Trends in building and ductwork airtightness in Latvia

AIVC & TIGHTVENT WEBINAR
BUILDING & DUCTWORK AIRTIGHTNESS TRENDS AND REGULATIONS IN CZECH REPUBLIC, LATVIA AND SPAIN

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Introduction – Building market in Latvia

- **Population**: 1,9 million
- **Residential buildings**: about 3000 building permits delivered / year
  (2/3 for single dwellings; 1/3 for multifamily)
- **Non-residential buildings**: about 45% of the construction activity
- **Total investment** : 1.2 billion €

Per cent variation of investment in real terms

investment Mln. € fixed prices

Sectors	2019a	2016	2017	2018	2019a
Building	1,232	-2.5	12.1	19.9	9.7
1.1. Housebuilding	287	2.1	-10.1	32.2	6.0
1.1.1. New	174	10.6	13.7	3.6	7.1
1.1.2. R&M	113	-8.6	-46.6	126.0	4.3
1.2. Non residential (c)	945	-4.1	20.5	16.4	10.8
1.2.1. Private	NA	NA	NA	NA	NA
1.2.2. Public	NA	NA	NA	NA	NA

a: estimate - b: forecast - c: incl. R&M

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Building airtightness

Introduction on building airtightness

- **2010:** requirement of blower door tests for buildings renovated with EU funds
  → interest in building airtightness starting
- **2015:** Latvian Construction Standard (LBN 002-01) on thermal insulation and airtightness became stricter
- **2021:** government recommendation to provide airtightness tests for the commissioning of all public buildings > 5000 m^3

Source: green-check.be

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Airtightness indicator: q_{50} ($m^3/(h.m^2)$)

→ Leakage flowrate at 50 Pa divided by the total envelope area (incl. floors)

n_{50} (h^{-1}) also used for some project

Requirements in the regulation

From 2001 to 2015:

- $q_{50} \leq 3{,}0$ $m^3/(h.m^2)$ for **dwellings, hospitals, kindergartens, homes for the elderly**
- $q_{50} \leq 4{,}0$ $m^3/(h.m^2)$ for other **public** buildings
- $q_{50} \leq 6{,}0$ $m^3/(h.m^2)$ for **industrial** buildings
- Mechanical ventilation for buildings with $q_{50} < 3$ $m^3/(h.m^2)$


Credit: Brittany Richard

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Credit: Brittany Richard

Since 2015:

- $q_{50} \leq 3{,}0\ m^3/(h.m^2)$ for buildings with **natural** ventilation (airing);
- $q_{50} \leq 2{,}0\ m^3/(h.m^2)$ for buildings with **mechanical** ventilation;
- $q_{50} \leq 1{,}5\ m^3/(h.m^2)$ for buildings with mechanical ventilation equipped with a **heat recovery system**;
- $q_{50} \leq 4{,}0\ m^3/(h.m^2)$ for **industrial buildings**
- ~~Mechanical ventilation for buildings with $q_{50} < 3\ m^3/(h.m^2)$~~

Update in 2019: same requirements regarding airtightness

Credit: IAQ.works

Building airtightness justifications

So there are **mandatory airtightness requirements** for all new buildings…

… but **no mandatory justification** !

- **No sanctions** in case a building does not comply with the requirements
- Only the owner/developer or construction regulator can initiate and write requirements to **perform airtightness tests for new projects** (Requirements usually described initially in the **project documentation)**

Incentives for building airtightness

- **2021:** government recommendation to provide airtightness tests for the commissioning of all public buildings > 5000 m^3

- **Since January 2022**: the city of Riga (capital) gives a **90% discount on property taxes** for:
  - **newly built detached houses classified as NZEB** (for a period of 5 years from the commissioning of the building)
  - **apartment in multi-family buildings for which the insulation of all facades has been performed after its commissioning** (as energy retrofit reaching better than class C)
    Discount applied throughout the period of validity of the energy certificate, with a maximum of 10 years.

Building airtightness in the EP calculation

- Airtightness is an **input of the Energy Performance (EP) calculations**

- **Default values**: requirements provided in the Latvian construction standard

  - $q_{50} \leq 3{,}0$ $m^3/(h.m^2)$ for buildings with **natural** ventilation (airing);
  - $q_{50} \leq 2{,}0$ $m^3/(h.m^2)$ for buildings with **mechanical** ventilation;
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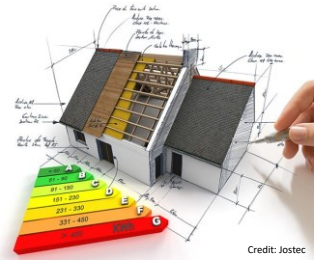


- Possible to use **lower air permeability values** if a test is performed

→ the rather favourable default values are **not encouraging airtightness testing**

Building airtightness test protocol

- **No national qualification scheme** for airtightness testers
  Currently there are approximately:
  - **8 persons** qualified by the manufacturer program **Retrotec**;
  - **1 person** qualified by **FLiB** (German Association for Airtightness)
  - **2 persons** qualified by the Air Tightness Testing & Measurement Association (**ATTMA**)

  Only some of them are testing building airtightness as their main activity

- **No national guidelines** to perform the airtightness test
  Tests should be performed in accordance with **EN 9972:2016**
  Method 2: "by closing all the windows, doors, hatches in the building"


Source: green-check.be

Building airtightness tests performed

Estimation of the percentage of buildings tested (no official data available):

- **70-80%** of **public** buildings (new or renovated)
- **5-10%** of **industrial** buildings;
- **5-15%** of **dwellings** (single-family houses and multi-apartment buildings)

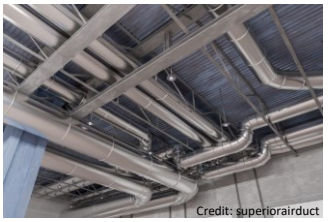
Conclusion

- **Awareness** on building airtightness in Latvia is **slowly growing**
- Mandatory **airtightness requirements** but **no mandatory tests** → still very few buildings tested
- Currently: airtightness **stimulated by the taxes reduction** for NZEB in Riga
- Changes can be expected in the future, but probably has to be **initiated by the EU regulations**

Ductwork airtightness

Ventilation ductwork airtightness

- **Not really taken into account** so far
  - No national regulations/guidelines
  - No requirements on airtightness levels
- **Reference document**: European standard LVS EN 12237
- Only **rare cases** in which **customers initiate a ductwork airtightness test**
- **No progress foreseen** in the next years


Credit: superiorairduct


Credit: Wikipedia