



ЕВРО-АЗИАТСКОЕ СОТРУДНИЧЕСТВО ГОСУДАРСТВЕННЫХ МЕТРОЛОГИЧЕСКИХ УЧРЕЖДЕНИЙ (КООМЕТ)

EURO-ASIAN COOPERATION OF NATIONAL METROLOGICAL INSTITUTIONS (COOMET)

ССАУВ/17-51

COOMET TC-AUV

Current activities

September 2017

General features of cooperation in the AUV area

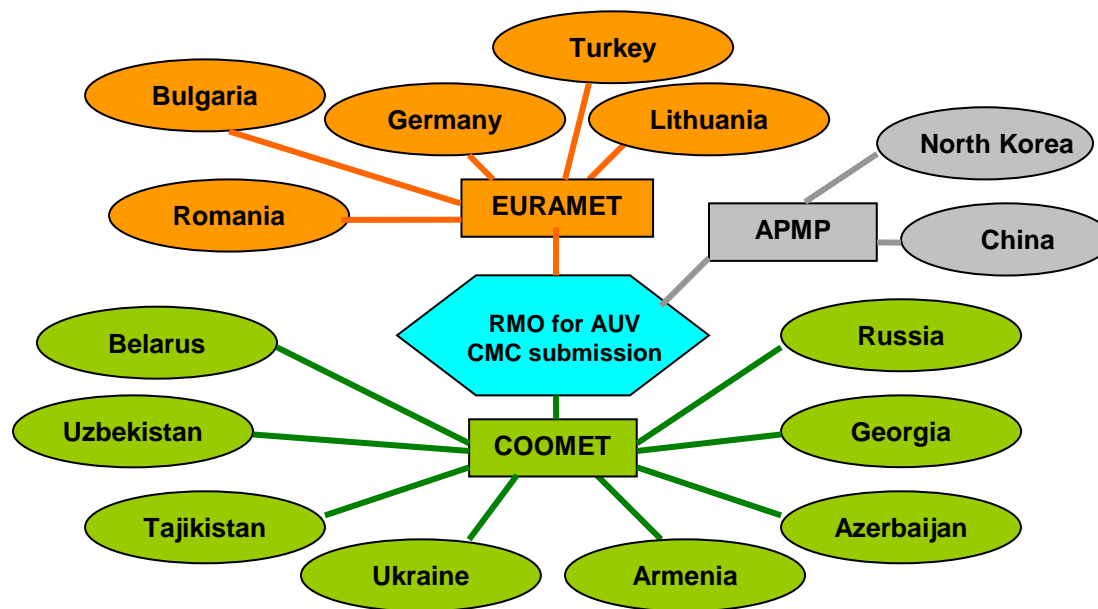
The NMIs from **15** COOMET member countries are represented in TC 1.2 “Acoustics. Ultrasound. Vibration”

8 NMIs, i.e.

Azerbaijan, Armenia, Belarus, Georgia, Russia, Tajikistan, Ukraine and Uzbekistan submit their AUV CMCs via COOMET

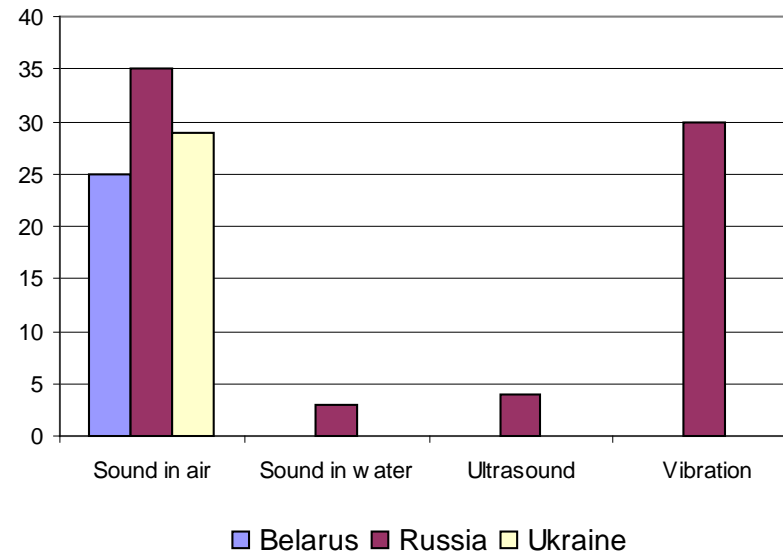
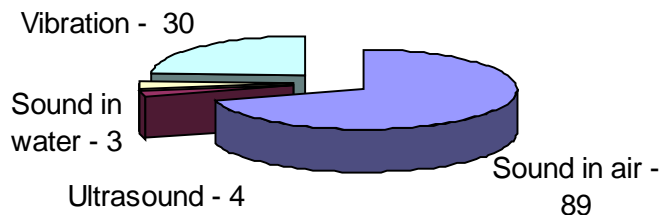
7 NMIs, i.e.

