



TC- F: Flow

Highlights and Scientific Challenges

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6th EURAMET General Assembly

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MINISTÉRIO DA ECONOMIA
E DO EMPREGO

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Elsa Batista

May 2012

TC-F

Flow

• EURAMET Technical Committee



Resume

- TC-F Structure and membership
- EURAMET Projects
- CMCs
- KCs
- EMRP
- Meeting 2012
- Challenges

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Flow

• EURAMET Technical Committee





TC-F

- The technical committee for flow (TC-F) is concerned with the issues that are relevant to industry, regulation and trade involving the measurement of fluid quantity and related measurements derived from it (e.g. energy)
- Fluids - water, hydrocarbon liquids, air and natural gas and all other fluids and mixtures of fluids



TC-F STRUCTURE and MEMBERSHIP

- 31 Contact persons
- 57 Flow experts
- Three sub groups
 - Gas Flow – Convenor - Bodo Mickan from PTB
 - Liquid Flow - Convenor - Petra Milota from BEV
 - Volume - Convenor - Zoe Metaxiotou from EIM

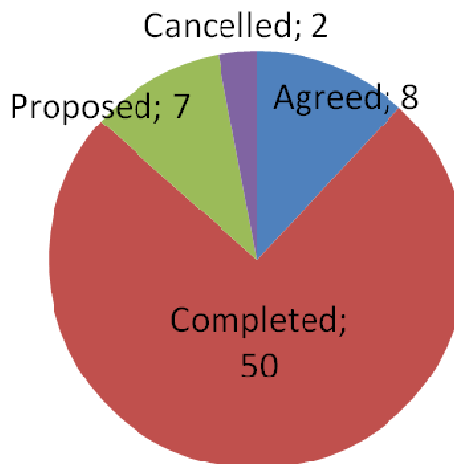




EURAMET PROJECTS

EURAMET Project Status

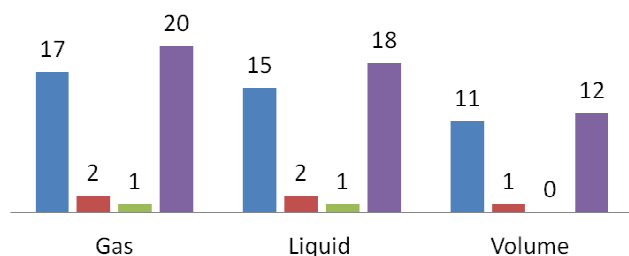
- Total 67
- Gas flow – 29
- Liquid flow – 24
- Volume – 14



EURAMET PROJECTS

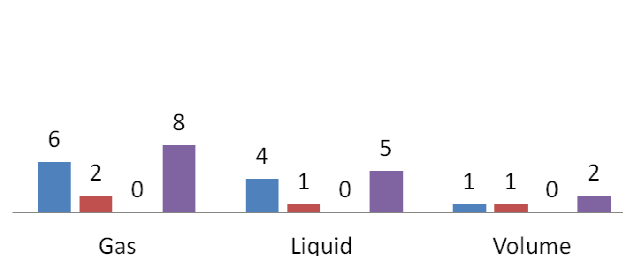
Completed Euramet Projects

Comparison Research Consultation Total



On Going EURAMET Projects

Comparison Research Consultation Total





EURAMET PROJECTS

- Proposed in 2012
 - 1225 - Comparison of very low air speed standard facilities (0,05-1)m/s
 - 1224 - Comparison VSL - PTB Volume flow for Natural Gas under High Pressure
- Concluded in 2012
 - 1159 - Volume calibration of a 100 microliter micropipette
 - 827 - LDA-based intercomparison of anemometers



CMCs

- CMCs from Spain (3), Greece (12), Portugal (4) and Denmark (9) were published in 2011, set EURAMET.M.21.2011
- New CMCs revision process started in December 2011
- New TC-F CMC revision group
- Two sets of CMC from 7 countries posted in the JCRB for RMO revision
 - EURAMET.M.27.2012
 - EURAMET.M.28.2012



