

Focus Topic
**Metrology
for Energy**

Reminder: Call for tender

 **EURAMET Study on
Co-ordination in Metrology**

The development of an appropriate, fit-for-purpose and integrated European metrology infrastructure is one of the key objectives of EURAMET's metrology research programmes. To provide evidence that this objective is being met and that EURAMET is progressing towards a more harmonised and coordinated European metrology landscape, EURAMET wishes to carry out a 'Study on Co-ordination in Metrology' and has launched a call for tender.

Detailed information on the tender can be found at www.euramet.org/tender

**Deadline for tenders is 27 March 2016,
23:59 CEST**

EMPIR Calls in 2016

 Calls for joint research projects in 2016, including Metrology for Energy, Environment, Pre- and Co-normative research and Research Potential, follow a two stage process. Stage 1 has now closed and Stage 2, which requests project proposals against Selected Research Topics (SRTs), will open on 16 June 2016. The full SRTs will be published by EURAMET when Stage 2 opens.

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CHANGE AND IMPACT FOR METROLOGY IN EUROPE FOREWORD FROM EURAMET CHAIRPERSON DR BEAT JECKELMANN



The year 2016 has already brought a lot of change for EURAMET and the further development of the association. I would like to welcome EURAMET's new Vice-Chairperson (EMPIR), Erkki Ikonen, and the first General Secretary, Jörg Zymnossek, to our community. They both began their terms in January and we wish them all the best in their new roles.

At the same time I would like to express EURAMET's sincerest thanks to Jörn Stenger, who held the position as Vice-Chairperson (EMRP / EMPIR) from 2010 to 2015. Jörn initiated many new developments during what was an exciting and demanding time for EURAMET.

It was during Jörn's chairmanship that the first EMRP projects began in 2010. Now, I am delighted to announce the publication

of the first impact report on the Metrology for Energy projects, which was published in February. The report outlines the key technical achievements and early impacts of the first group of projects completed under the EMRP Energy theme.

This year's EMPIR call focusses again on Energy and Environment. The call is already in progress and stage 1, for collecting potential research topics, is already complete. Stage 2 will begin in June, when applications can be submitted for joint research projects. We are looking forward to many more positive results under EMPIR.

After an intense phase of development – with many inputs from the EURAMET community and our stakeholders – the Strategic Research Agenda for Metrology in Europe (SRA) has been finalised. The SRA will provide strategic guidance to European and national metrology research programmes, and will inspire new ways of thinking in important policy areas to meet the major challenges facing European metrology over the coming years.

We hope you enjoy reading Issue 10 of our Newsletter, in which you can find many more interesting stories from EURAMET and the world of metrology, and we look forward to receiving your feedback.

10th EURAMET General Assembly – 23 to 27 May 2016

The city of Oslo in Norway will be the location for EURAMET's 10th General Assembly. The event will take place from Monday 23 to Friday 27 May 2016 and will be hosted by Justervesenet (JV), the Norwegian Metrology Service.

The General Assembly week includes the meetings of the EMPIR Committee and the Research Council. Additionally, there will be a symposium on 'Energy for the future' with a number of high profile speakers.

Further information will be available closer to the date on the EURAMET website at www.euramet.org/event-ga10

Registration is open for invited participants.

EVENTS

TEMPMEKO 2016

26th June to 1st July 2016
Zakopane, Poland
www.tempmeko2016.pl

ETSI: From Research to Standardization

10th to 11th May 2016
Sophia Antipolis, France
www.etsi.org

TC-M Annual Meeting

10th to 12th May 2016
Budva, Montenegro

TC-F Annual Meeting

19th to 21st April 2016
DMDM, Belgrade, Serbia

TC-Q Annual Meeting

13th to 14th April 2016
IMBiH, Sarajevo, Bosnia and Herzegovina

TC-IM Annual Meeting

7th to 8th April 2016
BEV, Vienna, Austria

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Research & Innovation

METROLOGY TO MEET THE GRAND CHALLENGE OF ENERGY

INTERVIEW WITH THE CONVENER OF EURAMET'S 'TASK GROUP FOR ENERGY' GERT RIETVELD



In times of scarce resources, increasing energy needs and climate change, one of Europe's Grand Challenges is Energy. EURAMET has been active taking different initiatives to address the demands in this field.

In 2009 and 2013, EURAMET's European Metrology Research Programme (EMRP) launched a call for projects in this field with an aim to establish the measurement infrastructure necessary to support Europe's sustainable energy goals. Focus was placed on technologies that enable greatly reduced greenhouse gas emissions, while also ensuring the security of Europe's energy supply. The successor programme EMPIR (European Metrology Programme for Innovation and Research) has launched another call for Energy projects in 2016.

