

Presentation to European Air Tightness Association

Competent Tester Schemes
in the UK



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“A Cautionary Tale”



The Air Tightness Testing & Measurement Association

- 16 Member Firms, all UKAS-accredited (ISO 17025) and deemed competent to test all building types
- Affiliated to BINDT (British Institute of Non Destructive Testing)
 - Sit on BINDT's governing committee for air testers
- Produce testing methodologies used for UK Building Regulations.
- Now authorised by UK Government as a "Competent Persons Scheme" manager (equal to BINDT). *But not currently live.*
- Mission is to promote the highest standards of air tightness testing.
- Undertake research, lobbying, information exchange, etc



The UK Air Tightness Testing Market

- Around 50000 new dwellings and 12000 new "non-dwellings" tested per year (at current rate).
- Typical price per dwelling - £100; per non-dwelling - £800.
- Around 150 testing companies, and up to 400 testing persons
- Customers are mainly
 - House-builders
 - Main Contractors (construction firms undertaking contracts to build all types of buildings)
- The "end clients" (eventual owners and/or occupiers of new houses/buildings) are rarely involved.



The UK Air Tightness Testing Market

- As a result, testing is purchased (by builders) for compliance...
- Almost all air tightness tests in the UK are conducted for Building Regulations compliance purposes (“Part L”)
- Part L requires air tightness testing of new buildings
 - Part L1A (new dwellings): Requires Sample-testing as a minimum, but incentivises 100% testing
 - Part L2A (new non-dwellings): Requires all new buildings with floor area over 500m² to be tested.
- Compliance with Part L: minimum Q₅₀ result of 10 m³/(m².hr)50Pa..... **or** whatever (better) result is needed to satisfy the energy calculation.

L1A
L2A



Key Features of the UK Market

- Air Tightness Testing has lost its mystique!
 - No longer viewed as a value-adding, technical process associated with building performance improvement....
 - Now regarded as a routine ‘commodity’ service that is only purchased because its needed for Building Regulations
- There is a lack of understanding or (or interest in) the Competence Schemes for Air Tightness Testers
 - Builders and Building Inspectors find it difficult to determine which Testers are qualified... and therefore most don’t bother.....



Key Features of the UK Market

- Its all about price...
 - Customers (builders) want cheap tests and no “fails”
- The pressure on testers to test badly or “cheat” is high.
 - The chance of being ‘found out’ is low
- Most testing people are not qualified engineers. Most testing firms are not formally 3rd-party accredited testing organisations.
 - Only around 20 UK firms are UKAS accredited for air-tightness testing(out of around 150 firms in total)
- Building Regs don’t clearly state a need for qualified/regulated testers. As a result, unregulated testers can/do freely operate.



The background

Pre 2002:

- Limited air-testing carried out enlightened clients by specialist firms (BRE, BSRIA, Building Sciences, etc)

2002:

- Building Regulation Part L updated:
 - Introduces need for large buildings (>1000m² floor area) to be tested
 - A few more firms enter the testing market
 - ATTMA formed
 - UKAS accreditation of testing firm (ISO17025) established as requirement to demonstrate competence (and for ATTMA membership)



The background

2006

- Building Regulation Part L updated again:
 - Introduces need for more new buildings (>500m² floor area) to be tested
 - Introduces need for a sample of all new dwellings to be tested
- House-builders complain that there are not Air Tightness Testers!
 - Government appoints “BINDT” (British Institute of Non Destructive Testing) to establish a Competence Scheme for individual dwelling testers (The “L1 Tester Scheme”)
 - The L1 Tester training and certification scheme is launched and therefore the number of L1 Testers starts to rise



The background

2006 - Present

- Building Regulation Part L updated again (2010):
 - Introduces incentive for 100% testing of new dwellings
- The number of L1 Testers has risen to around 250
 - They have formed a representative Association: ATA
- The number of ATTMA/UKAS accredited firms has risen to 16
- ATTMA given licence by Government to run a separate Competence Scheme (in competition to BINDT)
 - At present ATTMA is choosing to continue to operate in conjunction with BINDT



How to Become a “Competent” Air Tightness Tester in UK

Method 1:

- Your Firm becomes a UKAS-Accredited Air Tightness Testing “Laboratory”
- Join the Air Tightness Testing & Measurement Association (ATTMA)



Pros:

Cons:



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Pros:

- Acknowledged by Stakeholders as the highest Competence Scheme level
- UKAS/ATTMA firms are recognised by Government, BINDT and Building Control as competent to test all building types (for Buildings Regs L1 & L2)
- You therefore have legitimate access to whole marketplace



Cons:



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Cons:

- It is technically difficult to attain & maintain UKAS accreditation
- UKAS is expensive (circa £7-10k in year 1, plus £5k per year after), plus £1k to ATTMA
- The competence of individual Testing Operatives is not tested and certified.



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Method 1:

- Testing Staff each get trained and certified under the BINDT L1 Scheme
- Your company signs the BINDT L1 Scheme Code of Conduct
- You join the ATA



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Pros:

- Doesn't involve organisational accreditation: therefore much easier and cheaper
- While the scope is for dwellings (L1) only, you are not prevented from testing all building types

Cons:



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Pros:

- Doesn't involve organisational accreditation: therefore much easier and cheaper
- While the scope is for dwellings (L1) only, you are not prevented from testing all building types

Cons:

- Your “competence” is deemed to be only applicable to L1. You may often find it difficult to win work to test L2 buildings, or to have test results accepted by BCO.



How to Become a “Competent” Air Tightness Tester in UK

Method 3:

- Do not bother with Competence Schemes!

