

New impact report: Fundamental measurement research on the International System of Units and Open Excellence



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FOCUS ON THE IMPACT OF MEASUREMENT SCIENCE

Foreword from EURAMET Chairperson Dr Beat Jeckelmann



EVENTS

Workshop on European Metrology Networks

9 January 2018
Paris, France

TC-EM Workshop on the EMPIR 2018 Call

15 to 16 January 2018
Prague, Czech Republic

TC for Photometry and Radiometry Annual Meeting 2018

30 January to 1 February 2018
Bratislava, Slovakia

TC for Metrology in Chemistry Annual Meeting 2018

5 to 9 February 2018
Vienna, Austria

TC for Ionising Radiation Annual Meeting 2018

7 to 9 February 2018
Vienna, Austria

15th TC Chairs & BoD Meeting and TC Chairs Workshop

15 February 2018
Berlin, Germany

TC for Time and Frequency Annual Meeting 2018

7 to 8 March 2018
Caparica, Portugal

In 2017 we were celebrating 30 years of successful collaboration in European metrology. A good reason to pause and look back to reflect on the way forward.

It is EURAMET's vision to ensure that Europe has a world leading metrology capability, based on high-quality research, and an inclusive network based infrastructure to meet the rapidly growing needs for quality assured measurements in industry and related to grand societal challenges.

In the course of the year we have developed the concept of "European Metrology Networks" with the aim to improve the coordination among our members. There will be more to hear about this in the near future. And there have been plenty of other noteworthy events over recent months.

We welcomed Dagmar Auerbach as the new manager for the European Metrology Research Programmes and also Haris Memić (IMBIH), who took over a secondment as 'Regulation Support' to foster the work of EURAMET's 'Regulation Scrutiny Group'.

The two key European measurement organisations, WELMEC and EURAMET, have been looking for ways to intensify their collaboration. Just a few weeks ago, WELMEC, the European Cooperation in Legal Metrology, moved its secretariat to EURAMET.

In addition, this newsletter focuses on the different aspects of impact that metrology is delivering:

- A new report highlights fundamental measurement research from joint research projects on the International System of Units and Open Excellence (page 3).
- A new calibration guideline on 'Calibration of Autocollimators' has been published and three more were updated (page 7).
- In numerous training courses organised by EURAMET, the measurement community found a suitable platform for knowledge transfer and further development (page 11).
- At the last UN Climate Change Conference discussions focused on how to measure CO₂ emissions, but this is not the only aspect where measurements are involved in climate change questions. Learn in this issue how EURAMET's measurement research contributes to climate change monitoring (page 4).

2017 has been a year full of positive developments and challenges and there are still a few weeks to go. We hope you enjoy reading issue 13 of our newsletter and we wish you all the best for the festive season and beyond.

SAVE THE DATE – 12TH EURAMET GENERAL ASSEMBLY IN 2018

EURAMET's 12th General Assembly will take place in Bucharest, Romania from 28 May to 1 June 2018.

It will be hosted by INM, the Romanian National Metrology Institute. Further information will be available in due course.



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Impact & Innovation

NEW REPORT HIGHLIGHTS FUNDAMENTAL MEASUREMENT RESEARCH FROM EMRP PROJECTS ON THE INTERNATIONAL SYSTEM OF UNITS AND OPEN EXCELLENCE – REDEFINITION OF SI UNITS WILL ADDRESS GLOBAL CHALLENGES IN AREAS SUCH AS ENERGY, ENVIRONMENT AND HEALTH



European manufacturers require reliable measurements that give the same answer wherever they are made. Accurate measurements, with traceability to international standards, provide an objective base for decision-making in development and production and provide a basis for global trade. The solution to global challenges such as moving to renewable energy, delivering high quality healthcare and protecting the environment are all dependent on a reliable and internationally agreed measurement infrastructure. This structure supports innovation, efficient manufacturing and fair trade, and underpins health, safety, security and protection of the environment.

Just a few weeks ago the International Committee for Weights and Measures submitted a resolution recommending the redefinition of four base units of the International System of Measurement – the SI: the kilogram, the ampere, the kelvin and the mole. The recommendations will go before the General Conference on Weights and Measures, which oversees the SI, for final worldwide agreement in November 2018.

If the submission passes the vote, the four units will be based on exact values of four fundamental constants from 20 May 2019.