A first impact report on the Metrology for Energy 2009 projects was just published and can be found in this newsletter on page 4. The report outlines the key technical achievements and early impacts of the first group of projects completed under the EMRP Energy theme.

To foster possible solutions for present and upcoming energy metrology challenges the EURAMET Task Group on "Metrology for Energy" was established in 2014. In the following interview the Convenor of this task group, Gert Rietveld (VSL, The Netherlands), provides an insight into this topic.

Why is metrology important for challenges in the energy sector? And where do we find metrology for energy in our daily lives?

It is clear that in our daily lives we strongly rely on energy – we use it for transport, heating our houses, lighting, and powering our PCs, to name just a few examples. However, the limited resources of our carbon-based fuels and the impact they have on the environment via CO₂ emissions, forces a transition to a low-carbon supply, to also ensure a safe, affordable and sustainable energy supply for future generations.

I am convinced that metrology can play a key role in supporting this Energy Transition. The work done in recently finished and still on-going EMRP projects provides many examples of these supporting contributions. The introduction of for example LNG, biofuels and hydrogen in our energy mix is supported through measurements of composition, energy content, and flow. For the stable operation of smart electrical grids challenged by an increasing amount of renewable energy sources connected to the grid, metrology ensured the correct operation of new grid monitoring devices. The banning of incandescent lighting is strongly supported by metrology research on the efficacy (efficiency) of new LED lighting sources, clearly helping to develop a fair market place for these products.

EURAMET apparently has already taken measures to meet a series of metrology needs of the energy area. What needs to be done to further support the energy transition?

In my opinion, EURAMET indeed has well addressed the metrology challenges arising with the Energy transition. I see this reflected in the breadth of subjects of joint research projects under the EMRP programme.

However, I also think significant challenges remain, requiring extension of the present work and picking up new challenges in areas with currently limited metrology activity. Following extensive stakeholder consultation, our task group identified these challenges in the EMPIR strategic research agenda where we divide them into four broad themes: energy production and

conversion, energy transport and storage, energy use, and cross-cutting subjects such as efficiency. We see that energy efficiency is quickly becoming an important subject on the energy research agenda, among others driven by EU directives on Ecodesign and Building Energy Efficiency. Therefore, I hope to see many of the proposed research topics of the EMPIR 2016 Energy and pre-/co-Normative calls addressing these needs.

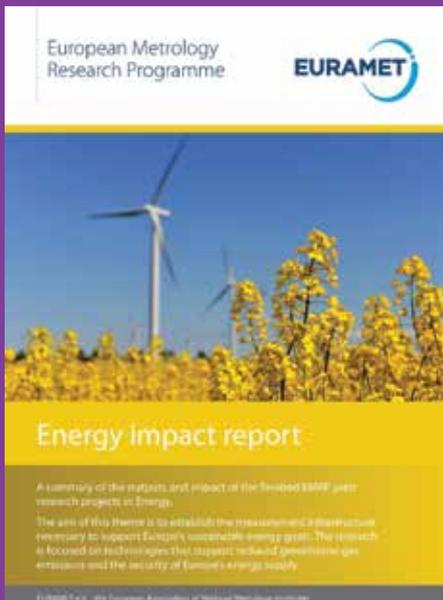
Why was the EURAMET task group for energy established and what are the objectives?

EURAMET identified Energy as one of the three grand challenges in metrology. The nature of this grand challenge requires the joint expertise of all technical disciplines within EURAMET in order to tackle the needs of society related to energy metrology. EURAMET decided to establish our task group in order to facilitate the uptake of energy metrology challenges by the EURAMET Technical Committees, and to stimulate the response to the societal needs. The eight members of the task group were selected so that their background and scientific expertise covers the breadth of the societal needs for energy related metrology. Already in the first 1.5 years of the task group, I have seen that this broad background has helped create a clearer picture of the stakeholder needs, and it is hoped that this will enable the uptake of these needs by metrology experts in new proposals for EMPIR joint research projects.

About Gert Rietveld

Gert obtained his PhD in solid state physics in 1993 and since then works at VSL, the Dutch National Metrology Institute, in the area of electrical quantum standards. His present research focus as chief metrologist is on power and energy and measurements for smart electricity grids. Gert is active in many international committees and expert groups; he among others is the founding chair of the EURAMET expert group on Power and Energy, convenor of the EURAMET Task Group for Energy and president of the CCEM.

