







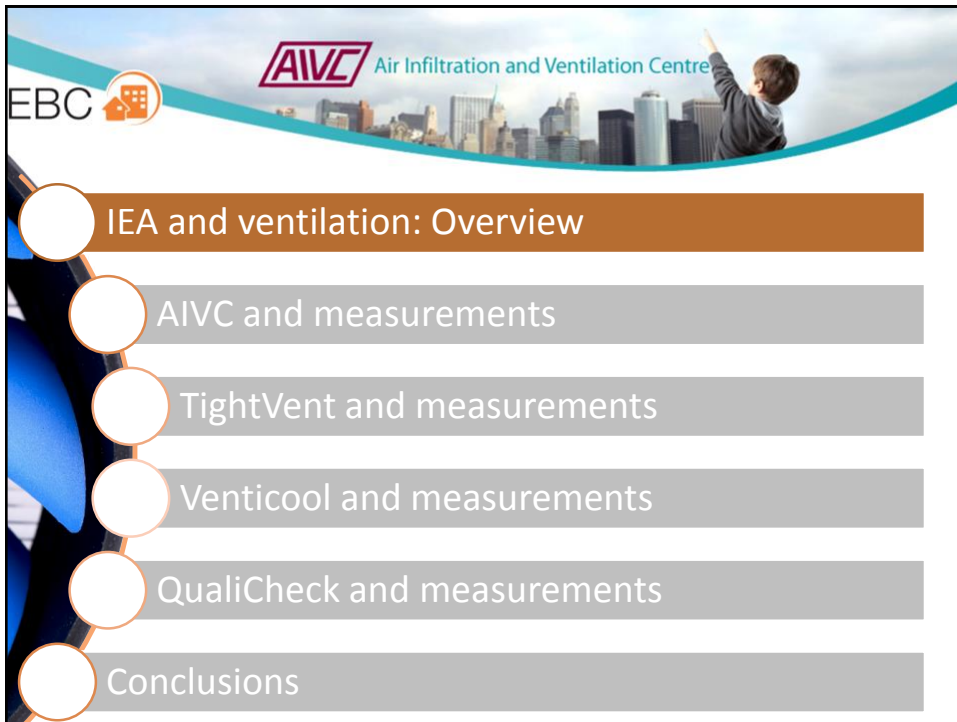


# *The role of measurements in quality and compliance schemes*

Peter Wouters  
Manager INIVE EEIG



-  IEA and ventilation: Overview
-  AIVC and measurements
-  TightVent and measurements
-  Venticool and measurements
-  QualiCheck and measurements
-  Conclusions

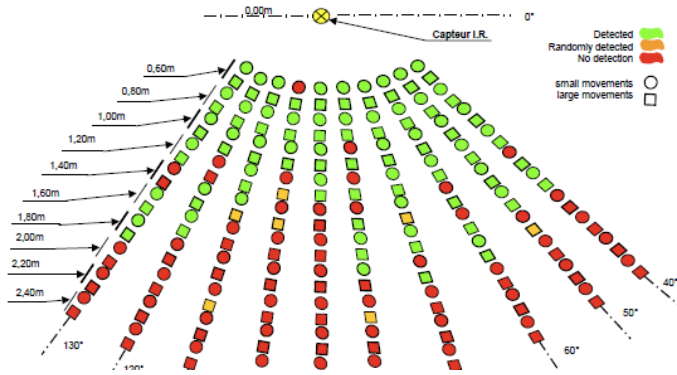


**Quite a lot of ventilation related projects in IEA EBC  
in which **measurements** are important...**

- Annex 5: Air Infiltration and Ventilation Centre
- Annex 8: Inhabitant behaviour with regard to ventilation
- Annex 9: Minimum ventilation rates
- Annex 18: Demand controlled ventilation systems
- Annex 20: Air flow patterns in buildings
- Annex 23: Multi-zone air flow modelling
- Annex 26: Energy efficient ventilation for large enclosures
- Annex 27: Evaluation & demonstration of domestic ventilation systems
- Annex 35: Control strategies for hybrid ventilation
- Annex 44: Integrating environmentally responsive elements
- Annex 62: Ventilative cooling

