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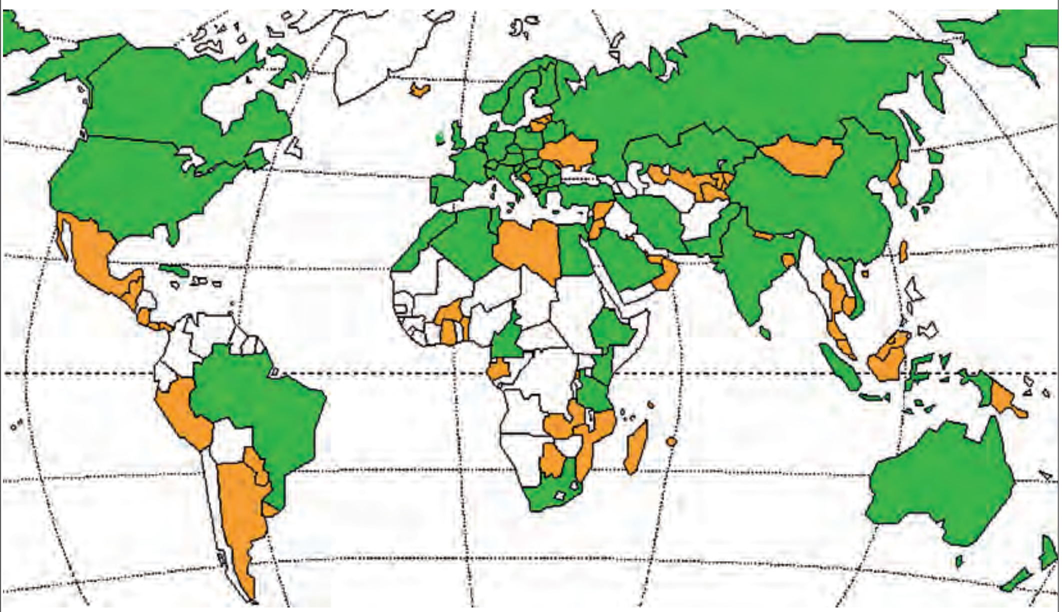

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Working across cultures in legal metrology

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Contents

OIML BULLETIN

VOLUME LI • NUMBER 3
JULY 2010

technique

evolutions

update

WORKING ACROSS CULTURES -
See article, page 17

Sommaire

BULLETIN OIML
VOLUME LI • NUMÉRO 3
JUILLET 2010

technique

évolutions

informations

Editorial

Jean-François Magaña
Director, BIML

Recognizing others' competence

In this issue of the Bulletin we publish three articles that address the same subject, but via three different approaches. The common theme is "are we willing to recognize each others' competence?"

The first approach is traceability in a field where this activity is relatively limited in each country. Only a few countries have set up a standard for calibrating polarimetric quartz control plates. For many years, a number of European countries used to obtain traceability from the PTB, as it was often not appropriate to set up national calibration facilities. Such an example shows that for some categories of measurement, recognition may be the only way to protect consumers and users at an acceptable cost.

The second approach describes several options to set up a metrology infrastructure using national resources versus using those of other countries. Mutual recognition and acceptance are necessary to establish a comprehensive and efficient metrology system when such a system has to be developed.

The third approach addresses the difficulties and obstacles facing a country for it to be easily able to accept what other countries do. A natural tendency in each country, unfortunately, is to consider that other countries do not have the appropriate experience, competence or objectives. But when one looks more closely at this, one can see that the major difference is in fact in the way countries express similar concerns and requirements, i.e. essentially a cultural difference.

When one meets colleagues from other countries, one understands that the main differences are neither their objectives, nor the technical issues (with which everyone is in fact familiar). The main difficulty is to attentively listen to others and to be willing to understand their concerns. This requires long and frequent discussions, and people must remain really open-minded. This is the area in which we all have to progress, and is a major issue for the OIML. ■

POLARIMETRY AT INMETRO

Calibration of quartz control plates by high resolution polarimetry

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Abstract

A high resolution polarimeter is being assembled at Inmetro for calibrating quartz control plates, standards for saccharimeters and industrial polarimeters. The first measurements made by this new instrument, using plates which were previously calibrated at the PTB, are discussed in this paper.

1 Introduction

The metrological traceability of standards is of great importance to ensure the competitiveness of national industry. Quartz control plates are transfer standards used to calibrate polarimeters and saccharimeters, a polarimeter being a specialized instrument used for the measurement of saccharosis concentration.

These instruments are used in the sugar cane, food, chemistry and pharmaceutical industries. They measure the angle of rotation of the polarization plane of radiation after traversing a chiral medium. This angle is related to the concentration of the substance or to the thickness of the crystal under test. The angle rotation from a quartz control plate corresponds to the rotation introduced by a standard solution of saccharosis measured under the established conditions prescribed by ICUMSA (International Commission for Uniform Methods of Sugar Analysis) standard SPS-1 (1998) and OIML R 14:1995 [1].

The recommendations of these organizations concerning the construction of saccharimeters, reference quartz plates and calibration procedures are internationally recognized and are followed by most of the countries with which Brazil engages in trade and business, which is what motivated Brazilian industry to request this service here in Brazil.

This paper was first published in *Produto & Produção*

2 Objectives

The Optical Division of Inmetro (Diopt) [2] is building a high resolution polarimeter for the calibration of quartz control plates in collaboration with the Polarimetry Laboratory of the PTB [3], the only institution that performs primary calibrations of quartz control plates. Inmetro's instrument is similar to the one recently built at the PTB. A first prototype was assembled at Inmetro with parts that were already available, and in 2008 Alvarenga et al. [4] employed a semi-automatic method to perform the measurements using standards that had already been calibrated at the PTB.

Recently the remaining imported parts of the equipment arrived and assembly of the new instrument has started, automated and programmed in the Interferometry Laboratory (Laint). It has a high resolution automatic rotation stage with an optical encoder to rotate the polarizer, and a linear stage to position the quartz plate, which allows fast repetition of the measurements, achieving greater reproducibility, which also leads to a much smaller uncertainty of the results.

3 Methods and experimental setup

The polarimetric method for measuring polarization rotation angles of optically active substances is well known, and is summarized in [2]. In a simple polarimeter, a beam of light crosses two polarizers where its intensity is monitored by a detector. The first polarizer is fixed and selects the incoming polarization plane; the other, mounted on a graduated circle, is rotated by 90° and consequently no light reaches the detector. On the graduated circle this is the reference point. The second step is to introduce the sample in the light pathway between both polarizers. The detector will indicate an increase in the signal, indicating that the polarization plane of the light was rotated. The third step is to restore the condition of minimum intensity as it was before (the null condition), which is done by rotating the second polarizer away from the reference point until the signal in the detector drops again to a minimum. The actual restoration angle read in the graduated circle corresponds to the rotation angle of the radiation polarization plane caused by the sampled substance.

This polarization rotation angle is temperature and wavelength dependent as seen in Bunnagel et al. (1966) [5], Zander et al. (1974) [6], and Emmerich et al. (1998) [7], and for crystalline substances the alignment of their optical axis and the radiation beam direction plays an important role as well. A high resolution polarimeter thus must obey the ICUMSA and OIML specifications SPS-1 and R 14 for their construction and operation; for a primary instrument, the requirements are much more stringent, in order to keep the uncertainty as low as possible.

The new polarimeter under construction, shown in Figure 1, utilizes the 633 nm radiation of a stabilized He-Ne laser, to comply with the requirement of well known incident wavelength. High quality optical elements are employed such as a Faraday isolator to cut back reflections into the laser tube, and calcite Glan-Taylor polarizers with a high extinction ratio.

An automatic programmable robust rotation stage is used to mount the analyzer with an optical encoder with 36000 lines, two reading heads and an interpolation card for a very precise angle reading. An automatic programmable linear stage is used for the positioning of the quartz plate in and out of the laser beam. There are two thermalization chambers with a circulating water bath for mounting the quartz plates which are under construction; meanwhile the plates are held in a sample holder inside a small foam cup with a high resolution temperature sensor attached, and all the linear stage is inside a metallic insulated box, where the sample holder slides in and out of the laser beam. A second temperature sensor (air model) is located above the metallic box to register the room temperature.

A very important step is the exact alignment of the whole system and of the quartz plates every time they are mounted and for this an autocollimator is used. The quartz plate standards are made under directions established by the ICUMSA SPS-1 (1998) standard and are tested for these conditions before the polarimetric measurements. Standards that failed the pretests are not calibrated. Quartz plates are discs made of clear, transparent, crystalline quartz that is free from any inclusions or defects, cut perpendicular to the quartz optical axis and making an angle deviation smaller than 10′ of the arc. The flatness and parallelism of the faces are tested by interferometric measurements, and their actual dimensions are measured: they should be 16 mm in diameter, with a maximum thickness of 1.6 mm.

Inmetro has seven quartz plate standards of very high quality bought from Bernhard Halle GmbH, Germany. These standards were characterized and calibrated using the PTB high resolution polarimeter in 2005, and are being measured in our developing setups. In our setup all instruments are programmed using LabView and the main program reads and registers the temperature, the angular position from the encoder, and the radiation intensity from the detection system.

The procedure starts with mounting the quartz plate in a sample holder attached to a positioning platform (covered by a foam “cup”) mounted over the motorized sliding table, that is covered by the insulated box. An autocollimator is used to align the plate exactly. The temperature sensor is positioned inside the “cup” as close as possible to the plate. After being covered with the box, the whole system is set to thermalize overnight. Figure 1 shows the actual setup. From right to left: the laser beam crosses the optical isolator, a quarter waveplate, the rotating polarizer, the quartz plate under measurement, the Faraday modulator, the fixed polarizer, and the photodetector.

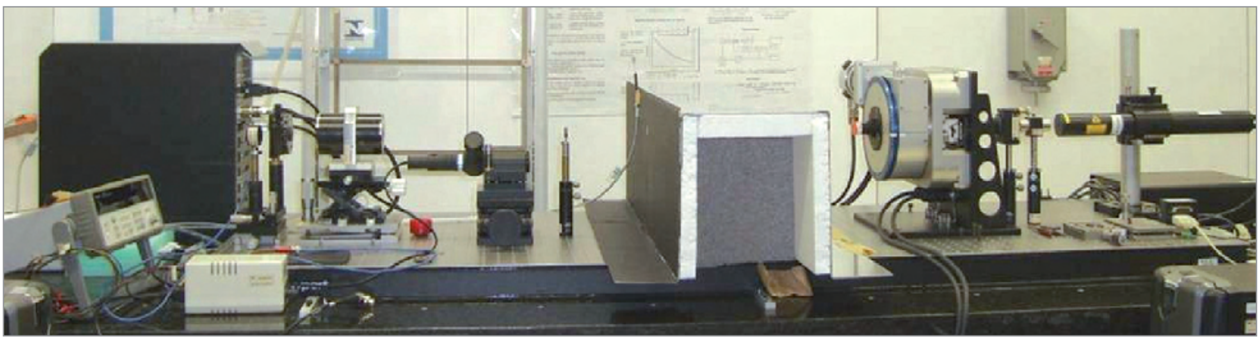

Figure 1 The new polarimeter under construction. Main components from right to left: stabilized He-Ne laser, analyzer in a rotator, insulated box covering the linear stage, autocollimator, Faraday modulator, polarizer, photodetector

Table 1 Polarization angular rotation and uncertainties of the quartz plates measured in the Prototype and calibrated at the PTB

Plate Number	PTB (U k=2)	Prototype (U k=2)
IP880	–(29.749±0.001)°	–(29.750±0.003)°
IP882	–(29.749±0.001)°	–(29.752±0.004)°
IP883	–(29.747±0.001)°	–(29.749±0.002)°
IP886	(29.817±0.001)°	(29.814±0.008)°

Two different methods for determining the null condition are under implementation in the radiation detection system. One employs a Faraday modulator built at the laboratory and a f/f modulation technique with a lock-in.

The resulting acquired points near the null region are fitted by a straight line, and the crossing Y = 0 point determines the angular position. The other method directly measures the output of the photodetector with a multimeter. The resulting points acquired near the region of minimum intensity are fitted to a second order polynomial, and the minimum point is calculated from the fitting parameters. This last method is already being used here by an earlier prototype built with a manual polarizer rotator and detailed in [4], and the results are shown in Table 1.

This prototype polarimeter has a device to rotate the polarizer with a digital display that shows the angular position to within 15" of uncertainty in the reading. A semi-automatic acquisition mode was used, where the angular position of each step was digitized in a window in the LabView program, which acquires the temperature and photodetector output from the instruments, and records all the data in a table.

The drawbacks are that the instrument is manually activated, which results in delays in the acquisition of refined data point by point, and in backlash problems, which introduces errors after repetitive series of measurements.

The new automatic equipment permits several repetitions of the measurements in the same day, and will even fully calibrate one quartz plate a day, contrary to the prototype which took two weeks to obtain measurements for just one quartz plate. On the prototype the null detection point was obtained by directly reading in dark conditions, and by using fitting routines to the data points. By that time, our modulator was not yet ready. Our new instrument will run measurements in both configurations in order to establish comparison conditions.

4 Results and discussion

The results of the measurement of four quartz plates obtained with the prototype are shown in Table 1. The first column shows the identification, the second column shows the PTB calibration values obtained for the three levorotatory plates (negative sign) and one dextrorotatory plate; the third column shows the prototype results, each being the average of several repetitions. The presented expanded uncertainty has a coverage factor of $k = 2$. These results agree with those of the PTB to one tenth of a degree: they are close but not good enough for a primary calibration service, where uncertainties to the order of ± 0.001° are desirable.

The setup with the new equipment is being tested with both acquisition modes: the modulation and the direct reading. In both, a series starts with the plate in front of the laser beam, the analyzer is rotated with a larger speed until it reaches a previously assigned angular position, then it slowly advances through a region around 1° at the minimum in order to have points read at an average step of (0.0026 ± 0.0003)°.

Next, it scans the angular region 180° apart, and while continuously turning, repeats two more scans and pauses while the linear stage moves the quartz plate away from the laser beam. The analyzer now advances to the next minimum intensity region corresponding to the two crossed polarizers (whose minimum is the angular reference position); it continuously turns until four scans are acquired. The rotation stage pauses again and the quartz plate is positioned in front of the laser beam. This is repeated four times, in order to have 16 scans for the quartz plate and 16 scans for the reference. The minimum (or null) angular position is determined from the fittings of parabolas (straight lines) to the region slowly scanned. The quartz plate angular rotation is obtained by the difference from the averaged four scans of the reference and each plate angular position. The angular rotation of the plate should be determined at 20 °C and thus a correction formula (1) is used where the measured temperature during each slow scan is averaged. The resulting 16 repetitions are then averaged to give one series result.

The acquisition of one series takes about one hour, whereas each slow scan region takes about 1 minute. During one day this series can be repeated to study the effect of the overall laboratory ambient conditions in the average rotation value. The seven plates were mounted and measured, then some of them were mounted again on different days, to study repeatability conditions, using the direct method. The modulation method, which is the one in use at the PTB, is still being implemented, and our results are not yet satisfactory.

