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Checklist: Test reports of airtightness measurements

This checklist can be used to confirm that the report of the airtightness measurement includes all the necessary information:

- ☐ Airtightness measurement performed in accordance with ISO 9972 (Method 1, in Germany, method 3 is also possible, according to the “national annex”)
- ☐ The general information about the test and the building is complete
  - ☐ Tester: name, address and signature
  - ☐ Object (including full address)
  - ☐ Date of test
  - ☐ Device used for testing
  - ☐ Measurement standard (norm)
  - ☐ Indoor and outdoor temperatures
  - ☐ Wind velocity
  - ☐ Flow coefficient (C_{env})
  - ☐ Leakage coefficient (C_L)
- ☐ The room-by-room calculation of the air volume of the building (V_{n50}) is included and carried out according to the method described in the criteria for buildings.
- ☐ The location of the device (fan) is documented. Installation location (e.g. front door) checked for airtightness after measurement, e.g. by visual inspection.
- ☐ Temporary sealing of the thermal envelope are documented (e.g. outdoor and exhaust air ducts for units used continuously).
- ☐ Series of measurements at positive AND negative pressure, including for each series of measurements:
  - ☐ Measurements of the natural pressure (⊿P01+, ⊿P01-, ⊿P02+, ⊿P02-, and ⊿P01, ⊿P02) before and after each series. Each individual measurement must be between -5 and 5 Pa.
    Note: natural pressure will usually be outside of this range if the wind speed is greater than 6 m/s (21.6 km/h) or the wind force is higher than 3 Beaufort. A high temperature difference between inside and outside also leads to a greater natural pressure difference.
  - ☐ At least 5 measuring points at different pressure differences, including the corrected value based on the average natural pressure, and with the highest value being at least ± 50 Pa
  - ☐ Recommended: total error (%)
    Note: this value factors errors in the measurements of wind velocity, atmospheric pressure, temperature, volume calculation, etc. for the detailed explanation please refer to the ISO 9972. It is important for assessing the quality of a measurement (e.g. shows unfavorable wind conditions).
  - ☐ Flow exponent “n” between 0.5 and 1.0.
    Note: a value outside this range indicates a measurement error due to a change in the envelope (e.g.: a window left open). In such cases, the causes should be investigated.

- ☐ If there are significant differences between the positive and negative pressure values (n_{50}): a plausible explanation of these differences should be given in the report.
  Note: in general, the positive and negative pressure values should be relatively close to each other. But as a rule, they are never the same.
- ☐ Leakage detection is documented:
  - ☐ For EnerPHit and PHI Low Energy Buildings, with n_{50} values between 0.6 1/h and 1.0 1/h: written and signed confirmation that an extensive leakage detection was carried out and all Individual leakages which may cause structural damage or impair comfort were identified and remedied. Sample text for the confirmation:
    I hereby confirm that air infiltration leak detection was carried out at negative pressure. All rooms within the airtight building envelope were inspected during this process. All points known to be prone to leakage were checked for leaks (including locations that were difficult to access such as tall ceilings). Any large leakages with a significant share of the total leakages or affecting thermal comfort were sealed.
  - ☐ For other buildings, and according to the ISO 9972, all large individual leakages must be documented. Remedying these leakages is strongly recommended, but nor required for certification.

For instructions to carry out the airtightness test, see: Airtightness measurements in Passive Houses.

For the measurement of tall buildings (e.g. high-rise buildings) special boundary conditions apply. Please review the procedure described in the guideline for airtightness measurement of high-rise buildings. In case of questions please contact your certifier.

For an example of an airtightness test see: sample documents for building certification.

This checklist is available for download as PDF here.

See also:

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