In 2010 EURAMET's European Metrology Research Programme (EMRP) launched a call for research on the SI and open excellence. The aim of this EU funded research was to develop the SI to meet the future measurement needs of industry and society and to bring together the best scientists in Europe to explore new techniques that have not yet been applied in measurement science. Focus was placed on the SI units for temperature, mass, electric current and time, and on technologies required by users for its implementation.

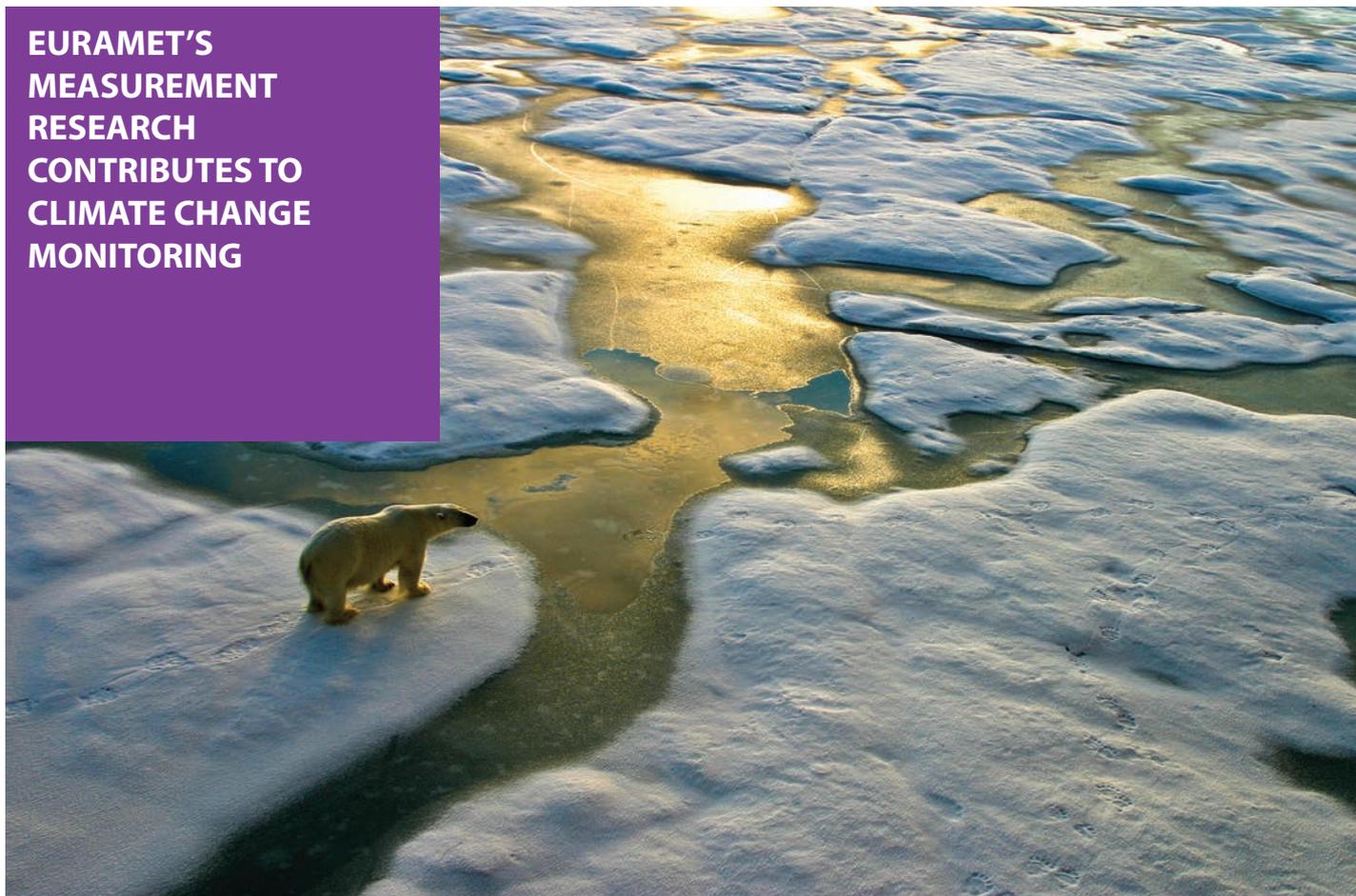
The newly published impact report on 'Metrology for SI Broader Scope' (SIB) and 'Metrology for Open Excellence' contains examples of the key technical achievements, summarises the measurement challenges and explores new measurement capabilities developed as a result of collaborations of National Metrology Institutes and Designated Institutes within these EMRP projects.