Figure 2 shows a plot of one slowly scanned region using the Faraday modulator, for sample IP886. The inset shows the linear fitting to the null adjacencies, where the Y = 0 crossing corresponds to the angular position. For the IP886 quartz plate the PTB's calibration value is (29.817 ± 0.001)° and the resulting average and standard deviation times 2 for this series of

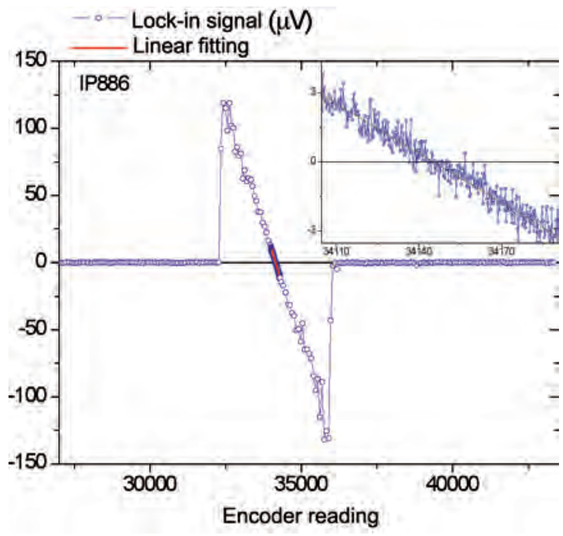

Figure 2 Photodetector f/f modulated signal output as a function of rotary encoder reading. The inset shows the detail of a linear fitting through the zero signal crossing region

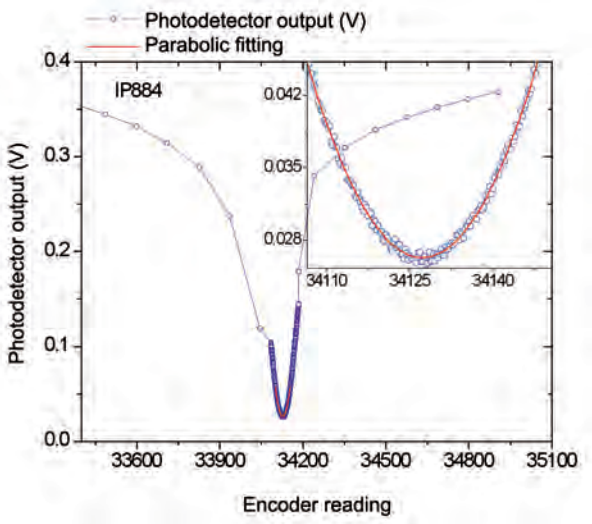

Figure 3 Photodetector output as a function of rotary encoder reading. The inset shows the detail of a parabolic fitting through the minimum intensity region

16 repetitions of our measured polarization angular rotation is: (29.803 ± 0.008)°, where the declared uncertainty U corresponds to a coverage factor $k = 2$. This result is worse than that obtained by the earlier prototype, as seen in Table 1. The main drawback is the correct choice of the modulation parameters, a compromise between excitation frequency and amplification power, which demanded the acquisition of a new, more powerful amplifier to feed the Faraday modulator, still undergoing testing. At this point we are still improving the modulation parameters.

Figure 3 shows a slow scanned region using the direct method. The inset presents the parabolic fitting to the minimum region. The parabola is a good approximation for the real phenomena just close to the minimum intensity region. The choice of the fitted region was made taking into account the residuals and the quality parameters for the fitting. Another test consisted in purposefully choosing a larger and a smaller set of points and comparing the determination of the minimum position from the parameters, in order to account for subtle variations in the choice of fitting points.

This last test showed that a mistake in the choice of the group of points for the fittings resulted in an uncertainty around 8×10^{-5} angular degrees, which is one order of magnitude smaller than the standard deviation of the averaged 16 measurements.

The evaluation of the uncertainty due to the encoder reading was carried out in two steps: measuring the spread of the readings with the rotation stage standing still, and reading this position as a function of time, over several hours, in order to account for laboratory temperature variations over the hardware. In the most pessimistic case, this uncertainty can be estimated to be of the order of 4×10^{-5} angular degrees. The actual acquisition time is about 1 minute per slow scan, and about 1 hour for the whole 16 repetitions of one series. Considering the acquisition time and the actual angular step of 0.0026°, this uncertainty in the position due to the encoder is very small.

The data analysis was performed using OriginPro 8 software. The value of the polarization rotation angle of each measurement at T = 20 °C, $R(\theta,T)$, was calculated using the expression in OIML R 14:1995:

$$R(\theta,T) = \frac{\theta}{1 + \alpha T - 20\alpha} \qquad (1)$$

where:

α = 0.000144 is the quartz thermal expansion coefficient,

θ is the measured polarization rotation angle, and

T is the average temperature near the quartz plate measured during the slow scan.

From each series of 16 measurements, an average value and the corresponding standard deviation was taken. This takes into account the repeatability. Plates that have been measured in more than one series, or which were mounted again on different days, had their values averaged by a weighted average. This takes into account the reproducibility.

Table 2 shows the values of the averaged measurements of the seven standard quartz plates that had already being calibrated at the PTB. The uncertainty

Table 2 Polarization angular rotation and uncertainties of the quartz plates measured in the laboratory and calibrated at the PTB. The identification of plate and the average method are indicated in the first column; the second column shows the values calibrated at the PTB and the third column shows the results of our measurements at the laboratory

Plate Number	PTB (U k=2)	Laboratory (U k=2)
IP880 [a]	–(29.749±0.001)°	–(29.7491±0.0004)°
IP881 [a]	–(29.750±0.001)°	–(29.7511±0.0008)°
IP882 [c]	–(29.749±0.001)°	–(29.751±0.008)°
IP883 [b]	–(29.747±0.001)°	–29.7489±0.0002)°
IP884 [c]	(29.859±0.001)°	(29.859±0.003)°
IP885 [a]	(29.796±0.001)°	(29.797±0.002)°
IP886 [a]	(29.817±0.001)°	(29.819±0.001)°

[a] repeatability: series of 16 measurements; simple average

[b] reproducibility: different series, same mounting; weighed average

[c] reproducibility: different series and mountings; weighed average

is U, $k = 2$. The negative signal corresponds to the levorotatory quartz plates, by convention. Comparing the values measured for the earlier prototype, in Table 1, with our values measured for the new setup, one can see that there is a great improvement in the precision and exactitude.

Comparing our measurements with the calibrated values at the PTB, one can see a very good agreement for IP880, IP884 and IP 885, even though the uncertainty in IP884 is greater than expected.

Plates IP881 and IP886 present a mean value and a deviation that are still considered as being in good agreement.

For IP882 and 883, although their mean values differ from the PTB's by 0.002°, their uncertainties are not good: IP882 presents too large an uncertainty due to the reproducibility factor: from six repeated series, one presented a value that is too low. We examined the ambient factors, the data analysis, but could not find any reason to exclude it from the weighted average, so we kept it.

IP883 presents a very small uncertainty, derived from the weighted average of two series, one measured on one day, and the other on the following day. Their mean individual values and standard deviation ($k = 1$) are $-(29.749 \pm 0.0005)°$ and $-(29.7488 \pm 0.0004)°$, which shows a very good repeatability of the measurements in these two series comprising 32 repetitions.

The uncertainty calculated just as the standard deviation of the average of these values, without weighting, leads to a larger value of $\pm 0.0002°$, which becomes closer to the PTB's when making $k = 2$, thus resulting in $\pm 0.0008°$. The results are presented with the small number in order to be consistent in the comparisons. Reproducibility measurements are underway, and those figures may change.

The results of the measurements presented in Table 2 are depicted in Figure 4; the same scale is used in the four graphs to compare the uncertainties. The red triangles are the calibration values measured at the PTB in their high resolution polarimeter, declared uncertainty is U, $k = 2$. The blue dots and blue diamonds are the levorotatory and dextrorotatory plate measurements performed at the first assembling of the new polarimeter set up at Diop/Laint. The uncertainty is $k = 2$.

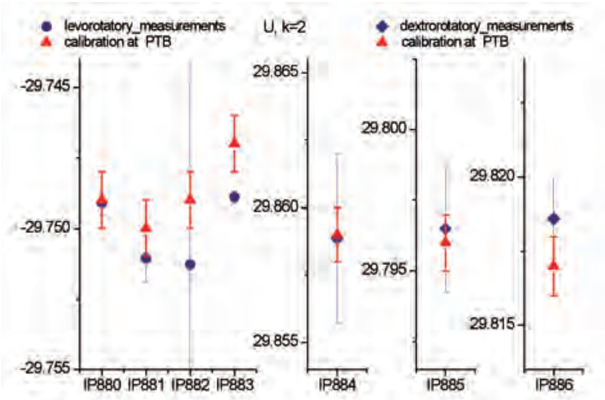

Figure 4 First results of the measurements of the polarization angular rotation of seven quartz control plates by the new equipment at Diopt/Laint: 4 levorotatory and 3 dextrorotatory. The triangles are previous calibration values measured at the high resolution polarimeter at the PTB

5 Conclusions

We have presented the first results of the measurements of seven quartz control plates realized in the new set up of the high resolution polarimeter under construction at Diopt/Laint.

The comparison with a previous prototype showed a great improvement in the repeatability and time spent for data acquisition: whereas in the prototype one slow scan took 30 min, now the same operation takes 1 minute. One series of 16 repetitions (32 slow scans plus translating movements) now takes 1 hour.

Time is important not only to speed up calibrations, but also to ensure that the relevant ambient factors are in the best stable conditions during the series measurement. The results show good agreement with the values calibrated at the PTB, and the uncertainties are close to those required (but not yet exactly as required) for a calibration service.

The assembling of the polarimeter is still under improvement. Considering the fact that the thermalization chambers with the special sample holder are not yet available, and that the measurements were not performed under the final assemblies, these results are still very promising with a view to soon being able to offer a calibration service for industry.

Acknowledgements

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References

[1] OIML R 14:1995 *Polarimetric saccharimeters graduated in accordance with the ICUMSA International Sugar Scale*.
ICUMSA Specification and Standard *SPS-1(1998)*.

[2] Alvarenga, A.D., Erin, M., França, R.S., Luna, F.R.T., Belaidi, H., Couceiro I.B., "*A new polarimeter applied to sugar industry in Brazil*", proceedings of the "Metrology 2005" International Conference, Lyon, France, 2005.

[3] Schulz, M., Fricke, A., Stock, K., Alvarenga, A.D., Belaidi, H., "*High accuracy polarimetric calibration of quartz control plates*", proceedings of the "IMEKO XVIII World Congress 2006", September 17–22, 2006, Rio de Janeiro, Brazil.

[4] Alvarenga, A.D., Souza, K., Borges, E.M., França, R.S., Belaidi, H., "*Cálculo da incerteza de medição do ângulo de rotação do plano de polarização da luz por um padrão de quartzo*"; Enqualab 2008 - Congresso da Qualidade em Metrologia-REMESP, 9–12 June 2008, São Paulo, Brazil.

[5] Bünnagel, R. and Oehring, H.A., "*Messung der Rotationdispersion an einem Quartz für die polarimetrische Bestimmung optischer Schwerpuntke*", Zeitschrift für angewandte Physik, Vol. 20, pp. 419–423, 1966.

[6] Zander, K., Seiler, W., Bunnagel R., "*Precision measurements of the rotational dispersion of aqueous sucrose solutions from 18 °C to 30 °C as a basis for the International Sugar Scale*", Zucker Vol. 27, pp. 642–647, 1974.

[7] Emmerich, A., Keitel, J., Mosche, M., Seiler, W., "*Rotatory dispersion of sucrose solutions and quartz in the near infrared*", Zuckerindustrie Vol. 123, pp. 329–339, 1998.

GLOBALIZATION

The optimization of multifunctional national metrological systems

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Abstract

Questions of globalization of the world economy and the role of national metrological services, together with the activities of international and regional organizations in the field of metrology are considered in this article. Models are proposed for multifunctional national metrological systems, and ways to optimize national normative bases are considered.

Introduction

Defending the interests of both customers and the state concerning the quality and safety of national products (i.e. processes, production and services) with the aim of rendering them competitive in the global market is impossible without taking into account modern metrological norms and rules, which are presented in numerous national Normative Documents (ND).

The removal of technical barriers in international trading and the acceleration of coordination are very much needed when considering metrological questions at international, regional and national levels. However, at international and regional levels there is a division of plenary powers in the field of metrology between a small number of organizations. At the same time there are tendencies towards a division of plenary powers at national level between a small number of bodies, which requires even greater efforts in order to resolve these questions pertaining to metrology.

The role of the national metrological services is also considerably multiplied as it provides the results of measurements of the national metrological institutes (NMI) and ensures the effective functioning of the national metrological services (NMS) in terms of globalization of the economy and international division of labor.

1 Globalization of the world economy and the role of the national metrological services

Metrology is a discipline in which the key element is a high degree of international, regional and national coordination and the general tendency is towards globalization of the world economy. Modern metrology is marked by close cooperation and partnerships between the various countries in the world, therefore however much individual countries decide on which metrological tasks must be carried out nationally, countries can easily remain isolated from each other. However, coordinating the concepts of legal, fundamental and industrial metrology, together with their requirements and procedures is a difficult and lengthy process.

Figure 1 shows a possible result of guaranteeing metrological equivalence of measurements and mutual recognition of their results in the Global Metrological System (GMS) [1–4].

For the GMS to function effectively, above all harmonization is required at the national level of legislation in the field of metrology on the basis of the relevant documents, Recommendations and standards of the various international organizations involved. One OIML International Document (OIML D1 – *Elements for a Law on Metrology* [5]) is particularly instrumental in this.

2 Metrological activity of international and regional organizations

Measurement provides the foundation for many types of activity, therefore numerous international and regional organizations are engaged in questions of standardization of metrological requirements. They determine the basic concepts and policy of metrological harmonization, and define the relevant harmonization documents. Generally, in many countries there is a trend towards reducing facilities and resources dedicated to metrological activity, therefore close cooperation within the framework of the network of international and regional organizations is of utmost importance.

Table 1 summarizes information on the basic tasks of these international and regional organizations that carry out work in the field of metrology [6, 7].

Almost all the countries that are members of international metrological organizations also participate in RMOs. The most developed network of regional organizations engaged in metrology is located in Europe; on other continents such regional organizations

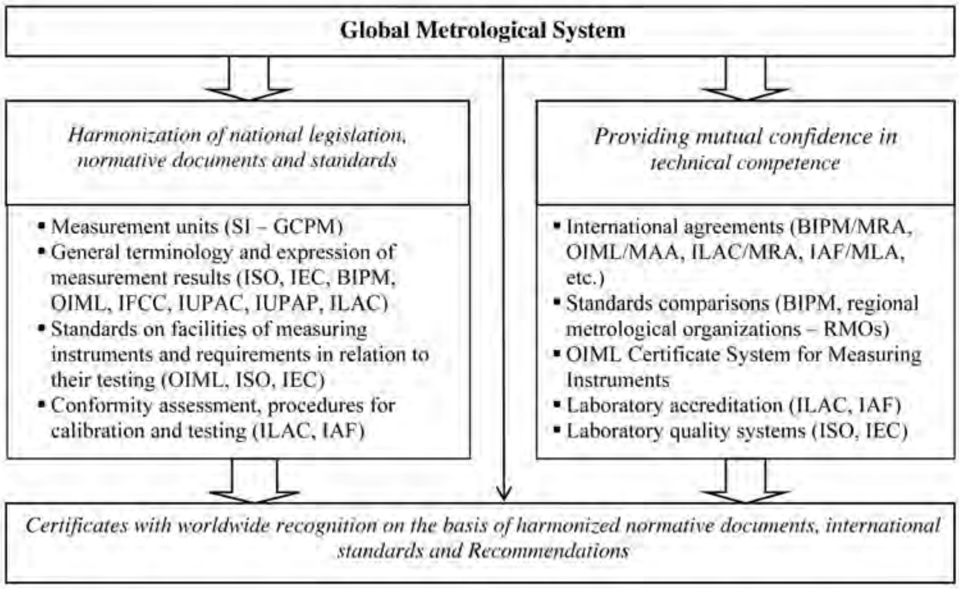

Figure 1 Metrological equivalence of measurements and mutual recognition in the Global Metrological System (GMS)

make up groups within the framework of collaboration in regional political and economical associations, for example the Asia Pacific Economic Cooperation (APEC) or the Southern African Development Community (SADC).

In complement to the main RMO for the Americas, the Inter American Metrology System (SIM) the members of the Organization of American States (OAS) also participate in NORAMET (3 North American countries), CAMET (7 Central American countries), ANDIMET (5 Andean Region countries), SURAMET (5 South American countries) and CARIMET (14 Caribbean countries).

In complement to the main RMO for African countries, the Intra-African System for Metrology (AFRIMETS), many countries also participate in MAGMET (3 North African countries), CEMACMET (6 Central African countries), EAMET (6 South-East African countries), SADCMET (15 South African countries) and SOAMET (8 Western African countries).

Table 2 shows the general basic characteristics of these international and regional organizations and the types of their metrological activities.

3 Models of functioning of the national metrological systems

In many developed countries, whereas before legal metrology did not influence certain production spheres, now at their own initiative manufacturers are voluntarily participating in various measures that go to form the national metrological system (NMS) aimed at improving the quality and economic viability of their products.

With the increase in globalization and the regionalization of trade and economies worldwide, new requirements arise which must be taken into account in the NMS. In fact, these tasks are directed at achieving an acceptable level of satisfaction on the part of society, industry and the scientific community, therefore from the point of view of rationality various NMS models can be considered.