First impact report on Metrology for Energy projects



A new report outlines the key technical achievements and early impacts of the first group of projects completed under the EMRP Energy theme.

The report explores the new measurement capabilities developed as a result of the collaborations within the Energy projects. Thirty-nine metrology research groups from across Europe came together with academia and industry to establish the measurement infrastructure needed to support Europe's sustainable energy goals. They focussed on supporting the introduction of sustainable energy into Europe's energy mix, accelerating uptake of low carbon technologies and improving the efficiency and security of the existing energy infrastructure.

In addition to overcoming key challenges in measurement science, project partners worked closely with end-users to ensure the research outputs met their needs. The report summarises the measurement challenges and highlights key technical achievements and early examples of the impact generated illustrating the successful uptake of new knowledge and skills across the energy sector. Case studies focus more closely on the benefits already being delivered to industry and society.

The nine projects were the first to be carried out as part of the European Metrology Research Programme (EMRP), which combines the knowledge, expertise and facilities of Europe's measurement community to address global challenges in areas such as energy, environment and health.

STRATEGIC RESEARCH AGENDA FOR METROLOGY IN EUROPE PUBLISHED



The Strategic Research Agenda for Metrology in Europe (SRA) has been developed to provide a high level strategic view of measurement capability requirements which may be delivered not just by the European Metrology Programmes, EMRP and EMPIR, but by the wider research community involved in measurement-related programmes regionally, nationally and internationally.

The SRA has been prepared by EURAMET with inputs from the EURAMET Technical Committees and Task Groups in consultation with their stakeholders. To engage the broader stakeholder communities in the development of the SRA, the document was subject to an open consultation in 2015 from which valuable comments and suggestions were received. Now the document is finalised and published on the EURAMET website www.euramet.org/sra

"I hope people will find the document of interest and value. We would welcome opportunities to work with our partners and wider stakeholder groups in the implementation of the Strategic Research Agenda", explains Kamal Hossain (NPL, UK), member of the EURAMET core group for the SRA. The document includes the main topics 'Metrology to Address European Grand Challenges and Support Innovation', 'Metrology Research Supporting the Redefinition, Realisation and Dissemination of the SI and Derived Units' and investigates possibilities to increase the impact of metrology.

METROLOGY FOR ENERGY UNLOCKING THE POTENTIAL OF THIN FILM ENERGY PRODUCTS TO SUPPORT EU'S LOW CARBON ECONOMY

The global market for low-carbon goods and services is projected to grow from £3.5 trillion in 2008 to just under £4.5 trillion in 2015. Much of this growth is driven by EU targets for the use of renewable energy and energy-efficient devices. Europe's shift to a low-carbon economy requires a wide range of advanced materials and technologies, including power electronics, solid state lighting, solar energy and energy-efficient windows. These applications are based on complex thin films that possess novel electronic and thermal properties not found in bulk materials.

Measurement challenge

The complexity of thin films means that there are technical challenges relating to their performance, durability and cost-effective manufacturing. The EMRP joint research project 'Traceable characterisation of thin-film materials for energy applications' (ENG53) develops the measurement methods needed to characterise the structure of thin films and their novel properties. Models are also developed to help interpret the measurements and relate them to product performance. This will accelerate innovation and improve quality control for energy technologies.

First impact

"The new measurement methods, instrumentation and reliable testing protocols developed within this project will help reduce time-to-market of innovative energy products by improving reliable quality control and reducing manufacturing costs", explains project coordinator Fernando Araujo de Castro (NPL, UK).

The project has attracted supporters and collaborators. A Stakeholder Advisory Committee has been established and an e-forum is available to facilitate communication. The committee includes not only end-users such as instrument manufacturers and material producers but also large stakeholder associations

such as NMI (UK's trade association for semiconductors) and OpTecBB (German competence network for optical technologies and micro-system technology) to help maximise the project's impact to support a safe and sustainable low carbon economy in Europe. Engagement with standardisation groups has started. For example, there is a new standard on the measurement and analysis in spectroscopic ellipsometry under development based partially on the results from the project.

The ThinErgy consortium organised and delivered two successful Workshops. One meeting on Fundamental X-ray Parameters, in Lisbon, brought together key stakeholders in the area of X-ray spectroscopy and will help set directions for future requirements and research on fundamental atomic parameters. Another meeting on Advanced Optical Measurements, in Berlin, brought together key stakeholders in the area of optical measurement instrumentation as well as end users of optical metrology and provided a forum to disseminate project results and get feedback on future directions of work.