In addition, the report focuses on how the projects contributed to the planned SI redefinition, preparations for implementing the revised SI, the development of practical realisations and traceability of measurement results.

As part of these EMRP themes, 28 research groups from 42 metrology institutes came together with academia and industry to work on 14 SIB projects and 4 Open Excellence projects, which combined the knowledge, expertise and facilities of Europe's measurement community to address global challenges in areas such as energy, environment and health.

The full report is available for download on EURAMET'S website:
<https://www.euramet.org/?news=40:642>

EURAMET'S MEASUREMENT RESEARCH CONTRIBUTES TO CLIMATE CHANGE MONITORING



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The recent UN Climate Change Conference held in Bonn, Germany, was the next step by governments towards the implementation of the Paris Climate Change Agreement. This conference aimed at accelerating the global transformation to a sustainable, resilient and climate-safe environment.

At the conference, the UN Secretary-General António Guterres urged world leaders to follow through with the Paris Agreement and to increase climate action commitments:

"Climate change is the defining threat of our time. Our duty - to each other and to future generations - is to raise ambition."

Representatives from 200 countries and organisations discussed the fundamental question of how states measure their CO₂ emissions and worked together towards agreement on the international rules for implementing the Paris Agreement.

Accurate and comparable measurements play a vital role in the protection of environmental and climate changes. A key challenge for Europe is protecting the environment and safeguarding our quality of life whilst maintaining economic growth. Meeting increasing demands for accurate long term climate change data requires technological innovations and improvements to meteorological measurements traceability.

EURAMET's European Metrology Research Programmes, EMRP and EMPIR, funded research projects to improve climate change measurement accuracy therefore helping to increase the quality of data used in environmental policy making. By working with the academic, meteorology and space communities, European NMIs ensure that measurements of the internationally defined Essential Climate Variables are available to climate scientists and policy makers.

Andrea Merlone (INRIM, Italy), Convenor of EURAMET's Task Group 'Metrology for Environment' says:

"Better measurements in the climate sector will show their real benefit in the coming years or decades. The main effort in detecting climate change should be focussed on how to harmonise and compare the climate data to some reference. The task of the measurement community is to contribute to the improvement of data quality that only metrology can deliver. We hope the next generation of climatologists will have in their hands accurate, traceable and, most of all, comparable data, in both space and time."

EURAMET projects have:

- Developed an environmental chamber to enable devices for temperature, pressure and humidity sensors to be calibrated at remote climate sensing stations so creating better measurements links to the SI.
- Made significant progress towards the goal of an 'NMI in space' that will calibrate and validate climate data from Earth observation satellites.
- Improved confidence in climate data.
- Improved accuracy in atmospheric and upper atmosphere data.
- Contributed to improved measurements and control for greenhouse gas emissions which are contributing to climate change.

To access the above mentioned case studies and further information, please go to EURAMET's website: <https://www.euramet.org/?news=40:639>

CONFIDENCE IN CLIMATE DATA



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Central to our understanding of climate change are reliable Earth models. These models depend on complex measurements for validation of variables such as ice cover, cloud cover, sea level and temperature that can only be made from space using satellites. The Earth observation community needs to be able to compare and combine these satellite data, regardless of the conditions under which they were collected, to ensure robust climate forecasts.

Challenge

The instruments used on board satellites to make measurements of key climate variables are calibrated prior to launch to ensure their accuracy. However, instrument performance can change. Changes in instrument response post-launch, due for example to the effects of reduced gravity, can be estimated but this makes the calculation of measurement uncertainties – and therefore the accuracy of the measurements – problematic.

Without sufficient knowledge of how accurate measurements are made, it is very difficult to compare climate data produced from different sources, using different methods, at different points in time. This limits the usefulness of available data, both historic and current. Improved uncertainty evaluation methods are required to enable greater confidence in climate data and the climate projections they underpin.

Solution

The EMRP project 'European metrology for Earth observation and climate' carried out research to better understand the performance of climate monitoring instrumentation in space and the measurement uncertainties that arise in this operating environment. Based on this extensive study, project researchers developed a method that enables the most robust comparison to date of historic and modern climate data from satellites. The method is freely-available to climate researchers in a good practice guide.

