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THE OIML BULLETIN IS THE QUARTERLY JOURNAL OF THE ORGANISATION INTERNATIONALE DE MÉTROLOGIE LÉGALE

The Organisation Internationale de Métrologie Légale (OIML), established 12 October 1955, is an intergovernmental organization whose principal aim is to harmonize the regulations and metrological controls applied by the national metrology services of its Members.

EDITOR-IN-CHIEF: Anthony Donnellan
EDITOR: Chris Pulham

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JOSÉ MOYARD IMPRIMEUR
8 RUE ROBERT SCHUMAN
10300 SAINTE SAVINE

OIML SECRETARIAT

BUREAU INTERNATIONAL DE MÉTROLOGIE LÉGALE (BIML)

11 RUE TURGOT – 75009 PARIS – FRANCE

TEL: 33 (0)1 4878 1282
FAX: 33 (0)1 4282 1727
INTERNET: www.oiml.org or www.oiml.int
www.metrologyinfo.org

BIML STAFF

DIRECTOR
Anthony Donnellan (anthony.donnellan@oiml.org)

ASSISTANT DIRECTORS
Paul Dixon (paul.dixon@oiml.org)
Ian Dunmill (ian.dunmill@oiml.org)

STAFF MEMBERS (IN ALPHABETICAL ORDER)
Jalil Adnani: Database Systems Management (jalil.adnani@oiml.org)

Jean-Christophe Esmiol: IT Systems Management (jean-christophe.esmiol@oiml.org)

Florence Martinie: Administrator, Finance (florence.martinie@oiml.org)

Luis Mussio: Engineer (luis.mussio@oiml.org)

Chris Pulham: Editor/Webmaster (chris.pulham@oiml.org)

Patricia Saint-Germain: Administrator, Members (patricia.saint-germain@oiml.org)

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Editorial

Happy New Year!

January is the traditional time to reflect on the accomplishments of the past 12 months and to consider our priorities for the New Year. 2018 was again a productive year for the OIML with many important events, decisions and actions which provide a sound basis for an optimistic approach to 2019.

The OIML-CS was successfully launched on 1 January 2018 with 19 categories of measuring instruments. There are 12 OIML Issuing Authorities, 21 Utilizers and two Associates participating in the OIML-CS and, from 1 January 2019, 37 categories of measuring instruments. It will be a constant challenge for us all to support and promote the OIML-CS wherever possible to ensure it is successful and beneficial for our Members, users and for the Organization.

The 53rd CIML Meeting and related events in Hamburg were very successful and participation was excellent. OIML cooperation with ILAC/IAF and the IEC was strengthened by renewing the respective MoUs, which paves the way for the continued success of our joint collaboration on acceptance and certification systems.

The CEEMS Advisory Group is now established. Its Terms of Reference are clearly defined in OIML B 19 and some important projects were approved in Hamburg. With our CEEMS activities we envisage an even closer cooperation with our sister organization, the BIPM, in the future to jointly promote metrology as an important element of the quality infrastructure (QI) of a country.

Having mentioned that, I would like to congratulate the BIPM on its successful accomplishment of the substantial revision of the SI at the 26th General Conference on Weights and Measures (CGPM) in November 2018 – a most exciting event for a metrologist. The "Revised SI", based on seven fundamental constants, will come into force on 20 May 2019, which is World Metrology Day. This will be a real cornerstone for metrology, even though the impact on practical measurements will be minimal or unnoticeable for nearly all users.

We had a very successful QI Toolkit Workshop in Hamburg, including site visits and practical sessions. There is an article in this Bulletin on the conclusions to this unique event, as well as on other aspects of our Hamburg meetings.

Bonne et Heureuse Année !

Le mois de Janvier est la période traditionnelle pour réfléchir sur les réalisations des 12 derniers mois et pour envisager nos priorités pour la nouvelle année. 2018 a encore été une année productive pour l'OIML, les nombreux événements, décisions et actions importants ayant fourni une base solide pour une approche optimiste de 2019.

L'OIML-CS a été lancé avec succès le 1er janvier 2018 avec 19 catégories d'instruments de mesure. Douze Autorités de Délivrance OIML, 21 Utilisateurs et deux Associés participent à l'OIML-CS, qui compte 37 catégories d'instruments de mesure depuis le 1er janvier 2019. Pour nous tous, le défi constant sera de soutenir et d'encourager autant que possible l'OIML-CS, afin d'assurer son succès et ses bénéfices pour nos Membres, pour nos utilisateurs et pour l'Organisation.

La 53ème Réunion du CIML et les événements s'y rapportant, qui se sont déroulés à Hambourg, ont connu un grand succès et la participation a été excellente. La coopération de l'OIML avec ILAC/IAF et avec la CEI a été renforcée par le renouvellement des Mémorandums d'accord respectifs, ouvrant ainsi la voie à la continuation du succès de notre collaboration sur les systèmes d'acceptation et de certification.

Le Groupe Consultatif des CEEMS est maintenant constitué. Ses Termes de Référence sont clairement définis dans l'OIML B 19 et certains projets importants ont été approuvés à Hambourg. Avec nos activités en faveur des CEEMS, nous envisageons une coopération encore plus étroite à l'avenir avec notre organisation sœur, le BIPM, afin de promouvoir conjointement la métrologie comme un élément important de l'infrastructure de qualité (IQ) d'un pays.

Ceci dit, j'aimerais féliciter le BIPM d'avoir procédé avec succès à la révision substantielle du SI à la 26ème Conférence Générale sur les Poids et Mesures (CGPM) en novembre 2018 – un événement très excitant pour un métrologue. Basé sur sept constantes fondamentales, le « SI révisé » entrera en vigueur le 20 mai 2019, qui est la Journée Mondiale de la Métrologie. Cela représentera un pilier important pour la métrologie, même si l'impact sur les mesures pratiques sera minime ou passera inaperçu pour la plupart des utilisateurs.

À Hambourg, l'Atelier d'Outils IQ s'est très bien déroulé et comportait des visites de sites et des sessions pratiques. Le présent Bulletin contient un article sur les issues de cet événement unique, ainsi que sur les autres aspects de nos réunions à Hambourg.

ROMAN SCHWARTZ
CIML PRESIDENT /
PRÉSIDENT DU CIML

The 2018 OIML CEEMS Award, formerly known as the *OIML Award for Excellent Contributions from Developing Countries to Legal Metrology*, was made to Prof. Carlos Augusto de Azevedo of the Ministerio Da Industria, Comercio Exterior e Serviços – MDIC, Instituto Nacional De Metrologia, Qualidade E Tecnologia – INMETRO, Brazil. Thanks to his initiative, legal metrology services can now be brought to the most remote populations along the Amazon River.

Dr. Charles Ehrlich (USA) was elected CIML First Vice-President, and the Committee appointed Mr. Anthony Donnellan BIML Director as the successor to Mr. Stephen Patoray. After two months as Director Designate, Mr. Donnellan took up his responsibilities with the BIML on 1 January.

Last but not least: With all the personnel and staff changes now successfully completed, 2019 will be a good year to reflect and define a set of concrete goals and steps for the next 4–5 years as regards improving the effectiveness of our technical work, keeping the relevant Recommendations and Documents up to date, concentrating on key tasks, identifying possibilities to further support project group conveners, promoting the OIML-CS to manufacturers and potential Utilizers and Associates, and working more closely together with the BIPM and the RLMOs as regards CEEMS activities. A Task Group, including the President, the Vice-Presidents, the new BIML Director, the Assistant Directors, and Presidential Council members, will consider and elaborate respective proposals to be put forward to the CIML in 2019 and the next Conference in 2020.

In closing, I would like to thank all our Members and the staff at the BIML for their support and contributions as the OIML continues its efforts to promote the global harmonization of legal metrology and assist Members in meeting the challenges of delivering legal metrology programs in today's world economies. I look forward to the 54th CIML meeting in Bratislava and wish you a successful, happy and healthy year. ■

Le Prix CEEMS OIML 2018, anciennement connu sous le nom de *Prix OIML pour les Excellentes Contributions des Pays en Voie de Développement à la Métrologie Légale*, a été remis au Prof. Carlos Augusto de Azevedo du Ministerio Da Industria, Comercio Exterior e Serviços – MDIC, Instituto Nacional De Metrologia, Qualidade E Tecnologia – INMETRO, du Brésil. Grâce à son initiative, des services de métrologie légale peuvent maintenant être apportés à la plupart des populations reculées, le long du fleuve Amazone.

Dr. Charles Ehrlich (États-Unis) a été élu Premier Vice-Président du CIML et le Comité a nommé M. Anthony Donnellan Directeur du BIML, en tant que successeur à Stephen Patoray. Après avoir siégé en tant que Directeur Désigné pendant deux mois, M. Donnellan a pris ses responsabilités au BIML le 1er janvier.

Dernier point mais non des moindres : Toutes les modifications du personnel ayant été réalisées avec succès, 2019 sera une bonne année pour réfléchir et définir un ensemble d'objectifs et de mesures concrets pour les 4–5 ans à venir, concernant l'amélioration de l'efficacité de notre travail technique, tout en gardant les Recommandations et Documents importants à jour, en nous concentrant sur les tâches essentielles, en identifiant les possibilités de soutien ultérieur aux coordinateurs de groupes de projets, en faisant connaître l'OIML-CS aux fabricants et aux Utilisateurs et Associés potentiels, et en travaillant plus étroitement avec le BIPM et les RLMO au sujet des activités des CEEMS. Un Groupe de Travail comprenant le Président, les Vice-Présidents, le nouveau Directeur du BIML, les Adjoints au Directeur et les membres du Conseil de la Présidence considèrera et élaborera des propositions respectives à soumettre au CIML en 2019 et à la prochaine Conférence de 2020.

Pour terminer, j'aimerais remercier tous nos Membres et le personnel du BIML pour leur soutien et leurs contributions, étant donné que l'OIML poursuit ses efforts pour promouvoir l'harmonisation globale de la métrologie légale et pour aider les Membres à relever le défi visant à élaborer des programmes de métrologie légale dans les économies mondiales actuelles. D'avance, je me réjouis de la 54ème Réunion du CIML à Bratislava et vous souhaite une bonne année ainsi qu'une bonne santé. ■

Editorial

Happy New Year!

As we progress towards the 65th Anniversary of the OIML in 2020, it is important that we not only reflect upon and celebrate all of the achievements of the OIML so far, but that we also develop a strategic vision and purpose in order to embrace the future with enthusiasm and foresight.

To do this, we need to recognize the opportunities and challenges facing us on a global scale, especially in our areas of expertise, and act on them accordingly. To assist in this, *Taskgroup 2023* has been established and will play a critical leadership role in this journey. I look forward to receiving and sharing the ideas generated by this leadership group and to receiving ideas and thoughts from all members of the Legal Metrology community to improve the system and make it as relevant and fit-for-purpose as possible both now and in the years to come.

There will also be some big announcements this year with the Redefinition of the SI coming into effect on World Metrology Day, 20 May 2019. The BIML is already working closely with the BIPM in the lead-up to the big day.

Bonne et Heureuse Année !

À l'approche du 65ème anniversaire de l'OIML en 2020, il est important que nous ne réfléchissions et célébrions pas seulement toutes les réalisations de l'OIML jusqu'à ce jour, mais que nous développions également une vision et des objectifs stratégiques, afin d'embrasser le futur avec enthousiasme et prévoyance.

À cet effet, nous devons reconnaître les opportunités et les défis qui nous attendent à une échelle globale, en particulier dans nos domaines d'expertise, et d'agir en conséquence. Le *Groupe de Travail 2023* a été établi dans ce but et jouera un rôle prépondérant de leadership dans ce voyage. D'avance, je me réjouis de recevoir et de partager les idées générées par ce groupe de leadership et de recevoir les idées et pensées de tous les membres de la communauté de Métrologie Légale pour améliorer le système et le rendre le plus pertinent possible en l'adaptant à l'usage, maintenant comme dans les années à venir.

Il y aura également quelques annonces importantes cette année, avec la Redéfinition du SI qui entrera en vigueur lors de la Journée Mondiale de la Métrologie, le 20 mai 2019. Le BIML travaille déjà étroitement avec le BIPM en préparation de ce grand jour.

