

Competent tester schemes for better airtightness measurement reliability

Comparison of approaches in 11 European countries

Workshop March 18-19th, Bruxelles
Valerie Leprince / PLEIAQ

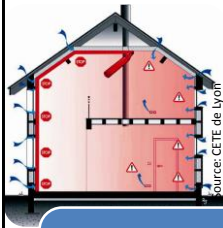


TightVent Airtightness Association Committee

- Set up and hosted within TightVent
 - At present, the participants are from
 - Belgium, Czech Republic, Denmark, Estonia, France, Germany, Ireland, Latvia, Poland, Sweden, and the UK
 - Contacts with Norway, Netherlands, Italy
- The scope includes various aspects:
 - airtightness requirements in the countries involved
 - competent tester schemes in the countries involved
 - applicable standards and guidelines for testing
 - collection of relevant guidance and training documents
- Since September 2012, the committee has met seven times (via internet) and first physical meeting held in June 2013



Introduction: The reliability of airtightness tests



Source: CETE de Lyon

Building airtightness is a key issue to reach low energy level



More and more regulations and labels impose airtightness testing



Source: L'Est-éclair

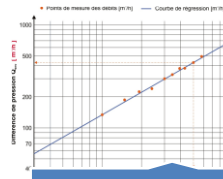
In this context airtightness tests have to be reliable

- ➔ Not to discredit the approach
- ➔ To avoid competition distortion

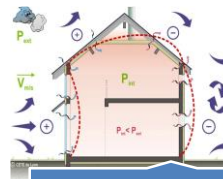
Uncertainty in airtightness testing



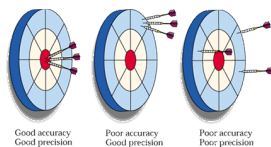
Measurement devices



Calculation



External conditions



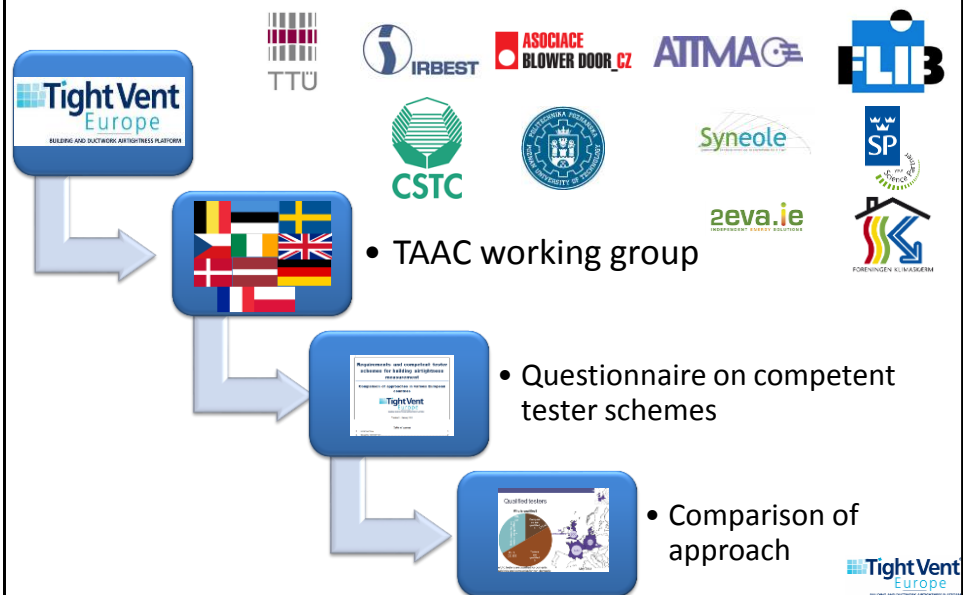
Good accuracy Good precision Poor accuracy Good precision Poor accuracy Poor precision