Pros:







- No cost of training, certification or accreditation costs
- No technical challenges

Cons:

- Your “competence” is unproven by a 3rd party. You may often find it difficult to win work to test anything, or to have test results accepted by BCO.


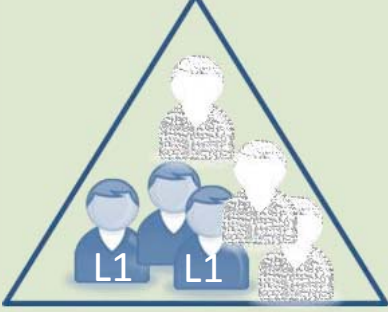



Capacity Comparison between 3 Methods

|   |   |   | Unregulated Testers |
|--|--|--|----------------------------|
| 16-18 firms (some small, some medium) 120 testers | 100 firms (mostly small) 250 testers | 20 firms ??? 50 testers ??? | |
| These testers are fairly highly utilised, so probably undertaking around 50% of all UK air tightness testing | These testers less utilised and more focussed on L1 dwellings. (40% of all tests) | At a guess these testers cover 10% | |



Comparison between 3 Methods

| 1. UKAS/ATTMA | 2. BINDT L1 / ATA | 3. Unregulated Testers |
|---|--|---|
| <p>Whole company is accredited for all tests. No certification of individuals</p>  | <p>Specific individuals certified for dwellings</p>  | <p>Neither the firm or the staff or accredited or certified</p>  |



The Current Situation - Problems

- The Government refuse to be specific about competence requirements in the Building Regulations
 - Allows unaccredited and uncertified testers to operate
- Stakeholders such as Builders, Clients, and Building Control Inspectors don't understand the competence schemes
 - Many use it as an excuse not to take them seriously!
- UKAS accreditation provides the best basis for quality testing but its not perfect and its not cheap.
 - Therefore only a few companies have it
 - It does not provide individual tester certification (this is done 'in house' by the accredited company)

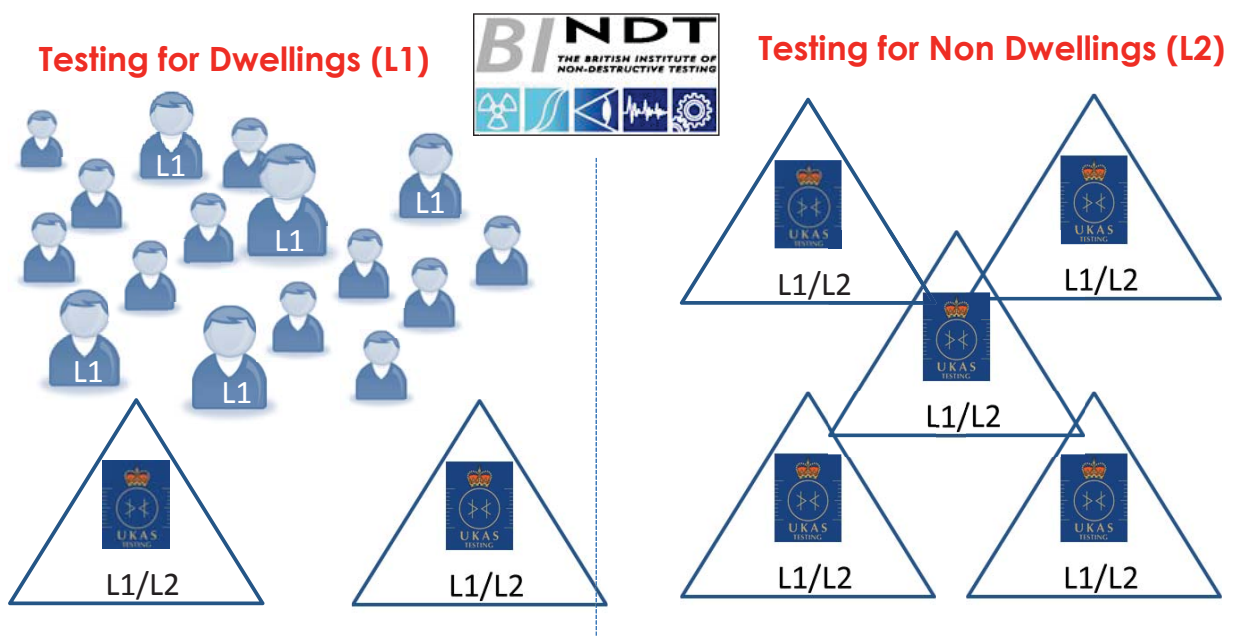


The Current Situation - Problems

- The BINDT L1 Scheme is not ‘fit for purpose’.
 - Centred on testing individuals. Therefore does not adequately control the testing company:-
 - Only covers L1 testing but does not prevent L2 testing
 - The annual reassessments are very benign
 - It doesn’t prevent “proxy testing”
 - It allows large testing companies to appear “organisationally certified” (to carry out all types of test) when in fact they may only have 1 or 2 certified L1 testers
 - It does not adequately prevent ‘cheating’, which as a result is much too frequently happening