So far in the project, in order to help validate measurement methods for elemental depth profiling, complex solar cell samples have been produced along with a procedure for a software tool to perform quantitative simulation. The project is also developing

novel measurement methods and advanced modelling tools for spatially resolved optoelectrical characterisation to allow reliable defect detection. In addition, a literature study on state-of-the-art optical scatterometry and the design of a new system has been performed for large-area characterisation methods.

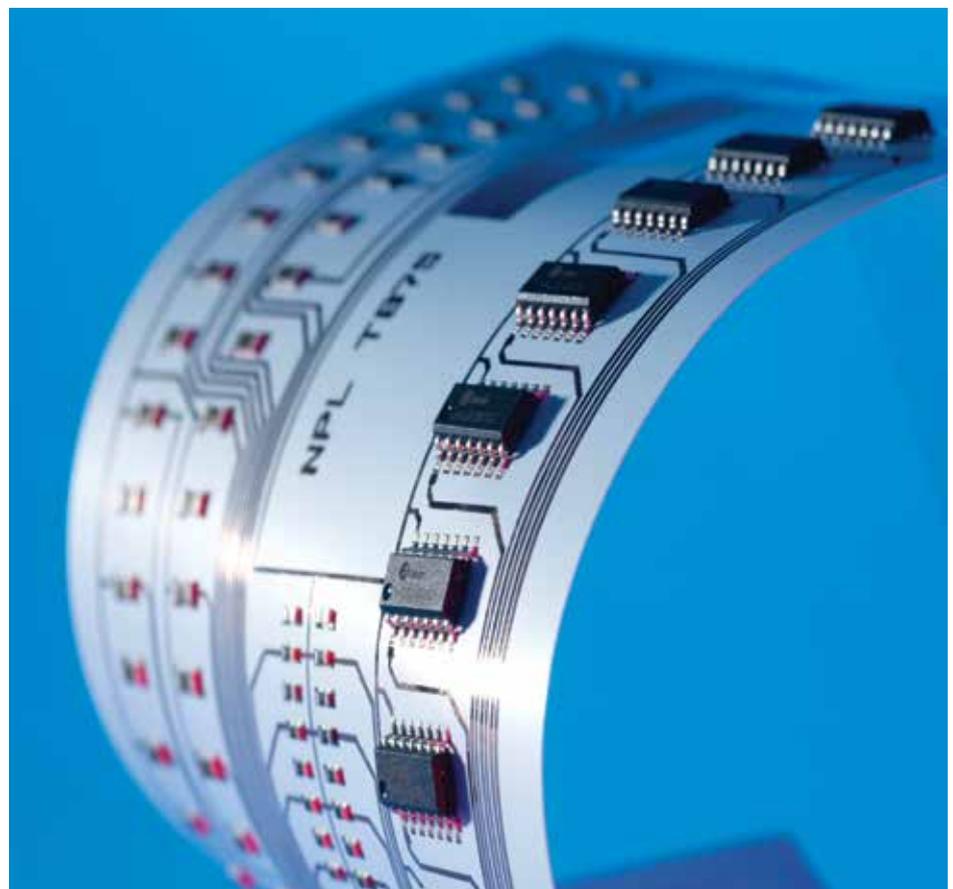
EMRP Project ENG53 ThinErgy

The 3-year project started in 2014 and has a consortium of 10 participating institutes from all over Europe. Project coordinator is Fernando Araujo de Castro from NPL, UK. The project is supported by three researcher grants.

The project is part of EURAMET's European Metrology Research Programme (EMRP), which is jointly funded by the European Union and the EMRP participating countries within EURAMET.

For further information please go to www.euramet.org/project-eng53

A list of all 13 'Metrology for Energy' projects from the 2013 call can be found here <http://www.euramet.org/metrology-for-societys-challenges/metrology-for-energy/>



Thin film measurements to support low carbon technology (ENG53). Courtesy of NPL.

METROLOGY FOR ENVIRONMENT PROTECTING EUROPE'S WATER RESOURCES

Water pollution has a significant negative impact on human health and the environment. Increasing demand from citizens and environmental organisations for cleaner rivers and lakes, groundwater and coastal beaches has led the European Commission to make water protection one of its priorities. The European Water Framework Directive (WFD) was established to protect and improve water quality and prevent further deterioration through legal limits on a wide range of known pollutants.

Measurement challenge

The WFD specifies a list of 33 priority water pollutants, for which maximum allowable concentrations have been defined – these are known as Environmental Quality Standards (EQS). EU member states are required to implement monitoring programmes to ensure their water bodies comply with the EQS. Some of the priority pollutants identified by the WFD are toxic to a wide range of living organisms, making them liable to accumulate within the food chain. The permitted levels specified by the EQS for such pollutants are consequently very low.

