

Template for comments and secretariat observations

Date: 2007-03-05

Document: 3CD OIML R85

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 com- ment ²	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
FR	3.1		ed	Automatic level gauge (ALG) An instrument intended to measure automatically and display the level of the liquid contained <u>in a tank</u> with respect...	The term of "storage tank" is more appropriated than "tank".	accepted ...the liquid contained <u>in a storage tank</u> with respect...
FR	3.5		ed	Transducer A device that provides an output quantity, having a determined relationship to the input quantity.	Definition of <u>transducer</u> : "A device that transforms the informations given by the liquid level sensor into a quantity which is passed to the calculator."	to be discussed
FR	3.7		ed	The term "transducer" was not used in the draft Recommendation.	In 3.7 the term "transducer" should be used instead of "measuring device(s)".	The term "transducer" is used in the (sub)clauses 3.1, 4 and 7.8.3.5 of the draft Recommendation. to be discussed
FR	3.10		ed	This definition seem to be not used in this Recommendation..	It should be deleted if not used, otherwise there should be a corresponding requirement.	to be discussed
FR	3.11		ed	This definition seem to be not used in this Recommendation..	It should be deleted if not used, otherwise there should be a corresponding requirement.	to be discussed
FR	3.12		ed	This definition seem to be not used in this Recommendation..	It should be deleted if not used, otherwise there should be a corresponding requirement.	to be discussed
FR	3.13		ed	This definition seem to be not used in this Recommendation..	It should be deleted if not used, otherwise there should be a corresponding requirement.	to be discussed
FR	4		ed	Figure 1 (title and figure itself)	The term of "movable liquid level detecting element" shall be replaced by "liquid level sensor".	to be discussed
FR	4		ed	Figure 1	The term of "Gauge reference height" shall be defined in an additional sub-clause under 2.	to be discussed
FR	4		ed	Figure 1	All the figures of the scheme shall be renumbered according to the numbers of corresponding paragraphs of the present draft.	to be discussed
FR	6.1		te	In the ambient temperatures, the following temperatures of -40°C and +85°C are not present. Is it voluntary ?		to be discussed

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				For example, some countries can use these extreme temperatures.		
SE	6.2		te	<p>It was commented already at last meeting that the text “<i>.. apply to the indication of a dip or an ullage according to the measuring principle of the ALG</i>” needs clarification. Similar text appears in both ISO 4266 and API ch 3.1b, and there it means that the maximum permissible error is an ullage MPE for an ullage based device, i.e ullage based level gauges shall be verified by an ullage dip and compared with the MPE expressed as ullage. This means that changes of tank reference height is excluded from MPE, only the ullage accuracy of the level gauge is checked.</p> <p>Further on in chapter 7.3.1.6 we say that “<i>installed on tank ... the deviation of tank ref height plus...remains within the MPE</i>. If understood correctly it means that it is ok if: the installed ALG (ullage based) is within 4 mm measured with an ullage dip. It is still ok if the reference height changes 4 mm or less. That would</p> <p>in worst case allow 4+4 mm deviation on level. Is that what is meant?</p>		<p>The MPE applies to the relevant indication of the ALG: if the indication refers to the ullage, the MPE refers to the ullage, in the case of the filling height the MPE refers to the filling height (always to “<i>... the relevant indication ...</i>”)</p> <p>Subclause 7.3.1.6 means: If the deviation of the indication of the ALG is smaller than or equal to the MPE, the total deviation have to be smaller than or equal to twice of the MPE and therefore in the worst case the total deviation could be 8 mm.</p>
FR	6.2.2		ed	The hysteresis error when changing the direction of the movement of the level shall not exceed 1 mm.	A reference to clause 8.1.4.1.4 should be added here.	to be discussed
FR	6.3		ed	<p>Presumption of compliance</p> <p>An automatic level gauge is presumed to comply with the provisions in 6.1 and 6.2 if it passes the tests 8.1.5.1 to 8.1/5/5 and 8.1.4.1 specified in Part 2 of this Recommendation.</p>	Read : "... to 8.1/5/5 8.1.5.4 and 8.1.4.1 specified ...".	accepted
FR	7.1.2		ed	An ALG may have more than one indicating device ...	<p>We suggest to improve the presentation of the paragraph.</p> <p>Furthermore we propose to add a requirement for indicating and repeating : for the indicating device and for the repeating indicating device a device shall announce that the operational limits of the</p>	to be discussed