The Original Intention

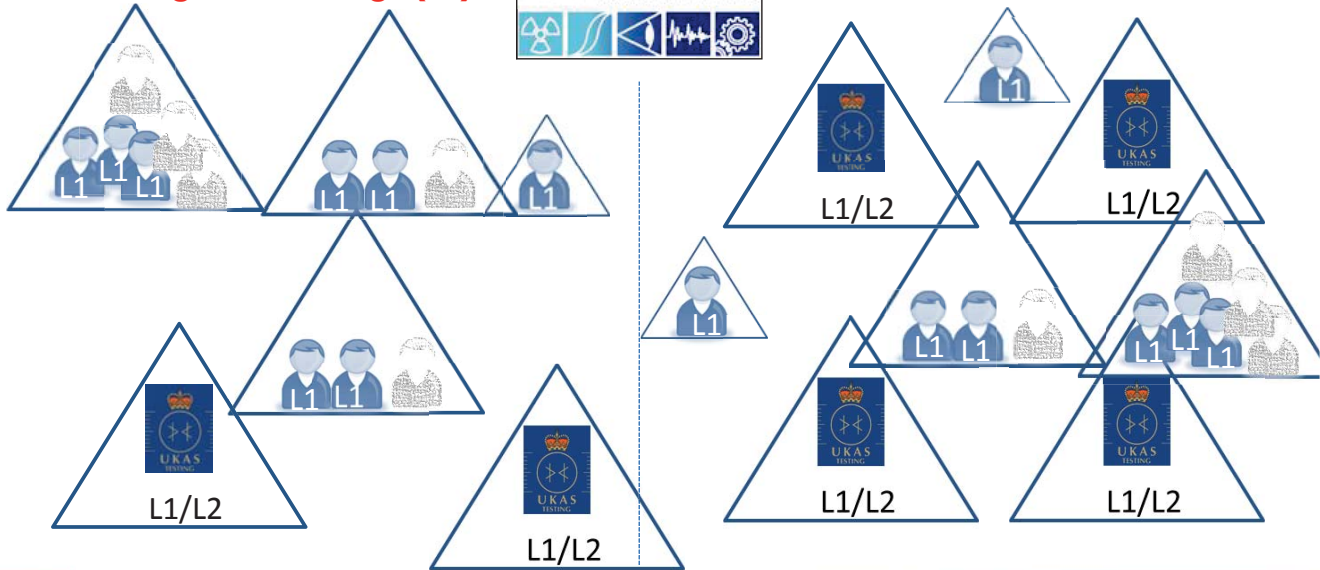


The Outcome

Testing for Dwellings (L1)



Testing for Non Dwellings (L2)



The Current Situation – Solutions!

- ATTMA & BINDT have proposed that in future ALL testing firms to be **UKAS accredited**, and....
- All individual employed testers to be certified too:
 - **Level 1** (Basic Testing Operative) Certified to test a simple building with a single fan.
 - **Level 2** (Advanced Operative) Certified to test larger and more complex buildings with multiple fans
 - **Level 3** (Technical Leader) Certified as competent in all technical matters relating to air-tightness testing, the scientific theory and calculations, calibration, relevant standards ,etc.



The Proposal



Accredited Companies Employing Certified Individuals



The Current Situation

- On behalf of current BINDT's L1 Testers, the ATA are opposing this:-
 - Too expensive! (UKAS accreditation costs around £3-5000 per year).
 - They currently pay around £200 per tester for BINDT registration, and nothing for the company
 - They don't want the extra burden that comes we maintaining UKAS accreditation
 - They believe that low levels of regulation are adequate and that they should be trusted to do the job properly
- UKAS are offering a reduced-cost solution for small firms
- Discussions continue....



Conclusions

ATTMA believes the following...

- ❑ Good Air Tightness Testing relies of Tester **Competence AND Integrity.**
- ❑ Robust Competence Schemes are needed to ensure BOTH
- ❑ Schemes should involve certification and on-going auditing of both the testing **organisation** and **employed testers.**
- ❑ All Test Results and Key Data for ALL tests should be “lodged” to improve traceability, accountability and motivation to get it right.
- ❑ There should be a robust disciplinary mechanism for both companies and individuals



Contact Details

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Rob Coxon:

0044 7841 384022

r.coxon@stroma.com



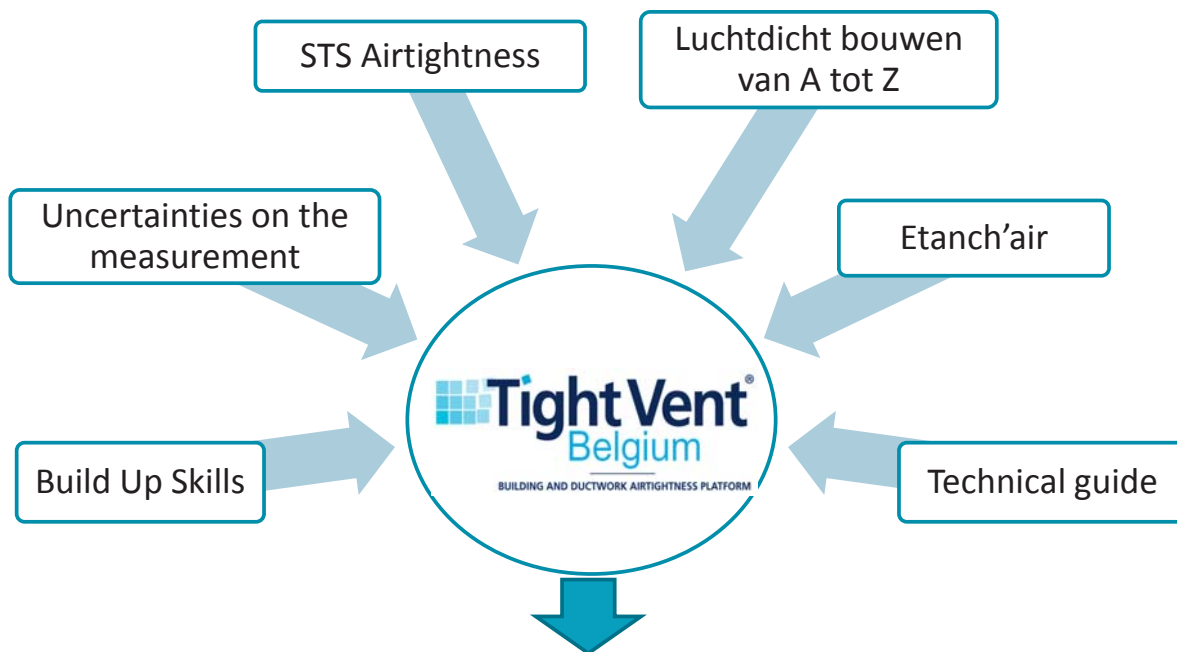


BUILDING AND DUCTWORK AIRTIGHTNESS PLATFORM

TightVent Belgium

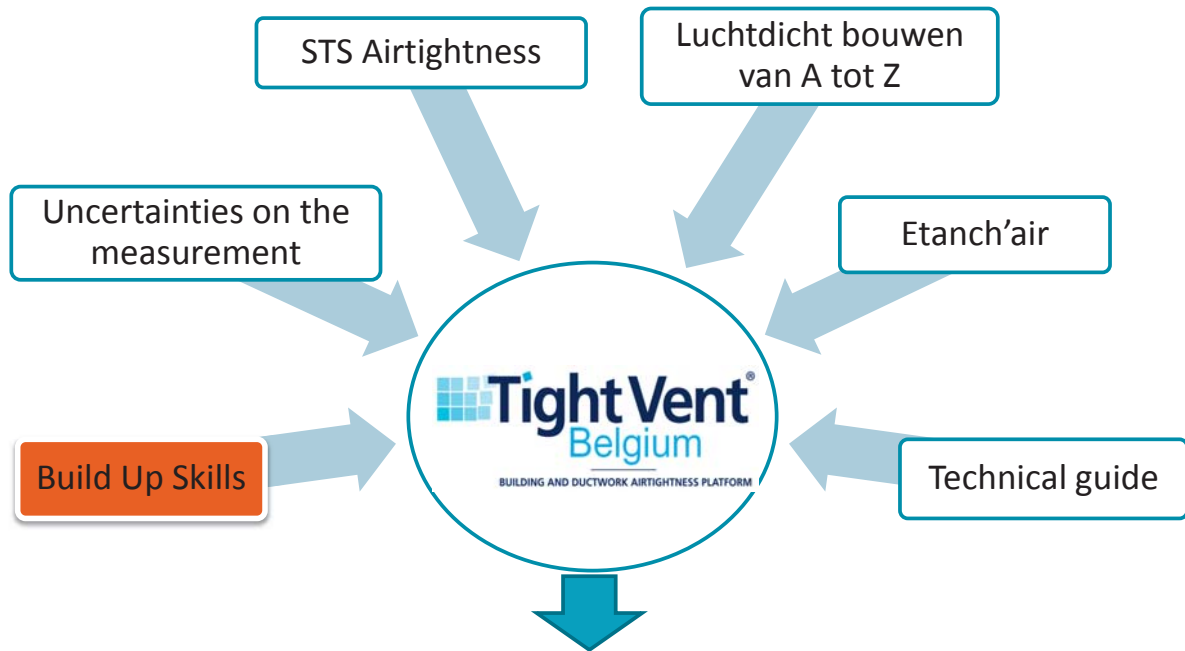
A new local network of airtightness
is starting up...

*Clarisse Mees - BBRI
Webinar 14/11/2013*



First step: Platform of airtightness testers to achieve a relevant quality framework and to follow up it day-to-day.

Second step: Wide range of activities related to building airtightness, ranging from good specifications, design issues, construction details and testing aspects, ...



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Build Up Skills



- An European project declined at the national level

- Partners: 

- **Objective : improve skills of builders**

- 9 topics
 - Airtightness
 - Replacement of exterior windows and doors
 - Ventilation
 - Coordination between workers
 - Heat pumps
 - PV and thermal solar collectors
 - Post-isolation of cavity wall
 - Isolation of roof
 - Sunscreen curtains

Build Up Skills: Conclusions



- Required pressurization test:
 - With or without leakages detection
 - Advisable: Architect and building contractor would be present during the test in order to make improvements on the envelope but also for training aspect and quality improvement
 - All building could be tested
 - The test could be required, but there could be no minimal performance required



Build Up Skills: Conclusions



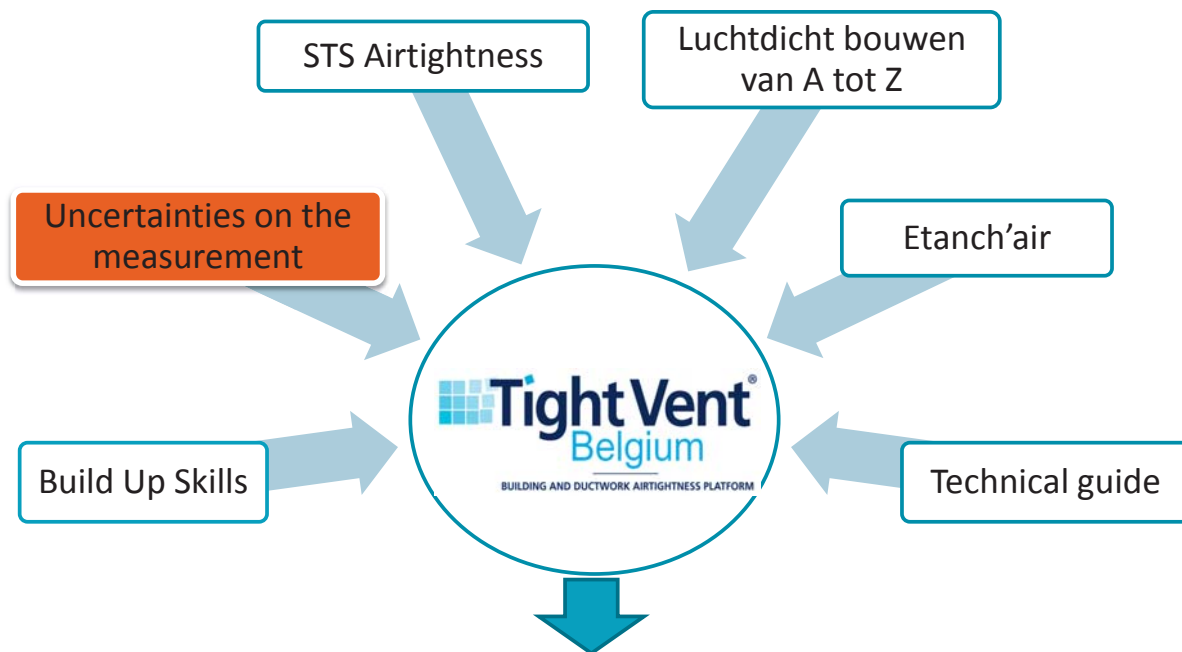
- Quality framework for the pressurization test:
 - If the test is required, it must be reliable
 - Good basic training for the testers
 - with exam
 - Good quality framework
 - Reliable measurements (method, equipment, operator, reporting)
 - Inventory of leakages by category
 - Control on site