Anthony Donnellan
BIML Director /
Directeur du BIML

We will also be working with Member States on a needs analysis, feeding into broader work to improve the impact and penetration of the work that the OIML performs. As part of this process, a priority of mine is to develop a closer working relationship with you and your Ministries. Furthermore, we do much critical work with international standard-setting, rule-making, trade policy and development organizations (through International Organizations and RLMOs), with industry and with end-users of measurement technology and processes, as well as the consumer. All of these should not be forgotten as part of the OIML's varied and complex network of stakeholders to engage.

Another priority is the critical and sustained effort that needs to be applied to the development and enhancement of Quality Infrastructure in Member and prospective Member States. This is complemented by the continuing excellent work of the CEEMS and the role of OTC.

The dedicated staff at the Bureau will continue to work hard to ensure that the OIML remains financially viable and represents the needs of Member States with timely and prioritized support of standards development and revision.

The OIML is stronger together but only as strong as its Members.

I look forward to working with you throughout 2019. ■

Nous travaillerons également avec les États Membres sur une analyse des besoins, en veillant à élargir notre coopération, afin d'améliorer l'impact et la pénétration du travail accompli par l'OIML. Dans le cadre de ce processus, l'une de mes priorités est de développer une relation de travail plus étroite avec vous et vos Ministères. De plus, nous accomplissons beaucoup de travaux décisifs avec les organisations internationales de normalisation, de réglementation, de politique commerciale et de développement (par l'intermédiaire des Organisations Internationales et des RLMO), ainsi qu'avec l'industrie, les utilisateurs finaux de la technologie et des procédés de mesurage, et le consommateur. On ne devra pas oublier d'engager ce réseau complexe et varié de parties intéressées de l'OIML.

Une autre priorité concerne l'effort critique et soutenu qui doit être appliqué au développement et à l'amélioration de l'Infrastructure de Qualité dans les États Membres et les États Membres potentiels. Ceci est complété par la poursuite de l'excellent travail des CEEMS et par le rôle des OTC.

Le personnel dévoué du Bureau continuera de travailler dur, afin d'assurer que l'OIML reste financièrement viable et représente les besoins des États Membres avec un soutien opportun et priorisé du développement et de la révision des normes.

L'OIML est plus forte avec, mais seulement aussi forte que ses Membres.

Je me réjouis de travailler avec vous tout au long de l'année 2019. ■

REVISED SI

Fixed values of fundamental constants as a base for new definitions of the SI units

K.A. Bronnikov, V.D. Ivashchuk, L.K. Isaev, M.I. Kalinin and V.V. Khruschov

Abstract

The new definitions of four of the seven base units of the SI (kilogram, mole, ampere and kelvin) based on fixed values of the defining constants (DCs) were adopted at the 26th General Conference on Weights and Measures on 16 November 2018. These definitions and various alternative options for choosing the DCs for such a revision of the SI are considered in this paper. The peculiarities of the new definitions of the kilogram, mole, ampere and kelvin are analyzed.

1 Introduction

The International System of Units (SI) is a development of the metric system of measures, which was created by French scientists and was first widely implemented after the Great French Revolution. In 1799, the first two standards were established: the length unit (meter) and the mass unit (kilogram). The SI was adopted at the 11th General Conference on Weights and Measures (CGPM) in 1960. It included six base units: the meter, the kilogram, the second, the ampere, the degree Kelvin and the candela. In 1967/68, the 13th CGPM changed the name of the thermodynamic temperature unit "degree Kelvin" to "kelvin". In 1971, the 14th CGPM made changes to the SI, adding, in particular, to the set of base units the unit of amount of substance (mole). In 1967, a new definition of the second was established, based on the frequency of radiation corresponding to the transition between the two hyperfine levels of the ground state of cesium-133, instead of the duration of the tropical year. In 1983, it was proposed to fix the exact value of the speed of light in vacuum, and on this basis, the unit of length was redefined: the meter is the distance covered by light in vacuum in the 1/299,792,458 part of a second.

The 2018 revision of the SI [1] is based on the proposal to define four base SI units (the kilogram, mole, ampere, and kelvin) by fixing exact values of some fundamental physical constants (FPCs), following the principle already used in 1983 to override the meter [2–5] when the value of the speed of light was fixed.

The main reason for the change in the existing definitions of these units is the instability of the international prototype of the kilogram (IPK) at the level of 5×10^{-10} per year [6]. The use of the exact values of FPCs is of fundamental importance in metrology, so this proposal was supported by many metrological organizations, meetings and conferences [1,3].

The first proposal to redefine the unit of mass appeared in [7], and the final set of new definitions of the above four base units is formulated in [2]. To redefine the kilogram, ampere, kelvin, and mole, in particular, it was proposed to fix with zero uncertainty the values of the constants: h (the Planck constant), e (the elementary electric charge), k (the Boltzmann constant), and N_A (the Avogadro constant) [1–3]. This set of FPCs has always been considered to be the most preferred one for a transition to new definitions of these four units. For example, in all versions of the 9th edition of the SI Brochure since 2010 (and there were five of them), the presentation of the Revised SI was based on it. In this paper, we present the new definitions of four SI units using fixed values of constants from this set and compare them with other sets of FPCs that could be used for new definitions.

2 Revised SI units

According to the draft of the 9th edition of the SI Brochure [1], the revised definitions of the SI units can be written by directly using the defining constants or using their products or other relations. The term "a defining constant" is used in the latest revision of the SI Brochure for fixed physical constants when overriding the SI units. In particular, new definitions of the kilogram, ampere, kelvin, and mole (based on fixed values of h, e, k and N_A, using the new values from CODATA-2017 [8]), will be effective from 20 May 2019 as follows [9]:

> *The kilogram, symbol kg, is the SI unit of mass. It is defined by taking the fixed numerical value of the Planck constant h to be 6.626 070 15 × 10^{-34} when expressed in the unit J s, which is equal to kg m^2 s^{-1}, where the metre and the second are defined in terms of c and* $\Delta\nu_{Cs}$.

The mole, symbol mol, is the SI unit of amount of substance. One mole contains exactly 6.022 140 76 × 10^{23} elementary entities. This number is the fixed numerical value of the Avogadro constant, N_A, when expressed in the unit mol^{-1} and is called the Avogadro number.

The amount of substance, symbol n, of a system is a measure of the number of specified elementary entities. An elementary entity may be an atom, a molecule, an ion, an electron, any other particle or specified group of particles.

The ampere, symbol A, is the SI unit of electric current. It is defined by taking the fixed numerical value of the elementary charge e to be 1.602 176 634 × 10^{-19} when expressed in the unit C, which is equal to A s, where the second is defined in terms of $\Delta\nu_{Cs}$.

The kelvin, symbol K, is the SI unit of thermodynamic temperature. It is defined by taking the fixed numerical value of the Boltzmann constant k to be 1.380 649 × 10^{-23} when expressed in the unit J K^{-1}, which is equal to kg m^2 s^{-2} K^{-1}, where the kilogram, metre and second are defined in terms of h, c and $\Delta\nu_{Cs}$.

For a transition to the new definitions of the kilogram and mole, the main conditions were the achievement of the 2×10^{-8} uncertainty level of the values of the constants N_A and h and the consistency of these values at the 95 % confidence level [1].

New results of measurements of N_A and h appeared in experiments with silicon spheres and Kibble balances [10,11] with relative standard uncertainty $u_r = 2 \times 10^{-8}$, which was crucial for the adoption and implementation of the new definition of the kilogram. The condition for a transition to a new definition of the kelvin was a measurement of the Boltzmann constant with a relative standard uncertainty $u_r(k) \leq 1 \times 10^{-6}$ [12].

The new definition of the ampere was proposed to be introduced on the basis of a fixed value of the elementary charge. In addition, there remains the problem of closing the so-called quantum metrological triangle [13], whose solution is expected in the near future using the phenomenon of single-electron tunneling [14,15]; it is of decisive importance and should lead to the creation of a new quantum standard of the ampere.

3 The Revised SI and alternatives

The main requirement for the SI revision is that the situation for any user should not be worse than with the current SI. This means, above all, continuity with respect to the existing SI, i.e., using the same set of units and the same values of these units within the accepted accuracy that existed at the time of revision. In addition, the revision should obviously not lead to using new standards of units whose stability would be worse than that of the old ones [17]. For example, the possible temporary instability of the new prototypes of the kilogram should be less than 5×10^{-10} per year. Similar requirements can be applied to all the SI units.

In addition to the basic set (h, N_A, e, k), five possible versions of the Revised SI fixing certain FPCs were considered [18], including the current SI. The five options for choosing FPCs to define SI units are indicated as A, B, C, D, E. For example, the definitions of the kilogram, ampere, kelvin and mole in the previous SI have been considered as conditions of fixing the values of the International prototype of the kilogram (IPK) (m(K)), the magnetic permeability of vacuum (μ_0), the temperature of the triple point of water (T_{tpw}) and the molar mass of carbon ^{12}C ($M(^{12}C)$). This set of defining constants is designated as system A, the set {h, e, k, N_A} as system B, the set {m_u, e, k, N_A} as system C [16], the set {h, μ_0, k, N_A} as system D [19], and the set {m_u, μ_0, k, N_A} as system E [18]. The 26th CGPM has chosen system B [1,3] for the SI revision. The advantages and disadvantages of different versions of the new definitions of the base SI units were widely discussed. The option B with fixing the values of the constants h, e, k, and N_A has been considered as the main one. The unit of mass defined in this version by means of a Kibble balance is called the "electric kilogram". System B leads to zero uncertainty of the Josephson constant K_J and the von Klitzing resistance R_K:

$$K_J = 2e/h,\ R_K = h/e^2 \qquad (1)$$

already used as practical quantum electromagnetic standards. Implementation of system B would solve the current problem of electric metrology, namely, the existence of contractual units 1990 $K_{J\text{-}90}$ and $R_{K\text{-}90}$. We note that in the method of determining the mass using a Kibble balance, the constants K_J and R_K play an important role since this method requires precise measurements using the quantum Hall effect and the Josephson effect. In the Revised SI according to system B, the electric constant ε_0 and the magnetic constant μ_0, satisfying the relations

$$\varepsilon_0\,\mu_0 = 1/c^2,\ \alpha = e^2/(2\,\varepsilon_0\,h\,c), \qquad (2)$$

are not constants. New definitions of the SI units according to system B introduce additional correction factors for ε_0, μ_0 and M_u. Indeed, consider the well-known relation

$$N_A\,h = A_r(e)\,M_u\,c\,\alpha^2/(2\,R_\infty), \qquad (3)$$

where the molar mass constant $M_u = N_A\,m_u$ coincides in the current SI with $M_{u0} = 1$ g/mol ($m_u = m(^{12}C)/12$ is the atomic mass constant), $A_r(e)$ is the relative atomic mass

of the electron, R_∞ is the Rydberg constant, α is the fine structure constant, c is the speed of light in vacuum. Due to Eq. (3), the molar mass constant M_u in the Revised SI is a physical quantity to be determined experimentally. After redefining the SI units, its value will be $M_u = 1{,}000000000 \times 10^{-3}$ kg mol^{-1} with a relative standard uncertainty $u_r = 7{,}0 \times 10^{-10}$.

4 Conclusions

In the preceding version of the SI, the definitions of the kilogram, ampere, mole and kelvin were based on fixed values of the mass of the International prototype of the kilogram (IPK) m(K), the magnetic constant μ_0, the triple point of water T_{tpw}, and the molar mass of the main isotope of carbon ^{12}C, $M(^{12}C)$. In the Revised SI, the definitions of these units are based on fixed values of four defining constants h, e, k, N_A. The advantages of this set of DCs is above all a translation of the fixed values of the Josephson and von Klitzing constants $K_J = 2e/h$ and $R_K = h/e^2$ to the category of permanent SI values, which is important for accurate electromagnetic measurements. In addition, the definitions of the kilogram and the mole become independent from each other, the mole is defined only by a numerical value of the Avogadro constant. However, this variant of overriding the base SI units has a shortcoming: rejection of fixed values of the molar mass constant M_u, the electric constant ε_0, and the magnetic constant μ_0. We can note that version C of the SI revision, with the "atomic kilogram" is free from this shortcoming [16]. ■

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The Authors

K. A. Bronnikov [a,b], V. D. Ivashchuk [a,b], L. K. Isaev [a], M. I. Kalinin [a], and V. V. Khruschov [a,c]

[a] VNIIMS, Ozyornaya ul. 46, Moscow 119361, Russia

[b] Institute of Gravitation and Cosmology, Peoples' Friendship University of Russia (RUDN University), ul. Miklukho-Maklaya 6, Moscow 117198, Russia

[c] National Research Centre "Kurchatov Institute", Ak. Kurchatov Square 1, Moscow 123182, Russia

Hamburg 2018

The 53rd CIML Meeting and associated events were held at the Radisson Blu Hotel in Hamburg, Germany, during the week of 8–12 October 2018.

