Review Workshop

The importance of the Key Comparison Data Base to the Gas Industry
Presentation Overview

- Introduction Speaker
- Customer & Supplier to Metrological Community
- Current use of KCDB – database
- Future use of KCDB - database
Speaker

• Werner Weterings
• Air Liquide
• Chemical Engineer (MSc)
• 26 years experience in Specialty Gases
• 10 years responsible for ISO17025 accredited laboratory
• 25 years member of ISO/TC 158
• 10 years WG4 member of EIGA
Gas Industry supplies Wide Diversity of Customers

Small to large companies that transform primary materials (metal) into finished products or advanced fabrications.

Companies engaged with food, beverage and pharmaceutical production and processing activities.

Industries engaged in activities from the extraction of ores and oil to the transformation of raw materials into added-value products (chemicals, steel rods, pulp) or added-value products.

Advanced technology industries (optoelectronics, electronic components and products) in need of comprehensive gas solutions, research centers and analytical labs.

Over a million professionals and craftsmen, involved with fabrication, construction and repair.
Four Business Units within Air Liquide

1] Industrial Merchant
At the core of Air Liquide Gas & Services business, we provide industrial and specialty gases, application equipments and process expertise to our customers at every process stage.

2] Large Industries
- Air gases, hydrogen and CO
- 15-year contracts
- Pipeline networks
- Industrial basins

3] Healthcare
- Hospitals
- Home healthcare
- Hygiene
- Specialty ingredients

4] Electronics
- Carrier gases
- Specialty gases
- Equipment & installations

2014 Gas & Services revenue: € 15.4 billion
Industrial Merchant

500 FACILITIES Wordwide

A GLOBAL REACH PRESENT IN 75 + COUNTRIES

2013 REVENUES OF €5.1bn

NETWORK OF 10 000 DISTRIBUTORS

20 000 EMPLOYEES IN 5 CONTINENTS

12 MILLION CYLINDERS

OVER

1 MILLION Diverse customers from blue chip companies to self-employed craftsmen

4 000 TRANSPORT VEHICLES

MORE THAN 700 Active patents

Owner: Werner WETERINGS

World leader in gases, technologies and services for Industry and Health

Classification: RESTRICTED

13-14 October 2015
Supply of cleaned/passivated cylinders and high integrity valves for manufacturing of stable Primary Reference Materials by NMI’s.

Metrological Customers:  
NPL, VSL, KRISS, INMETRO, GUM, NMC ASTAR, NMISA, VNIIMM, Ukrmetrstandard, NIST, IPQ, …
Support to Metrological Community

Identical Gas Mixtures for global Proficiency Testing Scheme’s to verify competence of ISO17025 Accredited Laboratories
Support to Metrological Community

International Standardization of Gas Mixture Manufacturing
• ISO/TC 158, ISO/TC 193 & ISO 197
• Traceability to international standards
• Uniformity in Total Uncertainty Calculation
• Influence of Isotopic Ratio’s on Molar Masses
Provide Pure Gases with Stable Isotopic Ratio's

Example

\[ \delta^{13}C_1 = -33.0 \%_{00} \]

- IAEA, NIST, Regional Metrology Authority - 29%
- External - 11%
- Internal - 35%
- Peer labs - 5%
- NA - 19%

403 sample size
Data of 2014
Key Comparisons & Data Base

What does this mean to the Gas Industry?
To ensure the accuracy of the measurements, plants/labs are only allowed to purchase Reference Materials from Metrology Institutes with:
BIPM KCDB or Website of local Metrology Institute?

• Technical people are “creatures of habit” and tend to stay with the same Metrology Institute, unless forced to change.
• Valid reasons being:
  ➢ Transport cost reasonable (local presence)
  ➢ No custom complications
  ➢ Positive experience with lead time
  ➢ Uncertainty capability of the MI
  ➢ Legal Requirements (e.g. EPA compliance)
• Non of the plants is using the (very advanced) BIPM KCDB for NMI comparison.
• Mechanism: First consult website of “favored” NMI, followed by “second opinion” in case of uncertainty, concentration or component restrictions.
Recommendations for Improvement

To improve the useability of the BIPM KCDB to the Gas Industry:

• Add pricing
• Add lead time information
• Simplify Metrology Language?
End of presentation
Thank you for your attention