The tester behaviour

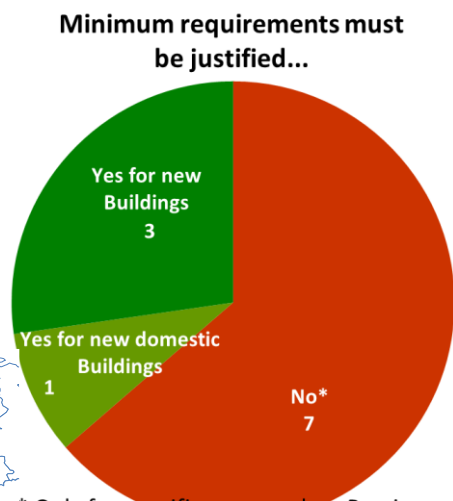
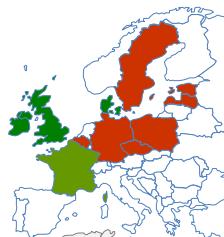
➔ Interpretation and respect of the measurement protocol

Context of this presentation



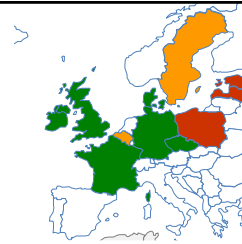
Minimum requirement

- Most countries account for building airtightness in their EP- regulation
- Some have **minimum requirements** either for EP-regulation or specific program
 - Some times do not have to be justified
- Some have **mandatory testing**



* Only for specific cases such as Passive houses, low-energy buildings, funding

Competent tester scheme



A competent tester scheme exists in:

- Denmark: Klimaskerm in collaboration with Byggeriets Kvalitetskontrol* and DS Certificering**
- France: Qualibat mesureur bâtiment 8711
- Germany: Zertifizierter Prüfer der Gebäude-Luftdichtheit im Sinne der Energieeinsparverordnung (FlIB e.V.)
- UK: BINDT/ATTMA
- Ireland: NSAI Air Tightness Testing

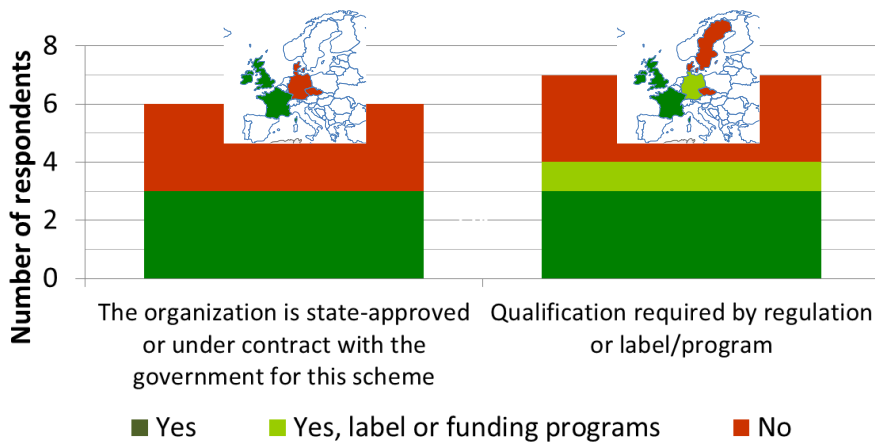
No tester scheme but association with ethical code in:

- Czech republic: membership in the Association Blower Door CZ

No scheme in:

- Belgium and Sweden but plan to develop a “competent tester scheme” (operational in 2014)
- Poland, Estonia and Latvia

Competent tester scheme



- If the qualification is required by a regulation or a label it always requires independent testing

