positive votes. The DIS draft has been prepared and circulated for comments. There will a Webex meeting to discuss the way that this document has addressed comments received so far. The DIS will be circulated soon (ideally the start of January), and the DIS comments will be discussed at a meeting in Seoul in May (just giving 20 weeks). If the WG27 output necessitates an amendment to ISO 19880-8, this will be carried out in a second version. A request was made to extend the timeframe from 24 to a 36 month schedule. This was approved.

TC 158/WG 7: Martine Carré presented progress on development of ISO 21087. 3 WG meetings held in 2016. Target date for CD ballot is June 2017.

Criteria for the analytical method to be defined, rather than specifying the actual method to be used. Maintaining the quality of the hydrogen sampled (which is covered from safety aspects in ISO 19880-1) is covered within the analytical methods document. First draft document intended to be circulated in February 2017, with the next meeting in May 2017.

Results of Systematic Reviews and Documents more than six years old:

ISO 16110-1:2007 H2 generators using fuel processing technologies – Part 1: Safety (TPD H. Barthélémy) – 3 countries voted to revise – 8 countries voted to confirm. Resolution to confirm today, ask Germany and Japan to come back with specific revisions needed, hold a CIB ballot, form a WG, appoint a project leader, and start a

revision at that time. TC 197 asks Germany, Japan, and New Zealand to come back by the end of January 2017 with specific revisions needed in order to hold a CIB ballot.

ISO/TS 15869:2009 Gaseous hydrogen and blends – Land vehicle fuel tanks (TPD C. Webster) Confirm, with the understanding that once ISO 19881 is published, ISO TS 15869 will be withdrawn.

ISO/PAS15594:2004 Airport hydrogen fuelling facility operations

The question was asked if there was any need for this document, in which case it should be updated. Germany proposed to withdraw it. The TC approved this proposal.

Liaisons and reports of liaisons

Francoise de Jong presented on CEN/CLC TC 6, hydrogen in energy systems. This had been discussed also in the strategic meeting on the Wednesday prior to the plenary. She explained the background to the formation of CEN/CLC TC 6 as an outcome of the SFEM hydrogen discussions that had taken in the recent years. She highlighted that SFEM WG hydrogen is also continuing in parallel to CEN/CLC TC 6.

Hervé Barthélémy presented on CEN TC 268, particularly WG5, and European Mandate for EN documents for interoperability

Andrei highlighted the need for developing the terms and definitions used across ISO TC 197, CEN TC 268 and CEN/CLC TC 6 that refer to common items between all groups. He will talk to Andy Dryden about how best to achieve this so that the terms relevant to Europe only (for instance for power-to-gas) can be included in an appropriate way into the larger standardized terminology.

Andrei also indicated an intention to start to work on a public document for multi-fuel stations, probably not a standard, or even TR, but something to bring together the appropriate information from relevant technical committees in a referenceable manner.

ISO has an umbrella-type mechanism to make this happen via a deliverable from a stakeholder workshop.

Andy Dryden indicated that there is no need for a formal liaison with CEN/CLC TC 6 from an ISO point of view, as in essence this was already happening through Vienna Agreement. A ballot was carried out anyway for the formation of a liaison as this had been requested. The formation of liaison with CEN/CLC TC 6 Hydrogen in energy systems was unanimously approved.

In addition, a Category D liaison for WG 25 with the European Cylinder Makers Association (ECMA) had been requested, this was unanimously approved.

A Mini-Round Table "Fuel quality investigation: specification, control and analytical methods – implementation and harmonization" took place to inform work on the ISO/TC 197 Business Plan. Fuel quality and control may present significant costs and liability to fuel providers and station operators and thus may affect their bottom lines. The specific rationale behind this topic choice for the investigation is also motivated by real and perceived controversy of approaches as articulated by the key players involved. The imminent implementation of the EU AFI Directive on alternative fuels is adding urgency to this topic resolution and contributing to the sense of uncertainty (and some uneasiness) on how ISO standards will be used to develop their CEN "off-springs" and how all of this will affect global harmonization of requirements and its timeline. Also, from the TC197 membership perspective, there is general interest in this topic. Plus, it is critical for the experts involved in design and engineering of HRS to better understand complex issues around fuel quality and control at HRS, and analytical methods involved.

Martine Carré, Hidenori Tomioka, Guy De Reals, Georgios Tsotridis, Glenn Scheffler

Viewpoints of ISO, EIGA/CEN, EC/JRC and SAE were presented and discussed.

Martine, Guy and Tomioka-san presented on the work area of hydrogen quality and quality control. Martine highlighted the need for good coordination between

the groups due to the influence of changes in one document on others, citing the example of "total halogenates", for which no method exists currently.

Guy presented the work going on at CEN level to tie together ISO 19880-8 being developed in WG28, and the transportable PEM applications of the ISO 14687 document in the process of being revised in WG27.

A presentation from Georgios Tsotridis from JRC highlighted a new European Fuel Cell test cycle for assessing the degradation of Fuel Cells (single cells only). It was indicated that so many things influence the operation of a Fuel Cell, that analysis of the effect of hydrogen impurities should be done using a standardized method. Also mentioned were standardized tests for electrolysers.

A presentation from Glenn giving the SAE perspective, with SAE J2719 waiting for evidence from ISO etc. to support any changes to be made to the SAE standard.

There was a brief discussion on standardized methodology for testing for hydrogen quality. The Chair queried whether this might spread limited resources thinner? Guy de Reals indicated that this could be seen as pre-normative research at this point. It was left to ISO/TC 197 to work out if a working group to start this work is needed at some point.

Future ISO/TC 197 Meetings (possible locations and approximate dates):

China (Wang Geng) gave some preliminary information on the next plenary meeting, anticipated to be held in Foshan City, in Guangdong.

- It is possible (if desirable) to have WG meetings prior to the Plenary.

- A strategic planning meeting is proposed for the 6th Dec, with the plenary on the 7th and 8th December 2017.

- A tour of the Yunfu hydrogen park is proposed for the afternoon of the 8th December.

Next meetings:

· for the Fall of 2018 TBD (possibly in Vancouver, hosted by SCC and CSA)· Hervé Barthélémy was tasked to find a suitable location in Europe for 2019.

The Chair was pleased to have the opportunity to make a special presentation to Kazuo Koseki-san, who was retiring from his roles in ISO/TC 197, for his outstanding leadership and service as a member of its Technical Advisory Board and Technical Program Director in Hydrogen Technologies and wished him good health and prosperity. Koseki-san was presented an honorary memorabilia paperweight with ISO/TC 197 name and logo.

ISO/TC 197 welcomed Hidenori Tomioka-san as a new members of its Technical Advisory Board in the capacity of the Technical Program Director of Stationary and Fuel Cell Applications and regional representative for Asia effective immediately.