One such toxic pollutant is tributyltin (TBT), a compound used in protective coatings for boats. The use of TBT is now strictly regulated, but TBT levels in the coastal waters of most developed countries remain high enough to pose a threat to living organisms. However, until recently, no standardised methods existed for detecting TBT in water at the low levels required by the EQS. Determining TBT levels from real water samples, as required by the EQS, is even more challenging due to the presence of other contaminants, such as suspended particles present in natural water. Accurate methods for measuring pollutants at low levels in real water samples were needed, to serve as a reference for test laboratories and underpin the requirements of the WFD.



Protecting Europe's water resources (ENV08). ©iStock.com/anzeletti.

Solution

The EMRP project Water Framework Directive developed two such reference methods, based on different mass spectrometry techniques, for measuring TBT levels in real water samples. Both methods are traceable to the SI and meet the requirements of the WFD regarding the limit of quantification (which describes the smallest concentration that can be reliably measured) and measurement uncertainty. "This enables testing labs to benchmark their methods, demonstrate compliance with the regulations, and perform water monitoring services more accurately, efficiently and economically", explains Dr Rosemarie Philipp, WFD coordinator.

Research impact

The improved method for TBT analysis developed in the EMRP project has already been adopted by IPROMA, an organisation contracted for water quality measurements by numerous Spanish Regional Authorities. IPROMA can now offer its clients an improved low-level TBT concentration test, enabling them to demonstrate that TBT levels in the open water systems used to supply cities and towns meet the requirements of the WFD. The new method is more efficient, requiring less time and labour, and costs 20% less to implement than its predecessor.

This improvement in measurement capability, along with other outputs of the project, will help ensure that levels of toxic pollutants in Europe's water resources are carefully monitored, protecting the public and environment.

Project ENV08 WFD

The EMRP project 'Traceable measurements for monitoring critical pollutants under the European Water Framework Directive (WFD-2000/60/EC)' was undertaken to support the implementation of the European Water Framework Directive and related directives, through improvements to the quality and comparability of data used to monitor the ecological status of Europe's inland water sources. The project developed primary reference methods for selected water pollutants, and produced new concepts for whole water reference materials and test materials that can meet the requirements of the legislation. The improvements will ensure long-term reliability and global comparability of water monitoring data obtained under the WFD and support better decision-making in the field of water management.

The project started in 2011 with a consortium of 11 participating institutes from all over Europe. Project coordinator was Dr Rosemarie Philipp from BAM (Designated Institute) in Germany. The project was supported by three researcher grants.

The project is part of EURAMET's European Metrology Research Programme (EMRP), which is jointly funded by the European Union and the EMRP participating countries within EURAMET.

For further information please go to www.euramet.org/project-env08

A list of all 9 Metrology for Environment projects from the 2010 call can be found here <http://www.euramet.org/metrology-for-societys-challenges/metrology-for-environment/>

Collaboration & Network

MEASUREMENTS IN A DYNAMIC WORLD CELEBRATE METROLOGY ON WORLD METROLOGY DAY 2016

World Metrology Day is on May 20. The theme for 2016 is 'Measurements in a Dynamic World.' "The topic was chosen to align with the increasing rapid pace of change in measurement science, and indeed of the world around us", explains Andy Henson, Director of the International Liaison and Communication Department of the BIPM and coordinator for the World Metrology Day project. The topic reflects both the challenge of accurately measuring dynamic quantities, for example the pressures in a combustion chamber, and the rapid pace of change in measurement science today.

The World Metrology Day is an annual celebration of the signature of the Metre Convention, on 20 May 1875. The Convention set the framework for global collaboration in the science of measurement and in its industrial, commercial and societal applications. The original aim of the Metre Convention - the world-wide uniformity of measurement - remains as important today as it was in 1875.

World Metrology Day is celebrated in more than 80 countries with events and activities to highlight the impact of measurement on our daily lives and the contribution of all the people that work in that area. Previous themes have included measurements to meet the global energy challenge, measurements for safety, measurements in sport and measurements in medicine.



The World Metrology Day project is realised jointly by the International Bureau of Weights and Measures (BIPM) and the International Organization of Legal Metrology (OIML), both organisations are important partners in EURAMET's network.

