Lessons learned from QUALICHeCK Lund workshop on ventilation and airtightness

François Rémi Carrié
ICEE
4 workshops planned...

- 4 workshops on the project’s technology focus areas are planned within the QUALICHeCK project
- Objective: Give opportunity to professionals to understand and discuss QUALICHeCK findings

- **Ventilation and airtightness**
  - LUND
  - 16-17 March 2015

- **Sustainable summer comfort**
  - ATHENS
  - 9-10 March 2016

- **Transmission characteristics**
  - TALLINN
  - October 2016

- **Renewables in multi-energy systems**
  - LYON
  - ~ January 2017
2nd QUALICHeCK workshop
‘Sustainable summer comfort’
March 9-10 2016

• 2-days workshop
• Aspects to be covered:
  • Solar control
  • Thermal mass
  • Ventilative cooling
  • Cool roofs
  • Daylighting
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<tbody>
<tr>
<td><strong>4.1</strong></td>
<td><strong>Selected approaches addressing quality and compliance in various countries – Concerns for innovation</strong></td>
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<td></td>
<td>Quality and compliance on building ventilation and airtightness in the Dutch context. <em>Wouter Borsboom, TNO, The Netherlands</em></td>
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<tr>
<td><strong>4.2</strong></td>
<td>Air-Permeability Testing of New Dwellings &amp; Buildings in the UK: Challenges to Maintaining Standards. <em>Barry Cope, ATTMA, UK</em></td>
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<td><strong>4.3</strong></td>
<td>Overview of competent tester schemes for building airtightness testers. <em>François Rémi Carrié, INIVE, Belgium</em></td>
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<td><strong>4.4</strong></td>
<td>BUILD UP Skills Sweden: Quality assurance of the works and training activities. <em>Per-Johan Wik, Lund University, Sweden</em></td>
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<td><strong>5.1</strong></td>
<td>Background on Swedish regulation BBR – Ventilation and airtightness. <em>Wanda Rydholm, Boverket, Sweden</em></td>
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<td><strong>5.2</strong></td>
<td>OVK Compliance (regulatory) and energy efficiency measures, as well as guidance to municipal supervisors on the Board’s Web (Boverkets), OVK experience and supervision. <em>Wanda Rydholm, Boverket, Sweden</em></td>
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<td><strong>5.3</strong></td>
<td>The Swedish National energy declaration record. <em>Anders Sjelvgren, Boverket, Sweden</em></td>
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<td><strong>5.4</strong></td>
<td>Certification of persons issuing OVK and energy performance certificates. <em>Magnus Jerlmark, Kiwa, Sweden</em></td>
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<td><strong>5.5</strong></td>
<td>Qualification of airtightness testers. <em>Paula Wahlgren, Chalmers, Sweden and Magnus Hansén, SP, Sweden</em></td>
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<td><strong>5.6</strong></td>
<td>The AMA framework: ductwork according, practical implementation and presentation of digital training for ventilation installers. <em>Johnny Andersson, Ramboll, Sweden</em></td>
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This presentation makes reference to the pdfs available on the website

Objectives of Lund workshop

• Status on the ground

• Increase confidence in declared ventilation and airtightness performance to show compliance with regulations:
  • How to improve the compliance of the input data used to issue Energy Performance certificates;
  • How to improve the quality of the works;
  • How to take into account innovations in a compliance framework.
Structure of the presentation

- Status on the ground
- Effective compliance frameworks
- Access to EPC input data
- Certification / qualification
- Quality of the works
- Handling of innovation
- Summary
Knowledge of the status on the ground is very helpful and a prerequisite to improve the situation.

However, ground status is in general not well-known.

- 2014: Only 52% (23 MS) has a view on compliance rates.
Status on the ground

**QUALITY INITIATIVES VENTILATION: JOINT EFFORT ASSOCIATIONS**

Because 50% of ventilation systems was not according to specifications, in 2012 a plan was made with all significant associations to make sure every ventilation system in 2015 has a good performance.

This was ended in November 2014 by the ministry because of:

- Lack of performance tests, few figures of housing corporations and none of home owners
- No demand of tenants and home owners about quality of ventilation: no incentive to building parties.
- Solution according to ministry: shift to private compliance test

**New approach developed including an effective compliance checking**

<table>
<thead>
<tr>
<th>Year</th>
<th>Thermal Insulation</th>
<th>Energy Performance</th>
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<tr>
<td></td>
<td>Requirement</td>
<td>In practice</td>
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<tr>
<td>1994-1997</td>
<td>No→K65→K55→K68</td>
<td>No requirements</td>
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<tr>
<td>2006</td>
<td>K45</td>
<td>K41</td>
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<tr>
<td>2007</td>
<td>K45</td>
<td>K39</td>
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<td>2008</td>
<td>K45</td>
<td>K38</td>
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<td>2009</td>
<td>K45</td>
<td>K36</td>
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<td>2010</td>
<td>K40</td>
<td>K33</td>
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<tr>
<td>2011</td>
<td>K40</td>
<td>K35</td>
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<tr>
<td>2012</td>
<td>K40</td>
<td>K34</td>
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</table>
Effective compliance frameworks

Procedures to obtain and prove compliant data

Procedures to obtain and prove quality of the works

There should be clear procedures what must be done

Formal procedures if non-compliance

There should be clear procedures how to decide on non-compliance and related actions

