

1. General Aspects

This report summarizes activities of the Technical Committee for Acoustics, Ultrasound and Vibration (TC AUV) since the General Assembly in 2010.

All TC AUV activities are organized in the following way: general issues are within the responsibility of the Technical Committee and technical issues are handled within the three Sub-Committees (SC) covering different subject fields. The activities of each Sub-Committee are coordinated by the appointed Convenor. The membership within Sub-Committees is as follows:

SC "Acceleration and Vibration"	: 15
SC "Sound in Air"	: 17
SC "Ultrasound and Underwater Acoustics"	: 4

All in all, the TC AUV has representatives from 25 of the 33 members of EURAMET.

2. Projects

Project 792 Investigation of methods of secondary free-field calibration of working standard microphones: This project is intended to investigate the viability of different methods of secondary free-field calibration and compare the results of these methods. It also addresses the need for a suitable sound source. The driver for this work is the preparation of the next part of the IEC 61094 series of Standards on measurement microphones, to describe methods of secondary free-field calibration of working standard microphones by comparison with laboratory standard microphones. The project has been finished, and the results will be used as input for a new standard on the subject. *The project will be formally closed in 2011, and the final reports will be uploaded to EURAMET's database.*

Project 1056 Comparison of methods to determine corrections to obtain the free-field response of a sound level meter: The project aims at supporting the development of this standard by comparing different methods, in order to evaluate the reproducibility of the measurements and the uncertainties. A SLM modified for simplifying the measurement will be circulated among the participants, that use different methods for the determinations of the corrections. Results and associated uncertainties will be given by each participants, and the data will be analysed. A verified evaluation of the uncertainty of the measurement is the main output of the project. The measurement round has been completed, and a draft B has been circulated and accepted by the participants. *This project has been now officially closed, and the reports are available at EURAMET's homepage.*

Project 1108: Comparison of measurement techniques for the determination of ultrasonic power of high-intensity ultrasound transducers: The main goal of the project is the development and comparison of measurement techniques for the determination of acoustic output power generated by high-intensity ultrasound transducers. Because there has been no experience of such methods in any world laboratory, comparison between different techniques is essential for the establishment of a reliable basis for measurement. *This project has been now officially closed, and the reports are available at EURAMET's homepage.*

New project proposals have been discussed, and these may be formalised in the near future. Projects that are labelled as "comparisons" are mentioned below identified by the corresponding EURAMET project number.

3. Comparisons

3.1. Key Comparisons

NMIs from EURAMET are participating in the following CCAUV comparisons:

CCAUV.A-K4 “Free-field reciprocity calibration of LS2F microphones” with 3 participants from EURAMET (LNE (FR), DFM (DK), and PTB (DE), though PTB acting as a COOMET member). The comparison was piloted by DFM and the CENAM (MX). The final report has been published in the KCDB.

CCAUV.A-K5 “Comparison of laboratory standard microphone calibrations.” This key comparison is an update of CCAUV.A-K1 but with enhanced scope. Among the participants from EURAMET there are four NMIs: DFM, Denmark; GUM, Poland; INRIM, Italy; NPL, UK; and one Designated Institute: BKSV-DPLA, Denmark. The measurement round is in progress. The comparison is piloted by NPL.

The following EURAMET AUV comparisons are in progress:

EUROMET.AUV.V-K1.1 (EUROMET project 897). Five NMIs participate BEV (AT), INETI (PT), LNE (FR), NCM (BG) and PTB (DE). PTB is acting as the pilot of the comparison. The Final Report of the comparison is under preparation.

EURAMET.AUV.A- S1 (EURAMET project 1126). Comparison of pressure reciprocity calibration of microphones among CENAM (MX), DFM (DK), DMDM (RS), and INM (RO). The role of Pilot laboratory is undertaken by DFM and CENAM. The draft A report is being prepared by CENAM.

EURAMET NMIs are also involved in key comparisons within other RMOs.

