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Contents

OIML BULLETIN

VOLUME L • NUMBER 1
JANUARY 2009

technique

evolutions

sydney 2008

update

SYDNEY 2008: SEE PAGE 29

Sommaire

BULLETIN OIML

VOLUME L • NUMÉRO 1
JANVIER 2009

technique

évolutions

sydney 2008

informations

Editorial

ALAN E. JOHNSTON
CIML President
Président du CIML

Happy New Year to all our Members and Readers!

Happy New Year and welcome to 2009! I hope that this Bulletin finds you and your family in good spirits. I like to start each New Year off by reflecting on what we accomplished in the previous year.

2008 was an excellent year for the OIML. We were fortunate to have held the 13th International Conference and 43rd CIML Meeting in Sydney, Australia from October 28th to 31st, 2008 and I would like to extend a special thank you to Grahame Harvey and his colleagues at the National Metrology Institute in Sydney for hosting both meetings.

During our time in Sydney we approved a number of Documents and Recommendations, as well as the OIML budget for the next four years. We also discussed ways of improving the OIML's ability to assist developing countries by appointing Dr. Eberhard Seiler to the post of Facilitator on Developing Country Matters. I was particularly pleased with the level of participation of the Members at the CIML Meeting and the Conference and I want to thank everyone for their feedback and continuing interest in our work.

We also recently signed a new Memorandum of Understanding (MoU) with the United Nations Industrial Development Organization (UNIDO) and renewed our MoU with the International Standards Organization (ISO). As you know, the global economy is in crisis and it is therefore more important than ever that we work with other international organizations to raise awareness of the role legal metrology plays in a global marketplace.

In closing, thank you all for your hard work over the last year. I look forward to seeing you at the 44th CIML meeting in Kenya. We have a very exciting year ahead of us!

Best wishes for a happy, healthy and wealthy New Year.

Bonne Année à tous nos Membres et Lecteurs !

Bonne Année et bienvenu en 2009 ! J'espère que ce Bulletin vous trouvera, ainsi que votre famille, en bonne forme. J'aime commencer chaque nouvelle année par une réflexion sur ce que nous avons accompli l'année passée.

2008 fut une très bonne année pour l'OIML. Nous avons eu la chance que la 13ème Conférence Internationale ainsi que la 43ème Réunion du CIML se tiennent à Sydney, du 28 au 31 octobre 2008, en Australie, et je voudrais à nouveau remercier Grahame Harvey et ses collègues de l'Institut National de Métrologie de Sydney pour l'organisation de ces deux réunions.

Pendant que nous étions à Sydney, nous avons approuvé un certain nombre de Documents et de Recommandations, ainsi que le budget de l'OIML pour les quatre prochaines années. Nous avons également discuté les moyens d'améliorer la capacité de l'OIML à aider les pays en développement, en nommant le Dr Eberhard Seiler au poste de Facilitateur pour les questions de Pays en Développement.

J'ai été particulièrement satisfait du niveau de participation des Membres lors de la Réunion du CIML et de la Conférence et je tiens à vous remercier tous pour vos réactions et pour l'intérêt continu que vous portez à notre travail.

De plus, nous avons récemment signé un Accord de Reconnaissance (AdR) avec L'Organisation des Nations Unies pour le Développement Industrielle (ONUDI) et renouvelé notre AdR avec l'Organisation Internationale de Normalisation (ISO). Comme vous le savez, l'économie mondiale est en crise et il est ainsi plus important que jamais que nous travaillions avec d'autres organisations internationales afin de les sensibiliser au rôle joué par la métrologie légale dans le marché mondial.

Pour finir, je vous remercie tous pour votre travail assidu de l'année passée. Je me réjouis de vous voir lors de la 44ème Réunion du CIML au Kenya. Nous avons une très excitante année devant nous !

Meilleurs voeux pour une heureuse et riche nouvelle année que je vous souhaite en bonne santé.

VERIFICATION

Using test results of nonautomatic weighing instruments (NAWI) for automatic weighing instruments (AWI)

KARSTEN SCHULZ, PTB

Introduction

Electronic weighing instruments, normally tested and approved as nonautomatic weighing instruments (NAWI), are often subsequently used as automatic weighing instruments (AWI) – with or without supplementary devices (feeding device, batching device, etc.).

In Germany AWIs are even generally approved for verification, provided they have been tested and approved as NAWIs and the commodity is not in relative movement to the load receptor while being weighed. Furthermore, the stability of equilibrium checking device must be in operation. An additional prerequisite for general approval is automatic zeroing or taring of the load receptor prior to each weighing. This rule remains in force until 2016 for automatic catchweighers (ACW, e.g. ready mix weighing instruments, instruments for producing prepackages), for automatic gravimetric filling instruments (AGFI, producing prepackages of predetermined quantity) and automatic discontinuous totalizers (ADT, weighing instruments for bulk material, e.g. intended to be used in ports when loading and unloading ships).

Moreover, the PTB as well as other European Notified Bodies (a Notified Body is an institution responsible for issuing type examination certificates under the European Measuring Instruments Directive, MID) receive applications for type examination certificates for ACWs, AGFIs and ADTs on the basis of tests on NAWIs. Simultaneously, manufacturers apply to issue OIML Certificates that are later on used outside the European Union to obtain type approval certificates, e.g. for AGFIs.

Past experience reveals that Notified Bodies partially follow different philosophies when dealing with these applications. In a most simple case, the records of the NAWI according to OIML R 76-2 [2] were simply copied and only a checklist according to OIML R 61-2 [3] for AGFIs was annexed. With this approach, the specific metrological problems had not been considered at all. In cooperation with various Notified Bodies, the PTB succeeded in drawing the attention of European metrological institutes to these problems before the European Directive on Measuring Instruments 2004/22/EC (generally known as the MID) came into force. In order to guarantee a unanimous metrological treatment of AWIs a subgroup within the framework of WELMEC WG2 was established in January 2004. The chair of this subgroup was then held by Denmark. The subgroup based their work on the draft results from Work Package 3 (WP3) of the so-called GROWTH project by the European Commission for the implementation of the MD.

1 Metrological problems

As the name implies, automatic weighing instruments normally function without an operator being present to supervise the weighing process. Moreover, weighing processes often run so fast that a visual inspection of the weight displayed is hardly feasible. From this the following problems result:

- The zero of the weighing instrument (weight display of the unloaded instrument) may drift due to warm-up effects of the electronics. Since no operator is present to correct zero errors, zero drifts fully affect the measurement result.
- The zero of the weighing instrument may drift due to the influence of varying ambient temperatures. In this case the error also directly affects the weighing result.
- In the case of a NAWI, the influence of the zero error on the measurement result may not exceed 0.25 scale intervals (d) after zero-setting or after a tare operation (OIML R 76 [2]). The scale interval is defined as the difference between two consecutive digitally indicated values. Especially when filling small amounts of mass, using automatic gravimetric filling machines (AGFI), the deviation of 0.25 d may have such a significant influence on the actual fill in comparison to the preset fill that verification and in-service error limits may be exceeded. Thus OIML R 61 [3] dealing with AGFIs fixes absolute lower limits of fills depending on different scale intervals and accuracy classes.
- Transient disturbances resulting from electromagnetic impacts that would be recognized by the operator of a NAWI will not be detected with AWIs. In the case of AGFIs, e.g. temporary changes in the

displayed measuring value fully affect the fill because such a rise in the displayed result would be interpreted by the AGFI as reaching the preset value. As a consequence, filling would be aborted before the preset fill has been filled into the package.

1.1 Considering the modular approach

Due to their large dimensions as well as their very broad spectrum of variants (as far as their metrological characteristics are concerned) electro-mechanical industrial weighing instruments are normally not tested as an entity. Instead, the indicator is examined separately as a module of a weighing instrument; load cells are also tested separately. Usually test certificates or OIML Certificates for load cells are issued by European Notified Bodies so that load cells need not be tested within the scope of the type approval procedure. Most load cells are based on detecting the deformation of metal bodies by means of strain gauges (SG). The following ideas exclusively refer to weighing instruments equipped with strain gauge load cells (SG-LC).

Indicators for connecting SG-LCs are tested on the basis of R 76/2006, Annex C, while a simulator is connected as a signal source instead of a load cell. It simulates the behavior of a Wheatstone bridge circuitry that is characteristic of SG-LCs. The manufacturer must, amongst others, indicate the smallest possible input signal per scale interval as well as the maximum number of scale intervals of the weighing instrument. The indicator, which is connected to the simulator, is adjusted such that a weighing instrument is simulated that has the maximum number of scale intervals while having the smallest possible signal level per scale interval. At the same time, according to OIML R 76-1, 3.10.2.1, the error limits are reduced by the factor p_i. Considering these basic conditions is essential for determining the quantitative impact of zero drifts and influence due to disturbances.

2 Quantitative influence on the measurement result

2.1 ACW

In analogy to NAWIs, the error limits of ACWs vary from 0.5 *d* to 1.5 *d* depending on the load. When testing the influence of disturbances the error limit is one scale interval.

Since zero is not checked by an operator, zero drifts directly affect the measurement result. When being tested as a NAWI the warm-up test requires the indication of the instrument to be read at no load and at maximum load (Max) immediately after switch-on. This is repeated after 5 min, 15 min and 30 min. The drift of zero does not play any part at all. Only the span between the indications at Max and at zero shall be taken into account. The error limit of the load corresponding to this span may not be exceeded. However, the indication at zero may drift so significantly that the error limits of the ACW are exceeded very clearly, in case no zero operation is performed. In order to prevent that, either the automatic operation of the ACW can be blocked during the time zero needs to finally approximate, or, depending on the results of the test, the manufacturer may program the instrument in such a manner that it cyclically performs automatic zero settings. Then, the instrument must be unloaded. With ACW, the time intervals between reading the indications while testing the warm-up behavior have often revealed to be too long. Shorter time intervals allow a more exact determination of the zero drift over time and therefore permit a better coordination of measures to solve the problem. Since weighing is allowed down to the minimum load (Min), corresponding to only 20 *d*, the relative effect on the weighing result may become significant.

2.2 ADT

ADTs weigh large partial loads, which are totalized. For ADT, percentage error limits apply that depend on the accuracy class but not on the load. The maximum accuracy required corresponds to a maximum deviation of 0.2 % from the sum of the totalized partial loads. If possible, ADTs are loaded to maximum load at each partial weighing, in order that the maximum flow rate is obtained when loading bulk material, such as coal, ore or grain. So the relative effect of zero drifts is minimized. While with ACWs the deviation of zero at no load may never exceed 0.5 *d*, this is equivalent to several thousand times the scale interval when an ADT is loaded with Max. So in comparison to ACWs the relative error due to zero drifts is smaller than one tenth of a percent.

In many cases the weighing cycle comprises re-weighing and taring. The weighing hopper is tared, filled and then a weighing operation is performed. After discharging the weighing hopper, a weighing is performed in turn (re-weighing), while the difference is totalized as a partial load. A new tare operation is performed, followed by a new filling. For that reason, relatively slow drifts of zero due to warm-up of the instrument as well as due to variations in ambient temperature hardly play any role.

2.3 AGFI

Initially, there will be a short explanation why zero drifts have a relatively strong influence compared to the temperature drift of the span.

Comparing the error limits of OIML R 76-1 (3.5.1) with those of OIML R 61 (2.5) when testing on influence factors:

OIML R 61, 2.5 says:

$mpd_{(influence\ factors)} = 0.25 \cdot mpd_{is\ (in\ service)}$

Testing the indicator as a module, p_i shall be taken into account: e.g. $p_i = 0.5$ (see section 1, last paragraph).

Furthermore, the reference accuracy class Ref(x) must be included. This is the accuracy class based on tests in the laboratory contrasted by X(x) which is designated by the MID as the operational accuracy class. The operational accuracy class results from the specific properties of each individual weighing instrument, the ambient conditions and the material to be filled. The factor (x) of the operational accuracy class shall by no means be smaller than the factor (x) of the reference accuracy class. All the following calculations replace X(x) by Ref(x) because they are based on laboratory tests.

The following diagram shows the error limits according to OIML R 61 (continuous lines) and OIML R 76 (dashed lines) on basis of the following example:

d = 1 g, $p_i = 0.5$ and Ref(X) = 1

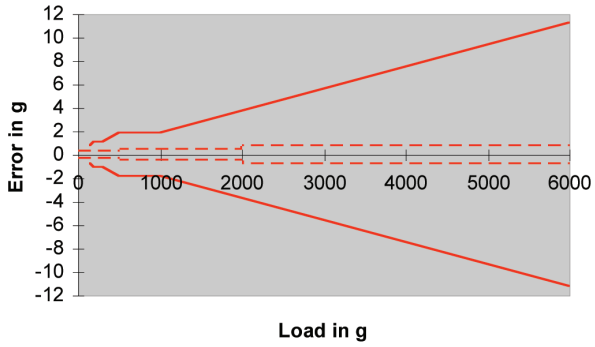

Figure 1: Error limits as per OIML R 61 (continuous line) compared to the error limits as per OIML R 76 (dashed line)

The following example of filling of 2 000 g may serve as an example of how much higher the error limits of R 61 are in comparison to those of R 76.

Error limit according to OIML R 61:

$mpd = Fill \cdot mpd_{is} \cdot 0.25$ (2.5 of R 61) $\cdot$ Ref(x) $\cdot p_i$

$mpd = 2\ 000\ g \cdot 1.5\ \% \cdot 0.25 \cdot 1 \cdot 0.5$

$mpd = 3.75\ g$

Error limits as per OIML R 76 at a load corresponding to 2 000 e, that is 2 000 g as well:

$mpe = 1\ e \cdot p_i = 1\ e \cdot 0.5 = 0.5\ g$

Figure 1 shows that the difference between the error limits of OIML R 76 and those of OIML R 61 becomes larger with increasing load. Thus, it is sufficient to consider only small loads (fills) or, more precisely, the smallest fill (Minfill). Therefore, Minfill should be determined on basis of the following considerations before checking whether variations of the span due to changes of the ambient temperature have an impact.

With AGFIs, zero drifts may have a very variable influence because error limits paralleling those of OIML R 87 for prepackages depend on the intended fill quantity and on the accuracy class. For that reason, the example of these weighing instruments is to show the assessment of a potential quantitative influence based on the test results obtained.

Table 1 gives an overview of the error limits of AGFIs, depending on the intended fill, falling under accuracy class X(1), as per OIML R 61, 2.2.

The significant criteria for determining the permissible error under influence factors (e.g. variations of ambient temperature) and disturbances (e.g. electromagnetic fields, electrostatic discharges) is the in-service error limit. The permissible error under influence factors and disturbances amounts to a quarter of the in-service error limit indicated in Table 1. Due to the required accuracy of zero-setting of the NAWI and in combination with Table 1, the following generally applicable Table 2 results. It contains the absolutely lowest limits of fill depending on the accuracy class X(x) and of the scale division *d*.

Influence of zero drifts

The zero drifts due to the warm-up of the weighing instrument (after power on) and due to variations in the ambient temperature may result in theoretically determined Minfills that are significantly higher than those of Table 2.

The requirements of OIML R 61 lead to the following value of Minfill due to zero drift as a consequence of warm-up of the weighing instrument:

$Minfill \geq (E_0 - E_{0\ init}) / (0.25 \cdot mpd_{is} \cdot p_i \cdot Ref(X))$

while:

E_0 : Deviation from zero after termination of warm-up.

$E_{0\ init}$: Deviation from zero at start of warm-up.

0.25 : Factor multiplying the in-service error limit to obtain the error limit for testing on influence factors, as per OIML R 61, 2.5.

Table 1

Value of the mass of fills, F (g)				Maximal permissible deviation (MPD) of each fill F from the average of the fills for class X(1) (as a percentage of F or in grams)	
				Initial verification	In-service inspection
	F	≤	50	7.2 %	9 %
50 <	F	≤	100	3.6 g	4.5 g
100 <	F	≤	200	3.6 %	4.5 %
200 <	F	≤	300	7.2 g	9 g
300 <	F	≤	500	2.4 %	3 %
500 <	F	≤	1 000	12 g	15 g
1 000 <	F	≤	10 000	1.2 %	1.5 %
10 000 <	F	≤	15 000	120 g	150 g
15 000 <	F			0.8 %	1 %

Specifying either percentage or absolute error limits corresponds to the specifications of OIML R 87.

Table 2

d (weighing instrument) (g)	Minimum permissible value of Minfill depending on the accuracy class, indicated in g or in scale intervals, d			
	X(0.2)	X(0.5)	X(1)	X(2)
0.5	28	11	6	3
1	111	22	11	6
2	334	44	22	12
5	1 665	335	110	30
10	3 330	1 330	330	110
20	6 660	2 660	1 340	340
50	25 000	6 650	3 350	1 650
100	50 000	20 000	6 700	3 300
200	100 000	40 000	20 000	6 600
≥ 500	500 d	200 d	100 d	50 d

mpd_{is} : In-service error limit from OIML R 61, 2.2.
p_i : Factor reducing the error limit when using the modular approach (testing the indicator as a module); p_i is always smaller than 1.
Ref(X) : Factor of the accuracy class to be multiplied with the error limits, as per Table 1, in case the accuracy class differs from accuracy class 1.

Since the error limit varies depending on the fill, several calculation steps may be required in order to determine the final Minfill. The first calculated Minfill may for example be higher than the one initially estimated. When Minfill is higher, in turn, the relative error limit decreases. Thus, the calculation has to be repeated using a new mpd_{is} and the corresponding error limit (2.5 of OIML R 61) until the calculated Minfill is within the limits of the left column of Table 1.

In a similar manner the temperature dependence of zero is considered. The following equation applies:

$Minfill \geq \Delta z_{max} / 0.25 \cdot mpd_{is} \cdot p_i \cdot Ref(X)$
while:

Δz_{max} : Difference in the indication at zero load after change in temperature by 5 K.

Again, iteration according to the procedure above is necessary.

The following two calculation examples serve as a means for a more detailed explanation, while, instead of the absolute values from Table 1, generally percentage values are used. The reason can most easily be explained by giving the following example: The fill shall be e.g. 75 g. The maximum permissible deviation for this fill is 4.5 g. This is the maximum error also for the highest fill in this range (100 g) and would be the smallest relative (or percentage) permissible deviation of all fills between > 50 g and ≤ 100 g. Therefore, taking this relative value of mpd_{is} of 4.5 % is the worst case and will guarantee that for all fills smaller than 100 g within this range, mpd_{is} is not exceeded at any time.

All numbers of paragraphs appearing in the calculations are taken from OIML R 61 (2004) unless otherwise indicated.

Example 1: Influence of warm-up of zero

from A.5.2:

$E_0 - E_{0\,init} \leq 0.25 \cdot mpd_{is} \cdot Minfill \cdot p_i \cdot Ref(X)$

$\Leftrightarrow Minfill \geq (E_0 - E_{0\,init}) / (0.25 \cdot mpd_{in\ service} \cdot p_i \cdot Ref(X))$

mpd_{is} → from Table 1 (of 2.2.2)

0.25 → from 2.5

Ref(X) → to be chosen by the manufacturer

Remark: If $(E_0 - E_{0\,init}) < 0$ then the absolute value of $(E_0 - E_{0\,init})$ has to be used.

From the OIML R 76-2 record form, the maximum zero drift due to warm up has to be taken and then Minfill can be calculated by iteration.

Calculation example: $e = d = 1$ g, Ref(X) = 1, $p_i = 0.5$, zero drift due to warm-up: 3 e, mpd_{is} = 9 % (assumption that Minfill ≤ 50 g)

$Minfill \geq (E_0 - E_{0\,init}) / (0.25 \cdot mpd_{is} \cdot p_i \cdot Ref(X))$

$\Leftrightarrow Minfill \geq 3\ g / (0.25 \cdot 9\ \% \cdot 0.5 \cdot 1)$

$\Leftrightarrow Minfill \geq 266.6\ g > 200\ g$: Assumption wrong!

New assumption: Minfill is between > 200 g and ≤ 300 g. mpd_{is} = 9 g. For a new calculation that figure has to be stated in relation to the highest fill of this range, i.e. 300 g.

The maximum percentage deviation would then be:
9 g / 300 g = 0.03 = 3 % (see initial remarks to the examples).

$Minfill \geq 3\ g / (0.25 \cdot 3\ \% \cdot 0.5 \cdot 1)$

$\Leftrightarrow Minfill \geq 800\ g > 500\ g$: Assumption wrong!

Next iteration step, assumption: Minfill is between > 500 g and ≤ 1 000 g. mpd_{is} = 15 g. For a new calculation the absolute maximum error again has to be stated in relation to the highest fill of this range, i.e. 1 000 g. The maximum percentage deviation would then be:

15 g / 1 000 g = 0.015 = 1.5 %
(see initial remarks to the examples).

$Minfill \geq 3\ g / (0.25 \cdot 1.5\ \% \cdot 0.5 \cdot 1)$

$\Leftrightarrow Minfill \geq 1\,600\ g \leq 10\,000\ g$

Because the error limit of fills between > 1 000 g and ≤ 10 000 g amounts to 1.5 % as well, the iteration stops here.

Example 2: Influence of temperature dependence of zero

From A.6.2.2:

$\Delta z_{max} \leq 0.25 \cdot mpd_{in\ service} \cdot Minfill \cdot p_i \cdot Ref(X)$

$\Leftrightarrow Minfill \geq \Delta z_{max} / (0.25 \cdot mpd_{in\ service} \cdot p_i \cdot Ref(X))$

mpd_{is} → from Table 1 (of 2.2.2)

0.25 → from 2.5

The maximum zero drift, depending on the temperature variation according to OIML R 76, is 1 *e* per 5 K (°C). The assumption made is that the maximum temperature drift is not more than 5 K / h (this figure is taken from A.3.3 of OIML R 61, see also OIML R 76, A.4.1.2) The maximum time interval between two zero settings assumed to be chosen by the manufacturer is 2 hours. Thus, the maximum zero drift to be considered is the theoretical drift within two hours, that is, twice the maximum value taken from the OIML R 76-2 record form.

From the OIML R 76-2 record form, the maximum zero drift has to be taken and then Minfill can be calculated on basis of OIML R 61 by iteration.

Calculation example: d = 1 g, Ref(X) = 1, p_i = 0.5,
zero drift 1 d / 5 K, mpd_{is} = 9 % (assumption: Minfill ≤ 50 g)

From A.6.2.2:

$\Delta z_{max} \leq 0.25 \cdot mpd_{in\ service} \cdot Minfill \cdot p_i \cdot Ref(X)$

$\Leftrightarrow$ $Minfill \geq \Delta z_{max} / (0.25 \cdot mpd_{in\ service} \cdot p_i \cdot Ref(X))$

Assuming that the instrument is not set to zero before 2 h have elapsed:

$Minfill \geq (2\ h \cdot 1\ e / h) / (0.25 \cdot 9\ \% \cdot 0.5 \cdot 1)$

$\Leftrightarrow Minfill \geq (2\ h \cdot 1\ g / h) / (0.25 \cdot 9\ \% \cdot 0.5 \cdot 1)$

$\Leftrightarrow Minfill \geq 2\ g / (0.25 \cdot 9\ \% \cdot 0.5 \cdot 1)$

$\Leftrightarrow Minfill \geq 177.78\ g > 50\ g$ (First assumption with regard to Minfill was wrong)

Next iteration step: Minfill ≤ 200 g and mpd_{is} = 4.5 %
(obviously leading to twice the value calculated before)

$Minfill \geq 2\ g / (0.25 \cdot 4.5\ \% \cdot 0.5 \cdot 1)$

$\Leftrightarrow Minfill \geq 355.56\ g > 200\ g$ (assumption with regard to Minfill was wrong)

Next iteration step: Minfill ≤ 500 g and mpd_{is} = 3 %

$Minfill \geq 2\ g / (0.25 \cdot 3\ \% \cdot 0.5 \cdot 1)$

$\Leftrightarrow Minfill \geq 533.33\ g > 500\ g$ (assumption with regard to Minfill was wrong again)

Next iteration step: Minfill ≤ 1 000 g and $mpd_{in\ service}$ = 1.5 %
(obviously leading to twice the value calculated before)

$Minfill \geq 2\ g / (0.25 \cdot 1.5\ \% \cdot 0.5 \cdot 1)$

$\Leftrightarrow Minfill \geq 1\,066.67\ g$ (more than 1 000 g, however for fills between 1 000 g and 10 000 g a deviation of 1.5 % is acceptable, thus, 1 067 g is the final permissible Minfill)

Solving the problem by means of shorter zero-setting intervals

In many cases a zero-setting interval of 2 h may not be adequate, especially if caking and adhesive material is filled. Some notified bodies even require an interval of not more than 15 minutes. The following example shows what happens to Minfill in case the maximum time interval between two zero-settings is reduced to, for example, 15 minutes.

