



ISO/TC 197
Hydrogen technologies

Email of secretary: jim.ferrero@bnq.qc.ca
Secretariat: SCC (Canada)

DIS 22734 Revised Collated Comments 2018-05-18

Replaces: N 1003

Document type: Other committee document

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Background: Here is the revised and complete collated comments from the DIS ballot that closed on 2018-05-14.

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

Template for comments and secretariat observations

Date:2018-05-18

Document: DIS 22734

Project: WG 26

Line number	MB/ NC ¹	Clause/ Subclause	Paragraph/ Figure/Table	Type of comment ²	Comments	Proposed change	Observations of the secretariat
1.	JP	1		te	ISO 22734 is applicable to multi-production model. Field assembly type or order production type which are met with various customer requirements are out of scope	Add the sentence as follows; Hydrogen generators of field assembly type or order production type are excluded from the scope of ISO 22734.	
2.	**	3.04, 3.5		Ed	Move “hazardous” and “non-hazardous” into the definition, i.e. <hazardous>		
3.	GB	3.3.6	Para 1	Ge	Are instructions to the operator to check routinely for obstructions enough? If not, can this be changed to “to minimise the likelihood of becoming obstructed”, or permitted a control measure to detect obstructed ventilation?	Consider alternative to a ventilation opening that cannot be blocked, or partial blocked, e.g. from a plastic bag that blows towards the electrolyser...	
4.	CA	4.01.5.3			This rule needs to be enforceable as opposed to being a recommendation. If an electrolyser is provided to an equipment assembler, and the assembler installs the unit inside a “C-Can), there is a potential for a hazard.	Delete the test It is recommended that the room And replace with A room to which the	
5.	CA	4.01.6.3			This rule needs to be enforceable as opposed to being a recommendation	Delete the test It is recommended that the room And replace with A room to which the	
6.	**	4.02		ed	If reference to a specific part of a standard is made, the publication date needs to be added, e.g. Annex B of ISO / IEC 31010	Add publication date to specific references to standards throughout the document	
7.	CA	4.03.4.1			Adequate margin is not enforceable. A percentage needs to be specified. The manufacturer shall define the MAWP of the pressurized systems such there is adequate margin above the MOP to prevent inadvertent or unnecessary activations of pressure-relief devices	4.3.4 Pressure-bearing components 4.3.4.1 General requirements The manufacturer shall define the MAWP of the pressurized systems such there is adequate margin that is not to exceed 20% above the MOP to prevent inadvertent or unnecessary activations of pressure-relief devices (PRD). The ratings of all	

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					(PRD). The ratings of all components shall be equal to or greater than the system MAWP.	components shall be equal to or greater than the system MAWP. PRDs shall protect all components in the system against over-pressure and be set at or below the system MAWP. (see 4.3.4.7)	
8.	NZ	4.03.4.5		te	On page 15. The note at the end of the section correctly identifies a hazard the proposed change could be added immediately before it to explicitly address the issue.	Suggested additional penultimate paragraph, "Metal parts at both ends of non-conductive pipe shall be grounded."	
9.	NZ	4.06.1		ed	On page 25, last line. Inappropriate hyphen/dash.	Remove "-" between "electrolyte" & "shall".	
10.	GB	4.1.5.3	Para 2	Ge	Remove "and hydrogen" – covered by 4.1.6.3	Remove "and hydrogen". Also consider if this requirement is only for when venting into enclosures, or when venting indoors. The position in the text suggests it could only for enclosures – see comment below	
11.	GB	4.1.5.3	Para 4	Ge	Can the electrolyser manufacturer stop this? Does it mean only venting into the enclosure and dilution is permitted if manufacturing an electrolyser for residential applications, and no vent line connection (whether going indoors or outdoors) that could be abused, even if against manufacturer's instructions?	Consider if this is reasonable / possible. If this is required, then clarify the residential electrolyser oxygen venting must be into the enclosure and diluted, if this is indeed the case?	
12.	GB	4.1.5.3	Para 5 & 6		More for installer rather than manufacturer? Manufacturer can only indicate guidance in the manual – suggest combining with Para 2. May benefit from a slight reordering for clarity.	Room ventilation guidance shall be provided in the installation instructions <u>for systems venting oxygen into either the enclosure, or indoors</u> , as required by 7.3.3. Pressure-relief devices that vent within enclosures or indoors shall be considered when determining dilution and ventilation requirements.	