The Guest Speakers were Dr. Ole Janssen, Deputy Director General, Directorate "Innovation and Technology Policies", Federal Ministry for Economic Affairs and Energy (BMWI) and Dr. Torsten Sevecke, State Counsel of the Hamburg Ministry of Economy, Transport and Innovation.

Their Welcome Speeches are reproduced in full. CIML President Dr. Roman Schwartz also gave a full report to the CIML.

The Resolutions of the CIML Meeting are available on the OIML website under the "Structure" section.

Radisson Blu Hotel, Hamburg (Photo: BIML)

Sunset over Hamburg Harbor (Photo: BIML)

HAMBURG 2018

53rd CIML Meeting

9–12 October 2018
Hamburg, Germany

Opening address by Dr. Roman Schwartz, CIML President

Ladies and Gentlemen, dear Colleagues and Friends,

It is my very great pleasure to welcome you to the Fifty-Third Meeting of the International Committee of Legal Metrology. Welcome to Germany, welcome to Hamburg! I thank you all for coming!

I am grateful for the excellent participation with a record number of more than 170 attendees, with 55 Member States present or represented, with 17 Corresponding Members, and several organizations in liaison and manufacturer's associations.

This makes me highly confident that this year's Committee meeting will be as positive and fruitful as ever, all the more so after the successful start we had yesterday with the OIML Seminar on "Legal Metrology in Practice".

We will again have a very busy Committee meeting with a number of important items on the agenda.

We will have to make decisions that are most important for our Organization.

I will just mention here the decisions we will have to make about the CIML First Vice-Presidency and the new Director of the Bureau.

We will also have a ceremony with the signature of two important Memoranda of Understanding, namely with the IEC and ILAC/IAF.

Let me therefore extend a warm welcome to Mr. Frans Vreeswijk, IEC General Secretary and CEO, Mrs. Merih Malmkvist Nilsson, Chair of ILAC, and Mr. Jianhua Xiao, Chair of IAF. Thank you for coming and for attending our Committee meeting. I look forward to the reports you will be presenting tomorrow.

A warm welcome also to Mr. Andy Henson, Director of the International Liaison and Communication Department at the BIPM, and to the representatives of CECIP, Mr. Karlheinz Banholzer, Mr. Roland Nater and Dr. Luis Cachon.

The last CIML meeting that took place in Germany was held in Berlin, in the year 2004, in conjunction with the 12th OIML Conference. At that time Prof. Manfred Kochsiek opened the Committee meeting as the CIML Acting President. I am grateful and pleased to welcome him today as a still very active Member of Honor of our Organization, as well as the other Members of Honor who are present today, notably the Immediate Past CIML President, Mr. Peter Mason.

It is now my pleasure to especially welcome two distinguished guests, namely Dr. Ole Janssen, representing the Federal Ministry for Economic Affairs and Energy, and Dr. Torsten Sevecke, representing the City of Hamburg.

Both have kindly agreed to give us an opening address today. Let me briefly introduce our first guest speaker for this year's Meeting, Dr. Ole Janssen.

Dr. Janssen is the Deputy Director General for the Directorate "Innovation and Technology Policies" at the Federal Ministry for Economic Affairs and Energy (BMWI). He has had a varied career, beginning in the University of Hanover, were he graduated in economics in 1996. He then became Academic Assistant at the University of Greifswald, where he completed his doctorate with a thesis about "currency board systems" in 2002. His political career started in 2003 at the Ministry for Economic Affairs, Labour and Transport of Lower Saxony, where he served in various offices, finally in the State Chancellery as Head of the department, representing the Federal State of Lower Saxony to the Federation. In 2011 he moved to the Federal Ministry for Economic Affairs and Energy, where he again served in various offices; he is currently the Deputy Director

CIML President Dr. Roman Schwartz addresses the CIML (Photo: PTB)

General for "Innovation and Technology Policy" at the BMWi in Berlin.

Dr. Janssen, may I invite you to the stage, please, to address our meeting.

Following the opening speech by Dr. Ole Janssen, Dr. Schwartz continued:

Thank you very much, Dr. Janssen.

Let me now introduce our second guest speaker, Dr. Torsten Sevecke. Dr. Sevecke is State Council of the Hamburg Ministry of Economy, Transport and Innovation. He studied law, social and economic history at the University of Hamburg, where he completed his Second State Law Examination in 1995 and his PhD examination in 1997. He then entered the Hamburg State Administration and served in various offices. Since this year he is the State Council of the Ministry of Economy, Transport and Innovation of the Federal State and City of Hamburg.

Dr. Sevecke, may I now invite you to the stage, please, to also address our meeting.

Following the opening speech by Dr. Torsten Sevecke, Dr. Schwartz concluded his introductory speech:

Thank you very much, Dr. Sevecke.

Before we proceed with the roll call of participants, let me conclude the opening addresses by thanking you again for coming, wishing us all a very successful meeting, and expressing my hope that you will enjoy the special – maybe even unique – framework program that has been organized for this evening, for tomorrow evening and for Thursday afternoon. I recommend that you make sure you don't miss any of them!

I wish you a great time in Hamburg and hope that you will have the time to enjoy some of its beautiful sights.

I should not forget to (once more) inform you that our professional photographer, Mrs. Bischofs, will take pictures today and over the next several days; some of the pictures are intended to be published and I trust that nobody will mind this.

Now, let's proceed with the roll call. I ask Ian Dunmill, Assistant Director of the BIML, to lead us on this.

Welcome speech by Dr. Ole Janssen
Deputy Director General for the Directorate "Innovation and Technology Policies" at the Federal Ministry for Economic Affairs and Energy

Dr. Ole Janssen gives his welcome speech (Photo: PTB)

Dear Mr. President,
Dear Dr. Sevecke,
Dear CIML Members and Corresponding Members,
Ladies and Gentlemen, Distinguished Guests,

It is my great pleasure to welcome you all, on behalf of the Federal Ministry for Economic Affairs and Energy, to the 53rd meeting of the International Committee of Legal Metrology.

I am especially pleased that this meeting – which is so important for international legal metrology – is taking place in the Free and Hanseatic City of Hamburg, one of the most important commercial centers in Germany today, with a long tradition going back to the 7th century.

The last meeting of the CIML in Germany, in combination with an OIML Conference, took place in our capitol Berlin in 2004. It is a great honor and pleasure for our country to host another CIML meeting after 14 years.

Germany is a founding member of the OIML, which was created in 1955. Germany fully supports the primary goal of the OIML to internationally harmonize

- the technical regulations,
- the technical requirements and
- test procedures for measuring instruments under legal control,
- and to promote mutual recognition of test results and certificates with the aim to reduce technical barriers to trade in the sense of the WTO / TBT agreement.

OIML Certification System

I am pleased that an important step in that direction was taken by the OIML with the launch of the new OIML Certification System on the 1st of January 2018. I am optimistic that the stakeholders in that system – most importantly the manufacturers of measuring instruments and the utilizing National Authorities – will soon discover the benefits: namely that unnecessary and costly double testing is avoided by mutually recognizing qualified certificates and related test results.

German Metrology Law

Legal Metrology is an important pillar of Germany's quality infrastructure.

Verifiably safe products, efficient market surveillance and a consistent metrology system guarantee fair trade and are important factors for a competitive business location.

In Germany, there are about 130 million measuring instruments under legal control, such as weighing instruments, fuel dispensers, water, gas and electricity meters – in total about 150 different types of measuring instruments.

Many of these measuring instruments are regulated by the NAWI-Directive *[Non-automatic weighing instruments]* and the Measuring Instruments-Directive. But Germany has taken a further step: Since 2015, we apply the European regulatory framework to all 150 categories of measuring instruments at the national level.

In Germany, every measuring instrument under legal control has to fulfill the essential requirements when being placed on the market.

OIML Recommendations

Within this framework, OIML recommendations play a significant role: a large number of them have been identified – either by the European Commission or by the responsible body in Germany – as normative documents. Thus, adhering to them provides a presumption of conformity with the essential requirements for measuring instruments.

PTB

PTB as the national metrology institute plays an important part in the new German legal metrology system:

- by operating a conformity assessment body,
- by providing traceability and support for the verification authorities,
- by informing and consulting with stakeholders
- all this with the aim of consumer protection, fair trade and support of the industry.

PTB also supports international technical cooperation and CEEMS activities with more than 40 projects in 90 countries and regions.

Priority topics

Let me finally say some words about how legal metrology relates to several high priority topics of the German government.

a) The German government is committed to promoting e-mobility. This can only be achieved if consumers have confidence in every aspect of these new technologies. Here is where legal metrology plays an important part: making sure consumers are confident in the charging infrastructure by ensuring correct measuring – be it electricity or hydrogen.

b) Digitization will also become more and more important for politics and industry alike. We can already foresee that practically every measuring instrument will be connected to the internet in the future – with every advantage and disadvantage this entails.

Conclusion

May I conclude by wishing you a successful meeting, interesting discussions and enjoyable days in the Free and Hanseatic City of Hamburg. Thank you for your attention. ■

Containers being loaded in the Harbor (Photo: BIML)

Welcome speech by Dr. Torsten Sevecke, State Council of the Hamburg Ministry of Economy, Transportation and Innovation

Dr. Torsten Sevecke gives his welcome speech (Photo: PTB)

Dear Mr. President, Ladies and Gentlemen,

Thank you very much for the opportunity to speak to you. On behalf of the Senate of the Free and Hanseatic and the City of Hamburg I would like to welcome you here in my home town.

The International Committee of Legal Metrology is holding its 53rd meeting here in Hamburg for the first time in my city and we are very proud to have you here. We asked in the "upper circles" if it was possible to give you the best weather ever, and He decided yes! So what you see outside is the legal standard here in Hamburg, the best weather for your conference Ladies and Gentlemen.

As my colleague told you, I am responsible for the Harbor and for other matters here in Hamburg. You have seen our shipping lines and the big cargo terminals; this is the heart of our city and all of industry transits through the port. For over a hundred years Hamburg has been a major industrial port, moving people and goods all over the world and so we are very proud to see you here in our beautiful city especially with these excellent weather conditions.

You have been holding your meetings worldwide since 1955 and you have seen different cities; you have a very interesting agenda for your meeting and from my point of view legal metrology is very important for human beings considering all the industrial products they will use in their lifetime. We are very happy to have you here and I know you will be visiting the Airbus site. The aviation industry here is responsible for even more metrology questions than the shipping lines or the Harbor. The aviation industry here in Hamburg is the second largest in Europe and, together with our colleagues in France, we try to be much better than our colleagues in the United States!

The people of Hamburg have worked hard to hold your congress here in Hamburg. It took us nearly ten years to build a new opera house! This is not as long as some colleagues in other cities such as Berlin to build the airport and I haven't yet seen it's finished! So please feel free to visit the opera house in the center of the Harbor – it is free of charge to visit but you may not be able to buy a ticket for a music concert, although there is a beautiful view with this beautiful weather. I hope you enjoy visiting my city here in Hamburg.

Thank you very much.

Fountain in the city center (Photo: BIML)

HAMBURG 2018

53rd CIML Meeting

9–12 October 2018
Hamburg, Germany

General report by Dr. Roman Schwartz, CIML President, to the 53rd CIML Meeting

Introduction

This is my first report as your CIML President. I thank all CIML Members once more for your confidence and very encouraging support; it is highly motivating for me to serve our Organization and its Members as best as I can for the upcoming years.

Handover

In Colombia there was a very smooth handover of the CIML Presidency after six very successful years of Presidency by Peter Mason, who was made CIML Member of Honor in recognition of his service to the Organization. CIML Past President Alan Johnston was also made Member of Honor, and this became effective in April 2018 on his retirement from Measurement Canada.

Again, the past year has been very busy and I have a lot to report.