The maximum zero drift per 5 K and therefore per 1 h has been assumed to be 1 *d*. Thus, in a quarter of an hour it cannot be more than 0.25 *d*. Minfill would then be:

$Minfill \geq \Delta z_{max} / (0.25 \cdot mpd_{in\ service} \cdot p_i \cdot Ref(X))$

$Minfill \geq 2\ g \cdot 0.25 / (0.25 \cdot 9\ \% \cdot 0.5 \cdot 1)$

$\Leftrightarrow Minfill \geq 0.5\ g / (0.25 \cdot 9\ \% \cdot 0.5 \cdot 1)$

$\Leftrightarrow Minfill \geq 44.4\ g$

This example demonstrates that cutting down on the zero-setting intervals leads to a significant reduction in Minfills. As an alternative, Minfills remaining constant, the reference accuracy class Ref(x) may be improved (the factor (x) of Ref(x) may become smaller).

Influence of transient disturbances

The influence of disturbances of a transient type (e.g. electrostatic discharges) causes errors that are transient as well, which, as detailed earlier, may directly affect the measurement result. With AGFIs, they may have a direct effect on the filled mass. So, during the EMC tests, the instrument has to be checked for transient changes in the indicated and processed weight. Exceeding certain limits may be checked by using digital control outputs which supply a signal when the weight exceeds or falls under a certain limit.

Exposure to high frequency electromagnetic fields may cause enduring stable changes of the indicated measurement value. These changes would be considered a significant fault with NAWIs as well, if they exceed one scale division. There is no such strict requirement with AGFIs because, on the basis of the accuracy class, Minfill could be taken into account and leads to an increased influence of disturbances by perfoming calculations that are similar to those taken into account for warm-up and temperature drift of zero.

This is shown too by the following equation:

$Minfill \geq md_{disturbance} / (0.25 \cdot mpd_{is} \cdot Ref(X))$

while:

$md_{disturbance}$: Maximum deviation (transient or constant) observed under disturbances

The factor p_i is not included because the influence of disturbances is always tested using a complete weighing instrument instead of a module.

Calculation example: $e = d$ = 1 g, Ref(X) = 1,
change of weight displayed due to disturbances: 0.8 *d*,
mpd_{is} = 9 % (assumption that Minfill ≤ 50 g)

$Minfill \geq md_{disturbance} / (0.25 \cdot mpd_{in\ service} \cdot Ref(X))$

$Minfill \geq 0.8\ g \cdot 0.25 / (0.25 \cdot 9\ \% \cdot 1)$

$\Leftrightarrow Minfill \geq 0.2\ g / (0.25 \cdot 9\ \% \cdot 1)$

$\Leftrightarrow Minfill \geq 8.9\ g$

Normally, the results are determined based on the smallest signal level per scale interval of the indicator. With an increasing signal level, the relative effect of e.g. zero drifts decreases because, from the technical point of view, they are drifts of the offset voltage of the electronics. The offset voltage ΔU_{off} remains constant while the signal voltage per *d* increases so that ΔU_{off} causes a smaller change of the indication in *d*. This, in turn, theoretically permits calculation of smaller Minfills. Partly, the resulting differences are significant. This is illustrated by the example of tables of Minfills (see Tables 3a and 3b).

After evaluation of the test results, the Minfills of an AGFI at a signal level of 1 µV/d were determined (see Table 3a).

Increasing the signal level to 1.5 µV/d leads to the Minfills given in Table 3b.

This example clearly shows that it makes sense to not only supply a Minfill table within the type approval certificate. Instead, it would be useful to also give the amount of the maximum error (in scale intervals at the smallest signal voltage per *d* of the indicator) on which the calculations are based.

3 A Guide to using NAWI test results for AWI approval

Certain European OIML Member States (Czech Republic, Denmark, France, Germany, The Netherlands, Spain, Switzerland, and the United Kingdom) drew up WELMEC Guide 2.8 dealing with the problems mentioned above; it was published on the WELMEC web site in May 2008 and any redundant or superfluous information was removed. The Guide is brief, and focuses on the main concerns.

4 Future prospects

AGFIs, especially, require an extended calculation time (recursive procedures) due to the special error regime to determine the potential minimum fills (Minfills). The results are normally determined on the basis of the smallest signal per *d* of the indicator of the weighing instrument.

With an increasing signal level, the relative effect of e.g. zero drift decreases because from a technical point of view it is a change in the offset voltage of the electronics. As mentioned above, in turn this theoretically permits the calculation of smaller Minfills. Appropriately programmed Excel sheets to perform the necessary calculations are available at the PTB.

The Minfills within the type examination certificates, obtained on the basis of the calculations mentioned above, can also be determined for higher signal levels. When the appropriate calculation tool is available this task is significantly facilitated, and it is planned to upload such a tool onto the web site of either the PTB or WELMEC. In addition, the type approval/examination certificates are to be supplemented by explanatory information. So under more favorable technical

Table 3a

d (of the weighing instrument)	Minimum permissible value of Minfill depending on the accuracy class, indicated in g			
(g)	X(0.2)	X(0.5)	X(1)	X(2)
1	1 600	320	107	27
2	3 200	1 280	320	106
5	8 000	3 200	1 600	400
10	24 000	6 400	3 200	1 600
20	48 000	19 200	6 400	3 200
50	120 000	48 000	24 000	8 000
100	240 000	96 000	48 000	24 000
200	480 000	192 000	96 000	48 000
500	1 200 000	480 000	240 000	120 000

Table 3b

d (of the weighing instrument) (g)	Minimum permissible value of Minfill depending on the accuracy class, indicated in g			
	X(0.2)	X(0.5)	X(1)	X(2)
1	1 067	142	36	18
2	2 134	426	142	36
5	5 335	2 135	1 065	180
10	16 000	4 270	2 130	1 070
20	32 000	8 540	4 260	2 140
50	80 000	32 000	16 000	5 350
100	160 000	64 000	32 000	16 000
200	320 000	128 000	64 000	32 000
500	800 000	320 000	160 000	80 000

conditions, that is, at a higher signal level per *d*, smaller Minfills can be calculated. In practice, ***subsequent*** re-calculation of the Minfills determined will not arise very often since the Minfill of the actually realized instrument normally strongly depends on the quality of the feeding devices, on the properties of the material to be filled (adhesive and caking materials) and on the ambient conditions (e.g. vibrations). The figures given in the type examination certificates are reference values that are intended to prevent instruments from being realized on site, of which the accuracy classes are higher and of which the Minfills are lower than those theoretically determined on basis of laboratory test results, e.g. of temperature and warm-up tests. ■

References

[1] Directive 2004/22/EC of the European Parliament and the Council of 31 March 2004 on measuring instruments

[2] OIML R 76 *Non-automatic weighing instruments. Part 1: Metrological and technical requirements – Tests*, edition 2006

[3] OIML R 61 *Automatic gravimetric filling instruments. Part 1: Metrological and technical requirements – Tests,* edition 2004

BREATH ALCOHOL CONTENT

Traceability of the mass concentration of exhaled breath alcohol measurements and associated uncertainty evaluation in Romania

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Abstract

Accurate, reliable and traceable alcohol measurement results in exhaled breath are widely required in forensic investigations. Within this framework, this paper depicts a number of aspects regarding the assurance of the traceability of these measurements performed in Romania. Starting from the experience of the National Institute of Metrology (INM), it describes the method applied to prepare the standard solutions used for calibration and/or testing the performance of evidential breath analyzers, to assign the mass concentration values, and to calibrate such instruments. Examples of measurement uncertainty evaluation are given both for the mass concentration associated with the standard solution and with the reported measurement result. The measurements were performed using different breath alcohol analyzers, simulators and sets of standard solutions.

Key words: Traceability, reference materials, breath alcohol concentration, uncertainty evaluation, metrology

1 Introduction

The abuse of alcohol is attracting more and more attention in view of recent reported statistics. For instance, within the European Union (EU) approximately 20 % of all fatal road traffic accidents are alcohol related. At the level of each EU country this figure can increase dramatically. In Romania, for instance, it was reported that approximately 40 % of fatal road traffic accidents are alcohol related. Also, it was reported that more than 30 % of accidents occurring at the work place are alcohol related. Therefore, much effort is devoted to identifying individuals who have consumed alcohol and who might cause an accident.

Starting in 1995, more than 1500 breath testers, based on electrochemical sensors, were put on the Romanian market purely for traffic control. National metrology standards were issued to test their performance. Since the qualitative information provided by these devices could not be used for legal purposes, they were gradually replaced by evidential breath analyzers. Most evidential models are based on the infrared absorption and/or electrochemical principles, and for quantitative analysis the Lambert-Beer law is applied. In order to carry out specific reliable and reproducible calibrations and other metrological operations for these instruments, since 2000 in cooperation with Dräger Safety Romania SRL, the INM Gas Concentration Group has developed a reference measurement standard consisting of a wet simulator based on the principle reported by Dubovski.

Within this framework, this paper describes the specific way in which evidential breath alcohol measurements are made in Romania as well as some aspects of uncertainty evaluation performed within the INM.

2 Legal basics of evidential breath alcohol measurement in Romania

In Romania, certain limits are set for the mass concentration of alcohol in exhaled air. A maximum 0.40 mg/dm^3 of ethanol per litre of exhaled air is considered acceptable for drivers, and a level exceeding 0.80 mg/dm^3 is considered a crime. Although only blood test results are admissible in court, there is obviously an increased tendency to expand the use of alcohol tests performed in human breath for legal purposes.

Evidential breath analyzers, hereafter referred to as EBAs, are intended to automatically measure the mass concentration of alcohol (ethanol) in exhaled human breath within certain specified limits. In practice, the term "breath tester" is also used for EBAs. The value of mass concentration of a sample of deep lung air, usable for evidential purposes, is expressed in milligrams of ethanol per cubic decimeter of exhaled breath, mg/dm^3. It should be noted that other units of measurement such as mg/L, mg/cm^3, µg/100 mL, g/210 L, etc. are also used

in practice by scientists involved in the research of alcohol pharmacokinetics in the human body or in medico-legal alcohol determination for forensic purposes.

Since these instruments are widely used in Romania for various forensic investigations, starting in 1992 EBAs have been subject to legal metrological control by type approval, initial verification (of new EBAs put on the market), and periodic re-verification, respectively.

At present, all specific tests are performed in accordance with certain written procedures aimed at conformity assessment against minimum technical specifications stated in the Legal Metrology Norm NML-012/05 [1], based on OIML Recommendation R 126 [2]. Within the INM a specific internal procedure used for testing EBAs was elaborated in 2007. In accordance with this internal procedure, gas mixture standards under reference conditions are required.

Different gas mixture standards to be used for calibration and/or testing are described in the literature: dry gases mixed in a pressure vessel [3], wet gases delivered by a simulator [4, 5] or gases with CO_2. Both gravimetric and volumetric methods to prepare the measurement standards are acceptable. For the purpose of the internal procedure, a wet gas delivered by a simulator system was developed within the INM. Note that this system may equally be used for calibrations and verifications of EBAs. Therefore, the associated measurement uncertainty becomes extremely important to evaluate the strength of the traceability chain and the accuracy reserve, i.e. the ratio between the evaluated uncertainty of the measurement standard and the maximum permissible limit of error. As a consequence, the task of ensuring the proper implementation of metrological concepts such as traceability and measurement uncertainty in this field is quite challenging for the INM within the new developed framework.

3 Some aspects regarding the traceability of mass concentration of alcohol in exhaled breath measurement results

By definition, traceability [6] is the property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties.

In the case of the mass concentration of alcohol in exhaled breath measurements, three aspects need to be considered: the measurand, the traceability chain and the measurement uncertainty statement.

Mass concentration measurements of alcohol in exhaled breath are based on Henry's Law which states that "When an aqueous mixture of a volatile substance reaches equilibrium with air, there will be a fixed ratio between the concentration of the substance in the air and its concentration in the solution". In accordance with OIML R 126 [2], only ethanol will be considered as alcohol further on in this paper.

It is well known that water and ethanol can be mixed in any ratio, resulting in homogeneous mixtures. Both liquids have a tendency to evaporate in the form of gas, but ethanol has a greater tendency to do this. If an ethanol-water mixture of this type is kept in a partly filled and sealed system, the concentration of gaseous ethanol in the air above the liquid will therefore increase until a certain concentration is reached. At this stage, there is a defined ratio between the ethanol concentration in the liquid and that in the air. A value of this ratio in the range between 2000:1 to 2300:1 is accepted worldwide.

The concentration of ethanol present in the vapor phase above the liquid-water mixture depends on just two factors: the temperature of the mixture and the alcohol concentration in the liquid.

$$\gamma_{air} = \gamma_{eth} \cdot A \cdot e^{B \cdot t} \quad (1)$$

where:

γ_{air} is the mass concentration of ethanol in the vapor phase above the liquid-water mixture, in mg/dm^3;

γ_{eth} is the mass concentration of ethanol in the solution, in g/dm^3.

The following experimental coefficients A and B were established over several studies on the air/ethanol solution coefficient:

A = 0.041 45 [mg/dm^3];

B = 0.065 83 [1 / °C];

Note that equation (1) is also referred to as Dubowski's formula [7].

In the case where t is equal to 34.0 °C, the equation becomes:

$$\gamma_{air} = 0.388\,66 \cdot \gamma_{eth} \quad (2)$$

Henry's law applies to the exchange processes in the human body, especially in the lungs. The balance between the ethanol in the blood and in the breath is created in the lungs in the same way as described for alcohol in the aqueous solution and air in the semi-closed system.

In accordance with this law, diffusion processes, also causing oxygen to be taken up in the lungs, achieve a balance between the alcohol concentration present in the blood and the alcohol concentration in the air from

the lungs. Thus, the alcohol measurement in exhaled breath involves directly determining this concentration.

For the alcohol measurements in human fluids, specific measuring units are used, some of which are not SI units. Thus, to determine the mass concentration of alcohol in the blood (BAC) the following measurement units are also used: per mille, ‰ and per cent, %. The measurement units used to determine the mass concentration of alcohol in breathing air (BrAC) are milligram per cubic decimetre, mg/dm^3, and the microgram per 100 cubic centimetres, µg/100 cm^3.

A certain community calls a mass concentration of 4.76 mg/dm^3 ethanol in breathing air: "one percent of ethanol in blood". When using multiples and sub-multiples of the gram and cubic decimetre, the numeric value changes accordingly.

A traceability chain used within the INM for ethanol measurements in exhaled breath is presented in Figure 1.

In practice, the mass concentration of ethanol in exhaled breath is directly measured against a working instrument breath tester. The working instrument is calibrated using at least three gas mixture standards delivered from a two-flask bubble train. Each flask contains ethanol standards, volumetrically prepared starting from ethanol of 99.8 % purity. The mass concentration of gas mixture standards is assigned against a reference measurement standard consisting of a calibrated breath tester. Some aspects regarding the traceability in this field are also presented in [8].

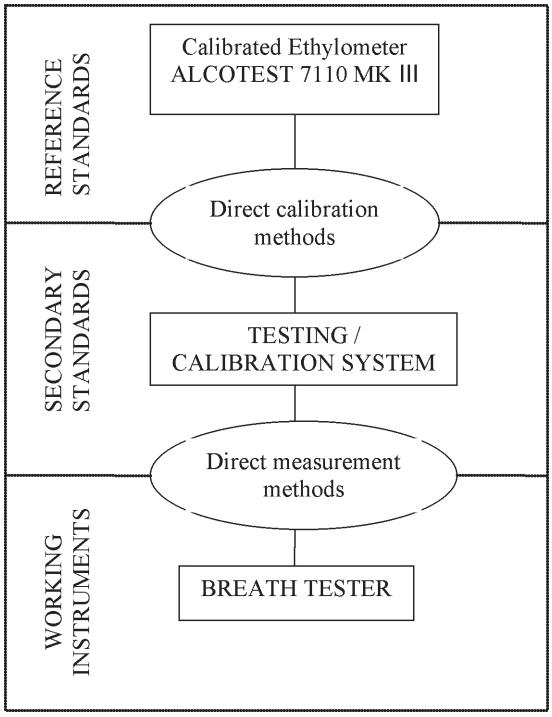

Figure 1 Traceability chain for mass concentration of alcohol in exhaled breath measurement results

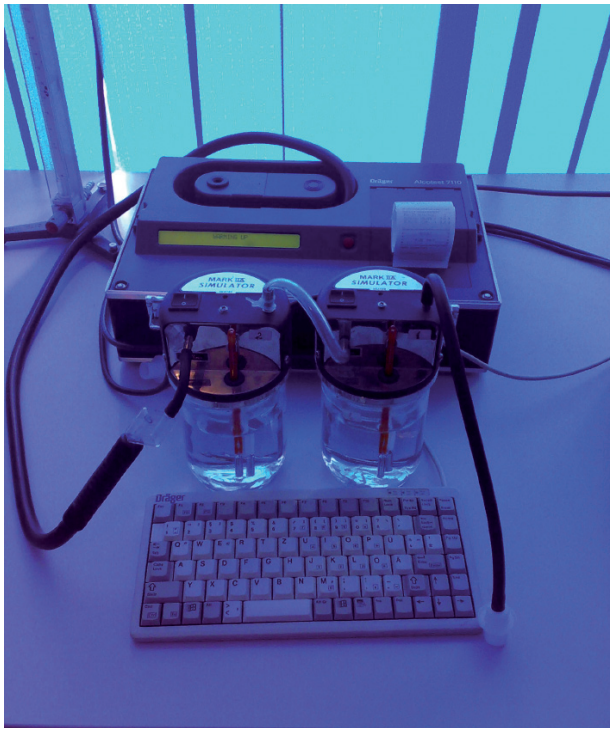

Figure 2 The calibration system used within the INM

4 Calibration system used by the INM for EBA calibration and verification

Taking national needs into consideration, the system used at present within the INM both for calibration and testing purposes is presented in Figure 2.

The system based on the principle of the "bubble train" consists of two thermo regulated flasks, Mark II A Type, produced by Dräger Safety AG&Co, KGaA, Germany and a breath tester ALCOTEST 7110 MKIII type, serial number ARNC-0145, also produced by Dräger Safety Germany. The Alcotest 7110 MK III breath tester was type approved in Germany by the PTB against the requirements of DIN VDE 0405 [9] and OIML R 126. In accordance with Romanian Law, the Alcotest 7110 MK III was given the type approval mark in Romania as well.

Each flask contains the same standard solution of ethanol in water, the concentration of which is established in accordance with the preparation procedure. Usually, the temperature of the solution in each flask is set at 34.0 ± 0.1 °C. The mass concentration of the ethanol gas delivered by the second flask is measured directly against the calibrated ALCOTEST 7110 breath tester (Calibration Certificate No. PTB 5659/07, issued by the PTB, Germany).

To evaluate the accuracy of the developed system, the following aspects were considered:

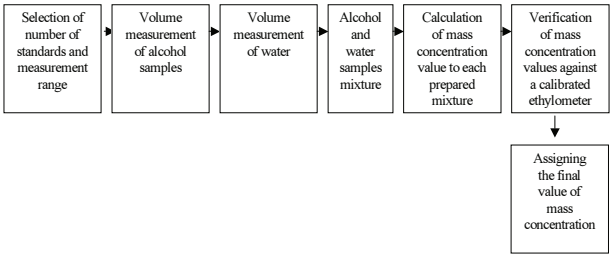

Figure 3 The method used to prepare the calibration standards required to calibrate / verify EBAs

- the close agreement between the mass concentration of the ethanol solution existing in the flasks, prepared starting from a Merck reagent of 99.8 % purity for analysis, and the mass concentration of the ethanol gas delivered by the second flask, measured against the calibrated breath tester;
- monitoring the ongoing process of dilution associated with the prepared ethanol standard solution, due to the gas purging;
- the influence of temperature on the value of the mass concentration of the ethanol gas delivered; and
- the accuracy of the mass concentration of the ethanol gas delivered.

4.1 Aspects regarding the preparation of standard solutions of ethanol in water

Prior to each calibration, a set of measurement standards was obtained as described in Figure 3.

On a regular basis, an ethanol reagent of 99.8 % purity, Merck, Darmstadt, Germany, code K22707783608, batch 2005786 and distilled water of electrolytic conductivity 0.5 $\mu S \cdot cm^{-1}$ were used. No additional tests regarding the purity of the reagent used were performed. The samples used to prepare the standard solutions were taken immediately after the bottle was opened. For volume measurements an automatic pipette of nominal volume (5.0 ± 0.1) cm^3 and a volumetric flask of nominal value 1 000 cm^3 were used. Before the volume measurements, the pipette was calibrated in the INM Volume Group using an XS205 Mettler Toledo type balance. The volumetric flask was calibrated in 2004, also within the INM Volume Group.

For the purpose of the work described in this paper a set of nine mass concentration standards: 0.095 2; 0.190 5; 0.285 7; 0.381 0; 0.476 2; 0.714 3; 0.952 4; 1.190 5; 1.428 6 mg/dm^3 were prepared by measuring different volumes of C_2H_5-OH.

The mass concentration of ethanol in the solution, γ_{eth}, was determined using the equation:

$$\gamma_{eth} = \frac{V_{eth} \cdot \rho_{eth}}{V_{H_2O}} \cdot P_{eth} \qquad (3)$$

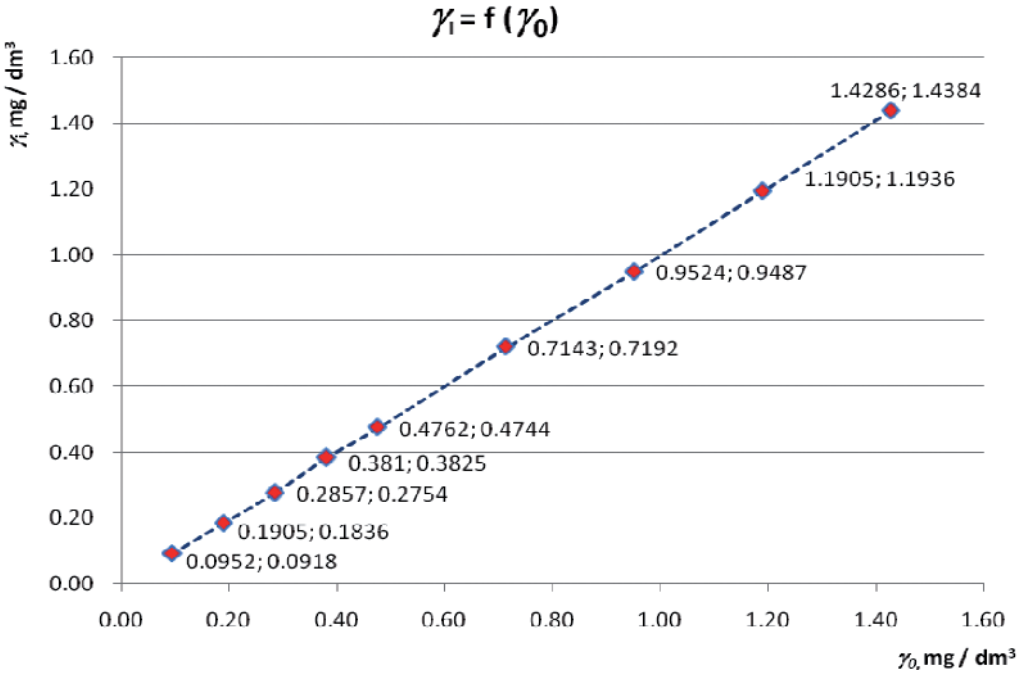

Figure 4 Correlation between the measured and prepared mass concentration of ethanol in simulated exhaled breath

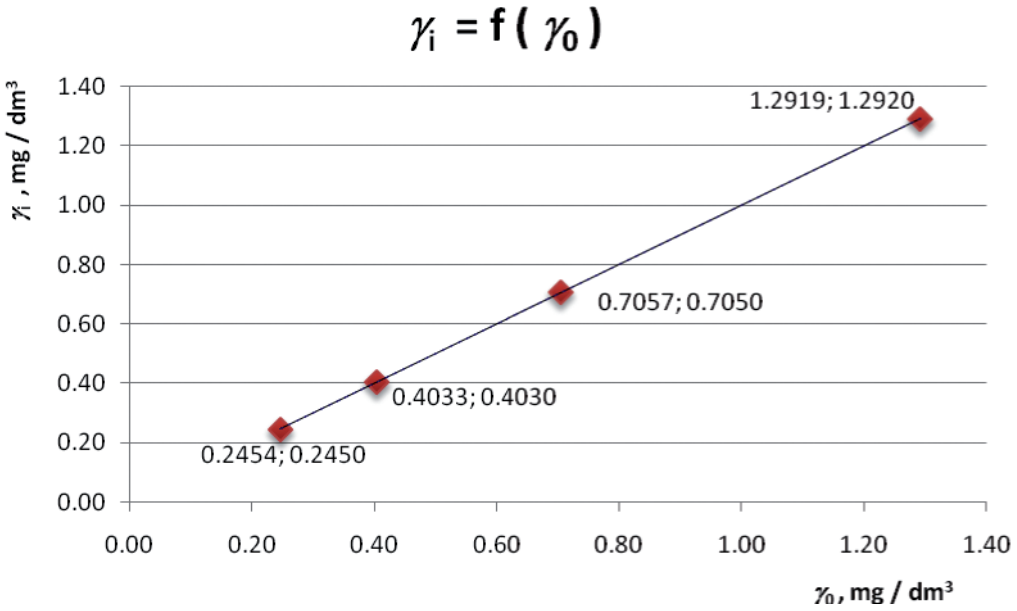

Figure 5 Correlation between the measured and certified mass concentration of ethanol in simulated exhaled breath

where:

V_{eth} is the volume of sample used, in cm^3;

ρ_{eth} is the density of the ethanol reagent used, in g/cm^3;

P_{eth} is the purity of the ethanol reagent given as a mass fraction;

V_{H_2O} is the final volume of the solution containing the ethanol, in cm^3.