Build Up Skills: Conclusions



- Realization of an airtight building:
 - Technical details available voor architects and building contractors (via on-line database)
 - Integration of airtightness issue in the cursus of architects and building contractors (also craftsmen)
- Manufacturers involvement
 - Performance of their products available
 - Reliable solutions
 - Durability of the performance: Ageing effect on their products



First step: Platform of airtightness testers to achieve a relevant quality framework and to follow up it day-to-day.

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Uncertainties on the measurement

- *Interlaboratory Tests for the Determination of Repeatability and Reproducibility of Buildings Airtightness Measurements*



C. Delmotte

- *Let's imagine*
 - *the same technician with the same blower door in the same building*
 - *How different can be 2 measurements of the airtightness?*

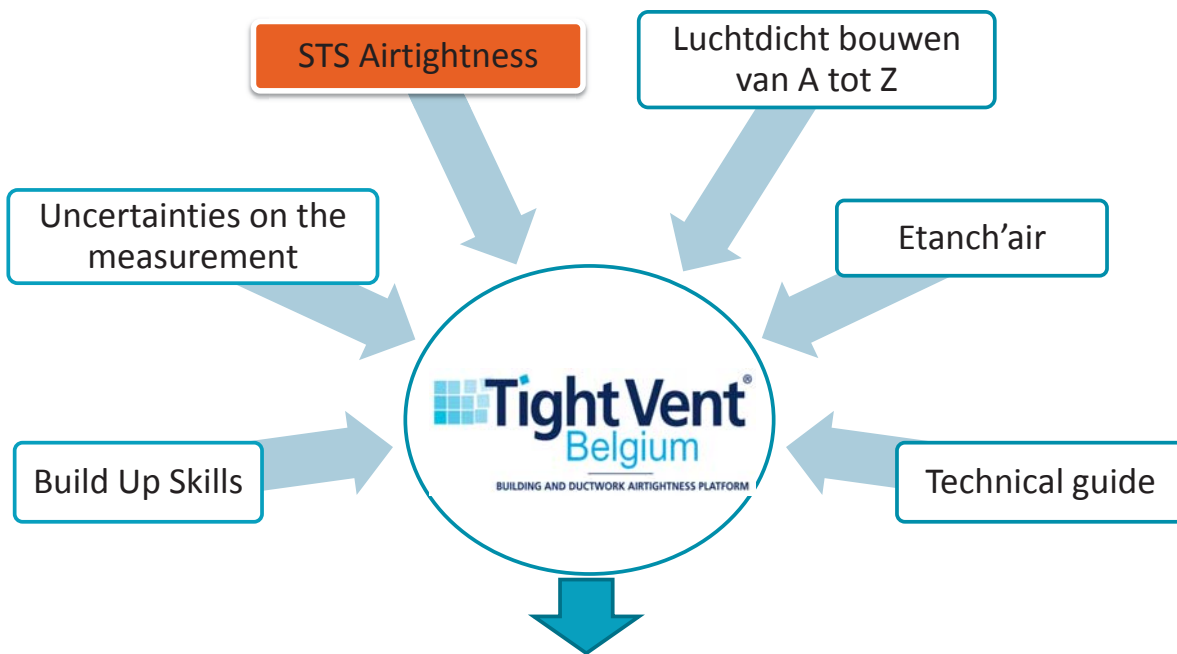
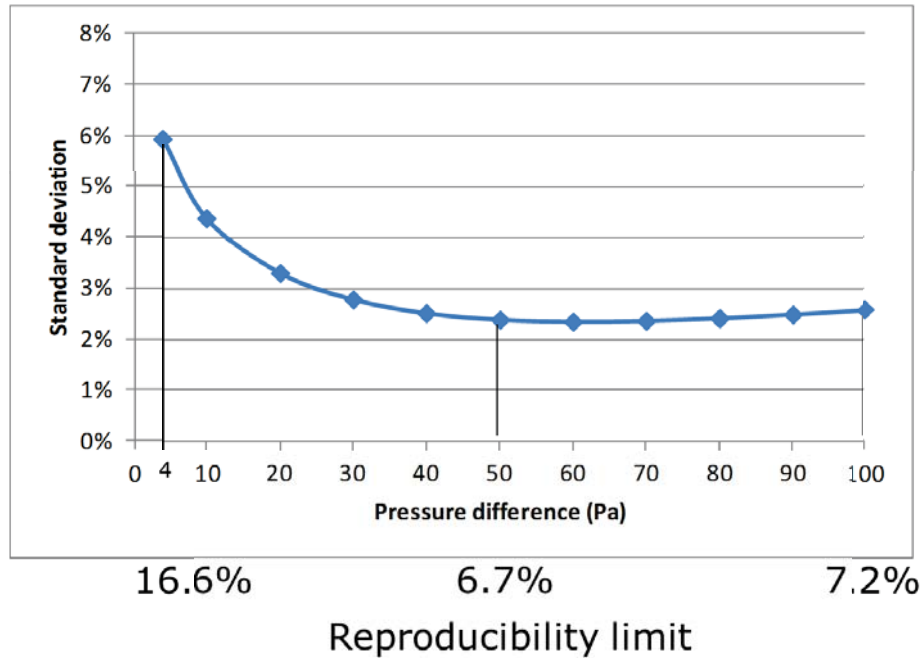
 - *...two technicians with their own blower door in the same building*
 - *How different can be 2 measurements of the airtightness?*