There are several possible models for the organization of NMS activity:

Model A – work is conducted in all directions of metrological activity;

Model B – work is conducted in all directions of metrological activity but primary standards are maintained only for selected measurement units in one NMI;

Model C – only secondary standards which provide traceability to the primary standards of other countries are maintained;

Model D – primary and/or secondary standards are maintained in one or several NMIs which are under administrative supervision (in a country or region);

Model E – standards are not maintained, and existing bodies only provide information concerning traceability to other NMIs (for example accredited laboratories, verification offices, etc.).

Type of metrological activities	Organization					
	International level	Regional level				
		Europe	Asia	America	Africa	
Measurement units and standards	BIPM	EURAMET	COOMET[1] APMP	SIM	AFRIMETS	
Legal metrology	OIML	WELMEC EMLMF[2]	COOMET APLMF IOLMF[3]	SIM	SADCMEL	
Standardization in the field of metrology	ISO IEC	CEN CENELEC UNECE	PASC[4]	COPANT	SADCSTAN	
Laboratory accreditation, calibration and quality systems	ILAC IAF	EA	APLAC PAC[4]	IAAC NACC[5]	SADCA	
Theoretical investigation and training in the field of metrology	IMEKO	*	*	*	SRCME	

Notes:
[1] Euro-Asian organization; [2] Euro-Mediterranean organization; [3] Indian Ocean organization;
[4] Asia-Pacific organization; [5] North American organization.
* Within the framework of RMOs, various seminars and training sessions are conducted in line with their respective activities

Table 1 Activities of international and regional organizations in the field of metrology

Realization of the proposed models can be carried out in any country by one or several organizations depending on their metrological capabilities. In the resulting models (except models A and B), only work in the first direction of metrological activity is taken into account (see Tables 1 and 2).

Considering the analysis of the activities of international and regional organizations in the field of metrology that was conducted, and also considering the specifics of metrological activity in various countries, other NMS functioning models are proposed taking into account all types of metrological work. Table 3 shows the basic characteristics and levels of the NMS models of functioning.

Below are the basic characteristics of the NMS functioning models:

Model A

- high national level for all directions of metrological activity;
- participation as active permanent members in international and regional organizations in the field of metrology;
- participation in multilateral agreements on questions of mutual recognition of standards, calibration certificates, and laboratory accreditation;
- developed normative basis in the field of metrology;
- carried out accreditation of calibration laboratories, NMI quality systems;
- effective system for training metrologists.

Model B

- middle national level for all directions of metrological activity except the high level of development of legal metrology;
- participation as a permanent or associate member in separate international and regional organizations in the field of metrology;
- middle level of normative basis in the field of metrology;
- special cases of accreditation of calibration laboratories and NMI quality systems;
- retraining of metrologists.

Model C

- middle national level of standards basis (conservation of primary and/or secondary standards in only one institute or in a small number of NMIs);
- development of legal metrology and retraining of metrologists;
- low levels of normative basis in the field of metrology (only selected ND in the field of metrology);

Type of metrological activities	Basic characteristics
1. Units of measurement and measurement standards (BIPM, EURAMET, COOMET, APMP, AFRIMETS, MENAMET, SIM)	▪ establishment of measurement units and requirements for the standards for their realization; ▪ coordination of projects to create standards; ▪ realization of examinations in the field of primary or national standards; ▪ exchange of information on the resources and services of member countries, etc.
2. Legal metrology (OIML, WELMEC, COOMET, APLMF, SIM, SADCMEL, EMLMF, IOLMF)	▪ determination and implementation of general principles of legal metrology; ▪ standardization of methods and rules of legal metrology and their implementation; ▪ development of Recommendations for typical verification of measuring instruments, etc.
3. Standardization in the field of metrology (ISO/IEC, CEN/CENELEC, UNECE, PASC, COPANT, SADCSTAN)	▪ standardization of measurement units; ▪ establishment of common requirements for measuring instruments; ▪ establishment of common requirements for laboratory quality systems and accreditation, etc.
4. Laboratory accreditation, calibration and quality systems (ILAC, IAF, EA, APLAC, PAC, IAAC, NACC, SADCA)	▪ establishment of requirements for accreditation of calibration laboratories; ▪ establishment of regional accreditation systems; ▪ certification or registration of quality systems, etc.
5. Theoretical investigation and training in the field of metrology (IMEKO, SRCME, other RMOs)	▪ information exchange between scientists and specialists from various countries in field of metrology; ▪ determination of basic directions and methods of research in the various fields of measurement; ▪ provision of specialists in metrology training in the various fields of measurement, etc.

Table 2 Types of metrological activities and their basic characteristics

- accreditation of calibration laboratories and NMIs quality systems (possible cases of accreditation);
- participation in separate international and regional organizations in the field of metrology as associate members

Model D

- middle level of development of legal metrology (metrological supervision is for selected measuring instruments) and retraining of metrologists (in the selected field of measurement);
- low level of standards basis (only the secondary standards which are traced to the primary standards of the NMIs of other countries are maintained);
- practically non-existent normative basis in the field of metrology;
- absence of accredited calibration laboratories and NMIs quality systems;
- possibility of participating in selected regional organizations in the field of metrology

Model E

- low level of development for directions of metrological activity;
- standards are not maintained in general;
- authorities only provide information relative to traceability to other NMIs (accredited laboratories, verification offices, etc);
- absence of normative documents in the field of metrology;
- no NMI;
- specialized establishments of legal metrology and, accordingly, participation in international and regional organizations in the field of metrology.

It should be noted that the resulting attribution of NMIs to certain models is very much conditional and is not an exhaustive solution to all questions of metrological activity.

Such an attribution to one of these models can help to provide information to partners from other countries in relation to the NMS in place and, accordingly, assist in drawing conclusions with relation to the prospects for collaboration.

Model of NMS	Model characteristics	Direction of activities*				
		1	2	3	4	5
A	All directions of metrological activity (fundamental, legal and industrial metrology).	H	H	H	H	H
B	All directions of metrological activity but primary standards are keeping only for selected measurement units in one NMI.	M	H	M	M	M
C	Primary and/or secondary standards are keeping in only one NMI or in a small number of NMIs, legal metrology is under the surveillance of a separate body.	M	M	L	L	M
D	Only those secondary standards which provide traceability to the primary standards of the NMI of other countries are maintained, and legal metrology using only for selected measuring instruments.	L	M	L	L	M
E	Standards are not maintained when they exist in a country in which the authorities only provide information concerning traceability to other NMI.	L	L	L	L	L
Note: * 1–5 – compliant with the types of metrological activity in Table 2. L: low level; M: middle level; H: high level.						

Table 3 Models of functioning of NMS in line with the type of metrological activity

Categories of measuring instruments	OIML System	MID
Gas meters and volume conversion devices	–	+
Water meters (cold and hot water)	+	+
Heat meters	+	+
Electrical energy meters	–	+
Measuring systems for continuous and dynamic measurement of quantities of liquids other then water	+	+
Automatic weighing instruments	+	+
Non-automatic weighing instruments	+	+
Dimensional measuring instruments	+	+
Material measures	+	+
Taximeters	+	+
Ethylometers (breath alcohol analyzers)	+	+
Chromatographs (liquid and gaseous)	+	–
Spectrophotometers	+	–
Thermometers (electrical clinical and medical)	+	–
Manometers, barometers	+	–
Force measuring systems of testing machines	+	–
Sound measuring instruments (audiometers, sound calibrators)	+	–

Table 4 Comparison between the categories of the OIML Certificate System and the MID

4 Optimization of the national normative basis in the field of metrology

In the NMS, legal metrology and standardization are closely associated. A national basis is created taking into account the necessities of both legal metrology and national standards. Confirmation of this is the acceptance in the European Union of the Measuring Instruments Directive 2004/22/EC (MID) [8, 9].

The basic features of the MID are the regulation of the application of the technical specifications in harmonized standards, the application of standards on a voluntarily basis, and the realization of a modular approach to conformity assessment. Eleven categories of measuring instruments are covered by the Directive, and it is applicable throughout the EU.

An important question is the comparison between the categories of measuring instruments that are regulated by the MID, and those that are applicable within the OIML Certificate System (see Table 4). A comparative analysis shows that certain divergences are acceptable in the categories in the scope of the MID and that of the Certificate System, therefore further harmonization of the approaches is necessary.

On the basis of the analysis conducted, it is possible to select the basic constituents of the national normative basis in the field of metrology that would allow the NMS to function effectively. Such a normative document system must comply with the level of organization of the national economy, and its subsystems are selected mainly according to the types of objects of standardization [10, 11].

Object of standardization	International standards and documents	National ND
Terminology in the field of metrology	VIM, VIML	+
Measurement units	CIPM, ISO, IEC, OIML	+
Measurement results estimation	GUM, OIML, ISO, IEC	+
Measurement standards	CIPM, OIML	+
National verification schemes	OIML	+
General requirements for measuring instruments	OIML (in Europe – MID)	+
Requirements as to categories of measuring instruments (for examples, see Table 4)		
Metrological characteristics of measuring instruments	OIML	+
Type examination of measuring instruments		
Verification of measuring instruments		
Metrological supervision, including for prepackaged products		
Certified reference materials	OIML, ISO	+[1]
Standard reference data	–	+[1]
Calibration of measuring instruments	ILAC, OIML	+[2]
Accreditation of calibration laboratories	ISO/IEC, ILAC, IAF, OIML	+[2]
Quality systems	ISO, ILAC, IAF	+[2]
Notes: [1] only model A; [2] is determined by the national organization by accreditation.		

Table 5 Main objects for subsystems of standardization systems at international and national levels

Table 5 shows the main objects for subsystems of standardization systems at international and national levels for models A and B.

5 Conclusion and summary

Below are the conclusions drawn from the investigation.

(1) Most countries accept to participate in the work of both international and regional organizations in the field of metrology; thus, the value of national authorities' participation increases in regional organizations, taking into account the signing of multilateral agreements related to questions of mutual recognition of standards, calibration certificates, and laboratory accreditation.

(2) When optimizing the national normative basis in the field of metrology it is expedient to take into account the proposed subsystems of the general system in harmonizing national normative documents with the standards and documents of those international organizations that have activities in the field of metrology.

The key issues raised in this article were reported at International Metrology Conference CAFMET 2010 ("Legal metrology" section), 19–23 April 2010, Cairo, Egypt.

References

[1] Kochsiek M., Odin A.: NMIs in present-day metrology. OIML Bulletin Vol. XXXVII No. 2 April 1996 pp. 27–32.

[2] Kochsiek M., Odin A.: An efficient metrological infrastructure – benefit for industry and society. OIML Bulletin Vol. XXXIX No. 2 April 1998 pp. 26–32.

[3] Kochsiek M., Odin A.: Towards a global measurement system: Contributions of international organizations. OIML Bulletin Vol. XLII No. 2 April 2001 pp. 14–19.

[4] Kochsiek M.: Trends in legal metrology towards a global measurement system. OIML Bulletin Vol. XLIV No. 1 Jan. 2003 pp. 7–9.

[5] OIML D1:2004: Elements for a Law on Metrology.

[6] Velychko O.: Activity of international and regional organization for globalization of the world economy. XVIII IMEKO World Congress, Rio de Janeiro, Brazil 2006 CD 6 p.

[7] Metrology in short. 3rd edition, Denmark, July 2008, ISBN 978-87-988154-5-7.

[8] Directive 2004/22/EC of the European Parliament and of the Council of 31 March 2004 on measuring instruments. Official Journal of the European Union, L 135/1. 30.4.2004.

[9] Velychko O., Gordiyenko T.: Implementation of the European Directive on Measuring Instruments in Ukraine. OIML Bulletin Vol. LI No. 2 April 2010 pp. 23–29.

[10] Velychko O.: Metrological activity in Ukraine. OIML Bulletin Vol. XXXVIII Number 3 July 1997 pp. 36–41.

[11] Velychko O.: Harmonization of the legislative acts and normative documents on metrology in Ukraine. OIML Bulletin Vol. XLI Number 2 April 2000 pp. 19–24.

INTERNATIONAL

Working across cultures in OIML TCs and SCs

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Introduction

According to the 2007 World Bank figures, OIML Members cover in total 86 % of the world's population and 96 % of its economy.

This OIML membership includes 57 Member States and 58 Corresponding Members, (see map below) and OIML technical activity currently consisting of 65 active OIML Technical Committees and 128 work projects.

Achieving international consensus in OIML Technical Committees, the composition of which includes representatives from countries or economies, international standardization and technical organizations, manufacturers' associations and regional regulatory bodies, requires a diverse skill set and can present unexpected challenges for the OIML Secretariats and stakeholders.

This article discusses the issues associated with working with multi-cultural OIML stakeholders and how to overcome them.

What is culture?

Culture comes from the Latin word "*colere*", meaning to build on, to cultivate, to foster, and defines a set of accepted behaviour patterns, values, assumptions, shared common experiences, social structure, decision-making practices, and communication styles.

Applying this to the legal metrology field implies that the OIML community and its multi-cultural stakeholders are working together with shared decision-making practices and rules in the development of a worldwide legal metrology technical structure.

To add to the complexity, cultures also exist within cultures, and these are readily apparent in the working environment. Think of the differences between OIML Member States, national legal metrology bodies, international organisations, certification bodies, manufacturers, and other OIML stakeholders.

The legal metrology discipline itself has a particularly strong circle of culture. Legal metrology experts and stakeholders take an overarching view of projects, and yet are microscopically logical. Working in an analytical and technical world of process and structure, OIML projects comprise all activities for which legal requirements are prescribed on measurement, units of measurement, measuring instruments and methods of measurement, these activities being performed by or on behalf of governmental authorities.

Communication

OIML Technical Committees will often need to consider differences between international cultures in order to ensure that there is an understanding of language and communication between cultures as this is a common area, which can easily create issues of misunderstanding. We do not always communicate the same way from day to day, since factors like context, individual personality, and mood interact with the variety of cultural influences we have internalized that influence our choices.

Communication is interactive, so an important influence on its effectiveness is our relationship with others. Do our stakeholders hear and understand what we are trying to say? Do their responses show that they understand the words and the meanings behind the words we have chosen? Is the mood positive and receptive? Is there trust between our stakeholders and us? Are there differences that relate to ineffective communication, divergent goals or interests, or fundamentally different ways of seeing the world? The answers to these questions will give us some clues about the effectiveness of our communication and the ease with which we may be able to move through conflict.

For example, we can create a simple glossary of terms at the outset of any project. This can include both technical terms and precise definitions of phrases such as 'customer', 'on-time' and 'due date' or 'deadline', where meanings may vary widely between international cultures.

Also building trust through sensitivity and understanding over time can help break down the multi-cultural communication barriers. Being sure that we have reached an agreement can be a major challenge across international cultures. The reason for this is that the word 'yes' can have multiple meanings. In many languages, it does not mean unambiguous agreement. It can often signify no more than "I heard you".

Working relationships

Coordinating the work of a multi-cultural technical committee involves processing a lot of information which will require heightened observation skills. Working with experts from cultures that place high importance on relationships and face-to-face contact is important at the initial stages of negotiation, and takes more time than some cultures normally allow for. In most cases, at the beginning a relationship must be nurtured - formality and professionalism are often preceded by small talk, personal detail and the inclusion of a social agenda. Notice how people act, dress and treat each other. Being able to read a situation will reduce cultural barriers and contribute towards a successful meeting or project.

At the same time it is important to understand that each country's culture will need an individual approach. A 'direct' culture can withstand direct communications. Blunt, to-the-point emails with a minimum of courtesy, introduction, niceness and small-talk are often acceptable and accepted conventions in day-to-day business. In other cultures, however, this approach - in the absence of a strong relationship - would not be appropriate.

In the international metrology field today, relationships increasingly need to be managed remotely. This creates difficulty as so many cultures expect face-to-face meetings. It often requires the establishment of a common ground, trust and a personal bond. This normally involves holding and participating in technical meetings at home and abroad, and visiting OIML stakeholders to further strengthen ties.

In the absence of face-to-face meetings, video conferencing, or webcam have the advantage of giving more information due to the visual images they convey. However, what is still missing is the opportunity to read body-language, interpret gestures as well as the human social gestures.

Take, for example, email correspondence - a form of communication that is widely taken for granted. Frequently in some cultures, emails will not be responded to unless, at the very least, you have met face-to-face with your counterpart.

Work style

Important is the need to adapt and select working practices that all committee members are comfortable with such as encouraging openness, tolerance and flexibility. A greater willingness to talk directly about differences helps build trust, facilitates decision-making and opens the way, where appropriate, to compromise and ultimately a better way of working together. However, we do need to consider cultural differences in this context. Whereas compromise agreements may be acceptable in some cultures, in the more hierarchical structure of other cultures, where there is an expectancy of senior managers to make decisions and lead, such discussion may result in the opposite effect. Care must be taken to avoid individuals losing face through direct and indirect criticism.