A value of 0.789 g/cm^3 was considered for the ethanol reagent; this value had previously been checked against an electronic densimeter, Anton Paar type.

Each prepared measurement standard was additionally checked using the breath tester. Therefore, the curve describing the correlation between the measured and the prepared mass concentration values is given in Figure 4. Note that a correlation factor of 0.999 96 and a slope of 1.009 8 were obtained, showing a good agreement between the measured values and the values assigned in accordance with the methods used to prepare the measurement standards.

For the above described system, some 4 reference materials - a solution of ethanol in water certified in January 2008 by BAM, Germany: I.2/2008 – K1501-012 (0.609 90 ± 0.000 59) g/L, I.2/2008 – K2101-012 (1.029 30 ± 0.000 99) g/L, I.2/2008 – K1501-013 (1.819 90 ± 0.001 75) g/L and I.2/2008 – K1501-014 (3.390 10 ± 0.003 25) g/L were used instead of the in-house prepared ethanol solution starting from the commercial reagent. Each certified reference material was measured twenty times under reference conditions. The curve describing the correlation between the measured and the certified mass concentration values is given in Figure 5. Note that a correlation factor of 0.999 99 and a slope of 0.999 56 were obtained in this experiment.

4.2 Influence of the temperature on the mass concentration of the ethanol gas delivered

According to Dubowski's formula, the concentration of ethanol in the vapor phase above the liquid-water mixture depends on two factors: the temperature of the mixture and the ethanol concentration in the liquid. So, ethanol in air standards can be prepared, varying the mixture's temperature while the ethanol concentration in the liquid is maintained constant, at a value of 0.977 g/dm^3. To evaluate this influence a system also consisting of a bubble train was used. This simulator is the result of a scientific project conducted by the Romanian Research and Development Institute for Analytical Instrumentation (ICIA), Cluj Napoca, in 2005. The simulator was based on the same principle as above, with the additional possibility to set different temperature values.

The solution of mass concentration of 0.381 0 mg/dm^3 was measured at five different temperatures under reference conditions. Four series of 10 repeated

Number of measurements, n	Temperature of the solution (mixture of alcohol in the liquid), t, °C	32.0	33.0	34.0	35.0	36.0
	Theoretical mass concentration according Dubowski's formula, $\gamma_{air\ 0}$, mg/dm^3	0.333	0.355	0.382	0.405	0.433
20	Average value of the measured mass concentration, $\gamma_{air\ m}$, mg/dm^3	0.332	0.355	0.382	0.405	0.434
	Experimental standard deviation, s, mg/dm^3	0.001	0.001	0.001	0.002	0.003
	Relative standard deviation s_{rel}, %	0.17	0.18	0.22	0.38	0.73
30	Average value of the measured mass concentration, $\gamma_{air\ m}$, mg/dm^3	0.332	0.354	0.381	0.403	0.431
	Experimental standard deviation, s, mg/dm^3	0.001	0.001	0.002	0.003	0.006
	Relative standard deviation s_{rel}, %	0.26	0.28	0.51	0.69	1.31
40	Average value of the measured mass concentration, $\gamma_{air\ m}$, mg/dm^3	0.332	0.354	0.379	0.402	0.428
	Experimental standard deviation, s, mg/dm^3	0.001	0.002	0.003	0.004	0.008
	Relative standard deviation s_{rel}, %	0.38	0.47	0.76	1.02	1.78

Table 1 Variation of the mass concentration of alcohol with temperature

measurements were performed at 32 °C, 33 °C, 34 °C, 35 °C and 36 °C, respectively. The average values for 20, 30 and 40 repeated measurements are presented in Table 1, together with the theoretical mass concentration of alcohol calculated in accordance with Dubowski's equation. The experimental standard deviation and relative standard deviation are also presented in this Table.

Note that the difference between the average measured value and the theoretical value increases with the temperature. Also, the maximum relative standard deviation of 1.78 % was obtained at the temperature of 36 °C.

As expected, the relative standard deviation increases with the number of measurements due to the evaporation process.

4.3 Evaluation of the number of measurements applicable for the prepared standard solution - Stability testing of measurement standards

Due to the fact that during the tests the standard mixtures used lose their accuracy and metrological characteristics, there must be a procedure for constant preparation and certification of new mixtures according to the most recent standards. The verification of the preparation procedure for the mixtures is performed with high accuracy analyzers having well known capabilities and demonstrated traceability. All parameters influencing the uncertainty of standard mixtures, such as temperature, volume (of the water and the ethanol), etc., are taken into account and quantified accordingly.

In order to evaluate how many measurements can be performed using the solutions prepared in the laboratory in such a way as to not affect the measurement accuracy, two different air ethanol concentrations were used: 0.184 mg/dm^3 and 0.382 mg/dm^3. All data obtained from the reproducibility experiment under reproducibility conditions (different time, various instruments, same sample) were evaluated according to ISO 8258:1991 [10]. The following parameters were calculated for each series of 30 measurements performed with ethanol concentrations.

The two solutions were tested for three hours after preparation. Within this period, over 30 measurements were performed under repeatability conditions, taking into account the ongoing evaporation process. Thus, the prepared solution was measured against the breath tester and it was checked how the measured values met

Theoretical alcohol concentration according to Dubowski's formula, $\gamma_{air\,0}$, (mg/dm^3)	0.184	0.382
Number of measurements, n	30	30
Measurement mass concentration range (mg/dm^3)	0.181 … 0.185	0.376 … 0.383
Arithmetic means of measured mass concentration, (mg/dm^3)	0.184	0.381
Maximum difference considered, ε_t, (mg/dm^3)	+/– 0.009	+/– 0.019

Table 2 Stability test results over three hours

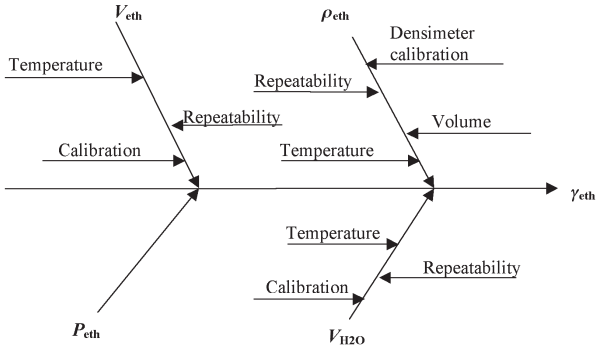

Figure 6 Cause-effect diagram for the mass concentration of the standard solution

certain specified limits of accuracy, over the three-hour period of time. For the purpose of this study a difference of 5 % between the initial and final mass concentrations measured was taken into account. Table 2 gives the number of measurements performed, the values of the mass concentration measured, together with the maximum difference taken into account.

Thus it was concluded that a maximum of 30 measurements within 3 hours can be performed without refreshing the standard solution.

5 Quantifying the measurement uncertainty associated with the mass concentration of ethanol in exhaled breath

For the system developed in the INM, the uncertainty associated with the prepared solutions of ethanol in water and the expanded uncertainty of ethanol gas delivered measurements will be considered.

5.1 Measurement uncertainty associated with the assigned values of mass concentration

In order to estimate the associated measurement uncertainty for each prepared solution, the influence of the volumes (due to the pipette and the flask), the purity of the ethanol and the density of the ethanol reagent are considered. The cause-effect diagram is presented in Figure 6.

Uncertainty of the volume used in the measurement

For volume measurement there are three major influences: calibration, repeatability and temperature effects were considered. Taking into consideration the calibration of the pipette performed within the INM and a difference of ± 1 °C between the laboratory temperature and the calibration temperature, a combined standard uncertainty of 0.02 cm^3 was associated with the volume of 4.68 cm^3 measurement using an automatic pipette.

Taking into consideration the calibration certificate no. 06.01-363/2004 and a difference of ± 1 °C between the laboratory temperature and the calibration temperature of the volumetric flask (20 °C), a combined standard uncertainty of 0.59 cm^3 was associated with the volume of 1 000.00 cm^3 measured using the flask.

Uncertainty due to the purity of ethanol

The purity of the ethanol used to prepare the different standards was 0.998. Considering a rectangular distribution gives an associated standard uncertainty of 0.001 155.

Starting from the calibration certificate of the densimeter used to check the value of the density corresponding to the ethanol reagent, an uncertainty of 5×10^{-5} g/cm^3 was considered.

Quantity	Value	Standard uncertainty	Probability distribution	Relative standard uncertainty
Volume of ethanol reagent, cm^3	4.68	0.02	normal	0.004 27
Volume of flask, cm^3	1 000.00	0.59	normal	0.000 58
Purity	0.998	$0.002/\sqrt{3} = 0.001\ 155$	rectangular	0.001 16
Density ethanol reagent, g/dm^3	0.789	0.05	normal	0.000 06
Mass concentration of standard solution, g/dm^3	3.685	0.016	normal	0.004 46

Table 3 Measurement uncertainty budget for γ_{eth}

Quantity	Value	Standard uncertainty	Probability distribution	Relative standard uncertainty
Mass concentration of standard solution, g/dm^3	3.685	0.016	normal	0.004 46
Temperature, °C	34.0	$0.1/\sqrt{3} = 0.057\ 7$	rectangular	0.000 02
Mass concentration of alcohol in exhaled breath, mg/cm^3	1.432 2	0.008 26	normal	0.005 77

Table 4 Measurement uncertainty budget for γ_{air}

The uncertainty budget for a mass concentration of 4.6 g/dm^3 is summarized in Table 3.

The combined uncertainty associated with the volume of the ethanol reagent and the standard uncertainty associated with the purity of the reagent have the largest contributions. However, note that the influence of evaporation of the ethanol, the loss due to the solution's transfer, etc. were not considered at this stage.

5.2 Expanded uncertainty associated with the measured mass concentration of ethanol gas delivered

To estimate the uncertainty of the mass concentration of the ethanol measured using the breath tester, equation (1) was considered. Accordingly, the influence of the temperature and the mass concentration of the ethanol in the solution was considered.

The combined standard uncertainty was evaluated starting with the following equation:

$$u_{c(\gamma_{air})} = \sqrt{\left(\frac{\partial \gamma_{air}}{\partial \gamma_{eth}}\right)^2 \cdot u_{\gamma_{air}}^2 + \left(\frac{\partial \gamma_{air}}{\partial t}\right)^2 \cdot u_t^2} \quad (4)$$

For a temperature of 34.0 °C, replacing the coefficients described in equation (4) gives:

$$u_{c(\gamma_{air})} = \sqrt{0.388\ 7^2 \cdot u_{\gamma_{eth}}^2 + (0.025\ 6 \cdot \gamma_{eth})^2 \cdot u_t^2} \quad (5)$$

The uncertainty budget for the mass concentration of alcohol in exhaled breath is summarized in Table 4. Note that the relative standard uncertainty for the mass concentration of alcohol in exhaled breath calculated as the ratio between the standard uncertainty (0.008 26) and the mass concentration value (1.432 20) has the final value of 0.005 77, the main contribution being given by the mass concentration of the standard solu-

tion. The calculated value of the relative standard uncertainty presented in Table 4 is rather small, which leads to the conclusion that the method used and the results obtained were good.

Uncertainty due to the temperature established by the simulator's thermostat

The simulator's thermostat was set to (34.0 ± 0.1) °C during the experiments. The calculated standard uncertainty (assuming a rectangular distribution for the variation of the thermostat's temperature) has the value u_t = 0.057 7 °C.

Considering equation (1), the combined uncertainty associated with the reported result of the mass concentration of alcohol in the exhaled air is:

γ_{air} = (0.474 ± 0.017) mg/dm^3.

The stated uncertainty is the expanded uncertainty obtained by multiplying the standard combined uncertainty by a coverage factor of k=2, estimated according to the GUM [11] (which was also adopted as a national standard). In this situation the main uncertainty contribution is given by the mass concentration of ethanol in the standard solution. The relative standard uncertainty obtained was rather small, allowing us to conclude that the two-flask bubble train system was appropriate, although the standard solutions need to be refreshed more frequently.

To evaluate the measurement uncertainty, the spreadsheet calculation method in [12] was used. The Excel application was developed by the author of this paper within the Gas Concentration Group and is used in daily practice. The method was also described in [8].

6 Conclusions

Breath alcohol analyzers are widely accepted as legal measurement instruments used for determining the mass concentration of alcohol in exhaled breath.

The Gas Concentration Laboratory of the National Institute of Metrology has developed procedures to prepare standard solutions of ethanol in water and a system to calibrate EBAs. Based on subsequent measurements performed on four CRMs produced by the Bundesanstalt für Materialforschung und Prüfung (BAM), Germany, it was concluded that the results obtained up to now showed that the measurement standards prepared according to European and International Standards, using the existing expertise and equipment in the Romanian laboratory, meet the necessary required accuracy. Therefore, these standards can be used for the proper dissemination of the unit of mass concentration of alcohol in exhaled breath. ■

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PREPACKAGES

Outline of a voluntary OIML certification system for prepackages:

An alternative IQ-Mark scheme

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Note: *This paper reflects the personal views of the author only and may not be taken as the position of the BIML or of OIML TC 6.*

OIML TC 6 *Prepackaged products* is discussing the development of an OIML Certification system for prepackages (provisionally named the IQ-Mark Scheme, where "IQ-Mark" means International Quantity Marking). So far, it has proved impossible to reach consensus on a mutual recognition arrangement in which participating countries (signatories to the agreement) would agree to accept each other's certificates.

This paper outlines a certification system that, in the opinion of the author, may have a better chance of being accepted and implemented in OIML Member countries, primarily because it is a totally voluntary system (much like the OIML Certificate System for Measuring Instruments) which, over time, may develop into a true mutual recognition system.

Introduction

Originally, the intention of the TC 6 Secretariat was to develop a mutual recognition arrangement for prepackages, more or less equivalent to the OIML MAA for measuring instruments. Under the MAA, signatories of a DoMC (Declaration of Mutual Confidence) for a specific category of measuring instruments (such as non-automatic weighing instruments, water meters, etc.) agree to accept each other's type evaluation reports as the basis for issuing national type approval certificates.

The MAA has evolved from the OIML Certificate System for Measuring Instruments. In the latter system, national type approval authorities may take account of the test results obtained in the type approval process in another country. These test results, if the tests are carried out according to the procedures in an OIML Recommendation, are reported in a specific OIML format and covered by an OIML Certificate, registered by the BIML. Acceptance of the certificate and the test results, however, is not mandatory.

The reasons for TC 6 members to oppose a mutual acceptance arrangement for prepackages are diverse:

- CIML Members do not always have control over the authorities responsible for the surveillance of prepackages on the market;
- Many countries would not accept an agreement limiting their powers to check imported prepackages before they are placed on the market;
- EU Member States would not be in a position to individually sign an agreement that would be binding on their governments. It would have to be negotiated by the European Commission;
- For the moment, there is not sufficient confidence in the competence of the authorities or private organizations in some countries;
- There are differences in legislation and interpretation of the requirements that need to be resolved first;
- Industry would not be interested because of the cost of the system.

In my personal opinion, the only feasible way to overcome these reservations and objections is to develop a certification system similar to the OIML Certificate System for Measuring Instruments. Such a system would have the following basic principles:

- Participants (the bodies issuing certificates) may be national authorities responsible for the control of prepackages, or private certification bodies and there may be more than one participant in a country. The arrangement would be a private agreement between all participating bodies.
- Participation in the system is voluntary. Not only for the packers, who may or may not want to have their quantity control systems certified, but also for authorities and private certification bodies participation would be voluntary.
- Acceptance of certificates is not mandatory. No authority (market surveillance authorities, customs, and inspection bodies) would be obliged to accept the certificates issued under the system.

It may seem that the latter principle would undermine one of the original objectives of the IQ-Mark Scheme, i.e. to ensure that prepackages covered by a certificate have free access to the markets of participat-

ing countries. This would indeed not be achieved automatically by the voluntary system. However, the voluntary system could certainly help to increase confidence in the correctness of the quantity of product in prepackages covered by the system when the system ensures that the packers' control systems are in compliance with the requirements and are under surveillance of the certification bodies, who themselves have to comply with certain requirements. Eventually this would lead to a substantial reduction in checks carried out by the customs and market surveillance authorities, and reduce the risk for the packer that his prepackages are rejected.

In the longer run, some countries (in particular developing countries without an infrastructure for checking prepackages at the border) may make it mandatory for importers to only import prepackages covered by a certificate under the system. It would then serve as an export certification system. One of the main problems at the moment with exports of goods from countries like the USA and the European Union is that product requirements often do not apply to products destined for export and are consequently not enforced. This leads in many instances to products not complying with international standards (such as OIML R 87) being exported to developing countries.

The voluntary system could start up with the participation of only a limited number of bodies issuing certificates in perhaps two or three countries and gradually expand.

What are the basics of a certification system?

Any credible certification system must be based on two types of requirements: product requirements and system requirements. Also, the system should comply with international standards to produce credible results (i.e. acceptable certificates and confidence that the products covered comply with specified requirements).

In the case of an OIML certification system for prepackaged products, the product requirements are to be found in:

- OIML R 87:2004 *Quantity of product in prepackages*, and
- OIML R 79:1997 *Labeling requirements for prepackaged products* (currently under revision).

OIML R 87 provides the requirements for the quantity of product in prepackages with a constant nominal quantity, produced under a quantity control system based on the average principle: prepackages produced shall contain, on average, at least the nominal quantity declared. OIML R 87 also provides procedures and tests for sampling batches of prepackages to be applied by authorities in the surveillance of prepackages.

OIML R 79 provides requirements for the labeling of prepackages, in particular with respect to the declaration of the quantity of product and the identification of the producer.

Under the OIML Convention, OIML Member States have the moral obligation to implement OIML Recommendations into their national legislation, in case they want to regulate the subject covered by the specific Recommendations. Moreover, countries that are signatories to the WTO agreement on Technical Barriers to Trade (WTO/TBT Agreement) are obliged to apply international standards as the basis for their national legislation. OIML Recommendations are such international standards, because, under the terms of the WTO/TBT Agreement, the OIML is an international standard-setting organization.

For the system requirements there are international standards and guides published by ISO/IEC and ILAC/IAF, such as the ISO/IEC 17000 series of standards. The OIML has concluded Memoranda of Understanding with those international organizations.

For the certification system for prepackages, OIML TC 6 is drafting specific documents containing the system requirements (for the quantity control system of the packer and for the bodies issuing certificates) and guidance on how to apply those requirements.

Figure 1 is a graphic presentation of the basics of the certification system.

ISO/IEC Guide 67 *Conformity assessment – Fundamentals of product certification* gives guidance on product certification systems by identifying their various elements based on current practices. Product certification is a third-party conformity assessment activity.

The proposed voluntary OIML certification system for prepackages would consist of the following elements (corresponding to a "System 3" of ISO/IEC Guide 67):

- Initial assessment of the packer's filling process and quantity control system;
- Sampling requested by the certification body;
- Determination of the actual quantity of product in the sampled prepackages (tests) and the correct labeling (assessment);
- Evaluation of the test and assessment results;
- Decision by the certification body;
- License (authorization for the packer to apply the "IQ-Mark" to prepackages covered by a certificate);
- Surveillance of the packer by the certification body.

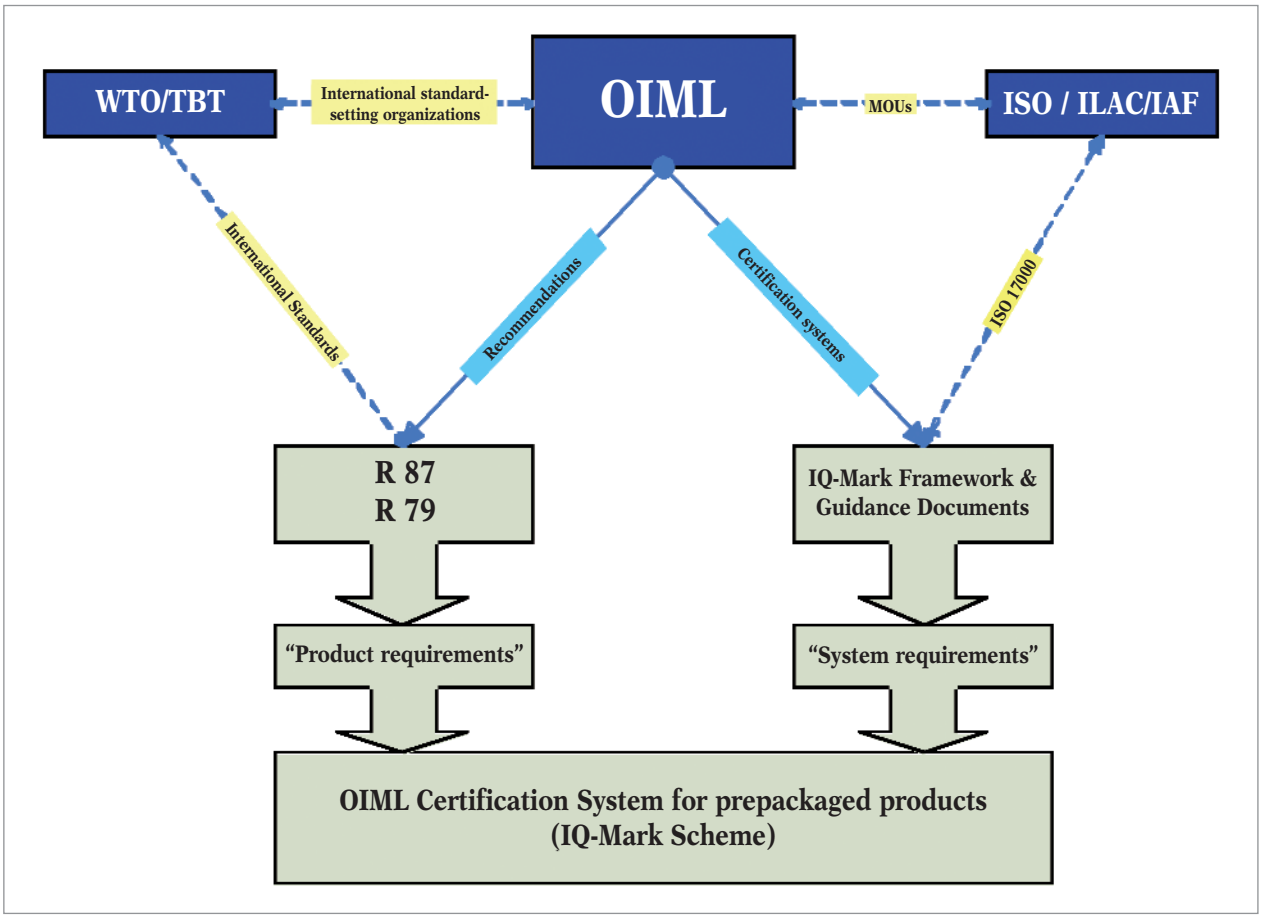


Figure 1 The elements of the voluntary certification system

The certification procedure

The certification procedure could be summarized as in Table 1.

The CIML would be the body that carries the ultimate responsibility for the correct functioning of the certification system. The CIML not only adopts the Recommendations that serve as the product requirements for the prepackages in the scope of the system, but also approves the Documents providing the system requirements (IQ-Mark Scheme Framework Document) and the guidance documents necessary for the correct implementation of the system and interpretation of the requirements.

Also, the CIML would empower individual CIML Members in the countries where participating certification bodies have their legal seat, to perform certain activities relating to the designation of certification bodies.

A Management Committee (**MC**), consisting of the CIML Members of each of the countries where participants or bodies that have applied for participation, are based, would review applications for participation and advise the CIML Member concerned whether an applicant may be designated, or whether a participant may continue to participate in the system after a (periodic) review.

The CIML Member, acting as the representative of the OIML in his or her country, would be the authority to receive applications, make a first assessment of the application, submit the application to the MC and designate the certification body after having obtained a positive advice from the MC. The CIML Member notifies the decision to designate a certification body to the BIML.

The role of the CIML Member in making the first assessment of the application is important because of the differences in legislation in different countries as to which bodies may or may not qualify to issue certificates for prepackages or for the recognition of the quantity control system employed by a packer. Some countries may allow such certificates to be issued only by a specific type of body (regulator, inspectorate, etc.).

