RESULT OF SYSTEMATIC REVIEW OF ISO 16110-1	
Date **2010-12-06**	**ISO/TC 197 N 485**
Title of TC or SC concerned **Hydrogen technologies**	

This document is to be completed by the committee secretariat and circulated within 6 months of the termination of the review period to (1) all P- and O-members, organizations and committees in liaison, (2) the ISO Central Secretariat, (3) the TC secretariat in the case of review in an SC.

Review Circulation **2010-01-15** Deadline **2010-06-15**

Reference number and title of International Standard

ISO **16110-1**

English title Hydrogen generators using fuel processing technologies -- Part 1: Safety

French title *Générateurs·d'hydrogène·faisant·appel·aux·technologies·du·traitement·du·carburant -- Partie 1: Sécurité*

Results (the compilation of results is given as an annex)

The following criteria have been met

1 A simple majority of voting P-members has proposed the following action:

a ☐ withdrawal **b** ☐ revision/amendment **c** ☒ confirmation (with or without correction)

2 ☒ Has been adopted/is intended to be adopted (with or without change), or is used "per se", by at least 5 P-members

3 ☐ No changes other than corrections are proposed by any P-member

In the light of results, the following action is proposed:

☐ **Withdrawal** [criteria 1 a met]

☐ **Revision** [criteria 1 b & 2 met – see Note)] ☐ **Amendment** [criteria 1 b & 2 met – see Note)]

Note: The choice between revision and amendment is essentially based on an assessment of whether or not the changes are limited (amendment) or if they require the redevelopment the whole document (revision). To be determined by the committee secretariat.

☒ **Confirmation** [criteria 1 c, 2, & 3 met] ☐ **... with a Technical Corrigendum**

☐ **No final decision can yet be taken** for the following reason(s) (indicate when decision is expected):

☐ **Other** (Please describe, e.g. division into Parts, combination with another IS, conversion to another deliverable type)

Further procedures (attribution to TC/SC/WG, Project Leader, development procedure, meetings, etc.)

☐ The proposed amendment/revision is to be registered as a Preliminary Work Item (stage 00.60)

Other: The comments received have been reviewed by the Chair and convener. The proposed course of action is shown in Annex A. P-members are invited to review Annex A and provide their comments if they disagree with the proposed course of action before **10 January 2011**. Unless we receive a number of concerns with this proposed course of action, the decision to confirm the standard will be forwarded to the ISO Central Secretariat after this deadline.

Experts (give details below, or as a separate annex)

Other associated information (e.g. documents to be considered. Give details below, or as a separate annex)

Proposed development track ☐ 1 (24 months) ☐ 2 (36 months - default) ☐ 3 (48 months)

Note: Selection of a development track will automatically associate default limit dates with critical stages. If you envisage that you can advance a project quicker than the default limit dates you may indicate your preferred earlier target dates in the field "Target date for submission'. ***Important!*** *Quoting earlier target dates implies a commitment to meeting these dates* ***If you do not want to change the defaults to earlier dates do not put anything in the "Target date for submission" fields****.*

Target date for submission:	as a CD:	as a FDIS:
	as a DIS:	for publication:

Secretariat	Date	Signature of the TC or SC Secretary
SCC/BNQ	**2010-12-06**	Sylvie Simyan

Compilation of the results

Member body	Member status	Q.1 Recommended action					Q.2 National adoption	Q.3 Same as international standard	Q.4 Used "per se"	Q.5 Reference in regulations	Comments enclosed (see Annex A)
	P/O	Confirm	Confirm & correct	Revise/ Amend	Withdraw	Abstain	Y/N	Y/N	Y/N	Y/N	
Argentina	P			X			N		Y	N	
Australia	O					X					
Austria	O					X					
Brazil	P					X					
Canada	P	X					Y	Y		Y	
China	P					X					
Denmark	P					X					
Egypt	P	X					Y	Y		N	
France	P			X			Y	Y		N	
Germany	P					X					
India	P	X					N		Y	N	
Italy	P					X					
Japan	P			X			N		N	N	Y
Kazakhstan						X					
Korea, Republic of	P	X					Y	Y		N	
Netherlands	P	X					Y	Y		N	
Norway	P					X					
Russian Federation	P					X					
Spain	P					X					
Sweden	P	X					N		N	N	
Switzerland	P					X					
United Kingdom	P	X					Y	Y		N	
USA	P	X					N		Y	N	
Totals (P-members only)		**8**	**0**	**3**	**0**	**9**	**6 Y 5 N**	**6 Y**	**3 Y 2 N**	**1 Y 10 N**	**1**

Abstentions and incomplete votes are not counted

Q2: Has this International Standard been adopted or is it intended to be adopted in the future as a national standard or other publication?