Impact

The UK Met Office generates some of the most comprehensive climate projections ever produced, to help decision-makers assess the UK's risk exposure to climate change and inform mitigation and adaptation strategies. These predictions are guided by climate data generated from many sources, both historic and current.

The Met Office will use the new uncertainty evaluation method developed within the project, to enable the combination of climate data collected on the most recent European Sentinel satellite missions with its existing datasets. This opens up a significant amount of additional climate data to the Met Office for climate monitoring and modelling purposes, improving the quality and range of measurements available to guide its climate projections.

The method and the research it is based on have also been assembled into a course and textbook for Earth observation scientists, to be made freely-available online in the near future, due to continuing funding support from EMRP. This is a significant step towards improving understanding and use of measurement uncertainty evaluation in the climate research community and will contribute to improved climate models and projections.

Earth observation metrology

The EMRP project 'Metrology for Earth observation and climate' developed new measurement standards, methods and calibration facilities to support the validation of sensors used in Earth observation satellites, both prior to and during flight.

These outputs will ensure that accurate, laboratory-quality measurements of key climate parameters can be made from space and used to underpin robust predictions of changes to the Earth's climate.

Case studies on pages 5 and 6 show early impact examples from projects within EURAMET's European Metrology Research Programme.

EMRP
European Metrology Research Programme
Programme of EURAMET



The EMRP is jointly funded by the EMRP participating countries within EURAMET and the European Union

NEW ARCTIC METEO IN-SITU CALIBRATION – TAKING CALIBRATION TO THE EXTREMES



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Accurate assessment of climate change relies on a world-wide network of monitoring stations that provide the high-quality data used in climate models to produce climate predictions. This requires measurements of internationally agreed essential climate variables, such as pressure, temperature and humidity, which must be comparable regardless of where they're collected – be it from a mountain in the Himalayas or an Arctic peninsula.

Challenge

Providing the traceability to the International System of Units (SI) needed to ensure globally comparable measurements, even in the most remote monitoring locations, poses a key challenge to environmental monitoring. The extreme conditions encountered in many remote locations, such as an Arctic winter, can significantly affect the response of environmental sensors, making accurate and dedicated calibration of utmost importance.

Until recently, instruments had to be sent away to distant calibration laboratories, a process which means they are unavailable for extended periods of time. In addition, usual calibration procedures may not provide accurate results when instruments are then operated in harsh environmental conditions.

The ability to calibrate sensors in the field would ensure their accuracy under typical operating conditions and would prevent gaps in the data during calibration periods.

Solution

The EMRP project 'Metrology for pressure, temperature, humidity and airspeed in the atmosphere' is taking traceability to remote monitoring locations through a newly-developed portable calibration chamber for temperature, humidity and pressure sensors. Known as EDIE (Earth Direct Investigation Experiment), the chamber can be used to calibrate sensors in situ using their normal operating conditions.

This allows remote monitoring stations to easily compare their sensors against reference instruments directly traceable to national standards, a process which would previously have been extremely challenging or even impossible.

Impact

Svalbard, a Norwegian archipelago in the Arctic Ocean, is home to one of the northernmost settlements in the world: Ny-Ålesund. Made up of an international scientific community operating several meteorological, marine, geological and atmospheric monitoring stations, Ny-Ålesund's arctic location is ideal for environmental monitoring, as changes in the Earth's climate occur more rapidly in the Arctic due to the characteristic polar environmental conditions.

Instruments at Ny-Ålesund face some of the most challenging operating conditions on Earth.

Taken on board the summer supply boat, EDIE was temporarily installed at Ny-Ålesund, enabling the island's atmospheric monitoring instruments to benefit from traceable calibration without having to be transported to distant calibration laboratories and unavailable for long periods of time.

The AWIPEV Arctic Research Base was one of the first research stations in Ny-Ålesund to benefit from EDIE. Scientists from France and Germany work together at AWIPEV to monitor surface and upper air meteorological parameters, contributing to, for example, the Global Climate Observing System (GCOS) Reference Upper-Air Network (GRUAN). With state-of-the-art ground based instruments, GRUAN provides long-term, high-quality climate data to calibrate the more comprehensive measurements taken from space and the upper atmosphere that support robust climate monitoring and trend prediction.