Table 1 Certification procedure

Step	Packer	Certification body
1	operates a specific filling process with an associated quantity control system	
2	applies for certification and submits supporting documentation	
3		initially assesses the packer's filling process and quantity control system for compliance with system requirements
4		takes sample(s) from the production and performs tests and checks for compliance with product requirements
5		takes a decision, issues and publishes a certificate, licenses the packer to use the IQ-Mark
6	produces prepackages as described in the certificate with the IQ-Mark and places them on the market	
7		keeps the packer under surveillance to ensure continued compliance with system and product requirements

Notes:

To step 1:

- "Specific filling process" means that the packer has to identify and document the facilities and equipment used, as well as the type of product and packaging, insofar as this is relevant for the control of the quantity of product in the prepackages.
- The associated quantity control system operated by the packer has to be such that it meets the requirements in R 87 as concerns the quality levels of the sampling plans employed (specified "producer's risk" and "consumer's risk").

To step 2:

- The supporting documentation includes, for instance: a description of the filling process facilities, equipment, type of packaging, type of product(s); information about the quantity control system: sampling plans, tests and checks to be performed, control procedures, measuring instruments used, record keeping, etc.

To step 3:

- The initial assessment would be in two parts: first an assessment of the documentation submitted with the application to see whether the system meets the system requirements. Second: an assessment in situ to check whether the actual situation is as described in the documentation.

To step 5:

- The certificate would briefly describe the filling process, specify the product(s) and type of packaging, (range of) quantities, etc., such that it is sufficiently clear to be able to identify prepackages covered by the certificate.
- The certificates would be made available by the certification bodies to everyone interested by publishing them on their own web site.
- The packer would be licensed to use the IQ-Mark on prepackages covered by the certificate. For the purpose of identification, the IQ-Mark could contain a code, identifying the certification body, or the specific certificate.

To step 7:

- Surveillance of the packer by the certification body would include a periodic re-assessment of the packer's filling process and quantity control system, records, etc. In addition, the certification body would randomly take samples from the production and perform tests and checks to see whether the prepackages produced continue to meet the product requirements.

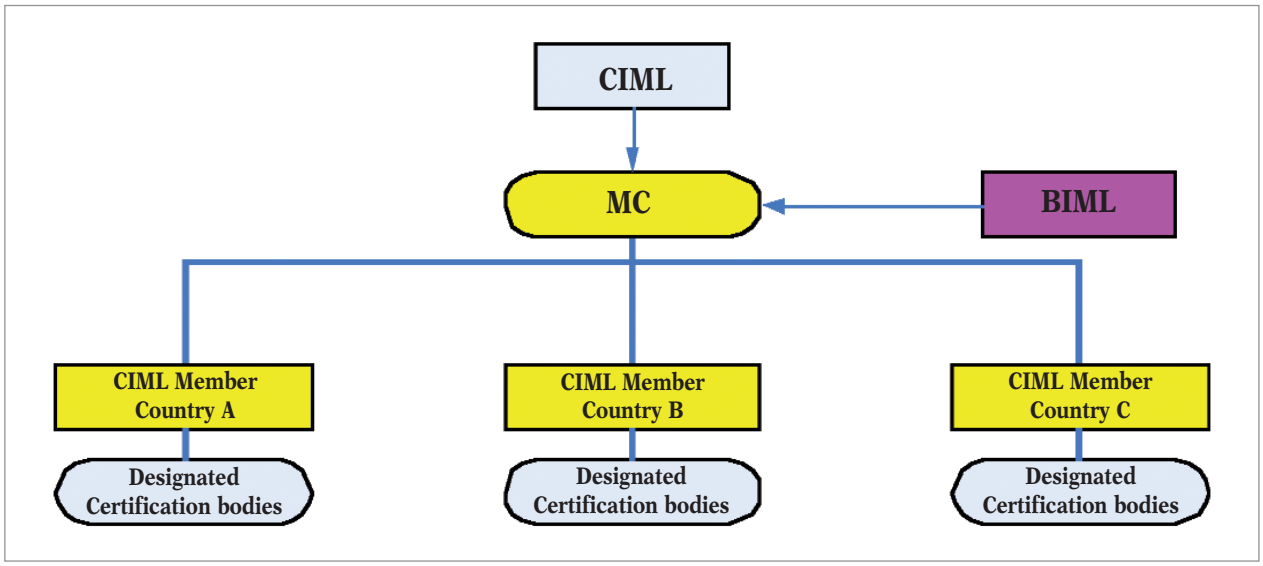


Figure 2 The organization of the certification system

In performing his duties within the certificate system, the CIML Member may be seconded, or represented by an appropriate expert.

The BIML maintains a list of the notified certification bodies and makes this list available on its web site. The BIML also acts as the secretariat for the MC.

The certification bodies that want to participate have to provide evidence that they comply with the requirements applicable to them under the certification system. This may be in the form of an accreditation or some kind of peer assessment

The designated and notified certification bodies maintain a list of certified packers/prepackages and make this list available on their web site.

Differences between countries

In any country there is a variety of organizations, authorities and private bodies that may have something to do with the legal control of prepackages placed on the market. They may be: market surveillance authorities, customs authorities, health & safety inspectorates, legal metrology regulators, professional associations, private conformity assessment bodies, etc.

The activities, duties and powers of those organizations are generally not the same in each country. Furthermore, the CIML Members in each country do not all have the same jurisdiction over the organizations involved in the legal control of prepackages.

In general, there are two types of bodies that may be interested in participating as a certification body in a voluntary OIML certification system for prepackages: public authorities and private conformity assessment bodies. Legislation in one country may prevent private bodies from acting as a certification body for prepackages, while in another country there would be no public body involved in such activities and only private bodies could participate (see Figure 3). And there may be countries where both types of organizations may participate.

There should not be a limit to the number of participants in a country, unless national legislation does not allow there to be more than one. Basically, the arrangement is a private agreement and certification bodies would be each other's competitors. Because packers in a country without any certification body may want to obtain certification, designated certification bodies should also be allowed to service customers in other countries.

Registration of certificates and notified certification bodies

The BIML would maintain a list of certification bodies that have been designated by the CIML Members (after a positive advice of the MC) and have been notified to the BIML. The details of these notified certification bodies would then be published on the OIML web site where links can be provided to the web sites of these bodies.

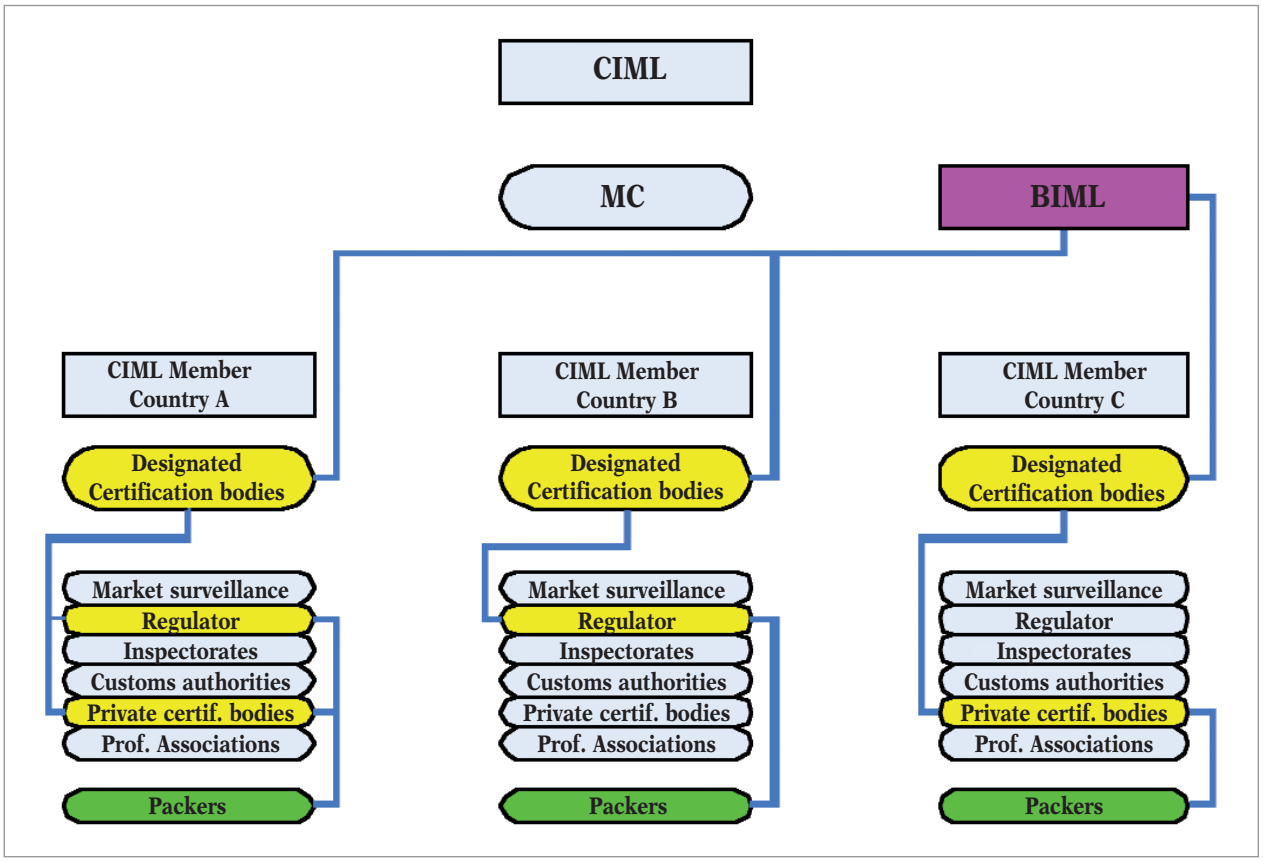


Figure 3

The certification bodies would each have to maintain a register of certificates issued and make these certificates available through their respective web sites. There would be no central registration of certificates, as in the case of the OIML Certificate System.

In this way, all relevant information would be accessible via the internet to anyone interested.

Acceptance of certificates

As mentioned before, national authorities would not be obliged to accept the certificates issued under the system. On the other hand, there will be a lot of countries where authorities may wish to rely on evidence that prepackages placed on their national markets comply with national legislation. If it can be shown that the system produces credible results, confidence in the system will increase. Early on in the implementation stage, there may be only very few participating certification bodies and registered packers/prepackages. But hopefully, over time, the number of packers that experience the benefits of the system will increase and that, in turn, will increase the number of participating bodies and the acceptance of the certificates.

Some authorities may want to accept only certificates issued by other authorities. The system may, however, over time evolve into, or be complemented by, a system of mutual recognition (like the MAA for some categories of measuring instruments evolved from the OIML Certificate System).

Cost and benefits of the certification system

It is much easier to quantify the cost to packers of the kind of certification system that has been presented in this paper, than it is to quantify the benefits. Industry generally will be quick to point out that they are the ones that have to pay (and ultimately the consumer) and initially do not want to know about possible benefits (because they are so hard to quantify).

On the other hand there are also packers that realize that the cost of non-conforming product may quickly outweigh the (extra) cost of certification. Also, batches of product waiting at the border to be controlled, the cost of destructive sampling and the risk of rejection could result in substantial cost. To a majority of companies, these are all hidden "cost of non-quality" and do not appear in any cost-benefit analysis.

Many packers, however, may already have implemented quality management systems for other reasons and it should not be difficult (nor very costly) to include certification for "IQ-Mark" prepackages in such already existing systems, in particular when the registrar of that existing system is also a designated certification body under the "IQ-Mark" scheme.

It would also be beneficial to authorities when they can rely on evidence that the quantity of product in prepackages is in compliance with their national legislation. It would make their work more efficient.

The cost to the OIML budget for maintaining an "IQ-Mark" scheme as presented above would be limited to the involvement of the BIML in the work of the MC. The workload may be compared to the BIML being a co-secretariat in an OIML Technical Committee. In addition, the BIML would maintain a list of notified certification bodies and publish it on the OIML web site. The cost of this would be marginal.

Future expansions of the system

Only prepackages presently in the scope of OIML R 87 are eligible for certification. These are "prepackaged products, labeled in predetermined constant nominal quantities of weight, volume, linear measure, area or count" and for which the average quantity of product equals at least the nominal quantity. Such prepackages are referred to as "prepackages filled under the average system".

Many countries, however, have legislation that requires prepackages to be filled under a minimum system, i.e. the quantity of product in each prepackage must be at least the nominal quantity. OIML TC 6 is currently discussing requirements for a minimum system and these may be the subject of a separate OIML Recommendation, or included in OIML R 87 as a separate category.

When prepackages filled under the minimum system are included in an OIML Recommendation, they may also be certified under the IQ-Mark scheme. The certification procedure, however, may be somewhat simplified compared to the one described earlier in this paper, depending on the process of filling.

Another possible expansion of the system could be to include certification of single batches of prepackages. The certificate would then be based on a one time assessment of the filling process and a sample taken from the batch produced. ■

SYDNEY

13th International Conference

43rd CIML Meeting

and Associated Events

Sydney,Australia

28–31 October 2008

The National Measurement Institute (NMI) hosted the following Meetings at the Star City Hotel, Sydney, Australia, from 28 through 31 October 2008:

- *13th International Conference,*
- *43rd CIML Meeting,*
- *Round Table of RLMOs, and*
- *OIML Working Group on Conformity to Type.*

SYDNEY

43rd CIML Meeting: Opening Address

Mr. Alan E. Johnston
CIML President

Good morning everybody. Welcome to Sydney. I trust that you had time to relax before the Meeting and that you will be in fine form.

First of all I would like to recognize the hard work and all the efforts which have been put in by Dr. Harvey and his team in relation to organizing this Meeting, and also I participated in the Asian Pacific Legal Metrology Forum. So I would like to give Dr. Harvey and his team a round of applause at this point in time for all of their efforts. Thank you.

I know that they are all sitting here on pins and needles and that by Friday afternoon they will be able to finally relax and breathe a little deeper than they have been doing for the last ten days.

Four countries have expressed an interest in becoming Member States and at least two of them will be joining the OIML very shortly. We also have one new Corresponding Member, Montenegro, and, in addition, the United Nations Development Program is considering supporting a number of countries to become OIML Corresponding Members.

In the meantime, a number of stakeholders are showing a growing interest in the OIML. Amongst interested International Organizations we are happy to welcome the International Association of Wine and Vine. We are also happy to establish new links with the International Federation of Wine and Spirits, which is represented here. I don't know about you, but I see a theme here. It starts with wine and ends with wine!

We also expect to have further discussions from the European Federation of Grain Exporters, and other stakeholders to join into our work in the future. This demonstrates a growing interest in the OIML from countries as well as other International Organizations, Development Organizations and from stakeholders in general.

To me this proves that the OIML is in good shape and it demonstrates that we are addressing the needs of the global economy when it comes to legal metrology.

We welcome a number of new CIML Members:

- Dr. Philippe Richard from Switzerland;
- Mr. Roger Flandrin from France;
- Dr. Nineta Majcen from Slovenia;
- Mrs. Ellen Stokstad from Norway;
- Mrs. Dorota Habich from Poland;
- Mr. Tran Van Vinh from Vietnam; and
- Ms. Gyung-Hee Hu fromthe Republic of Korea.

We have not yet received confirmation of the appointment of Mr. Mustafa Kasal from Turkey.

As is the case when the CIML Meeting takes place in conjunction with a Conference, the CIML Meeting will be shortened to one day. A number of items have been transferred to the agenda of the Conference in order to avoid duplication of presentations and discussions. This is the case for the financial issues and for the direct sanction of Recommendations by the Conference.

Although this CIML Meeting is a short one, a number of important issues will be addressed and I expect some lively discussion on these issues; in particular:

- the Certificate system and the MAA, to which amendments are essential to make the systems progress;
- we will have a discussion on Developing Countries issues, on which a modification of the work is being proposed;
- the OIML pension system, which is proposed not to be applicable to new contracts and to the renewal of contracts;
- the approval of a number of publications which are not to be submitted to the sanction of the Conference; and
- we shall also have a presentation on the online facilities set up for the work of Technical Committees and Subcommittees and this issue of using internet facilities is also of importance for the efficiency of our technical work.

As I say, we have a pretty full agenda today so that concludes my opening remarks. I hope you enjoy your time in Sydney. We have a number of events lined up for you as well, so please take advantage of the opportunity while you are in Sydney to enjoy both the Conference, the Meeting and of course, the weather. Thank you very much for your attention. ■

SYDNEY

13th Conference: Opening Address

The Hon. John Murphy MP
Parliamentary Secretary to the Minister for Trade in Australia

Distinguished guests, ladies and gentlemen, Mr. President, welcome to Sydney, Australia for the 13th International Conference on Legal Metrology. I would like to acknowledge the traditional custodians of the land on which we are meeting today, the Gadigal people.

The Minister for Small Business, Independent Contractors, and the Service Economy, the Hon. Dr. Craig Emerson MP, who has portfolio responsibility for legal metrology in Australia, has asked me to welcome you to this auspicious occasion.

It is an honour for Australia to once again host the International Conference on Legal Metrology. The last occasion was in the year of Australia's Bicentenary, in 1988. Australia's National Measurement Institute is proud to host this event in 2008.

Sydney has been chosen as the location of the Conference for several reasons. First, Sydney is a beautiful city. Second, Sydney is an important tourist hub from which you can access other areas of the country before returning home. Third, and most importantly, Sydney is where the headquarters of the National Measurement Institute is located.

It is very pleasing to see that so many of you have been able to join us here and I sincerely hope that you will enjoy your stay in Australia.

Australia's legal metrology has undergone some significant changes in the past twenty years since we last hosted the Conference. Our three former metrology organisations - the National Measurement Laboratory, the National Standards Commission, and the Australian Government Analytical Laboratories - came together in 2004 to form a single national metrology body, the National Measurement Institute (NMI).

NMI is responsible for Australia's national infrastructure in physical, chemical, biological and legal measurement. Bringing together these measurement fields into a single organisation provides synergies and opportunities to solve measurement problems, drawing on all these disciplines. Examples where these synergies become important include environmental measurements, nanotechnology, and quality measurements in trade (such as protein content of grain and the sugar content of cane sugar).

I note that the Conference program includes a technical visit to NMI's laboratories. I urge you to take advantage of this opportunity to see, at first hand, some of Australia's metrology infrastructure and to meet some more of NMI's staff.

On a slightly different track, Australia is currently in the midst of an exciting project that will change the way that trade measurement is undertaken in this country. At present, trade measurement is under the jurisdiction of individual Australian State and Territory Governments. This situation is a legacy from the nineteenth century British colonies in Australia where traditionally "weights and measures" for trade was a local issue in the sparsely populated "Great Southern Land". Thus, no single, continent-wide set of rules was developed.

The Australian Government is in the process of setting up a national system of trade measurement which has strong industry support. The legislation for our new national system was introduced into Australia's Federal Parliament last month. NMI has responsibility for implementing the transition to a national trade measurement system beginning on 1 July 2010, and for administering the system beyond that date.

Much has changed in legal metrology in the twenty years since the Conference last assembled in Sydney. Technology has been advancing rapidly in many areas including communications, automation, software and measurement instrumentation. There have been major changes in the ways in which the world communicates, trades, and generally does business.

Accordingly, the role of the OIML is becoming increasingly important in this new age of technology with measuring instruments such as "smart" electricity meters being rolled-out in many countries.

I note that the OIML is an intergovernmental treaty organisation established in 1955 in order to promote the global harmonization of legal metrology, and that it has observer status on the Committee on Technical Barriers to Trade (TBT Committee) of the World Trade Organisation (WTO). Accordingly, its Recommendations, or model regulations, are critical to underpin national and international trade, particularly in pre-packaged goods. I mention pre-packaged goods because the majority of international food trade is now in pre-packaged goods whereas in the past it was in bulk commodities.

Australia is an active Member of the OIML and has always held the work of the International Organisation of Legal Metrology in high regard. Indeed, NMI is a

Participating Member on forty OIML Technical Committees and has Observer status on ten other Technical Committees. Rather than put its resources into developing national standards, Australia has preferred to work with the OIML Technical Committee framework to develop international model regulations that can then be adopted with confidence as national standards or regulations within Australia.

Australia has gone further than good intentions and has written OIML into its measurement legislation. Australia's National Measurement Act requires that the Minister with responsibility for legal metrology must be satisfied that any proposed regulation governing pattern (or type) approval of measuring instruments is consistent with specifications published by the OIML, unless there is very good case for variation.

By hosting this Conference, the Australian Government is indicating its continuing support for international collaboration in legal metrology and metrology generally. Last week we also hosted meetings of the Asia Pacific Legal Metrology Forum and a workshop on Legal Metrology Needs of South Pacific Economies, in the Hunter Valley here in New South Wales. I understand that the outcomes of those meetings will be considered at a Round Table of Regional Legal Metrology Organisations, where the needs of developing economies will also be considered.

In conclusion, from my perspective of the Australian trade portfolio, the OIML's work is crucial to underpin the ability of nations to trade products and services into the global economy. This is why your meetings are important. They stimulate international cooperation and development, help to set priorities, and encourage a better understanding of legal metrology. The outcomes of your deliberations will ultimately translate into the well-being of individual people, most of whom probably will never know about the OIML, but thanks in part to your work, can engage in trade and enjoy a better standard of living.

It is clear from the Conference agenda that you have a full and busy time ahead of you. In a spirit of cooperation, I wish you an interesting and successful Conference and trust that you will enjoy your stay in Sydney. ■

Welcome by Alan Johnston

Alan Johnston thanked Mr. Murphy for opening the Thirteenth Conference and was honored that a key Australian Government decision maker could be present to underline the importance of the OIML's work.

He welcomed Delegates to the Conference and expressed his thanks to Grahame Harvey's Staff, and to the Australian Government, for their impeccable organization not only of the meetings but also of the Dinner Cruise and other social events during the week.

He was also pleased to welcome two CIML Past Presidents: Gerard Faber and Manfred Kochsiek, as well as John Birch, CIML Honorary Member, all of whom had for many years contributed to the OIML's work thanks to their vast breadth of knowledge of legal metrology.

As Mr. Murphy had said, most people do not know what the OIML is, nor even what legal metrology is. The OIML must continue to "spread the word" to increase awareness throughout the world and thus achieve our objective of a global metrology system affecting each and every one of us.

Mr. Johnston concluded his brief opening remarks by making nominations in relation to the President and Vice-Presidents of the Conference. He proposed Dr. Lawrence Besley as Conference President, CEO of the Australian National Metrology Institute. As Vice-Presidents he wished to nominate Mr. Stephen O'Brien, from New Zealand and Mr. James Kiarie, from Kenya. Delegates having unanimously approved these nominations, Mr. Johnston declared the Thirteenth Conference officially open and turned the floor over to Dr. Besley. ■

Sydney scenes...

SYDNEY

Awards

for Outstanding Contributions to Legal Metrology

The Committee made Awards to

Mrs. Hiroe Sakai

and

Dr. Péter Pákay

in recognition of their outstanding contribution to legal metrology.

The Presidential Council also met in Sydney:

SYDNEY

13th International Conference Agenda

Opening speeches

Roll call

Election of the Conference President and Vice-President

1 Approval of the minutes of the 12th Conference

2 Report on CIML and BIML activities

2.1 Actions stemming from Article I of the Convention
2.2 Other actions

3 Presentations given by Liaisons

4 Technical work

4.1 Sanctioning of Recommendations
4.2 Acceptance / Recognition Systems

5 Presentation of the Strategic Plan

6 Report on Developing Country issues

7 Financial issues

7.1 Report on the 2005 – 2008 financial period
7.2 Future developments
7.3 Needs for the 2009 – 2012 financial period
7.4 2009 – 2012 budget of the OIML
7.5 Financial estimates for the financial period 2009 – 2012

THIRTEENTH INTERNATIONAL CONFERENCE on LEGAL METROLOGY

Sydney, 29 & 31 October 2008

RESOLUTIONS

Resolution no. 1

The Conference made the recommendation that CIML Members update, in a timely manner, the data related to their country in the OIML online database.

Resolution no. 2

The Conference made the recommendation that CIML Members make their regulatory requirements available to the public on the internet and that they update their Member's data on the OIML web site with links to these national web sites.

Resolution no. 3

The Conference made the recommendation that CIML Members complete the inquiry on the implementation of OIML Recommendations as accurately as possible and as soon as possible, and further made the recommendation that Member States update it each time a new or revised National Regulation is adopted.

Resolution no. 4

The Conference made the recommendation to CIML Members to keep other National Departments informed of OIML work, and to invite them to contribute to this work.

Resolution no. 4a

The Conference took note of the comments made concerning the possibility of a rapprochement with the BIPM. It instructed the Committee and the BIML to further study this issue and to continue strengthening the cooperation with the BIPM.

Member States are requested to send comments and proposals to the BIML by the end of 2008 so that a summary of these may be discussed by the Presidential Council in March 2009.

Resolution no. 4b

In order to better assist developing countries, the Conference considered it desirable that Publication D 1 *Elements for a law on metrology* be revised to take account of the latest developments in world trade, such as conformity assessment, certification and globalization. The Conference instructed the Committee to start a revision of Publication D 1.

TREZIÈME CONFÉRENCE INTERNATIONALE de MÉTROLOGIE LÉGALE

Sydney, 29 & 31 octobre 2008

RÉSOLUTIONS

Résolution n° 1

La Conférence recommande aux Membres du CIML de régulièrement tenir à jour les données relatives à leur pays sur la base de données en ligne de l'OIML.

