



# Building airtightness: recent market trends in Belgium

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# Content of the presentation

- ❖ Airtightness requirements
  - Before EPB regulations
  - Since EPB regulations
- ❖ Market trends
- ❖ Conclusions





# 1) Airtightness requirements before EPB regulations

❖ None !

but...

❖ Only recommendations in the national dwellings ventilation standard (NBN D 50-001:1991)

- balanced mechanical system ?  
→  $n_{50}$  should be lower than  $3 \text{ h}^{-1}$ ,
- balanced mechanical system with heat recovery ?  
→  $n_{50}$  should be lower than  $1 \text{ h}^{-1}$ .

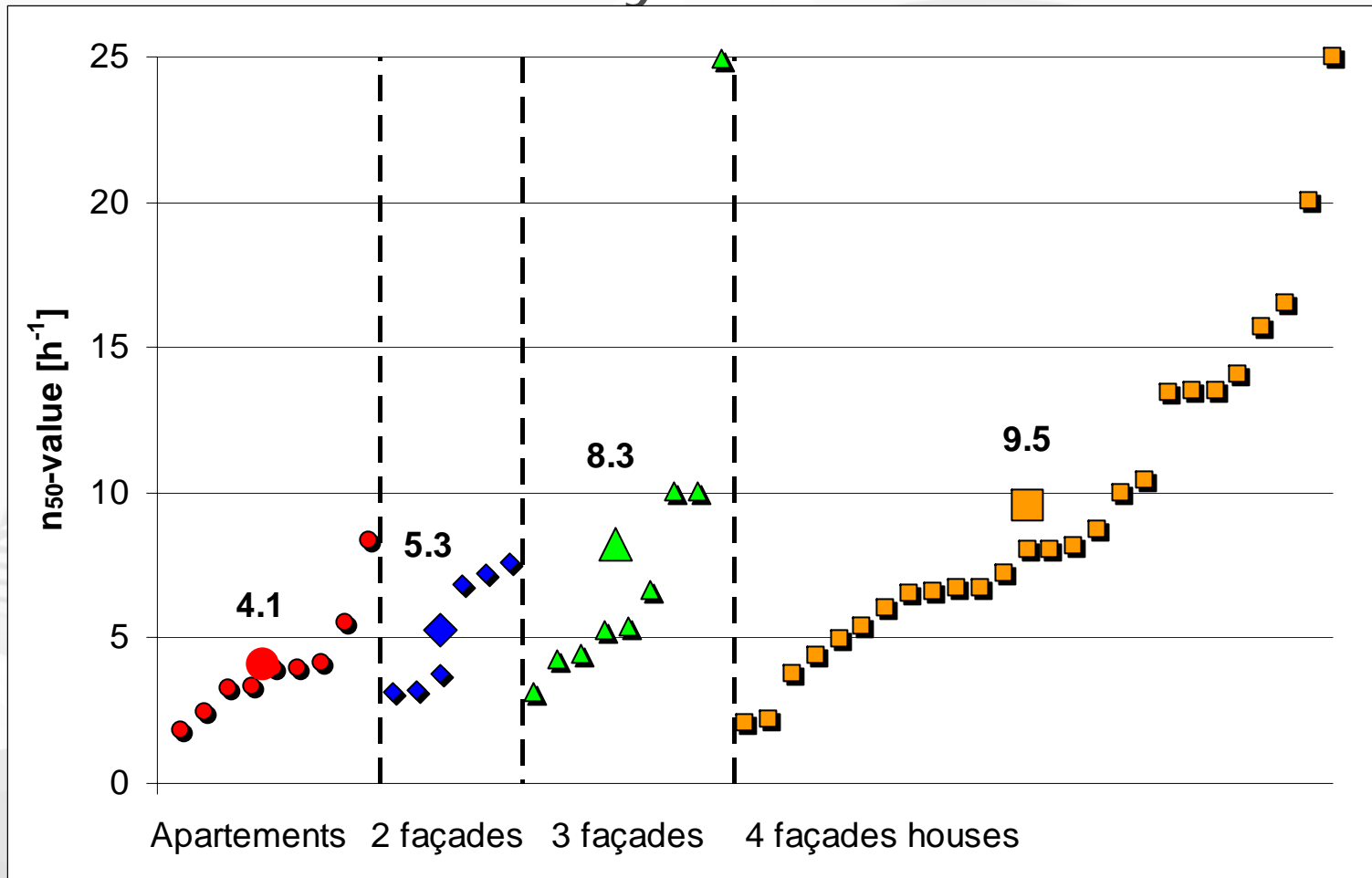
❖ Passive house label

- →  $n_{50}$  should be lower than  $0.6 \text{ h}^{-1}$ .



# Airtightness in practice before EPB regulations

❖ We come from very far...



Source : SENVIVV study, 1999, on recently built dwellings in the Flemish Region





## 2) Airtightness requirements after EPB regulations

❖ None !

but...

❖ Airtightness may have an important impact on the building energy performance !

❖ Energy performance expressed as an adimensional value called E-level

❖ EPB regulations in force :

- since 01-01-2006 in the Flemish Region
- since 02-07-2008 in the Brussels-Capital Region
- after 01-09-2009 in the Walloon Region



# Energy efficiency aspects related to ventilation in new EPB regulations

## ❖ Attention for :

- Building airtightness
- Heat recovery
- Fan regulation (only non-residential)
- Fan energy consumption
- Heat recovery, more specifically :
  - temperature efficiency
  - balancing of air flow rates
  - automatic flow control
  - by-pass for summer conditions
- Ductwork airtightness (only dwellings)
- Self regulated inlet devices (only dwellings)
- Correct flow settings (only dwellings)