Cultural differences should also be addressed and viewed as what they are: potentially different values, assumptions, expectations and behaviour as a result of differing collective experiences. It should be understood that members of a committee are not there to represent a culture or particular ethnic group: they represent themselves. However, their cultural background will influence behaviour. An understanding of cultural differences encourages the tolerance and flexibility required for the team to work well together.

Time differences

Working across cultures takes more time. Different attitudes towards time can also reveal different values, which need to be recognised and adapted to. Communication may be slowed and logistics may be different. Expect most things to take longer than they would when dealing with a business from your same culture or country. For example, in some cultures time is not generally a driver. In other cultures this simply is not the case and relationships and interaction are the keys to getting the job done. In this way the same goals will ultimately be achieved, but they are approached in a different way. Also OIML stakeholders need to give themselves more time to process all the information before making decisions.

Interacting across cultures

Interacting well across cultures can make the difference between any project's success and failure. For engineers, scientists and metrologists who work with process, rules, logic, consistency, spreadsheets and project plans, a degree of adaptation will be required to work successfully with other cultures. Those who focus more on human relationships, place importance on the informal, often favouring social and personal interaction, will require a different approach from those that are more process-driven.

As a result, understanding and being able to adapt to the other culture will make the work more enjoyable and less frustrating. From an international perspective, we can accelerate our process of learning by attending meetings, reading about the country, learning a little of the language, making a reconnaissance visit to find out more about the local culture. Rather than remaining baffled, ask: "What is really happening here?" We may discover other benefits that go beyond conventional work success in learning to work with rather than against different cultures.

Conclusion

To become successful in the intercultural context that makes up the international legal metrology environment, scientists, engineers, metrologists and legal metrology stakeholders first need to recognise that not everyone thinks in such a measured and logical way. Second, in order to create better working relationships with colleagues, we need to learn to adapt to accommodate different cultural values, regardless of whether such differences result from an international or interdepartmental business context. Third, it is important to reconfirm when and how a project will be completed to help clarify meaning. ■

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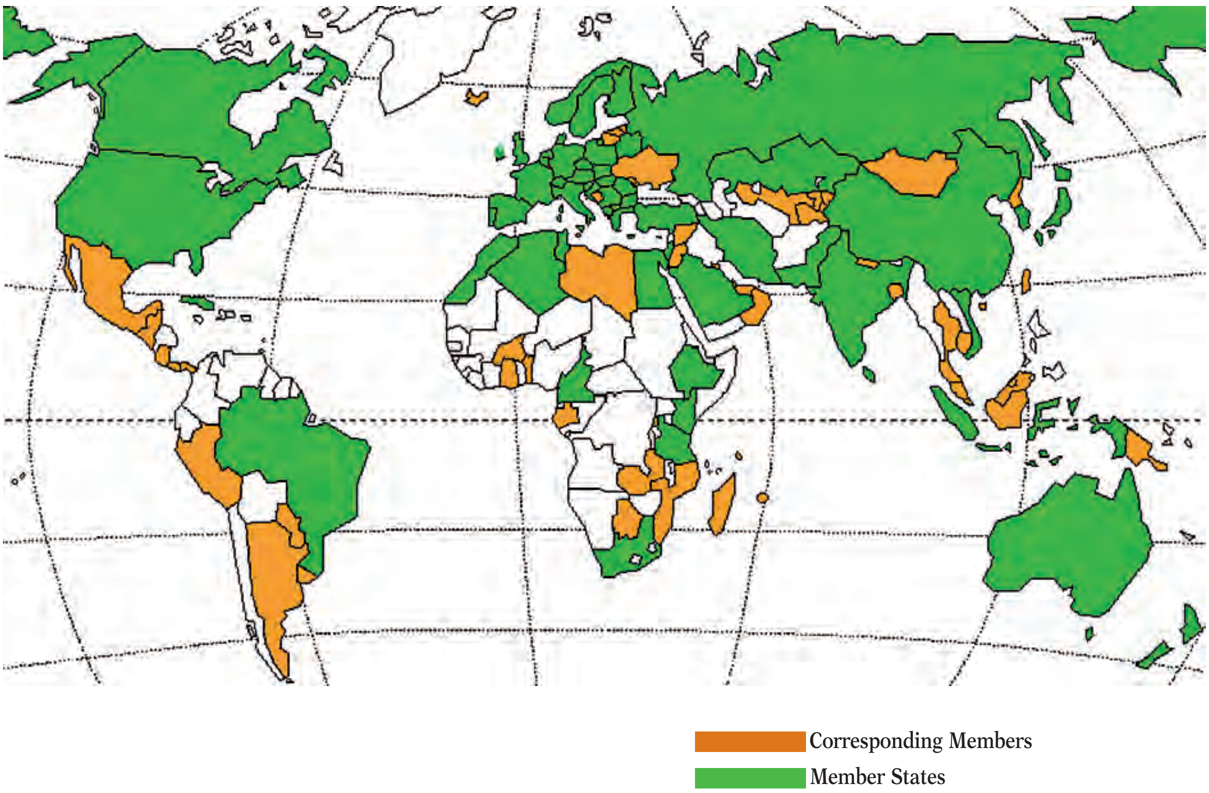


TC/SC MEETING

Meetings of OIML TC 8/SC 5 and the Joint ISO/OIML Working Group

AFNOR, Paris 19–22 April 2010

Morayo Awosola, NMO
OIML TC 8/SC 5 Secretariat

The fourth meeting of the joint ISO/TC 30/SC 7, OIML/TC 8/SC 5 and CEN/TC 92 water meters standards working group was held at AFNOR, Paris on 19–22 April, 2010, courtesy of Fabrice Baron of AFNOR who welcomed the delegation to Paris.

A separate meeting of OIML TC 8/SC 5 under the UK NMO secretariat was also held on April 22 at AFNOR following the joint ISO/OIML working group meeting. Although most of the intercontinental members of the joint ISO/OIML working group were unable to attend the meetings because of flights cancellation due to the recent eruptions from the Eyjafjallajökull volcano, the following members participated in the OIML TC 8/SC 5 meeting:

- Michael Reader-Harris, NEL UK (Convenor, joint ISO/OIML working group)
- David Michael BSI, (Secretary, joint ISO/OIML working group)
- Fabrice Baron (AFNOR, France)
- Willem Kool (BIML)
- Ian Holmes-Higgins (Elster, UK)
- Stephen Bruce (NMO, UK)
- Morayo Awosola (TC 8/SC 5 Secretariat, NMO)
- Marcel Schulze (CEN TC 92)
- Gilles Sauliere (France)
- Morel Emeric (France)
- Jürg Wyss (CEN TC 92)
- Schaller Martin (CH)

The OIML meeting discussed the background to the 44th CIML resolution no.18 to withdraw OIML D 7 *The evaluation of flow standards and facilities used for testing water meters*. An investigative report from James Welsh (D 7 revision convenor) of Measurement Canada had recommended that OIML D 7 be withdrawn as it was deemed no longer relevant, outdated and containing information readily available on the internet. A vote from OIML TC 8/SC 5 supported this decision and the 44th CIML resolution no.18 (in October 2009, Kenya) formalised this decision. The OIML meeting agreed that further work was necessary to look into the possibility of either incorporating Parts 4 and 5 of the harmonised standard into the final OIML harmonised version or developing a new OIML Document based on Parts 4 and 5.

Willem Kool, BIML Assistant Director, reported that he is replacing Samuel Just (who had left the BIML) in the joint ISO/OIML working group until a permanent replacement is found. He gave a brief report on the work at the BIML to revise the OIML Basic Publication '*Directives for the Technical Work*', and the possible impact this may have on the work of the joint ISO/OIML working group in terms of a new OIML technical committee structure and the potential abolition of the OIML subcommittees (SCs) structure. The proposed change is not expected to affect the work of the joint ISO/OIML working group and a final decision on such changes is expected at the 45th CIML meeting in September 2010.

The OIML meeting agreed that good progress had been made in the development of the drafts of Part 1 (*Water meters intended for the metering of cold potable water and hot water - Part 1: Metrological and technical requirements*) and Part 2 (*Water meters intended for the metering of cold potable water and hot water - Part 2: Test methods* of the harmonised standard.

Resolutions

1 Second committee drafts of parts 1 and 2 to be issued by the joint ISO/OIML secretary and circulated by November 2010 to the OIML for comments and votes.

2 In order to further speed up the development of part 3 (*Water meters intended for the metering of cold potable water and hot water - Part 3: Test Report Format*) the TC 8/SC 5 secretariat (UK) will work closely with Romania to develop and submit the second committee draft of part 3 to the joint ISO/OIML working group for comments and voting by November 2010, if possible along with parts 1 and 2.

3 Grabel van der Burg, a technical liaison with the joint ISO/OIML working group, recently left the working group to move on to other work and OIML TC 8/SC 5 would like to thank him for his contributions to the work and wish him the very best for the future.

4 ISO and the OIML will work closely together to finalise the naming of the harmonised standard and the associated parts of the standard.

5 NMO (Morayo Awosola and Stephen Bruce) will look into improving the various performance tests and updating the reference information on the relevant IEC standards.

6 The next meeting of OIML TC 8/SC 5 will take place in either November 2010 and /or May 2011 alongside the joint ISO/OIML working group meeting. These meetings will discuss the responses and votes to parts 1, 2 and 3. Exact dates and venues are to be finalised and circulated later.

Outcomes from the joint ISO/OIML working group meeting included the following points:

1 Comments from the ISO/OIML/CEN stakeholders to the first committee drafts of parts 1, 2 and 3 were discussed in great detail and implemented as appropriate.

2 Testing of families of meters and associated problems with endurance testing of large meters within a family: James Welsh of Measurement Canada will be approached to investigate and report on appropriate wordings for the harmonised standard.

3 Smart metering: The joint ISO/OIML working group noted the work that CENT /TC 92 is doing on smart meters and wishes to be kept informed of developments.

4 Specification of measurement units in the harmonised document: It was agreed that for safety reasons the unit for pressure rating will always be specified.

5 The number of meters required for individual tests will be clarified in the second committee draft. ■

TC/SC MEETING

OIML TC 6 *Prepackaged products*

Pretoria, South Africa 1–5 March 2010

Willem Kool
Assistant Director, BIML

Eight of the 27 P-Members were represented in the meeting: Australia, Brazil, France, Germany, Japan, the Netherlands, South Africa and Switzerland. South Africa holds the secretariat of TC 6.

The meeting was hosted by NRCS, the National Regulator for Compulsory Specifications. Mr. Stuart Carstens, head of the Legal Metrology Division of NRCS, CIML Member for South Africa and CIML Vice-President welcomed the participants to Pretoria. The main items on the agenda were:

- the certification system for prepackages;
- the revision of OIML R 87 on the quantity of product in prepackages;
- the revision of OIML R 79 on the labeling of prepackages; and
- cooperation with WELMEC WG 6 in drafting procedures for drained weight, etc.

The certification system for prepackages

In December 2009, the secretariat of TC 6 had circulated the collated comments on the first Committee Draft (1 CD) for an OIML Basic Publication *International system for the certification of prepackages as complying with requirements for the quantity of product and associated labeling* together with a draft for the 2 CD.

The meeting noted that some countries continue to oppose the further development of the certification system. However, all of these countries continue to contribute to the discussions, by sending written comments and/or participating in meetings.

Concerning the scope of the certification system, the meeting agreed that this would be defined by the scope of OIML R 87. Should the scope of R 87 be extended to include the minimum principle for prepackages with a constant nominal quantity, or prepackages with variable nominal quantity, these will automatically be acceptable in the certification system.

It was agreed that the OIML quantity marking would consist of the OIML logo and an identification of the designated certification body that has registered the packer for the prepackage to which the marking is affixed, outlined by a rectangle. The quantity mark may appear anywhere on the prepackage, as long as it is visible.

In case the name of the registered packer does not appear on the prepackage, e.g. because he wants to remain anonymous, the quantity mark must always include a code which will enable the packer's certificate to be found on the web site of the designated certification body. The meeting felt that it was not necessary to require that the quantity mark is protected in national legislation. It is not the intention of the system to create legal obligations for the enforcement of national legislation. Also, the system is not intended to replace other marking schemes or national systems, but it should be compatible with such systems, as far as possible. The purpose of the quantity mark is to enable an inspector to establish whether a prepackage is covered by a certificate, which he can subsequently view or download from the web site of the designated body. The absence of such a certificate would be an indication that the quantity mark may have been wrongly affixed and that further investigation is necessary.

It was considered that registration certificates should have a common layout, following a model to be included in an annex. The secretariat will draft wording for the registration certificate that will be published for public use, allowing for a code to be used to identify the packer, if necessary.

All comments received on the 1 CD were considered during the meeting and changes to the draft 2 CD were made where considered necessary. The secretariat will circulate the final 2 CD to all members of TC 6 by 30 June 2010, with a request for vote and comment.

The revision of OIML R 87

The meeting discussed a number of issues to be considered in the revision of R 87 *Quantity of product in prepackages*:

- **Definitions:**

  The set of definitions in the current version of R 87 is based on the distinction between packing material (everything intended to be left over after use of the product) and product, without actually defining 'product'. Codex Alimentarius standards and some regional (EU) and national legislations have slightly different definitions, or interpretations of definitions. The main issue here concerns substances that are packed with the product and which may, or may not, be considered packing material, such as: liquid medium, pressurized gas, individual wrappers, etc. TC 6 will consider a proposal to enhance the set of definitions in R 87 to clarify this issue and to promote a harmonized interpretation, using as much as possible commonly used terminology.

- **Statistical basis of the sampling plan in R 87:**

  Some statisticians had pointed out that there is a discrepancy between the criteria for statistical sampling and the sampling plans included in R 87. These sampling plans are intended to be used by authorities when conducting inspections in the course of market surveillance. The secretariat will make a recommendation for changes to the relevant sections of R 87, based on expert reports. If necessary, an ad-hoc group will be formed to assist in the elaboration of this recommendation.

- **Prepackages with variable nominal quantity of product:**

  Currently, only prepackages with a constant nominal quantity (i.e. the quantity declared on the prepackage) are included in the scope of R 87. A number of products, such as meat, poultry and cheese, are often prepacked in an industrial environment and are individually weighed and labeled. Such prepackages may also be controlled on a statistical basis. The secretariat will make proposals for a set of requirements for prepackages with variable nominal quantity.

- **Prepackages controlled with the minimum principle:**

  Although OIML and Codex standards propagate the use of the average principle in the control of the quantity of product in prepackages (i.e. the average quantity in a lot of prepackages shall be at least equal to the nominal quantity), many countries still apply the minimum principle (every prepackage shall contain at least the nominal quantity) for some or all prepackaged products. To accommodate packers who wish to use the certificate system, which is currently being developed, for markets where the minimum principle is applied in the control of prepackages, a proposal to include requirements for such prepackages in R 87 will be considered by TC 6.

The secretariat of TC 6 will request further proposals for the revision of R 87 from TC members and, on the basis of those proposals, produce a First Committee Draft Revision (1 CD) to be circulated to TC members for comment only.

The revision of OIML R 79

In December 2009, the secretariat had circulated a Third Working Document (3 WD) for the revision of OIML R 79 *Labeling requirements for prepackaged products* on the basis of comments received on the 2 WD. The secretariat had identified a number of controversial issues for discussion at the meeting:

- **Definitions:**

  Some TC members objected to definitions being removed from OIML R 79 and placed in OIML R 87. The meeting considered, however, that the benefit of having definitions in OIML R 79 is outweighed by that of having a single set of definitions in OIML R 87 applicable to both documents. It was agreed that subsequent drafts of the R 79 revision will include an annex with applicable definitions, which may be retained in the final publication, or be removed.

- **Quantity declaration on the Principal Display Panel (PDP):**

  The current edition of OIML R 79 requires the nominal quantity to be declared on the so called Principal Display Panel (PDP), located on a side of the prepackage that is designed to be displayed to and viewed by the consumer when the prepackage is offered for sale. Some countries have less strict requirements and just require that the nominal quantity marking is visible on the prepackage, or in the same field of vision as some other mandatory information. After much discussion the meeting agreed to retain the 'PDP' requirement, noting that the OIML should not seek the lowest common denominator of current national requirements. Moreover, to retain the 'PDP' requirement would facilitate the use of the certification system, since complying prepackages would be acceptable in a larger number of economies.

