Building and ductwork airtightness: Issues with the reliability of EPC input data and with the quality of the works

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INIVE

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Evolution of airtightness requirements
Consequences for the supply industry
Some positive developments
Summary
Airtightness requirements in EU countries

- Requirements evolve in many countries
- Lessons learnt from a survey conducted within TAAC - TightVent Airtightness Associations Committee (11 countries, not exhaustive)
  - Most countries account for building airtightness in their EP regulations
  - Several countries (e.g. UK, DK, FR, IE) have minimum requirements either for specific programmes or regulations
  - Mandatory testing applies in several countries (e.g. UK, DK, FR, IE)
  - The market share of airtightness testing varies a lot
  - Credit for better ductwork airtightness is included in Belgium and France
  - Minimum requirement applies in Portugal for A/C systems (since 2006, soften in 2013)
Consequences for the supply industry

- Taking airtightness into account in the regulations is a first fundamental step
- Significant market development for airtightness products and testing
- Evidence of poor performance (e.g., due to fraud or poor (use of) materials) can discredit good solutions
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<th>Quality of the works</th>
<th>Facts</th>
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| Building            | 😞 Unusual care for the bulk of building workers  
|                     | 😊 Appropriate products significantly limit risks |
| Ductwork            | 😊 Limited risk with appropriate product selection  
|                     | 😅 😊 Easy-to-install high-performance products available, but market share is limited |

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| Building             | 😞 Unusual care for the bulk of building workers  
|                      | 😊 Appropriate products significantly limit risks | ✓ Qualified workers and designers (certification, training programmes, etc.) |
| Ductwork             | 😊 Limited risk with appropriate product selection  
|                      | 😞 Easy-to-install high-performance products available, but market share is limited | ✓ Encourage quality control (self-tests) and quality management approaches  
|                      |                                                | ✓ ... |

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<th>Possible solutions...</th>
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| Building                      | 😞 Significant risk of unintentional mistakes or frauds (during the test or when reporting) | ✓ Competent tester schemes  
|                               |                                                | ✓ Cross-checks between test reports and EPC input data  
| Ductwork                      |                                                | ✓ Database developments ... |
Some positive developments

1. Quality of the works
   1.1. Training schemes for designers and workers
   1.2. Quality control and management approaches

2. Reliable input data
   2.1. Competent tester schemes
   2.2. Database developments
1.1. Training programmes and material
1.1. Training programmes and material
1.2. Swedish AMA framework

- AMA sets requirements for ductwork airtightness:
  - The call for tender (inc. the required tightness class according to AMA)
  - The work has to be performed according to AMA specifications
  - Commissioning/inspection of the work is performed and documented according to AMA
  - Airtightness testing may be performed by the contractor himself (i.e., no requirement for third party check)

- Ductwork airtightness is in general excellent in Sweden
1.2. Quality management approaches

1st of January 2013 – Residential:
Minimum building airtightness requirement
+ Mandatory justification

2 options for justification

Measurement by a competent tester

Development and implementation of an approved quality management approach
2.1. Competent tester schemes

Number of qualified testers in 6 European countries in January 2014 (the Swedish scheme started in 2014)
2.2. Monitoring of building stock

• One virtue of the competent tester schemes is that it allows building databases
• Not as simple as it looks, but worth the effort

![Air permeability graph]

Certified buildings only

FRANCE
Summary

• Recent studies and developments confirm the relevance of improving building and ductwork airtightness in the EPBD recast context
• Airtightness requirements evolve significantly in the member states
• This is very positive but evidence of poor performance (e.g., due to fraud or poor (use of) materials) can discredit good solutions and therefore is a risk for industry
• TightVent partners support QUALICHeCK to bring to light solutions to limit this risk
• Recent developments on workers trainings, competent tester schemes, etc. have shown interesting results
Acknowledgements

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.

Diamond partners

Gold partners

Associate partners

ECF has given substantial support to TightVent in the start-up phase
Airtightness Testers Association Committee

- Set up and hosted within TightVent since 2012
  - At present, the participants are from:
    - Belgium, Czech Republic, Denmark, France, Germany, Ireland, Poland, Sweden, and the UK
    - Contacts with Estonia, 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