## Energy efficiency aspects related to ventilation in new EPB regulation

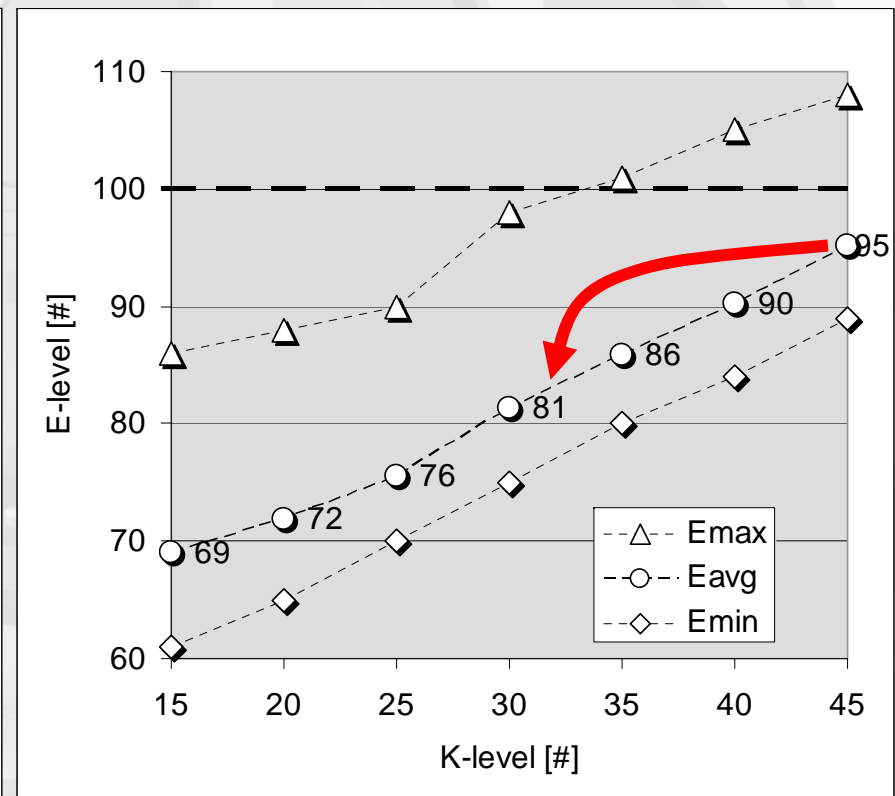
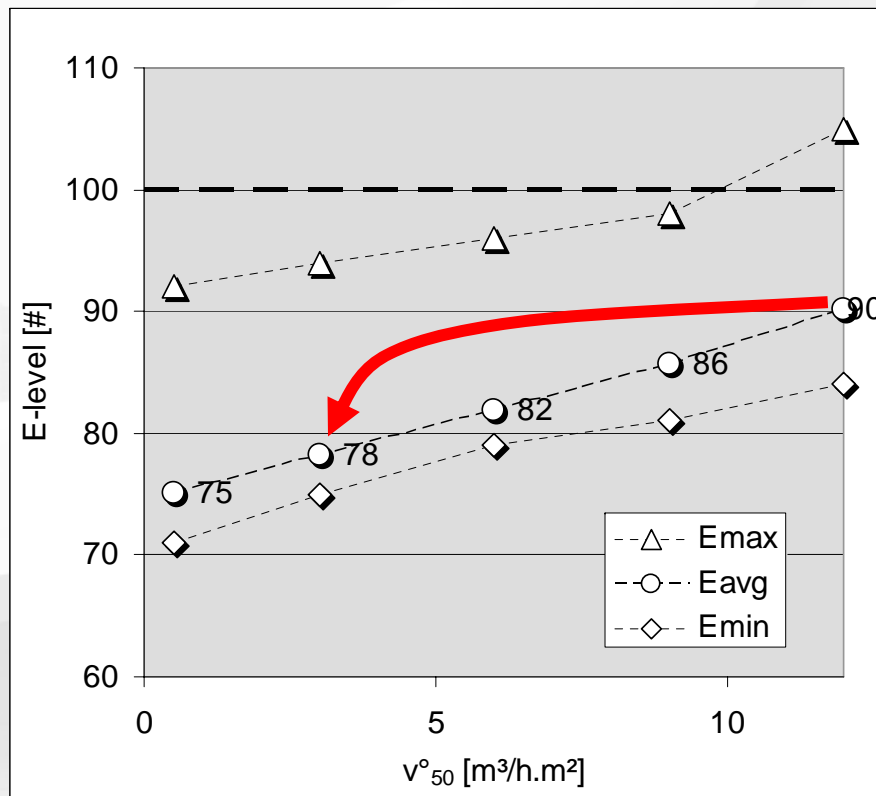
- ❖ Measurements **after completion** of the dwelling can improve calculated E-level *(in opposition with quality of e.g. insulation works, where no measurements are required)*

- Building airtightness
- Fan energy consumption
- Heat recovery, more specifically :
  - balancing of air flow rates
- Ductwork airtightness (only dwellings)
- Correct flow settings (only dwellings)