Résolution n° 2

La Conférence recommande aux Membres du CIML de mettre à disposition du public leurs exigences réglementaires sur internet, et de mettre à jour leurs "données Membres" sur le site internet de l'OIML en fournissant les liens pointant vers ces sites internet nationaux.

Résolution n° 3

La Conférence recommande aux Membres du CIML de remplir l'enquête sur la mise en application des Recommandations de l'OIML de façon aussi précise que possible et dans les meilleurs délais, et de plus recommande aux Etats Membres de mettre celle-ci à jour chaque fois qu'une Recommandation de l'OIML nouvelle ou révisée est adoptée.

Résolution n° 4

La Conférence recommande aux Membres du CIML de tenir informés, les autres départements ministériels de leur pays, des travaux de l'OIML et de les inviter à participer à ces travaux.

Résolution n° 4a

La Conférence a pris note des commentaires exprimés concernant la possibilité d'un rapprochement avec le BIPM. Elle donne instruction au Comité et au BIML de poursuivre l'étude de ce sujet et de continuer à renforcer la coopération avec le BIPM.

Les Etats Membres sont priés d'adresser leurs commentaires et propositions au BIML d'ici fin 2008 de sorte qu'un résumé de ces contributions puisse être discuté au Conseil de la Présidence en Mars 2009.

Résolution n° 4b

Afin de mieux aider les pays en développement, la Conférence a considéré souhaitable que la publication D 1 *Eléments pour une Loi de Métrologie* soit révisée afin de prendre en compte les derniers développements dans le commerce international, tels que l'évaluation de conformité, la certification et la globalisation. La Conférence donne instruction au Comité d'entreprendre la révision de la Publication D 1.

Resolution no. 5

The Conference sanctioned the following publications previously approved by the Committee and made the recommendation that Member States use them as the basis for their national regulations as far as possible:

R 21:2007	*Taximeters*
R 35-1:2007	*Material measures of length for general use. Part 1: Metrological and technical requirements*
R 49-1:2006	*Water meters intended for the metering of cold potable water and hot water. Part 1: Metrological and technical requirements*
R 49-2:2006	*Water meters intended for the metering of cold potable water and hot water. Part 2: Test methods*
R 51-1:2006	*Automatic catchweighing instruments. Part 1: Metrological and technical requirements - Tests*
R 65:2006	*Force measuring system of uniaxial material testing machines*
R 76-1:2006	*Non-automatic weighing instruments. Part 1: Metrological and technical requirements - Tests*
R 82:2006	*Gas chromatographic systems for measuring the pollution from pesticides and other toxic substances*
R 83:2006	*Gas chromatograph/mass spectrometer systems for the analysis of organic pollutants in water*
R 107-1:2007	*Discontinuous totalizing automatic weighing instruments (totalizing hopper weighers). Part 1: Metrological and technical requirements - Tests*
R 116:2006	*Inductively coupled plasma atomic emission spectrometers for the measurement of metal pollutants in water*
R 117-1:2007	*Dynamic measuring systems for liquids other than water*
R 134-1:2006	*Automatic instruments for weighing road vehicles in motion and axle-load measuring. Part 1: Metrological and technical requirements - Tests*
R 137-1:2006	*Gas Meters. Part 1: Requirements*
R 138:2007	*Vessels for commercial transactions*
R 139:2007	*Compressed gaseous fuel measuring systems for vehicles*
R 140:2007	*Measuring systems for gaseous fuel*

Resolution no. 6

The Conference sanctioned the following publications and made the recommendation that Member States use them as the basis for their national regulations as far as possible:

R 71:2008	*Fixed storage tanks. General requirements*
R 85:2008	*Automatic level gauges for measuring the level of liquid in stationary storage tanks*
R 99-1:2008	*Instruments for measuring vehicle exhaust emissions. Part 1: Metrological and technical requirements*
R 99-2:2008	*Instruments for measuring vehicle exhaust emissions. Part 2: Metrological controls and performance tests*
R 141:2008	*Procedure for calibration and verification of the main characteristics of thermographic instruments*
R 142:2008	*Automated refractometers: Methods and means of verification*

Résolution n° 5

La Conférence sanctionne les publications suivantes antérieurement approuvées par le Comité et recommande aux Etats Membres de les utiliser dans la mesure du possible, comme base de leurs réglementations nationales:

R 21:2007	*Taximètres*
R 35-1:2007	*Mesures matérialisées de longueur pour usages généraux. Partie 1: Exigences métrologiques et techniques*
R 49-1:2006	*Compteurs d'eau pour le mesurage de l'eau potable froide et de l'eau chaude. Partie 1: Exigences métrologiques et techniques*
R 49-2:2006	*Compteurs d'eau pour le mesurage de l'eau potable froide et de l'eau chaude. Partie 2: Procédures d'essai*
R 51-1:2006	*Instruments de pesage trieurs-étiqueteurs à fonctionnement automatique. Partie 1: Exigences métrologiques et techniques - Essais*
R 65:2006	*Système de mesure de force des machines uniaxiales d'essai des matériaux*
R 76-1:2006	*Instruments de pesage à fonctionnement non automatique. Partie 1: Exigences métrologiques et techniques - Essais*
R 82:2006	*Systèmes chromatographiques en phase gazeuse pour la mesure des pollutions par pesticides et autres substances toxiques*
R 83:2006	*Système de chromatographe en phase gazeuse/spectromètre de masse pour l'analyse de polluants organiques dans l'eau*
R 107-1:2007	*Instruments de pesage totalisateurs discontinus à fonctionnement automatique (peseuses totalisatrices à trémie). Partie 1: Exigences métrologiques et techniques - Essais*
R 116:2006	*Spectromètres à émission atomique de plasma couplé inductivement pour le mesurage des polluants métalliques dans l'eau*
R 117-1:2007	*Ensembles de mesurage dynamique de liquides autres que l'eau. Partie 1: Exigences métrologiques et techniques*
R 134-1:2006	*Instruments à fonctionnement automatique pour le pesage des véhicules routiers en mouvement et le mesurage des charges à l'essieu. Partie 1: Exigences métrologiques et techniques - Essais*
R 137-1:2006	*Compteurs de gaz. Partie 1: Exigences*
R 138:2007	*Récipients pour transactions commerciales*
R 139:2007	*Ensembles de mesurage de gaz compressé pour véhicules*
R 140:2007	*Systèmes de mesurage de gaz*

Résolution n° 6

La Conférence sanctionne les publications suivantes et recommande aux Etats Membres de les utiliser dans la mesure du possible, comme base de leurs réglementations nationales:

R 71:2008	*Réservoirs de stockage fixes. Prescriptions générales*
R 85:2008	*Jaugeurs automatiques pour le mesurage des niveaux de liquide dans les réservoirs de stockage fixes*
R 99-1:2008	*Instruments de mesure des gaz d'échappement des véhicules. Partie 1: Exigences métrologiques et techniques*
R 99-2:2008	*Instruments de mesure des gaz d'échappement des véhicules. Partie 2: Contrôles métrologiques et essais de performance*
R 141:2008	*Procédure pour l'étalonnage et la vérification des principales caractéristiques des instruments thermographiques*
R 142:2008	*Réfractomètres automatisés: Méthodes et moyens de vérification*

Resolution no. 6a

The Conference took note of the comments made by some Member States regarding the necessity of revising the following Publications as soon as possible:

R 71:2008 *Fixed storage tanks. General requirements*

R 85:2008 *Automatic level gauges for measuring the level of liquid in stationary storage tanks*

R 139:2007 *Compressed gaseous fuel measuring systems for vehicles*

The Conference instructed the Committee to start the revision of these Publications.

Resolution no. 7

The Conference sanctioned the withdrawal of the following publications:

V 3 *Hardness testing dictionary (quadrilingual French-English-German-Russian)*

R 9 *Verification and calibration of Brinell hardness standardized blocks*

R 10 *Verification and calibration of Vickers hardness standardized blocks*

R 11 *Verification and calibration of Rockwell B hardness standardized blocks*

R 12 *Verification and calibration of Rockwell C hardness standardized blocks*

R 36 *Verification of indenters for hardness testing machines*

R 37 *Verification of hardness testing machines (Brinell system)*

R 38 *Verification of hardness testing machines (Vickers system)*

R 39 *Rockwell hardness machines*

R 74 *Electronic weighing instruments*

R 121 *The scale of relative humidity of air certified against saturated salt solutions*

Resolution no. 8

The Conference made the encouragement to Member States to actively participate in the development and revision of OIML mutual acceptance and recognition systems with a view to making them acceptable in their countries.

Resolution no. 9

The Conference made the encouragement to Member States to participate in existing OIML mutual acceptance and recognition systems and to actively promote them to all concerned parties such as manufacturers and users of measuring instruments.

Resolution no. 10

The Conference approved the Strategic Plan and instructed the Committee to implement it and to report on the progress in its implementation at the 14th Conference. It requested the Committee to take account of the comments made by the Conference for the update of this plan.

Résolution n° 6a

La Conférence prend note des commentaires émis par certains Etats Membres concernant la nécessité de réviser aussi tôt que possible les Publications suivantes:

R 71:2008 *Réservoirs de stockage fixes. Prescriptions générales*

R 85:2008 *Jaugeurs automatiques pour le mesurage des niveaux de liquide dans les réservoirs de stockage fixes*

R 139:2007 *Ensembles de mesurage de gaz compressé pour véhicules*

La Conférence donne instruction au Comité de commencer la révision de ces Publications.

Résolution n° 7

La Conférence sanctionne le retrait des Publications suivantes:

V 3 *Dictionnaire des essais de dureté (édition quadrilingue français-anglais-allemand-russe)*

R 9 *Vérification et étalonnage des blocs de référence de dureté Brinell*

R 10 *Vérification et étalonnage des blocs de référence de dureté Vickers*

R 11 *Vérification et étalonnage des blocs de référence de dureté Rockwell B*

R 12 *Vérification et étalonnage des blocs de référence de dureté Rockwell C*

R 36 *Vérification des pénétrateurs des machines d'essai de dureté*

R 37 *Vérification des machines d'essai de dureté (système Brinell)*

R 38 *Vérification des machines d'essai de dureté (système Vickers)*

R 39 *Vérification des machines d'essai de dureté (systèmes Rockwell)*

R 74 *Instruments de pesage électroniques*

R 121 *Echelle d'humidité relative de l'air certifiée par rapport à des solutions saturées de sels*

Résolution n° 8

La Conférence encourage les Etats Membres à participer activement au développement et à la révision des systèmes OIML d'acceptation et de reconnaissance mutuelles en vue de les mettre en œuvre dans leurs pays.

Résolution n° 9

La Conférence encourage les Etats Membres à participer aux systèmes existants d'acceptation et de reconnaissance mutuels et à les promouvoir activement auprès de toutes les parties concernées telles que les fabricants et les utilisateurs d'instruments de mesure.

Résolution n° 10

La Conférence approuve le Plan Stratégique et donne instruction au Comité de le mettre en oeuvre et de rendre compte sur le progrès de sa mise en œuvre lors de la 14ème Conférence. Elle demande au Comité qu'il prenne en compte les remarques faites par la Conférence pour la mise à jour de ce plan.

Resolution no. 11

The Conference dissolved the Permanent Working Group on Developing Countries and thanked its members for their valuable advice and contribution to the OIML's work on developing countries.

Resolution no. 12

The Conference established the unsalaried position of "Facilitator on developing country matters", responsible to the CIML President and asked the BIML to provide such support, within its budget, as may be necessary to this Facilitator.

Resolution no. 13

The International Conference of Legal Metrology,

HAVING EXAMINED the reports on the management of the budget for the years 2004, 2005, 2006 and 2007;

NOTING that the budget was managed in conformity with the expenses necessary for carrying out the work of the Bureau and that the accuracy of the report has been certified by annual audits;

NOTING that the respective functions assigned by the Convention to the President of the International Committee of Legal Metrology and to the Director of the International Bureau of Legal Metrology have been fulfilled;

GAVE ITS DEFINITIVE DISCHARGE to the President of the Committee and to the Director of the Bureau for their management of the budget during the years mentioned above.

Resolution no. 14

The base contributory share for Member States for the financial period 2009–2012 shall be as follows:

2009	13 600 €
2010	13 900 €
2011	14 200 €
2012	14 500 €

No entry fee shall be due for countries joining as Member States during this financial period.

Resolution no. 15

Corresponding Member fees for the financial period 2009–2012 shall be as follows:

2009	1 120 €
2010	1 230 €
2011	1 340 €
2012	1 450 €

No entry fee shall be due for countries joining as Corresponding Members during this financial period.

Résolution n° 11

La Conférence dissout le Groupe de Travail Permanent sur les Pays en Développement et remercie ses membres pour leurs conseils et contributions aux travaux de l'OIML sur les Pays en Développement.

Résolution n° 12

La Conférence établit le poste bénévole de "Facilitateur pour les questions de Pays en Développement", sous la responsabilité du Président du Comité, et demande au BIML de fournir le soutien nécessaire à ce Facilitateur, dans la mesure de son budget.

Résolution n° 13

La Conférence Internationale de Métrologie Légale,

AYANT EXAMINÉ les rapports sur la gestion du budget pour les exercices 2004, 2005, 2006 et 2007;

NOTANT que le budget a été géré conformément aux dépenses nécessaires pour mener à bien les tâches du Bureau, et que l'exactitude des rapports a été certifiée par des audits annuels;

NOTANT que les fonctions respectives assignées par la Convention au Président du Comité International de Métrologie Légale et au Directeur du Bureau International de Métrologie Légale ont été remplies;

DONNE SA DÉCHARGE DÉFINITIVE au Président du Comité et au Directeur du Bureau pour leur gestion du budget durant les exercices comptables mentionnés ci-dessus.

Résolution n° 14

La part contributive de base des Etats Membres pour la période financière 2009–2012 sera la suivante:

2009	13 600 €
2010	13 900 €
2011	14 200 €
2012	14 500 €

Les pays rejoignant l'Organisation en tant qu'Etats Membres pendant cette période financière ne seront pas redevables du droit d'entrée.

Résolution n° 15

Les droits de Membre Correspondant pour la période financière 2009–2012 seront les suivants:

2009	1 120 €
2010	1 230 €
2011	1 340 €
2012	1 450 €

Les pays rejoignant l'Organisation en tant que Membres Correspondants pendant cette période financière ne seront pas redevables du droit d'entrée.

Resolution no. 16

The tariffs of the other OIML products or services for the financial period 2009–2012 shall be as follows:

	2009	2010	2011	2012
OIML Bulletin annual subscription	60 €	60 €	60 €	60 €
DoMC Issuing Participant application	1 620 €	1 650 €	1 680 €	1 710 €
DoMC Peer Assessment (per day)	1 530 €	1 560 €	1 590 €	1 620 €
OIML Certificates (Basic and MAA)	350 €	358 €	367 €	376 €

Resolution no. 17

Should the economic conditions result in a critical financial situation for the OIML and after having taken all necessary measures to reduce costs, the President of the Committee shall report on the measures taken and may propose that the Committee asks Member States for an exceptional voluntary additional contribution.

Resolution no. 18

Considering that the provisions of IPSAS (International Public Sector Accounting Standards) concerning pensions are not yet defined, the Conference instructed the CIML President:

- to appoint an expert specialized in international public sector accountancy as the OIML external auditor;
- to elaborate with this expert the appropriate amendments to be made to the OIML Financial Regulations, in particular regarding pensions; and
- with the support of this expert, to take the appropriate provisional decisions concerning the OIML accountancy and the OIML Pension System.

Resolution no. 19

The Conference instructed the Committee to elaborate a procedure to implement Article XXIX, second paragraph, of the Convention, related to resignation and readmission of Members to be submitted to the next Conference.

The Conference granted Cameroon a delay of six months to make the payment of a significant part of its arrears. ■

Résolution n° 16

Les tarifs des autres produits ou services de l'OIML pendant la période financière 2009–2012 seront les suivants:

	2009	2010	2011	2012
Abonnement annuel au Bulletin OIML	60 €	60 €	60 €	60 €
Candidature d'un Participant Emetteur dans une DoMC	1 620 €	1 650 €	1 680 €	1 710 €
Evaluation par pair dans une DoMC (par jour d'évaluateur)	1 530 €	1 560 €	1 590 €	1 620 €
Enregistrement d'un Certificat OIML (dit "de base" ou MAA)	350 €	358 €	367 €	376 €

Résolution n° 17

Dans l'éventualité où les conditions économiques engendreraient une situation financière critique pour l'OIML, le Président du Comité devra rendre compte des mesures prises et pourra proposer que le Comité demande aux Etats Membres une contribution volontaire additionnelle exceptionnelle, après avoir pris au préalable toutes les mesures nécessaires pour réduire les coûts.

Résolution n° 18

Considérant que les dispositions des normes IPSAS (normes comptables internationales pour le secteur public) concernant les retraites, ne sont pas encore définies, la Conférence donne instruction au Président du CIML:

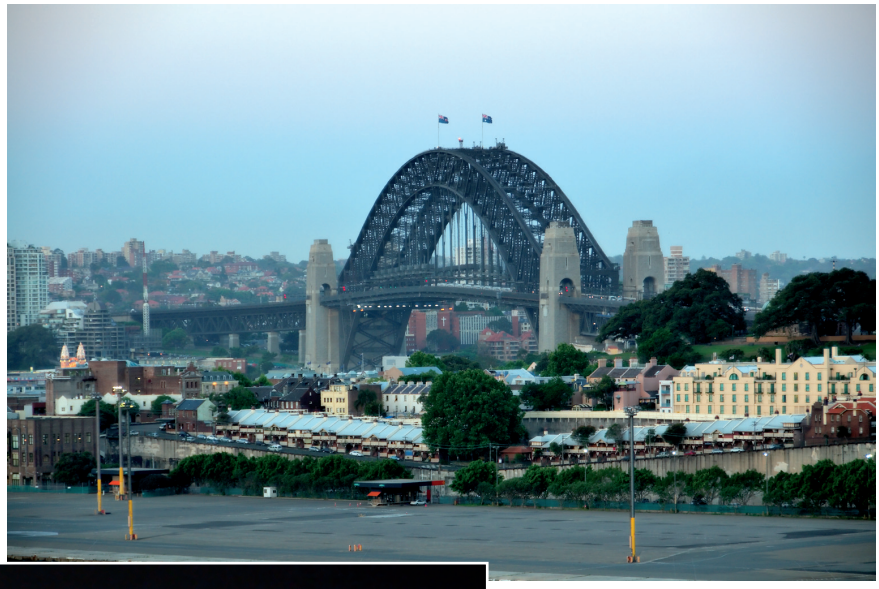
- de nommer un expert spécialisé dans la comptabilité du secteur public international en tant qu'auditeur externe de l'OIML,
- d'élaborer avec cet expert les amendements nécessaires à apporter au Règlement Financier de l'OIML, plus particulièrement pour les retraites, et
- avec le soutien de cet expert, de prendre les décisions provisoires appropriées concernant la comptabilité et le système de retraite de l'OIML.

Résolution n° 19

La Conférence a donné instruction au Comité d'élaborer une procédure de mise en oeuvre du second paragraphe de l'Article XXIX de la Convention, relatif à la radiation et à la réadmission des Membres, afin de la soumettre à la prochaine Conférence.

La Conférence a accordé au Cameroun un délai de six mois pour procéder au paiement d'une partie significative de ses arriérés. ■

Sydney scenes...



SYDNEY

43rd CIML Meeting Agenda

Opening speeches

Roll call

Approval of the Agenda

1 Approval of the minutes of the 42nd CIML Meeting

2 Member States and Corresponding Members
2.1 New Member States and perspectives
2.2 New Corresponding Members
2.3 Member State contributions and arrears

3 Presidential Council activities

4 Developing Countries activities

5 Liaisons
5.1 BIPM
5.2 ILAC / IAF
5.3 ISO / IEC
5.4 UNIDO
5.5 World Trade Organization (WTO)
5.6 Regional Legal Metrology Organizations
5.7 Other Organizations

6 Technical activities
6.1 General
6.2 The OIML Certificate System and the MAA
6.3 Publications submitted to the CIML for approval
6.4 TC/SC items for information
6.5 TC/SC items for approval

7 Human resources matters
7.1 Amendments to the BIML Staff Regulations
7.2 Contract of an Assistant Director

8 Conference Agenda

9 Future meetings
9.1 44th CIML Meeting, 2009
9.2 45th CIML Meeting, 2010

10 Other matters

FORTY-THIRD MEETING
of the INTERNATIONAL COMMITTEE of LEGAL METROLOGY
Sydney, 28 & 31 October 2008

RESOLUTIONS

Resolution no. 1

The Committee approved the Minutes of the 42nd CIML Meeting without modification.

Resolution no. 2

The Committee welcomed Montenegro as a new Corresponding Member and expressed its appreciation for the growing interest shown by many countries in joining the OIML.

The Committee instructed its President and the Bureau to continue to raise the level of awareness of the advantages of OIML Membership, in order to encourage the widest possible participation in the International Legal Metrology System.

Resolution no. 3

The Committee rejected the appeal from Greece concerning its contributory class.

Resolution no. 4

The Committee decided to strike Cameroon and Ethiopia off the list of Member States in application of Article XXIX of the Convention.

The Committee further resolved that in application of Article XXIV of the Convention, the Conference would be requested to consider whether these countries should be granted the opportunity to reduce their debt over a period of time to be determined, in which case the Committee's decision would be suspended. Failing acceptance by the Conference, they would be struck off the list of Member States as decided by the Committee.

Resolution no. 5

The Committee took note of the decision by the 13th Conference to grant Cameroon a delay of six months to significantly reduce its arrears.

Resolution no. 6

The Committee instructed its President and the Bureau to strike Zambia off the list of Corresponding Members.

QUARANTE-TROISIÈME RÉUNION
du COMITÉ INTERNATIONAL de MÉTROLOGIE LÉGALE

Sydney, 28 & 31 octobre 2008

RÉSOLUTIONS

Résolution n° 1

Le Comité a approuvé sans modification le Compte-rendu de la 42ème Réunion du CIML.

Résolution n° 2

Le Comité a souhaité la bienvenue au Monténégro en tant que nouveau Membre Correspondant et a exprimé son appréciation pour l'intérêt croissant de nombreux pays à rejoindre l'OIML.

Le Comité a donné instruction à son Président et au Bureau de poursuivre la sensibilisation portant sur les avantages dont bénéficient les Membre de l'OIML, dans le but d'encourager une plus large participation au Système International de Métrologie Légale.

Résolution n° 3

Le Comité a rejeté l'appel de la Grèce relatif à sa classe de contribution.

Résolution n° 4

Le Comité a décidé de radier de la liste des Etats Membres le Cameroun et l'Ethiopie en application de l'Article XXIX de la Convention.

Toutefois, le Comité a décidé, en application de l'Article XXIV de la Convention, qu'il serait demandé à la Conférence de considérer si ces pays devaient se voir offrir la possibilité de réduire leur dette dans des délais à déterminer, auquel cas la décision du Comité serait suspendue. En cas de refus de la Conférence, ils seraient radiés de la liste des Etats Membres tel que décidé par le Comité.

Résolution n° 5

Le Comité a pris note de la décision de la 13ème Conférence d'accorder un délai de six mois au Cameroun pour que ce dernier réduise significativement ses arriérés.

Résolution n° 6

Le Comité a donné instruction à son Président et au Bureau de radier la Zambie de la liste des Membres Correspondants.

Resolution no. 7

The Committee took note of an oral presentation given by its President on the activities of the Presidential Council.

Resolution no. 8

The Committee approved the allocation of the position of "Facilitator for developing country activities" to Mr. Eberhard Seiler.

Resolution no. 9

The Committee approved the setting up of an OIML Award "for excellent contributions from developing countries to legal metrology" and requested the Bureau to finalize the arrangements for this Award, so that the first candidates could be proposed at the 44th Committee Meeting in 2009.

Resolution no. 10

The Committee expressed its appreciation for the excellent cooperation between the Presidential Council and the Bureau of the CIPM, as well as between the BIML and the BIPM.

The Committee requested the BIML to circulate the joint report of the BIPM and BIML Directors to all CIML Members with a view to collecting their comments.

Resolution no. 11

The Committee expressed its appreciation for the excellent cooperation with ILAC and the IAF and instructed its President and the Director of the Bureau to pursue this cooperation and to develop and implement joint work programs with these two organizations.

Resolution no. 12

The Committee took note of the ongoing work on the revision of the MoUs with ISO and the IEC and instructed the Bureau to pursue this revision, taking into consideration the specific aspects of importance to legal metrology and to the OIML.

Resolution no. 13

The Committee expressed its appreciation for the excellent cooperation with UNIDO and instructed its President and the Director of the Bureau to pursue the work on drawing up the Memorandum of Understanding (MoU) with UNIDO and the BIPM, taking into account the respective missions of the three Organizations.

Resolution no. 14

The Committee noted the importance given to OIML publications and conformity assessment and certification systems in the implementation of the WTO/TBT Agreement. It instructed its President and the Director of the Bureau to continue to cooperate with the WTO and to promote the OIML as an organization facilitating compliance with the WTO/TBT Agreement.

