Competent tester schemes for better airtightness measurement reliability

Comparison of approaches in 11 European countries

Workshop March 18-19th, Bruxelles
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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

Building airtightness is a key issue to reach low energy level

More and more regulations and labels impose airtightness testing

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
The tester behaviour
Interpretation and respect of the measurement protocol
Context of this presentation

- TAAC working group
- Questionnaire on competent tester schemes
- Comparison of approach

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
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-Luftdichkeit 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

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 €
Training programme always include…

- Purpose and steps of the tests
- The rules: building preparation, calculation of derived quantity, calibration, etc.
- How to use the equipment on site
- How to write/file a report

For UK non-domestic buildings it depends on each company.

Testers know-how: qualification

- Specific training*
- Evaluation of test reports
- Administrative requirements
- Specific insurance*
- Education requirements
- Validity limit in time
- Other requirements

* Yes for UK-Domestic buildings, No for non domestic (depends on UKAS accreditation)
## Appropriate equipment

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Operational now or soon</th>
<th>Known issues</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Manufacturers offer calibration services</td>
<td>• Accreditation process can be heavy and expensive</td>
</tr>
<tr>
<td></td>
<td>• Calibration procedures w/ accredited bodies</td>
<td>• Debates on airflow calibration procedures (inter-laboratory calibration checks)</td>
</tr>
<tr>
<td></td>
<td>• in the UK (now)</td>
<td>• Company’s responsibility</td>
</tr>
</tbody>
</table>

- 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

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

January 2014

Testers profile

*people in career change, researchers, any background
** Industry service only for non-domestic buildings in the UK
Qualibat experience

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

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
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 honnesty, measurment 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?
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.

http://www.tightvent.eu

http://www.aivc.org

Acknowledgements

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.

Acknowledgements

- Special thanks to the persons who have kindly answered the questionnaire:
  - Clarisse Mees, Belgium
  - Jiří Novák, Czech Republic
  - Walter Sebastian, Denmark
  - Valérie Leprince, France
  - Oliver Solcher, Germany
  - Paul Carling, United Kingdom
  - Targo Kalamees, Estonia
  - Andrejs Nitijevskis, Latvia
  - Andrzej Gorka, Poland
  - Owe Svensson, Sweden
  - Mark Shirley, Ireland
THANK YOU FOR YOUR ATTENTION

Analysis of answers of airtightness associations representatives performed by:
Valérie Leprince, Maria Kapsalaki, Rémi Carrière