6: Yes

Canada – Adoption is planned in the future,
Egypt – There is no national standard about this subject till now,
France – NF ISO 16110-1,
Korea , Republic of, – To be developed soon
Netherlands – NEN-ISO 16110-1:2007
United Kingdom – BS ISO 16110-1:2007

5: No

Argentina,
India,
Japan - Japan has a domestic Law under the name of "High Pressure Safety Control Law" which has most priorities in Japan at present
Sweden - To our knowledge there are no manufacturers in Sweden of these units for the time being.
USA

Q.3: Is the national publication identical, or proposed to be identical, to the International Standard or modified?

6: Identical (Canada, Egypt, France, Korea, Republic of, Netherlands, United Kingdom)

0: Modified

Q.4: Is this International Standard used in your country without national adoption or are products used in your country based on this standard?

3: Yes (Argentina, India, USA)

2: No (Japan, Sweden)

Q.5: Is this International Standard, or its national adoption, referenced in regulations in your country?

1: Yes (Canada – Canadian Hydrogen Installation Code)

9**: No** (Argentina, Egypt, France, India, Japan, Korea, Republic of, Netherlands, Sweden, United Kingdom, USA)

Compilation of Comments

Date: 2010-12-06	Document: **ISO16110-1**

1	2	(3)	4	5	(6)	(7)
MB[1]	**Clause No./ Subclause No./ Annex** (e.g. 3.1)	**Paragraph/ Figure/Table/ Note** (e.g. Table 1)	**Type of comment**[2]	**Comment (justification for change) by the MB**	**Proposed change by the MB**	**Secretariat observations** on each comment submitted
JP	Scope			It is not clear if this document covers safety for the reformer integrated with fuel cells; it is not specified if they are also subject to the safety requirements or safety tests in the document. On the other hand, the corresponding IEC standard on fuel cell system deals with safety of such integrated reformers including tests. Integrated reformers are usually regulated with a fuel cell control system. It is difficult to test the safety of such reformer independently. Therefore It is necessary to make it clear that a reformer integrated with a fuel cell system and regulated with its fuel cell control system is out of the scope	Proposed change 1 Change the first sentence of the scope "This part of ISO 16110 applies to packaged, self-contained **or** factory matched hydrogen generation systems" To "This part of ISO 16110 applies to packaged, self-contained **and** factory matched hydrogen generation systems" Proposed change 2 .Add the following Note in the scope : "Note : the reformers integrated with fuel cells are covered under IEC 62282-3-1" Proposed change 3 Add the following wording in the scope: "The reformers integrated with fuel cells and regulated by fuel cell control systems are out of this scope"	Rejected. Ideally, IEC 62282-3-1 should require that integrated reformers comply with ISO 16110-1. The IEC standard would then only need to specify the additional tests that would be required to make sure the integrated system is safe. A request to that effect will be forwarded to IEC/TC 105.
JP	4.7.2.3.2	Classification of hazardous areas	te	Hydrogen generators are equipped with hydrogen sensor, emergency shut-down system and ventilation system. Ventilation is controlled to provide the amount of purging required to achieve level below 25% of LEL. But this clause stipulates all the hydrogen generator compartments shall be classified and the extent of hazardous areas determined according to IEC 60079-10, This represents an excessive requirement for well-ventilated systems. Therefore only those hydrogen generators without ventilation control to achieve a level below 25% of LEL shall be classified for their generator cabinet compartments and the extent of hazardous areas determined, according to IEC 60079-10	Within the cabinet of a hydrogen generator, compartments with source of flammable gas or vapour shall be provided with ventilation that control the amount of purging required to achieve levels bellow 25% of LEL . Within the cabinet of a hydrogen generator, if compartments with source of flammable gas or vapour are not provided with ventilation that control the amount of purging required to achieve levels bellow 25% of LEL ,such generator compartment shall be classified and the extent of hazardous areas determined according to IEC 60079-10,	Rejected. It is necessary that the exercise of evaluating the applicable classification and the extent of hazardous areas be done in accordance with IEC 60079-10 in all cases. The result of this exercise will determine whether there is a need for additional protection measures.

1	2	(3)	4	5	(6)	(7)
MB[1]	**Clause No./ Subclause No./ Annex** (e.g. 3.1)	**Paragraph/ Figure/Table/ Note** (e.g. Table 1)	**Type of comment**[2]	**Comment (justification for change) by the MB**	**Proposed change by the MB**	**Secretariat observations** on each comment submitted
JP	4.7.2.3.3	Ignition sources within cabinets	te	same in a foregoing paragraph	The manufacturer shall eliminate ignition sources in cabinet areas classified as hazardous under the foregoing paragraph(4.7.2.3.2) by ensuring that:	See above