Challenges for Ventilation systems in Nearly Zero-Energy Buildings (NZEB)

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European Ventilation Industry Associations
41 Members (36 companies, 5 national associations)
Agenda

- Increasing pressure on ventilation
- Innovative ventilation systems
- Some positive developments
- Quality of the work
- Work to do!
Increasing pressure on ventilation

Increased airtightness

→ higher demand on the ventilation system
→ no back-up from natural ventilation.

Insufficient ventilation

→ increased attention for public health.

Increased isolation and airtightness

→ quieter building
→ need for a better acoustic performance of the ventilation system.
We have the right products
Some positive developments

- Our knowledge of the performance of our systems has been increased.
- A lot of data acquisition has been done. We know exactly how our units are performing in practice.
- We developed an "infiltration tool" where we can calculate internal airflows generated by infiltration.
Some positive developments

Unit Specifications and energy performance:
Covered in national databases with approved data (mostly tested according EN 13141/..)

- Germany Infoportal [www.tzwl.de/uebersicht](http://www.tzwl.de/uebersicht)
- Passivhaus [www.passiv.de/komponentendatenbank](http://www.passiv.de/komponentendatenbank)
- Switzerland Energiecluster [www.energie-cluster.ch](http://www.energie-cluster.ch)
- Belgium [www.epbd.be](http://www.epbd.be)
Quality of the works
Reliability of EPBD input data

- **Facts:**
  - Approved product specifications for heat recovery systems exists in several national databases.
  - DCV ventilation not covered in today's national standards and regulations in most countries, resulting in a barrier for innovation.

- **Solutions:**
  - Product labelling. From 2016 Ecodesign product labelling helps to understand the energy saving potential of DCV and Heat Recovery Ventilation.
  - Implementing European EPBD product standards
  - Collaboration between countries on databases and assessment of innovative systems?
Quality of the work

Facts:

- Insufficient attention for a good installation.
- Insufficient attention for maintenance and cleaning.
- The end user is not always well informed how to use the system.
- Installers not familiar with all kinds of systems; especially in case of more innovative ventilation systems.
Quality of the work

No mandatory ventilation regulations for maintenance and completion of houses in most countries

Interesting approaches:
- **Sweden**: there is a mandatory maintenance scheme for housing associations.
- **NL**: Voluntary recommendations and a maintenance scheme in ISSO publications (knowledge institute for installers)
- **DE**: Voluntary scheme limited to inspection on parts of the installation. (DIN 1946/6)
- **BE**: Mandatory document in progress (STS Ventilation) for quality assurance of ventilation in new buildings.
Quality of the work

Dutch study 2011 by BBA Atze Boerstra

- (Too) high sound levels of ventilation systems in practice. Control of the airflow in about 50% of the houses based on sound level instead of actual need on fresh air.
- 90% of the residents ventilate in the lowest air flow rate during day and night!
- In 20% of the houses the air supply rate does not meet the requirements.
- In 50% of the houses the air exhaust rate does not meet the requirements.
- The maintenance of ventilation system is insufficient.
Quality of the work

Actions in Dutch context

Government:
Minimum acoustical requirements (30dB) in occupied rooms for ventilation and heat generation installations.

Building sector:
Completion checklist (BRL 8010) for requirements for installed ventilation systems in new built.

Practice:
Less than 5% of principals and installers use this checklist due to economic constraints and disinterest.

Conclusion:
Sector itself cannot solve the problem.
Third party involvement is crucial, e.g. governmental requirements
Work to do!

Solutions

- **Reliable** product labelling crucial!
- Reliable framework for assessing innovative ventilation systems crucial for stimulation innovation.
- From **component to system** performance.
- Certification and training programs for designers and workers.
- Mandatory completion checklist showing that there is compliance with the requirements.
- Maintenance: awareness raising crucial, sometimes obligations necessary
- Cover a **maximum sound level** for installations in Standards and regulations for occupied rooms.
Conclusion and summary

- More attention for “high quality” ventilation thanks to more air tight buildings.

- The right products are available even as all the knowledge to install these in a proper way.

- The quality of the installations can be improved.

- The government and the industry took their responsibility.

- There is a need for European harmonisation.