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					level gauge are reached (heights maximum and minimal).	
FR	7.1.8		te	A digital indication shall display at least one figure ... What is the interest of such details?		to be discussed
FR	7.3.1.8		te	The whole paragraph is concerning use and installation conditions and is not consistent with the second hyphen of clause 1 which specifies : "This new revision is dealing only with the level gauge itself". However if it is maintained it is necessary to also treat the distortion due to hydrostatic pressure of the liquid.		to be discussed
FR	7.5		te	Markings	The repeating indicating device shall be taken into account in this clause. The following informations shall be marked in the <u>repeating indicating device</u> : <ul style="list-style-type: none"> - type approval mark, - type designation, - serial number and year of manufacture, - identifications of tanks. 	to be discussed
FR	7.7		ed	a) Access shall only be allowed to authorized ... b) ... c) The device shall either clearly indicate when it is ...	In sub-clauses a) and c) the terms "measuring system" shall be replaced with the terms "ALG".	The ALG is only a part of the measuring system. not accepted
FR	7.8.2		te	The number 7.8.2.1 was omitted and the clauses 7.8.2.1 (a) and (b) are not defined clearly.	The writing of 7.8.2 should be revised in order to make it more easily intelligible and coherent with clauses in 8 which refer to it.	to be discussed
SE	7.8.2.2		ed	There is no 7.8.2.1 in the document.		It should read: <i>"7.8.2.1 ALG's shall be designed and ..."</i>
SE	7.8.2.2		ed	What is 3.32?		Subclause 3.32 defines "significant fault"
FR	8.1.4		te	8.1.4 Reference conditions	It has to be specified that all the tests are carried out under atmospheric pressure.	accepted

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				Except for the parameter being tested, the following reference conditions shall be kept by the testing laboratory during the tests:		
SE	8.1.4.1.2		te	Not clear what is meant by "initial intrinsic error". The definition in 3.30 says "the intrinsic error as determined prior to (?) performance tests"		To be discussed
SE	8.1.4.1.2		te	... 10 levels.... other determinations at least 3 levels.. What is other determinations? Needs clarification that e.g. disturbance tests only require one test level. Do we need to specify the location(s) of the levels?		to be discussed
SE	8.1.4.1.3		te	.. compliance with 6.2.3 ... shall it be 6.2.4?		to be discussed
SE	8.1.4.1.3		te mechanical level sensor...change to: ... movable liquid level detecting element...		to be discussed
SE	8.1.4.1.4		te	Same comment as above.		to be discussed
FR	8.1.5		ed	The type of an automatic level gauge is presumed to comply with the provisions specified in 6.1 of Part 1 of this Recommendation if ...	To be consistent with other clauses, the words "of Part 1 of this Recommendation" should be deleted.	accepted
FR	8.1.5.1		ed	Maximum permissible error under reference conditions. Before, during, and after the following tests 8.1.5.2 - 8.1.5.5, the error of the ALG shall not exceed the maximum permissible error on initial verification specified in 6.2 of Part 1 of this Recommendation under ...	To be consistent with other clauses, the words "of Part 1 of this Recommendation" should be deleted.	accepted
FR	8.1.5.2		ed	Static temperatures	The paragraphs 8.1.5.2.1 and 8.1.5.2.2 shall be written in consistency with paragraphs 10.1.1 and 10.1.2 of D 11 respectively (as it has been done for 8.1.6)	accepted
FR	8.1.5.2		ed		In the tables in 8.1.5.2.1 and 8.1.5.2.2, on the lines "Test" , the present sentence shall be replaced with : "After stabilisation at the relevant temperature, the following tests shall be carried out : - an accuracy test at three different levels	to be discussed