# DEMAND CONTROLLED VENTILATION (DCV) SYSTEMS : PERFORMANCES OF INFRARED DETECTION

A.M. Bernard<sup>1</sup>(CETIAT) – J.G. Villenave<sup>2</sup> (CSTB)  
Marie Claude LEMAIRE<sup>3</sup> (ADEME)



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Energy in Buildings and  
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EBC  **AIVC** Air Infiltration and Ventilation Centre

- IEA and ventilation: Overview
- AIVC and measurements**
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- ## AIVC projects...
- Envelope air leakage databases
  - Philosophy on airtightness requirements
  - How tight and insulated ducts should be?
  - Durability aspects of airtightness
  - Quality management of airtightness
  - TAAC (TightVent Airtightness Associations Committee)
  - Quality of methods for measuring ventilation and infiltration**
  - Ventilative cooling
  - Ventilation needs and health
  - Steps to improve the quality of residential ventilation systems

Steps to improve the quality of residential ventilation systems



Brussels, B

18-19 March

International V

Securing the quality of v  
in residential build  
and perspec



International workshop  
Brussels, 18-19 March, 2013

Securing the quality of ventilation systems  
in residential buildings



Existing approaches in various countries




**35<sup>th</sup> AIVC Conference**

**24-25 September 2014**  
Poznań, Poland

*Ventilation and airtightness in transforming the building stock to high performance*

**4<sup>th</sup> TightVent Conference**  
**2<sup>nd</sup> venticool Conference**

Receipt of abstracts: **April 7 2014**  
Confirmation of acceptance: 1 May 2014  
Submission of papers: 30 June 2014

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 **Tight Vent**<sup>®</sup>  
Europe

BUILDING AND DUCTWORK AIRTIGHTNESS PLATFORM

  + 

[www.tightvent.eu](http://www.tightvent.eu)

## Objectives of TightVent

1

- Awareness raising about the importance

2

- Awareness raising about the existing approaches

3

- Identifying and supporting a long term action plan

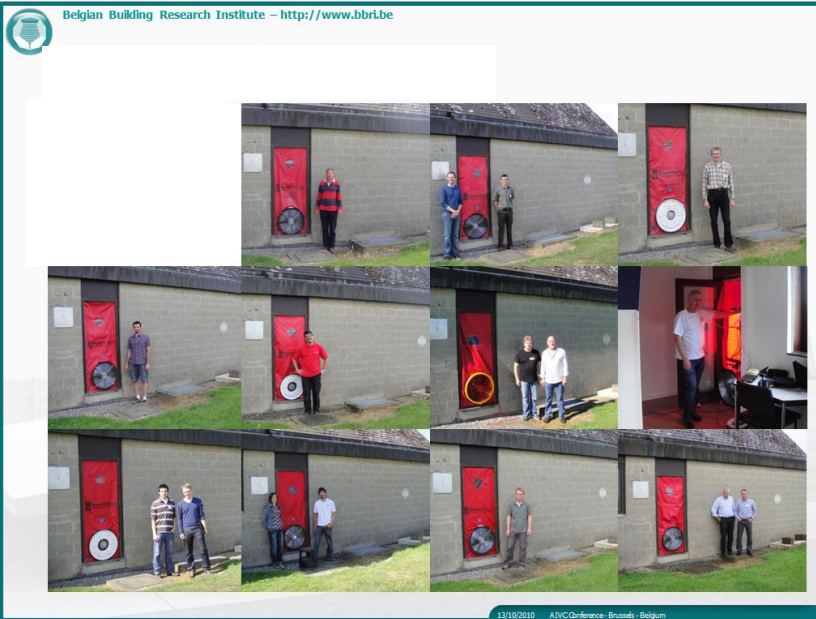
**...accurate and reliable measurements...**

 **Tight Vent**  
Europe

BUILDING AND DUCTWORK AIRTIGHTNESS PLATFORM

## ... airtightness issues in relation to the topic of this workshop?

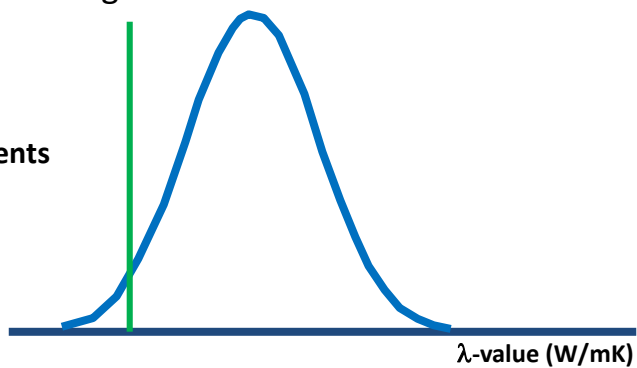
- What do we know about the accuracy aspects of airtightness measurements? Do we know enough?
- Do we need to take the uncertainties into account when declaring airtightness results?
- ...