The short and easily implemented traceability chain provided by EDIE, has enabled for the first time, on-site calibration of GRUAN's ground instruments in simulated conditions closer to those during operation in the harsh Arctic environment. Further developments to EDIE are underway to make a more robust and compact version suitable for long term installation in Ny-Ålesund – a first step towards a permanent arctic calibration laboratory that will support multi-national climate observation and research at Svalbard.

Metrology for climate variables

The EMRP project 'Metrology for pressure, temperature, humidity and airspeed in the atmosphere' focussed on providing traceability to surface and upper-air measurements of key variables involved in climate change. As well as developing novel instruments and improved calibration procedures and facilities, the project provided improved validation methods for climate parameters with associated uncertainty budgets.

NEW AND REVISED EURAMET CALIBRATION GUIDELINES



EURAMET has published more than 20 calibration guidelines to date, these are aimed at improving harmonisation for measurement instrument calibrations.

New additions for 2017 include a new 'Calibration of Autocollimators' guideline and revisions to: 'Calibration of Temperature Block Calibrators'; 'Calibration of Temperature and / or Humidity Controlled Enclosures' and 'Calibration of Electromechanical and Mechanical Manometers'.

- **NEW** Guideline No. 22 'Calibration of Autocollimators' was developed for angle measuring instruments by the EMRP project 'Angle Metrology', in collaboration with EURAMET's Technical Committee for Length and the EURAMET Board of Directors.

Autocollimators are used for measuring precise and non-contact angular displacements of a mirror or other similar reflecting surface. These devices are well suited to a broad range of applications both in measurement and industrial manufacturing where measurements of straightness, parallelism and rectangularity of machine tools are important.

Guideline 'Calibration of Autocollimators' is intended for precise calibration of electronic autocollimators but can also be used for calibration of analogue autocollimators. It includes general definitions and technical requirements for autocollimator calibrations, an example of a typical calibration procedure and practical advice for laboratories performing calibrations.

- **Revised** Guideline No. 13 'Calibration of Temperature Block Calibrators' applies to temperature block calibrators in which a controllable temperature is realised in a solid-state block with the aim of calibrating thermometers inserted into the borings of the block.
- **Revised** Guideline No. 20 'Calibration of Temperature and / or Humidity Controlled Enclosures' outlines the basic technical requirements for laboratories undertaking the calibration of enclosures controlling temperature and/or humidity in their working volume.

Guidelines No. 13 and No. 20 have been revised by the EURAMET Technical Committee for Thermometry. These guidelines are recommended for Accreditation Bodies use. Their purpose is to increase harmonisation and to enhance the equivalence and mutual recognition of calibration results obtained by laboratories.

- **Revised** Guideline No. 17 'Calibration of Electromechanical and Mechanical Manometers' provides the fundamental information necessary for establishing and applying calibration procedures for measuring the pressure of a fluid. This guideline applies to all electromechanical manometers used for measuring absolute, positive and negative gauge and differential pressures, as well as to bourdon tube manometers

Guideline No. 17 has been revised by EURAMET's Technical Committee for Mass and Related Quantities.

All EURAMET calibration guidelines, including the new and revised ones, are available on EURAMET's website:

<https://www.euramet.org/calibration-guidelines>

EURAMET REPRESENTED AT EUROPEAN CONFERENCE ON PUBLIC TO PUBLIC PARTNERSHIPS



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'Co-designing Public-Public Partnerships for the next Framework Programme' was the motto of a European conference held at the beginning of November in Brussels. Public to public partnerships are partnerships between government bodies, public authorities or non-profit organisations. Their aim is the coordination and collaboration between national or regional research activities and focus on increasing the efficiency of public research funding in Europe.

The partnerships are an important part of Horizon 2020, the current and biggest research and innovation programme with nearly 80 billion Euro of funding available over seven years - in addition to private investment. The programme will run until the end of 2020 and preparations for a subsequent 'Framework Programme' (FP9) have already begun.

The 2017 event focused on public to public partnerships in the upcoming framework programme and involved a variety of stakeholders to discuss their future design. Topics included the outcomes of the Horizon 2020 interim evaluation and the responses of Member States, European Parliament and stakeholders, support actions and the results of impact activities.

EURAMET's General Secretary, Duncan Jarvis, facilitated the session on 'Support for industrial technologies'. In the session strategies were discussed on how to increase the relevance, impact and cooperation between the public to public partnerships for industrial technologies and how to improve collaboration with stakeholders.