COOMET.AUV.A-K1: 4 participants from EURAMET (PTB, SMU, GUM, UME). PTB is the pilot of the comparison. The comparison has been approved for equivalence, and published in the KCDB.

COOMET.AUV.V-K1: 3 participants from EURAMET (GUM, UME, INM). VNIIM (RU) is the pilot of the comparison. The Measurement stage has been completed. The Draft A of the comparison report is under preparation.

3.2. Bilateral Comparisons

There are three bilateral comparisons at different stages underway.

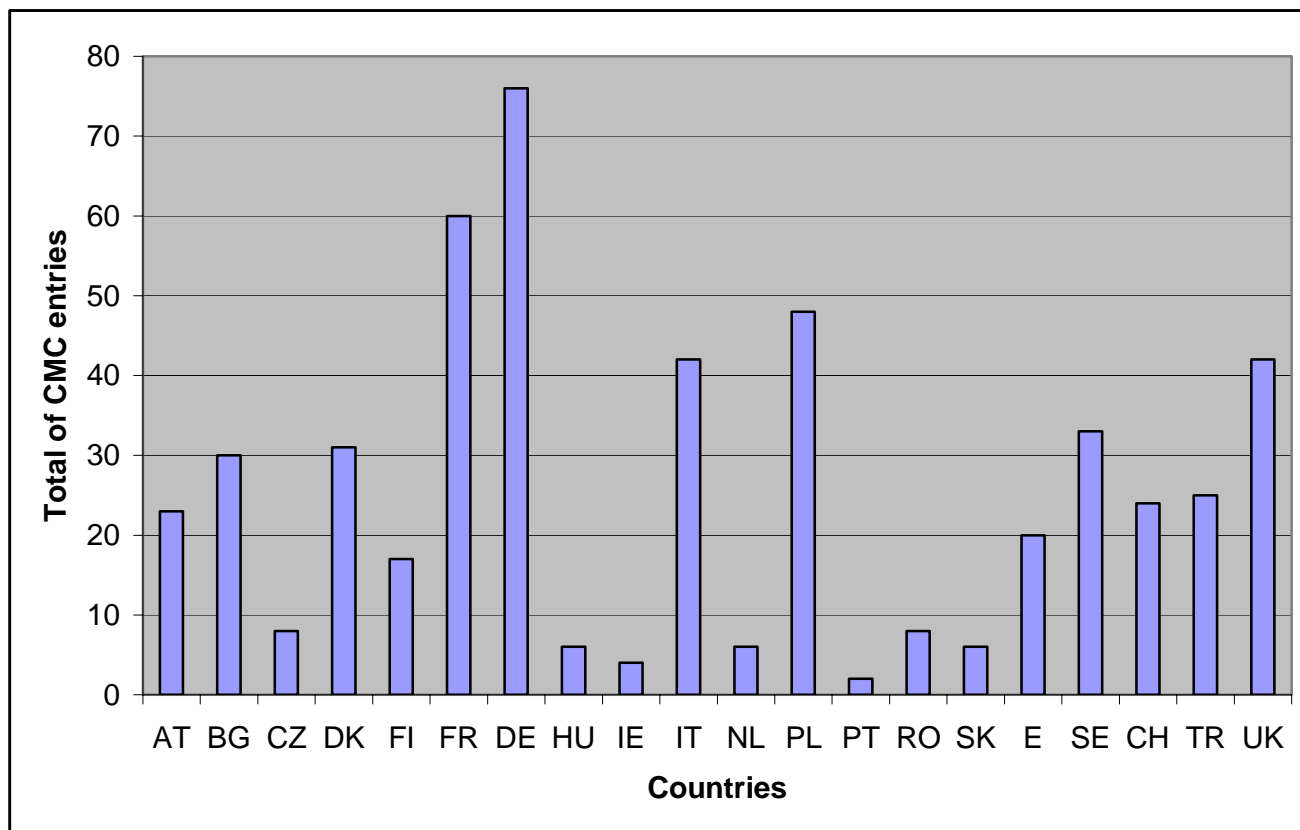
EURAMET project 1062: Bilateral comparison in hydrophone calibration up to 50 MHz between NPL and PTB.