Membership

Concerning the changes in membership of our Committee, I am pleased to welcome the following new CIML Members:

Ms. Diane Allan .....Canada
Mr. QIN Yizhi .....China
Mr. Jairo Enrique Malaver Barbosa.....Colombia
Eng. Abdallah Moantasser.....Egypt
Dott. Giuseppe Capuano.....Italy
Mrs. Merita Mustafai .....Macedonia
Dr. Bobjoseph Mathew.....Switzerland
Dr. Ludovic Manege .....Tanzania
Mr. Boonyarit Kalayanamit .....Thailand
Mr. Richard Sanders .....United Kingdom

I am also pleased to welcome the Republic of Kiribati as a new Corresponding Member.

As President Mason stated in Colombia last year, we can again confirm that interest in the work of the OIML across the globe has never been greater and we can all be proud of this fact. We will certainly not rest on our laurels, but take this as an incentive and motivation to work hard in order to keep this high level of interest and remain relevant in a rapidly changing world.

Presidential Council

As CIML President, I have reviewed and slightly modified the composition of the Presidential Council (PC). I appreciate that Charles Ehrlich, Sergey Golubev, Yukinobu Miki and Corinne Lagauterie continue to be members of the Council, and I have also invited Bill Loizides, Mairead Buckley, Himba Cheelo, and Bobjoseph Mathew to join as new members. Their support and advice is precious to me as President and I value their contributions.

At our February-March 2018 PC meeting we discussed many points. We also thoroughly reviewed the 2017 CIML resolutions and the minutes of the 2017 PC meetings and drew up a list of actions to use as a working basis. Let me summarize the key elements below, starting with the review of technical activities.

Review of projects

At the February-March 2018 PC meeting the status of all 55 ongoing projects was reviewed. Of these, 15 projects were identified as having been inactive for a long period of time and they were therefore submitted to the CIML to decide whether they should be cancelled or not. There was a clear decision to cancel all of them, leaving 40 active projects. I am also pleased to report that some previously dormant projects have now started to make progress. There is a strong indication that the recent training sessions coupled with the fact that some new conveners have come on board for several projects have helped in this respect.

Convener training and support

You will be given detailed information on convener training under agenda item 12.3. Training has been held in a number of locations over the last year and further courses are planned for the near future. There was excellent interaction with participants, many of whom confirmed that they found the course to be enjoyable, informative and professional.

I understand that the situation of Project Group conveners is often difficult. I have great respect for the conveners and for the work they carry out, which is often in addition to their work in their national institute, however one of the concerns I have is that globally, the project management needs to be analyzed and improved. I personally attended a convener training

session at the BIML to provide my thoughts on how good project management would help the delivery of Draft Recommendations and Documents. This was based on my personal experience with the revision of R 76. It is my intention that information on project management be incorporated into future training courses.

At our CIML meeting in 2017 I said that I consider it crucial for our Organization that we keep the relevant publications up to date. As we have limited resources, these must be allocated to carrying out key tasks. I have therefore asked the BIML to produce a list of all the Recommendations so that priorities for publication reviews can be identified.

I also asked if the BIML would be able to offer even more support, at least for high priority projects, so that the conveners can focus on the technical aspects of their projects. This is certainly something I will discuss further with the new BIML Director and the PC.

Translations into French

As French is the official language of the Organization, it is important that we make as many key publications and parts of the website as possible available in French. Firstly, I am pleased to report that full introductions to both the OIML-CS and the CEEMS sections of the website are now available in French. Secondly, a priority list of publications that require translation has been drawn up, and work has started to translate R 59 and R 60. OIML B 18 has already been translated, as have R 87 and R 147. R 61 is the next Recommendation on the list of priorities. The BIML is using the support from two professional external translators in order to accomplish the translation work, and the minutes of the 15th Conference are also being translated by a third translator. All this translation work is being carried out in close cooperation with Mrs. Lagauterie.

BIML staff

I would now like to report to you on the BIML staff, especially the situation concerning the three senior members.

As you know, Stephen Patoray will retire at the end of 2018 after eight years as BIML Director. At last year's meeting in Colombia, Resolution no. 2017/3 was approved with the aim of appointing a new BIML Director at the 2018 CIML meeting. Based on that Resolution and on B 13:2004 *Procedure for the appointment of the BIML Director and Assistant Directors*, a Selection Committee was established, composed of six members of the Presidential Council. I have informed CIML Members about the selection process and its outcome by letter, and I will be giving a report under agenda item 4.1.

I am pleased that the Selection Committee was very successful in finding the right candidate to be proposed for appointment as the new BIML Director. There will be a presentation by the candidate under agenda item 4.2 and you will have the opportunity to discuss his candidacy during the meeting.

Still on the subject of the Bureau Staff, in January 2018 we were pleased to welcome Paul Dixon into his role as BIML Assistant Director, having been appointed by the CIML in Colombia.

Finally, also during our meeting in Hamburg the CIML will be discussing and voting on the renewal of the contract of Ian Dunmill. You will recall that in Colombia, the CIML voted to not appoint a Selection Committee for the renewal of his contract.

Financial status

Under item 8, the BIML Director will give a detailed report on the financial situation of the Organization. The global financial health of the Organization is good. I would like to emphasize, however, that in addition to this overall financial situation, it is necessary to keep a close watch on the cash position, and in particular the cash flow, if the Organization is to continue to function smoothly. Our dependence on subscriptions from Member States as the principal source of income means that we rely on timely payments coming in from our Members, in particular the larger ones.

At the 15th International Conference in Strasbourg we discussed the surplus which built up in the accounting period 2012–2016, and decided that this surplus should primarily be used for PG training, in order to improve the efficiency of our technical work.

Related to that discussion, at the last CIML meeting we started to think about the appropriate level of reserves that the Organization should hold. Under agenda item 8.5 of this meeting we will resume the discussion on the surplus and reserves with the aim of submitting a proposal for consideration by the 16th Conference in 2020. It is my firm belief and strong recommendation that we focus the discussion on investment in the future of our Organization in order to ensure that the OIML remains viable and be well prepared for the future. I will come back to this at the end of my report when I will speak about my vision and goals for the Organization.

Corresponding Members

Corresponding Members now benefit much more than in the past from their membership thanks mainly to the interactivity of the OIML website. They can now also participate actively in our technical work, though of course they do not have voting rights.

After discussion at the PC meeting in 2018 it was agreed that a proposal should be developed to ask CIML Members about the possibility of introducing four

distinct classes for Corresponding Members. So under agenda item 8.5 I propose that we have an initial discussion with a view to presenting a proposal that could be put to the 16th Conference in 2020.

The revised SI and cooperation with the BIPM

As I said last year in Colombia, I consider the good and fruitful cooperation with other International Organizations as very important.

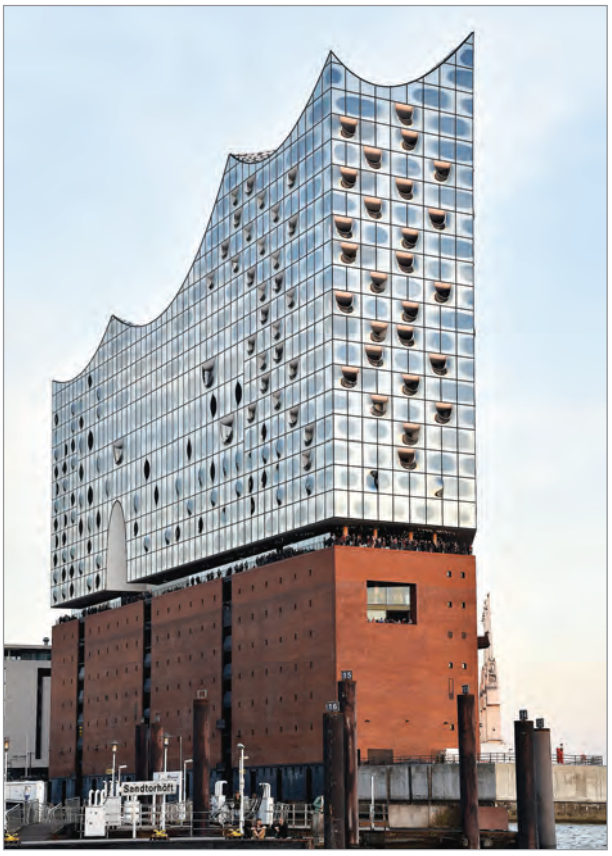
Let me begin with our sister organization dealing with scientific metrology, the BIPM. They are preparing for the 26th General Conference on Weights and Measures (CGPM) to take place from 13–16 November 2018 in Versailles near Paris. This is a most exciting event, at least for metrologists, because it is expected that the CGPM will follow the CIPM recommendation to revise the current International System of Units, the SI, so that it will be based on seven fundamental constants, to come into force on World Metrology Day in May 2019. This will be a real cornerstone for metrology, although the impact on practical measurements will be minimal or unnoticeable for nearly all users.

As an official member of the CCU, the OIML has closely monitored the development of the revised SI from the beginning, and we are looking forward to hearing more about the current developments and decisions in the report of the BIPM under agenda item 9.3 and under agenda item 12.4.

We will certainly need to consider the impact on OIML publications, e.g. D 2, for which a Project Group has been set up. The BIPM as a liaison organization will be following the work closely with us. There is also a need to identify other OIML publications that will possibly be affected by the revision of the SI, such as R 111 for weights of different accuracy classes. To this end the BIML is about to put out a call to all Secretariats to review their respective publications to see if there are any changes required.

In my new role as CIML President I have not yet had very many opportunities to meet with representatives of the BIPM. A good opportunity was the quadripartite meeting in March 2018, which I attended together with Charles Ehrlich and Stephen Patoray, where we discussed – among many other things – the update of the Joint "BIPM, OIML, ILAC and ISO declaration on metrological traceability". I would also like to mention the excellent cooperation between the BIPM and the OIML on World Metrology Day, which was again this year a resounding success. As I mentioned, next year's World Metrology Day will be a really exciting event.

Finally, I would like to mention that I am invited to attend the 26th CGPM and to give a presentation entitled *Developing a common vision for scientific and legal metrology: the OIML perspective*. I am sure that a common vision and a common concept to promote metrology as an important element of the quality infrastructure of a country makes perfect sense in an interconnected world.



Elbphilharmonie Concert Hall, Hamburg (Photo: PTB)

OIML-IEC and OIML-ILAC/IAF cooperation

I am pleased to report that the liaisons with the IEC and ILAC/IAF also remain a very significant part of the OIML's work. We are going to renew our MoUs with both the IEC and ILAC/IAF at our meeting in Hamburg and I very much look forward to the signing ceremony under agenda item 9.4. I am pleased that Mr. Frans Vreeswijk, IEC General Secretary and CEO, Mrs. Merih Malmqvist Nilsson, ILAC Chair, and Mr. Xiao Jianhua, IAF Chair, will personally attend the CIML meeting in Hamburg to represent their organizations.

One of the key reasons for updating our MoUs is to address the new OIML Certification System (OIML-CS) which came into force on 1 January 2018.

Concerning the cooperation with IEC, Paul Dixon and myself met several times with representatives of the IEC (Chris Agius, Executive Secretary of IECEx; Mark Amos, IECEx secretariat; Dr. Thorsten Arnhold, IECEx Management Committee Chair) to discuss the renewal of our MoU and possibilities to strengthen our cooperation in the future. Paul Dixon and I were also

invited to attend the IECEx Management Committee meeting in Cannes, France, on 20–21 September 2018, where we gave a report primarily about the current status of the OIML-CS.

Please refer to CIML agenda items 9.3 and 9.4 for more information.

RLMOs

I am pleased to report that as in previous years, over the past year BIML staff have attended meetings of a number of regional legal metrology organizations. I personally hope to be able to accept invitations to RLMO meetings in the future.

I am also pleased to point out that all the RLMOs have been invited to participate in the OIML-CS Management Committee as observers. Dr. Miki will be giving a comprehensive oral report during our meeting.

Other organizations

I would like to mention four other organizations with which we maintain regular contacts: the International Organization for Standardization (ISO), the World Health Organization (WHO) concerning medical devices, CODEX Alimentarius concerning food packaging labelling, and UNECE WP.6 regarding regulatory cooperation.

CEEMS Advisory Group (AG) and CEEMS activities

Concerning CEEMS, the Advisory Group is now established and B 19 *Terms of Reference for the Advisory Group on matters concerning Countries and Economies with Emerging Metrology Systems (CEEMS)* has been published. A joint project of the CEEMS AG with the BIPM is the revision of D 1 *Considerations for a Law on Metrology,* and in the future we envisage even closer cooperation with the BIPM, especially in capacity building and Quality Infrastructure (QI) activities.

