EMPIR Energy Strategic Research Agenda (SRA) and proposal process



Gert Rietveld
grietveld@vsl.nl

Euramet
TG Energy chair





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Outline

- Energy landscape
- Metrology research – SRA
- EMPIR 2016 call on “Energy”
- Networking Workshop
- Summary





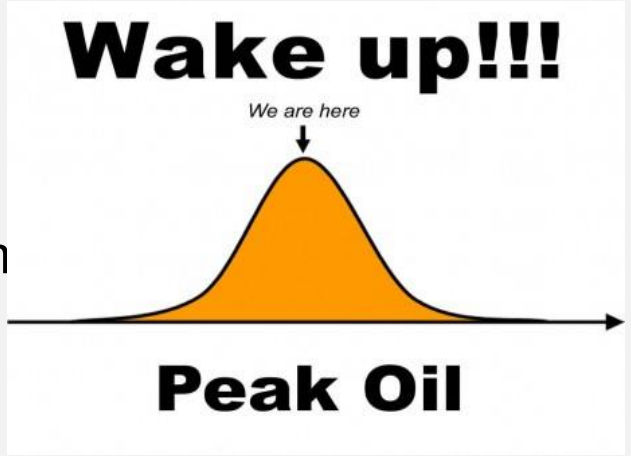


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Carbon energy supply – why change?



Oil and gas reserves are limited, not available in each country





Environment - climate change

- greenhouse gas emissions
- disasters





Energy Transition





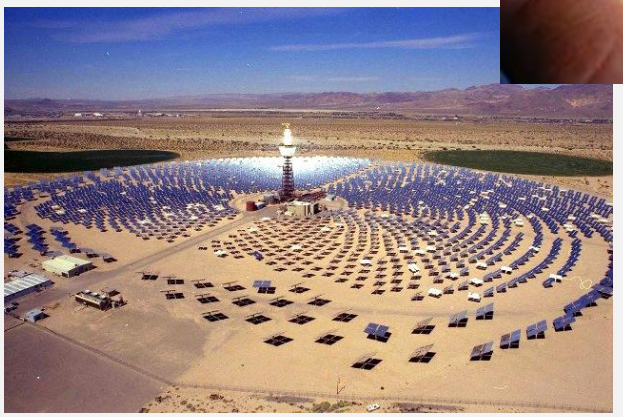
20/20/20 aims EU for 2020:

- 20 % reduction CO_2 emission
- 20 % renewable energy
- 20 % less energy (efficiency)

Energy 'trilemma' (World Energy Council)

- Reduce carbon emissions
- Maintain affordable energy
- Secure energy supply





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Solving the Energy Trilemma

EU: solve the Energy 'Trilemma' by ***realising a sustainable, affordable, secure energy infrastructure*** *via*

- Diversification of fuel mix
- Low-carbon energy generation (electricity)
- Smart electricity grids
- Electrification of energy market
- Better energy performance of buildings
- Improved energy efficiency

EU-27 Energy Mix (2011)	
Oil	35%
Gas	24%
Coal and other solid fuels	17%
Nuclear	14%
Renewables	10%



DIRECTIVE 2009/125/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 21 October 2009
establishing a framework for the setting of ecodesign requirements for energy-related products

⇒ **New era of energy supply**

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Metrology research

Key Question: how can metrology research support the Energy Transition and make a crucial difference?

⇒ Cooperation required

⇒ EMRP / EMPIR programme

⇒ Strategic Research Agenda to indicate major challenges



http://www.euramet.org/index.php?id=homepage

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The gateway to Europe's integrated metrology community.

EURAMET

SI Unit



Environment



Energy



Fundamental



Health



Industry



EMRP: 22 projects, each 3.5 M€

- Smart Grids (4x)
- HVDC
- Energy Harvesting
- Power plants (3x)
- Biofuels, biogas
- Multiphase flow, viscosity fluids
- LNG (2x)
- Solid State Lighting (2x)
- PV (2x)
- Materials: thin films, composites

⇒ JRPs are mix of improved existing technology & new technology

EMRP
European Metrology Research Programme
Programme of EURAMET

The EMRP is jointly funded by the EMRP participating countries within EURAMET and the European Union

EMPIR EURAMET

The EMPIR initiative is co-funded by the European Union's Horizon 2020 research and innovation programme and the EMPIR Participating States

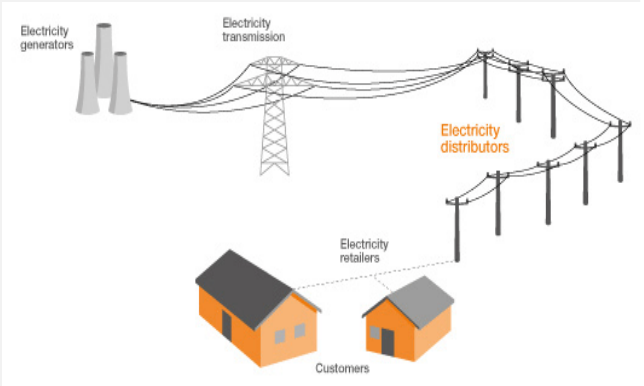
http://www.euramet.org/research-innovation/emrp/emrp-calls-and-projects/

Energy metrology SRA

Present metrology challenges

- Energy production and conversion
- Energy transport and storage
- Energy use
- Cross-cutting themes

Energy Supply Chain



Strategic Research Agenda for Metrology in Europe

Draft Version 2.0 (08/2015)

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Generation: the new energy mix

Combination of existing and new technologies



Metrology challenges:

- Conventional - efficiency
- Renewable - characterisation
- Energy content (trade)
- Storage
- Fuel cells