"When we reflect on the rapid pace of change in the 21st century, we may say that 'the only thing that is constant is change itself'. The needs for metrology, and how these needs are met, are no exceptions; it is a challenge to bring the benefits of a stable and accurate measurement system to a dynamic world", explains Martin Milton, Director of the BIPM in his message for World Metrology Day. Stephen Patoray, Director of the BIPM puts it as follows:

"While metrology, the science of measurement, is as old as human civilization it continues to constantly change; it continues to see forward acceleration and it continues to be dynamic. It is truly a fascinating time to be a part of this very dynamic work that we call 'metrology'."

Further information on World Metrology Day 2016, the Directors' messages and poster can be found at <http://worldmetrologyday.org/>

About the BIPM

The signing of the Metre Convention in 1875 created the BIPM and for the first time formalised international cooperation in metrology. The Convention laid the foundations for worldwide uniformity of measurement, historically focusing on industry and trade, but today just as vital as we tackle grand challenges such as climate change, health, and energy. The BIPM undertakes scientific work at the highest level on a selected set of physical and chemical quantities. The BIPM is the hub of a worldwide network of national metrology institutes which continue to realise and disseminate the chain of traceability to the SI into national accredited laboratories and industry.

About the OIML

In 1955 the OIML was established as an Intergovernmental Treaty Organization in order to promote the global harmonisation of legal metrology procedures with the Bureau International de Métrologie Légale (BIML) as the Secretariat and Headquarters of the OIML. Since that time, the OIML has developed a worldwide technical structure whose primary aim is to harmonise the regulations and metrological controls applied by the national metrological services, or related organisations.

Community News

SUCCESSFUL FIRST EURAMET WORKSHOP FOR DESIGNATED INSTITUTES



Janko Drnovšek, EURAMET Vice-Chairperson (GA), leading through the EURAMET workshop.



Participants of EURAMET's workshop for Designated Institutes.

In many countries, Designated Institutes (DI) play an essential role in developing and maintaining the national metrology infrastructure. To further strengthen collaboration with DIs, EURAMET ran a two-day workshop on 'Challenges for full integration of DIs within EURAMET'. "Our objectives are to fully integrate DIs into the EURAMET community and its activities, as well as stimulating their role to actively contribute to metrology developments at a national level", explained Janko Drnovšek, EURAMET Vice-Chairperson (GA) and facilitator of the workshop.

The event was hosted on 18 and 19 February 2016 by the Danish National Metrology Institute DFM in Kongens Lyngby (Denmark). The event was aimed in the first instance at DIs, but also addressed National Metrology Institute (NMI) representatives, national designating and financing authorities and EURAMET Technical Committee chairs. This was reflected in the composition of the 55 participants from all over Europe. "The goal of the workshop is to achieve a good understanding of the specific needs and expectations of the different communities and to establish effective communication between them for the future", comments Maguelonne Chambon, member of EURAMET's Board of Directors and the organising committee of the workshop.

After the opening words by Michael Kjær, Director of the host DFM, the workshop began with an introduction to the EURAMET organisation and opportunities for participation in EURAMET committees and R&D programmes. In the following session, information on the CIPM Mutual Recognition Arrangement, Calibration and Measurement Capabilities processes, Quality Management System and accreditation was provided.

The second day started with a number of success stories from EURAMET NMIs and DIs giving an insight into the different national metrology landscapes. The workshop concluded with a round table discussion raising different proposals and issues for the improvement of the collaboration between DIs and EURAMET. The participants appreciated the first EURAMET workshop for DIs and asked EURAMET to organise further topic-centred DI workshops and events.

"On behalf of EURAMET I would like to give our warmest thanks to DFM for hosting the workshop", said Beat Jeckelmann, EURAMET Chairperson. "The landscape of NMIs and DIs varies a lot and there are different models from country to country. We hope that the first EURAMET DI meeting was fruitful for all involved parties and provided a platform for the exchange of experiences." Based on the collected feedback EURAMET will develop an action plan including the next steps needed to further extend the collaboration with DIs. The material presented at the workshop is available on the EURAMET website <http://www.euramet.org/event-diworkshop2016>

People & EURAMET

THANKS TO JÖRN STENGER –

EURAMET's Past Vice-Chairperson (EMPIR) – for his involvement in EURAMET's metrology research programmes from the very start



“On behalf of the whole EMPIR Committee, I would like to thank Jörn for his invaluable contributions to EURAMET's research programmes. It has been a pleasure to work in the committee when Jörn was chair and his choice to remain there ensures the efficient work can be continued”, says Erkki Ikonen, new Vice-Chairperson (EMPIR).