Improvements have been made to the webpages for CEEMS activities (including translation into French) and some further upgrading is ongoing to address the training centers.

A survey of the needs of CEEMS was sent out to OIML Members in June 2018 to assess what support they require. The outcome will be analyzed and more information will be given under agenda item 10.

An Expert database is currently being compiled and work is being carried out on the required legal disclaimer before it can be made live.

There have been three successful Pilot Training Center events in Kenya, P.R. China and Cuba. Detailed information will be provided on this under agenda item 12.3. In this context, at the last PC meeting we also discussed the need to review the Arcachon resolution on CEEMS and develop a consistent curriculum for the OIML Training Centers (OTCs).

OIML-CS

On 1 January 2018, the new OIML Certification System (OIML-CS) came into force and replaced the former Basic Certificate System and the Mutual Acceptance Arrangement (MAA). The first OIML-CS Management Committee (MC) meeting was held in Sydney, Australia on 21–22 March 2018, in conjunction with a meeting of the Review Committee, which is a sub-committee of the MC, and a lab-tour and symposium organized by the host, NMI Australia. As the Chairman of the provisional Management Committee (prMC) I attended all the meetings, which were very successful with almost 50 participants from 18 countries. At the time of compiling this report there are 12 OIML Issuing Authorities, 20 Utilizers, two Associates and 19 categories of measuring instruments. The objective for 2020 is 36 categories.

I would again like to stress the importance of awareness raising and identifying potential opportunities. 'Standard' presentations will be made available which can then be used when talking about or promoting the OIML-CS. It is important, for instance, to get the message across that a Member State does benefit from the OIML-CS not only as an OIML Issuing Authority, but also as a Utilizer, with full voting rights in the MC. In addition, Corresponding Members can also benefit as Associates.

Together, we can all help promote the OIML-CS and ensure it is successful. It is also important to ensure that the OIML-CS is included on the agenda of RLMO meetings.

We will be given detailed reports during our meeting from the MC Chairperson, Cock Oosterman and from the Executive Secretary, Paul Dixon under agenda item 11.

Vision and goals

I spoke of my vision and goals a year ago in Colombia. I believe that our Organization is in very good shape, but that we still face some challenges to ensure that we are well prepared for the future.

At our CIML meeting in 2017 I summarized my vision as follows:

1 Technical work – there is a need to improve the effectiveness of our technical work with the aim of keeping the relevant Recommendations and Documents up to date. It is therefore important that we identify the priority for reviewing and updating publications. We must use all available resources to carry out key tasks and identify possibilities to further support conveners.
2 OIML-CS – to make it a success we need to continue to promote it to manufacturers and to potential Utilizers and Associates. To support this, further promotional activities will be undertaken and

additional promotional materials made available.

3 CEEMS – greater cooperation is required with the BIPM and the RLMOs to "sell" metrology as a package that is part of the QI for a country. We will work on this together.

4 Closer cooperation is required with other international organizations, especially the BIPM. A small task group should look at this within the current framework. A suggestion is for the Directors and Presidents to meet, which would result in a win-win situation if done in the right way.

My proposal is that after the PC meeting in March 2019, a respective "Task Group 2023" be formed, including the President, the two Vice-Presidents, the new BIML Director, the two Assistant Directors, and one or two PC members, with a view to elaborating proposals to be put forward to the CIML in 2019 or the 16th Conference in 2020. Leading on from this, it is crucial that the OIML adapts to address the key challenges of the 21st century such as digitization, analysis of big data, better market surveillance and remote verification.

There is also the issue of Conformity to Type (CTT) and how to best assist Member States to overcome the "golden sample" issue, which some of our Members claim to have resolved by certain regulations and programs, but others possibly still consider as a key challenge. I recall saying during the seminar held in Utrecht in 2011 that the OIML should concentrate on pre-market activities, because post-market activities are up to countries and are concerned by national legislation. I hope that the new OIML Document on CTT that is being developed will be finalized very soon.

Thank you for your support!

In concluding my report, after my first year as your President I would like to extend my deepest appreciation for the support I have received from Acting First Vice-President Dr. Miki, all the members of the PC, the BIML Director and all his staff, and also our Immediate Past President Mr. Peter Mason. Your support and guidance has meant that over the past year we have accomplished a great deal and we are shaping the way for our future.

I very much hope that the vacancy of the position of the CIML First Vice-President can be filled at the CIML meeting in Hamburg. There will be a presentation by the candidate and a vote on his election.

Looking forward, I am confident that our Organization is well prepared to meet the needs of our Members and the challenges we will certainly be facing. I hope you share my optimism and look forward to heading into 2019 and the following years. ■

Group visit to Airbus (Photo: PTB)

OIML Awards

During the Hamburg CIML meeting a number of OIML Awards were presented:

- **the 2018 OIML CEEMS Award;**
- **Three OIML Medals, and**
- **Five Letters of Appreciation.**

2018 OIML CEEMS Award

The 2018 OIML CEEMS Award was made to Prof. Carlos Augusto de Azevedo of the Ministerio Da Industria, Comercio Exterior e Serviços – MDIC, Instituto Nacional De Metrologia, Qualidade E Tecnologia – INMETRO, Brazil. He has made a major contribution to bringing legal metrology services to the most remote populations along the Amazon River.

Brazil is a country covering 8.5 million km^2, in which creating an adequate infrastructure to provide legal metrology services is a major challenge.

In the case of the Amazon River this challenge is even larger, as access to the most remote populations is only by the river itself.

To resolve this problem, Prof. Azevedo is the mentor of a fluvial unit containing a total infrastructure to provide legal metrology services, among other research activities. In 2017 the first unit was released and recently a second unit was inaugurated providing, in addition to the legal metrology services, a DNA research laboratory.

The fluvial units will cover 61 municipalities along the Amazon River during one year, performing inspections on behalf of the Weights and Measurements Institute of the Amazon State (IPEM-AM) in Brazil. One vessel is equipped with three laboratories (prepackage, health and chrono-tacographs) and one multimedia center and the second has volume, mass and length laboratories. ■

CIML Member for Brazil Mr. Raimundo Alves de Rezende (right) receives the OIML CEEMS Award from Dr. Roman Schwartz (left) on behalf of Prof. Carlos Augusto de Azevedo (Photo: PTB)

Prof. Carlos Augusto de Azevedo (Photo: INMETRO)

2018 OIML Medals

During the Awards ceremony at the 53rd CIML Meeting, the CIML President gave OIML Medals to the following individuals in recognition of their contribution to the work of the OIML:

- Ms. Anneke van Spronssen,
- Mr. George Teunisse, and
- Mr. Stephen Patoray.

Dr. Roman Schwartz presents an OIML Medal to Mrs. Annecke van Spronssen (Photo: PTB)

Dr. Roman Schwartz presents an OIML Medal to Mr. George Teunisse (Photo: PTB)

Dr. Roman Schwartz presents an OIML Medal to Mr. Stephen Patoray (Photo: PTB)

2018 Letters of Appreciation

During the Awards ceremony at the 53rd CIML Meeting, the OIML President also gave Letters of Appreciation to the following individuals in recognition of their contribution to the work of the OIML:

- George Teunisse,
- Dr. Toshiyuki Takatsuji,
- Mr. Jaco Marneweck,
- Ms. Galina Bityukova, and
- Mr. Roland Nater.

CEEMS Workshop

Ensuring Quality to Access Markets: A Reform Toolkit

"This is exactly what we needed!"

The Seminar "Legal metrology in practice" was open to representatives of OIML Member States and Corresponding Member countries, representatives from RLMOs, potential OIML Issuing Authorities, Utilizers and Associates, and manufacturer representatives. It took place on Monday 8 October 2018 and comprised two main parts:

1 - Monday morning: Technical visit – "Post-market" activities

The objective of the first part of the Seminar was to show how national regulations for measuring instruments are enforced. Examples are taximeters, storage tanks for mineral oil in harbors, and truck scales that are verified regularly by the "Verification Authority North" based in Hamburg. Delegates were able to visit both the Authority with its test facilities for taxis etc., located in the center of Hamburg, and also the harbor area with storage tanks for mineral oil.

2 - Monday afternoon: Workshop – Information about the "QI Toolkit"

The QI toolkit is a new tool to support the implementation and sustainable operation of a Quality Infrastructure (QI) of a country which comprises the elements metrology, standards, accreditation, inspection, testing, product certification, management system certification, technical regulation framework including legal metrology as a mandatory part of metrology. It was developed in a joint cooperation project by the World Bank and the PTB.

The Workshop aimed to provide detail and an explanation about the concept of how to evaluate the status and efficacy of the QI in a country, e.g. the maturity level of the legal metrology system, and how the toolkit can benefit OIML Members. A break-out session allowed the participants to apply the toolkit practically using the example of a fictitious country.

At 18:00 after the Seminar there was a "Get-together" to which all participants in the Hamburg events were invited.

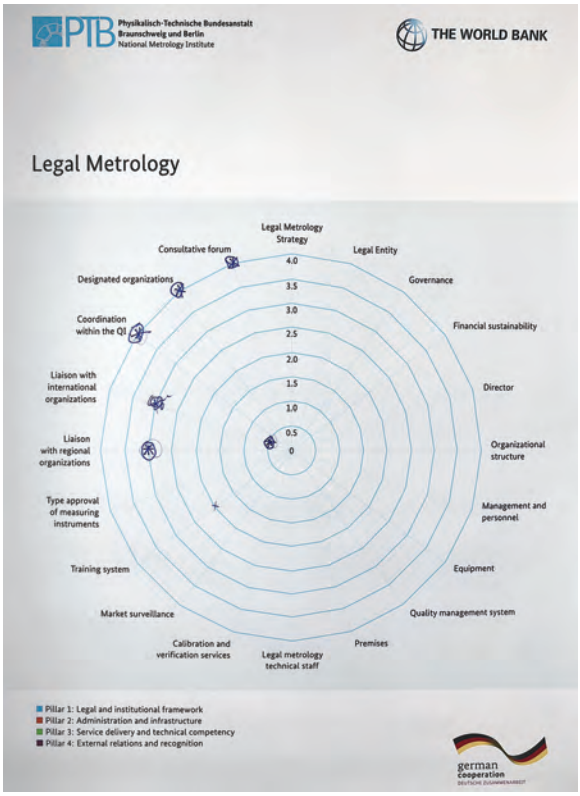
(Photo: PTB)

For many years, the OIML has recognized that those of its members whose metrology systems are not yet fully developed face a number of distinct challenges. Addressing these challenges has become a priority for the Organization since 2013 when the CIML established an Advisory Group on matters concerning Countries and Economies with Emerging Metrology Systems (CEEMS), chaired by the CIML Member for the People's Republic of China. Formal Terms of Reference for this Advisory Group were approved by the CIML in 2017. The CEEMS countries were the target group of the seminar on the topic of *"Quality Infrastructure"* during the 53rd CIML meeting in October 2018 in Hamburg, Germany.

Honorary Professor Dr. Roman Schwartz, CIML President and Vice President of the PTB, welcomed the guests to Germany. *"Hamburg was the ideal location for this meeting,"* said Dr. Schwartz. *"With a visit to the Hamburg verification office, which included descriptive presentations of the verification of taximeters, fuel pumps, exhaust meters and mineral oil storage tanks at Hamburg's harbor and at the aeroplane manufacturer Airbus, the participants were able to gain a lively impression of the economic significance of the use of metrology and verification in Germany."*

The seminar *"Ensuring Quality to Access Markets: A Reform Toolkit"* was co-hosted by the PTB and the World Bank Group. Eighty-eight participants from 48 countries and 17 participants from separate institutions attended the seminar. During the workshop, the new *Quality Infrastructure (QI) Reform Toolkit* was presented. In today's highly competitive global markets, a country's ability to produce high-quality products is directly linked to its economic success. Product quality is at the root of Germany's economic growth and prosperity, with the trademark "Made in Germany" being a selling point across the globe.

