Workshop objectives

Questions
- What is the knowledge regarding the quality of ventilation systems in residential buildings in various countries?
- What is the status with existing approaches to improve the quality of these systems?
- What can we learn from targeted efforts to characterize or monitor real ventilation system performance?
- How can quality frameworks help improve the situation and how can they converge with existing regulations or programmes?

Objectives
- To discuss pros and cons of existing approaches
- To explore ways to improve the situation with key experts from various countries.
Quality of ventilation systems?

Compliance to legal requirements:
• Supplied and extracted air flow rates
• Acoustical comfort

More
• Energy performance
• Thermal comfort
• Tightness
• Ease to use and operate
• Cleanliness supply air
• Cleanability – maintainability
• Fire safety
• Reliability
• ...

(Almost) everything is there

• Ventilation standards
  • In most countries part of building code or EPBD regulation
• Performance requirements
  • Air flow rates, noise, comfort
• Product and system standards
  • Product databases and labels
• Design and installation guidelines
• Testing and compliance standards and guidelines
• Educational and qualification programmes for installers
  • On voluntary basis
• Certification programmes
  • On voluntary basis
Still major quality problems

• Large gap between performance ‘on paper’ and reality
• Main problems:
  • Insufficient flow rates
  • Poor balancing of flow rates
  • Noise
  • Poor quality supply air
  • Suboptimal operation
  • ...
• Related to:
  1. Poor installation
  2. Lack of maintenance
  3. Poor design
  4. (Poor quality products)

Causes of problems

• Lack of collaboration and continuity at different stages of design and construction
• Lack of knowledge, awareness and care for quality at different stages
• Savings on investments: lack of willingness to pay for quality
• Lack of training of specific installers and commissioners, no training requirements
• Limited enforcement of legislation
Product and system improvements

• Labelling and classification of products
  – Beyond energy performance and flow characteristics
    • Eg. Cleanliness (Finland)
    • Eg. Hygiene, Acoustic qualified (Germany)
  – Uniform schemes across EU?
• Innovations towards system quality
  – Beyond product performance
  – Advanced controls and central processing units
    • Auto calibration
    • User feedback
  – Attractive and clever solutions, also for renovation

Process improvements

• Compliance checks on site
  – Visual checks, descriptive guidelines
  – Performance testing
    • Measuring guidelines, accuracy/ repeatability of tools
    • Health benefits and costs of commissioning
  – Completion certificates, declarations of conformity
• Training programmes
  – Degree for installers of ventilation, degree for testers,
    degree for maintenance and cleaning personnel,…
• Support from system suppliers
  – Share responsibility
  – From sales support to commissioning support
  – Improved installation and user manuals
Drivers for better quality

- Benefits should be clear:
  - Relate quality aspects (balancing, tightness,...) to improved energy performance in legislation
  - Product labels, installer degrees,...
- End user concerns
  - Health, comfort
  - Pay final term when actual performance is demonstrated
- Legal requirements
  - Minimum of enforcement is necessary or nothing happens...
  - Maintenance and inspection schemes
    - At predefined intervals

Discussion points

- Availability of quality documents and specifications not sufficient to achieve quality in practice
- Certification as solution?
  - Self-declared schemes vs 3rd party certification
  - Product vs process certification
    - Problem: additional to all other EU certification schemes?
- How far should legislation go to support quality?
  - Mandatory training requirements?
  - Mandatory commissioning by independent entity?
  - Compulsory or voluntary certification schemes?
  - Enforcement by authorities?
    - Checks, fines,...
Thank you for your attention and participation!