- **Reference temperature:**

  There had been a lot of comments on defining a reference temperature at which the actual quantity of product should comply with the requirements.

For non-frozen products this temperature was set at 20 °C. The meeting agreed to retain this value and noted that the reference temperature is not necessarily the temperature of consumption or use of the product, nor the temperature at which the packer or inspector is expected to conduct measurements. Where relevant, measured values should be corrected for the difference in temperature.

- **Units of measurement:**

Generally, quantities of solid products are declared in units of mass and quantities of liquid products in units of volume. A survey that had been conducted to obtain information on the use of units of measurement for specific semi-solid or viscous products has shown that a consensus on the use of either mass or volume for these products is highly unlikely. As long as countries requiring the quantity of such products to be declared in units of volume or in units of mass, allow double declaration (mass and volume), this would not create any technical barrier to trade. The same applies to the declaration of the nominal quantity on aerosol containers. The meeting, therefore, agreed that R 79 should not include requirements for the use of specific units of measurement for viscous and semi-solid products and for aerosols.

- **Minimum height of characters:**

Arising from comments on the lack of clear requirements for the height of characters in the declaration of the nominal quantity, the issue was again discussed, but consensus could not be reached. The secretariat will now draft a proposal for new requirements, based on different principles. This proposal will be circulated to members of TC 6 for comment and ballot.

- **Misleading practices:**

The meeting agreed to re-instate the section on misleading practices in the draft for the revision of R 79. However, the table for percentage fill of aerosol containers will be replaced by a fixed percentage value. For information and comment, the procedure for determining the volume of product in aerosol containers submitted by the FEA (European Aerosol Federation) will be distributed with the next draft of the revision of R 79.

On the basis of the discussions, the secretariat will prepare the next draft, which will be distributed as the 1 CD to the members of TC 6 for comment.

Cooperation with WELMEC/WG 6: Procedures for drained weight, etc.

WELMEC Guide 6.8 (*Guidance for the verification of drained weight, drained washed weight and deglazed weight and extent of filling of rigid food containers*) is under revision and WELMEC and the OIML agreed to cooperate in this work with the objective of reaching a consensus on procedures for determining the actual quantity of products in the scope of the WELMEC Guide. Such procedures are currently included in informative annexes to OIML R 87, but, in view of the intended certification system, it would be better to make the procedures normative.

The meeting briefly discussed the draft revision of WELMEC Guide 6.8 and concluded that only sections 3 and 5 were of relevance to the OIML as these deal with procedures. The remainder of the document is specific for the European Union situation.

As there was insufficient time during the meeting, it was agreed that participants would forward comments to the secretariat by correspondence. The secretariat will collate the comments and circulate them to TC 6 members for approval before they are submitted to WELMEC WG 6.

It was noted that there are differences in the procedures between Codex, WELMEC and the OIML. TC 6 will have to resolve whether to harmonize with either WELMEC or Codex or use the most simple of each.

The future of OIML R 87 and OIML R 79

The meeting agreed that TC 6 should consider merging OIML R 87 and OIML R 79 into one publication dealing with the quantity of product in, and the labeling of prepackages, provided that the revised R 87 includes requirements for prepackages with variable nominal quantity, so that the scope of both publications would become the same.

Next meeting

The next meeting of TC 6 is scheduled to be held in Tokyo on 11–15 April 2011, at the kind invitation of Japan. ■

LIAISON ACTIVITIES

Cooperation between ILAC and the OIML

Régine Gaucher, BIML
OIML Liaison Officer with ILAC

Laurent Vinson, COFRAC
ILAC Liaison Officer with the OIML

Introduction

On the basis of the Memorandum of Understanding (MoU) signed between ILAC (International Laboratory Accreditation Cooperation), IAF (International Accreditation Forum) and the OIML, a joint ILAC/OIML Working Program was developed. It is revised every year during an annual tripartite meeting.

Among the joint actions decided in 2009 was the organization of two surveys (one managed by ILAC and the other by the OIML, among their respective Members) on accreditation in the field of legal metrology.

The aim of these surveys was:

- to collect information from ILAC members concerning the number of accreditation bodies which are actively accrediting organizations working in the fields of legal metrology covered by the OIML Declarations of Mutual Confidence; and
- to collect information from OIML Members (Member States and Corresponding Members) concerning:
  - countries which request accreditation of national type approval bodies, bodies responsible for initial and periodic verifications;
  - the requirements used to evaluate the competence of the relevant bodies.

Replies to the surveys

From both sides, unfortunately very few replies were received; consequently it is not possible to draw any definitive conclusions.

However, it has been decided to publish the results of these two surveys for informational purposes.

Survey conducted by ILAC

The questionnaire sent out by ILAC requested answers to the following questions:

- How many laboratories have you accredited in the field of:
  - testing water meters according to OIML R 49;
  - testing load cells according to OIML R 60;
  - testing non-automatic weighing instruments according to OIML R 76;
- If accreditation was delivered, which requirements were used?

Fifteen ILAC Full Members replied – these replies are summarized in Figures 1, 2 and 3.

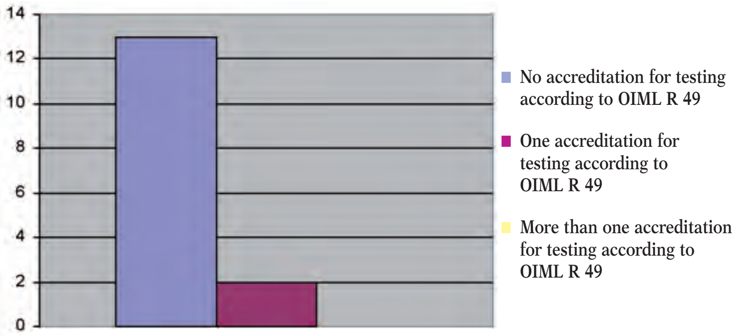


Fig. 1 Accreditation in testing water meters according to OIML R 49

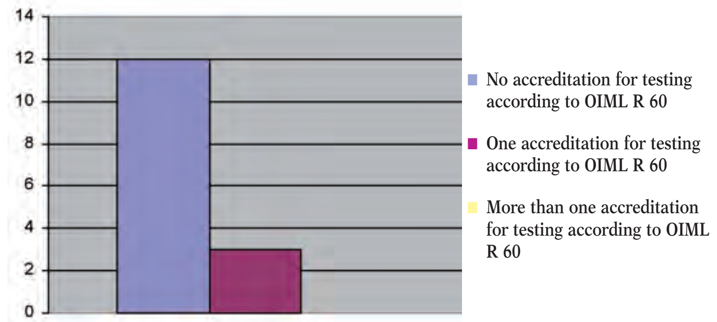


Fig. 2 Accreditation in testing load cells according to OIML R 60

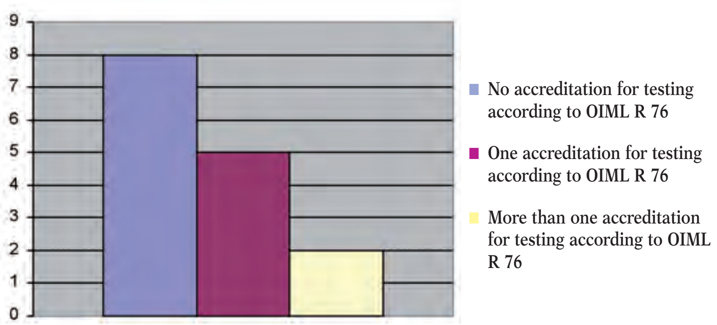


Fig. 3 Accreditation in testing non-automatic weighing instruments according to OIML R 76

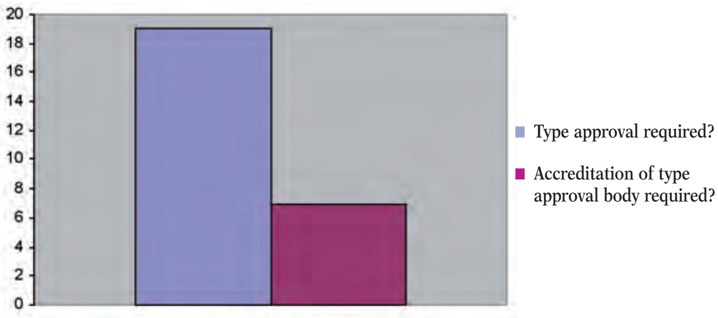


Fig. 4 Number of countries which request type approval of certain categories of measuring instruments and where accreditation is required

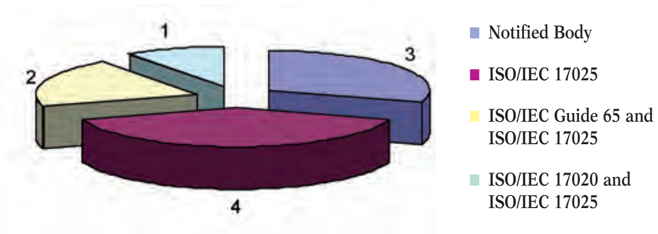


Fig. 5 Number of countries regarding the requirements applicable to type approval bodies

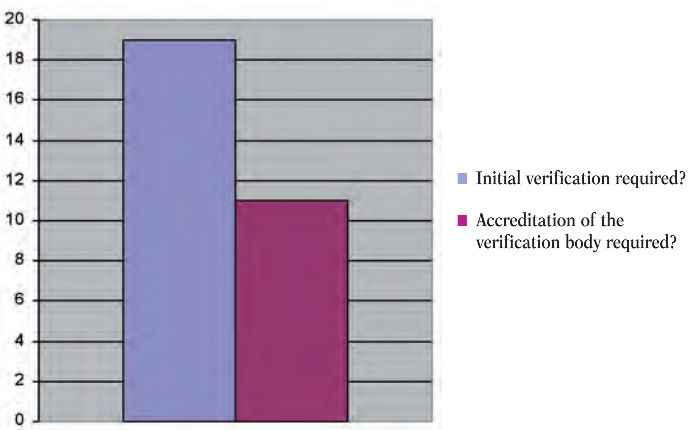


Fig. 6 Number of countries which request initial verification of certain categories of measuring instruments and where accreditation is required

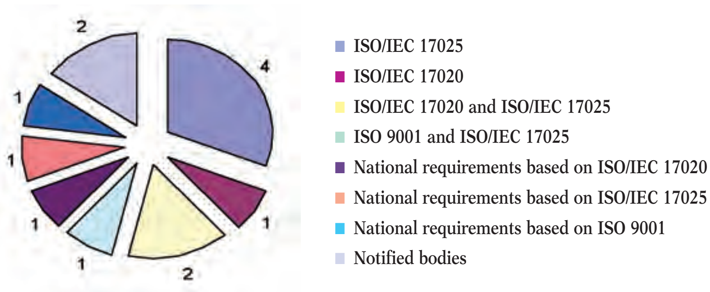


Fig. 7 Number of countries regarding the requirements applicable to initial verification bodies

Among those national accreditation bodies that declared having accredited testing laboratories in these three domains of legal metrology, six indicated that the accreditations were delivered on the basis of ISO/IEC 17025 *General requirements for the competence of testing and calibration laboratories*. One mentioned the use of ISO/IEC 17020 *General criteria for the operation of various types of bodies performing inspection*.

It should be highlighted that most of the time, legal metrology or even testing according to the relevant OIML Recommendations is not clearly indicated in the accreditation scope. This means that the current replies may not be representative of the real situation.

In addition, if we consider the accreditation of notified bodies for the implementation of the Directive for Measuring Instruments (MID), notified bodies for module B (Type Examination) may be accredited as product certification bodies on the basis of EN 45011 (ISO/IEC Guide 65 *General requirements for bodies operating product certification systems*) and the accreditation of the associated laboratories may not be visible as an accreditation in the field of legal metrology.

Survey conducted by the OIML

The questionnaire sent out by the OIML requested answers to the following questions:

- Does your national regulation require type approval for certain categories of measuring instruments?
- Does your national regulation require initial verification to be carried out on certain instruments before they are placed on the market or put into use?
- Does your national regulation allow the manufacturer of the instrument and/or the owner of the type approval certificate to be responsible for the initial verification?
- Does your national regulation require subsequent verifications for certain categories of measuring instruments?

In case of the answer was "yes" to any of the questions, additional questions were asked: whether the responsible bodies need to be accredited and if "yes" according to which reference standards.

Twenty OIML Members sent in replies. Among them, twelve were sent by countries outside Europe. These replies are summarized in Figures 4–11.

No formal conclusions may be drawn. Analysis of the figures may demonstrate a tendency for accreditation to be more widely required for bodies responsible for subsequent verification. This is probably due to the fact that for several years, national regulations authorize designated third-party bodies to perform subsequent (in service) verifications of measuring instruments.

The joint ILAC/OIML Working Program (which has just been revised for 2010–2011) is given below.

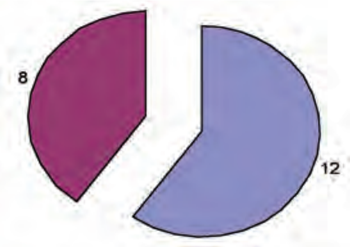


Fig. 8 Initial verification by the manufacturer

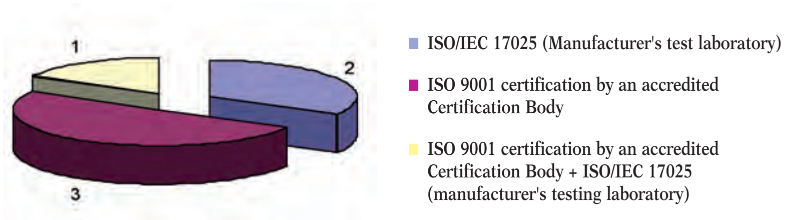


Fig. 9 Reference requirements applicable to the manufacturer in the event that accreditation is required

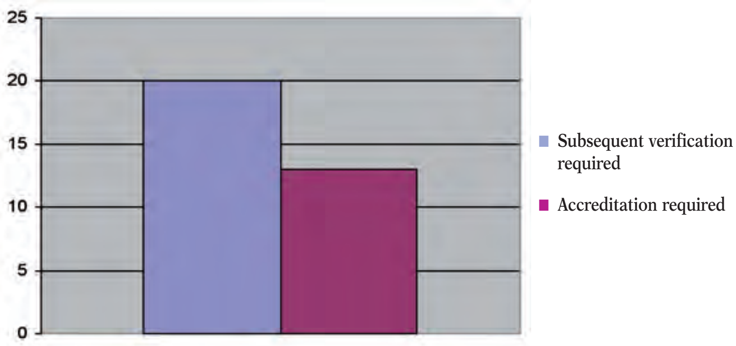


Fig. 10 Number of countries which request subsequent verification and which request accreditation of subsequent verification bodies

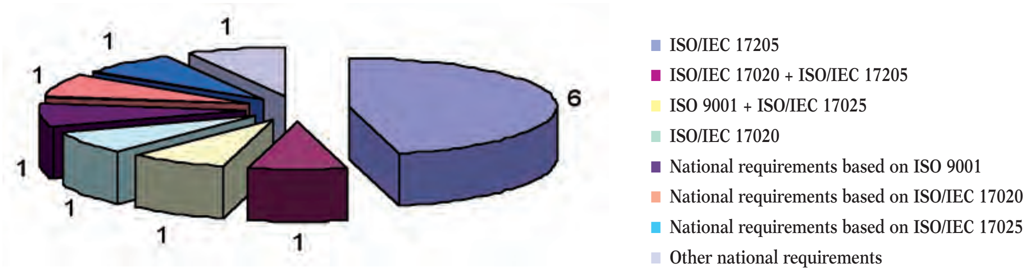


Fig. 11 Number of countries regarding the requirements applicable to subsequent verification bodies when accreditation is required

Joint ILAC/OIML Working Program

2010–2011

In accordance with the Memorandum of Understanding (MoU) signed in November 2007 between ILAC and the OIML, the joint Working Program has now been revised on the basis of the conclusions of the ILAC/OIML Meeting held on 1 April 2010 and approved by the ILAC Chair and CIML President.

Laurent Vinson (ILAC) and Régine Gaucher (OIML) are responsible for the implementation of this Program, which is published on the following page.

