

VIP SERIES – AIVC BUILDING AND DUCTWORK AIRTIGHTNESS

AIVC Webinar – Valérie Leprince (Cerema)

December 13, 2024

1

VIP series on Building & Ductwork Airtightness

- Series of Ventilation Information Papers (VIP) published by the AIVC
 - “Building and ductwork airtightness - National trends and requirements”
 - Template prepared: **similar structure** for all papers
 - Authors found in various countries via the TightVent Airtightness Associations Committee (TAAC) and the AIVC board members
 - Available on the AIVC website:
<https://www.aivc.org/resources/collection-papers/volume/ventilation-information-papers-0>



2

VIP series on Building & Ductwork Airtightness

• For both BUILDING and DUCTWORK airtightness, it details :

- **national requirements and drivers:** airtightness indicator, requirements in the regulation, energy programs, airtightness justifications, sanctions, etc.;
- if it is included in the **energy calculations** and how;
- the **airtightness test protocol:** qualification for the testers, guidelines, requirements on measuring devices;
- **tests performed:** tested buildings/ductworks, database, evolution with time;
- **guidelines** to build airtight buildings/ductworks.

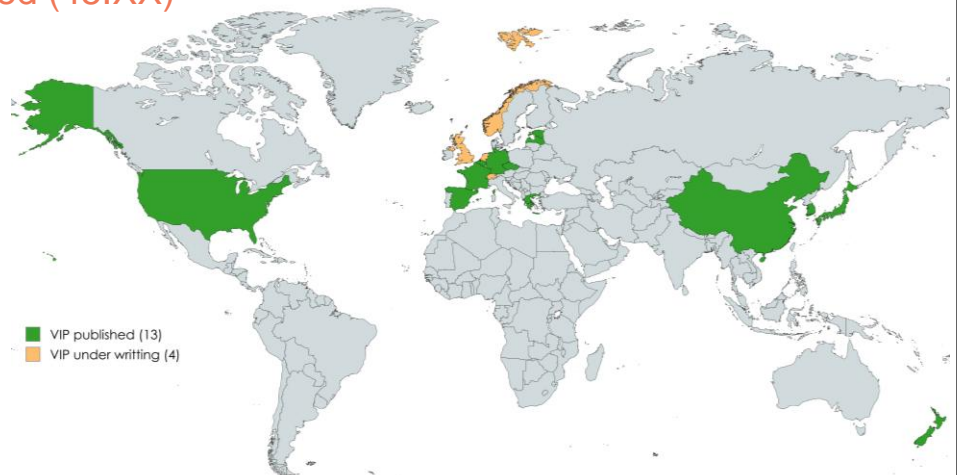


3

VIP series on Building & Ductwork Airtightness

13 VIPs published (45.XX)

- 1 Estonia
- 2 Spain
- 3 Czech Republic
- 4 Belgium
- 5 Latvia
- 6 France
- 7 Greece
- 8 China
- 9 Japan
- 10 Republic of Korea
- 11 New Zealand
- 12 USA
- 13 Germany



4

TN 73: Overview of the trends in building and ductwork airtightness in 16 countries

Nolwenn Hurel, Valérie Leprince (June 2024)

Available on the **AIVC website**:
<https://www.aivc.org/resource/tn-73-overview-trends-building-and-ductwork-airtightness-16-countries?volume=33978>

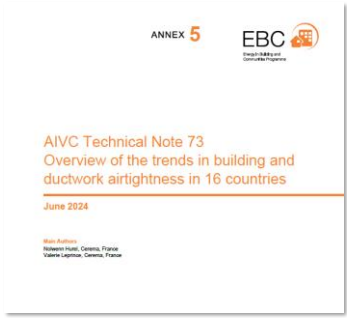


Table 3: National mandatory requirements regarding building airtightness currently in force in the 16 countries

Country	Requirement (mandatory)	Reference	Value	Other notes
BE	CEC (see art. 107(2) before management system)	Residential buildings (sanctuary allowed)	0.15 for airtightness 0.10 for ductwork	
DE	Yes (by law)	All buildings (sanctuary allowed)	0.15 for all buildings larger at 0.10 for dwellings	
DK	Yes (by law)	Residential buildings in some categories that exceed the EBC energy code (sanctuary allowed)	0.15 for all buildings 0.10 for dwellings with very high ceilings	
FR	Yes (by law)	Residential buildings > 0.15 of all buildings (sanctuary allowed)	0.15 for all buildings 0.10 for dwellings with very high ceilings	
IT	Yes (by law)	All buildings	0.15 for all buildings 0.10 for dwellings with very high ceilings	
NL	Yes (by law)	All buildings	0.15 for all buildings 0.10 for dwellings with very high ceilings	
PL	Yes (by law)	All buildings	0.15 for all buildings 0.10 for dwellings with very high ceilings	
PT	Yes (by law)	All buildings	0.15 for all buildings 0.10 for dwellings with very high ceilings	
SE	Yes (by law)	All buildings	0.15 for all buildings 0.10 for dwellings with very high ceilings	
UK	Yes (by law)	All buildings	0.15 for all buildings 0.10 for dwellings with very high ceilings	



Figure 3: Building airtightness in the Energy Performance Calculations in the 16 countries

2.5. Building airtightness test protocol

The most common way to measure the airtightness performance of a building is to perform a pressurisation test, as described for example in standard ISO 9972 (ISO, 2015).