Handling of non-compliance in practice

There should be an effective control and penalties if non-compliance

!! Societal support !!
1. It clearly identifies the different key steps in the process 59%

2. It is not so clear 25%

3. I would prefer another approach 13%

4. I have not yet a clear idea 3%

Effective compliance frameworks:

- Efficiency of a heat exchanger
- Airtightness of a building
- Possibility to have efficient maintenance
- Procedures to obtain and prove compliant data
- Procedures to obtain and prove quality of the works
- Formal procedures if non-compliance
- There are clear procedures how to decide on non-compliance and related actions
- Handling of non-compliance in practice
- There is an effective control and sanctions if non-compliance
Several initiatives to ease access to product data

3.1 EPC website: www.eurovent-certification.com

Quick search

7.3

Many advantages for all the actors

- For the manufacturers
  - Higher confidence of the owners
  - Higher visibility
  - Compliant and unquestionably «product data»

- For the rapporteurs
  - No risk on the responsibility of «product data»
  - Easier access to «product data»

- For the authorities
  - Higher compliance
  - Less controls needed at the moment of EP declarations

8.3 French voluntary scheme for homogeneous announcement of ventilation product performance

François DURIER

CETIAT
Access to EPC input data

- Easy access should be a key concern and database developments can surely help
- Some concerns with database developments
  - Input data specific to a national context are often necessary
  - Development and maintenance costs
  - Legal robustness when used to justify EPC input data
Certification / qualification

ATTMA
The Air Tightness Testing & Measurement Association

Air-Permeability Testing of New Dwellings & Buildings in the UK: Challenges to Maintaining Standards
Lund, Sweden – 16 March 2015

Presentation delivered by Barry Cook – ATTMA Registered Testers Scheme Manager

8 EUROPEAN COUNTRIES

Competent tester schemes

A quality framework
Pressurization test must be reliable!
1. Qualification of testers
2. Technical criteria for the measurements
3. Controls

Number of qualified testers in 6 European countries in January 2014 (the Swedish scheme started in 2014, Belgian scheme in 2015)

4.2

4.3

5.5

7.2

8.1

QUALICHECK
Towards better quality and compliance
**Certification / qualification**

- Positive experience with building airtightness testers in BE, FR, SE, UK (to be confirmed in long term)
- Negative experience in NL with the certification of installers
- A new certification for ventilation system installer developed in Sweden... to be assessed

**QUALITY INITIATIVES VENTILATION: JOINT EFFORT ASSOCIATIONS**

Because 50% of ventilation systems was not according to specifications, in 2012 a plan was made with all significant associations to make sure every ventilation system in 2015 has a good performance.

This was ended in November 2014 by the ministry because of:
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- Solution according to ministry: shift to private compliance test

**Third Party Certification of Ventilation Installers**

The Swedish Association of Contracting Companies has commissioned INCERT The Certification Organization for Installations to certify their Ventilation Installers

This means that the certification is done as a **Third party certification** which means that it is an independent judgment and assurance that specified demands related to a product, person, process or management process has complied with requirements.
In **Sweden**, a long experience with quality for ventilation system installations:
- AMA guidelines, in use since the 1950s
- Compulsory checks of ventilation systems (OVK inspection) started in 1991
- A new certification for ventilation system installers

In **France**, a regulatory scheme developed to foster quality management for building airtightness gives good results
• Testimonials of manufacturers confirm that fair accounting of innovative products/systems is critical (ex. ventilative cooling, DCVs)

• Interesting approach: the equivalence principle developed in several countries
Summary

• Significant need for improvement on:
  • the status on the ground
  • the clarity of compliance procedures
  • the ease of access to EPC input data
  • the effectiveness of certification schemes
  • measures fostering better quality of the works
  • handling of innovation

• Good news:
  • there are positive experience to learn from on all these aspects

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More information on:
- REHVA Journal Special issue
- Factsheets gradually uploaded on website

QUALICHECK  
fact sheet #01

Authors
François Rémi Carrié (ICEE) and Sandrine Charrier (CEREMA)

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<thead>
<tr>
<th>Technology</th>
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<th>Country</th>
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<td>Ventilation and airtightness</td>
<td>Quality of the works</td>
<td>France</td>
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BUILDING REGULATIONS CAN FOSTER QUALITY MANAGEMENT: 
THE FRENCH EXAMPLE ON BUILDING AIRTIGHTNESS

The French regulation includes an alternative route to systematic building airtightness testing to justify for a given airtightness level. This route was developed to push professionals to revisit their methods for implementing building airtightness solutions and to include specific quality requirements. At the end of 2014, 81 such quality management approaches have been approved representing a production of about 15,500 buildings per year.

<table>
<thead>
<tr>
<th>Residential buildings</th>
<th>Non-residential buildings</th>
<th>Specific buildings</th>
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Context
There exists a significant body of literature showing the negative impacts of air leaks in building envelopes as well as the benefits of good building airtightness with appropriate provisions for ventilation, whether natural or mechanical. This explains why the French regulation has taken into account building airtightness since over 30 years, unfortunately with little success until about 2006. That year, a new regulation (RT 2005) came into force, with a benefit of about 7% on the calculated energy use for better airtightness on single-family houses. This regulation also introduced a new scheme (Annex VII of the regulation) to justify for the target airtightness level based on quality management (QM) principles.
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