## Compliance checks...

- **Thermal insulation:**  $\lambda_{90/90}$ 
  - Probability of 90 % that 90% of the measurements is better than the given value

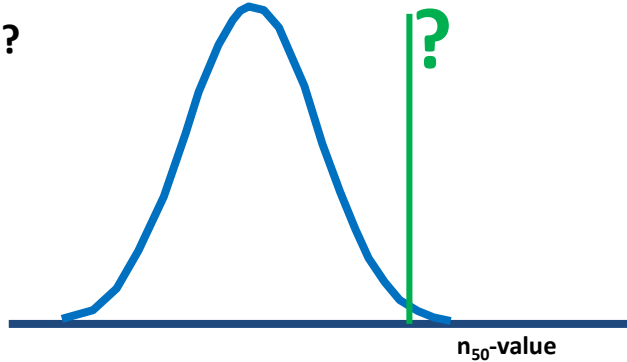
Reliable measurements  
are rewarded!








## Compliance checks...

- **Thermal insulation:**  $\lambda_{90/90}$ 
  - Probability of 90 % that 90% of the measurements is better than the given value
- **Airtightness?**



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**venticool**  
the international platform for ventilative cooling

IEA EBC  
**Annex 62**  
The IEA project  
on ventilative cooling  
EBC

INFORMATION ON VENTICOOL      INFORMATION ON EBC ANNEX 62

Home About Partners Publications Events Contact      **WELCOME** FAQs      Home About Participants Publications Contact

Dear visitor,

Welcome to this new and combined website of the **venticool platform** and of **IEA EBC annex 62 'ventilative cooling'**:

The **venticool platform** was launched in October 2012 and aims to increase communication, networking and awareness raising about ventilative cooling to mobilize the untapped potential in terms of energy savings and improved comfort. Information can be found in the left part of the menu.

The **Annex 62 'ventilative cooling'** of the 'Energy in Buildings and Communities Programme (EBC)' of the International Energy Agency (IEA) was approved in November 2012 for a 1 year preparation phase. Information can be found in the right part of the menu.

As the venticool platform will act as a key partner for dissemination of annex 62 and in order to

Search Site  
Q

**Recent updates**

- 35th AIVC – 4th TightVent – 2nd venticool Conference – Poznan, Poland – 24-25 September 2014!
- 34th AIVC– 1st venticool: 170 participants and more than 40 presentations on ventilative cooling!
- BUILD UP paper on ventilative cooling!
- 1st venticool conference: a total of more than 160 presentations!
- 2nd meeting of IEA EBC Annex 62 in Athens September 23-24,