Dr. Roman Schwartz presents the Workshop (Photo: PTB)



Legal metrology components (Photo: PTB)

Therefore, the German government is naturally committed to enabling its partners in emerging and developing countries to access new markets and strengthen their competitiveness by enhancing the quality of their products. In the framework of its technical cooperation, it places special emphasis on the core of its own quality production: a well-functioning quality infrastructure (QI). Such a QI system offers proof that products and services comply with the necessary market requirements regarding quality and safety. It can therefore boost trade and reduce trade costs, enhance technology transfer and innovation, increase investments and competitiveness, and protect consumers. The importance of QI for economic, ecological and social development is reflected in the development agenda of the German government and the European Union. In the new German Aid for Trade strategy, quality infrastructure was identified as one of the main pillars for enhancing the capabilities of developing countries to reap the benefits of free, fair and safe trade.

On behalf of the Federal Ministry for Economic Cooperation and Development (BMZ), the PTB advises governments and ministries, promotes quality infra-

structure institutions and supports small and medium-sized enterprises. This is realized following a demand-oriented and systematic approach, oriented towards international good practices. The outstanding effects of this cooperation are reflected in economic development and the strengthening of consumer protection.

In 2016, the World Bank Group and the PTB formally established a partnership which increased their collaboration in the implementation of QI development cooperation and led to the elaboration of this QI diagnostic and reform toolkit.

This product will help practitioners and governments to analyze and assess the QI system in a particular country in a holistic manner. It also provides an overview of international good practices, recommendations on QI reforms and on coherent support for those reforms and the necessary capacity development.

The presentation of the QI Reform toolkit in the framework of the CIML Meeting aimed at publicizing the toolkit to the participants, especially to countries who may use it to evaluate their QI systems, as well as to obtain feedback from the experts in usability and content of the instruments and raise awareness on the importance of quality infrastructure for economic, environmental and social development. Participants were made familiar with the QI Reform toolkit, its instruments and its practical application, using the example of Legal Metrology. Therefore, after the presentation of the toolkit as a whole, participants split into working groups during a break-out session in order to apply the Rapid Diagnostic Tool to Legal Metrology. In lively discussions the participants used the toolkit questionnaires and tested for their applicability. During the break-out sessions and in the following plenary session, input and feedback on the main findings were provided to the World Bank and PTB Team, and open questions were discussed.

Using the toolkit questionnaires, the quality of the metrological infrastructure of a country can be assessed and also the further necessary development steps can be identified. This lively practical test of the toolkit has demonstrated that it passed its baptism of fire with distinction. Andy Henson, Director of the International Liaison and Communication Department of the BIPM, was very impressed with the concept and the functionality of the QI toolkit: *"This is exactly what we needed!"* he said.

The feedback obtained is currently being incorporated into the final publication which is scheduled to be published in March 2019.

In the meanwhile, more information on its content and related topics can be found here:

www.worldbank.org/qi or www.ptb.de/qitoolkit.

Contact:
Susanne Wendt
Project Coordinator
German Institute of Metrology (PTB)
Susanne.Wendt@ptb.de

Workshop attendees (Photo: PTB)

Seminar and Workshop attendees (Photo: PTB)

OIML Certificates: www.oiml.org/en/oiml-cs

Certificates registered 2018.10–2018.12

The OIML Certification System (OIML-CS)

The OIML-CS is a system for issuing, registering and using OIML Certificates and their associated OIML type evaluation reports for types of measuring instruments (including families of measuring instruments, modules, or families of modules), based on the requirements of OIML Recommendations.

It is a single Certification System comprising two Schemes: Scheme A and Scheme B (see the OIML website).

The aim of the OIML-CS is to facilitate, accelerate and harmonize the work of national and regional bodies that are responsible for type evaluation and approval of measuring instruments subject to legal metrological control. In the same way, instrument manufacturers, who are required to obtain type approval in some countries in which they wish to sell their products, should benefit from the OIML-CS as it will provide evidence that their instrument type complies with the requirements of the relevant OIML Recommendation(s).

It is a voluntary system and OIML Member States and Corresponding Members are free to participate. Participating in the OIML-CS commits, in principle, the signatories to abide by the rules of the OIML-CS. OIML B 18:2017 *Framework for the OIML Certification System (OIML-CS)* establishes these rules whereby signatories voluntarily accept and utilize OIML type evaluation and test reports, when associated with an OIML Certificate issued by an OIML Issuing Authority, for type approval or recognition in their national or regional metrological controls.

The OIML-CS was launched on 1 January 2018 and replaces the OIML Basic Certificate System and the OIML Mutual Acceptance Arrangement (MAA).

The OIML Basic Certificate System

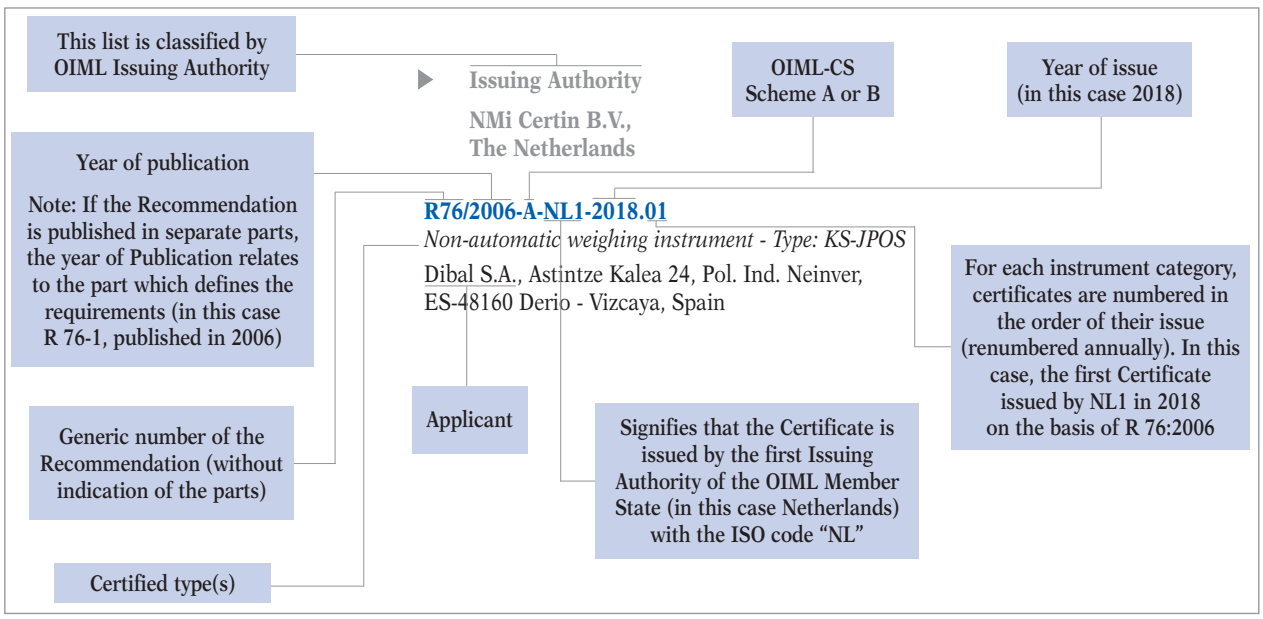
The OIML Basic Certificate System for Measuring Instruments was introduced in 1991 to facilitate administrative procedures and lower the costs associated with the international trade of measuring instruments subject to legal requirements.

The System provided the possibility for manufacturers to obtain an OIML Basic Certificate and an OIML Basic Evaluation Report, indicating that a given instrument type complies with the requirements of the relevant OIML International Recommendation. The Basic System was described in OIML B 3 *OIML Basic Certificate System for OIML Type Evaluation of Measuring Instruments*, which was withdrawn when the OIML Certification System was introduced in January 2018.

The OIML MAA

In addition to the Basic System, the OIML developed a Mutual Acceptance Arrangement (MAA) which was related to OIML Type Evaluations. This Arrangement - and its framework - were defined in OIML B 10 *Framework for a Mutual Acceptance Arrangement on OIML Type Evaluations*, which was also withdrawn when the OIML Certification System was introduced in January 2018.

The Basic and MAA certificates shown on the following pages were issued before the launch of the OIML-CS. All existing Basic and MAA certificates remain valid, although no new (or revisions to) Basic and MAA certificates can be issued from 1 January 2018.



INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Water meters intended for the metering of cold potable water and hot water
Compteurs d'eau pour le mesurage de l'eau potable froide et de l'eau chaude

R 49 (2006)

▶ Issuing Authority / *Autorité de délivrance*

NMRO Certification Services (NMRO), United Kingdom

R049/2006-GB1-2010.01 Rev. 2
Family of cold-water meters named WaterMaster, utilising a common, electromagnetic principle, FEV1 & FET1

ABB Limited, Oldends Lane, Stonehouse UK-GL10 3TA, United Kingdom

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

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

R 49 (2013)

▶ Issuing Authority / *Autorité de délivrance*

Czech Metrology Institute (CMI), Czech Republic

R049/2013-CZ1-2016.04 Annex. 1
Water Meter

Arkon Flow Systems, s.r.o., Berkova 534/92, CZ-612 00 Brno, Czech Republic

R049/2013-CZ1-2017.03 Annex. 1
Water meter - Type: PD97TRP

Lianyungang Lianli - First Meter Co., Ltd., 9# Yuzhou South Road, Haizhou Development Zone, Jiansu, P.R. China

Color code:	
OIML-CS Scheme A Certificate	OIML Basic Annexes
OIML-CS Scheme B Certificate	OIML MAA Annexes

▶ Issuing Authority / *Autorité de délivrance*

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

R049/2013-FR2-2016.02 Annex. 1
Water meters - Types: TU1 40F, TU1 50, TU1 65, TU1 80, TU1 100 and TU1 150

Itron France, 9 rue Ampère, FR-71031 Macon, France

▶ Issuing Authority / *Autorité de délivrance*

NMi Certin B.V., The Netherlands

R049/2013-B-NL1-2018.01
Electromagnetic water meter - Type: MUT2300 and MUT2200EL with electronic converter MC406M

Euromag International S.r.l., Via della Tecnica 20, IT-35035 Mestrino (PD), Italy

R049/2013-B-NL1-2018.02
Electromagnetic water meter - Type: KEFD

Shanghai Kent Instrument Co. Ltd., Kangfa Road No. 169, Tinglin Town, Shanghai, P.R. China

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 Institute of Metrology, P.R. China

R051/2006-B-CN2-2018.01
Automatic catchweighing instrument - Type: HEW61-57BC

Xuzhou WIKA Electronics Control Technology Co. Ltd., No. 11 Baoliansi Road, Xuzhou Economic Development Zone, Jiangsu, P.R. China

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

NMi Certin B.V.,
The Netherlands

R051/2006-B-NL1-2018.05
Automatic catchweighing instrument -
Type: Octopus Max
VWS Nederland B.V., Hoogschaihksestraat 25,
NL-5374 EC Schaijk, Netherlands

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***

NMi Certin B.V.,
The Netherlands

R060/2000-A-NL1-2018.03
Bending beam load cell, with strain gauges - Type: LHE-2
Huzhou Liheng Electronic Technology Co. Ltd., No. 69 Hengda Road, Qianyuan Town, CN-313216 Zhejiang, P.R. China

R060/2000-A-NL1-2018.16 Rev. 1
Bending beam load cell, with strain gauges -
Type: PW15AH, PW15PH
Hottinger Baldwin Messtechnik GmbH,
Im Tiefen See 45, DE-64293 Darmstadt, Germany

R060/2000-A-NL1-2018.22
Shear beam load cell, with strain gauges -
Type:SBSF-x000Lx, SBSF-000Hx
Transcell Technology Inc., 975 Deerfield Park Way,
IL-60089 Buffalo Grove, Illinois, United States

R060/2000-A-NL1-2018.26
Compression load cell, with strain gauges - Type: MC-CT
Marques Electronic Technology (Ningo) Co., Ltd.,
Room 113, Building B, Xidan Industry Park,
No 126 Zhenning, West Road, Jiauchuan Street,
CN-315200 Ningbo City, P.R. China

R060/2000-A-NL1-2018.27
Single point load cell, with strain gauges - Type: PW22
Hottinger Baldwin Messtechnik GmbH,
Im Tiefen See 45, DE-64293 Darmstadt, Germany

R060/2000-A-NL1-2018.28
Compression load cell, with strain gauges - Type: CT
Tuna Tarti ve Elektronik Sistemler Ltd. Sti., 1202/2 Sk. No. 31/112 Halkapinar Mah., Konak, Izmir, Turkey

R060/2000-A-NL1-2018.29
Bending beam load cell, with strain gauges -
Type: M100 or PR77
MinebeaMitsumi Inc., 1-1-1 Katase Fujisawa-shi,
JP-251-853 Kanagawa-ken, Japan