"The number and breadth of the partnerships supporting industrial technologies is impressive, almost 47 % of all projects funded by transnational calls are in this area. Increasing the cooperation between the 26 or more different networks, including EMPIR, will be an important consideration in planning FP9."

This year, 350 participants took part in the conference, including representatives from various national ministries. The annual event was organised by ERA-LEARN and the Directorate-General for Research and Innovation of the European Commission. ERA-LEARN 2020 is a support action funded by Horizon 2020, which started in January 2015 as a support platform for the Public-Public-Partnerships community.

Further information and presentations from the event can be found at:

<https://www.era-learn.eu/events/annual-conference-on-public-public-partnerships-7-8-nov-2017>

The latest ERA-LEARN newsletter is available at:

<https://www.era-learn.eu/publications/era-learn-2020-newsletters/era-learn-2020-newsletter-6-dec-2017>

If you are interested in regular updates from ERA-LEARN you may register to their newsletter at:

<https://www.era-learn.eu/newsletter>

Collaboration & Network

KEY EUROPEAN MEASUREMENT ORGANISATIONS INTENSIFY COLLABORATION – WELMEC SECRETARIAT MOVED TO EURAMET



Meeting at the EURAMET and WELMEC secretariat (from left to right): Wolfgang Schmid, EURAMET Member Service Manager, Vanessa Petrou, Administration Support, Jutta Bender, Member Service Officer and Gregor Dudle, WELMEC Chairperson

Legal metrology includes the technical and administrative procedures established in law to guarantee the quality of measurements made during commercial transactions and official controls. WELMEC, the European Cooperation in Legal Metrology, coordinates the collaboration between legal metrology authorities in member states of the European Union, the European Free Trade Association and associated countries.

In 2010, WELMEC and EURAMET, the two key European organisations leading the legal and scientific measurement communities with a long history of mutually beneficial cooperation, signed a Memorandum of Understanding. Now both organisations are exploring possibilities to further intensify the collaboration, with WELMEC moving its secretariat to EURAMET in October 2017.

“The measurement communities in Europe should speak with one voice, regardless if it is about legal or scientific metrology,” says WELMEC Chairperson Gregor Dudle. “The form of cooperation has still to be defined, but I strongly believe that both, EURAMET and WELMEC, will benefit from a rapprochement. Sharing a common secretariat is a first step.”

Created in 1990, WELMEC is the primary source for trusted advice on legal metrology issues in Europe. It aims at establishing a consistent approach to legal metrology for the benefit of all stakeholders including consumers, businesses, EU and national authorities. To date, WELMEC has 31 members and 8 associate members. From the beginning, they shared a common vision to foster free movement of measuring instruments by reducing barriers to trade. Over the years WELMEC has gained importance and become the main platform to identify, address and act on issues in legal metrology.

Major achievements of WELMEC include:

- the development of a large number of guidance documents, which harmonise best-practice solutions in the field of the ‘Measuring Instruments Directive (MID)’, the ‘Directive on Non-automatic Weighing Instruments (NAWID)’ and directives on pre-packages
- the recognition of WELMEC guides as reference documents by the European Commission
- the development of guidance documents to explain how normative documents should be interpreted
- the support for authorities in implementing the directives

The most-popular WELMEC guides include the ‘Guide on the General and Administrative Aspects of the Voluntary System of Modular Evaluation of Measuring instruments’, the ‘Guide on Common application of Directive 2009/23/EC Non-automatic weighing instruments’ and the ‘Software Guide’. In addition, stakeholders from industry appreciate the overview on legal metrology authorities in WELMEC member countries.

“As the fields of activities of both organisations complement each other, joint efforts and actions support the visibility and recognition of the science of measurement in Europe as a whole,” explains Beat Jeckelmann, EURAMET Chairperson. “We are looking forward to intensify the exchange of expertise and experts on various topics, including WELMEC’s valuable input to the European Metrology Research Programmes.”

Further information on WELMEC can be found on its website:

<http://www.welmec.org/>

WELMEC guides are available at:

<http://www.welmec.org/latest/guides/>

WELMEC overview of legal metrology authorities: <http://www.welmec.org/welmec/country-info/>

EUROPEAN LABORATORIES ASSOCIATION AND EURAMET AGREE ON JOINT ACTIONS TO PROMOTE MEASUREMENT



EUROLAB and EURAMET meeting; (from left to right) Duncan Jarvis (EURAMET General Secretary), Drewin Nieuwenhuis (EUROLAB Secretary General), Laura Martin (EUROLAB International Affairs Manager) and Álvaro Silva Ribeiro (EUROLAB President). Courtesy of EUROLAB

EURAMET has a strong network of partner organisations at the international level. One of their Liaison Organisations is EUROLAB, the European Federation of National Associations of Measurement, Testing and Analytical Laboratories.