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					equally spaced in the measuring range; - a discrimination test at one level, anywhere within the measuring range; - an hysteresis test at one level, anywhere within the measuring range."	
FR	8.1.5.3		te	In the table, the following paragraph is repeated two times : "The EUT shall comply with the specified maximum permissible errors at voltage levels between the two levels."	It shall be deleted under "Test severity" and maintained under "Requirement"	to be discussed
FR	8.1.6		ed	Disturbances The type of ALG is presumed to comply with the provisions specified in 7.8.2.1, of Part 1 of this Recommendation if ...	To be consistent with other clauses, the words "of Part 1 of this Recommendation" should be deleted.	accepted
FR	8.1.6.2.1		ed	The paragraphs which are in "Notes" after the table are already presents in the table.	The whole paragraph "Notes" shall be deleted.	accepted
SE	8.2.1.1		ed	... the ALG shall be checked ...	Propose to delete the sentence "To fix the configuration....sealed acc. to Certificate.	to be discussed
SE	8.3		te	Needs further discussion		accepted
CZ	8.3.1		te	... Subsequent verification with a period of ...	<i>We suggest delete those sentences:</i> Subsequent verification with a period of validity of 1 year is recommended. Subsequent verification is to verify the ALG accuracy at one single level within the normal operating range (In practice, this will be the actual level of the fluid in the tank at the moment of the verification). <i>and replace it by set two intervals for re-verification:</i> Subsequent verification is recommended with a	to be discussed

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					<p>period of validity of:</p> <p>a) two years for ALG without automatic checking of metrological parameters*</p> <p>b) four years for ALG with automatic checking of metrological parameters*</p> <p>* automatic checking of metrological parameters of ALG shall comply with following requirements:</p> <ul style="list-style-type: none"> - by automatic checking of metrological parameters is ALG compared with independent calibrated length standard, which is part of ALG or part of measuring system, - automatic checking of metrological parameters of ALG is execute automatically without outside intervention, minimally once a day or by each movement in the tank, which occure earlier, - it is prohibited use the result of automatic checking of metrological parameters of ALG for correction of measuring outputs of ALG; in the case of difference between measuring the same length in tank and in standard exceed MPE of ALG, checking facility evaluate this state as a fault and signalize to control center that henceforth use this ALG as legal meter is not allowed (see 7.8.2.5); this state together with date and time is recorded in memory module of ALG. <p><i>Explanation:</i></p> <p>For probability of good measurement results during the whole period of verification, proposed check of only one point of measuring range would be not sufficient. Also the accuracy of the measuring and evaluate of level high for comparison is discutable (waves, temperature conversion, non-homogeneity of fluids, etc.).</p>	

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					<p>Therefore it is necessary to test those levelmeters in test laboratories. Most of types of levelmeters is able relative easy to dismount (radar, ultrasonic, servo, etc. including those used in pressurized tanks), some problems would be with electronic levelmeters of dip-stick or cable type.</p> <p>There is a possibility to co-ordinate the verification period with service intervals the tank (cleaning, leakage inspection).</p> <p>The case b) is for example impossible to use for storage tanks of state reserves, because the level is in the long term unchanging.</p>	
SE	8.4		te	Needs further discussion		accepted
SE	T.3		ed	There is no paragraph 6.1.1		should be cleared
SE	T.5		ed	There is no paragraph 7.1.10		"7.1.10" will be deleted in T.5
SE	T.11.1			Delete accuracy class in table		to be discussed
SE	T.11.1			What is the purpose of table "maximum differences"? Propose to delete.		to be discussed

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**OIML TC8/SC1
Comments WG2
“4CD” OIML R 85 “Automatic Level gauges”**

and the convener’s reply

31 July 2007

Introduction

During the meeting of TC8/SC1, 8-9 March 2007 in Vienna, the 3 CD R 85 was discussed and several changes were agreed. These changes have been effected in this new draft.