Joint ILAC/OIML Working Program

2010–2011

Action	Comments	Leader	Means	Deadline
Improvement in communication between National Accreditation Bodies and National Legal Metrology Bodies	Draft joint ILAC/OIML Communiqué	ILAC	Joint ILAC/OIML Communiqué to be sent to CIML Members and to National Accreditation Bodies. Communiqué to be uploaded on both ILAC and OIML web sites and to be published in ILAC News and in the OIML Bulletin	December 2010
	Renewal of the R 60 and R 76 DoMCs	BIML	BIML Circular to be sent to Issuing Participants (with copy to CIML Members) before launching the renewal of the R 60 and R 76 DoMCs	September 2010
Training for lead assessors from Accreditation Bodies, ILAC full Members	Development of training material	BIML	Presentation to be used for the training	December 2010
	Training organization	OIML	One-day training sessions	To be decided
Training for technical and metrological experts	To train technical and metrological experts on accreditation on the basis of ISO/IEC 17025 and related assessments	ILAC	One-day training sessions	To be decided
Procedure for assessment in the field of legal metrology	Draft OIML/ILAC procedure to be prepared by a joint ILAC/OIML Working Group to be set up	BIML/ILAC	Joint ILAC/OIML Publication	September 2010
Communication on the use of accreditation in legal metrology	Article to be drawn up jointly by ILAC and the OIML to present the results of the two surveys conducted in 2009	BIML	Article to be published in ILAC News, posted on the ILAC web site, published in the OIML Bulletin and posted on the OIML web site. BIML Circular to CIML Members and OIML Corresponding Members	Mid-2010

UNIDO celebrates World Metrology Day 2010

Vienna Austria, 20 May 2010

Source: UNIDO press release

In the framework of the strategic partnership with the International Bureau of Weights and Measures (BIPM) and the International Organization of Legal Metrology (OIML), the United Nations Industrial Development Organization (UNIDO) celebrated for the first time the World Metrology Day on May 20th through the organization of a conference called **"Metrology for Sustainable Development**".

The BIPM is an international standards organization, established to maintain the International System of Units (SI) under the terms of the Convention du Mètre (Metre Convention). Regarding the area of metrology, the BIPM is the main player as it carries out measurement-related research. It takes part in, and organizes, international comparisons of national measurement standards, and it carries out calibrations for its member states. Having the BIPM as a partner will enhance UNIDO implementation programmes in the field of metrology laboratories support among others.

The OIML is an intergovernmental treaty organization; it promotes the global harmonization of legal metrology procedures. The OIML has developed a worldwide technical structure that provides its Members with metrological guidelines for the elaboration of national and regional requirements concerning the manufacture and use of measuring instruments for legal metrology applications.

During the World Metrology Day, more than eighty States celebrate the impact of measurement on our daily life, no part of which is untouched by this essential and largely hidden aspect of modern society. Previous themes have included topics such as measurements in sport, environment, medicine, and trade. The 2010 theme concentrated on how measurement influences science and stimulates innovation. As the world strives to move on from its recent financial problems, and Governments work to regenerate economies, we shall find that science and technology are the engines of economic growth and prosperity. These, in turn, rely on being able to measure correctly and to refer measurements to the same international reference standards. A world without accurate measurement is a world where science, technology, trade and society cannot communicate/ interact and where error and uncertainty would reign supreme.

Innovation and science have proven contributions to environment, trade, energy, industrialization and poverty reduction. All these areas are priorities for our organization, and, it is in this context that the Trade Capacity Building branch, together with BIPM and OIML organized this event.

The speakers, Andy Henson from BIPM and Ian Dunmill from OIML presented an overview of the impact of measurement in the following fields:

Environment. Effective mitigation of greenhouse gas-induced global warming requires precise and comparable measurements in order to: determine accurate emissions levels and baselines, monitor greenhouse gas levels, assess impact of mitigation strategies by addressing point emission source monitoring and standards, international comparability of greenhouse gas emission measurements, all these bearing huge economic implications.

Energy. Biofuels require a comprehensive and effective policy framework to measure the quality and accurate content of biofuels. The policy-drivers for biofuels are: energy security/ political tensions, resource diversification, petroleum prices/volatility, climate change, air pollution, economic development, farm income. Additionally in order to effectively and accurately measure energy consumption (and efficiency) metrology is needed.

Trade and economy. Metrology in trade serves to reduce the Technical Barriers to Trade by recognising measurements across countries. Metrology ensures goods are measured correctly and correct price is paid, governments collect correct taxes on exports, and national economies improve.

Poverty reduction. The impact of legal metrology on poverty reduction is by making trade fairer, and protecting the poor income by receiving correct goods for their money, farmers receive correct payment for their produce, etc. Consumers have confidence on the control of pre-packed goods. Legal metrology also serves government-related institutions that deal with speed-meters, utility-meters, alcohol-content measurement devices, and other health-related measurement items (blood pressure, body temperature, cholesterol levels, etc.).

LIAISON ACTIVITIES

ISO CASCO WG 29 4th meeting

7–9 April 2010 Geneva, Switzerland

Régine Gaucher,
BIML

Introduction

ISO CASCO WG 29 is responsible for the revision of ISO/IEC Guide 65 *General requirements for bodies operating product certification systems*.

As an A Liaison in ISO CASCO, the OIML is a member of WG 29 since product certification is linked to OIML technical work in particular in the following areas:

- OIML TC 3, which is responsible for metrological control;
- OIML TC 3/SC 5, which is responsible for the OIML Certificate System and the Mutual Acceptance Arrangement (which are both certification schemes in the sense of ISO Standards and Guides);
- OIML TC 6, which is setting up a certification scheme for prepackages.

ISO/IEC Guide 65 is currently referred to in OIML B 10-1 as a tool for Issuing Authorities to demonstrate their competence even if no formal assessment is required. It is proposed to refer to it in the revision of OIML B 3 as the basis for designating OIML Issuing Authorities even though again no formal assessment will be required.

OIML D 29 gives guidance for the application of ISO/IEC Guide 65 to the assessment of measuring instrument certification bodies in legal metrology and will of course be affected by the revision of ISO/IEC Guide 65 and the ongoing work within the OIML. One objective is to have the additional requirements of OIML D 29 included in the revision of ISO/IEC Guide 65 (ISO/IEC 17065).

Meeting

The ISO CASCO WG 29 held its fourth meeting in Geneva on 7–9 April 2010. The aim of the meeting was to discuss the comments received on the Committee Draft (CD) circulated among ISO CASCO Members and to give the WG 29 Drafting Group guidance on drawing up the next document.

Even though 80 % of ISO CASCO Members voted in favour of the CD, more than one thousand comments were received.

Forty-three ISO CASCO WG 29 members attended the meeting, among whom representatives of Standardization Bodies, Liaison Organizations, Accreditation Bodies and Certification Bodies (including Federations of Certification Bodies).

Considering the large number of comments, only those identified as critical were discussed and in particular those related to the following issues:

- Clarification in the document on the applicability of the ISO/IEC CD 17065 to processes and services (editing issue);
- Clarification on the role of the scheme in certification;
- Difference between the certification scheme and the certification system;
- Impartiality mechanism;
- Availability of a directory of certified products;
- Competence of the certification body personnel and of the scheme owner personnel.

Comments from the OIML on the ISO/IEC CD 17065

The OIML sent in comments on the ISO/IEC CD 17065 through the BIML. These comments were a compilation of those received from several OIML TC 3/SC 5 members.

The replies to these comments are available to TC 3/SC 5 members on the OIML TC 3/SC 5 internet Workgroup under the heading “work in liaison with TC 3/SC 5”.

Next steps

Considering the large number of comments and the number of changes agreed on at the meeting, ISO CASCO WG 29 decided to draw up a CD 2 instead of directly developing the DIS (Draft International Standard).

Consequently, the revised time schedule should now be the following:

- Mid June 2010: the WG 29 Drafting Group will meet to draw up the CD 2 which will take into account the recommendations from the WG 29 meeting;
- July: CD 2 to be circulated for editorial review by ISO CASCO WG 29 members (this should include checking the implementation of the changes agreed on at the meeting);
- Beginning of August: CD 2 to be circulated among ISO CASCO Members for a two-month consultation;
- Mid January 2011: the WG 29 Drafting Group will meet to prepare the synthesis of the comments received on the CD 2 and the appropriate replies. The CASCO Secretariat will elaborate observations on the comments received and circulate the compilation of comments to the WG 29 members;
- 7–9 February 2011: ISO CASCO WG 29 meeting in order to review and discuss the critical comments and decide on developing the DIS. This meeting will be coordinated with the third meeting of ISO CASCO WG 32 (revision of ISO/IEC Guide 67) to be held on 10–11 February;
- June 2011: DIS to be circulated among ISO Members for a five-month consultation;
- February 2012: FDIS to be circulated among ISO Members for a two-month consultation;
- Summer 2012: ISO/IEC 17065 to be published.

The ISO CASCO WG 29 meeting was held in Geneva (Switzerland)

LIAISON ACTIVITIES

SADCMEL 24th Annual Meeting

March 2010 Mbabane, Swaziland

Katima Temba
SADCMEL and AFRIMETS Regional Coordinator

Current membership and office bearers

SADCMEL consists of 14 member states that go to make up the Southern African Development Community. Since SADCMEL is a member of AFRIMETS, the SADCMEL secretariat has extended its associate and corresponding membership to other sub-regional legal metrology organizations to also participate in its activities with the aim of strengthening legal metrology work in the region. As a result, the Ghana Standards Board was officially welcomed as a SADCMEL Associate member in March 2010.

SADCMEL harmonized legislation

In an effort to harmonize technical regulations in the region using OIML publications as basis, proposed amendments through the relevant Technical Committee were ratified by the 24th SADCMEL annual meeting in line with the SADC Trade Protocol which has been signed by member governments. These amendments were made to SADCMEL Document 1 *Labelling requirements for prepackaged products and general requirements for the sale of goods* (based on OIML R 79) and SADCMEL Document 4 *Tolerances permitted for the accuracy of measurement made in terms of legal metrology legislation including the measurement of goods when prepacked or when measured at the time of sale in pursuance of sale, and requirements for inspection of prepackages*. Other harmonized requirements include those for beam scales, mechanical non self-indicating counter scales and liquid measuring devices respectively.

2010 annual meeting

SADCMEL held its 24th annual meeting in Mbabane, Swaziland in March 2010. It was attended by 12 member states, two associates and observers from the OIML, PTB and a SADC EU funding delegation.

SADCMEL resolved to support the nomination of Mr. Brian Beard (South Africa) for the OIML Award on Developing Countries for the distinctive contribution he has made to legal metrology activities in the region over the years.

Report by the BIML

Under the standing agenda item on OIML cooperation, SADCMEL expressed its appreciation for the support provided by the OIML and a motion of thanks to Mr. Ian Dunmill and to the OIML was passed. Mr. Dunmill reported on recent activities within the OIML and the BIML. The report included updates on Recommendations approved, documents under development, progress with the MAA on type approval test results and the OIML Certificate System, liaison with other organizations and assistance to developing countries.

Mr. Dunmill further encouraged members to consider their membership status and joining the OIML. He did this by outlining some the benefits of participation in OIML activities, which ended up being a topic that drew a lot attention and participation from member states present at the meeting.

Report by TC 1 (Packaging and sale of goods)

TC 1 proposed amendments to SADCMEL Documents 1 and 4. These were accepted and the documents will be amended accordingly.

Capacity building

Funding for capacity building in the area of standardization, quality assurance, accreditation and metrology (SQAM) is approaching the end of its life span. This project is an initiative between SADC and the European Union, intended to run for a period of three years.

Funding from the SADC/EU project for capacity building within the SADC SQAM structures is being provided in two phases (termed Project Estimates for budgetary purposes) of twelve months each with any funds left unspent after each phase being forfeited. Funds for Project Estimate 1 (PE1) were due to become available in June 2008 but due to delays they only became available in September 2008. This resulted in the need to condense the planned activities for PE1 into a period of 8 months. To provide time for suitable international trainers to be sourced the Legal Metrology Department of the NRCS of South Africa offered to provide trainers for the initial activities where competence and resources were available. Local expertise was also sourced from the National Measuring Institute of South Africa (NMISA) and the National Laboratory Association (NLA) for various activities. As secretariat for SADCMEL the Legal Metrology Department of the NRCS was also responsible for facilitating arrangements for the activities.

The project is managed by a Project Team consisting of SQAM experts contracted by the EU but is subject to the rules of the SADC Secretariat for certain aspects such as the release of funds and authorization of those countries in which the training takes place.

Activities were planned after circulating a needs analysis amongst members to update a similar survey conducted several years ago during the initial stages of motivating the project to prospective donors. Visits by project experts were also made to most member countries to verify requests for capacity building. As funding was limited, the full number of participants requested by each country could not be accommodated and the number of participants per country was restricted on a pro rata basis after also considering actual circumstances pertaining in member countries.

After the allocation of participants per activity was complete, Seychelles became a member of SADC and therefore also of SADCMEL, and their requirements were addressed when rescheduling postponed activities and when planning activities under PE2.

Elections

Botswana was elected SADCMEL Chair for next two years in terms of the SADCMEL rules of procedure. SADCMEL also expressed its appreciation to the outgoing Chair from the Democratic Republic of Congo.

Participation in AFRIMETS

AFRIMETS held its General Assembly in July 2009 in Magaliesburg, South Africa. The General Assembly was represented by all five sub-Regional Metrology Organizations (legal and scientific), including its associates and observers from the OIML, EURAMET, PTB and IAEA. It was during this meeting that AFRIMETS elected its Chairperson, Dr. Wynand Louw, from South Africa. ■

CONFORMITY ASSESSMENT

Seminar on metrology and conformity assessment

Brussels, Belgium 2 March 2010

NATAŠA MEJAK-VUKOVIČ
WELMEC Chair

LESLIE PENDRILL
EURAMET Chair

Abstract

Metrology and conformity assessment for the benefit of European Neighborhood Policy (ENP) countries (Algeria, Armenia, Azerbaijan, Belarus, Egypt, Georgia, Israel, Jordan, Lebanon, Libya, Moldova, Morocco, Palestinian Authority, Syria, Tunisia and Ukraine) and Russia were addressed in a seminar jointly organized by the European metrology organizations EURAMET and WELMEC in Brussels in March 2010 for Ministry of Trade and National Metrological Institute representatives from 16 countries.

Lecturers from EURAMET, WELMEC, plus EC DG Enterprise and Industry, EMLMF and COOMET, gave presentations covering both scientific, industrial and legal metrology as well as conformity assessment, and the links between these. Liaison with the African regional metrology organization AFRIMETS to which several ENP countries belong was also made. Among seminar conclusions were a number of topics and suggested mechanisms for future work, including the strengthening of metrological and quality infrastructure in these European Neighborhood Policy countries, as formulated in group discussions by the participants themselves. The seminar was made in co-operation with the Directorate General for Enterprise and Industry and supported by TAIEX, the Technical Assistance Information Exchange Instrument of the European Commission.

Introduction

Conformity assessment of products and processes of all kinds is receiving increased attention. Some of the major challenges of modern society, such as energy and the environment, are being met by a strengthening of quality infrastructures, an umbrella covering: metrology, standardization, testing, certification, quality management systems and accreditation. Traditional conformity assessment is typically made in situations where products and processes are legally regulated because of economic, safety or other serious societal concerns. The field has widened recently, both in the scope of legal metrology as well as to cover even non-regulated areas and the common marketing of products, as for example in the New Legislative Framework of the European Commission [Decision No 768/2008/EC].

Metrology – quality-assured measurement – is a key element in conformity assessment since measurement quality determines product quality. The main objective of this EURAMET - WELMEC seminar was to give appropriate support to European Neighborhood Policy (ENP) countries in the area of metrology and conformity assessment. Participants were representatives of Ministries of Trade and National Metrological Institutes of the ENP countries and Russia.

The aims were to:

- Present the main issues related to (scientific, industrial and legal) metrology and its relation to conformity assessment, to be taken into account in the process in the ENP countries in aligning to EU requirements;
- Refresh the main principles and clarify basics;
- Exchange national experiences;
- Develop national strategies;
- Stimulate co-operation between national metrology authorities;
- Find partners for support.

During the seminar the following lectures were given:

- Harmonized Measurements and their International Recognition by Mr. Wolfgang Schmid (EURAMET),
- Operation of National Metrology Institutes - the European experience by Mr. Arnold Leitner (EURAMET),
- Directive on Measuring Instruments – the experiences of Member States by Ms. Nataša Mejak Vukovič (WELMEC),
- Possibility for Neighboring Countries to prepare for an ACAA (Agreement on Conformity Assessment and Acceptance of Industrial products) by Mr. Daniel Hanekuyk (EC DG Enterprise and Industry),
- Free movement of goods in non-harmonized area - Mutual Recognition Principle and The future of Services in the Internal Market by Mr. Pavel Klenovský (WELMEC),

- Role of quality-assured measurement (traceability, uncertainty) in Conformity Assessment. European cooperation by Mr. Leslie Pendrill (EURAMET),
- Example of Metrology Infrastructure Development: South-East Europe – current status and future developments by Mr. Janko Drnovšek (WELMEC),
- Market Surveillance: Checking compliance with conformity regulations by Mr. Gerald Freistetter (WELMEC).