In September, EURAMET's General Secretary Duncan Jarvis met with EUROLAB representatives, including EUROLAB President Álvaro Silva Ribeiro and EUROLAB Secretary General Drewin Nieuwenhuis, to agree on ways of closer cooperation between the two organisations.

"We concluded that joint actions will increase the visibility of both associations and help to promote the science of measurement at European level," says Duncan Jarvis. "In addition, EURAMET wants to encourage EUROLAB to provide input to the European Metrology Programme for Innovation and Research (EMPIR)." This will be an opportunity for EUROLAB and

the national laboratories to become more involved in EMPIR and bring in their added value and expertise in the research projects.

Planned activities include the development of joint guides to support calibration laboratories and traceability in testing laboratories and the mutual participation in events to foster interaction and exchange of knowledge in metrology and testing.

Another way to support both communities is via the exchange of resources, for example, EUROLAB's 'Cook Books'. These are guides for the development and the implementation of quality on laboratory management to comply with ISO/IEC 17025 and accreditation requirements. The guides are intended to support higher qualification of metrologists and laboratory practitioners at the start of their careers or for newly starting businesses. All the EUROLAB Cook Books are currently being revised according to the new ISO / IEC 17025.

EUROLAB is a not-for-profit organisation grouping over 2000 conformity assessment bodies and representing over 100,000 technical experts and laboratory practitioners. It represents its members on economic, political and technical issues that have a direct impact on laboratories' activities. EUROLAB plays an important role in addressing European legislation such as consumer protection, occupational health and safety, product certification and environmental and food safety.

EUROLAB's Cook Books are available at <http://www.eurolab.org/cookbooks.aspx>

Community News

TRAINING COURSE ON THE REVIEW OF QUALITY MANAGEMENT SYSTEMS IS A SUCCESS

In November EURAMET and the International Bureau of Weights and Measures (BIPM) held a joint training course on the review of quality management systems in National Metrology Institutes (NMI) and Designated Institutes (DI).

Topics included an introduction to the Mutual Recognition Arrangement of the International Committee for Weights and Measures (CIPM MRA), structure and operation of EURAMET's Technical Committee for Quality, specifics about peer reviews and visits, and good practice in reporting and practical training sessions. Lecturers included experts from BIPM, EURAMET and its members.

The training course was aimed at NMI and DI quality managers and those involved in the revision of quality management systems.

Participants were prepared to carry out reviews of quality management systems in the scope of the CIPM MRA, with additional focus on EURAMET specifics of peer review process and requirements for reviewers.

The two-day event was hosted by the National Institute of Aerospace Technology (INTA), one of Spain's Designated Institutes. INTA is a public research agency that specialises in aerospace technological research and development in the fields of land, naval and defence. *"INTA has been a great host. They provided a perfect environment for a productive workshop and training course,"* comments Tanasko Tasić, EURAMET's Capacity Building Officer.

Along with 23 participants from 12 different countries, guests from the Regional Metrology Organisations COOMET and

GULFMET also attended the workshop. Initial feedback from participants has been very positive, with the practical session regarded as very helpful and suggestions made for follow-up actions and improvements.

"An effective quality management system is vital for the smooth operation of the CIPM MRA, this course has clearly contributed very effectively to that goal," says Andy Henson, Director of the BIPM's International Liaison and Communication Department.

Due to the success of this training course it is very likely that EURAMET will organise a similar event in 2018.

An overview of upcoming EURAMET training courses can be found at <https://www.euramet.org/trainingcourses>



Pictures: Courtesy of INTA



DEVELOP AND GROW YOUR INSTITUTE USING EURAMET'S CAPACITY BUILDING PROGRAMME – NEW FLYER PROMOTES TRAINING COURSES, RESEARCHER GRANTS AND RESEARCH POTENTIAL PROJECTS

EURAMET assists all members, especially new and emerging ones, in the development of their national metrology infrastructure and their integration in a coherent, efficient and sustainable European metrology landscape.