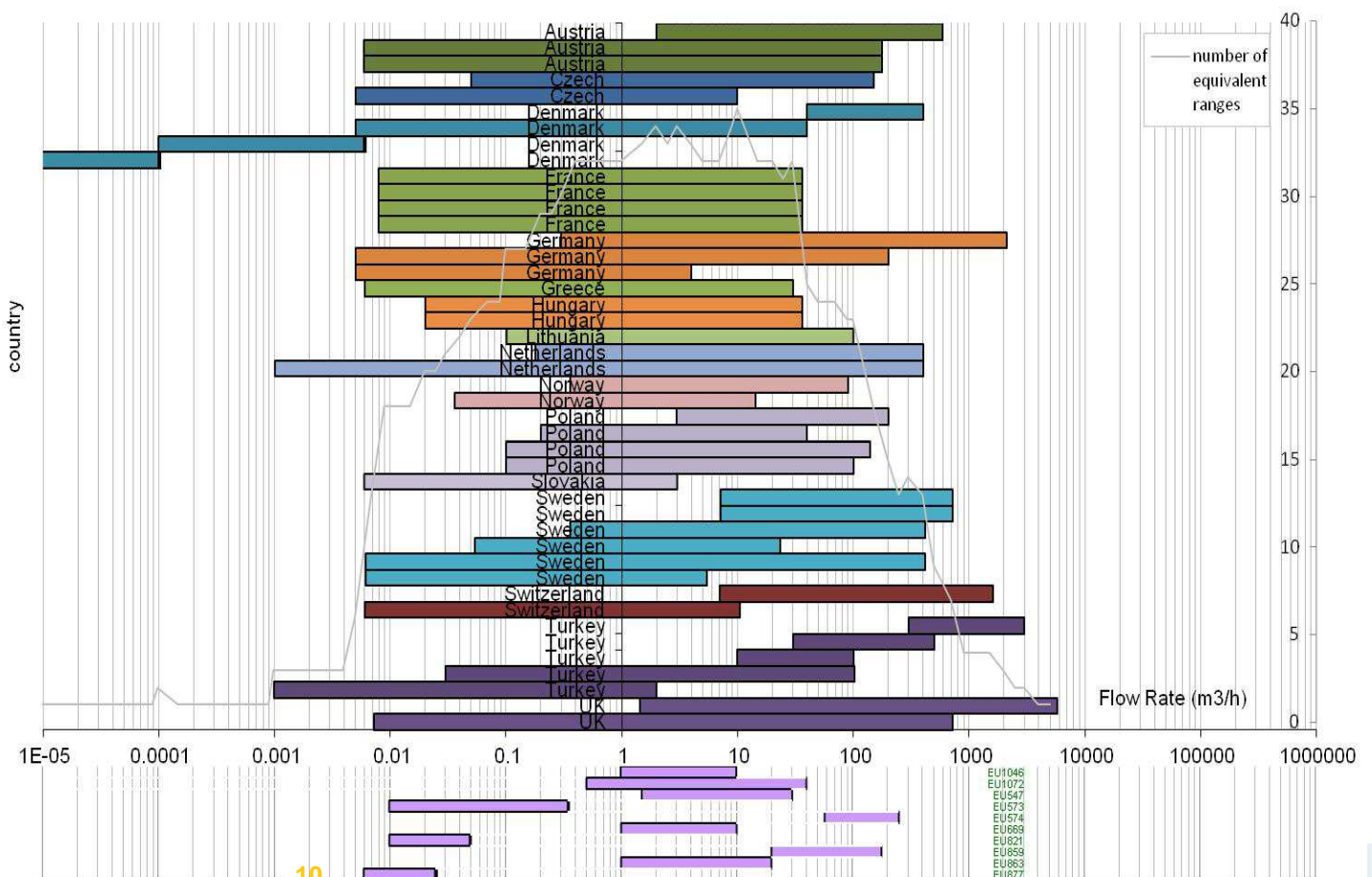


CMCs

- A third set will be posted until the end of May with CMCs from 6 countries
- Reactivated the *Gapfinder* (excel statistic tool)
 - very useful tool to update and review the CMC entries and the CMC review group will use it in the future



