



Gulf Association for Metrology

GULFMET Technical Committee for Mass and Related Quantities

*Report to CCM, WGD-kg
BIPM-Paris, May 2019*

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The GULF Association for Metrology (**GULFMET**) was granted **provisional** acceptance as an RMO by the CIPM in September 2015.



Provisional

- Intra-RMO CMC review must be performed by another RMO
- GULFMET cannot vote for approval of CMCs during Inter-RMO review

Member

Kingdom of Bahrain

Kingdom of Saudi Arabia (2011)

State of Kuwait (2018)

- Member
- Associate

Sultanate of Oman (2012)

State of Qatar (2016)

Republic of Yemen (2014-18)

United Arab Emirates (2015)

Associate

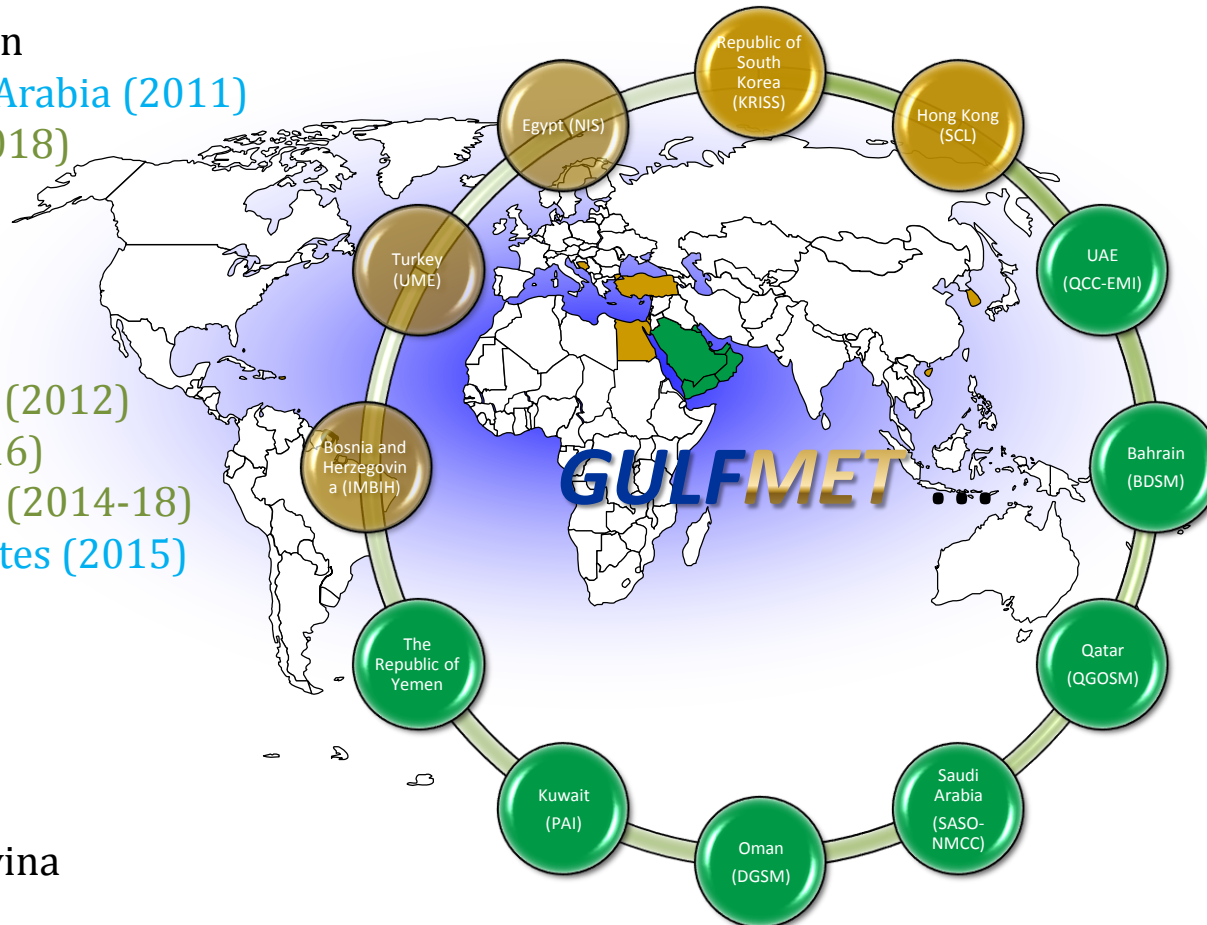
Egypt

South Korea

Turkey

Bosnia & Herzegovina

Hong Kong



TC Details

TC-Mass is responsible for carrying out the activities required by GULFMET for the fulfillment of the CIPM-MRA. Specifically:

- The provision of technical support and facilitation of the intra-RMO CMC review process
- The participation in the inter-RMO review of CMC's
- The organization and technical support of GULFMET Key and Supplementary Comparisons

Covers the areas of: **Mass, Pressure, Force, Torque, Density, Volume**

The TC meets bi-annually in April and November

Revision of GULFMET procedures

Proposal for:

- ***Procedure for the Review of Calibration and Measurement Capabilities (CMCs)*** GULFMET 03, Issue 2, 20/ 02 /2019

(expected to be adopted by upcoming GULFMET GA).