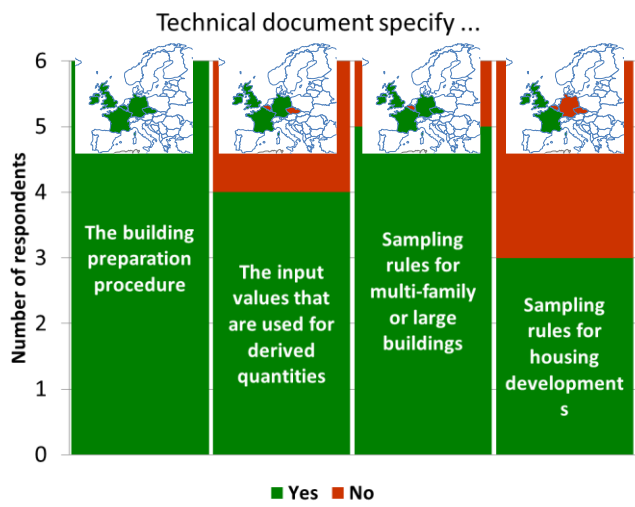
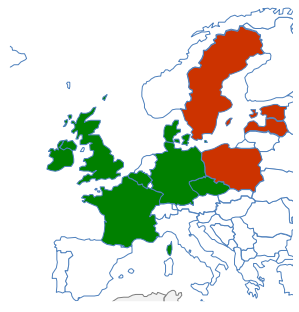
COMPETENT TESTERS SCHEMES

Key components

- Tester knowledge
 - Regulatory/programme context
 - Fundamentals of airtightness measurement
 - Tester know-how
 - To use equipment
 - To use analysis tools
 - To use reporting tools
 - Pre-requisites on tools used
 - Appropriate equipment
 - Appropriate analysis tools
 - Appropriate reporting tools
- ⇒ Support those requirements by
- ⇒ Technical documents
 - ⇒ Training programs
 - ⇒

Technical documents

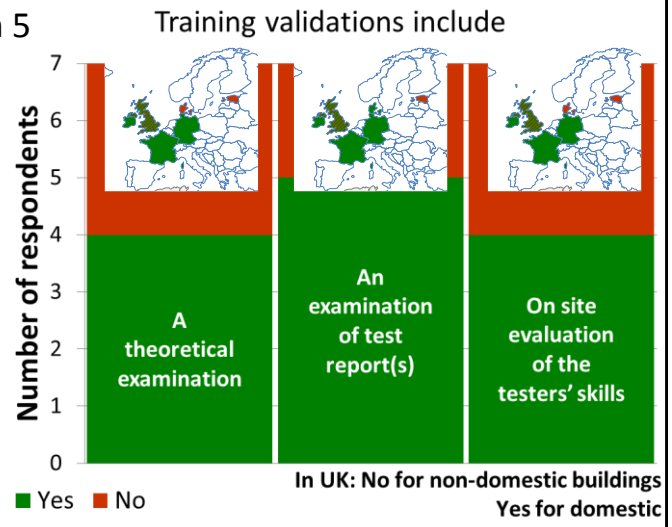
Technical documents beyond measurement standards (EN 13829)