- ❖ Measured building airtightness can have a significant impact on the E-level

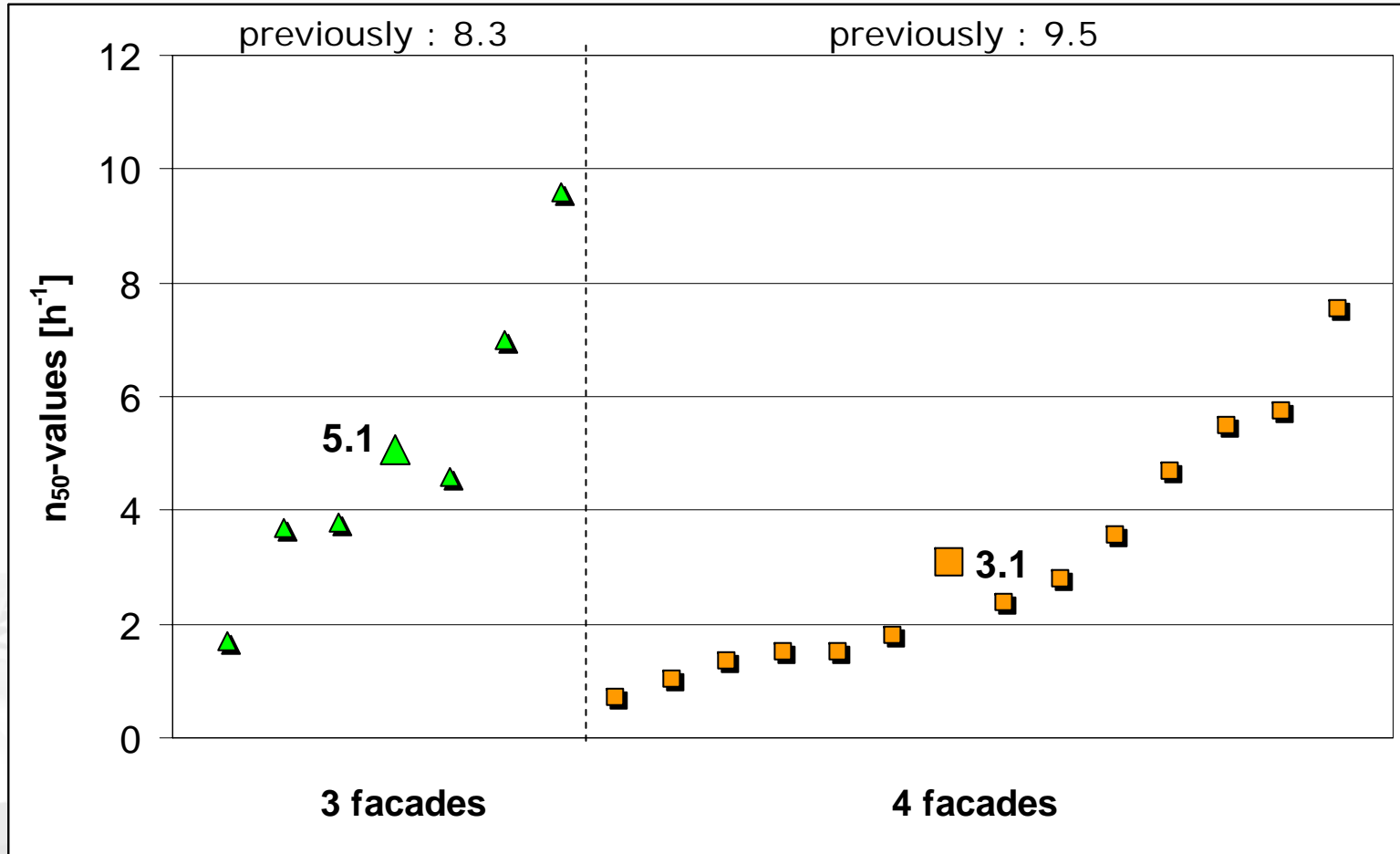
# Impact of the building airtightness on the E-level

- ❖ Improving the airtightness from 12 (default) to 3  $\text{m}^3/\text{h}\cdot\text{m}^2$  may improve the E-level by  $\pm 12\%$ 
  - similar to an improvement of the K-level from K45 (required by law) to  $\pm$  K32





# Airtightness in practice after EPB regulations



Source : more recent measurements carried out by BBRI, mainly in the voluntary action *Construire avec l'énergie...*



# Airtightness measurements

## ❖ Various gaps in EN 13829

- Method A or B ?
  - A: building in use
  - B: building envelope only (all openings sealed)
- Extent of the measured volume ?
- Highest pressure difference ?
  - 50 Pa to ... 25 Pa in large buildings
- Pressurisation **OR** Depressurisation ?

→ Due to the strict control framework in Belgium, there is a need for a completely comprehensive procedure !

❖ Documents will be available in English, Dutch and French from [www.epbd.be](http://www.epbd.be)

### 3) Market trends

❖ Various products are coming up on the market



- ❖ Various companies are offering airtightness measurements
- ❖ Some large building contractors have made efforts to improve the airtightness of their buildings and have bought blower doors

## 4) Conclusions for Belgian market

- ❖ It's still too early to track the actual changes (e.g. in terms of  $n_{50}$  and energy savings)...
- ❖ ... but there is clearly a growing interest for building airtightness !
- ❖ Still missing : trainings, like in France...

❖ Thanks for your attention