Bulgaria, China, Germany, KDPR, Lithuania, Romania and Turkey do this through other RMOs



Only **3 countries**: Belarus, Russia and Ukraine
 have published their CMCs in AUV by now

126 CMC entries on BIPM KCDB



Meetings:



The **11th** meeting of TC 1.2 was held in BelGIM 20-21 September 2016, Minsk, Belarus.

15 participants from Belarus, Lithuania, Russia and Ukraine.



Delegates at 2017 meeting of TC-AUV
at Vilnius, Lithuania

The **12th** meeting of TC 1.2 was held in Vilnius Metrology Centre 5-6 September 2017, Vilnius, Lithuania.

17 participants from Belarus, China, Georgia, Lithuania, Russia, Turkey and Ukraine.



Participation of COOMET NMIs in key comparisons of CCAUV

Acoustics Sound in air	Acoustics Sound in water	Ultrasound	Vibration
<ul style="list-style-type: none"> ◆ CCAUV.A-K1 ◆ CCAUV.A-K2 ◆ CCAUV.A-K3 — CCAUV.A-K4 ◆ CCAUV.A-K5 	<ul style="list-style-type: none"> ◆ CCAUV.W-K1 * CCAUV.W-K2 	<ul style="list-style-type: none"> ◆ CCAUV.U-K1 - CCAUV.U-K2 ◆ CCAUV.U-K3 -CCAUV.U-K3-1 - CCAUV.U-K4 	<ul style="list-style-type: none"> ◆ CCAUV.V-K1 ◆ CCAUV.V-K2 ◆ CCAUV.V-K3 ➤ CCAUV.V-K4 ➤ CCAUV.V-K5

- ◆ completed CCAUV comparisons
- * planned CCAUV comparisons
- CCAUV comparisons in progress
- CCAUV comparisons COOMET NMIs do not (did not) participate in

Participation of COOMET NMIs in key comparisons of CCAUV

Last CCAUV comparisons completed up to 2016

<u>CCAUV.A-K5</u>	Comparison of laboratory standard microphone calibrations 2011 - 2012
Comparison type, Field Parameter(s) Status	Key comparison in AUV, Acoustics Frequency: 2Hz to 10 kHz Approved for equivalence, <i>Metrologia</i> , 2014, 51, Tech. Suppl., 09007
<u>CCAUV.U-K3</u>	Ultrasonic power 2008 - 2012
Comparison type, Field Parameter(s) Status	Key comparison in AUV, Ultrasound Frequency: 2 MHz to 15 MHz Power: 10 mW to 15 W Approved for equivalence, <i>Metrologia</i> , 2014, 51, Tech. Suppl., 09001
<u>CCAUV.V- K2</u>	Vibration acceleration 2009 - 2012
Comparison type, Field Parameter(s) Status	Key comparison in AUV, Vibration Frequency: 10 Hz to 10 kHz Approved for equivalence, <i>Metrologia</i> , 2014, 51, Tech. Suppl., 09002
<u>CCAUV.V- K3</u>	Acceleration complex sensitivity 2013 - 2015
Comparison type, Field Parameter(s) Status	Key comparison in AUV, Vibration Different frequencies from 0,1 Hz to 40 Hz with specified acceleration amplitudes Approved for equivalence, <i>Metrologia</i> , 2017, 54, Tech. Suppl., 09001

Participation of COOMET NMIs in key comparisons of CCAUV

CCAUV ongoing comparisons

<u>CCAUV.W- K2</u>	Comparison of free-field hydrophone calibrations in water 2014 - 2015
Comparison type, Field Parameter(s) Status	Key comparison in AUV, Underwater acoustics The frequency range from 250 Hz to 500 kHz <i>Technical Protocol was approved by the CCAUV</i>

COOMET comparisons



Last COOMET comparisons completed in 2016 - 2017

<u>COOMET.AUV.A-K5</u>	Comparison of national acoustic standards 2013 - 2015
Comparison type, Field Parameter(s) Status	Supplementary comparison in AUV, Acoustics Frequency: 250 Hz and 1/3-oktave frequencies from 20 Hz to 20 kHz Approved and published, <i>Metrologia</i> , 2016, 53, Tech. Suppl., 09003
<u>COOMET.AUV.W-S1</u>	Comparison of free-field hydrophone calibrations for underwater acoustics 2012 - 2013
Comparison type, Field Parameter(s) Status	Supplementary comparison in AUV, Underwater acoustics Frequency: 250 Hz to 8 kHz Approved and published, <i>Metrologia</i> , 2015, 52, Tech. Suppl., 09001
<u>COOMET.AUV.U-K3</u>	Ultrasonic power 2013 - 2016
Comparison type, Field Parameter(s) Status	Key comparison in AUV, Ultrasound Frequency: 2 MHz to 15 MHz Power: 10 mW to 15 W Reclassified as pilot study COOMET.AUV.U-P1 . Review of report draft B by the KCWG is in progress