Résolution n° 7

Le Comité a pris note de la présentation orale donnée par son Président sur les activités du Conseil de Présidence.

Résolution n° 8

Le Comité a approuvé la nomination de Monsieur Eberhard Seiler en tant que “Facilitateur pour les activités relatives aux Pays en Développement”.

Résolution n° 9

Le Comité a approuvé la mise en place d’une récompense de l’OIML pour “l’excellence des contributions pour la métrologie légale de pays en développement” et a demandé au Bureau de finaliser les dispositions nécessaires à cette récompense, de sorte que les premiers nominés puissent être proposés à la 44ème Réunion du Comité en 2009.

Résolution n° 10

Le Comité a exprimé son appréciation pour l’excellente coopération entre le Conseil de Présidence et le Bureau du CIPM ainsi qu’entre le BIML et le BIPM.

Le Comité a demandé au BIML de mettre en circulation auprès des Membres du CIML le rapport conjoint des Directeurs du BIPM et du BIML afin de recueillir leurs commentaires.

Résolution n° 11

Le Comité a exprimé son appréciation pour l’excellente coopération avec ILAC et IAF et a donné instruction à son Président et au Directeur du Bureau de continuer cette coopération et de développer et mettre en oeuvre des programmes de travail conjoints avec ces deux organisations.

Résolution n° 12

Le Comité a pris note des travaux en cours portant sur la révision des Accords avec l’ISO et la CEI et a donné instruction au Bureau de poursuivre ces révisions, en tenant compte des spécificités importantes pour la métrologie légale et l’OIML.

Résolution n° 13

Le Comité a exprimé son appréciation pour l’excellente coopération avec l’ONUDI et a donné instruction à son Président et au Directeur du Bureau de poursuivre les travaux portant sur l’élaboration d’un accord de coopération avec l’ONUDI et le BIPM, tout en tenant compte des missions respectives des trois organisations.

Résolution n° 14

Le Comité a pris note de l’importance donnée aux publications ainsi qu’aux systèmes de certification et d’évaluation de la conformité dans la mise en oeuvre de l’Accord OMC/OTC. Il a donné instruction à son Président et au Directeur du Bureau de continuer à coopérer avec l’OMC et de promouvoir l’OIML comme organisation facilitant le respect de l’Accord OMC/OTC.

Resolution no. 15

The Committee took note of the report on the Round Table with the Regional Legal Metrology Organizations (RLMOs). It instructed its President and the Director of the Bureau to continue this work with a view to strengthening mutual cooperation and improving the coherence of the work and, if appropriate, the signing of an MoU.

Resolution no. 16

The Committee emphasized the importance of the OIML maintaining close relations with Organizations representing legal metrology stakeholders and encouraged the latter to participate in OIML work. It instructed its President and the Director of the Bureau to continue to identify such stakeholder organizations and to raise their awareness of OIML work.

Resolution no. 17

The Committee encouraged the Bureau to progress as quickly as possible in finalizing the revision of the Directives for OIML Technical Work.

Resolution no. 18

A Draft OIML Publication approved by the Committee shall be available on the OIML web site immediately after approval, for reference purposes and in order for manufacturers and OIML Issuing Authorities to begin preparing for issuing Certificates in the future. However it is not permitted to issue an OIML Basic Certificate based on the Draft.

The official date from which an OIML Basic Certificate can be issued is the date on which the OIML Publication appears on the OIML web site. This date shall be recorded in the table of Publications available on the OIML web site.

The date from which an OIML MAA Certificate can be issued is specified in the corresponding DoMC.

Resolution no. 19

As soon as an OIML Recommendation, including the Test Report Format is published, the relevant OIML Recommendation is automatically included in the OIML Basic Certificate System. The Bureau will publish the appropriate information on the web site.

If a new version of an OIML Recommendation is published, the earlier version is maintained in the OIML Basic Certificate System or in the relevant OIML DoMC, together with the new version.

A comparison document between the two versions, drawn up by the appropriate TC/SC Secretariat, is no longer required.

Note: The last part of the Resolution results in withdrawing the requirement defined in 6.6.1 of OIML B 3: 2003.

Résolution n° 15

Le Comité a pris note du rapport sur la Table Ronde avec les Organisations Régionales de Métrologie Légale (RLMOs). Il a donné instruction à son Président et au Directeur du Bureau de continuer ces travaux afin de renforcer la coopération mutuelle et d'améliorer la cohérence des travaux et, si approprié, de signer un Accord.

Résolution n° 16

Le Comité a souligné l'importance que l'OIML maintienne des relations étroites avec les organisations représentant les parties intéressées par la métrologie légale, et a encouragé celles-ci à participer aux travaux de l'OIML. Il a donné instruction à son Président et au Directeur du Bureau de continuer à identifier de telles organisations et à les sensibiliser aux travaux de l'OIML.

Résolution n° 17

Le Comité a encouragé le Bureau à progresser aussi vite que possible en vue de finaliser la révision des Directives pour les Travaux Techniques.

Résolution n° 18

Tout Projet de Publication OIML approuvé par le Comité devra être mis en ligne sur le site internet de l'OIML immédiatement après son approbation, à titre de référence et afin de permettre aux fabricants et aux Autorités de Délivrance de commencer à se préparer à l'émission des futurs Certificats. Il n'est toutefois pas permis d'émettre un Certificat dit "de base" fondé sur le projet.

La date officielle à partir de laquelle un certificat dit "de base" peut être émis est la date à laquelle la publication OIML est mise en ligne sur le site internet de l'OIML. Cette date devra être enregistrée dans la table des publications disponible sur le site internet de l'OIML.

La date à partir de laquelle un Certificat OIML dans le cadre du MAA peut être émis, est spécifiée dans le Déclaration de Confiance Mutuelle correspondante.

Résolution n° 19

Dès qu'une Recommandation OIML, incluant le format de rapport d'essais, est publiée, cette Recommandation est automatiquement incluse dans le Système de Certificats dit "de base". Le Bureau publiera l'information appropriée sur le site internet de l'OIML.

Lorsqu'une nouvelle version d'une Recommandation de l'OIML est publiée, la version précédente est conservée dans le Système de Certificats dit "de base" ou dans la Déclaration de Confiance Mutuelle correspondante, avec la nouvelle version.

Un document de comparaison entre les deux versions, établi par le Secrétariat du TC/SC compétant, n'est plus requis.

Note: La dernière partie de la Résolution a pour effet d'annuler l'exigence définie au 6.6.1 du Document OIML B 3, édition 2003.

Resolution no. 20

The OIML Basic Certificate System and the OIML MAA are maintained in parallel for categories under the MAA until the Committee decides to stop the implementation of the OIML Basic Certificate System. The proposal to stop the OIML Basic Certificate System for a particular category shall be examined, as appropriate, by the Committee independently for each category covered by the MAA. A two-year period (after the Committee decision) shall be allowed before stopping the OIML Basic Certificate System for the relevant category.

For the time being, Issuing Participants shall not issue OIML MAA Certificates in the event that results of tests outside the scope of the DoMCs are taken into account (e.g. test results from manufacturers) in the Evaluation Reports. In this case an OIML Basic Certificate may still be issued as long as the MAA does not provide this possibility.

The Committee supports the intention of TC 3/SC 5 to further discuss the acceptance of manufacturers' test results, with the aim of ultimately including them in the scope of the MAA if consensus can be reached on the conditions to be applicable to manufacturers ISO/IEC 17025 test laboratories.

Resolution no. 21

After the OIML Basic Certificate System for a particular category of instrument has been stopped, when an applicant requests a revision (see the Note below) of an OIML Basic Certificate based on the same version of the OIML Recommendation, which has been subsequently covered by the MAA, the revised OIML Basic Certificate may be issued by the original OIML Issuing Authority even if it is not an Issuing Participant in the relevant DoMC, or by an Issuing Participant in the DoMC.

Also after the OIML Basic Certificate System for a particular category of instrument has been stopped, if a new Certificate is applied for, based on the new version of the OIML Recommendation, then an OIML Basic Certificate cannot be issued any more. Rather, an OIML MAA Certificate shall be issued. Therefore the application can only be made to an Issuing Participant in the relevant DoMC.

Note: A Certificate is considered to be a 'revision' when the basis for issuing the revised Certificate is the same edition of the Recommendation as was used when issuing the original Certificate. A Certificate is considered to be 'new' when the Certificate is issued on the basis of the new version of the Recommendation, even if some results of tests conducted when issuing the original Certificate are still valid and used for issuing the new Certificate.

Resolution no. 22

The Committee approved the following Publications:

R 85-3:2008 *Automatic level gauges for measuring the level of liquid in stationary storage tanks. Part 3: Report format for type evaluation*

R 99-3:2008 *Instruments for measuring vehicle exhaust emissions. Part 3: Report Format*

D 29:2008 *Guide for the application of ISO/IEC Guide 65 to assessment of measuring instrument certification bodies in legal metrology*

D 30:2008 *Guide for the application of ISO/IEC 17025 to the assessment of Testing Laboratories involved in legal metrology*

D 31:2008 *General requirements for software controlled measuring instruments*

Résolution n° 20

Le Système de Certificats dit “de base” et le MAA de l’OIML sont conservés en parallèle pour chaque catégorie couverte par le MAA jusqu’à ce que le Comité décide de mettre fin à l’application du Système de Certificats dit “de base” pour cette catégorie. La proposition de mettre fin à l’application du Système de Certificats dit “de base” pour une catégorie donnée sera examinée, s’il y a lieu, par le Comité, indépendamment pour chaque catégorie couverte par le MAA. Une période de deux ans (après la décision du Comité), sera permise avant de mettre fin au Système de Certificats dit “de base” pour la catégorie considérée.

Pour l’instant, les Participants Emetteurs ne doivent pas émettre de Certificats MAA lorsque des résultats d’essais en dehors du champ de la Déclaration de Confiance Mutuelle sont pris en compte dans les rapports d’évaluation (par exemple résultats d’essais du fabricant). Dans un tel cas, un Certificat OIML dit “de base” pourra toujours être émis tant que le MAA ne fournira pas cette possibilité.

Le Comité soutient l’intention du TC 3/SC 5 de poursuivre les discussions sur l’acceptation des résultats d’essais des fabricants, avec pour objectif de les inclure dans le champ d’application du MAA si un consensus peut être obtenu sur les conditions applicables aux laboratoires d’essais ISO/CEI 17025 des fabricants.

Résolution n° 21

Après qu’il ait été mis fin au Système de Certificats dit “de base” pour une catégorie particulière d’instruments, lorsqu’un fabricant requiert une révision (voir la note ci-dessous) d’un Certificat dit “de base” basée sur une même version de la Recommandation de l’OIML qui a été ultérieurement couverte par le MAA, le Certificat dit “de base” révisé peut être délivré par l’Autorité de Délivrance originale, même si elle n’est pas un Participant Emetteur de la Déclaration de Confiance Mutuelle correspondante, ou par un Participant Emetteur de la Déclaration de Confiance Mutuelle.

En outre, après qu’il ait été mis fin au Système de Certificats dit “de base” pour une catégorie particulière, lorsqu’un nouveau Certificat est demandé , sur la base de la nouvelle version de la Recommandation de l’OIML, il n’est plus possible d’émettre un Certificat dit “de base”. Un Certificat MAA doit être émis. Par conséquent la demande ne peut être adressée qu’à un Participant Emetteur de la Déclaration de Confiance Mutuelle correspondante.

Note: Un Certificat est considéré comme une “révision” lorsque la référence pour émettre le Certificat révisé est la même édition de la Recommandation que celle ayant été utilisée pour émettre le Certificat original. Un Certificat est considéré comme “nouveau” lorsque le Certificat est émis sur la base de la nouvelle version de la Recommandation, même si certains résultats d’essais menés lors de l’établissement du Certificat original sont toujours valides et utilisés pour émettre le nouveau Certificat.

Résolution n° 22

Le Comité a approuvé les Publications suivantes:

R 85-3:2008	*Jaugeurs automatiques pour le mesurage des niveaux de liquide dans les réservoirs de stockage fixes. Partie 3: Format de rapport pour l’examen de type*
R 99-3:2008	*Instruments de mesure des gaz d’échappement des véhicules. Partie 3: Modèle de rapport*
D 29:2008	*Guide pour l’application du Guide ISO/CEI 65 à l’évaluation des organismes de certification des instruments de mesure en métrologie légale*
D 30:2008	*Guide pour l’application de la norme ISO/CEI 17025 à l’évaluation des laboratoires d’essais intervenant en métrologie légale*
D 31:2008	*Exigences générales pour les instruments de mesure contrôlés par logiciel*

Resolution no. 23

The Committee expressed its appreciation for the first training session provided by the BIML to certain TC/SC Secretariats in April 2008 and instructed the Bureau to extend this training to those Secretariats which did not participate, and to organize updates as necessary.

Resolution no. 24

The Committee approved the withdrawal of the following publications:

V 3	*Hardness testing dictionary (quadrilingual)*
R 9	*Verification and calibration of Brinell hardness standardized blocks*
R 10	*Verification and calibration of Vickers hardness standardized blocks*
R 11	*Verification and calibration of Rockwell B hardness standardized blocks*
R 12	*Verification and calibration of Rockwell C hardness standardized blocks*
R 36	*Verification of indenters for hardness testing machines*
R 37	*Verification of hardness testing machines (Brinell system)*
R 38	*Verification of hardness testing machines (Vickers system)*
R 39	*Rockwell hardness machines*
R 121	*The scale of relative humidity of air certified against saturated salt solutions*
D 15	*Principles of selection of characteristics for the examination of measuring instruments*

Resolution no. 25

The Committee approved the following new work items:

Revision of V 1:2000	*International Vocabulary of Legal Metrology*
Revision of R 91:1990	*Radar equipment for the measurement of the speed of vehicles*
Revision of D 11:2004	*General requirements for electronic measuring instruments*
New project: Document	*Software – Methods and means of verification*

Revision of the requirements in R 138 on *measuring container bottles* by TC 6

Revision of R 49:2006	*Water meters intended for the metering of cold potable water and hot water*
Revision of R 18:1989	*Visual disappearing filament pyrometers*
Revision of R 60:2000	*Metrological regulation for load cells*
Revision of R 16:2002	*Mechanical non-invasive sphygmomanometers*

The Committee cancelled the following project:

TC 9/SC 4 p1: *Density value of aqueous sucrose solutions*

Résolution n° 23

Le Comité a exprimé son appréciation pour la première session de formation délivrée par le Bureau à certains Secrétariats de TCs/SCs en avril 2008 et a donné instruction au Bureau d'étendre cette formation aux Secrétariats qui n'y ont pas participé, et d'organiser des sessions de mises à jour en tant que de besoin.

Résolution n° 24

Le Comité a approuvé le retrait des publications suivantes:

V 3	*Dictionnaire des essais de dureté (quadrilingue)*
R 9	*Vérification et étalonnage des blocs de référence de dureté Brinell*
R 10	*Vérification et étalonnage des blocs de référence de dureté Vickers*
R 11	*Vérification et étalonnage des blocs de référence de dureté Rockwell B*
R 12	*Vérification et étalonnage des blocs de référence de dureté Rockwell C*
R 36	*Vérification des pénétrateurs des machines d'essai de dureté*
R 37	*Vérification des machines d'essai de dureté (système Brinell)*
R 38	*Vérification des machines d'essai de dureté (système Vickers)*
R 39	*Machines de dureté Rockwell*
R 121	*Echelle d'humidité relative de l'air certifiée par rapport à des solutions saturées de sels*
D 15	*Principes du choix des caractéristiques pour l'examen des instruments de mesure usuels*

Résolution n° 25

Le Comité a approuvé les sujets de travail suivants:

Révision du V 1:2000	*Vocabulaire international des termes de métrologie légale*
Révision de la R 91:1990	*Cinémomètres radar pour la mesure de la vitesse des véhicules*
Révision du D 11:2004	*Exigences générales pour les instruments de mesure électroniques*
Nouveau projet: Document	*Logiciels – Méthodes et moyens de vérification*
Révision des exigences de la R 138 sur les *bouteilles récipients-mesures* par le TC 6	
Révision de la R 49:2006	*Compteurs d'eau pour le mesurage de l'eau froide potable et de l'eau chaude*
Révision de la R 18:1989	*Pyromètres optiques à filament disparaissant*
Révision de la R 60:2000	*Réglementation métrologique des cellules de pesée*
Révision de la R 16-1:2002	*Sphygmomanomètres non invasifs mécaniques*

Le Comité a annulé le projet suivant:

TC 9/SC 4 p1: *Valeurs de la densité des solutions aqueuses de sucrose*

Resolution no. 26

The Committee decided to disband OIML TC 10/SC 5 *Hardness standardized blocks and hardness testing machines*.

The Committee approved the new names and scopes of the following Technical Committee and Subcommittee:

TC 5	*General requirements for measuring instruments*
TC 5/SC 1	*Environmental conditions*

The Committee allocated the Secretariats of the following Technical Committee and Subcommittees:

TC 7/SC 4	allocated to the USA
TC 12	allocated to Australia
TC 17/SC 1	allocated jointly to China and the USA

The Committee decided to submit the TC 16/SC 1 draft for a new Recommendation "*Instruments for continuous measuring SO_2 in stationary source emissions*" to direct CIML online approval.

Resolution no. 27

The Committee took note of Resolution no. 4b of the 13th Conference asking for the revision of D 1 and instructed TC 3 to take appropriate action.

Resolution no. 28

(Deleted)

Resolution no. 29

The Committee voted to renew the contract of Mr. Ian Dunmill, Assistant Director of the Bureau.

Resolution no. 30

The Committee approved the Draft Conference Agenda with the following modifications:

Revision of ISO 3930/OIML R 99 Part 1 and Part 2 is added to the list of OIML Recommendations to be submitted for Direct Sanction by the Conference (agenda item 4.1.2).

Item 8.1 (on a new category of OIML membership) is withdrawn.

Resolution no. 31

The Committee thanked Kenya for its presentation on the venue of the 44th Committee meeting to be held in Kenya in 2009.

Resolution no. 32

The Committee thanked the USA for inviting the Committee to hold its 45th meeting in the USA in 2010, and accepted this invitation. ■

Résolution n° 26

Le Comité a décidé de dissoudre le TC 10/SC 5 *Blocs de référence de dureté et machines d'essais de dureté*.

Le Comité a approuvé les nouveaux noms et domaines des Comités Techniques et Sous-Comités suivants:

TC 5	*Exigences générales pour les instruments de mesure*
TC 5/SC 1	*Conditions environnementales*

Le Comité a alloué les Secrétariats des Comités Techniques et Sous-Comités suivants:

TC 7/SC 4	alloué aux Etats-Unis
TC 12	alloué à l'Australie
TC 17/SC 1	alloué conjointement à la Chine et aux Etats-Unis

Le Comité a décidé de soumettre le projet de nouvelle Recommandation du TC 16/SC 1 "*Instruments pour le mesurage continu du SO_2 dans les sources d'émission fixes*" à l'approbation directe en ligne du CIML.

Résolution n° 27

Le Comité a pris note de la Résolution n° 4b de la 13ème Conférence demandant la révision du D 1 et a donné instruction au TC 3 de prendre les actions appropriées.

Résolution n° 28

(Supprimée)

Résolution n° 29

Le Comité a renouvelé le contrat de M. Ian Dunmill, Adjoint au Directeur du Bureau.

Résolution n° 30

Le Comité a approuvé le projet d'ordre du jour de la Conférence, avec les modifications suivantes:

La révision de l'ISO 3930/OIML R 99 Parties 1 et 2 est ajoutée à la liste des Recommandations soumises à la sanction directe de la Conférence (point 4.1.2 de l'ordre du jour).

Le point 8.1 (relatif à une nouvelle catégorie de Membres) est retiré de l'ordre du jour.

Résolution n° 31

Le Comité a remercié le Kenya pour sa présentation portant sur l'organisation de la 44ème Réunion du Comité qui se tiendra au Kenya en 2009.

Résolution n° 32

Le Comité a remercié les Etats-Unis pour leur invitation à tenir la 45ème Réunion du Comité aux Etats-Unis en 2010, et a accepté cette invitation. ■

SYDNEY

Working Group on Conformity to Type

GRAHAME HARVEY, NMI, Australia

The fourth meeting of the OIML Working Group (WG) on Conformity to Type (CTT) was held on 30 October 2008 in association with the 13th OIML Conference and the 43rd CIML Meeting in Sydney. It was attended by 27 Delegates from 17 Member States, a CECIP representative, a WELMEC representative and BIML Staff.

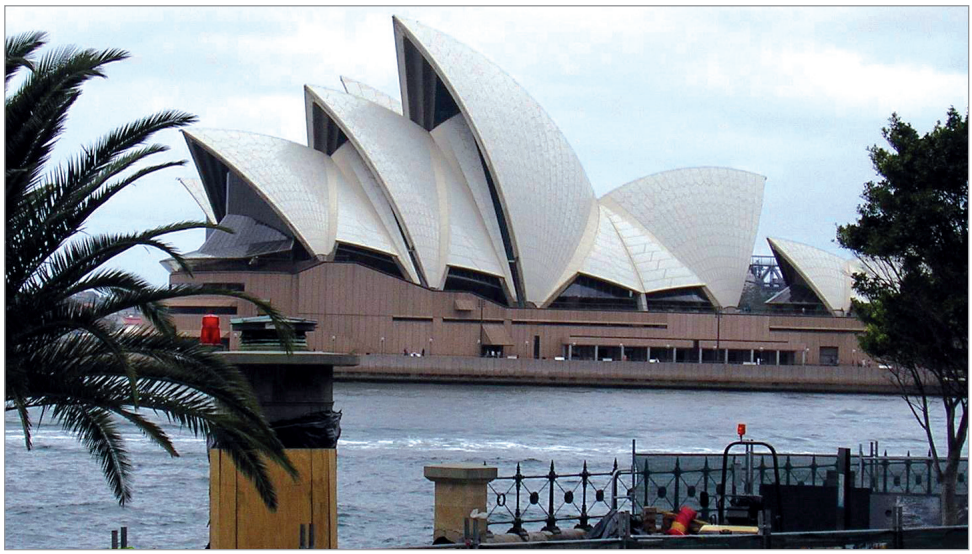
The Chair presented the WG with an Issues Paper which was used to facilitate discussion of the issues associated with the development of a CTT program. The WG reviewed issues that had previously been discussed such as international coordination, the possible role of regional bodies, responses to non-conformities, program funding and its possible linkage with manufacturers' test results.

The WG took note of a pilot CTT program that was conducted in Australia for non-automatic weighing instruments. The program set MPEs of 1.5 times that required under type approval; however several instruments in the program still failed. The WG was also informed about a supplier in Australia who was providing approved instruments into the market and claimed it would take three months to provide an instrument for conformity to type testing.

The representative from CECIP informed the WG that European manufacturers are supportive and open to the idea of a CTT program. The representative confirmed that since an OIML program had yet to be introduced, some major European manufacturers were considering the introduction of their own voluntary CTT programs.

A representative from the USA informed the WG of a 'Proof of Production Meeting Type' program that has been established by the Scale Manufacturers Association in America. This program incorporates conformity testing for influence factors. In addition, some representatives informed the WG that several manufacturers have approached them requesting a higher level OIML type approval (OIML ++).

The WG agreed to establish a smaller WG to develop a more detailed proposal for an OIML conformity to type program. ■



TC/SC NEWS

OIML TC 6 Meeting

1–3 September 2008

Czech Metrology Institute, Brno, Czech Republic

WILLEM KOOL, Assistant Director, BIML

At the invitation of the Czech Metrology Institute (CMI) in Brno, Czech Republic, OIML Technical Committee 6 *Prepackaged products* met to discuss issues related to the proposed system for the certification of packers' quantity control systems (provisionally named the IQ-Mark Scheme, where "IQ-Mark" stands for International Quantity Mark) and some other issues, such as the revision of OIML Recommendation R 79 *Labeling requirements for prepackaged products* and certain amendments to the requirements for measuring container bottles (MCBs) that would allow them to be used in a quantity control system complying with the requirements of OIML Recommendation R 87 *Quantity of product in prepackages*.

The following is a summary of the discussions.

IQ-Mark Scheme

In the previous meeting (Gaithersburg, USA, September 2007), TC 6 started to discuss the IQ-Mark Scheme Working Draft 2 (WD 2, 2007-02-20) "*Scheme for the acceptance of prepackages complying with requirements for accuracy of packaging and labeling*". The main principle of the system as described in WD 2 is that signatories to an agreement would be the National Responsible Bodies of countries (OIML Members and Corresponding Members), represented by their CIML Member or Contact person in the case of Corresponding Members, and, although participation would not be mandatory, the participants would mutually accept each other's certificates. The certificate would attest that the packer's quantity control system on the facilities used to fill prepackages covered by the certificate and his ability to control the quantity of product in those prepackages comply with the requirements of OIML R 87 and that the labeling of those prepackages complies with the requirements of OIML R 79.

