Device Certification System

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INTERNATIONAL CONFERENCE on COAL BASED POWER:
CONFRONTING ENVIRONMENTAL CHALLENGES
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3. The provisions of this Act shall have effect notwithstanding anything inconsistent therewith contained in any enactment other than this Act or in any instrument having effect by virtue of any enactment other than this Act.

CHAPTER II

STANDARD WEIGHTS AND MEASURES

4. Every unit of weight or measure shall be in accordance with the metric system based on the international system of units.

5. (1) The base unit of weights and measures.

(i) length shall be the metre;

(ii) mass shall be the kilogram;

(iii) time shall be the second;

(iv) electric current shall be the ampere;

(v) thermodynamic temperature shall be the kelvin;

(vi) luminous intensity shall be the candela; and

(vii) amount of substance shall be the mole.

(2) The specifications of the base units mentioned in sub-section (1), derived units and other units shall be such as may be prescribed.

6. (1) The base unit of numeration shall be the unit of the international form of Indian numerals.

(2) Every numeration shall be made in accordance with the decimal system.

(3) The decimal multiples and sub-multiples of the numerals shall be of such denominations and be written in such manner as may be prescribed.

7. (1) The base units of weights and measures specified in section 5 shall be the standard units of weights and measures.
CSIR-NPL India (NPLI) presently maintained standards of six SI base units like mass (kg), length (m), time (s), temperature (K), luminescence (cd) and current (A).

The realization of seventh base unit or amount of substance SI ‘mole’ has been initiated in 12th FYP (MiC).
In 1999, and in support of world trade, the CIPM established a Mutual Recognition Arrangement (MRA) of national measurement standards for calibration and measurement certificates issued by NMIs.

The aim of the CIPM MRA is to provide the technical basis for the worldwide acceptance of national measurement standards and calibration and measurement certificates of NMIs.
So far in India, there is no agency/institute which is doing performance test and certification for CEMs and CAMs.

Under the current national missions, several CEMs and CAMs manufacturers in India need a certificate for their product (as per recent guideline of CPCB).

Therefore a performance test facility and the certification scheme is urgently needed at national level to fulfill this requirement.
This certification system is in accordance with the recent requirements:

- To help Central Pollution Control Board (CPCB) in establishing device certification processes.

- To establish the test and calibration facilities for Continuous Emission Monitoring Systems (CEMs) and Continuous Ambient Air Monitors (CAMs) at National Physical Laboratory, India (NPL-I).

- Under “Make in India” mission, several CEMs and CAMs manufacturers in India need certification for their product (as per recent guideline of CPCB, http://cpcb.nic.in/upload/Latest/Latest_105_Online_Monitoring_Protocol.pdf)
NPL UK has been doing such certification –

**Equipment Testing to the MCERTS Performance Standard**

*What is MCERTS?*

In 1998, the Environment Agency established a rigorous certification scheme for pollution monitoring equipment, based on internationally accepted performance standards. The MCERTS scheme initially focused on continuous emission monitoring systems (CEMs) and has now been extended to continuous ambient air monitors (CAMs). Certified instruments will provide regulators and industry with the best basis with which to monitor releases from industrial processes.
Development of performance test facility for stack emission monitoring system and calibration facility for ambient air monitoring system

- Based on “Monitoring Certification Scheme (MCERTS)” for pollution monitoring equipments based on internationally accepted performance standards.

- To work on the performance test of different CEMs and CAMs for species e.g. HCl, NH₃, SO₂, HF, NOₓ, N₂O, SOₓ, CO, O₂, and VOCs, particle size distribution, concentration and mass emissions of particulates, metals, dioxins and furans, trace micro pollutants such as PAHs and PCBs, flue gas velocity and temperature, etc.
Realization of Mole in Gas Measurements Through Gravimetric Preparation of Gas Standards

Gravimetric preparation of gas standard (e.g., CO₂, CH₄, CO, etc.):
- Heating evacuation of cylinder, purging with mixing gas
- Weighing of cylinder
- Filling of component gas
- Filling of mixing gas
- Final weighing of the cylinder
- Homogenization
- Validation analysis, homogeneity, stability tests
- Certification

Cylinder evacuation and filling system:
- Pining, calculation of mole fraction, dilution strategy
- Purity/impurity analysis of mixing gas
- Purity/impurity analysis of component gas

Current facility

Equal arm balance (Raynor HCE-250, sensitivity 1 mg):

Cavity ring-down spectroscopy (CRDS):

Gas chromatography- pulsed discharge helium ionization detector (GC-PDHD):

Gas chromatography- flame ionization detector (GC-FID):

Gas chromatography- electron capture detector (GC-ECD):

Prepared gas standards:

Analytical Chemistry Section (Metrology in Chemistry Activity)
Sophisticated and Analytical Instrumentation Division
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The developments so far:

• CPCB – NPL discussions initiated during 2015-16
• Interaction meetings with vendors/suppliers have been held during 2015
• Work on associated modalities for establishment of Indian device certification system are currently going on
Thank you....!

Thank you....!

March 20, 2013  06:33 AM
Temperature 18º C
Humidity 89%

March 21, 2013  06:32AM
Temperature 18º C
Humidity 83%