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						NOTE This guidance should recommend that the room to which the hydrogen generator ventilates its air/gas mixture be sufficiently ventilated to dilute the oxygen concentration in air below a volume fraction of 23,5 %. Labelling warning about the presence of oxygen and hydrogen shall be affixed as required by 6.4.	
13.	GB	4.1.5.3 (/ 4.1.5.2 & 6.4)	Para 2	Ge	Should there be a requirement to label the oxygen vent if / when not venting indoors?	Consider moving label requirement to general, or add requirement to clearly indicate where the oxygen vent connection should be made. To discuss – does this need a label, or is instruction in the manual / installation instructions adequate? Should there be a cross reference to 6.3? (or from 6.3 to here?)	
14.	GB	4.1.6.1	Para 1	Ed	Incorrect cross-reference, now 4.1.6.2 and 4.1.6.3	Replace with: "...in accordance with 4.1.6.2 and 4.1.6.3."	
15.	GB	4.1.6.2	Para 1	Ge	What if the manufacturer does not supply / install the vents	Means shall be provided to connect a vent line to the hydrogen generator. <u>When supplied with the hydrogen generator</u> , vent lines should be designed according to ISO/TR 15916, or other similar standards.	
16.	GB	4.1.6.2	Para 1	Ge	Could include informative note referencing CGA and EIGA	Add: NOTE: Additional guidance on hydrogen vents can be found in CGA G-5.5 and EIGA - IGC Doc 211 17 E (For informative references in bibliography: CGA G-5.5: Hydrogen vent systems	

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						EIGA - IGC Doc 211 17 E: Hydrogen vent systems for customer applications)	
17.	GB	4.1.6.3 (4.1.6.2)	Para 2	Ge	Should there be a requirement to label the hydrogen vent if / when not venting indoors?	Consider moving label requirement to general, or add requirement to clearly indicate where the hydrogen vent connection should be made. To discuss – does this need a label, or is instruction in the manual / installation instructions adequate? Should there be a cross reference to 6.3? (or from 6.3 to here?)	
18.	GB	4.1.7	Para 1	Ed	Typo?	<u>Under standard conditions</u>	
19.	GB	4.1.7 / 4.1.8	All		Should there be a requirement to label the hydrogen / oxygen outlet points as applicable?	Consider labelling of outlets – hydrogen outlet, oxygen outlet if appropriate, water drain, etc Is it clear from 6.3 what is required? And should there be a cross reference to 6.3? (or from 6.3 to here?)	
20.	GB	4.1.8	Para 1	Ge	Only needed where applicable (i.e. where the hydrogen generator is designed to supply oxygen as a by-product	Industrial and commercial equipment may deliver oxygen. <u>Where applicable</u> , the manufacturer shall...	
21.	GB	4.1.8	Para 1	Ed	Typo: “oxygen temperature range”, not “hydrogen temperature range”	“...the oxygen output pressure range, hydrogen oxygen temperature range, and the quality of the oxygen...”	
22.	GB	4.1.8	Para 1	Ed	Typo?	<u>Under standard conditions</u>	
23.	GB	4.3.4.3	Para 2	Ed	Maximum allowable pressure consistent with MAWP definition?	If so, consider clarification in the MAWP definition that this might also be referred to as maximum allowable pressure...	

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24.	GB	4.4.1.2	Para 1	Ge	“The hydrogen generator enclosure shall be classified according to IEC 60079-10-1.” Offer other acceptable alternatives, see ISO DIS 19880-1 text for instance	Consider replacing with: Hazardous areas shall be identified and classified according to IEC 60079-10-1 or other regionally accepted methodologies.	
25.	GB	4.4.2.5	Para 1	Ge	Is this reference appropriate for a several tonne containerised system? Is there an alternative to IEC 61010-1 for heavy electrical equipment?	Consider if this is a reasonable / sufficient requirement.	
26.	GB	4.5.1.5	All	Ge	Lots of duplication of 4.1.5.3?	Consider which text is unique to hazardous area classification (e.g. 2 nd sentence), and refer to 4.1.5.3 for the rest	
27.	GB	4.5.2	3	Ge	Increased clarity would be useful on what is meant by: “The design of safety-control circuits shall be such that failure of critical functional components will cause the hydrogen generator to go to a safe condition, as follows” Should a) & b) refer to the control system rather than the component that has failed?	Further guidance would be useful. Consider: a) the component <u>control system</u> shall act to safely interrupt the intended function under its control, or b) the component <u>control system</u> shall allow an operational cycle to complete, but shall fail to start or will lock out on the subsequent cycle.	
28.	GB	4.5.2	3	Ge	The option b) given in case of a “failure of critical functional components” is to allow the system to complete an operational cycle but fail to start a subsequent one. I believe it should state “if safe to do so” in that sentence. For example, we could consider a cycle the generation of hydrogen until we reach the target pressure and we go to standby. However, in case of a fire it would be	the component shall allow an operational cycle to complete <u>if safe to do so</u> , but shall fail to start or will lock out on the subsequent cycle. (or control system shall..... as per above)	