This basic principle of the system envisaged in WD 2, i.e. that the participants were obliged to accept each other's certificates, met with fierce opposition from several members of TC 6 for various reasons:

- In a number of countries, the responsibility for the control of prepackages is not (solely) in the hands of the national legal metrology service, and the CIML Member would have no control over the responsible bodies (inspection bodies, market surveillance authorities and the customs authorities), and these bodies could not be obliged to accept the certificates issued under the IQ-Mark Scheme, nor would they give up the right to carry out inspections on prepackaged products covered by such certificates. The only way to overcome this barrier would be to conclude an agreement between States at the level of governments.
- Some European members of TC 6 argued that an acceptance arrangement as proposed in WD 2 could not be concluded by individual CIML Members of EU Member States, because such an agreement would bind those EU Member States (to accept each other's certificates) and, therefore, such an agreement would have to be negotiated by the European Commission on behalf of all the EU Member States.
- Some TC 6 members argued that because most of the cost of such a system would have to be born by industry (manufacturers of prepackages), their national industry was not interested. Moreover, the envisaged system would place a considerable administrative burden on the BIML and the associated cost would weigh heavily on the OIML budget.

Another concern expressed during the 2007 Gaithersburg meeting was that, before any certification system could be implemented, the system requirements for the packer's quantity control system and the bodies issuing certificates had to be agreed and some level of harmonization in interpreting the "product" requirements in R 87 and R 79 had to be achieved.

It was clear from the discussions in Gaithersburg that TC 6 would not accept a certification system as envisaged in WD 2 and some members of TC 6 suggested to postpone the discussion or even to stop the work on the IQ-Mark Scheme and ask the CIML to cancel the project.

In Brno, TC 6 discussed all those reservations and arguments concerning the viability of such a certification system, but decided to continue the project. However, it was agreed that the basic principles of the

IQ-Mark Scheme need to be amended in order to overcome most, if not all, of the reservations expressed that would prevent successful implementation of the system.

In particular, the system would have to be based on the following principles:

- Participants (issuing certificates) may be national authorities responsible for the control of prepackages, or private certification bodies and there may be more than one participant in a country. The arrangement would be a private agreement between all participating bodies.
- The system has to be voluntary. Not only for the packers, who may or may not want to have their quantity control systems certified, or for authorities and private certification bodies to participate, but also as concerns the acceptance of certificates. No authority (market surveillance authorities, customs, and inspection bodies) would be obliged to accept the certificates issued under the system.

The BIML offered to write an explanatory memorandum, outlining such a voluntary certification system and indicating the responsibilities and relationships between the various parties involved (OIML, BIML, CIML Members, participating national authorities and private certification bodies). The meeting decided to postpone the discussions on the principles and system requirements for the voluntary IQ-Mark Scheme until after the members had an opportunity to study the explanatory memorandum.

The meeting then continued to discuss sections 10.2 and 10.3 of WD 2 which deal with the requirements for the packers' quantity control systems. Various amendments were made to the text of these sections which will be incorporated in the next Working Draft. The meeting agreed that the requirements should be detailed in an annex or in a separate guidance document, in particular with regard to the suitability and accuracy of measuring instruments used in the quantity control system and on how to establish that the sampling plans used by the packers comply with the requirements in R 87.

So far, only prepackages that are filled under the "average system" of R 87 (the quantity of product in prepackages must, on average, be equal to the quantity declared on the prepackage) are considered for inclusion in the IQ-Mark Scheme. The meeting, recognizing that many countries apply the minimum system (the quantity of product in each prepackage must be at least the quantity declared on the prepackage) agreed to continue to develop requirements for such a minimum system and, at a later stage, decide whether or not, and under which conditions, to include the minimum system in the IQ-Mark Scheme.

Revision of R 79

In 2007, the CIML approved the revision of OIML Recommendation R 79 *Labeling requirements for prepackages products* as a new work item for TC 6. The Secretariat had subsequently asked the TC 6 members to

submit comments and proposals. These had been circulated to the TC 6 members and were now discussed by the meeting. Where consensus was reached on proposals to amend the existing text of R 79, the Secretariat will include those in a first Working Draft revision of R 79 to be distributed for comment within TC 6.

Requirements for MCBs

Requirements for measuring container bottles (MCBs) are currently contained in OIML R 138 *Vessels for commercial transactions*, published under the responsibility of OIML TC 8 *Measurement of quantities of fluids*. The 2007 CIML Meeting took the decision to transfer the responsibility for MCBs from TC 8 to TC 6 because their primary use is for producing prepackages.

The meeting discussed an issue that had been raised some time ago and was discussed in an exchange of e-mails between TC 6 members earlier this year concerning the suitability for use of MCBs that comply with the requirements of OIML R 138 in a quantity control system according to OIML R 87. It appears that, even if the MCBs comply with those requirements, the resulting prepackages may not comply with the average-requirement of R 87. The requirements for MCBs would have to be amended accordingly.

The meeting decided to ask the CIML to approve the revision of the requirements for measuring container bottles as a new work item for TC 6. This revision will also include some other issues, for instance relating to the marking of the brim capacity in addition to the nominal capacity (the brim capacity should be marked without the unit, to avoid confusion).

R 87 Sampling plans

In 2007, C.H. Sim, of the Institute of Mathematical Sciences of the University of Malaya in Kuala Lumpur, Malaysia, published a paper in *Metrologia*[1] in which he criticized the sampling plans for use by market surveillance authorities provided in section 4.2 of R 87 as not meeting the requirements for the statistical control of prepackages in section 4.1 of R 87. Several statisticians have since confirmed this observation. As a result, the sampling plans would not provide sufficient protection for the consumer.

The meeting noted that the sampling plans in R 87 were often used by packers to control their filling process, although R 87 clearly states that they are for use by market surveillance authorities only. The packer, however, has to implement a quantity control system that includes sampling procedures that ensure that the statistical requirements of R 87 are met. R 87 does not specify how those requirements have to be met.

The BIML will prepare an article for publication in the OIML Bulletin to explain the observed discrepancies in R 87.

Next meeting of TC 6

The next meeting of TC 6 will be held in South Africa, early in 2009 (dates and venue to be confirmed). The main topic will again be the development of an IQ-Mark Scheme. ■

[1] C.H. Sim (2007) *Requirements and process control for quantity of product in prepackages*. Metrologia 44, pp. 29-34.

LIAISON ACTIVITIES

Joint ILAC/IAF General Assembly

20 October 2008 Stockholm, Sweden

RÉGINE GAUCHER
MAA Project Leader
OIML Liaison Officer with ILAC and IAF
BIML

On the occasion of the joint ILAC/IAF/OIML Meeting held on 6 March 2008, it was agreed that the OIML should give a presentation at the joint General Assembly in particular on the current status of cooperation between the OIML and ILAC and IAF.

The presentation included:

- A reminder on the OIML and its activities;
- A presentation of the OIML Certificate System and of the OIML Mutual Acceptance Arrangement;
- A presentation of the cooperation with ILAC and IAF.

The following issues related to this cooperation were highlighted.

OIML cooperation with ILAC

The OIML and ILAC signed a Memorandum of Understanding (MoU) in November 2006. The aim of the cooperation between ILAC and the OIML defined in the MoU comprises various aspects.

The development of common approaches in the interpretation and implementation of ISO/IEC 17025 when applicable to testing in the field of legal metrology is a major issue. In 2008 the OIML finalized a guide for the application of ISO/IEC 17025 to testing laboratories involved in legal metrology testing (OIML D 29, approved at the 43rd CIML Meeting). ILAC participated in this OIML technical work as a liaison organization and was consequently able to comment on the successive drafts. This OIML Document will be a very useful tool to harmonize assessments procedures.

Having an appropriate assessment team is also key in guaranteeing harmonized assessment procedures. The implementation of the OIML MAA requires that the assessment team includes at least one expert in management system evaluation, and also one technical and metrological expert in the relevant field of measuring instrument. To this end, ILAC and the OIML have developed a joint list of assessors and experts who are recognized as being able to conduct assessments in the field of legal metrology (see tables).

Assessors who are responsible for assessing the management system requirements are qualified as lead assessors by the relevant national accreditation body and are trained by the OIML on legal metrology issues to be able to participate in OIML peer assessments.

Technical and metrological experts are validated by an ad-hoc OIML Committee and are specially trained in assessing on the basis of ISO/IEC 17025 in cooperation with ILAC.

ILAC and the OIML have agreed to not restrict this cooperation to the implementation of the OIML MAA, but to extend it to the accreditation of Testing Laboratories whenever legal metrology is included in the scope of the accreditation. To this end, the OIML will draw up a list of experts which is not limited to those categories of measuring instruments that are covered by a Declaration of Mutual Confidence.

A joint assessment procedure is also currently being drafted, in particular to define the operating rules of cooperation within the OIML MAA when the evaluation of a testing laboratory is based on its accreditation.

For the purpose of the MAA, an accreditation assessment has already been conducted by a national accreditation body which included a technical and metrological expert from the joint list in its assessment team.

A work program implementing the MoU is decided on during an annual meeting. The initial program was defined during the first meeting held in March 2007, and was subsequently updated in March 2008. This joint working program is implemented by two liaison officers (one for ILAC and one for the OIML).

The next step is to encourage this cooperation to be completed at national level between ILAC Full Members and Legal Metrology Bodies to pursue the harmonization processes.

OIML cooperation with the IAF

The MoU signed between ILAC and the OIML was extended to the IAF in November 2007.

The level of cooperation between the IAF and the OIML is not as developed as that between ILAC and the OIML, since the OIML has not yet defined formal requirements based on an evaluation of certification bodies (products and/or quality systems) or inspection bodies.

Consequently, the use of ISO/IEC Guide 65, ISO/IEC Guide 17021 and ISO/IEC 17020 is recommended only in certain OIML Documents and Basic Publications. Nevertheless, OIML Member States may already render them mandatory in their national regulations (e.g. ISO/IEC Guide 65 for bodies responsible for type evaluation of measuring instruments, and ISO/IEC 17020 for bodies responsible for initial verification of measuring instruments).

The provisions in the MoU related to cooperation between the IAF and the OIML are similar to those defined between ILAC and the OIML. They include recognition of experts and common interpretation of the appropriate ISO/IEC Standard.

The OIML has this year finalized a guide for the application of ISO/IEC Guide 65 (OIML D 30, approved at the 43rd CIML Meeting) to the assessment of certification bodies in the field of legal metrology. This guide will be updated to include a common interpretation of the future ISO/IEC 17065 which will replace ISO/IEC Guide 65. ■

OIML MAA implementation: Accreditation in legal metrology

1 Lead Assessors

Nominated by ILAC/IAF Full Member Accreditation Bodies to Participate in OIML Peer Assessments

Assessor	National Accreditation Body	Country
Dr. Andreas Odin	Deutscher Kalibrierdienst (DKD)	Germany
Mr. Andre Barel (ISO/IEC 17025)	Dutch Accreditation Council RvA	The Netherlands
Mr. Peter van de Leemput (ISO/IEC 17025)	Dutch Accreditation Council RvA	The Netherlands
Mr. Jaap Prummel (Certification)	Dutch Accreditation Council RvA	The Netherlands
Mr. Brian Beard	National Regulator for Compulsory Specifications (NRCS)	South Africa
Mr. Thomas Scriven	National Regulator for Compulsory Specifications (NRCS)	South Africa
Ms. Bussaba Saelim	Thai Laboratory Accreditation Scheme (TLAS)	Thailand
Ms. Uthumporn Kaewnamdee	Thai Laboratory Accreditation Scheme (TLAS)	Thailand

2 Technical and Metrological Experts validated by the OIML Committees on Participation Reviews (Ad-hoc OIML Committees)

2.1 Category of measuring instrument: Load cells on the basis of OIML R 60

Expert	Institute	Country
Mr. Chris Davies	National Measurement Institute (NMI)	Australia
Ms. Cai Changqing	National Institute of Metrology (NIM)	China (P.R.)
Mr. Denis Vogel	Laboratoire National de Métrologie et d'Essais (LNE)	France
Mr. Olivier Mack	Physikalisch-Technische Bundesanstalt (PTB)	Germany
Dr. Bernd Meissner	Physikalisch-Technische Bundesanstalt (PTB)	Germany
Mr. Kazuo Neda	National Metrology Institute of Japan/ National Institute of Advanced Industrial Science and Technology (NMIJ/AIST)	Japan
Mr. Aad AC Pauwels	NMi Certin B.V.	The Netherlands
Mr. Eugeni Vilalta	Appluscorp	Spain

2.2 Category of measuring instrument: Nonautomatic weighing instruments on the basis of OIML R 76

Expert	Institute	Country
Mr. Chris Davies	National Measurement Institute (NMI)	Australia
Ms. Cai Changqing	National Institute of Metrology (NIM)	China (P.R.)
Mr. Denis Vogel	Laboratoire National de Métrologie et d'Essais (LNE)	France
Mr. Michael Denzel	Physikalisch-Technische Bundesanstalt (PTB)	Germany
Dr. Panagiotis Zervos	Physikalisch-Technische Bundesanstalt (PTB)	Germany
Mr. Kazuo Neda	National Metrology Institute of Japan/ National Institute of Advanced Industrial Science and Technology (NMIJ/AIST)	Japan
Mr. Aad AC Pauwels	NMi Certin B.V.	The Netherlands
Mr. Jan Konijnenburg	NMi Certin B.V.	The Netherlands
Mr. Matej Grum	Metrology Institute of the Republic of Slovenia (MIRS)	Slovenia
Mr. H.F. Ferreira	National Regulator for Compulsory Specifications (NRCS)	South Africa

2.3 Category of measuring instrument: Water meters on the basis of OIML R 49

Expert	Institute	Country
Mr. Fabrice Baron	Veolia Eau, Direction Technique	France
Mr. Banislav Tanasic	Directorate of Measures and Precious Metals (DMDM)	Serbia
Ms. Noelia Herrero	Centro Español de Metrología (CEM)	Spain

LIAISON ACTIVITIES

24th CASCO Plenary Meeting

29–31 October 2008 Geneva, Switzerland

RÉGINE GAUCHER (BIML)
Project Leader / OIML Liaison Officer with CASCO
With the assistance of Sean Mac Curtain and Stefan Marinkovic (ISO/CASCO)

The OIML has "Liaison A" status with ISO, and was represented by the BIML at the 24th CASCO Plenary Meeting to give updates on OIML activities in the field of conformity assessment. On this occasion, the two following OIML Documents were highlighted:

- OIML D 29:2008 *Guide for the application of ISO/IEC Guide 65 to assessment of measuring instrument certification bodies in legal metrology;*
- OIML D 30:2008 *Guide for the application of ISO/IEC 17025 to assessment of testing laboratories involved in legal metrology testing.*

ISO/IEC Guide 65 is currently under revision by ISO/CASCO Working Group 29. In the context of this revision, OIML D 29 is a key Document which should be considered by ISO/CASCO WG 29 since it addresses guidance on the application of ISO/IEC Guide 65 in regulatory areas. In fact, one of the main issues identified by ISO/CASCO to be taken into account in the future ISO/IEC 17065 (which will replace ISO/IEC Guide 65) is its implementation in regulatory areas since product certification is more and more addressed in regulatory schemes, sometimes in combination with accreditation requirements. The BIML represents the OIML in the ISO/CASCO WG 29.

During the Plenary Meeting, ISO/CASCO gave an update on the revision and confirmation of the various ISO/IEC Standards and Guides on conformity assessment. The table below summarizes these updates.

ISO/CASCO also hosted a Workshop on market surveillance on 29 October 2008. In his introduction Alan Bryden, ISO Secretary General, said that the growing volume and the evolving global supply chains of international trade proportionally increase the possibility of nonconforming and dangerous products found in national markets.

He noted that consumer awareness regarding health, safety and the environment has increased, and that regulators, producers and distributors are under greater pressure than ever to ensure the safety of the merchandise on commercial shelves.

In such a demanding environment, he affirmed, market surveillance has a crucial role to play as an essential tool for ensuring safety and quality, protecting consumers and the environment.

Good regulatory practices, as promoted by the World Trade Organization's Agreement on Technical Barriers to Trade, imply the use of International Standards not only for the requirements on products and services themselves, but also on the assessment of their compliance, i.e. to avoid unnecessary duplication of testing and certification.

Mr. Bryden felt that to achieve the optimal oversight process in order to reconcile consumer protection and global trade, it is necessary to focus on monitoring the whole supply chain.

He welcomed participants to the Workshop, which he hoped would lead to a shared understanding of the Standards and guidance needs to be addressed, and to possible future ISO activities in relation to market surveillance.

Olivier Peyrat, ISO/CASCO Chair, noted in his opening remarks that the regulatory framework of each country is adapted to the potential risk for consumers and users. As a consequence, the intensity of market surveillance efforts can vary along the supply chain, making overseeing the conformity assessment process more or less severe.

From a conformity assessment point of view, he stressed that it is important to address the variations in requirements amongst regulatory frameworks as well as in business-to-business and business-to-consumer situations. Indeed, the expectations of consumers are different to those of retailers or manufacturers.

He added that the Workshop represented a good opportunity for ISO to bring together all the stakeholders to discuss this important topic.

Sean Mac Curtain, ISO/CASCO Secretary, summed up these introductions with some concluding remarks. The ISO/CASCO Workshop on Market Surveillance was attended by more than 110 participants; participation was facilitated by the fact that it was held the day before the CASCO plenary meeting, and this significant number of attendees demonstrated that market surveillance is a topical subject.

The workshop was organized into three sessions which addressed respectively: regulators/ governmental bodies, conformity assessment activities and lastly consumers and industry. The sectors and stakeholders represented by the panelists were very diverse (regulators, regional and international organizations, industry sector organizations, consumer organizations, federations of accreditation and certification bodies).

The aims of the workshop were to:

- identify good market surveillance practices at the national level;
- raise awareness and capacity to use the CASCO toolbox in market surveillance activities;
- investigate market surveillance activities related to the oversight processes for conformity assessment activities;
- identify actions when a product does not comply.

The diversity of the panel was welcomed by the Secretary General of ISO Mr. Alan Bryden, and the Chair of ISO/CASCO Mr. Olivier Peyrat. There were representatives from governments, international organizations, industries and consumers.*

The sessions were organized for the presentations to be brief and very informative in order to have dynamic and fruitful round table discussions. Each session was followed by an open discussion where questions from the floor and questions received offline were put to the panelists.*

The conclusions of the Workshop were that CASCO will now develop an action plan to address:

- how to facilitate rapid sharing of information on market surveillance;
- possible future ISO publications on good market surveillance practice;
- market surveillance in the area of services;
- promotion of existing ISO Standards.

* More details available on the dedicated Webpage:
http://www.iso.org/iso/livelinkgetfile?llNodeId=189388&llVolId=-2000

CASCO 24th Plenary Meeting held at the World Meteorological Organization, Geneva, Switzerland

Current standards and Documents developed by ISO/CASCO

Standard or Document	Scope	Title of the Standard or Document	Edition	Additional information
ISO/IEC Guide 7	General	Guidelines for drafting of standards suitable for use for conformity assessment	1994	ISO/IEC 17007 is under development and will replace ISO/IEC Guide 7:1994. It is expected to be published by the end of 2009.
ISO/IEC 17000	Vocabulary and general	Conformity assessment - Vocabulary and general principles	2004	Confirmed for a further five years.
ISO 9001	Quality management systems	Quality management systems - Requirements	2008	New edition published on 15 November 2008.
Guide ISO/IEC 43-1	Calibration and testing	Proficiency testing by interlaboratory comparisons - Part 1: Development and operation of proficiency testing schemes	1997	ISO/IEC 17043 General requirements for proficiency testing will replace ISO/IEC Guide 43:1997 and is expected to be published by the end of 2010.
Guide ISO/IEC 43-2	Calibration and testing	Proficiency testing by interlaboratory comparisons - Part 2: Selection and use of proficiency testing schemes by laboratory accreditation bodies	1997	ISO/IEC 17043 General requirements for proficiency testing will replace ISO/IEC Guide 43:1997 and is expected to be published by the end of 2010.
ISO/IEC 17020	Inspection	General criteria for the operation of various types of bodies performing inspection	1998	Under revision.
Guide ISO/IEC 65	Product cerfication	General requirements for bodies operating product certification systems	1996	ISO/IEC 17065 is under development and will replace ISO/IEC Guide 65:1996
ISO/IEC 17021	Management systems certification	Conformity assessment - Requirements for bodies providing audit and certification of management systems	2006	ISO/IEC 17021-2 Requirements for third party certification auditing of management systems is under development. The revision is expected to be published mid-2010.
ISO/IEC 17024	Certification of persons	Conformity assessment - General requirements for bodies operating certification of persons	2003	Under revision.
ISO/IEC 17011	Accreditation	Conformity assessment - General requirements for accreditation bodies accrediting conformity assessment bodies	2004	Confirmed for a further five years.
ISO/IEC 17050-1	Declaration of conformity	Conformity assessment - Supplier's declaration of conformity -- Part 1: General requirements	2004	Systematic review in 2011.
ISO/IEC 17050-2	Declaration of conformity	Conformity assessment - Supplier's declaration of conformity -- Part 2: Supporting documentation	2004	Systematic review in 2011.

DEVELOPING COUNTRIES

The new post "Facilitator on Developing Country Matters"

EBERHARD SEILER

1 Background

The 13th OIML International Conference adopted the following Resolutions concerning Developing Country issues in Sydney in October 2008:

Resolution No. 11

> The Conference dissolved the Permanent Working Group on Developing Countries and thanked its members for their valuable advice and contribution to the OIML's work on developing countries.

Resolution No. 12

> The Conference established the unsalaried position of "Facilitator on developing country matters", responsible to the CIML President, and asked the BIML to provide such support, within its budget, as may be necessary to this facilitator.

As former Head of the Permanent Working Group I have informed the CIML President and the BIML of my readiness to act as Facilitator and this was accepted.

I would therefore like to familiarize you with my ideas concerning my intentions as Facilitator. Your comments and suggestions are highly appreciated.

2 Ideas of the Facilitator

"To facilitate" means "to make easier", and this is what I have the intention of doing. Suppose you face a problem in the field of legal metrology, either with regard to the correct implementation or interpretation of a certain regulation or with the verification of a certain type of instrument or, indeed, with any other facet of legal metrology. In this case you will have the opportunity to contact me, either by e-mail (eberhardseiler@msn.com) or through the BIML.

I will then look into the issue and check to see whether I might be able to facilitate a solution. My experience in legal metrology and in technical cooperation projects will be helpful for this task. I still maintain good relations with specialized agencies and with experts, and will try to involve them in the event that the issue surpasses my resources.

Since I am not necessarily already familiar with the specific issues you may have in your country, I would invite you to contact me, and to explain exactly what needs to be facilitated. I will then take the necessary actions, and I look forward to receiving your inquiries.

I will also continue to collect relevant information on legal metrology which could be of general interest or at least of interest to specific groups, and to facilitate access to this information.

As an example of this kind of work I refer to the OIML web site. If you look at the section "Developing Countries" you will find under "Translations" lists of OIML Publications which have been translated into Arabic and Portuguese. This will facilitate their use by countries using these languages. More generally proposals, examples and ideas of how legal metrology activities can best be carried out, and how awareness can be raised, will be communicated with the aim of stimulating activities. This approach aims to increase the involvement of the relevant legal metrology services and their representatives through personal contacts via e-mail and the OIML web site. You are invited to take part in this process.

I am honored to have been assigned this role, and look forward to working with you. ■

Developing Countries will be featured in the April 2009 OIML Bulletin

Eberhard Seiler

OIML Certificate System:
Certificates registered 2008.08–2008.10
Up to date information (including B 3): www.oiml.org

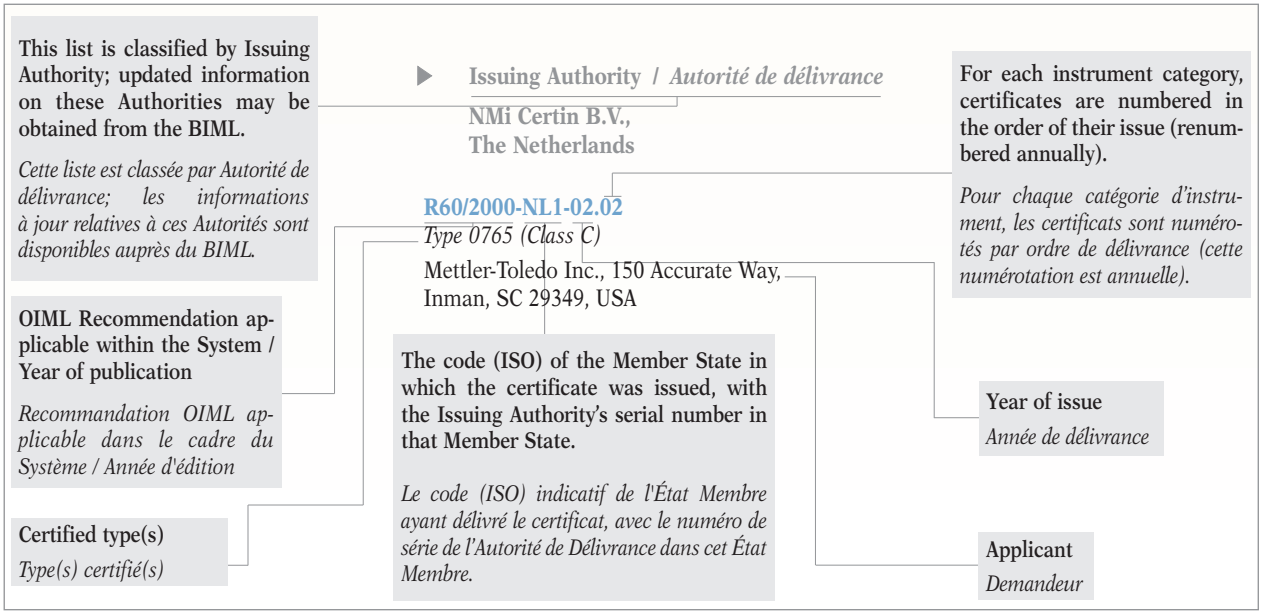
The *OIML Certificate System for Measuring Instruments* was introduced in 1991 to facilitate administrative procedures and lower costs associated with the international trade of measuring instruments subject to legal requirements.