Inter-RMO CMC Review

TC-Mass has contributed to the JCRB inter-RMO CMC review process by undertaking reviews of CMC's submitted.

TC-Mass has declined to review submissions when reviewers with relevant expertise were not available.

	2017	2018	2019
Accepted to review	12	5	4+2
Declined to review	4	7	1

Completed Comparisons

- ***EURAMET.M.P-S13*** *Comparison in the range of 10 MPa to 100 MPa of liquid pressure*
 - *Pilot: UME (Turkey)*
 - *Status: Completed*
 - **QAF (Qatar), SASO-NMCC (Saudi Arabia), QCC-EMI (UAE)*

Comparisons nearing completion

- ***GULFMET.M.M-S1*** *Multiples and submultiples of the kg (10 kg, 500 g, 20 g, 2 g, 100mg)*
 - *Pilot: UME (Turkey)*
 - *Status: Draft B in preparation*
 - **BDSM (Bahrain), PAI (Kuwait), *QAF (Qatar), SASO-NMCC (Saudi Arabia), QCC-EMI (UAE)*
- ***GULFMET.M.M-S2:*** *Multiples and submultiples of the kg (5 mg, 2 g, 50 g, 1 kg and 5 kg)*
 - *UME (Turkey)-pilot, SASO-NMCC (Saudi Arabia)*
 - *Status: Draft B*

Comparisons nearing completion

- ***GULFMET M.M.-K4*** : Comparison of 1 kg stainless steel mass standards
 - *Pilot: UME (Turkey)*
 - *Status: Draft A*
 - *INRIM (Italy), KRISS (Korea), METAS (Switzerland), PAI (Kuwait), QGOSM (Qatar), SASO-NMCC (Saudi Arabia), QCC-EMI (UAE)*
- ***GULFMET M.M.-K7*** : Comparison of multiples and submultiples of the kilogram (5 kg, 100 g, 10 g, 5 g, 500 mg)
 - *Pilot: UME (Turkey)*
 - *Status: Draft A*
 - *INRIM (Italy), METAS (Switzerland), PAI (Kuwait), QGOSM (Qatar), SASO-NMCC (Saudi Arabia), QCC-EMI (UAE)*

Comparisons nearing completion

- ***GULFMET M.P.-S1: Comparison in the range of
0.7 MPa to 7 MPa of Gas Pressure***
 - *Pilot: UME (Turkey)*
 - *Status: Draft A*
 - *SASO-NMCC (Saudi Arabia), QCC-EMI (UAE)*
- ***GULFMET M.F.-S1: Force measurements in the range
100 kN to 1 MN***
 - *Pilot: UME (Turkey)*
 - *Status: Draft A*
 - *SASO-NMCC (Saudi Arabia), QCC-EMI (UAE)*
- ***GULFMET M.F.-S2: Force measurements in the range
0.4 kN to 100 kN***
 - *Pilot: UME (Turkey)*
 - *Status: Draft B in preparation*
 - *SASO-NMCC (Saudi Arabia)*

2019 Planned Comparisons

- ***GULFMET.M.FF-S1: Calibration of piston operated micro-pipette 100 μ l***
 - *Pilot: SASO-NMCC (Saudi Arabia)*
 - *UME (Turkey), QCC-EMI (UAE), IMBH (Bosnia & Herz.)*
- ***GULFMET.M.D-S1: Comparison in solid density (stainless steel weights 1 kg, 200 g, 20 g, 2 g)***
 - *Pilot: QCC-EMI (UAE)*
 - *SASO-NMCC (Saudi Arabia), UME (Turkey)*

Additional Proposed Comparisons

- ***Comparison of torque standards 100 N·m to 1000 N·m***

SASO-NMCC (Saudi Arabia), UME (Turkey), QCC-EMI (UAE)

- ***Comparison of Vickers HV30 scale (100, 500 and 900), Key***
- ***Comparison of Rockwell HRC scale (20, 30, 45, 55 and 70),
Supplementary***

SASO-NMCC (Saudi Arabia), UME (Turkey)

Acknowledgments

- *Thank you to our Associate Members (particularly UME and KRISS) for supporting and piloting GULFMET comparisons.*
- *INRIM and METAS participation in GULFMET KC's is gratefully acknowledged.*

Thank you!