COOMET comparisons

COOMET ongoing comparisons

<u>COOMET.AUV.V-K1</u>	Vibration acceleration 2007 - 2008
Comparison type, Field Parameter(s) Status	Key comparison in AUV, Vibration Frequency: 40 Hz to 5 kHz Review of report draft B by the KCWG is in progress
<u>COOMET.AUV.A-S2</u>	Supplementary comparison of national standards of sound pressure in air 2014
Comparison type, Field Parameter(s) Status	Key comparison in AUV, Acoustics Frequency range from 20 Hz to 8 kHz for microphone type WS1P and from 20 Hz to 20 kHz for microphone type WS2P Review of report draft B by the KCWG is in progress

COOMET pilot studies

Project No	Description	Participants of comparison
<p>COOMET No 646/RU/14</p>	<p>Pilot comparisons of underwater particle velocity receiver in the frequency range from 5 Hz to 4.0 kHz</p> <p style="text-align: center;">Status: In progress</p>	<p>VNIIFTRI, Russia HAARI, China</p>
<p>COOMET No 706/RU/16</p>	<p>Pilot comparison in the field of velocity of longitudinal ultrasound waves propagation in solid mediums</p> <p>Status: Agreement of technical protocol is in progress</p>	<p>VNIIFTRI, Russia NIM, China BelGIM, Belarus</p>

The COOMET NMIs have the status of QMS Recognition

No	State and name of NMI	Status QMS	Given	Valid	Given (after 5 years)	Valid
1	Russia, VNIIM	Recognition	20.09.2005	20.09.2010 (prolonged until 20.2.2011)	14.10.2010	14.10.2015
					28.08.2015	28.08.2020
2	Russia, VNIIFTRI	Recognition	20.12.2005	20.12.2010	14.10.2010	14.10.2015
					28.08.2015	28.08.2020
3	Belarus, BelGIM	Recognition	20.12.2005	20.12.2010 (prolonged until 31.5.2011)	19.05.2011	19.05.2016
4	Ukraine, DNDI "Systema"	Recognition	30.03.2007	30.03.2012	14.03.2012	14.03.2017

Cooperation in AUV field with the relevant international and regional organizations

Since 2004, members of TC 1.2 have attended the meetings of CIPM Consultative Committee for AUV and its Working Groups. Joint comparisons between COOMET and EURAMET or COOMET and APMP are conducted.

TC 1.2 members attend the meetings of IEC/TC29, IEC/TC 87 and ISO/TC 43 on a regular basis.

From Dec. 2015 to Aug. 2017 TC representatives attended the following meetings:

IEC/TC87 interim meeting of WG's (Arlington, USA, December 2015)

EURAMET-AUV meeting (Copenhagen, Denmark, February 2016)

5rd Plenary Meeting of ISO/TC 43/SC3 and WG15 of IEC/TC87, London, UK (June 2016)

IEC/TC87 «Ultrasound» meeting, Sendai, Japan (September 2016)

External assessment of underwater acoustic calibration laboratory of the Institute of materials of Research Center on Marmara sea, TÜBİTAK – MAM, Turkey (November 2016)

IEC/TC87 interim meeting of WG's (Austria, Vienna, June 2017)

Meeting of the International Measurement Confederation IMEKO/TC3, TC5 and TC22, Helsinki, Finland, from 30.05 to 01.06.2017

Also, TC representatives attended the following relevant international events:

45th International congress and exhibition in the field of noise suppression «InterNoise 2016», Hamburg, Germany (August 2016)

Scientific and technical workshop in honour of 25th anniversary of cooperation between VNIIFTRI and Hangzhou Applied Acoustics Research Institute, Hangzhou, China (October 2016)

6th International scientific and technical conference «Sudometrika 2016. Measurements and tests in shipbuilding and related fields», St.-Petersburg, Russia (October 2016)

10th International scientific and technical conference «Metrology - 2016», Kharkov, Ukraine

6th All-Russian scientific and practical conference with international participation «Protection from elevated noise and vibration», St-Petersburg, Russia (March 2017)

All-Russian scientific and practical conference with international participation “Environmental, industrial and energy security-2017”, Sevastopol, Russia (September 2017).

Thank you for attention!

Valentina Pozdeeva
Chair of COOMET TCAUV
September 2017



Alexander Enyakov
TC assistant chairman