Furthermore, it was concluded during that meeting that Mr. Hagg would submit a proposal for sub-clause 7.6 and the US delegation for 7.3.1.7 and 7.3.1.8. We received the proposal from Mr Hagg. But, in spite of a reminder, the convener never received the proposals from the US.

30 May 2007 a draft for OIML R 85 has been distributed to the members of the Working Group (OIML TC8/SC1/WG2), with a copy for information to the members of the Subcommittee and a few other persons that might be interested. Although the drafts was marked "4CD", this was meant to be a **working draft** within the Working Group. And this was the reason for the short (one month) time for response by the members of the Working Group, instead of the prescribed minimum time of 3 month for drafts in the Subcommittee.

As per 6 July 2007, the convener of TC8/SC1/WG2 only received remarks from Mr. Sochor (Czech Republic), Mr. Rog and Mr. Engler (The Netherlands) and the proposal from Mr. Hagg (Norway) already mentioned above.

In the table below, these remarks have been summarized; together with the response by the convener of the WG.

A new draft (4CD) has been drafted where these remarks and responses have been taken into account.

And it is the opinion of the convener of WG2 tat the time has come now to distribute the drafts for Part 1 and Part 2 among TC8/SC1 members for formal vote within the Subcommittee.

Furthermore, Part 3 (Test Report format) has been completely updated and is ready now for distribution for comments.

General aspects
Part 1, Part 2, and Part 3 have been split into separate files (can be combined again later if applicable). So each of the 3 parts can be brought into vote separately. As a result, Annex A has been moved to Part 1 Annex A and Terminology: statement added that these are applicable to all 3 Parts.
Several minor editorial improvements
All references checked and corrected where necessary

Part 1

Document Clause	Comment by	Comment	Convener's reply
Foreword	Engler	Adjust the text to the latest example of BIML (R 137-1)	Done
Introduction	Engler	Add: "The differences between the previous Recommendation and the present one are thus far-reaching that ALG's complying with the edition 1998, can not be supposed to comply with this new edition, unless the compliance is confirmed by new tests."	Done
2	Sochor	<p>This Recommendation specifies the metrological and technical requirements and test procedures for automatic level gauges for storage tanks. The storage tanks include vertical, cylindrical storage tanks and pressurized storage tanks (spheres, spheroid, bullets). <i>Why not other shapes? Technically, the tank of any shape corresponding with OIML R71-rev. (9.1.1) is able to be used in conjunction with tank calibration table. There may be problems for example with cooling tanks for milk (they use several different shapes – not mentioned) and they would be outside of legal category.</i> The storage tank may be refrigerated or heated.</p> <p><i>Change the paragraph by:</i></p> <p>This Recommendation specifies the metrological and technical requirements and test procedures for automatic level gauges for storage tanks. The storage tanks include all the shape corresponding with OIML R71 (9.1.1) e.g. vertical, cylindrical storage tanks and pressurized storage tanks (spheres, spheroid, bullets). The storage tank may be refrigerated or heated</p>	Accepted and draft R 71 added to the Bibliography
3.33	Engler	"T" is not used any more	Deleted
4	Engler	Should we make a new drawing for Figure 1 ? Anyhow, update the references and terminology.	Drawing replaced; terminology and references in the drawing updated.
6.1	Rog	a) high: add "+" sign to 55	Done
	Engler	<p>In 8.2.1.2, there was the statement "<i>If national regulations allow the use of an ALG under conditions outside the rated operating conditions (see 6.1) all necessary information to make the required corrections shall be given to the user.</i>" But this a <u>requirement</u> for the manufacturer and if relevant, it shall be checked during the initial verification.</p>	Moved to 6.1 and text in 8.2.1.2 changed.
7.1.5	Engler	Replace " <i>at least after 10 s</i> " by " <i>within 10 s</i> "	Done
7.1.9	Engler	Note that 7.1.1 only applies for analogue display. Therefore change reference " <i>Sub clauses 7.1.1 ...</i> " to " <i>Sub clauses 7.1.2 ...</i> "	Done
7.3.1.2	Engler	This is inconsistent with 8.2 / 8.4	Text revised