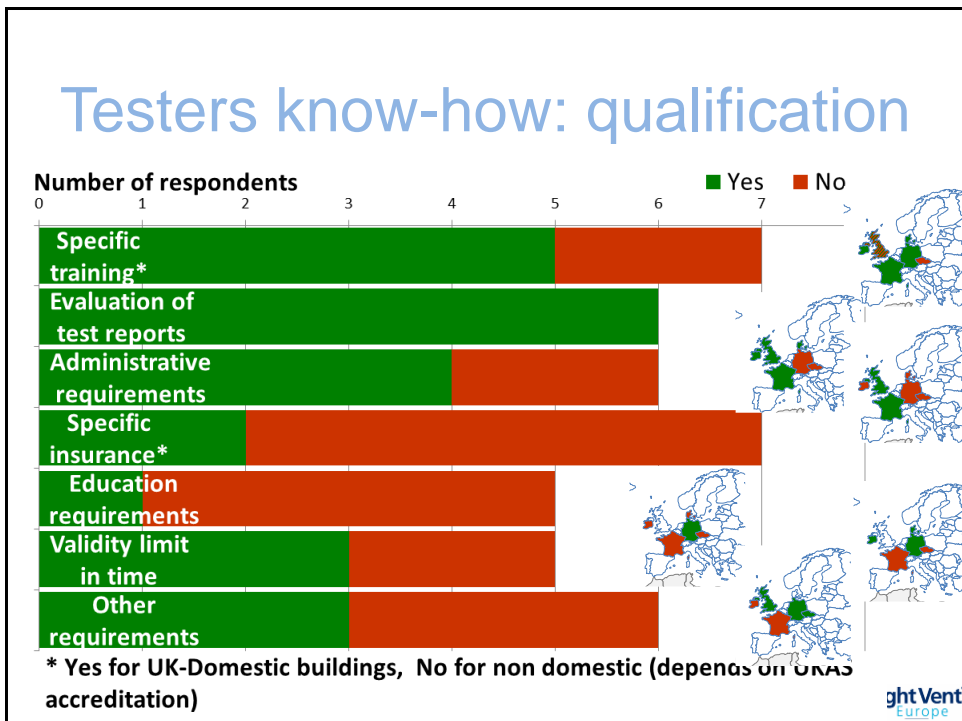
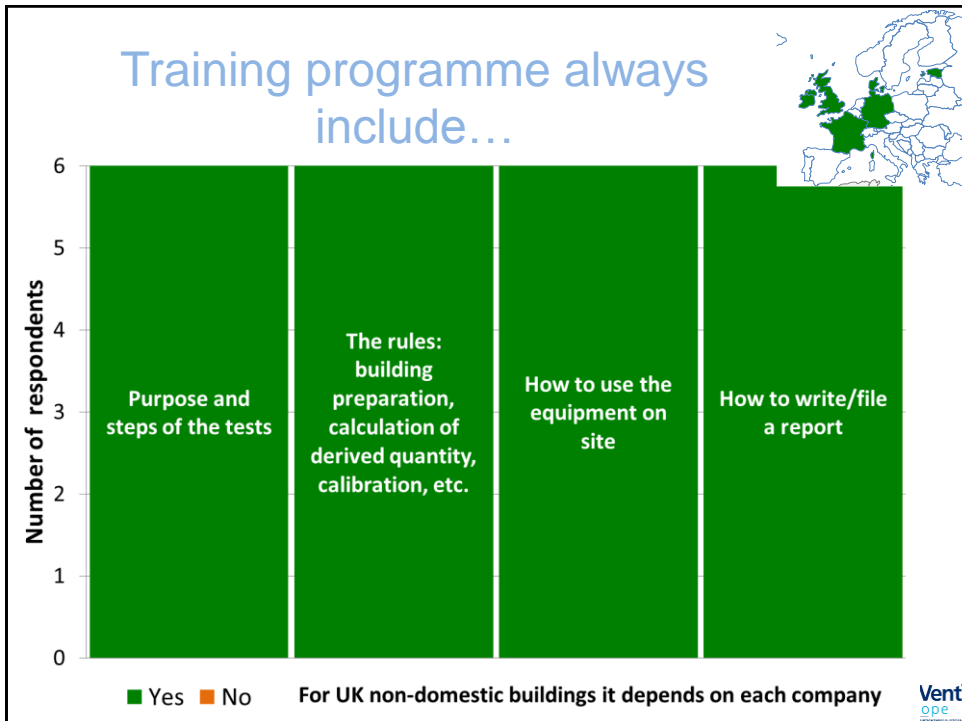


Tester knowledge

Training include in 5 out of the 7 qualification schemes

- Duration:
 - 1 to 5 days
- Cost:
 - Free to 2100 €

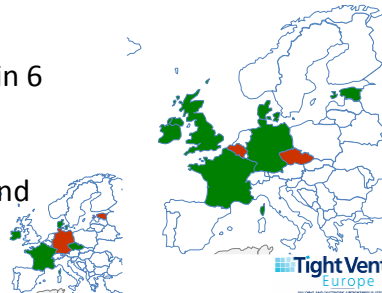




Appropriate equipment

	Operational now or soon	Known issues
Equipment	<ul style="list-style-type: none">• Manufacturers offer calibration services• Calibration procedures w/ accredited bodies<ul style="list-style-type: none">• in the UK (now)	<ul style="list-style-type: none">• Accreditation process can be heavy and expensive• Debates on airflow calibration procedures (inter-laboratory calibration checks)• Company's responsibility

