Ventilative cooling - Industry view on quality and compliance issues

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Karsten Duer, VELUX
Why ventilative cooling?

Status of ventilative cooling

How shall it succeed?
What is ventilative cooling?

- Ventilative cooling refers to the use of natural or mechanical ventilation strategies to cool indoor spaces by means of outdoor air.
- Ventilative cooling is relevant in a wide range of buildings and may even be critical to realize renovated or new NZEB.
Ventilative cooling solutions shall range from simple window openings to sophisticated systems depending on actual:

- Climate
- Security
- Pollution outdoor
- Noise outdoor
- Insects

One size will not fit all!
WHY ventilative cooling?

- **Air condition:**
  - Air conditioners use about 5% of all the electricity produced in the US, at an annual cost of more than $11 billion to homeowners [*]
  - Air conditioning units for post-mounting are available in any DIY store in Europe

- **Ventilative cooling**
  - Ventilative cooling is relevant during night time and - depending on climate - daytime. Ventilative cooling can eliminate or bring down significantly the need for mechanical cooling
  - Ventilative cooling shall work together with other passive cooling techniques such as the thermal mass of the building and solar protection.

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Climate cooling potential

For office buildings – non-adaptive thermal comfort [Artmann et al. 2007]
33-40% window-to-floor area ratio. All with specific use of ventilative cooling

No overheating discovered during two years of monitoring

No risk of post-mounting of air-conditioners
WHY ventilative cooling?

- EPBD requires focus on all-year performance – overheating issues (all year) will become critical for realising NZEB ambitions
- Energy renovation will increase overheating issues in the existing building stock
- Ventilative cooling is needed for Europe to realise the foreseen energy savings in buildings
Status of ventilative cooling

- Passive cooling used “always”
- Ventilative cooling is simple but difficult to quantify with present compliance tools
Designers don’t know what to do with VC
Standards are not covering well
Regulations & compliance tools give little or no help
Ready-to-use systems are rare due to unclear rules

Classical CATCH 22 – we need to break that
Regulations are the key!
How shall it succeed?

SOME HIGHLIGHTS

• *Venticool* – the international platform for ventilative cooling since 2012
• IEA EBC Annex 62, international research project on ventilative cooling, 2013-2017
• France, Denmark, Switzerland among countries who have started including VC in building regs and compliance tools.
• Improved CEN standards are under way (2016)
• More and more demonstrations of successful implementation of VC – and of “disasters” without!
How shall it succeed?

• AWARENESS
  – Among designers, regulators, standards writers, industry

• PRODUCTS
  – From simple systems to automated

• GUIDELINES
  – What to do in practice

• REGULATION
  – Better EN and national standards
  – Clear EPBD requirements
  – Better national building regulations
  – Better national compliance tools
Thank you for your attention

Further info and keep track on venticool.eu