**venticool**

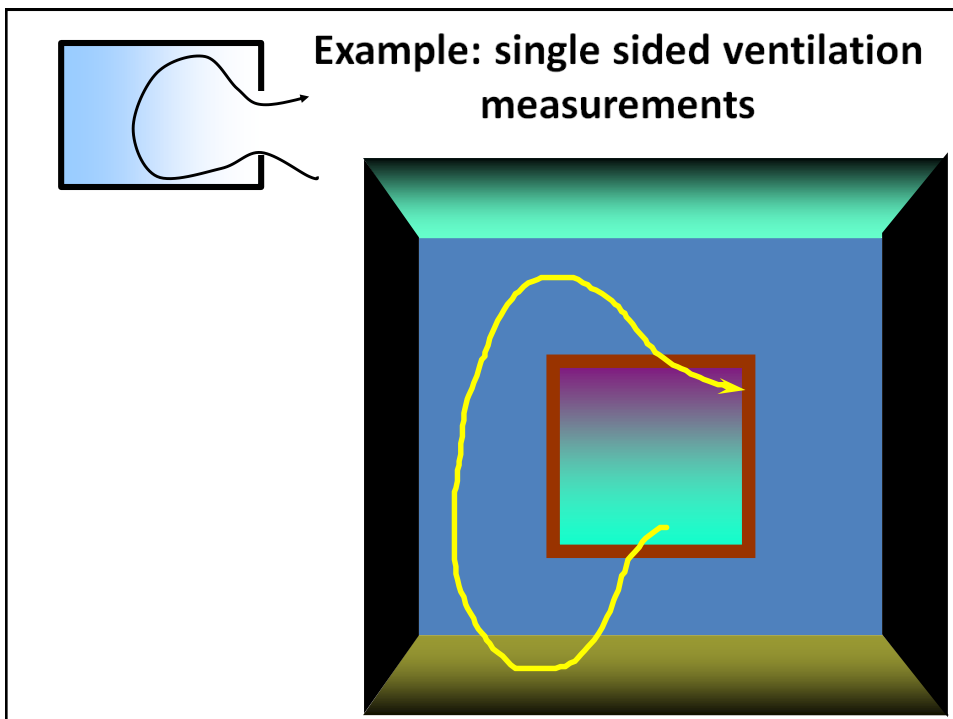
- Raise awareness about the potential of ventilative cooling
- Raise awareness about existing bottlenecks
- Raise awareness about interesting approaches
- (Support to) Planning of priority actions

**...accurate and reliable measurements...**

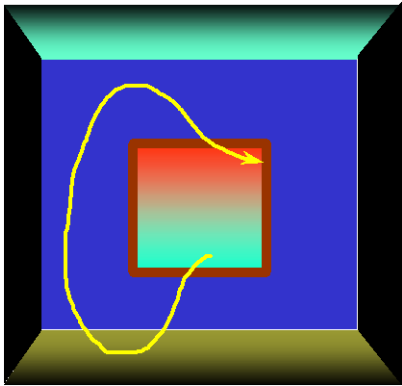
**www.venticool.eu**

## Ventilative cooling issues in relation to this workshop?

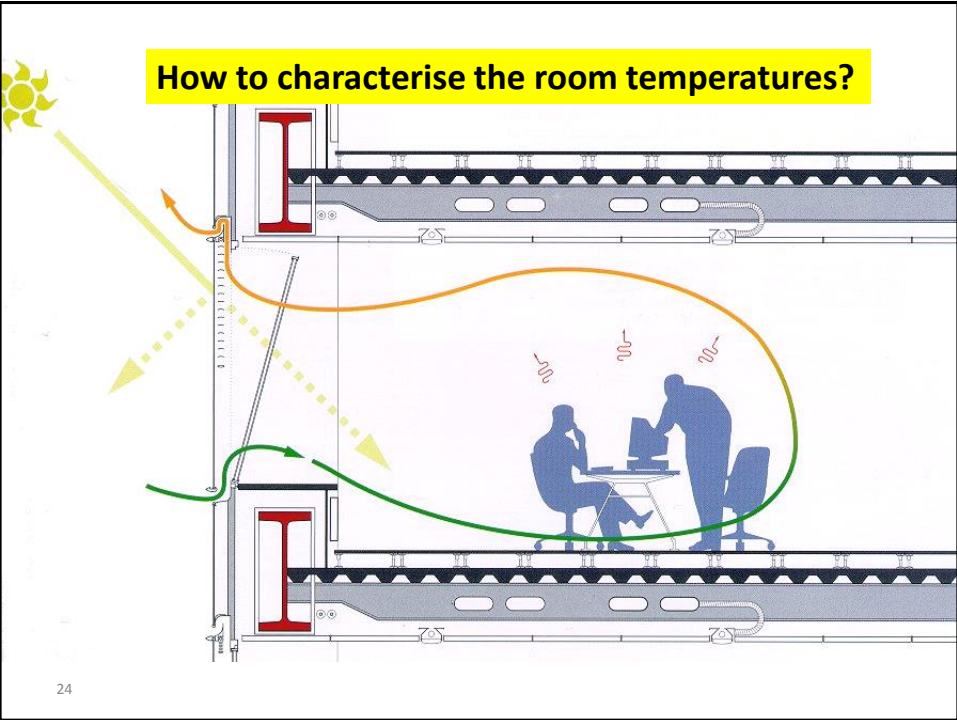
- How to have a reliable measurement of **air flow rates** in ventilative cooling conditions?  
Which accuracy can be expected?
- The same questions for **room temperatures**?
  - Air temperatures
  - Surface wall temperatures