To ensure that these tests are performed properly, with in particular a consistent building preparation and accurate measurements and calculations, more than half of the 16 countries have developed local qualifications for users, as detailed in Table 4. In the countries with no local qualifications, some testers get qualified abroad, as in Switzerland, Latvia and the Netherlands.

These qualifications are mandatory in 2 countries only:

- BE: (Flanders only), the quality framework for airtightness testers of both BECU (Belgian Construction Certification Association) and SIFA are approved by the Flemish government. They comply with the new requirements from 2020 on a quality framework for airtightness tests and apply in particular:
 - The qualification procedure must include at least an optional training and a mandatory theoretical and practical exam.
 - The quality of the airtightness measurements must be guaranteed by carrying out air-tightness audits combined with effective enforcement (20% of the audits are audited at least once a year).
- NL: airtightness tests must be performed by a third-party tester, qualified by the certification body. Qualified to be qualified a tester has to undergo state-approved training, pass the theoretical and practical training examination and possess proof of sufficient testing experience with a minimum of 10 tests performed. Once qualified, every tester is subjected to yearly follow-up checks, organised by the certification body.

In addition, if standard ISO 9972 is used in most countries considered in Europe to perform the airtightness tests, some countries have developed local guidelines to give further guidance on how to perform these tests. These local guidelines are also listed in Table 4. They include national specifications, such as for example the obligation to perform both a pressurisation and a depressurisation tests (BE, DE, NL) or sampling rules (IT).

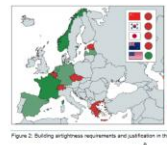
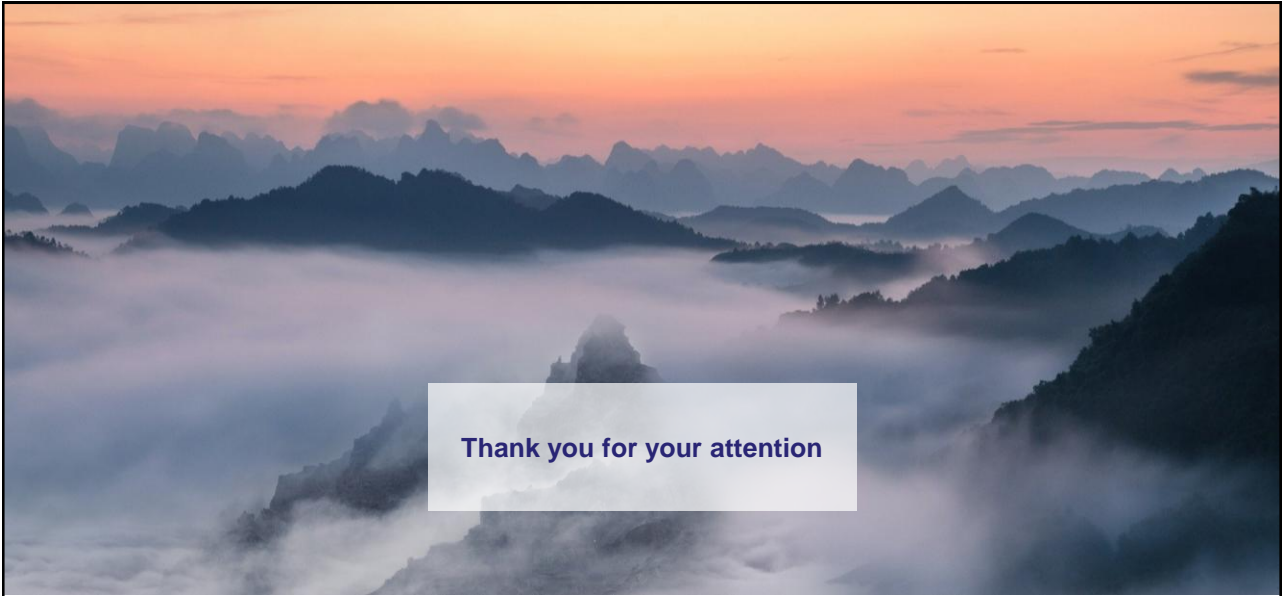


Figure 4: Building airtightness requirements and justification in the 16 countries



Thank you for your attention