Uncertainties on the measurement



Uncertainties on the measurement

- *Variability of the average value*




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STS Airtightness

Spécifications techniques unifiées



Eengemaakte technische specificaties

*norme belge
enregistrée*

NBN EN 13829

1^{er} éd., février 2001

Indice de classement: B 62

Performance thermique des bâtiments - Détermination de la perméabilité à l'air des bâtiments - Méthode de pressurisation par ventilateur (ISO 9972:1996, modifiée)

Thermische eigenschappen van gebouwen - Bepaling van de luchtdoorlatendheid van gebouwen - Overdrukmethode (ISO 9972:1996, gewijzigd)

Thermal performance of buildings - Determination of air permeability of buildings - Fan pressurization method (ISO 9972:1996, modified)



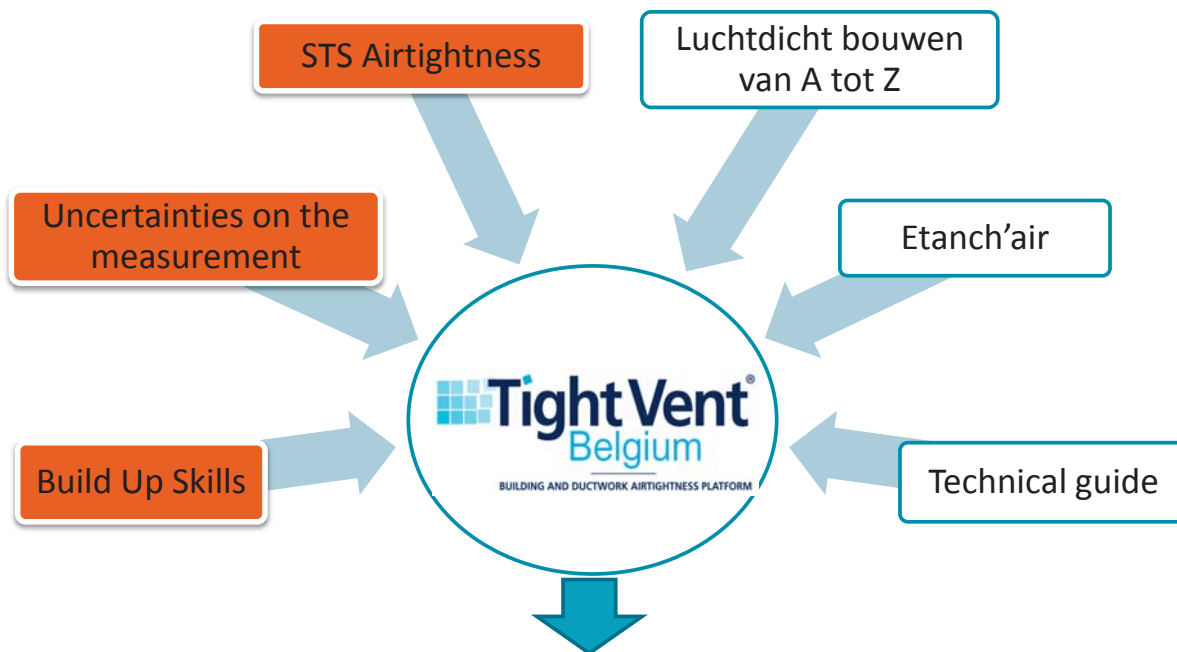
Home Données produits PEB Etanchéité à l'air Eclairage

Etanchéité à l'air

Spécifications supplémentaires pour la mesure de l'étanchéité à l'air de l'enveloppe des bâtiments

Il est possible d'utiliser le résultat d'une mesure de l'étanchéité à l'air dans la détermination du niveau E (ou du niveau E_w en Région wallonne). Les arrêtés d'exécution PEB dans chacune des 3 Régions stipulent que la mesure de l'étanchéité à l'air doit avoir lieu conformément à la norme NBN EN 13829:2001. Cette norme admet cependant 2 variantes, et laisse aussi un certain nombre d'autres questions dans l'incertitude.

C'est pourquoi les 3 Régions ont fixé ensemble un certain nombre de spécifications supplémentaires qui doivent être respectées pour qu'une mesure de l'étanchéité à l'air puisse être reconnue dans le cadre d'une déclaration PEB (finale).