# Example: single sided ventilation measurements



## How to characterise the room temperatures?



EBC   Air Infiltration and Ventilation Centre 

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# QualiCheck project (2014-2017)

WP – Status of compliance and quality on the ground

WP – Towards easy access of reliable EPC input data

WP – Towards more quality of the works

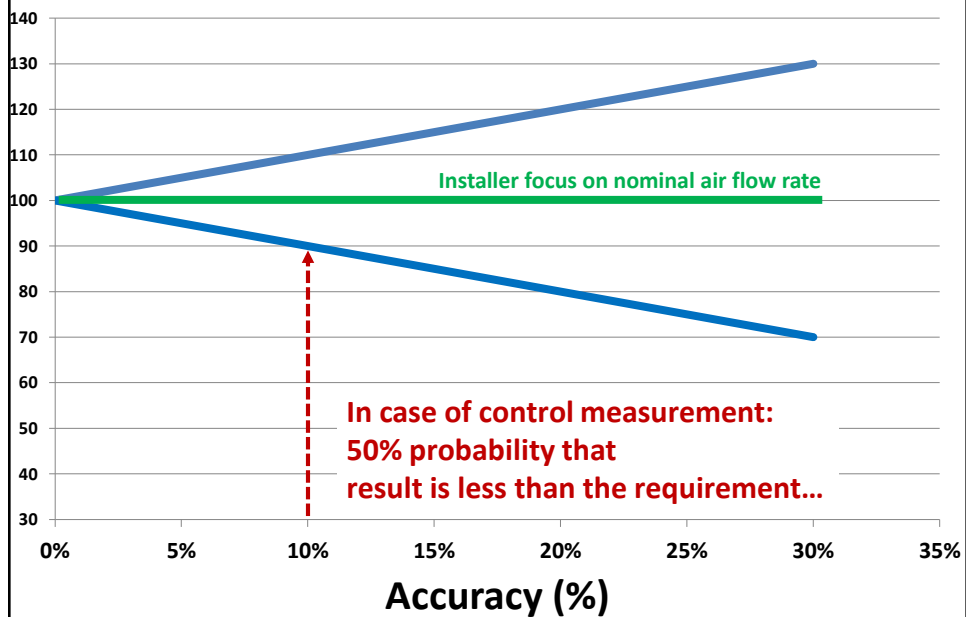
WP – Towards better compliance and effective penalties

