

1. Introduction

This report summarizes activities of the Technical Committee for Acoustics, Ultrasound and Vibration (TC AUV) from October 2008 to September 2010.

General administrative issues are the responsibility of the Technical Committee (TC), while activities of more technical nature are treated within the Sub Committees. There are three Sub-Committees covering different the fields of Sound in Air (SC-A), Acceleration and Vibration (SC-V), and Ultrasound and Underwater Acoustics (SC-U). All in all, the TC AUV has representatives from 25 of the 33 members of EURAMET.

On June 2009 Salvador Barrera-Figueroa took over the Chair of the TCAUV, succeeding Enver Sadikoğlu who finished his second term.

The activities of each Sub-Committee are coordinated by the appointed Convenor. New Convenors for the SCs Sound in Air and Ultrasound and Underwater Acoustics have been elected at the corresponding Sub-Committee meetings. The new Convenor for SC-A is Claudio Guglielmono (INRiM), and the new Convenor for SC-U is Steve Robinson (NPL).

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.

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 will be circulated.

Project 1188: 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 started in 2009.

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

CCAUV.A-K2 “Calibration of LS1P microphones at low frequencies” with 6 participants from EURAMET (BEV, CEM, DPLA, NPL, PTB, UME). The Final Report of the comparison has been approved for equivalence at the CCAUV, and the results published in the KCDB database.

CCAUV.A-K4 “Free-field reciprocity calibration of LS2 microphones” with 3 participants from EURAMET (LNE, DPLA, PTB, though PTB acting as a COOMET member). The comparison has been which is piloted by DFM and the CENAM (Mexico). Once the CCAUV approves the results for equivalence, the final report has been published in the KCDB.

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), DANIAmet-DFM (DK), DMDM (RS), and INM (RO). The role of Pilot laboratory is undertaken by DFM and CENAM. The measurement round has been finished, and a draft A report will be produced 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

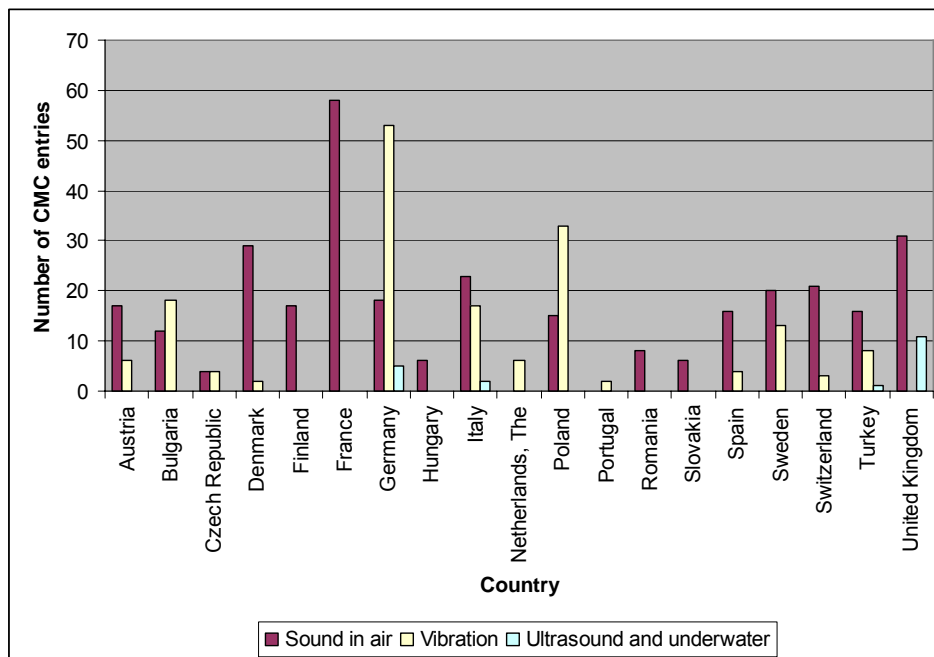
EURAMET project 1062: Bilateral comparison in hydrophone calibration up to 50 MHz between NPL and PTB.

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

19 European countries have CMC entries approved and published on the BIPM KCDB. The overall number of published CMCs is 505. The distribution by country and subject field is shown in the figure below.



At the moment, no CMC has been submitted to inter-regional review, although it is planned to submit a CMC batch just before the 7. CCAUV meeting. The TC working group for CMC Review has been involved in the assessment of several CMC batches from other RMOs.

6. Participation in iMERA-Plus

Members of EURAMET TC AUV are involved in the T2.J07 Joint Research Project. The project, entitled “External Beam Cancer Therapy” includes a work package related to the characterization of High Intensity Focused Ultrasonic (HIFU) transducers. Four NMIs, PTB (DE), NPL (UK), INRiMT (IT) and UME (TR) are involved in the activities within the work package. A spin off this project is the EURAMET Project 1108 described above.

Salvador Barrera-Figueroa
 TC AUV Chair

24th of September, 2010
 Kongens Lyngby, Denmark