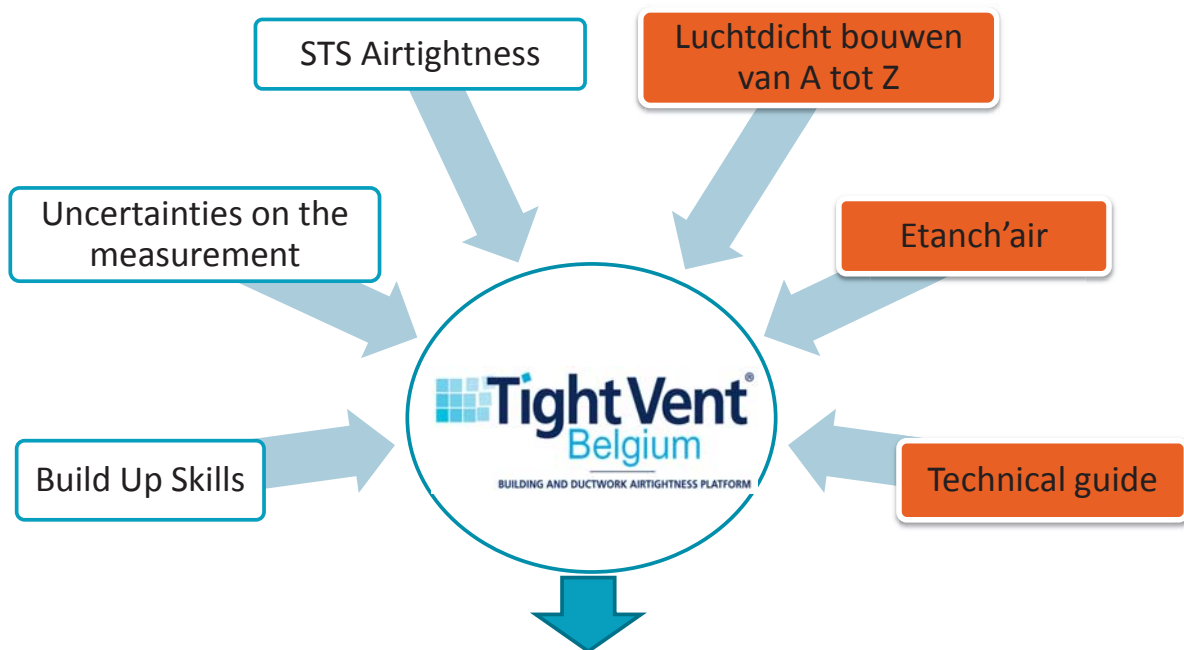


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A new local network of airtightness testers

- BBRI and TightVent Europe have organized an information day on airtightness issues in the Belgium context.
 - 52 persons exchanged points of views
- Given the positive feedback of the participants on the relevance of such meetings, it is likely to lead to the inauguration of a Belgian network named “TightVent Belgium”
- ***There is a wide support for a quality framework for airtightness testing***



First step: Platform of airtightness testers to achieve a relevant quality framework and to follow up it day-to-day.

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Etanch'air

- Research project subsidized by Wallonia
- Collaboration with 3 building contractors

- **Objectives:**

- Measure the leakages in-situ
- Develop the airtightness measurement for large buildings
- Elaborate a guide with technical solutions
- ...



Luchtdicht bouwen van A tot Z

- Research project subsidized by Flanders
- Collaboration between:



- **Objectives: a close follow up of twenty companies**

- Technical advises on site
- Trainings
- Several measurement to check the efficiency of different solutions
- ...

Technical guide

- Publication foreseen in 2014
- On-line details



Technical guide

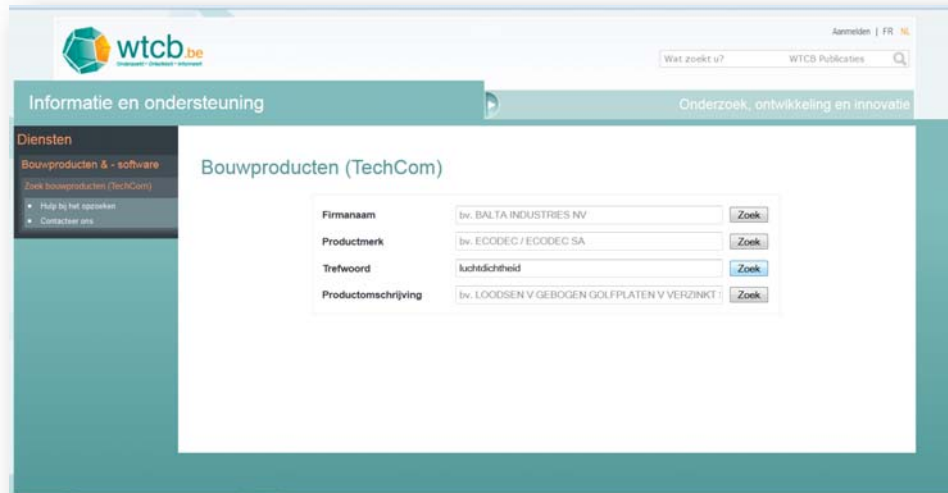
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min. 50 %
min. 20 mm
min. 10 mm

