

# **AIVC WORKSHOP – QUALITY OF METHODS FOR MEASURING VENTILATION AND AIR INFILTRATION IN BUILDINGS**

## **WHY IS IT IMPORTANT TO ADDRESS MEASUREMENT QUALITY ISSUES IN STANDARDS? HOW STANDARDS CAN CONTRIBUTE.**

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### **SUMMARY**

Product certification is a first essential step to assure the overall performance and energy performance of buildings. Designer and consultant pay a lot of attention to select, project and install HVAC&R products as part of heating, ventilating, air-conditioning and cooling systems in buildings.

They have to base their selection on the data presented by the producer or supplier of these products. The system designer or installer has to be sure that these data are reliable and applicable. The building system or sub-system will only perform according the expectation and connected contract obligations if the product data are correct and complete. The next step, the system design shall meet all design parameters on indoor environment, energy performance and other offered performances.

If at the end the building or building system 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?

Inspection and measurements of the realised ventilation and air systems are an essential factor to guaranty the performance of the system in relation to the building properties. Airtightness of the building and air systems, measuring flow rates of ATD's, measuring noise levels of ventilation devices, checking location of ATD's, checking the airway path in order to be able to report the performance of the ventilation and air systems.

To be able to rely on these inspection and measuring services we need to assure the quality of these processes. We have to describe the measurement procedures and the inspection protocols and additional the competence level of the qualified persons performing these assessments.

The EPB standards are restrictive, inspection standards like the standard EN15239 & EN15240 (currently under revision/development by CENTC156WG23) and expected to be published as: Energy performance of buildings –Ventilation for buildings – Module M4-11, M5- 11, M6-11, M7-11 - Guidelines for inspection of ventilation

and air conditioning systems. The scope of this standard excludes the qualification of the persons or organisation in charge of inspections.

The scope includes: air conditioning system(s) without mechanical ventilation; or air conditioning system(s) with mechanical ventilation; or natural and mechanical ventilation system(s).

The standard applies to: fixed systems; accessible parts that contribute to the cooling and mechanical ventilation services; ventilation-only systems. Applicable to all types of comfort cooling and air conditioning systems; all types of ventilation systems like mechanical, natural, hybrid.

However this EPB inspection standard and related CEN standards do not specify the measurement accuracy. Flow rates in situ are to be measured by pressure compensated flow measuring devices. Their accuracy will not exceed  $\pm 10\%$ . This may lead to a safety margin chosen to prevent any negative assessment results, if installers have to guaranty full compliance this may lead to installations with a 10% higher performance as required. It should be investigated if guidelines or standards are needed to give guidance or procedures for the required accuracy.

*“DG Energy has launched a written consultation on the draft amendments of ecodesign implementing measures and energy labelling delegated acts related to the application of tolerances in verification procedures. The purpose of this document is to clarify the use of Energy Efficiency measurement tolerances by the different stakeholders (market surveillance authorities, manufacturers, importers).”*

This statement indicates a need for guidance for acceptable tolerances for in situ testing as well.

*“The European Standardisation Organisations will be further encouraged to prepare the necessary measurement methods and to propose the measurement uncertainties of the measured parameters, to be taken into account by the Commission when setting tolerance values in future ecodesign and labelling measures. In this respect the Commission will continue to monitor the Organisations' activity to assure a timely preparation of the standards and of the relevant measurement uncertainties.*

*This approach would solve the problems identified by market surveillance authorities and would help to ensure that no misleading information is provided to consumers, that a level playing field is maintained for industry, and that the implementing measures and delegated acts achieve the expected savings contributing to the Europe 2020 targets. In principle the approach would have no negative effects and would not introduce a burden on any of the actors involved in the process, compared to the original intentions of the regulations concerned.”*

Although this statement is referring to product testing and meeting product requirements according ecodesign regulation, a similar statement could refer to in situ system testing.