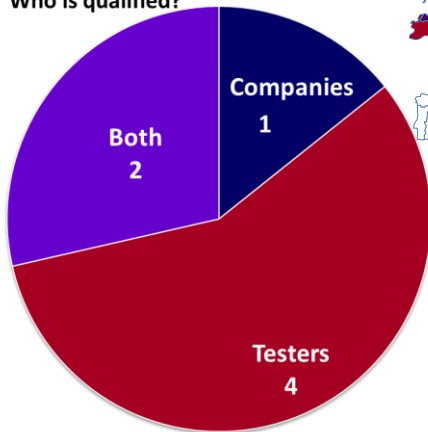
- Calibrated equipment is required in 6 out of the 8 schemes studied
- 4 countries have set specific requirements for equipments beyond standards



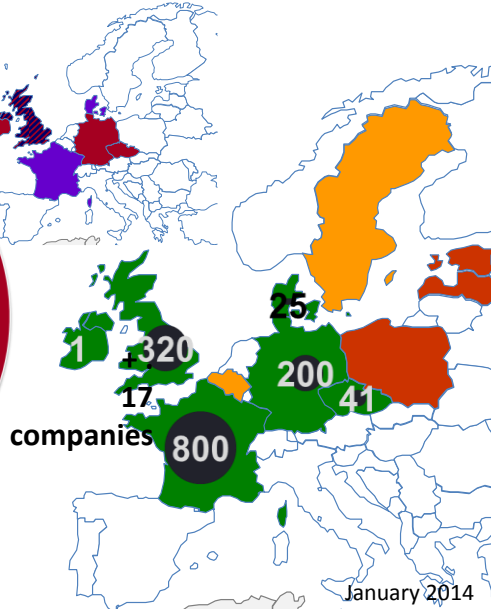
RESULTS

Qualified testers

Who is qualified?

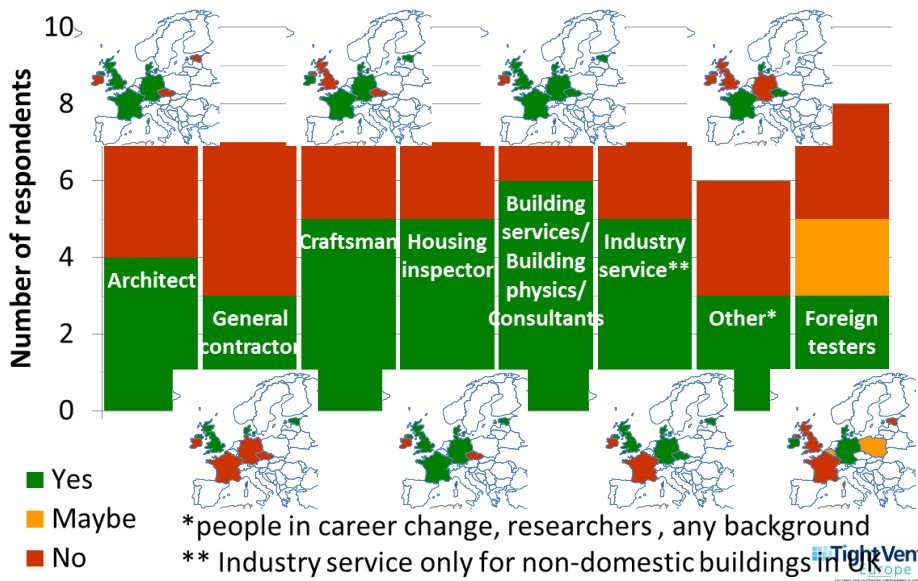


In UK, testers are qualified for domestic buildings and companies for non-domestic



