




**QUALITY ASSURANCE OF VENTILATION SYSTEMS IN RESIDENTIAL BUILDINGS; IS CERTIFICATION AND/OR (RETRO-) COMMISSIONING THE ANSWER?**



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International Workshop  
 Securing the quality of ventilation systems in residential buildings: status and perspectives

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## Poor ventilation systems : who is to blame?

- Product certification is essential to assure the overall performance and energy performance of buildings.
- Designer/consultant select, project and install HVAC&R products as part of heating, ventilating, air-conditioning and cooling systems in buildings.
- Basis of selection are the product data from producer/supplier.
- Are these data reliable and applicable?

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## Poor ventilation systems : who is to blame?

- The building system or sub-system will only perform according the expectation and connected contract obligations if the product data are correct and complete.
- If at the end the building or installation doesn't perform according the agreed design specifications, who is to blame?
  - The designer because of a poor design?
  - The installer because of poor installation work?
  - The supplier of the integrated products because of poor performance of these products?

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## who is to blame?

- Often the installer -as he is in many cases the subcontracting party- gets the blame.
- For the client this seems simple, the installer installs and should perform.
- As professionals we know that this may be client's logic, but is not always correct (or the entire story).
  - The (sub-)contracted installer may not be paid or responsible for the design.
  - Should he have checked the design or the correct performance of the products?
  - Is he to blame if trusting the inaccurate or not reliable product data?
  - How could an average installer ever win a dispute on this issue when opposing a specialized producer?

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## who is to blame?

- Given these many questions it seems logical if a substantial number of reliable producers in our field agreed to choose for the certification of their **products**.
- With certified **products** they want to convince their clients that the performance data of their products are reliable.
- EXAMPLE:
- Eurovent Certification
- However not many residential ventilation related products are listed yet.
- See : *REHVA Journal – March 2013*



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## First step: Certification of ventilation products

- Product certification is a substantial step in the right direction. But are all certificates the same?
- Self-declared schemes, generally indicating that the producer is ISO9000 or ISO9001 certified may help but
- How trustworthy? Is an in-dependent 3rd party checking the relevant product performance according general accepted product standards?
- With this 3rd party certification where in-dependent accredited certifiers declare that the specific declared product performance is reliable according a specific, public available and by the accreditation body accepted, certification guide and or standard.
- In our EU-industry there are organizations like EUROVENT-certification organizing this certification service on bases of accredited ISO17025 and EN45011 certification schemes. These accredited schemes, offer a maximal assurance level, they may also refer to accredited laboratories testing the products.

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## How to market this Certified Product?

- Give preference to certified products by promoting this to the client. The call for offers should require this, if not we don't have a levelled playing field; non-certified products may often be cheaper.
- Product certification should focus on the information (data) requirement of the system designer/installer,
- The product certificate or label should report all data needed for good design and installation work.

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## Next step: from Product to System Certification to assure the system performance

- A next step could be certifying the designer and installer according an EN45011 based certification scheme.
- This means that a contractor or client can choose for a certified installing company where the QA is guaranteed by the system that requires regular 3rd party checks of the projects of this certified supplier (installer etc.).
- These schemes are to be developed for specific application fields.
- They will also include the use of certified products. By using certified products the certified installer will concentrate on qualifying its own process.
- By using certified products he can trust the product certificates and doesn't have to check the quality of these products again.

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## Process/product certification of installers

- A levelled playing field when offering
- QA and a clear complaint route for the client
- The result is a certified installation meeting the offered requirements
- For the installer: process 3<sup>rd</sup> party certification offers a learning curve, there is an immediate feed-back when faults are detected
- Commissioning schemes are more focussed on the end of pipe approach and offers less learning opportunities

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## Commissioning the solution?

- Commissioning and retro-commission another route?
- ASHRAE Guideline 0-2005 defines Commissioning as:
- “A quality-focussed process for enhancing the delivery of a project. The process focusses upon verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, tested, operated and maintained to meet the owner’s Project Requirements.”

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## Commissioning the solution?

- In most cases this Commissioner, or as they say, the commissioning authority, is an independent entity not being the planner/designer/installer/tester/operator/maintainer.
- This may be a good solution for extensive complicated and sometimes risky projects, but seems overdone for the majority of Residential Ventilation Systems.
- An EN45011 product/process certification scheme seems more attractive, for lower costs and achievable for the majority.

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## Ventilation system standards are the basis for certification

- Apart from the earlier mentioned product standards, system performance standards are needed to refer to in describing how to check the system performance
- Examples are standards on :
  - Noise production of the system
  - Air-leakage of the system
  - Energy efficiency of the system
  - indoor environmental standards

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## **Standards are the basis of certification or commission procedures**

- This is why I want to say a few words on the standard development on products and system in Europe
- Among many two EU directives (basis for national regulation in EU member States) are important for the ventilation industry and the designers and installers of residential ventilation systems

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## **Developing product and system standards, relation ECO-design / EPBD**

- Implementing the EU ECO-design Directive requires upgrade or development of ventilation products standards.
- Product TC's have to be aware that the performance data should be suitable for the system performance description under the EPBD.
- The availability of these standards will make the further development of product and system certification schemes possible.

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## The ECO-design and EPBD connection may challenge the Standard developers

- Product TC's (at CEN or ISO level) may have a first priority for just specifying these data needed to compare products in doing so the market seems well regulated.
- System designers need more information and not always visible in the current product declarations,
- If not regulated in a standard, they have to rely for these data on the producer self-declaration and documentation.
- Product Certification will become more welcomed by the system designer/installer if a more complete product declaration is supported.
- One should not expect that the TC, responsible for the product standard, will add this information without a clear push of the market.
- Non-producers are a minority in Product TC's and don't have sufficient means to support the extension of the standards towards design information.

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## ECO-Design(M495) in relation to EPBD(M480) work

- **Objective of mandate 495 is very much supported**, there is an urgent need to use **standardisation as a basis** for Eco-design Directive
- in the past: the procedures developed under the earlier "lots" have not been well harmonised, this may not be acceptable for relevant stakeholders and these procedures are not yet accepted on CEN-TC level to become included in EN and/or ISO standards.
- Scope of Eco-design Directive includes products applied in buildings, **as part of building systems and installations**, covered by the EPBD under Mandate 480

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## Regarding ECO-Design Mandate 495

- The calculation procedures to assess the energy performance of these products shall be based on the EPBD standards:  
This possible **overlap** with EPBD work may lead to confusion in the process of revising the current set of CEN EPBD standards if product standard developers use a different approach

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## This overlap with EPBD work requires clear coordination

- The EPBD system TC's have to report to the product TC's on the product specification necessary to describe the system performance
- The product TC's have to refer to the CEN EPBD system standards if they want to use methods to determine the energy performance of the products in connection with the system
- CEN established an ECO-Design Coordination group to support coordination

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## M480 and M495

- Both Directives **should strengthen** each other : harmonisation of EPBD and Eco-Design related standards : (Definitions, system boundaries, methods etc. ) : harmonisation is needed
- This statement is limited to the product groups, where products are an integral part of a building or building systems (for heating, cooling, **ventilation**, lighting, DHW, energy production etc.)

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## M480 and M495

- Assessment methodologies (calculation, measurements procedures) and input conditions require a coordinated approach to facilitate a consistent perception in the market:  
Performance of products has to be evaluated in a comparable way under M480 and M495
- A clear interaction process has to be defined and managed intensively from the start of the development of the standards, to reach harmonisation of product - and systems standards

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## Summary

- Certification and Commission are needed for QA of residential ventilation systems
- Developing and harmonised product and system standards on residential ventilation systems is very important

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