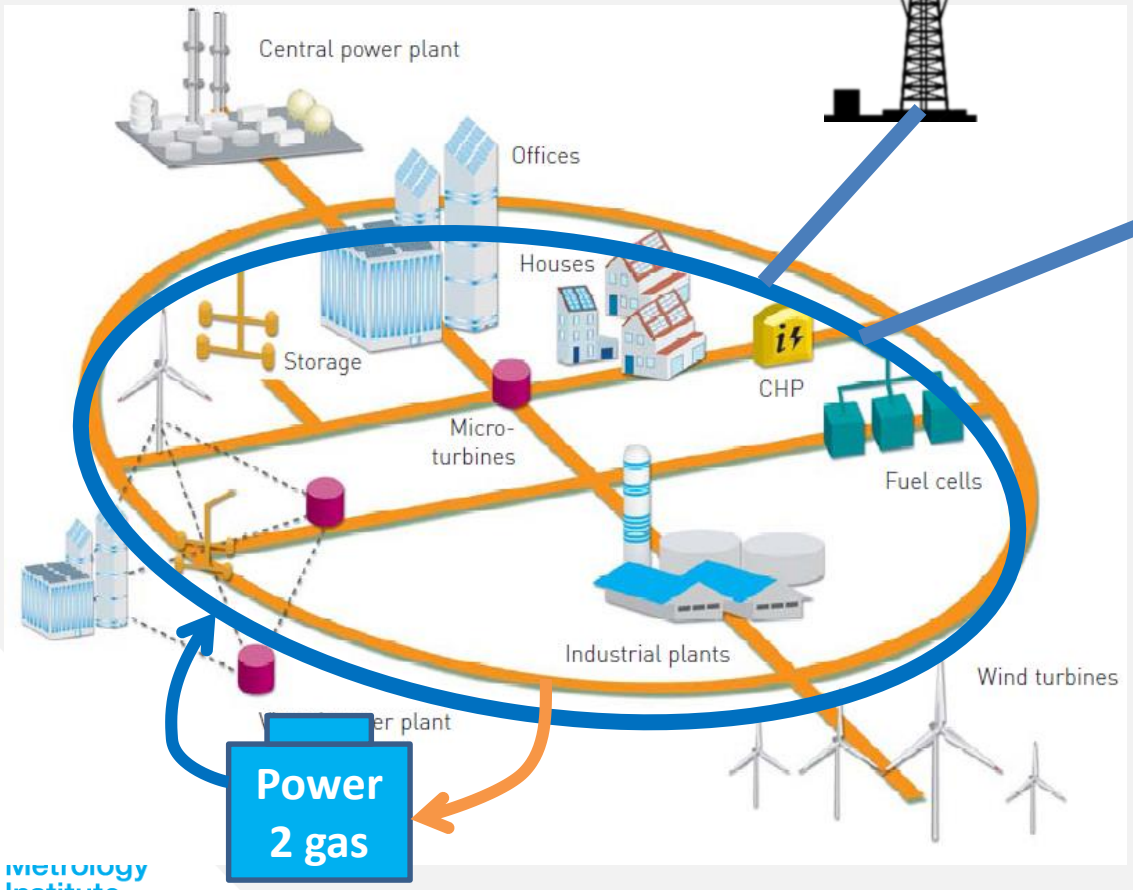






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Transport: grids, energy carriers





Metrology challenges:

- Grid monitoring & control
- Conversion of energy carriers

(security & quality of supply)

Energy use



Metrology challenges:

- Transport – electrification
- H or LNG as a fuel
- Buildings
- SSL
- Low losses (Ecodesign)







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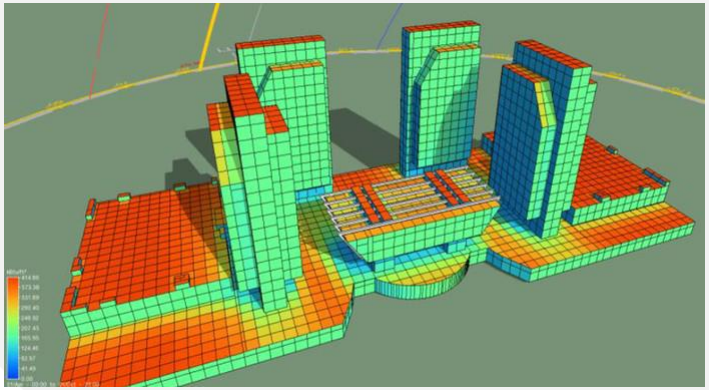
Cross-cutting issues



Metrology challenges:

- Improve and verify efficiency
- New materials characterisation
- Modelling







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EMPIR 2016 call Energy

http://msu.euramet.org/calls.html

EMPIR 2016 call for proposals will cover two grand challenges: energy - environment

EMPIR Calls





Two-step process

- Submission of ideas (PRT) — Jan – Feb
- Selection of best ideas (SRT) — Apr – May
- Writing of project proposal — Jun – Sep
- Review of proposal — Nov
- Start of work — Spring 2017





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Todays Workshop

"Explore themes in energy research
where metrology can make a significant contribution"

- Background and broad context
- Industry perspective

- Breakout sessions
  - Efficiency
  - Generation - conventional
  - Generation - renewable
  - Materials and modelling
  - Storage and conversion
  - Transmission and distribution



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Summary





An Energy Transition is needed to solve the Energy 'Trilemma' and ensure a sustainable, afforable, and secure energy supply



The Energy Metrology SRA identifies research areas where metrology can support this transition

⇒ Energy chain: generation, transmission, use

⇒ Storage and conversion

⇒ Cross-cutting: efficiency, materials, modeling

EMPIR Energy 2016 Call - Networking Meeting

Today's networking event aims to pave the way for metrology energy research projects 'that make a difference'

idea!