**Solutions**

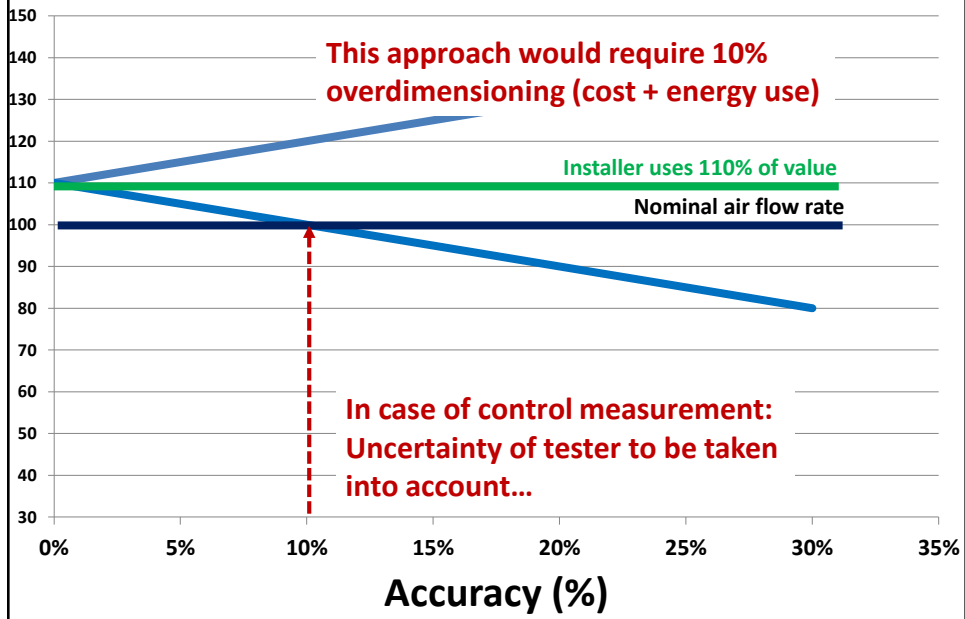
International conference

Brussels  
September 30

## Example: air flow rates



## Example: air flow rates

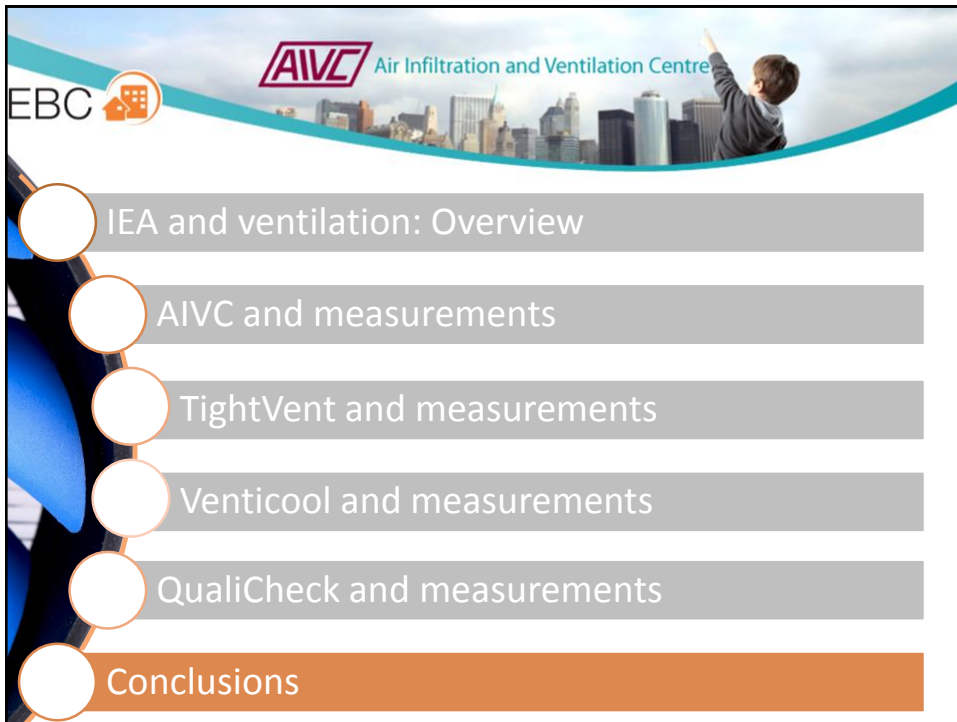


## Example: Acoustical measurements

Apparently, it is not so evident to have a simple and rather accurate measurement in practice for checking the requirements in e.g. bedrooms







The slide features a header with the EBC logo (a house icon) and the AIVC logo (Air Infiltration and Ventilation Centre) above a city skyline. A child is pointing upwards in the sky. Below the header is a vertical list of six items, each preceded by a white circle with an orange border. The items are: IEA and ventilation: Overview, AIVC and measurements, TightVent and measurements, Venticool and measurements, QualiCheck and measurements, and Conclusions. The 'Conclusions' item is highlighted with an orange background bar.

IEA and ventilation: Overview
AIVC and measurements
TightVent and measurements
Venticool and measurements
QualiCheck and measurements
Conclusions

## Conclusions

- Reliable information on measured results is important
- There are still pending problems/issues
- Due to growing interest in the quality of systems and increased focus on compliance frameworks: importance of reliable measurements is growing



## **Question 1**

- **Do we need new sensors, new measuring instruments, new measuring techniques?**



## Question 2

- Do we need to better know the accuracy of the measuring instruments / the uncertainty of measurement?
- Do we need to better use the uncertainty when comparing a measurement result to a required value?



## Question 3

- Do we need new measuring procedures, guidelines, standards, operating manuals?



## Question 4

- For a large scale implementation of measurements, do we need more training and certification?
- Do we need a platform to exchange information?



THANK YOU