Reports on behalf of participants were presented by Mr. Osama Melhem from the Euro-Mediterranean Legal Metrology Forum (EMLMF) and Mr. Nikolai Zhagora from the Euro Asian Cooperation of National Metrology Institutions (COOMET).

Regional and international cooperation, role of metrology in conformity assessment in quality infrastructure

The scope of today's major societal challenges can only be met by multinational cooperation – hence the timeliness of increased European coordination in metrology. Regional programs – amongst the national metrology institutes, such as EURAMET (www.euramet.org); legal metrology authorities (WELMEC - www.welmec.org); or between regional organizations in related areas – should be more productive than the simple sum of the national programs.

The new European Metrology Research program, implemented by EURAMET on behalf of the European Commission, is a recent example of a major new program which is one of the most integrated research programs in the European Research Area. Interregional interaction, for instance with Euro-Asian COOMET and the African regional metrology organization AFRIMETS and sub-regional groupings to which several ENP countries belong, is also important for coordination of efforts.

In the innovation value chain linking academic research and commercial measurement services, national metrology institutes (NMIs) have a unique, intermediary position. In the context of conformity assessment of products and services of all kinds, metrology provides invaluable support, ultimately in setting an objective value of impact and risk in decisions of compliance. Proactive policy advice to regulatory bodies, where new technology and new metrology anticipate emerging challenges, such as safe nano-production, is a particular focus. Colleagues in regulation, standardization, legal metrology and accreditation, can usefully work together in providing the necessary technological quality infrastructure for modern society – this TAIEX seminar is one example of this cooperation.

Metrology has key roles to play in product conformity assessment. Measuring equipment and the measurement data itself from testing of product quality characteristics for conformity assessment have to be accurately and correctly used and interpreted. The two main components of metrology – traceability and uncertainty, respectively – ensure the reliability of conformity assessment as follows:

- Measurements of products can be made at different times and places, such as when complex products consisting of several parts are made at different locations or at different times. Products will be interoperable, robust and of good quality if they are based on accurate measurements with **metrological traceability** to the international SI unit system (under the Metre Convention). Calibration of measurement systems is a sure way of avoiding the circular arguments of the so-called 'Zanzibar' effect!
- When assessing compliance of product characteristics with requirements (e.g. for health, safety or environmental reasons), the risks of incorrect decisions (e.g. approval of defective products) arising from limited measurement quality can be explicitly quantified since metrology declares limits on measurement quality in terms of **measurement uncertainty**.

The area of quality-assured measurement technology – "Metrology" – provides an essential support for sustained growth and innovation in many sectors and industries.

Accurate measurement is, however, not an end in itself, but when planning a particular measurement, it is important to adapt the measurement quality to the task at hand, that is, one seeks "fitness for purpose". Traditional 'rules of thumb' have set more or less arbitrary limits on measurement uncertainty (*MPU* – maximum permissible uncertainty) as some fraction of product tolerances. In recent years, new decision-theory tools – such as optimized uncertainty methodology and cost characteristics – have been developed which put an explicit value (often economic) on measurement uncertainty (see Figure 1). This provides arguably more objectivity and facilitates dialogue between the metrologist and decision- and policy-makers, where a balance usually has to be struck between the costs of measurement and the costs of the consequences of incorrect decisions of conformity, for instance customer risk when non-conforming product is erroneously accepted. Examples include many instruments of the EU Measurement Instruments Directive as well as the calibration and measurement capabilities of national metrology institutes.

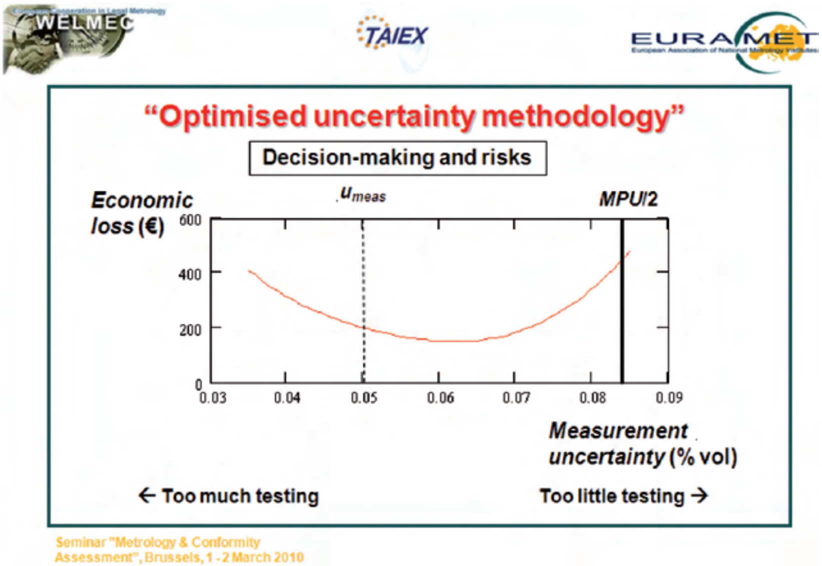


Figure 1 Balancing the costs of measurement against the consequence costs of incorrect decisions of conformity [Pendrill 2010]

This kind of needs-based metrological planning is essential not only in an individual conformity assessment but in performing a needs-based dimensioning of national metrology systems, for instance in the ENP countries.

ENP country future needs

An important final session of this Seminar consisted of group discussions where the participants themselves considered, debated and formulated recommendations about their needs and mechanisms to meet these needs in strengthening metrological and quality infrastructures in these European Neighborhood Policy countries, including alignment to EU requirements where appropriate.

Examples of some recommendations from the group discussions were:

"Some of the developing countries in the Arabic countries have small NMI metrology institutes. Individually these institutes not cover all the metrology activities. Sharing facilities of neighboring Arabic countries can help build a good and strong NMI."

- "Deeply scientific study for the neighboring countries of metrological facilities;
- Regional agreements between these countries (maximum three countries) including the related basics (scientific & legal) roles;
- Exchange of calibration services between each other;
- International recognition or accreditation for these NMI including an integrated quality management system and regional agreements".

All the seminar topics presented are considered of utmost importance for ENP countries, which have a very strong need to acquire first hand information on the basic principles and EU requirements related to metrology as well as to be informed of all the latest developments related to conformity assessment, the Measuring Instruments Directive and to the functioning of the internal market.

4 Conclusions, future work and suggested actions

The development of European Neighboring Policy countries in the field of metrology can usefully take place in a coordinated effort with the assistance of European organizations such as EURAMET and WELMEC, alongside other organizations active in these countries in the wider quality infrastructure context. Liaison and cooperation with Euro-Asian COOMET and the African regional metrology organization AFRIMETS and sub-regional groupings to which several ENP countries belong are also to be encouraged.

The main areas for ENP development in the field of metrology are:

1 How to establish a national metrology system, national regulations and needs analysis; organization of regional and sub-regional metrology cooperations in these neighboring countries.

2 Evaluation of NMIs, organization of inter-laboratory comparisons for mutual equivalence of national metrology systems.

3 Encouraging some NMIs to join the Metre Convention; supporting some calibration labs to obtain accreditation in top priority fields.

4 Knowledge transfer in the field of metrology (training, equipment, study visits, drafting guidelines).

5 Qualifying Notified Bodies (in the framework of ACAA) in top priority fields within the scope of the Measuring Instruments Directive.

5 Overall evaluation

The participants actively involved themselves in the discussions held after each presentation and in their group discussions which defined the above main topics of future collaboration with EURAMET and WELMEC. They strongly proposed to continue with similar seminars.

A recommendation would be to continue with the activities supporting ENP countries on a more systematic basis in this area of conformity assessment and metrology. Being now in possession of the list of responsible metrology experts from ENP countries and having identified areas and mechanisms for cooperation where more support is needed (see above), with the support of TAIEX we could prepare a second workshop in the period before June 2011 to tackle some of those issues which are of special interest to ENP countries.

Acknowledgments

This seminar, Metrology & Conformity Assessment (INT MARKT 34468) was organized by WELMEC and EURAMET in co-operation with Directorate General for Enterprise and Industry. We express our deep gratitude to all the lecturers and participants for their active engagement in making this event such a success.

Support for the meeting was provided by TAIEX, the Technical Assistance Information Exchange Instrument of the European Commission. All the presentations of the seminar can be found at:

http://ec.europa.eu/enlargement/taiex/dyn/taiex-events/library/detail_en.jsp?EventID=34468

OIML CERTIFICATE SYSTEM

List of OIML Issuing Authorities

The list of OIML Issuing Authorities is published in each issue of the OIML Bulletin. For more details, please refer to our web site: www.oiml.org/certificates. Changes since the last issue of the Bulletin are marked by a red square.

		R 16	R 21	R 31	R 49	R 50	R 51	R 58	R 60	R 61	R 76	R 81	R 85	R 88	R 93	R 97	R 98	R 99	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	R 136
AT1	Bundesamt für Eich- und Vermessungswesen (BEV)					■	■	■		■	■		■	■		■	■		■	■		■	■	■			■	■	■							
AU1	National Measurement Institute (NMI)				■	■	■		■		■		■									■	■						■		■		■			
BE1	SPF Economie, PME, Classes Moyennes et Energie										■					■	■																			
BG1	State Agency for Metrology and Technical Surveillance (SAMTS)										■						■																			
BR1	Instituto Nacional de Metrologia, Normalização e Qualidade Industrial (INMETRO)										■																									
CH1	Office Fédéral de Métrologie (METAS)	■		■	■	■	■		■	■	■					■	■				■	■	■						■							
CN1	General Administration of Quality Supervision, Inspection and Quarantine of P. R. China (AQSIQ)								■		■					■	■																			
CZ1	Czech Metrology Institute (CMI)				■						■	■	■								■								■						■	
DE1	Physikalisch-Technische Bundesanstalt (PTB)	■		■	■	■	■	■	■	■	■		■	■		■	■	■	■	■	■	■	■	■			■	■	■		■	■	■	■		■
DK1	The Danish Accreditation and Metrology Fund (DANAK)					■	■		■	■	■						■				■	■	■						■				■		■	
DK2	FORCE Certification A/S				■																															
DK3	Dansk Elektronik, Lys & Akustik (DELTA)					■	■		■	■	■											■	■										■		■	
ES1	Centro Español de Metrología (CEM)				■ (red)		■		■	■	■					■	■														■					
FI1	Inspecta Oy					■	■		■	■	■		■									■	■						■							
FR1	Ministère de l'Economie, de l'Industrie et de l'Emploi (MEIE)	*All activities and responsibilities were transferred to FR2 in 2003*																																		
FR2	Laboratoire National de Métrologie et d'Essais (LNE)			■	■	■	■	■	■	■	■		■	■		■	■		■		■	■	■	■			■	■	■		■		■			
GB1	National Weights and Measures Laboratory (NWML)				■	■	■		■	■	■		■				■				■	■	■						■				■		■	
GB2	National Physical Laboratory (NPL)															■																				
HU1	Hungarian Trade Licensing Office (MKEH)										■																									
JP1	National Metrology Institute of Japan / National Institute of Advanced Industrial Science and Technology (NMIJ / AIST)								■		■																	■	■							
KR1	Metrology and Measurement Division (KATS)										■																									
NL1	NMi Certin B.V.		■	■	■	■	■		■	■	■	■	■			■		■			■	■	■						■		■	■			■	
NO1	Norwegian Metrology Service (Justervesenet)					■	■			■	■										■	■	■						■				■			
NZ1	Measurement and Product Safety Service (MAPSS Wellington)										■																									
PL1	Central Office of Measures (GUM)										■						■		■																	
RO1	Bureau Roumain de Métrologie Légale (B.R.M.L.)															■	■							■			■	■								
RU1	Russian Research Institute for Metrological Service (VNIIMS)			■	■	■	■	■	■	■	■		■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
SE1	Swedish National Testing and Research Institute AB (S.P.)					■	■		■	■	■		■				■					■	■						■							
SI1	Metrology Institute of the Republic of Slovenia (MIRS)										■																									
SK1	Slovak Legal Metrology				■						■																		■							
US1	NCWM, Inc.								■		■																									
VN1	Directorate for Standards and Quality (STAMEQ)										■																									

OIML Systems

Basic and MAA Certificates registered 2010.03–2010.04

Information: www.oiml.org section "OIML Systems"

The OIML Basic Certificate System

The *OIML Basic Certificate System for Measuring Instruments* was introduced in 1991 to facilitate administrative procedures and lower the costs associated with the international trade of measuring instruments subject to legal requirements. The System, which was initially called "OIML Certificate System", is now called the "OIML Basic Certificate System". The aim is for "OIML Basic Certificates of Conformity" to be clearly distinguished from "OIML MAA Certificates".

The System provides the possibility for manufacturers to obtain an OIML Basic Certificate and an OIML Basic Evaluation Report (called "Test Report" in the appropriate OIML Recommendations) indicating that a given instrument type complies with the requirements of the relevant OIML International Recommendation.

An OIML Recommendation can automatically be included within the System as soon as all the parts - including the Evaluation Report Format - have been published. Consequently, OIML Issuing Authorities may issue OIML Certificates for the relevant category from the date on which the Evaluation Report Format was published; this date is now given in the column entitled "Uploaded" on the Publications Page.

Other information on the System, particularly concerning the rules and conditions for the application, issue, and use of OIML Certificates, may be found in OIML Publication B 3 *OIML Certificate System for Measuring Instruments* (Edition 2003, ex. P 1) and its *Amendment* (2006) which may be downloaded from the Publications page. ■

The OIML MAA

In addition to the Basic System, the OIML has developed a *Mutual Acceptance Arrangement* (MAA) which is related to OIML Type Evaluations. This Arrangement - and its framework - are defined in OIML B 10-1 (Edition 2004) and its Amendment (2006), and B 10-2 (2004).

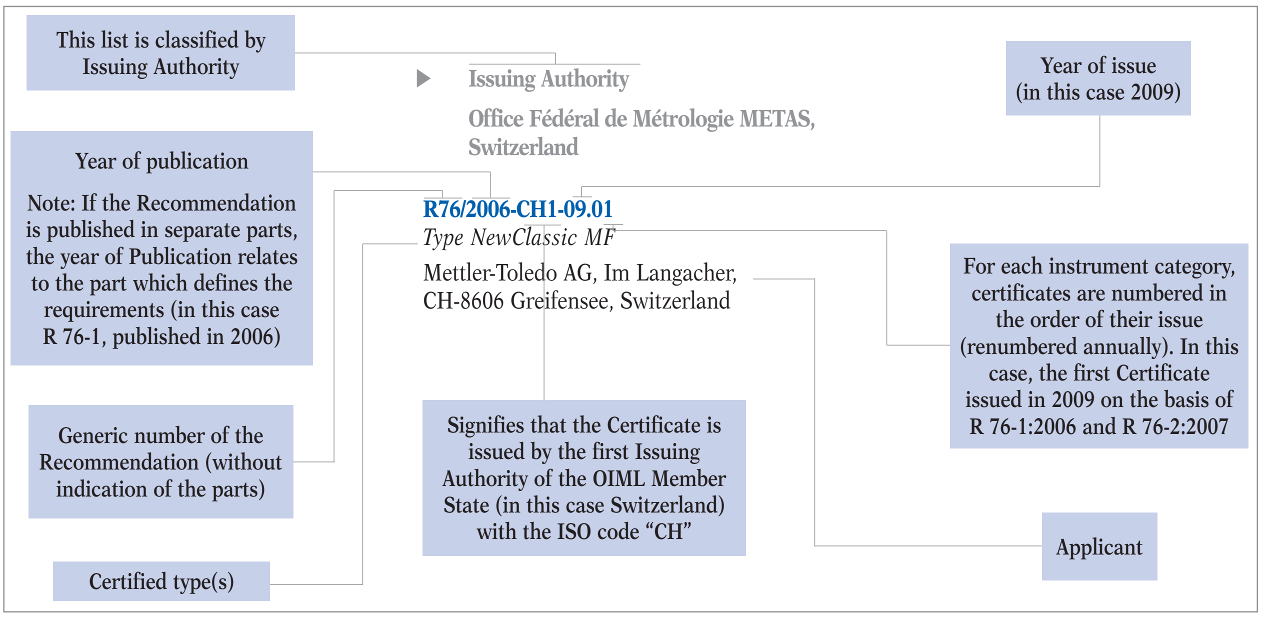
The OIML MAA is an additional tool to the OIML Basic Certificate System in particular to increase the existing mutual confidence through the System. It is still a voluntary system but with the following specific aspects:

- Increase in confidence by setting up an evaluation of the Testing Laboratories involved in type testing;
- Assistance to Member States who do not have their own test facilities;
- Possibility to take into account (in a Declaration of Mutual Confidence, or DoMC) additional national requirements (to those of the relevant OIML Recommendation).