EURAMET.AUV.V-K1.2 (EURAMET project 1066) is a comparison on the calibration of accelerometers between METAS and PTB.

EURAMET project 1142: Bilateral Comparison of Accelerometer Calibration between MIKES and SP.

4. CMCs

A total of 20 EURAMET countries have CMC entries approved and published on the BIPM KCDB. The overall number of published CMCs is 511. The distribution by country is shown in the figure below.



Two CMC submissions EURAMET.AUV.9.2010, and EURAMET.AUV.10.2011 that contain entries from NSAI-NML Ireland, and LNE, France have been through intra-, and inter-regional review. The two CMC batches were approved, and published in the KCDB.

A new batch from BMI, Bulgaria has been received, and it is under preparation for submission to intra-regional review.

The TC working group for CMC Review has been involved in the assessment of several CMC batches from other RMOs, including the batch AMPM.AUV.7.2010 that consists of CMCs on Vibration from NIM, China, and AFRIMETS.AUV.2.2010 that contains vibration entries from NMISA, These batches have been accepted and published in the KCDB.

Recently two submissions have been received for Inter-regional review: the batch COOMET.AUV.6.2011 that contains entries from DP NDI "Systema" Ukraine; and the batch APMP.AUV.8.2011 that contains entries from NPLI, India, and ITRI, Taipei.

5. Activities of the Sub-Committees

The activities of each Sub-Committee are coordinated by the appointed Convenor. The level of participation in Sub-Committees varies significantly. Each Sub-Committee meets annually. In 2010

the Convenor for the Sub-Committee Vibration, Thomas Bruns (PTB) has been re-elected for another 2-year term. Claudio Guglielmone (INRiM) and Stephen Robinson (NPL) have been elected as new Convenors for the Sub-Committee Sound in Air, and the Sub-Committee Ultrasound and Underwater Acoustics, respectively.

6. Participation in EMRP

Originally, the scope of the 2010 EMRP Call “Environment” explicitly included Acoustic propagation. This triggered a fair number of submitted PRTs to the open call. However, the EMRP Committee decided afterwards that the scope should focus on climate change. This had a discouraging effect on the intentions of participating in the 2011 call. However, several PRTs were submitted to the Health-call in 2011. This resulted in two SRTs related to non-audible sound and ultrasound therapy. The consortia will be formed at the coming partnering meetings in the summer 2011.

7. Meetings

It was agreed in the meetings of the TC and the Sub-Committees for Sound in Air, and Acceleration and Vibration in 2010, that the meetings of the Sub-Committee Sound in Air, Sub-Committee Acceleration and Vibration and the TC AUV will be held jointly. The Sub-Committee for Ultrasound and Underwater Acoustics decided to continue meeting separately. The Joint meeting was hosted by DMDM in Belgrade, Republic of Serbia on the 11th-13th of May, 2011. The experience of having the joint meeting was positive, and it was decided to use the same scheme on 2012. The meeting will with high probability be host by LNE, France, and will be hold immediately after the 8th Meeting of the CCAUV.

The meeting of the Sub-Committee for Ultrasound and Underwater Acoustics in 2011 has been postponed, and will be held in Madrid, Spain later on the year.

TCAUV Chairmen from other RMOs were invited to the joint TCAUV meeting in 2011 but none attended. The invitation may be reissued in 2012.

8. Other issues

The first term of the TC Chair ends by the General Assembly in 2011. The TC Chair has asked the TC Contact persons to submit any proposal for a new TC, or whether they agreed on having the current TC Chair to continue for a second and last period. No alternative proposals were received.

Salvador Barrera-Figueroa
TC AUV Chair

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Kongens Lyngby, Denmark