January 2014

Testers profile



Yes

Maybe

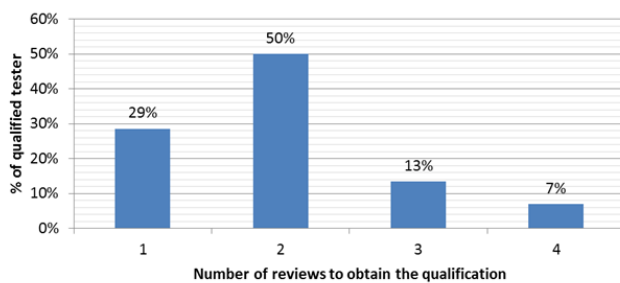
No

* people in career change, researchers, any background

** Industry service only for non-domestic buildings in UK

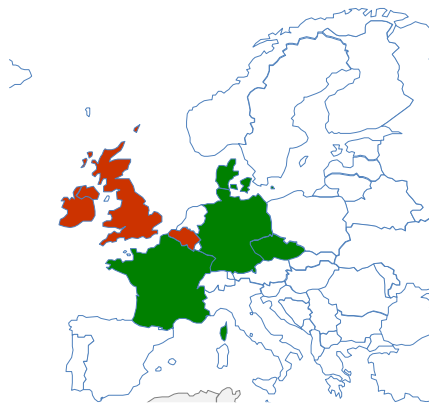
Qualibat experience

- Feedback from the French competent scheme holder: Qualibat:
 - Less than 1/3 of applicants gets the qualification at the 1st review
 - 1/5 needs 3 or 4 review
 - => Confirm the relevance to check competences



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Database



- Four schemes require reporting in a database
- More than 100 000 new measures expected in France each year
- => Easy to analyze large samples
- => Track suspicious results

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Conclusion (1/2)

- Several schemes are now operational
- These schemes obviously:
 - Improve the quality of the measurements
 - Help build databases
 - 4 schemes impose specific reporting in database
- General positive feedback although they can be improved
- ... a strong basis for new initiatives...
- Nevertheless other uncertainty sources also have to be consider
 - Measurer honesty, measurement devices, external conditions, calculation method...

Conclusion (2/2)

- Workshop march 2012: 35-page report published on AIVC and TightVent websites
- Interest to join the TightVent airtightness association committee?



Acknowledgements



<http://www.tightvent.eu>

The TightVent Europe "Building and Ductwork Airtightness Platform" was launched on January 1, 2011. It aims at facilitating exchanges and progress on building and ductwork airtightness issues.

Founding partners



Platinum partners



Associate partners



<http://www.aivc.org>

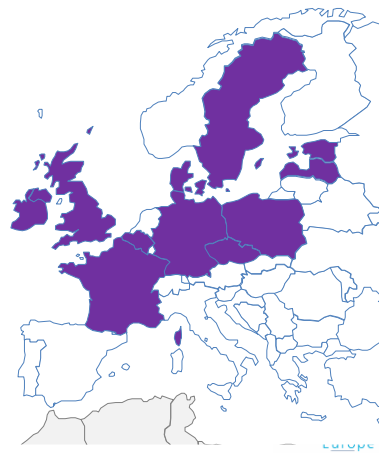
The Air Infiltration and Ventilation Centre was inaugurated through the International Energy Agency and is funded by the following countries:

Belgium, Czech Republic, Denmark, France, Germany, Greece, Italy, Japan, Republic of Korea, Netherlands, New Zealand, Norway, Portugal, Sweden, and United States of America.

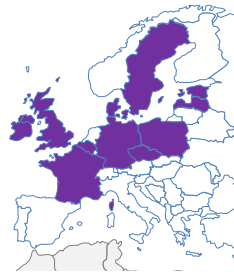


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THANK YOU FOR YOUR ATTENTION



Analysis of answers of airtightness associations representatives
performed by:

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