One way to support its members is EURAMET's capacity building and knowledge transfer programme including Human and Institutional Capacity Building, Researcher Mobility Grants and EMPIR Research Potential Projects.

Human and Institutional Capacity Building includes training courses on technical, administrative and research programme related topics. The Researcher Mobility Grants support researchers at any stage of their career to undertake research abroad.

EMPIR Research Potential Projects aim to support the participating organisations to develop basic levels of metrological research expertise.

As direct results of capacity building activities, four associate members became full EURAMET members, several NMIs have had their first CMCs published in the BIPM key comparison database and almost all emerging NMIs started participating in joint research projects.

All measures and further information are briefly described in the brand-new flyer on EURAMET's Capacity Building programme available for download at <https://www.euramet.org/knowledge-transfer/>



People & EURAMET

NEW ADMINISTRATIVE SUPPORT: VANESSA PETROU

Vanessa Petrou joined EURAMET in September 2017 as the new administrative support and will enhance the secretariat team in Braunschweig.

In 2014, Vanessa completed her apprenticeship as a foreign language correspondence clerk, followed by an apprenticeship in office management which she completed in 2017.

Vanessa is supporting EURAMET in all kinds of secretariat tasks, and she assists in the operation of the WELMEC secretariat which moved to EURAMET in October 2017.



People & EURAMET

DAGMAR AUERBACH IS EURAMET'S NEW PROGRAMME MANAGER

Dagmar Auerbach joined EURAMET in October 2017 as the new manager for its European Metrology Programme for Innovation and Research. Dagmar's tasks include the management of calls for proposals, the selection process of proposals, contracting and monitoring of the funded proposals and the final presentation of the impacts of the programme.

In her previous role as Research and Innovation Manager at Eurice GmbH, Dagmar was the project manager of EU projects as well as national large-scale projects. She is experienced in the management and innovation related activities of several parallel EU funded projects, including the supervision of requirements and objectives set out in contracts, rules and instructions. In addition, Dagmar was responsible for writing project proposals for EU and national programmes and giving guidance for scientific consortia.

Dagmar studied lab and process engineering at the University of Cooperative Education in Riesa and Göttingen, Germany. Her PhD in biophysical chemistry on 'Photophysical characterisation of fluorescence markers and fluorescence proteins', and her Master of Business Administration specialising in Managing within Europe (both Saarland University) have laid the perfect foundation for her position at EURAMET.



HARIS MEMIĆ SUPPORTS EURAMET'S REGULATION SCRUTINY GROUP

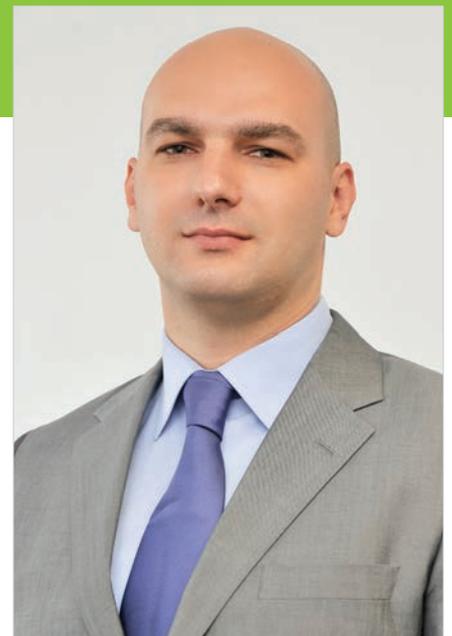
Metrology for regulation and conformity assessments are a key focus for many National Metrology Institutes.

In October 2017 Haris Memić (IMBIH) took over a secondment as 'Regulation Support' to foster the work of EURAMET's 'Regulation Scrutiny Group', which collects information about regulation that contains metrological needs.

Haris studied Mechanical Engineering at the Džemal Bijedić University of Mostar in Bosnia and Herzegovina. He joined IMBIH, the National Metrology Institute of Bosnia and Herzegovina, in 2006 as a metrologist in the mass laboratory. Since 2010 he has been

head of department for the nomination of verification laboratories. His tasks include activities to harmonise regulations, laws, procedures and other documents in the field of metrology. He follows the relevant international and national legislation in the field of metrology and organises the nomination process and the supervision of testing laboratories.

Haris has been part of the EURAMET community for many years, previous roles include Alternate to the General Assembly, and he is the contact person for the Technical Committee for Quality.



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