The System provides the possibility for a manufacturer to obtain an OIML Certificate and a test report indicating that a given instrument type complies with the requirements of relevant OIML International Recommendations.

Certificates are delivered by OIML Member States that have established one or several Issuing Authorities responsible for processing applications by manufacturers wishing to have their instrument types certified.

The rules and conditions for the application, issuing and use of OIML Certificates are included in the 2003 edition of OIML B 3 *OIML Certificate System for Measuring Instruments*.

OIML Certificates are accepted by national metrology services on a voluntary basis, and as the climate for mutual confidence and recognition of test results develops between OIML Members, the OIML Certificate System serves to simplify the type approval process for manufacturers and metrology authorities by eliminating costly duplication of application and test procedures. ■



Système de Certificats OIML:
Certificats enregistrés 2008.08–2008.10
Informations à jour (y compris le B 3): www.oiml.org

Le *Système de Certificats OIML pour les Instruments de Mesure* a été introduit en 1991 afin de faciliter les procédures administratives et d'abaisser les coûts liés au commerce international des instruments de mesure soumis aux exigences légales.

Le Système permet à un constructeur d'obtenir un certificat OIML et un rapport d'essai indiquant qu'un type d'instrument satisfait aux exigences des Recommandations OIML applicables.

Les certificats sont délivrés par les États Membres de l'OIML, qui ont établi une ou plusieurs autorités de délivrance responsables du traitement des demandes présentées par des constructeurs souhaitant voir certifier leurs types d'instruments.

Les règles et conditions pour la demande, la délivrance et l'utilisation de Certificats OIML sont définies dans l'édition 2003 de la Publication B 3 *Système de Certificats OIML pour les Instruments de Mesure.*

Les services nationaux de métrologie légale peuvent accepter les certificats sur une base volontaire; avec le développement entre Membres OIML d'un climat de confiance mutuelle et de reconnaissance des résultats d'essais, le Système simplifie les processus d'approbation de type pour les constructeurs et les autorités métrologiques par l'élimination des répétitions coûteuses dans les procédures de demande et d'essai. ■

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Water meters intended for the metering of cold potable water
Compteurs d'eau destinés au mesurage de l'eau potable froide

R 49 (2006)

▶ **Issuing Authority / *Autorité de délivrance***

Laboratoire National de Métrologie et d'Essais, Certification Instruments de Mesure, France

R049/2006-FR2-2008.02 Rev. 2
Electronic cold potable water meter type CZ 3000 S or D
Contazara S.A, Carretera Castellon km 5.5,
E-50720 Sarragosse, Spain

R049/2006-FR2-2008.06
Water meter type D2
Sappel, 67, rue du Rhône, BP 160,
F-68300 Saint-Louis Cedex, France

▶ **Issuing Authority / *Autorité de délivrance***

Physikalisch-Technische Bundesanstalt (PTB), Germany

R049/2006-DE1-2007.03 Rev. 1
Water meter intended for the metering of cold potable water - Type: SM100VR, SM150VR
Severn Trent Metering Services Ltd.,
Smeckley Wood Close, Chesterfield Trading Estate,
Chesterfield S41 9PZ, United Kingdom

R049/2006-DE1-2008.02
Water meter intended for the metering of cold potable water - Type: SM100, SM100E, SM100P or SM001, SM001E, SM001P, SM150, SM150E, SM150P, SM250, SM250E, SM250P
Severn Trent Metering Services Ltd.,
Smeckley Wood Close, Chesterfield Trading Estate,
Chesterfield S41 9PZ, United Kingdom

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Automatic catchweighing instruments
Instruments de pesage trieurs-étiqueteurs à fonctionnement automatique

R 51 (2006)

▶ **Issuing Authority / *Autorité de délivrance***

National Weights and Measures Laboratory (NWML), United Kingdom

R051/2006-GB1-2008.01 Rev. 1
CW3 Checkweigher
Loma Systems Group and ITW Group, Southwood,
Farnborough, Hampshire GU14 0NY, United Kingdom

▶ **Issuing Authority / *Autorité de délivrance***

Physikalisch-Technische Bundesanstalt (PTB), Germany

R051/2006-DE1-2008.02
Automatic catchweighing instrument (postal scale) - Type: LBHG
TeleFrank GmbH, Am Wildengrund 1,
D-98553 Altendambach, Germany

R051/2006-DE1-2008.03
Automatic catchweighing instrument - Type: PAW2000-G
Leich und Mehl und Co. GmbH, Porschestrasse 7,
D-71394 Kernen in Remstal, Germany

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Metrological regulation for load cells (applicable to analog and/or digital load cells)
Réglementation métrologique des cellules de pesée (applicable aux cellules de pesée à affichage analogique et/ou numérique)

R 60 (2000)

▶ **Issuing Authority / *Autorité de délivrance***

National Weights and Measures Laboratory (NWML), United Kingdom

R060/2000-GB1-2005.03 Rev. 1
Single ended shear beam (bending) strain gauge load cell
Vishay PM Onboard Ltd., Airedale House, Canal Road, Bradford BD2 1AG, United Kingdom

R060/2000-GB1-2008.06
Aluminium (2024T4) bending single point load cell
CAS Corporation, # 19 Kanap-ri, Gwangjuk-Myoun, Yangju-Si, 482-841 Gyeonggi-Do, Korea (R.)

R060/2000-GB1-2008.07
Allow steel bending beam strain gauge load cell
Transdutec S.A., CL. Joan Miró 11, E-08930 Sant Adrià de Besós - Barcelona, Spain

R060/2000-GB1-2008.08
Steel compression load cell
Puls Electronik Sistemleri, MAK. SAN. IC VE DIS TIC. LTD. STI., Adnan Kahveci Cad. Kos Koop, Sanayi Sitesi 2, yol N° 9, Hadimköy - Omerli - Istanbul, Turkey

▶ **Issuing Authority / *Autorité de délivrance***

NMi Certin B.V., The Netherlands

R060/2000-NL1-2005.20 Rev. 1
Type: GDN... or 0782A
Mettler-Toledo (Changzhou) Precision Instruments Ltd., 5 Middel HuaShan Road, ChangZhou, Jiangsu, P.R. China

R060/2000-NL1-2008.02
A shear beam load cell - Type: SB-S...
Keli Electric Manufacturing (Ningbo) Co. Ltd., 199 Changxing Road, Jiangbei District, Ningbo City, P.R. China

R060/2000-NL1-2008.03 Rev. 1
A shear beam load cell - Type: FTK
Laumas Elettronica S.r.l., Via Primo Maggio n.6, I-43030 Basiicanova Parma, Italy

R060/2000-NL1-2008.07
A compression load cell - Type: CBL
Laumas Elettronica S.r.l., Via Primo Maggio n.6, I-43030 Basiicanova Parma, Italy

R060/2000-NL1-2008.08
A shear beam load cell - Type: SBK.....
Dini Argeo Srl, Via Della Fisica, 20, I-41042 Spezzano di Fiorano (MO), Italy

R060/2000-NL1-2008.09
A bending beam load cell. - Type: PA29...
Shekel Electronics Scales, Kibbutz Beit Keshet, M.P. Lower Galilee 15247, Israel

▶ **Issuing Authority / *Autorité de délivrance***

Physikalisch-Technische Bundesanstalt (PTB), Germany

R060/2000-DE1-2008.06
Load cell - Strain gauge single point load cell - Type: PC1
Flintec GmbH, Bemannsbruch 9, D-74909 Meckesheim, Germany

R060/2000-DE1-2008.07
Load cell - Strain gauge single point load cell - Type: PC6
Flintec GmbH, Bemannsbruch 9, D-74909 Meckesheim, Germany

R060/2000-DE1-2008.08
Load cell - Strain gauge double bending beam load cell - Type: PC42
Flintec GmbH, Bemannsbruch 9, D-74909 Meckesheim, Germany

R060/2000-DE1-2008.09
Load cell - Strain gauge double bending beam load cell - Type: 011xxK
Sartorius Mechatronics T&H GmbH, Meiendorfer Strasse 205, D-22145 Hamburg, Germany

R060/2000-DE1-2008.10
Load cell - Strain gauge double bending beam load cell - Type: 011xxH
Sartorius Mechatronics T&H GmbH, Meiendorfer Strasse 205, D-22145 Hamburg, Germany

R060/2000-DE1-2008.13
Load cell - Strain gauge compression load cell - Type: SCL3

Precia-Molen, Franse Akker 1, NL-4824 AL Breda, The Netherlands

▶ Issuing Authority / *Autorité de délivrance*
DANAK The Danish Accreditation and Metrology Fund, Denmark

R060/2000-DK1-2008.01
Single point, strain gauge load cell - Type: SSP

ESIT Electronics Ltd., Nisantepe Mahallesi, Alemdar, Umraniye, TR-34775 Istanbul, Turkey

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Nonautomatic weighing instruments
Instruments de pesage à fonctionnement non automatique

R 76-1 (1992), R 76-2 (1993)

▶ Issuing Authority / *Autorité de délivrance*
National Weights and Measures Laboratory (NWML), United Kingdom

R076/1992-GB1-2007.03 Rev. 1
NCR 7878-2000 and 7874-5000 non-automatic weighing instruments

NCR Corporation, 2651 Satellite Blvd, 30096 Georgia, Duluth, Georgia, United States

R076/1992-GB1-2008.05 Rev. 1
Non-automatic weighing instrument comprising the #821E weight indicator connected to a compatible load cell.

Ryco Equipment Inc., 6810 220th Street SW, Mountlake Terrace, WA 98043 Belllingham, United States

R076/1992-GB1-2008.06
Charder MS-4400 Baby hoist scale

Charder Electronic Co. Ltd., 103, Kuo Chung Road, Dah Li City, Taichung Hsien 41262, Chinese Taipei

▶ Issuing Authority / *Autorité de délivrance*
NMi Certin B.V., The Netherlands

R076/1992-NL1-1999.16 Rev. 1
Non-automatic weighing instrument - Type: DS-450...

Teraoka Weigh-System PTE Ltd., 4 Leng Kee Road, #06-01 SIS Building, 159088 Singapore, Singapore

R076/1992-NL1-2001.33 Rev. 1
Non-automatic weighing instrument - Type: DS-470...

Teraoka Weigh-System PTE Ltd., 4 Leng Kee Road, #06-01 SIS Building, 159088 Singapore, Singapore

R076/1992-NL1-2008.18
Non-automatic weighing instrument - Type: DS-162SCS

Shanghai Teraoka Electronic Co. Ltd., Tinglin Industry Developmental Zone, Jin Shan District, 201505 Shanghai, P.R. China

R076/1992-NL1-2008.20
Non-automatic weighing instrument - Type: MARK 500

BEN Engineering S.r.l, Via Venezia Giulia 1, Monza (MI), Italy

R076/1992-NL1-2008.22
Non-automatic weighing instrument - Type: ASP / ATP / AHW / QSP / QTP / QHW

Taiwan Scale Mfg. Co. Ltd., 282, Sec. 3, Hoping W. Road, Taipei, Chinese Taipei

R076/1992-NL1-2008.23
Non-automatic weighing instrument - Family of type: IND560

Mettler-Toledo Inc., 1150 Dearborn Drive, OH 43085-6712 Ohio, Worthington, Ohio, United States

R076/1992-NL1-2008.24
Non-automatic weighing instrument - Family of type: IND780

Mettler-Toledo Inc., 1150 Dearborn Drive, OH 43085-6712 Ohio, Worthington, Ohio, United States

R076/1992-NL1-2008.25
Non-automatic weighing instrument - Type: HT(R) / AT

Shinko Denshi Co. Ltd., 3-9-11 Yushima, Bunkyo-ku, 113-0034 Tokyo, Japan

R076/1992-NL1-2008.26
Non-automatic weighing instrument - Type: IND310

Mettler-Toledo Inc., 1150 Dearborn Drive, OH 43085-6712 Ohio, Worthington, Ohio, United States

R076/1992-NL1-2008.27
Non-automatic weighing instrument - Type: JP / JSP
Taiwan Scale Mfg. Co. Ltd., 282, Sec. 3,
Hoping W. Road, Taipei, Chinese Taipei

R076/1992-NL1-2008.28
Non-automatic weighing instrument - Type: MHS2200/ MHS2400/ MHS2500/ MHS2600
Charder Electronic Co. Ltd., 103, Kuo Chung Road,
Dah Li City, Taichung Hsien 41262, Chinese Taipei

R076/1992-NL1-2008.29
Non-automatic weighing instrument - Type: AW, GW, GWH, FA130, FD130, FG130 & SA130
Excell Precision Co. Ltd., 6F, No. 127, Lane 235,
Pao-Chiao Road, Hsin Tien, Taipei Hsien,
Chinese Taipei

R076/1992-NL1-2008.30
Non-automatic weighing instrument - Type: R420 Series
Rinstrum Pty. Ltd., 41 Success Street,
QLD 4110 Acacia Ridge, Australia

R076/1992-NL1-2008.31
Non-automatic weighing instrument - Type: FM-604, FMM-TPRO3500, FM-605, FMM-TPRO3300
Fook Tin Technologies Ltd., 4/F Eastern Center,
1065 King's Road, Quarry Bay, Hong Kong

R076/1992-NL1-2008.32
Non-automatic weighing instrument - Type: DS-650EV
Shanghai Teraoka Electronic Co. Ltd., Tinglin Industry Developmental Zone, Jin Shan District,
201505 Shanghai, P.R. China

R076/1992-NL1-2008.33
Non-automatic weighing instrument - Type: DS-560
Shanghai Teraoka Electronic Co. Ltd., Tinglin Industry Developmental Zone, Jin Shan District,
201505 Shanghai, P.R. China

R076/1992-NL1-2008.34
Non-automatic weighing instrument - Type: SM-800../SM-880..
Teraoka Weigh-System PTE Ltd., 4 Leng Kee Road,
#06-01 SIS Building, 159088 Singapore, Singapore

▶ **Issuing Authority / *Autorité de délivrance***
Physikalisch-Technische Bundesanstalt (PTB), Germany

R076/1992-DE1-2007.08 Rev. 1
Nonautomatic electromechanical weighing instrument - Type: B II...
Bizerba GmbH & Co. KG, Wilhelm-Kraut-Straße 65,
D-72336 Balingen, Germany

R076/1992-DE1-2007.10
Non-automatic electromechanical vehicle mounted weighing instrument - Type: 9760.xx
Soehnle-Waagen GmbH + Co.,
Wilhelm-Soehnle-Straße 2,
D-71540 Murrhardt, Germany

▶ **Issuing Authority / *Autorité de délivrance***
Swedish National Testing and Research Institute AB, Sweden

R076/1992-SE1-2008.01
A graduated, self-indicating, electronic, multi-interval non automatic weighing instrument - Type: UNI-7 P, UNI-7 H, UNI-7 EV1, UNI-7 EV2, UNI-7 SS, UNI-7 B
Ishida Co. Ltd., 44, Sanno-cho, Shogoin, Sakyo-ku,
606-8392 Kyoto-city, Japan

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Non-automatic weighing instruments
Instruments de pesage à fonctionnement non automatique

R 76-1 (2006), R 76-2 (2007)

▶ **Issuing Authority / *Autorité de délivrance***
NMi Certin B.V.,
The Netherlands

R076/2006-NL1-2008.35
Indicator, as a part of a non-automatic weighing instrument - Type: IND211 or XIG
Mettler-Toledo (Changzhou) Measurement Technology Ltd., No. 1111, West TaiHu Road, ChangZhou XinBei District, 213125 Jiangsu, P.R. China

▶ Issuing Authority / *Autorité de délivrance*

Physikalisch-Technische Bundesanstalt (PTB), Germany

R076/2006-DE1-2008.03
Nonautomatic electromechanical weighing instrument with or without lever system
Sartorius A.G., Weender Landstraße 94-108, D-37075 Göttingen, Germany

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Fuel dispensers for motor vehicles
Distributeurs de carburant pour véhicules à moteur

R 117 (1995) + R 118 (1995)

▶ Issuing Authority / *Autorité de délivrance*

Russian Research Institute for Metrological Service (VNIIMS)

R117/1995-RU1-2003.01 Rev. 4
Midco Fuel Dispensing Pump (MEB Series/MPD Series/MMS Series/Midco SureFill Series)
Midco Ltd., Metro Estate, Vidyanagari Marg, Kalina, 400098 Mumbai, India

R117/1995-RU1-2008.01
Midco Make Fuel Dispensing Pump (MPD/MMS/SureFill Series)
Midco Ltd., Metro Estate, Vidyanagari Marg, Kalina, 400098 Mumbai, India

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Multi-dimensional measuring instruments
Instruments de mesure multidimensionnels

R 129 (2000)

▶ Issuing Authority / *Autorité de délivrance*

Physikalisch-Technische Bundesanstalt (PTB), Germany

R129/2000-DE1-2008.02
Multi-dimensional measuring instrument - Type: LBHG-Modul
TeleFrank GmbH, Am Wildengrund 1, D-98553 Altendambach, Germany

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Automatic instruments for weighing road vehicles in motion
Instruments à fonctionnement automatique pour le pesage des véhicules routiers en mouvement

R 134 (2003)

▶ Issuing Authority / *Autorité de délivrance*

NMi Certin B.V., The Netherlands

R134/2003-NL1-2008.01 Rev. 1
Automatic instrument for weighing road vehicles in motion. Total vehicle weighing - Type: DINA 3
Dinamica Generale s.r.l, Via Mondadori 15, I-46025 Poggio Rusco, Italy

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AU1 - National Measurement Institute	R 49	R 50	R 51	R 60	R 76	R 85
	R 106	R 107	R 117/118	R 126	R 129	

AUSTRIA

AT1 - Bundesamt für Eich- und Vermessungswesen	R 50	R 51	R 58	R 61	R 76	R 85
	R 88	R 97	R 98	R 102	R 104	R 106
	R 107	R 110	R 114	R 115	R 117/118	

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BE1 - Metrology Division	R 76	R 97	R 98

BRAZIL

BR1 - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial	R 76

BULGARIA

BG1 - State Agency for Metrology and Technical Surveillance	R 76	R 98

CHINA

CN1 - State General Administration for Quality Supervision and Inspection and Quarantine	R 60	R 76	R 97	R 98

CZECH REPUBLIC

CZ1 - Czech Metrology Institute	R 49	R 76	R 81	R 85	R 105	R 117/118

DENMARK

DK1 - The Danish Accreditation and Metrology Fund	R 50	R 51	R 60	R 61	R 76	R 98
	R 105	R 106	R 107	R 117/118	R 129	
DK2 - FORCE Technology, FORCE-Dantest CERT	R 49					

FINLAND

FI1 - Inspecta Oy	R 50	R 51	R 60	R 61	R 76	R 85
	R 106	R 107	R 117/118			

FRANCE

FR1 - Bureau de la Métrologie	*All activities and responsibilities were transferred to FR2 in 2003*
FR2 - Laboratoire National de Métrologie et d'Essais	R 31 R 49 R 50 R 51 R 58 R 60 R 61 R 76 R 85 R 88 R 97 R 98 R 102 R 105 R 106 R 107 R 110 R 114 R 115 R 117/118 R 126 R 129

GERMANY

DE1 - Physikalisch-Technische Bundesanstalt (PTB)	R 16 R 31 R 49 R 50 R 51 R 58 R 60 R 61 R 76 R 88 R 97 R 98 R 102 R 104 R 105 R 106 R 107 R 110 R 114 R 115 R 117/118 **R 126** R 128 R 129 R 133 R 136

HUNGARY

HU1 - Országos Mérésügyi Hivatal	R 76

JAPAN

JP1 - National Metrology Institute of Japan	R 60 R 76 R 115 R 117/118

KOREA (R.)

KR1 - Korean Agency for Technology and Standards	R 76

THE NETHERLANDS

NL1 - NMi Certin B.V.	**R 21** R 31 R 49 R 50 R 51 R 60 R 61 R 76 R 81 R 85 R 97 R 105 R 106 R 107 R 117/118 R 126 R 129 R 134

NEW ZEALAND

NZ1 - Ministry of Consumer Affairs, Measurement and Product Safety Service	R 76

NORWAY

NO1 - Norwegian Metrology Service	R 50 R 51 R 61 R 76 R 105 R 106 R 107 R 117/118 R 129

POLAND

PL1 - Central Office of Measures	R 76 R 98 R 102

ROMANIA

RO1 - Romanian Bureau of Legal Metrology	R 97 R 98 R 110 R 114 R 115

RUSSIAN FEDERATION

RU1 - Russian Research Institute for Metrological Service	R 31	R 50	R 51	R 58	R 60
	R 61	R 76	R 85	R 88	R 93
	R 97	R 98	R 102	R 104	R 105
	R 106	R 107	R 110	R 112	R 113
	R 114	R 115	R 117/118	R 122	R 126
	R 128	R 129	R 133	R 134	

SLOVAKIA

SK1 - Slovak Legal Metrology (Banska Bystrica)	R 49	R 76	R 117/118		

SLOVENIA

SI1 - Metrology Institute of the Republic of Slovenia	R 76				

SPAIN

ES1 - Centro Español de Metrología	R 51	R 60	R 61	R 76	R 97
	R 98	R 126			

SWEDEN

SE1 - Swedish National Testing and Research Institute AB	R 50	R 51	R 60	R 61	R 76
	R 85	R 98	R 106	R 107	R 117/118

SWITZERLAND

CH1 - Federal Office of Metrology METAS	R 16	R 31	R 49	R 50	R 51
	R 60	R 61	R 76	R 97	R 98
	R 105	R 106	R 107	R 117/118	

UNITED KINGDOM

GB1 - National Weights and Measures Laboratory	R 49	R 50	R 51	R 60	R 61
	R 76	R 85	R 98	R 105	R 106
	R 107	R 117/118	R 129	R 134	
GB2 - National Physical Laboratory	R 97				

UNITED STATES

US1 - NCWM, Inc.	R 60	R 76			

VIETNAM

VN1 - Directorate for Standards and Quality (STAMEQ)	R 76				

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  Mr. Sekwang Lee

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4-5 February 2009, NWML, United Kingdom (To be confirmed)
OIML TC 9/SC 2 "Automatic weighing instruments"

17-20 March 2009, South Africa (Venue to be confirmed)
OIML TC 6 "Prepackaged products"

5-8 May 2009, Douai, France
TC/SC Secretariat Training - Second Session

2-5 June 2009, Croatia (To be confirmed)
OIML Seminar on smart meters

17, 18 and 19 June 2009, METAS, Switzerland
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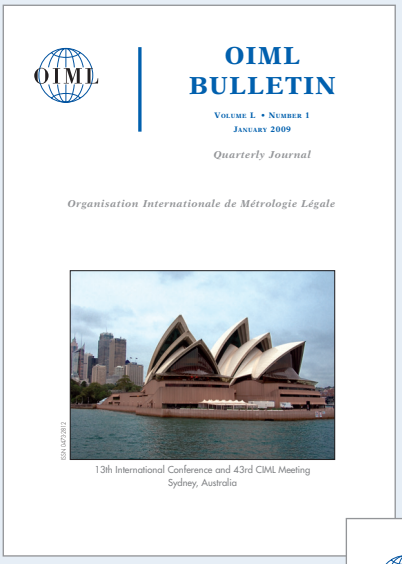
None



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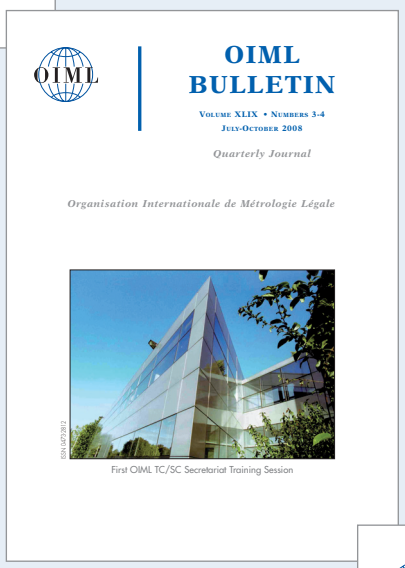

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