The aim of the MAA is for the participants to accept and utilize MAA Evaluation Reports validated by an OIML MAA Certificate of Conformity. To this end, participants in the MAA are either Issuing Participants or Utilizing Participants.

For manufacturers, it avoids duplication of tests for type approval in different countries.

Participants (Issuing and Utilizing) declare their participation by signing a Declaration of Mutual Confidence (Signed DoMCs). ■



INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Water meters intended for the metering of cold potable water

R 49 (2006)

▶ Issuing Authority / *Autorité de délivrance*

Office Fédéral de Métrologie METAS, Switzerland

R049/2006-CH1-2010.01
Single-jet impeller meter with wet register intended for the metering of cold water (T30) - Type: ENK-EA., ENK-EAV, ENK-EAN, ENK-EAO, ESK-EA., ESK-EAV, ESK-EAN, ESK-EAO
E. Wehrle GmbH, Obertalstrasse 8, DE-78120 Furtwangen, Germany

▶ Issuing Authority / *Autorité de délivrance*

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

R049/2006-FR2-2009.07 Rev. 1
Water meter ITRON Type TMII
Itron Italia S.p.A., Strada Valcossera, 16, IT-14100 Asti, Italy

R049/2006-FR2-2010.01 Rev. 1
Water meter ITRON - Type MG25-30-40-50
Itron France, 11, Boulevard Pasteur, FR-67500 Haguenau, France

▶ Issuing Authority / *Autorité de délivrance*

National Weights and Measures Laboratory (NWML), United Kingdom

R049/2006-GB1-2010.01
Family of cold-water meters named WaterMaster, utilising a common, electromagnetic principle - Type: FEV1 & FET1
ABB Limited, Oldends Lane, Stonehouse, Gloucestershire GL10 3TA, United Kingdom

R049/2006-GB1-2010.02
Family of cold-water meters named AquaMaster with mains powering, utilising a common, electromagnetic principle. - Type: MM/GA & FER2, Mains Powered
ABB Limited, Oldends Lane, Stonehouse, Gloucestershire GL10 3TA, United Kingdom

R049/2006-GB1-2010.03
Family of cold-water meters named AquaMaster with battery powering, utilising a common, electromagnetic principle. - Type: MM/GA & FER2, Battery Powered and Explorer AM/E
ABB Limited, Oldends Lane, Stonehouse, Gloucestershire GL10 3TA, United Kingdom

▶ Issuing Authority / *Autorité de délivrance*

Physikalisch-Technische Bundesanstalt (PTB), Germany

R049/2006-DE1-2007.03 Rev. 2
Water meter intended for the metering of cold potable water - Type: SM100VR, SM150VR
Elster Metering Ltd., 130 Camford Way, Sundon Park, Luton, Bedfordshire LU3 3AN, United Kingdom

R049/2006-DE1-2007.03 Rev. 3
Water meter intended for the metering of cold potable water - Type: SM100VR, SM150VR
Elster Metering Ltd., 130 Camford Way, Sundon Park, Luton, Bedfordshire LU3 3AN, United Kingdom

R049/2006-DE1-2008.02 Rev. 1
Water meter intended for the metering of cold potable water - Type: SM100, SM100E, SM100P or SM001, SM001E, SM001P, SM150, SM150E, SM150P, SM250, SM250E, SM250P
Elster Metering Ltd., 130 Camford Way, Sundon Park, Luton, Bedfordshire LU3 3AN, United Kingdom

R049/2006-DE1-2008.02 Rev. 2
Water meter intended for the metering of cold potable water - Type: SM100, SM100E, SM100P or SM001, SM001E, SM001P, SM150, SM150E, SM150P, SM250, SM250E, SM250P, SM700, SM700E, SM700P
Elster Metering Ltd., 130 Camford Way, Sundon Park, Luton, Bedfordshire LU3 3AN, United Kingdom

R049/2006-DE1-2010.01
Water meter intended for the metering of cold potable water - Type: RNK-RP, RNK-PR-N
Zenner International GmbH & Co KG, Römerstadt 4, D-66121 Saarbrücken, Germany

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-GB1-2010.01
WIL-700 and WIW-700 (weight/weight-price labeller, checkweigher)
Digi Europe Ltd., Digi House, Rookwood Way, Haverhill, Suffolk CB9 8DG, United Kingdom

Issuing Authority / *Autorité de délivrance*

NMi Certin B.V.,
The Netherlands

R051/2006-NL1-2010.01
Automatic catchweighing instrument - Type: AW-4600CPR-...
Teraoka Seiko Co. Ltd., 13-12 Kugahara, 5-Chome, Ohta-ku, JP-146-8580 Tokyo, Japan

Issuing Authority / *Autorité de délivrance*

Physikalisch-Technische Bundesanstalt (PTB),
Germany

R051/2006-DE1-2007.07 Rev. 1
Automatic catchweighing instrument - Type: AB C
Mettler-Toledo Garvens GmbH, Kampstr. 7, DE-31180 Giesen, Germany

R051/2006-DE1-2010.01
Automatic catchweighing instrument - Type: WM-CWL
Bizerba GmbH & Co. KG, Wilhelm-Kraut-Strasse 65, DE-72336 Balingen, 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*

Centro Español de Metrologia, Spain

R060/2000-ES1-2010.01
Strain gauge compression load cell
Sensocar S.A., Carrer Géminis 77, ES-Terrasa, Spain

Issuing Authority / *Autorité de délivrance*

International Metrology Cooperation Office,
National Metrology Institute of Japan
(NMIJ) National Institute of Advanced Industrial Science and Technology (AIST), Japan

R060/2000-JP1-2010.02 (MAA)
LCM13K500-C3, LCM13T001-C3, LCM13T1.5-C3, LCM13T002-C3, LCM13T003-C3, LCM13T005-C3
A&D Company Ltd., 3-23-14 Higashi-Ikebukuro, Toshima-Ku, JP-170-0013 Tokyo, Japan

R060/2000-JP1-2010.04 (MAA)
LCC11T010-KC, LCC11T020-KC, LCC11T030-KC
A&D Company Ltd., 3-23-14 Higashi-Ikebukuro, Toshima-Ku, JP-170-0013 Tokyo, Japan

R060/2000-JP1-2010.05 (MAA)
Load cells - Type: CC1-1-20T, CC1-1-25T, CC1-1-30T, CC1-1-40T, CC1-1-50T, CC1-1-60T, CC1-1-100T, KDC-20T-V, KDC-25TV, KDC-30T-V, KDC-40T-V, KDC-50T-V, KDC-60T-V, KDC-100T-V
Kubota Corporation, 1-2-47 Shikitsu-higashi, Naniwa-ku, JP-556-8601 Osaka, Japan

Issuing Authority / *Autorité de délivrance*

NMi Certin B.V.,
The Netherlands

R060/2000-NL1-2005.16 Rev. 1
Single point, bending beam load cell - Type: 1042, 1042 HF, 1042 Symmetric and 1042 Symmetric HF
Tedea-Huntleigh or Vishay Transducers or Vishay Precision, 5a Hatzoran Street, New Industrial, IL-42506 Netanya, Israel

R060/2000-NL1-2010.02 (MAA)
A bending beam load cell - Type: AMI...
Keli Electric Manufacturing (Ningbo) Co. Ltd., No. 199 Changxing Road, Jiangbei District, CN-315033 Ningbo, P.R. China

R060/2000-NL1-2010.03 (MAA)
Single point load cell - Type: 108JA...
Anyload Transducer C.o. Ltd., 7228 Winston Street, #18, Burnaby, BC, V5A 2G9 Canada

Issuing Authority / *Autorité de délivrance*

Physikalisch-Technische Bundesanstalt (PTB),
Germany

R060/2000-DE1-2010.01
Strain gauge planar beam load cell - Type: PB
Flintec GmbH, Bemannsbruch 9, DE-74909 Meckesheim, Germany

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*

Korean Agency for Technology and Standards, (KATS), Republic of Korea

R076/1992-KR1-2010.01 (MAA)
Non-automatic weighing instruments - Type: SJ-....H / SJ-....HS / SJ-....KH / SJ-....KHS series
A & D SCALES CO. LTD., 164-4 Insan-Ni, Deogsan-Myeon, Jincheon-Gun, KR-135-784 Chungcheongbuk-Do, Korea (R.)

Issuing Authority / *Autorité de délivrance*

International Metrology Cooperation Office, National Metrology Institute of Japan (NMIJ) National Institute of Advanced Industrial Science and Technology (AIST), Japan

R076/1992-JP1-2010.01 (MAA)
Non-automatic weighing instruments - Type: TL-260A, TL-280A. Non-automatic weighing instruments (Instruments for direct sales to the public) - Type: TL-270A, TL-290A
Tanita Corporation, 14-2, 1-Chome, Maeno-cho, Itabashi-ku, JP-147-8630 Tokyo, Japan

Issuing Authority / *Autorité de délivrance*

National Weights and Measures Laboratory (NWML), United Kingdom

R076/1992-GB1-2009.08 Rev. 2
Non-automatic weighing instrument designated the AWB120
Avery Weigh-Tronix Ltd., Foundry Lane, Smethwick, West Midlands B66 2LP, United Kingdom

R076/1992-GB1-2010.06 (MAA)
CI-200 Series, non-automatic weighing instrument
CAS Corporation, #19, Ganap-ri, Gwangjuk-Myoun, Yangju-Si, KR-482-841 Gyeonggi-Do, Korea (R.)

Issuing Authority / *Autorité de délivrance*

NMi Certin B.V., The Netherlands

R076/1992-NL1-2004.33 Rev. 1
Non-automatic weighing instrument - Type: Viper... and BB4 4...
Mettler-Toledo (Albstadt) GmbH, Unter dem Malesfelden 34, DE-72458 Albstadt, Germany

R076/1992-NL1-2008.12 Rev. 1
Non-automatic weighing instrument - Type: BBK4... and VIPER...
Mettler-Toledo (Albstadt) GmbH, Unter dem Malesfelden 34, DE-72458 Albstadt, Germany

R076/1992-NL1-2009.32
Non-automatic weighing instrument - Type: WEB-201
Shanghai Teraoka Electronic Co. Ltd., Tinglin Industry Developmental Zone, Jin Shan County, CN-201505 Shanghai, P.R. China

R076/1992-NL1-2009.33 Rev. 1
Non-automatic weighing instrument - Type: SM-100.., SM-5100..
Shanghai Teraoka Electronic Co. Ltd., Tinglin Industry Developmental Zone, Jin Shan County, CN-201505 Shanghai, P.R. China

R076/1992-NL1-2009.35 Rev. 1
Non-automatic weighing instrument - Type: FMM-PDx00M / FMM-T310x(B)
Fook Tin Technologies Ltd., 4/F Eastern Center, 1065 King's Road, Quarry Bay, HK-Hong Kong

R076/1992-NL1-2010.01 Rev. 1
Non-automatic weighing instrument - Type: T32M... or T32XW...
Ohaus Corporation, 19A Chapin Road, US-NJ 07058 Pine Brook, United States

R076/1992-NL1-2010.04 Rev. 1
Non-automatic weighing instrument - Type: CJ
Shinko Denshi Co. Ltd., 3-9-11 Yushima, Bunkyo-ku, JP-113-0034 Tokyo, Japan

R076/1992-NL1-2010.07
Non-automatic weighing instrument - Type: MS21-NEOV..., MS-235..., MS-2504..., MS-2515..., MS-383..., MS-391..., MS-464..., MS-491..., MS-573..., MS-544..., MS-584..., MFB-59...
Charder Electronic Co. Ltd., No. 103, Kuo Chung Road, Dah Li City, TW-Taichung Hsien 41262, Chinese Taipei

R076/1992-NL1-2010.08
Non-automatic weighing instrument - Type: MS21-NEOVI..., MS-236..., MS-2505..., MS-2516..., MS-384..., MS-392..., MS-465..., MS-490..., MS-570..., MS-545..., MS-581...
Charder Electronic Co. Ltd., No. 103, Kuo Chung Road, Dah Li City, TW-Taichung Hsien 41262, Chinese Taipei

R076/1992-NL1-2010.10
Non-automatic weighing instrument - Type: AW-4600...
Teraoka Seiko Co. Ltd., 13-12 Kugahara, 5-Chome, Ohta-ku, JP-146-8580 Tokyo, Japan

R076/1992-NL1-2010.11
Non-automatic weighing instrument - Type: DPS-4600...
Teraoka Seiko Co. Ltd., 13-12 Kugahara, 5-Chome, Ohta-ku, JP-146-8580 Tokyo, Japan

Issuing Authority / *Autorité de délivrance*

Physikalisch-Technische Bundesanstalt (PTB), Germany

R076/1992-DE1-2006.09 Rev. 1
Non-automatic electromechanical baby weighing instrument - Types: M384x1, M385x1, M834x1, M834x1-I, M834x1-II, M835x1, M835x1-I, M835x1-II
Seca GmbH & Co. kg., Hammer Steindamm 9-25, DE-22089 Hamburg, Germany

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-NL1-2010.02
Indicator, as a part of a non-automatic weighing instrument - Type: IND131 / IND331
Mettler-Toledo (Changzhou) Measurement Technology Ltd., No. 111, West HaiHu Road, ChangZhou XinBei District, CN-213125 Jiangsu, P.R. China

R076/2006-NL1-2010.05 (MAA)
Electronic, self-indicating device, with single [- or multi]-interval or multi range indication - Type: Energy
Grupo Epelsa, S.L., Ctra. Sta. Cruz de Calafell, 35, ES-08830 Sant Boi de Llobregat (Barcelona), Spain

R076/2006-NL1-2010.06
Non-automatic weighing instrument - Type: RM-5800
Shanghai Teraoka Electronic Co. Ltd., Tinglin Industry Developmental Zone, Jin Shan County, CN-201505 Shanghai, P.R. China

R076/2006-NL1-2010.09
Indicator, as a part of a non-automatic weighing instrument - Type: EWU 040
FLSmidth Ventomatic SpA, Via G. Marconi, I-24030 Valbrembo (BG), Italy

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Evidential breath analyzers
Éthylomètres

R 126 (1998)

Issuing Authority / *Autorité de délivrance*

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

R126/1998-FR2-2010.01
Evidential breath analyser SERES type 679E
Alcohol Countermeasure Systems, 60, International Blvd, Ontario M9W 6J2, Toronto, Canada

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  Mrs. Angjelina Kola

- **Republic of Kenya:**
  Mr. Michael Nyamwamu Onyancha

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45th CIML Meeting
21–24 September 2010 - Orlando (Florida, USA))

TC 1 Terminology
29–30 September 2010 - GUM (Warsaw, Poland)

TC 17/SC 1 Humidity and
TC 17/SC 8 Instruments for quality analysis of agricultural products
27–29 September 2010 - Orlando (Florida, USA))

TC 3/SC 5 Conformity assessment
October 2010 (Dates and venue to be confirmed)

Committee Drafts

Received by the BIML, 2010.03 – 2010.05

None

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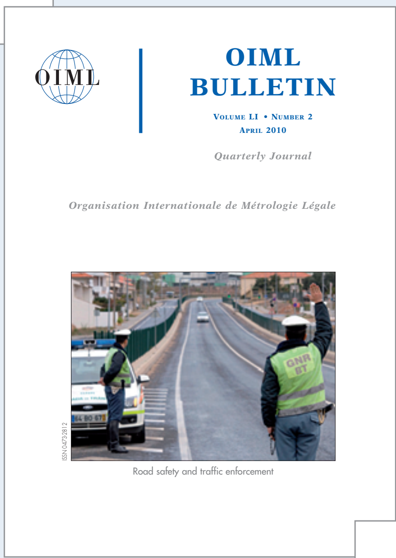

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