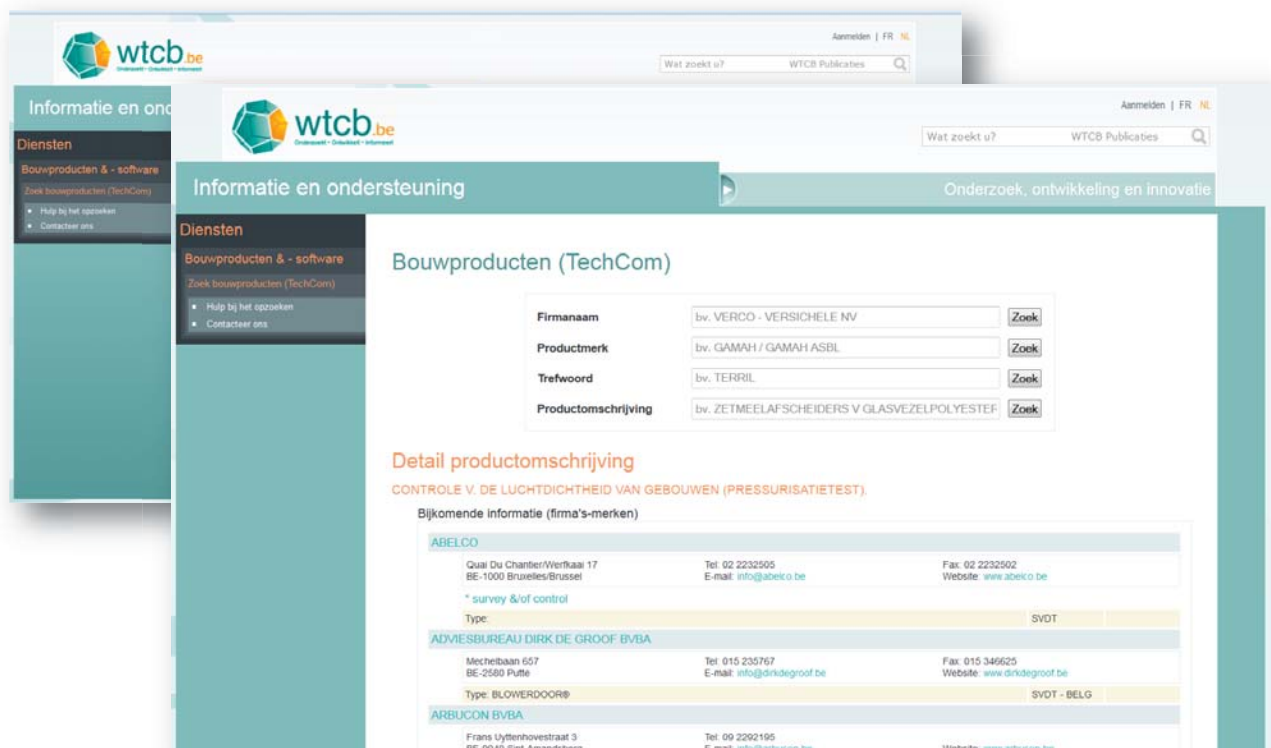
- **Nature de la barrière à l'air :**
 - Enduit
 - Membrane d'étanchéité
 - Type de jonction : Sec-humide
 - Dalle béton
 - Type de jonction : Sec-humide
- **Principaux corps de métier concernés :**
 - Maçon
 - Plafonneur
- **Points d'attention :**
 - La membrane est collée à la dalle de béton. Afin d'assurer une bonne adhérence, la dalle doit être suffisamment propre.
 - La jonction entre la membrane et l'enduit est assurée avec un élément intermédiaire (scotch, ...), une juxtaposition de 2 cm minimum doit être prévue.
 - Sur la durée de chantier, le risque d'endommagement de cette membrane est important. L'entrepreneur-carreleur doit être extrêmement soigneux lors du découpage de la bande périphérique afin de ne pas endommager celle-ci. Une mesure de précaution peut être d'insérer temporairement entre le matériau sensible et la bande périphérique un plat métallique assurant la butée contre laquelle l'extrémité de l'outil de découpe s'appuie.
 - Le passage des techniques au niveau de la membrane doivent être traités.

NOTE D'INFORMATION
TECHNIQUE
N° 2XX
UNE ÉDITION DU CENTRE SCIENTIFIQUE ET TECHNIQUE DE LA CONSTRUCTION
Etanchéité à l'air des bâtiments

Techcom Database



Techcom Database



Techcom Database

The screenshot displays the Techcom Database website interface. At the top, there is a search bar with the text 'Wat zoekt u?' and 'WTCB Publicaties'. Below the search bar, the website header includes the 'wtcb.be' logo and navigation links. The main content area is titled 'Bouwproducten (TechCom)' and features a search form with the following fields:

- Firmanaam: bv. VERCO - VERSICHELE NV
- Productmerk: bv. GAMAH / GAMAH ASBL
- Trefwoord: bv. TERRIL
- Productomschrijving: bv. ZETMEELAFSCHEIDERS V GLASVEZELPOLYESTER

Below the search form, there is a section titled 'Detail productomschrijving' with the heading 'CONTROLE V. DE LUCHTDICHTHEID VAN GEBOUWEN (PRESSURISATIE TEST)'. This section provides 'Bijkomende informatie (firma's-merken)' and lists the following details:

| ABELCO | | |
|---|---|--|
| Quai Du Chantier/Werfkaai 17 BE-1000 Bruxelles/Brussel | Tel: 02 2232505 E-mail: info@abelco.be | Fax: 02 2232502 Website: www.abelco.be |
| * survey &/of control | | |
| Type: | | SVDT |
| ADVIESBUREAU DIRK DE GROOF BVBA | | |
| Mechelbaan 657 BE-2580 Putte | Tel: 015 235767 E-mail: info@dirkdegroof.be | Fax: 015 346625 Website: www.dirkdegroof.be |
| Type: BLOWERDOOR® | | SVDT - BELG |
| ARBUCON BVBA | | |
| Frans Uytendovestraat 3 BE-9040 Sint-Amandsberg | Tel: 09 2292195 E-mail: info@arbucon.be | Website: www.arbucon.be |

Conclusions

- There is a wide range of activities related to building airtightness, ranging from good specifications, design issues, construction details and testing aspects, ...
- Awareness raising and stakeholders concertation is crucial
- From the various activities, it is clear that there is a wide support for a quality framework for airtightness testing
- It is within this context that TightVent Belgium is conceived

Thank you for your attention