R060/2000-A-NL1-2018.30
Single point load cell, with strain gauges -
Type: MT1022-. . .
Mettler-Toledo (Changzhou) Precision Instrument Ltd.,
No. 22 Zhengqiang Rd., Xinbei District, Jiangsu,
P.R. China

R060/2000-A-NL1-2018.31
Single point load cell, with strain gauges - Type: MT1041
Mettler-Toledo (Changzhou) Precision Instrument Ltd.,
No. 22 Zhengqiang Rd., Xinbei District, Jiangsu,
P.R. China

R060/2000-A-NL1-2018.32
Single point load cell, with strain gauges - Type: MT1241
Mettler-Toledo (Changzhou) Precision Instrument Ltd.,
No. 22 Zhengqiang Rd., Xinbei District, Jiangsu,
P.R. China

R060/2000-A-NL1-2018.33
Single point load cell, with strain gauges - Type: MT1260
Mettler-Toledo (Changzhou) Precision Instrument Ltd.,
No. 22 Zhengqiang Rd., Xinbei District, Jiangsu,
P.R. China

R060/2000-A-NL1-2018.34
Shear beam load cell, with strain gauges - Type: SBT
Dini Argeo Srl, Via Della Fisica, 20,
IT-41042 Spezzano di Fiorano (MO), Italy

R060/2000-A-NL1-2018.35
Shear beam load cell, with strain gauges -
Type: RL35063S
Rice Lake Weighing Systems, 230 West Coleman Street,
US-54868 Rice Lake, Wisconsin, United States

Issuing Authority / *Autorité de délivrance*

NMRO Certification Services (NMRO), United Kingdom

R060/2000-A-GB1-2018.02 Rev. 1
Type: 730

Tecnicas de Electronica Y Automatismos, S.A., C/Espronceda 176, ES-08018 Barcel, Spain

R060/2000-A-GB1-2018.02 Rev. 2
Type: 730

Tecnicas de Electronica Y Automatismos, S.A., C/Espronceda 176, ES-08018 Barcel, Spain

R060/2000-A-GB1-2018.03 Rev. 1
Type: AC

Cardinal Scale Manufacturing Co., 203 East Daugherty Street, P.O. Box 151, US-64870 Webb City, Missouri, United States

R060/2000-A-GB1-2018.03 Rev. 2
Type: AC

Cardinal Scale Manufacturing Co., 203 East Daugherty Street, P.O. Box 151, US-64870 Webb City, Missouri, United States

R060/2000-GB1-2005.06 Rev. 2 Annex. 01
Eurocell CPD & CPD-M, stainless steel, compression load cell with digital output

Societa Cooperativa Bilanciai Campogalliano a.r.l, Via S. Ferrari, 16, IT-41011 Campogalliano (Modena), Italy

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*

NMRO Certification Services (NMRO), United Kingdom

R076/1992-A-GB1-2018.01
Type: FW500 Series

CAS Corporation, #262, Geurugogae-ro, Gwangjeok-myeon, Gyenonggi-do, Korea (R.)

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*

Institut fédéral de métrologie METAS, Switzerland

R076/2006-A-CH1-2018.03 Rev. 1
Non-automatic analytical/precision weighing instrument - Type: MS. . .TS, ML. . .T

Mettler-Toledo AG, Im Langacher 44, CH-8606 Greifensee, Switzerland

R076/2006-A-CH1-2018.04
Non-automatic analytical/precision weighing instrument - Type: MS . . . TS, ML. . .T

Mettler-Toledo Instrument (Shanghai) Co., Ltd, 589 GuiPing Road, CN-200233 Shanghai, P.R. China

R076/2006-A-CH1-2018.04 Rev. 1
Non-automatic analytical/precision weighing instrument - Type: MS. . .TS, ML. . .T

Mettler-Toledo Instrument (Shanghai) Co., Ltd, 589 GuiPing Road, CN-200233 Shanghai, P.R. China

R076/2006-CH1-2017.03 (MAA)
Non-automatic weighing instrument - Type: XPR/XSR Precision Balance Family

Mettler-Toledo GmbH, Im Langacher 44, PO Box MT-100, CH-8606 Greifensee, Switzerland

Issuing Authority / *Autorité de délivrance*

FORCE Certification A/S, Denmark

R076/2006-A-DK2-2018.03
Type: BW / BWS / VW / CW / CWS / KW / EKW / ELW / NSW / NTW

Tscale Electronics Mfg. (Kunshan) Co., Ltd, No. 99 Shunchang Road, Zhoushi, Jiangsu, P.R. China

R076/2006-A-DK2-2018.04
Type: 185

Cardinal Scale Manufacturing Co., 203 East Daugherty Street, P.O. Box 151, US-64870 Webb City, Missouri, United States

R076/2006-A-DK2-2018.04 Rev. 1
Type: 185
Cardinal Scale Manufacturing Co., 203 East Daugherty Street, P.O. Box 151, US-64870 Webb City, Missouri, United States

▶ **Issuing Authority / *Autorité de délivrance***
Laboratoire National de Métrologie et d'Essais, Certification Instruments de Mesure, France

R076/2006-A-FR2-2018.01 Rev. 0
Type: P1401-A
Precia SA, BP 106, FR-07001 Privas Cedex, France

▶ **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

R076/2006-A-JP1-2018.01
Non-automatic weighing instrument - Type: SJ-.. AWP/SJ-.. AWP-BT series
A&D Company Ltd., 3-23-14 Higashi-Ikebukuro, Toshima-Ku, JP-170-001 Tokyo, Japan

R076/2006-A-JP1-2018.02
Non-automatic weighing instrument - Type: HV-..C, HV-..CP, series
A&D Company Ltd., 3-23-14 Higashi-Ikebukuro, Toshima-Ku, JP-170-001 Tokyo, Japan

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

R076/2006-A-NL1-2018.28
Non-automatic weighing instrument - Type: CS-1200
Dibal S.A, Astinze Kalea, 24-Pol. Ind. Neinver, ES-48160 Derio (Bilbao-Vizcaya), Spain

R076/2006-A-NL1-2018.30
Non-automatic analytical/precision weighing instrument - Type: AURORA S1
Xiamen RongXing New Century Petroleum Equipment Mfg. Co., Ltd, No. 1299 TongJi M. Rd, CN-361100 Tongan, Xiamen, P.R. China

R076/2006-A-NL1-2018.31 Rev. 1
Analog data processing device - Type: LE-DigiCell
Mettler-Toledo (Changzhou) Measurement Technology Ltd, N° 111, West TaiHu Road, XinBei District, CN-213125 Jiangsu, P.R. China

R076/2006-A-NL1-2018.35
Non-automatic weighing instrument - Type: Centrella
Hill-Rom, 1069 State Route 46 East, US-47006 Batesville, Indiana, United States

R076/2006-A-NL1-2018.40
Non-automatic weighing instrument - Type: RM-5800III
Shanghai Teraoka Electronic Co. Ltd., Ting Lin Industry Development Zone, Jin Shan District, CN-201505 Shanghai, P.R. China

R076/2006-A-NL1-2018.41
Indicator - Type: Intuition 20i, Intuition 22i
VPG TRANSDUCERS., 26 Harokmim St. Building B, 6th floor, Azrieli Center Holon, 5885849 Holon, Israel

R076/2006-A-NL1-2018.41 Rev. 1
Indicator - Type: Intuition 20i, Intuition 22i
VPG Transducers, 26 Harokmim St. Building B, 6th Floor, Azrieli Center Holon, 5885849 Holon, Israel

R076/2006-A-NL1-2018.42
Non-automatic weighing instrument - Type: Scout SJX series
Ohaus Corporation, 7, Campus Drive, Suite 310, NJ-07054 Parsippany, New Jersey, United States

R076/2006-A-NL1-2018.45
Non-automatic weighing instrument - Type: DI-771
Teraoka Seiko Co., Ltd., 13-12 Kugahara, 5-Chome, Ohta-ku, JP-146-858 Tokyo, Japan

R076/2006-A-NL1-2018.46
Indicator - Type: AD-4406A
A&D Instruments Ltd., Unit 24/26 Blacklands Way, Abingdon Business Park, Abingdon UK-OX14 1DY, United Kingdom

R076/2006-A-NL1-2018.47
Non-automatic weighing instrument - Type: HT-N series
Shinko Denshi Co., Ltd, 3-9-11 Yushima, Bunkyo-ku, JP-113-003 Tokyo, Japan

R076/2006-A-NL1-2018.48
Non-automatic weighing instrument - Type: AW-5600, AW-5600CP, AW-5600CPR, AW-5600FX
Teraoka Seiko Co. Ltd., 5-13-12, Kugahara, Ohta-ku, JP-146-8580 Tokyo, Japan

R076/2006-A-NL1-2018.49
Non-automatic analytical/precision weighing instrument - Type: DPS-560

Teraoka Seiko Co. Ltd., 5-13-12, Kugahara, Ohta-ku, JP-146-8580 Tokyo, Japan

R076/2006-A-NL1-2018.50
Non-automatic analytical/precision weighing instrument - Type: DPS-5600, DPS-5600M

Teraoka Seiko Co. Ltd., 5-13-12, Kugahara, Ohta-ku, JP-146-8580 Tokyo, Japan

R076/2006-A-NL1-2018.51
Non-automatic weighing instrument - Type: FreshWay. . .,FW. . .,FW-V. . .

Mettler-Toledo GmbH, Im Langacher 44, PO Box MT-100, CH-8606 Greifensee, Switzerland

▶ Issuing Authority / *Autorité de délivrance*

NMRO Certification Services (NMRO), United Kingdom

R076/2006-A-GB1-2018.06
Type: KTACS Series

Ningbo ETDZ HanSen Measurement Co., Ltd, No.8 NenJian Road, Beilun, CN-315800 Ningbo, P.R. China

R076/2006-A-GB1-2018.08
Type: CI-2001 Series

CAS Corporation, #262, Geurugogae-ro, Gwangjeok-myeon, Gyenonggi-do, Korea (R.)

R076/2006-A-GB1-2018.09
Type: CL3000 Series

CAS Corporation, #262, Geurugogae-ro, Gwangjeok-myeon, Gyenonggi-do, Korea (R.)

R076/2006-A-GB1-2018.10
Type: CI-600A Series and CI-600D Series

CAS Corporation, #262, Geurugogae-ro, Gwangjeok-myeon, Gyenonggi-do, Korea (R.)

R076/2006-A-GB1-2018.11
Type: RW-5000 Series: RW-5002PL Model

CAS Corporation, #262, Geurugogae-ro, Gwangjeok-myeon, Gyenonggi-do, Korea (R.)

R076/2006-A-GB1-2018.14
Type: CL5200N Series

CAS Corporation, #262, Geurugogae-ro, Gwangjeok-myeon, Gyenonggi-do, Korea (R.)

R076/2006-A-GB1-2018.15
Type: DD1010, DD1010IC, DD1010I, DD1010H, DD1010ICH, DD1010IH, DD1010 Flynet, DD1010IC Flynet, DD1010I Flynet, DD1010H Flynet, DD1010ICH Flynet, DD1010IH Flynet

Societa Cooperativa Bilanciai Campogalliano a.r.l, Via S. Ferrari, 16, IT-41011 Campogalliano (Modena), Italy

R076/2006-A-GB1-2018.17
Type: SWII Plus Series

CAS Corporation, #262, Geurugogae-ro, Gwangjeok-myeon, Gyenonggi-do, Korea (R.)

