

Progress Report to CCM from 2019 to 2021 for the meeting of the Consultative Committee for Mass and Related Quantities (CCM) BEV, Austria

BEV pilot in key Comparisons

1. Key comparison of 1 kg mass standards EURAMET.M.M- K4.2015 (EURAMET 1346), which linked to the CCM key comparison (CCM.M-K4) of 1 kg stainless steel standards. (Number of participants is 28). Results published on 16 March 2020.
2. CCM.D-K5 Density meters
3. EURAMET 1440 key comparison that is planned parallel running with the CCM.D-K5.
4. BEV has been chosen as pilot in the EURAMET comparison following CCM.D-K3 Solid density standards -Stainless steel weights. No preparation has been started since the protocol of CCM.D-K3 is not available.
5. EURAMET key comparison on density of liquids (hydrostatic weighing method). Measurements started in February 2021. Registration in progress.
6. EURAMET key comparison on density of liquids (density meter). Measurements started in February 2021. Registration in progress.

BEV participates in other Comparisons

1. EURAMET.M.M-S7, Comparison of 500 kg mass standard.
2. EURAMET.M.M-K7, Comparison of Stainless Steel Multiples and Sub-Multiples of the Kilogram, 5 kg, 100 g, 10 g, 5 g, 500 mg.
3. EURAMET.M.M-S5: Comparison of mass standards , Mass: 200 mg, 5 g, 20 g, 50 g, 200 g and 1000 g; BEV is link laboratory and also provider of the density measurements of the transfer standards. There was no communication from the Pilot Laboratory during the reporting period.
4. EURAMET.M.D-K4.2020 Calibration of high resolution hydrometers
5. EURAMET project No. 1507 Comparisons of standards for liquid flow rates under static load changes

Research and development activities in BEV

1. Participation in EMPIR 19RPT02 "Improvement of the realization of the mass scale"
2. Participation in EMPIR 17RPT02 "Establishing traceability for liquid density measurements".
3. Participation in EMPIR 18RPT02 "Developing an infrastructure for improved and harmonised metrological checks of blood-pressure measurements in Europe".
4. Participation in EMPIR 16RPT03 "Developing research capabilities for traceable intraocular pressure measurements".
5. Participation in EMPIR 19ENG04 MetroHyVe2 "Metrology for hydrogen vehicles 2"
6. Participation in EMPIR 17IND13 Metrowamet "Metrology for real-world domestic water metering"
7. Recalibration of 500 kg weights of the 250 kN dead weight standard force machine. The deviation to the results of the former calibration (2012) was smaller than 1 g.

Publications,

1. Improvement of the realisation of the mass scale (Z. Zelenka, S. Alisic, B. Stoilkovska, R. Hanrahan, I. Kolozinsky, G. Popa, D. Pantic, V. Dikov, J. Zuda, M. Coenegrachts, A. Malengo) http://dx.doi.org/10.21014/acta_imeko.v9i5.928

2. Final report on EURAMET comparison on 1 kg stainless steel mass standards,
<https://iopscience.iop.org/article/10.1088/0026-1394/57/1A/07011>
3. EURAMET key comparison 1031 (EURAMET.M.D-K1.1)—solid density comparison (Horst Bettin, Michael Borys, Martin Firlus, Christian Buchner, Zoltan Zelenka, Nieves Medina, Tijana Parlić-Risović, Mladen Bezjak, Chris Mitsas, Alexandros Lefkopoulos, Elżbieta Lenard, George Florian Popa, Andrea Malengo, Tanguy Madec, Florian Beaudoux, Peter Fuchs, Kilian Marti, Christian Wüthrich, Heikki Kajastie, Alaaeldin A Eltawil, Ken-ichi Fujii, Naoki Kuramoto, Atsushi Waseda, Michael Perkin, Stuart Davidson, Ümit Y Açadağ and Aleksey Domostroev)
<https://doi.org/10.1088/0026-1394/57/1A/07028>
4. First density comparison on viscoelastic samples by oscillation-type densimetry (A. Furtado, J. Pereira, R. Quendera, M. Schiebl, E. Lenard, E. Malejczyk, A. Alic, S. Alisic, J. Rauch, F. Lorenz, A. Bescupschii, A. Ciubara, B. Laky, R. Amsüss),
http://dx.doi.org/10.21014/acta_imeko.v9i5.943
5. Metrology for intraocular pressure measurements (D. Prazak, R. Ziolkowski, D. Rosu, M. Schiebl, J. Rybar, P. Pavlasek, E. Sinir, F. Pluhacek),
http://dx.doi.org/10.21014/acta_imeko.v9i5.999
6. Temperature robustness of oscillation-type density meters , M Schiebl and S Wasylewski
2019 Meas. Sci. Technol. 30 115012,

Compiled by Zoltan Zelenka, 22 April 2021