9.1.1 Volume water flow rate : all entries





CMCs JCRB

Several CMCs from other RMO were reviewed and approved

- APMP.M.31.2012 from KRISS Korea
- SIM.M.19.2011 from NIST USA
- SIM.M.17.2011 from INTI Argentina
- APMP.M.30.2011 from VIM Vietnam
- SIM.M.23.2012 from NIST USA



KCs for Fluid Flow

- CCM.FF-K1 – Water flow
- CCM.FF-K2 – Liquid hydrocarbon Flow
- CCM.FF-K3 - Air Speed
- CCM.FF-K4 – Liquid Volume
- CCM.FF-K5 – High pressure gas flow
- CCM.FF-K6 – Low pressure gas flow

The first round ended in 2010 and a second round started in 2011





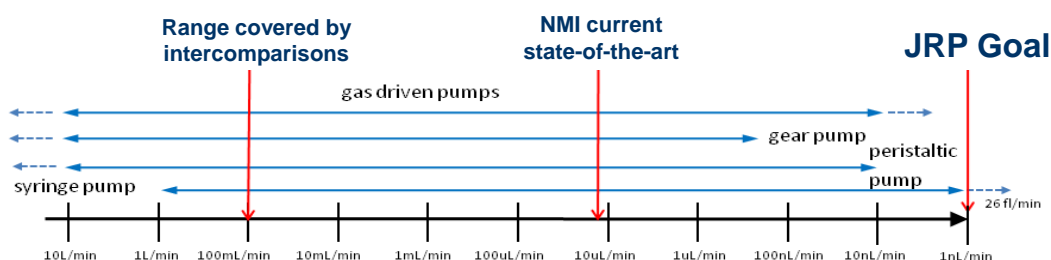
EMRP – TC-F Participation

- Call 2009 - Energy
 - ENG03 - Metrology for Liquefied Natural Gas
 - ENG09 - Metrology for Biofuels
 - ENG06 - Metrology for Improved Power Plant Efficiency
- Call 2011 - Health
 - HLT07 - Metrology for drug delivery



HLT07 – Metrology for Drug delivery

- VSL, CETIAT, UME, CMI, IPQ, DTI and METAS with a strong support from hospitals, manufactures of flow meters and manufactures of drug delivery device.
- Development of traceable calibration services for drug delivery systems for lower flow rates, 10 nanoliters pr. minute (nl/min).





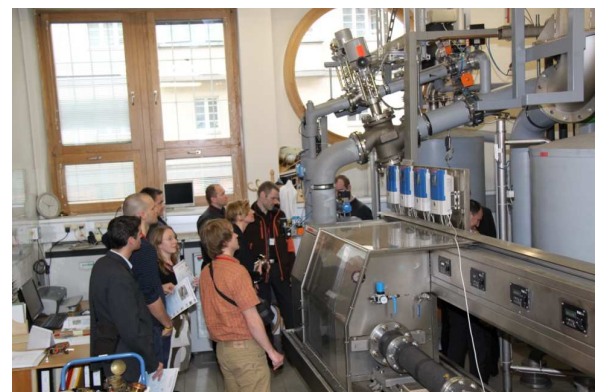
EMRP Call 2012 - Industry, SI Broader Scope & Open Excellence Flow PRT

- Towards the calibration-free flowmeter
- Traceability of gas flow measurement for non-conventional applications
- CDF Studies of particle-laden multiphase flows in hydraulic and pneumatic conveying



Meeting 2012

- Last meeting 13th from 15th of March 2012: Vienna, Austria hosted by BEV
- 25 Countries: 53 Delegates
- Three day meetings
- CMC, EMRP, DUT uncertainty, roadmaps, new facilities and comparisons results discussed



The next TC-F meeting will be in Delft, Netherlands from 12th to 14th of March 2013 and will be hosted by VSL



Scientific Challenges – New Roadmap

- Innovative metrological tools for biomedical traceability
- Development and improvement of cost-effective complex flow measurements
- Improved control and enhanced metering of energy-carrying fluids
- Development of traceable measurement technology for emission/waste reduction, monitoring and trade
- New fundamental standard for absolute molecule counting