7.6	Hagg	Regarding the comment from US about verification marks, they simply don't know what it is. Verification marks are not used by very many countries and my guess is that there are more countries who have the same question as US. I realize that it is not very good practise to write recommendations with wordings like: <i>".... In some countries national regulation may require the use of verification mark.."</i> But in this case I would say it is needed. I would therefore propose that we relax the text that verification mark not is mandatory, unless required by national regulation. My proposal is therefore to add the sentence: <i>"In some countries national regulation may require the use of verification mark...."</i>	Instead of the proposed text, a note has been added
7.8.2.1	Engler	Re-introduce numbering of the items to facilitate reference from Part 2, 8.1.7 (disturbances).	Done
7.8.2.2	Engler	The text <i>"The choice manufacture"</i> can be deleted, as this is also in 7.8.2.4	Done
7.8.3.2	Engler	Footer: ISO 2111 has been withdrawn	Reference removed
Bibliography	Engler	Add reference to (draft) OIML R 71.	Done

Part 2			
Document Clause	Comment by	Comment	Secretariat's reply
8.1 / 8.2	Engler	Combine the rows <i>"Test procedure in brief"</i> and <i>"Tests"</i> wherever applicable. And improve the consistence of the tables. Those tests carried out at only one level: add that this level shall be about 50 % of the measuring range.	Done
8.1.4	Engler	Split 8.1.4 into 8.1.4 and 8.1.5 and change further numbers accordingly	Done
8.1.4.1.2	Rog	Change 2 nd paragraph as follows: <i>"When determining the initial intrinsic error, at least 10 levels shall be selected. For other determinations at least 3 levels shall be selected. During influence and disturbance tests 1 level shall be selected."</i>	Change 3 levels for influence tests to 1 level not accepted. But instead, the wording has been changed.
8.1.4.1.3	Engler	<i>"according to the accuracy class"</i> shall be removed, as there are no different accuracy classes any more.	Done
8.1.4.1.4	Engler	<i>"equally distributed"</i> is not fully consistent with 3 points at a distance of at least 1/5 of the measuring range	Changed
8.1.5.1	Engler	Add: <i>" ..., all functions shall operate as designed and the error"</i> In that case, most of the rows <i>"Requirement"</i> are superfluous and can be deleted (or in a few cases slightly modified). And replace <i>"at initial verification"</i> by <i>"before installation"</i> .	Done
8.1.5.2.1	Engler	Dry heat: 20 g/ m ³ (Superscript)	Corrected