Jörn Stenger is member of the Presidential Board of the Physikalisch-Technische Bundesanstalt (PTB, Germany) and started his term as Vice-Chairperson (EMRP) in 2010.

Jörn held the position during a very intense and challenging period for EURAMET which included both the operational implementation and strategic development of the programme, which Jörn was already contributing to prior to the commencement of his term.

“Jörn is together with others from the former core team one of the main architects and drivers of the EMRP and later also of EMPIR. He is one of the key players who led us through the transition process, focused, and with a clear vision for the programmes and the development of the European metrology. On behalf of EURAMET I would like to express my sincerest thanks”, comments EURAMET Chairperson, Beat Jeckelmann.

During his 6-year term from the beginning of 2010 to the end of 2015 the first EMRP projects started and the positive mid-term evaluation by the European Commission and the European Parliament took place. At the same time, Jörn was driving the exploration of options for the successor programme EMPIR and its creation in line with the European Union's Horizon 2020 programme.

“I enjoyed the collaboration within the EMPIR Committee. We always found solutions which were accepted by all of the members and I was fortunate to be able to count on a very reliable team including the EMRP Programme Manager, Duncan Jarvis, his Management Support Unit, EURAMET's Legal Advisor Barbara Tafel and the Secretariat. My successor Erkki Ikonen knows the EMPIR Committee well and has been involved in the programmes for many years. I wish him all the best for his new task.”

Jörn always emphasised the drive of European metrology behind the numerous EMRP and EMPIR projects: “The programmes do not only lead to an integration of scientific work but are influential to all related wider activities such as the fields of innovation, standardisation, conformity assessment, knowledge transfer and policy advise.”

ERKKI IKONEN (FINLAND) IS EURAMET'S NEW VICE-CHAIRPERSON (EMPIR)

Professor Erkki Ikonen (VTT and Aalto University, Finland) was elected as new EURAMET Vice-Chairperson (EMPIR) at the EMPIR Committee meeting held in Prague in December 2015. In January 2016, he started his term in this new position.

Following his Doctor of Technology degree at the Department of Technical Physics at Helsinki University of Technology (now Aalto University) in 1988, Erkki joined the Laboratory of Electrical Engineering at VTT, the Technical Research Centre of Finland. From 1989 to 1995 he held the position of Assistant Director of Metrology at the Electrical and Communications Engineering department at Helsinki University of Technology. Erkki has been Professor in Measurement Science and Technology at Aalto University since 1995 and at MIKES (now VTT) since 2005.

Erkki has been part of the EURAMET community for more than 20 years, where he started as member of the Technical Committee for Photometry and Radiometry in 1994. In 2007 he joined the EMRP Committee and now the EMPIR Committee as a Representative. He took over responsibility as Deputy Chair from 2007 to 2013. He was elected as member of the EMPIR Sub-Committee on Research for the term from 2014 to 2017.

Thanks to various memberships in international committees, expert groups and long-term visits abroad, Erkki is well known in the international metrology community.

Erkki, as Vice-Chairperson (EMPIR) you are responsible for EURAMET's research programmes. What is special about the programmes?

What is most important about the programmes – next to the research results of course – is the great opportunity of collaboration they provide, especially between people from different National Metrology Institutes (NMIs) and Designated Institutes (DIs). This is a unique platform for people working in the field of metrology.

What will your term as Vice-Chairperson bring?

There are many fundamental topics on the agenda. For example, the mid-term review of the European Metrology Programme for Innovation and Research (EMPIR) and the final review of the European Metrology Research Programme (EMRP) in 2017. Preparation for these reviews is very important and needs input and joint efforts from different parties involved: EMPIR Committee Representatives, project coordinators and partners, and EURAMET staff.

What is your vision for EMPIR during your term and beyond?

I am taking over the position as Vice-Chairperson in a time when the programmes are successfully running, with sound governance structures, decision making and well defined responsibilities. As chair I will work for the benefit of the research programmes and EURAMET in general. Therefore, I would like to focus on the demonstration of the impact of the programmes.

On the long-term view we have to think about options for a possible successor programme of EMPIR.



And what are the challenges?

The requirements for the implementation of EMPIR are different to those within the EMRP. The challenge is to make these new tools to work optimally and get people used to them. The EURAMET Management Support Unit, the coordinators of the projects, the participating NMIs and DIs and the EMPIR Committee are all doing an excellent job to achieve this goal.

The EMPIR Committee consists of 28 Representatives from different countries. What is the secret to come to good decisions with so many participants?

