

22. The BIPM/CIPM Working Group for Fluid Flow (WGFF)

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Objectives: The new WGFF formed in the BIPM/CIPM Consultative Committee for Mass and Related Quantities (CCM) has as its objectives:

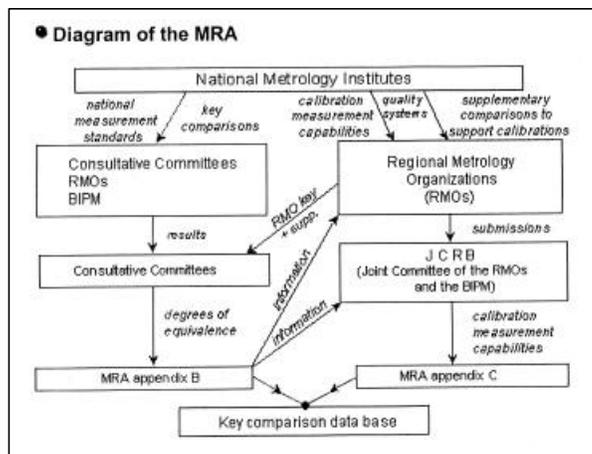
- to establish the degree of equivalence of national flow measurement standards maintained by the National Metrology Institutes (NMIs),
- to provide for the mutual recognition of flow calibration and measurement certificates issued by the NMIs,
- thereby to provide governments and other parties with a secure technical foundation for wider agreements regarding flow measurements that relate to international trade, commerce, and regulatory affairs.

Problem: Non-tariff trade barriers rooted in measurement-related issues, e.g., the lack of acceptance of calibration certificates based on the lack of comparability of the standards for flow measurement maintained in the world's NMIs, can limit international trade.

Approach: In accord with BIPM/CIPM guidelines in the Mutual Recognition Arrangement (MRA), devise a WGFF strategy and a Working Group structure to:

- a. review the Calibration and Measurement Capabilities (CMCs) of the world's National Metrology Institutes (NMIs) so that their calibration certificates are acceptable and
- b. conduct Key Comparisons (KCs) of the flow standards maintained in the NMIs to establish their equivalency.

Results will be made available on the internet, in a Key Comparison Data Base.



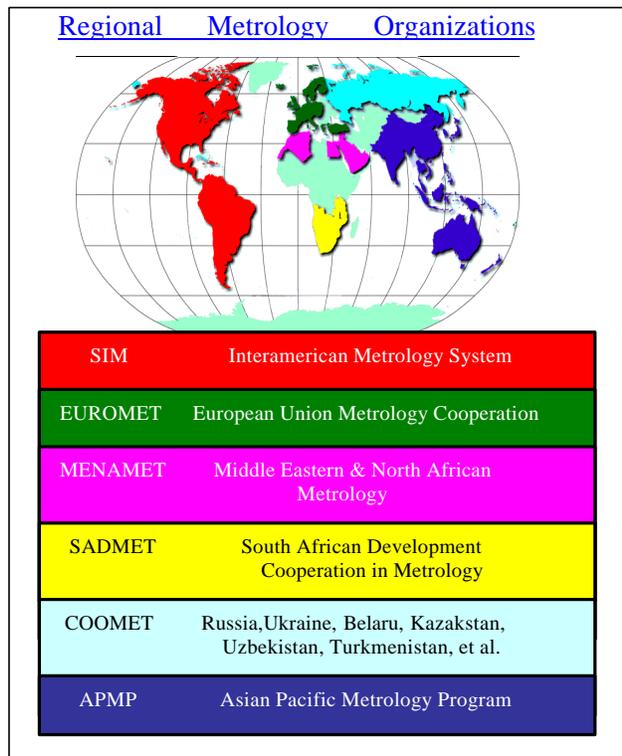
Results and Future Plans: The world's NMIs and signatories of the MRA were informed of the formation of the WGFF and invited to join it. At its first meeting, the participant NMIs, in their respective Regional Metrological Organizations (RMOs), were organized into sub-groups in the six measurement areas assigned to the WGFF. These areas are water flow, hydrocarbon liquid flow, low pressure air flow, high pressure natural gas flow, air speed, and liquid volume.

Primary and secondary roles have been assigned to specific NMIs in each measurement area in the RMOs to undertake the reviews of the CMCs and the reporting of results. Using the results from these CMC reviews, these NMIs will design and conduct the initial phases of the KCs.

NIST has accepted a primary role in low pressure air flow and a secondary role in high pressure natural gas flow. To deliver expected products in high pressure natural gas, NIST will partner with the Colorado Engineering Experiment Station, Inc. (CEESI) in Colorado, a private flow meter calibration laboratory which has the required facilities.

By partnering is meant that NIST will use the results of its telecalibration capabilities established with CEESI, to conduct the NIST KC tests by taking metrological control of the CEESI facilities to generate NIST results in Colorado or wherever the requisite CEESI facilities are located. This partnering arrangement is being recommended to all NMIs that do not have the requisite calibration capabilities to participate directly, as this partnering should lead to satisfactory harmonization of standards, both domestically and internationally. An alternative approach for such NMIs is to simply designate KC participation to a domestic lab that has such capabilities, but it is felt this can lead to confusing and unacceptable harmonizations of standards.

The results of the global KCs in each measurement area are expected to lead to the satisfactory quantification of the equivalency of the flow standards maintained in the world's NMIs. These results should establish the "horizontal comparability" of the NMI standards. When domestic traceability establishes the "vertical traceability" to the NIM, then measurements anywhere in the world should be acceptable anywhere else.



The MRA guidelines recommend that KC testing be completed in 18 months.