▶ Issuing Authority / *Autorité de délivrance*

Slovak Legal Metrology (Banska Bystrica), Slovakia

R076/2006-A-SK1-2018.01
Type: ACS-. . . E, ACS-. . .EP

Shanghai Zhuojing Electronic Technology Co., Ltd., Building 26, No. 99, Chunguang Road, Xinzhuang Industrial Zone, Shanghai, P.R. China

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Automatic level gauges for fixed storage tanks
Jaugeurs automatiques pour les réservoirs de stockage fixes

R 85 (2008)

▶ Issuing Authority / *Autorité de délivrance*

Czech Metrology Institute (CMI), Czech Republic

R085/2008-B-CZ1-2018.01
Magnetostrictive level gauge - Type: VISY-Stick, VISY-Stick Advanced, VISY-Stick Flex

FAFNIR GmbH, Schnackenburgalle 149c, DE-22525 Hamburg, Germany

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

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

R 117 (1995) + R 118 (1995)

▶ Issuing Authority / *Autorité de délivrance*

Russian Research Institute for Metrological Service (VNIIMS)

R117/1995-RU1-2003.01 Rev. 4 Annex. 01
Midco Fuel dispensing pump (MEB Series/MPD Series/MMS Series/Midco SureFill Series)
Gilbarco Veeder-Root India Private Limited, Art Guild House, 'B' wing, 1st floor, Phoenix Marketcity, LBS marg, Kurla (west), 400070 Mumbai, India

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Dynamic measuring systems for liquids other than water
Ensembles de mesurage dynamique de liquides autres que l'eau

R 117 (2007) + R 118 (1995)

▶ Issuing Authority / *Autorité de délivrance*

Russian Research Institute for Metrological Service (VNIIMS)

R117/2007-RU1-2017.05 Annex. 01
MIDCO Fuel Dispensing Units SureFill/AccueFill Series, Suction type and Remote (Pressurized) Type
Gilbarco Veeder-Root India Private Limited, Art Guild House, 'B' wing, 1st floor, Phoenix Marketcity, LBS marg, Kurla (west), 400070 Mumbai, India

▶ Issuing Authority / *Autorité de délivrance*

NMi Certin B.V., The Netherlands

R117/2007-B-NL1-2018.03
Measurement transducer - Type: Promass Q 300 DNxxx, Promass Q500 DNxxx
Endress + Hauser Flowtec AG, Kagenstrasse 7, CH-4153 Reinach BL 1, Switzerland

R117/2007-B-NL1-2018.03 Rev. 1
Measurement transducer - Type: Promass Q 300 DNxxx, Promass Q500 DNxxx
Endress + Hauser Flowtec AG, Kagenstrasse 7, CH-4153 Reinach BL 1, Switzerland

R117/2007-B-NL1-2018.04
Measuring device, intended to be used as part of a measurement instrument - Type: ALTOSONIC 5 UFC and UFC 5
Krohne Altometer, Kerkeplaat 12, NL-3313 LC Dordrecht, Netherlands

R117/2007-B-NL1-2018.05
Special gas extractor - Type: EGS_1 and EGS_2
Liquid controls, LLC, 105 Albretch Drive, IL-60044 Lake Bluff, Illinois, United States

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Gas meters
Compteurs de gaz

R 137 (2012)

▶ Issuing Authority / *Autorité de délivrance*

NMi Certin B.V., The Netherlands

R137/2012-B-NL1-2018.10
Electronic Gas Meter - Type: x485xxx
MeteRsit, Viale dell'Industria 31, IT-35129 Padova, Italy

R137/2012-B-NL1-2018.12
Ultrasonic gas meter - Type: Q.Sonic
Elster GmbH, Steinern Strasse 19-21, DE-55252 Mainz-Kastel, Germany

R137/2012-B-NL1-2018.13
Rotary displacement gas meter - Type: IM-RM
Pietro Fiorentini S.p.A., Via E. Fermi 8/10, IT-36057 Arcugnano (VI), Italy

R137/2012-B-NL1-2018.14
Measuring instrument - Type: ZT-G(value), ZT-G(value)A, G(value)S, G(value)A

Zhejiang Chint Instrument and Meter Co., Ltd, Wenzhou Bridge, Industrial Zone Yueqing, CN-325603 Wenzhou Zhejiang, P.R. China

R137/2012-B-NL1-2018.15
Diaphragm Gas Meter - Type: xxS (steeel) / HP xxA (aluminium) (XX is G6, G10, G16, G25, WG6, WG10, WG16, WG25)

ZENNER Metering Technology (Shanghai) Ltd., No. 6558, East Yinggang Road, Qingpu Industrial Zone, Shanghai, P.R. China

R137/2012-B-NL1-2018.16
Diaphragm Gas Meter - Type: xxS (steeel) / HP xxA (aluminium) (XX is G1.6, G2.5, G4, WG2.5)

Marques Electronic Technology (Ningo) Co., Ltd., Room 113, Building B, Xidan Industry Park, No. 126 Zhenning, West Road, Jiauchuan Street, CN-315200 Ningbo City, P.R. China

R137/2012-B-NL1-2018.17
Ultrasonic gas meter - Type: 3414 / 3415 / 3416 / 3417 GUSM or Senior Sonic

Daniel Measurement and Control, Inc, 11100 Brittmore Park Drive, TX 77041 Houston, Texas, United States

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Gas measuring systems
Ensembles de mesurage de gaz

R 139 (2014)

Issuing Authority / *Autorité de délivrance*

Czech Metrology Institute (CMI), Czech Republic

R139/2014-B-CZ1-2018.01
Dispenser for compressed natural gas (CNG) - Type: OCEAN BMP 40xx.Oxx/CNG

Tatsuno-Benc Europe a.s., Prazska 2325/68, CZ-67801 Blansko, Czech Republic

OIML Certification System (OIML-CS)

List of OIML Issuing Authorities and their scopes

The list of OIML Issuing Authorities is published in each issue of the OIML Bulletin and can be downloaded at www.oiml.org/oiml-cs/oiml-issuing-authorities

Updated: 2019-01-21

		R 21:2007	R 46:2012	R 49:2006	R 49:2013	R 50:2014	R 51:2006	R 60:2000	R 61:2004	R 75:2002	R 76:1992	R 76:2006	R 85:2008	R 99:2008	R 106:2011	R 107:2007	R 117:1995	R 117:2007	R 126:1998	R 129:2000	R 134:2006	R 137:2012	R 139:2014
AU1	National Measurement Institute Australia (NMIA)					■					■	■											
CH1	Federal Institute of Metrology (METAS)		■			■	■	■	■			■			■	■			■		■		
CN2	National Institute of Metrology, China (NIM)		■			■	■	■	■		■	■				■		■			■	■	
CZ1	Czech Metrology Institute (CMI)									■			■				■	■				■	■
DE1	Physikalisch-Technische Bundesanstalt (PTB)						■	■		■		■											
DK2	FORCE Certification A/S					■	■		■			■			■	■				■	■	■	
FR2	Laboratoire National de Métrologie et d'Essais (LNE)					■	■	■				■							■				
GB1	NMO	■				■	■	■	■		■	■	■		■	■	■	■		■	■		
JP1	NMIJ/AIST							■			■	■											
NL1	NMi Certin B.V.	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
SE1	Research Institutes of Sweden (RISE)						■		■				■				■	■					
SK1	Slovak Legal Metrology (SLM)											■											

OIML Certification System (OIML-CS)

List of Utilizers, Associates and their scopes

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Updated: 2019-02-04

1 = Scheme A only
2 = Scheme A and MAA
3 = Scheme A and B
4 = Scheme A, B and MAA

		R 21:2007	R 46:2012	R 49:2006	R 49:2013	R 50:2014	R 51:2006	R 60:2000	R 60:2017	R 61:2004	R 75:2002	R 76:1992	R 76:2006	R 85:2008	R 99:2008	R 106:2011	R 107:2007	R 117:1995	R 117:2007	R 126:1998	R 129:2000	R 134:2006	R 137:2012	R 139:2014
AU	National Measurement Institute, Australia (NMIA)				2			2				2	2											
BE	Federal Public Service Economy	3	3		3	3	3	1		3	3		1	3	3	3	3		3		3		3	3
CA	Measurement Canada							2			1		2											
CH	Federal Institute of Metrology (METAS)		1	2	2	1	1	2		1	1		2			1	1			1	1	1	1	
CN	State Administration for Market Regulation (SAMR)							2				2	2											
CO	Superintendencia de Industria y Comercio (SIC)	3	3	4	4	3	3	2		3	3	2	2	3	3	3	3	3	3	3	3	3	3	3
CU	National Bureau of Standardization (NBS)	3	3	3	3	3	3	2		3	3	2	2	3	3	3	3	3	3	3	3	3	3	3
DE	Physikalisch-Technische Bundesanstalt (PTB)				4	3	3	2		3	3		2	3		1	3		3		3	1		3
DK	FORCE Certification A/S			2	2	1	1	2		1		2	2			1	1				1	3		
FR	Laboratoire National de Métrologie et d'Essais (LNE)	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1		1	1	1	1	1	1
GB	NMO Certification	3		4	4	3	3	2		3		2	2	3		3	3	3	3		3	3		
IN	Legal Metrology Division, Department of Consumer Affairs	3	3		4	3	3	2		3	3		2	3		1	3		3		3	1	3	3
JP	National Metrology Institute of Japan / National Institute of Advanced Industrial Science and Technology (NMIJ/AIST)							2				2	2											
KH	National Metrology Centre (NMC)	3	3	3	3	3	3	1		3	3	1	1	3	3	3	3	3	3	3	3	3	3	3
KR	Korea Testing Certification (KTC)											2	2											
LV	LNMC Ltd. Metrology Bureau																			3		3		
NA	Namibian Standards Institution		3	4	4	3	3	2		3		4	4	3		3	3	3	3	3	3	3		
NL	NMi Certin B.V.	3	3	3	4	3	3	2		3	3	1	2	3	3	3	3	3	3	3	3	3	3	3
NZ	Trading Standards (Ministry of Business, Innovation and Employment) (MBIE)			4	4	3	3	2				2	2	3		3	3	3	3		3	3		
SA	SASO (Saudi Standards, Metrology and Quality Organization)		3		1				1				1						3					
SK	Slovak Legal Metrology (SLM)												2											
US	National Conference on Weights and Measures (NCWM)							2																
ZA	NRCS: Legal Metrology			3	3		3	1				1	1	3		3	3	3	3	3	3	3	3	3
ZM	Zambia Metrology Agency	3	3	3	3	3	3	1		3	3	1	1	3	3	3	3	3	3	3	3	3	3	3

info

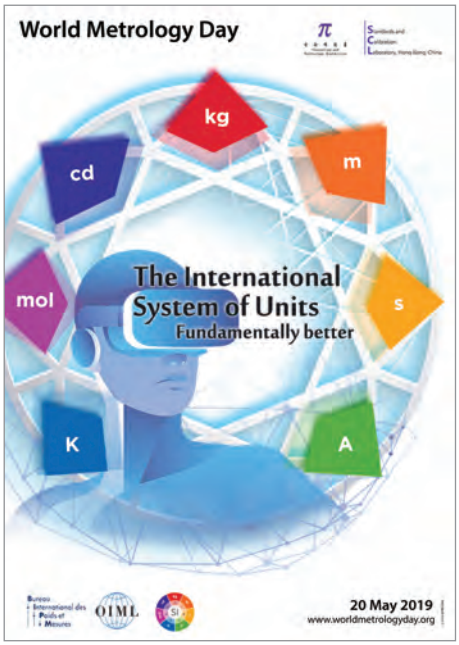
OIML meetings

February 2019

OIML TC 17/SC 7/p 3
Revision of R 126
13–15 February 2019
LNE, Paris

October 2019

54th CIML Meeting and Associated Events
21–25 October 2019
Bratislava, Slovak Republic



World Metrology Day 2019:
www.worldmetrologyday.org

Committee Drafts

Received by the BIML, 2018.11 – 2019.01

Revision of OIML R 16-2: R yyy: Non-invasive automatic sphygmomanometers	1 CD	TC 18/SC 1/p 1	CN
Revision of OIML R 16-1: R xxx: Non-invasive non-automatic sphygmomanometers	2 CD	TC 18/SC 1/p 1	CN
Revision of R 117: Dynamic measuring systems for liquids other than water	2 CD	TC 8/SC 3/p 4	US
New Recommendation: Continuous totalizing automatic weighing instruments of the arched chute type	2 CD	TC 9/SC 2/p 9	UK
Revision of D 5: Principles for the establishment of hierarchy schemes for measuring instruments	2 CD	TC 4/p 2	SK

Call for papers

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RLMOs
Liaison Institutions
Manufacturers' Associations
Consumers' & Users' Groups, etc.

- Technical articles on legal metrology related subjects
- Features on metrology in your country
- Accounts of Seminars, Meetings, Conferences
- Announcements of forthcoming events, etc.

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- the paper originals of any relevant photos, illustrations, diagrams, etc.;
- a photograph of the author(s) suitable for publication together with full contact details: name, position, institution, address, telephone, fax and e-mail.

Note: Electronic images should be minimum 150 dpi, preferably 300 dpi.

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