The Committee has a good and constructive working atmosphere and the Representatives of the EMPIR Committee are very professional. Additionally, we always have tight timeframes determined by the programme. So everyone understands that the EMPIR Committee has to work very efficiently. Nonetheless the members have the possibility to present their views on different topics and we try to find a consensus. Sometimes the nature of topics is such that we have to make decisions by voting.

If we would ask your colleagues: Which of your personal skills would they say will support you most in your new role as Vice-Chairperson?

This is a difficult question, but I think my colleagues would say that I have a strong focus on fairness. I try to treat everyone equally and to include people in democratic decision-making processes. I think this is an important skill for a chairperson.

JÖRG ZYMNOSEK IS EURAMET'S FIRST GENERAL SECRETARY



Jörg Zymnossek was appointed to the post of General Secretary for EURAMET, the European Association of National Metrology Institutes. As the first General Secretary for the association he took up the position in January 2016.

Jörg Zymnossek studied Mechanical Engineering at the Technical University of Berlin, Germany. During this time, he had his first contact with national requirements and measurement infrastructure in the field of testing materials and quality assurance. From 1998 to 2008, Jörg held various positions in production and production planning at Volkswagen AG (Wolfsburg, Germany) and gained experience in managing national and international projects in the automotive industry.

In 2008, he became Group Head at the German national standardisation organisation DIN and was responsible for the management of various standardisation committees, including standardisation in the science of measurement.

Jörg, now that your first days in your new position as EURAMET's General Secretary are behind you:

What are your first impressions of EURAMET and your role?

EURAMET manages the programmes and the member services very professionally. I'm very happy to be part of the experienced and well-organised EURAMET team, and I'm excited about taking a lead role in Europe's integrated metrology community. Last but not least, I see my task in creating a working environment for my teams which fosters motivation and high performance.

What are you looking forward to in the next few months in EURAMET?

I'm looking forward to the EMRP evaluation and to the further successful implementation of EMPIR. The joint metrology research will be beneficial for the collaboration of European National Metrology Institutes, Designated Institutes, industry and academia. This will foster the establishment of an effective and balanced European measurement infrastructure.

What is your vision for EURAMET over the next years?

In the challenging times leading up to the redefinitions of the SI units, the EURAMET 2020 Strategy provides a clear and realistic picture for European metrology. Additionally the Strategic Research Agenda is an overall metrology research agenda towards an integrated and internationally competitive measurement infrastructure for Europe. It's essential to communicate the benefits of a progressive and balanced metrology system to the public.

What skills and experience from your previous roles, in the automotive industry and standardisation, will you bring to your new role?

As a project manager of the planning department at Volkswagen AG, I gained experience in leading different kinds of projects and acquired intercultural managerial experience in growth markets. I enjoy working in a multinational context, to bring together varying cultural needs and I find the possibility of further developing strategies for cooperation in European metrology particularly appealing. As a group head at the German standardisation body DIN, I gained experience in managing a wide and sustainable network, spanning different disciplines. By cooperating more closely with standardisation organisations, the impact of the EURAMET programmes will be extended.

Ahmet Ömer Altan is first Convenor of the Working Group for Capacity Building



In 2015, EURAMET established the Board of Directors' Working Group for Capacity Building (WGCB) to strengthen and reorganise the role and position of the previous Focus Group on Facilitating National Metrology Infrastructure Development. Ahmet Ömer Altan (TÜBITAK UME, Turkey) is the first Convenor of the

WGCB and took over the position in January 2016 for a two-year term.

After his studies in Geography at the University of Minnesota (USA), Ömer started his career in the financial sector. In 2005, he joined the National Metrology Institute of the Scientific and Technological Research Council of Turkey (TÜBITAK UME) as Specialist responsible for International Relations and Coordinator of the Project Implementation Unit for the World Bank Industrial Technology Project. In 2010, Ömer started a two-year secondment at the International Bureau of Weights and Measures (BIPM) in Paris (France) as Executive Secretary of the Joint Committee of Regional Metrology Organizations and the BIPM. Since 2014, he has held the position of Head of the International Relations Department at TÜBITAK UME.

"As Convenor of the WGCB, my objective is to ensure the most effective utilization of all resources available for capacity building, from EMPIR as well as other sources, to reduce developmental disparities within the European metrology landscape. Additionally, I will focus on broadening the participation in capacity building activities to all EURAMET members."

Ömer has a lot of experience working within the EURAMET community. As Contact Person, he contributed to the Focus Group for Facilitating National Metrology Infrastructure Development between 2007 and 2010 and again in 2015. He was member of different core and working groups, and acted as a trainer and organiser of training and workshop programmes.

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