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TC – F Roadmap 2012-2020

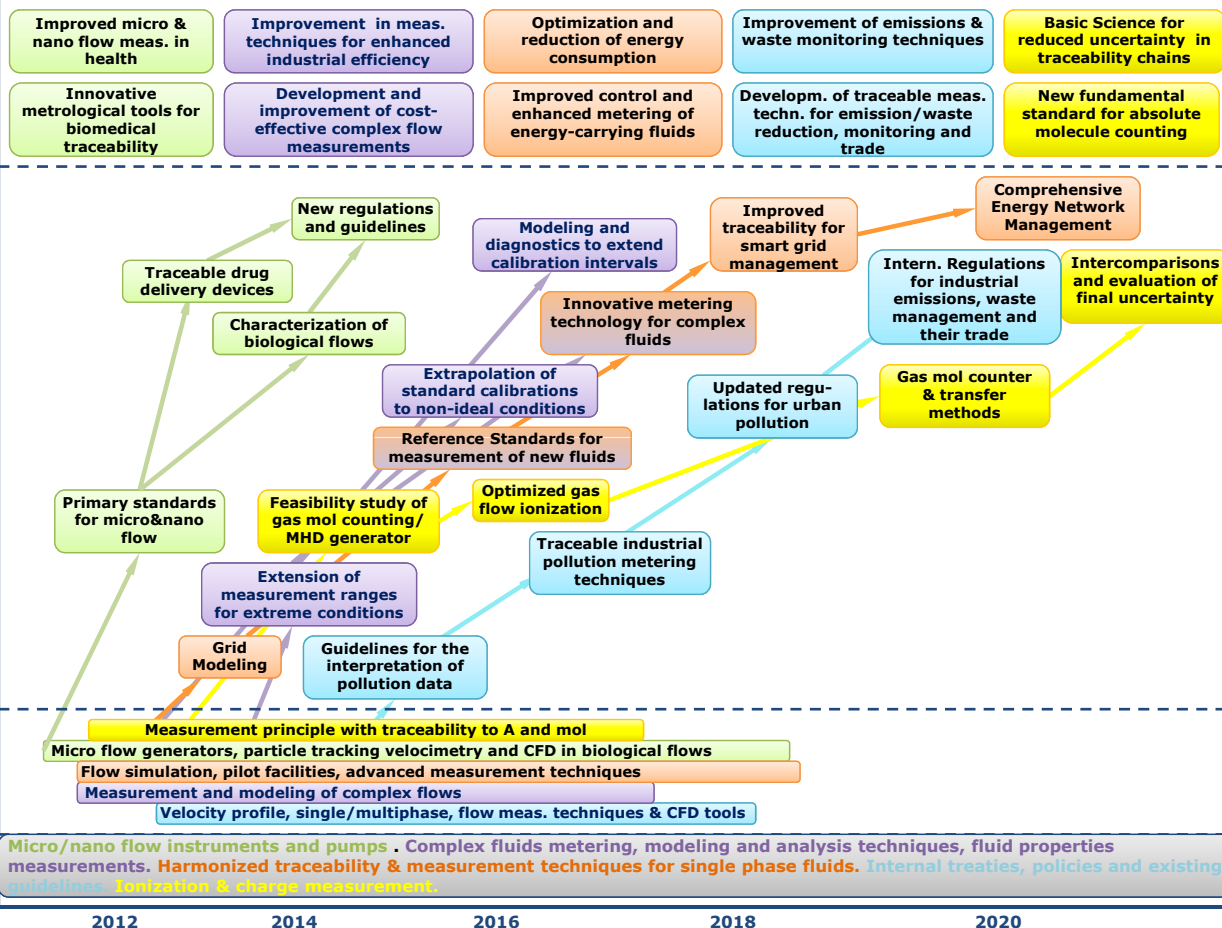
Triggers/Dri-
vers/challenge

Target/
Impact KT

Deliverables

Technologies

Enabling
science





Metrological CHALLENGES

- Development of a formal and repeatable revision procedure of CMCs
- Development of new EURAMET Projects and repeating old projects
- WGFF procedures agreement on CMC revision criteria
- EMRP participation
- Publication of a new EURAMET guide on volumetric measurements
- Improve R&D and techniques through collaboration



Thank you!