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					safer to stop the "cycle" and vent/shutdown straightaway.		
29.	GB	4.5.2	All	Ge	Should there be a link between this section about safety critical components and section 4.5.6 about emergency stop?	Consider linking with cross-reference – for example, an emergency stop would typically be carried out using some form of safety control circuit...	
30.	NZ	5.02.7.1		ed	On page 33, missing word.	Amend "described4.4.1" to "described in 4.4.1".	
31.	GB	5.2.6.3.1 Bubble test		te	<p>The draft contains the text "a volumetric fraction of less than 1×10^{-5} of sulphur and 1×10^{-5} of halogen". I propose this is replaced with the equivalent in explicit metric units such as "less than $10 \text{ cm}^3/\text{m}^3$ sulphur and $10 \text{ cm}^3/\text{m}^3$ halogen" or "less than $10 \mu\text{l/l}$ sulfur and $\mu\text{l/l}$ halogen".</p> <p>Explicit metric units are increasingly used in modern standards and other documents because they are succinct, unambiguous, and scale well to small values with SI prefixes.</p>	Replace "a volumetric fraction of less than 1×10^{-5} of sulphur and 1×10^{-5} of halogen" with "less than $10 \text{ cm}^3/\text{m}^3$ sulphur and $10 \text{ cm}^3/\text{m}^3$ halogen".	
32.	GB	5.2.6.3.1 Bubble test		te	<p>The draft contains the text "sulphur". I propose this is replaced with "sulfur". The 'sulf...' spelling was adopted by IUPAC and the UK Royal Society of Chemistry in the 1990s. Since then it has been the spelling used by ISO standards.</p> <p>See: https://en.wikipedia.org/wiki/Sulfur#Spelling_and_etymology</p> <p>For what it's worth, the Google ngram viewer shows the relative proportions of the two spellings in British books. See:</p>	Replace "sulphur" with "sulfur"	

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					https://books.google.com/ngrams/graph?content=sulphur%3Aeng_gb_2012%2Csulfur+%3Aeng_gb_2012&case_insensitive=on&year_start=1920&year_end=2008&corpus=18&smoothing=3&share=&direct_url=t4%3B%2Csulphur%3Aeng_gb_2012%3B%2Cc0%3B%2Cs0%3B%3B%3B%3Aeng_gb_2012%3B%2Cc0%3B%3BSulphur%3Aeng_gb_2012%3B%2Cc0%3B%3BSULPHUR%3Aeng_gb_2012%3B%2Cc0%3B.t4%3B%2Csulfur%3Aeng_gb_2012%3B%2Cc0%3B%2Cs0%3B%3Bsulfur%3Aeng_gb_2012%3B%2Cc0%3B%3BSulfur%3Aeng_gb_2012%3B%2Cc0%3B%3BSULFUR%3Aeng_gb_2012%3B%2Cc0		
33.	GB	5.3.1			05.3 also applies to one-off designs. Does the inclusion of “serial production” confuse this?	Consider: Routine tests shall be performed on every serial production hydrogen generator prior to placement on the market, installation, or commissioning.	
34.	NZ	7.05		te	For many installations a passive safety feature is that hydrogen be allowed to rise freely and be diluted as rapidly as possible in the atmosphere. Anything that restricts such flow paths should be removed and this can be ensure after regular maintenance. This also applies to oxygen where it is not captured.	Suggested addition after the third paragraph, “Maintenance should include ensuring that there are no obstructions to the free flow of gas where it is intended that gas be diluted to a safe concentration in the atmosphere.”	
35.	**	Clause 2 Normative references		ed	ISO 7000 and ISO 7010 are not normative. It is not required in all instances.	Move ISO 7000 and ISO 7010 to the Bibliography.	
36.	**	Clause 2 Normative references		ed	IEC 60079 (all parts) is listed in the normative references clause and so are some of the separate parts of the document.	Either list IEC 60079 (all parts) or list the separate parts that are normative but not list both.	
37.	**	Clause 2		Ed	Introductory generic text is not correct.	Up-to-date generic text is provided in the Simple template in the Drafting standards section on iso.org: https://www.iso.org/drafting-standards.html	

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38.	**	Figures		Ed	Please provide revisable files for all figures.	Guidelines for the submission of text and graphics to ISO/CS are available in the Drafting standards section on iso.org: https://www.iso.org/drafting-standards.html	
39.	*	Foreword		Ed	Update generic text, which now includes mention of “the voluntary nature of standards” in 5 th paragraph (and 3 rd hyperlink) and rewords subsequent paragraphs.	Up-to-date generic text is provided in the Simple template in the Drafting standards section on iso.org: https://www.iso.org/drafting-standards.html	
40.	**	General		Ed	Use “this document” to refer to ISO XXXXX throughout the text.	Please correct as applicable.	
41.	**	General: NOTES		Ed	NOTES cannot contain requirements (“shall”), recommendations (“should”) or permission (“may”).	Review all NOTES and remove or redraft any of the provisions not allowed.	
42.	IRAM/AR	Reference 32		Ed	The acronym of the code and consequently the name of the standard is wrong and should be corrected - ICG Doc 13/02/E, <i>Oxygen Pipeline Systems</i>	Rename as follows: IGC Doc 13/02/E, <i>Oxygen Pipeline Systems</i>	

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