8.1.5 8.1.6 Annex A	Engler	Align the IEC standards referred to and the description of the “electrical” tests in 8.1 with the latest version of the IEC standards.	All references to IEC and ISO standards have been updated. This also resulted in a few minor changes in the tests..
8.1.6.1 Damp heat cyclic	Engler	<u>In the 1st sentence</u> , there is a reference to 7.8.2.1.2, but this sub-clause does not exist. This should be: 7.8.2.1	Corrected
		<u>Last row of the table:</u> As “Damp heat, cyclic (condensing) is a disturbance (not an influence!), the criterion should be “no significant error” instead of “MPE”.	Corrected
		It is not yet specified whether the ALG is switched on or of during this disturbance.	Added: “Switched of”
		<u>Proposal:</u> Immediately after the last cycle, an accuracy test shall be carried out at 3 levels upward as well as downward: low - middle - high - middle - low During this accuracy test, either: (a) Significant faults do not occur, or (b) Significant faults are detected and acted upon by means of a checking facility.	This proposal has partly been included in this Part 2 and partly in Part 3 (Test report format).
8.1.6.2.1	Engler	There is a reference to 7.8.1.1, a), but this does not exist any more (2x). The lay out of this sub clause is not consistent with the other tests (tables).	Changed
8.1.6.2.3	Engler	<u>Electrostatic discharge</u> In the previous edition (R 85: 1998), severity level 4 was prescribed. In the present draft, there is the choice of level 1, 2, or 3. In OIML D 11, level 3 is the preferred severity level. Taking this into account, I propose to prescribe only level 3 now.	Accepted
8.1.6.2.8	Engler	In the table, there are references to notes (1) and (4). But there are no notes. So, these references should be removed.	References removed
8.2	Engler	There is only 8.2.1, reading “ <i>If initial verification is carried out in two stages, ...</i> ” but nothing is said about initial verification in one stage. As far as I know, initial verification is <u>always</u> carried out two stages.	Text amended accordingly
8.2.1.2	Engler	The statement “ <i>If national regulations allow the use of an ALG under conditions outside the rated operating conditions (see 6.1) all necessary information to make the required corrections shall be given to the user.</i> ” is a requirement for the manufacturer and if relevant, it shall be checked during the initial verification.	Moved to 6.1 and text in 8.2.1.2 changed.
8.3	Sochor	Suggest changing the text:: <i>In practice, subsequent verification is not possible for pressurized tanks outside tank only (after dismounting).</i>	Accepted, but other wording used.
8.3.1	Sochor	Change the paragraph by: Subsequent verification The ALG shall be inspected and examined to establish that it is in correct working order with a period of validity of 1 year is recommended. Subsequent verification This inspection check the ALG accuracy at one single level within the normal operating	The idea is useful, but in our opinion, such an inspection is not a subject of legislation in the sense of an OIML Recommendation.

		<i>range (In practice, this will be the actual level of the fluid in the tank at the moment of the verification).</i>	Therefore no change.
8.3.2 + 8.3.3	Sochor	<p>Combine 8.3.2 and 8.3.3 (deleting number 8.3.3): <i>Add to the paragraph by set two intervals for re-verification:</i></p> <p>Subsequent verification is recommended with a period of validity of:</p> <ul style="list-style-type: none"> a) two years for ALG without automatic checking of metrological parameters* b) four years for ALG with automatic checking of metrological parameters* <p>* automatic checking of metrological parameters of ALG shall comply with following requirements:</p> <ul style="list-style-type: none"> - by automatic checking of metrological parameters is ALG compared with independent calibrated length standard, which is part of ALG or part of measuring system, - automatic checking of metrological parameters of ALG is execute automatically without outside intervention, minimally once a day or by each movement in the tank, which occure earlier, - it is prohibited use the result of automatic checking of metrological parameters of ALG for correction of measuring outputs of ALG; in the case of difference between measuring the same length in tank and in standard exceed MPE of ALG, checking facility evaluate this state as a fault and signalize to control center that henceforth use this ALG as legal meter is not allowed (see 7.8.2.5); this state together with date and time is recorded in memory module of ALG. <p><i>Explanation:</i></p> <p><i>For better probability of good measurement results during the whole period of verification, proposed check of only one point of measuring range would be not sufficient. Also the accuracy of the measuring and evaluate of level high for comparison is discutable (waves, temperature conversion, non-homogeneity of fluids, etc.).</i></p> <p><i>Therefore it is necessary to test those levelmeters in test laboratories. Most of types of levelmeters is able relative easy to dismount (radar, ultrasonic, servo, etc. including those used in pressurized tanks), some problems would be with electronic levelmeters of dip-stick or cable type.</i></p> <p><i>There is a possibility to co-ordinate the verification period with service intervals the tank (cleaning, leakage inspection). The case b) is for example impossible to use for storage tanks of state reserves, because the level is in the long term unchanging and the level sensor is “sleeping” in one position.</i></p>	<p>We think that in practice it is too complicated in legislation to make the legal period for subsequent verification dependent of technology.</p> <p>* This is a technical requirement that does not belong in Part 2. Technical requirements are covered by Part 1. See for checking facilities 7.8 in Part 1.</p> <p>But we have completely revised the text of 8.3 (and 8.4 as well).</p>