QUALITY FRAMEWORK FOR RELIABLE FAN PRESSURISATION TESTS

Airtightness performance of the building has a significant weight in the Belgian EPB-calculation and the number of pressurisation tests in new buildings is strongly increasing. To face the potential lack of tester’s skills and to ensure a reliable value, a quality framework has been achieved according to which testers have to pass an exam and could be controlled. This factsheet describes the relevant quality framework and its context.

<table>
<thead>
<tr>
<th>Residential buildings</th>
<th>Non-residential buildings</th>
<th>Specific buildings: ......</th>
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</thead>
<tbody>
<tr>
<td>New buildings</td>
<td>Existing buildings</td>
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Context

Airtightness of the building’s envelop is taken into account in the regional energy performance regulations in Belgium. But making a pressurisation test is not mandatory and there is no requirement regarding the airtightness performance of new buildings. Actually, if a test is not realised, the energy consumption for heating and cooling is calculated with quite unfavourable V50 air permeability default values. These values are equal to 12 m³/(h m²) for heating calculations and 0 m³/(h m²) for the risk of overheating and cooling calculations. If a pressurisation test is done, the result can be used as input data for new buildings (residential buildings, offices and schools). This data has a huge impact on the energy performance-calculation, which can reach 15% according to the configuration.

Practically and considering the reinforcement of the energy requirements in the 3 regions, the number of pressurisation tests in new building is strongly increasing. This increasing market is quite attractive and a lot of testers start their activities. However, with no requirements set on testers, it appears that some of them do not present the needed competences.

Figure 1: Evolution of pressurisation test numbers for new buildings in the Flemish Region of Belgium.
The non-reliable results would be a major barrier in this area. A quality framework is needed and also stakeholders ask for it.

Objectives and problems addressed
The main objective of this approach is to ensure the compliance of the airtightness performance reported. The group targeted by this measure is the testers. The quality framework aims to check the testers’ skills and the quality of their work, including the test itself and the reporting.

Note that both residential and non-residential buildings (offices and schools) are concerned.

Approach to overcome identified problems
The Belgian Construction Certification Association (BCCA) has developed a certification system that allows to certify airtightness testers and companies in Belgium.

The qualification of testers is based on:

- optional theoretical lessons;
- a theoretical examination (multiple choice questions);
- a practical examination (practical measurement);
- a requirement for minimum experience in the field (supply of at least 5 test reports).

Principles of ISO 9712 have been taken into consideration for the development of the qualification system.

In order to be recognised, companies must fulfil the following requirements:

- to have civil liability insurance;
- to have all necessary measuring instruments and software;
- to employ at least one qualified tester.

It is worth noting that accredited companies can be automatically recognised without further requirements.

Control and declaration of conformity
In order to manage quality effectively, a control system has also been put in place. It includes control of test reports and on site controls. A dedicated web application must be used.

Basic information regarding measurements must be given at least one day in advance through the web application; it concerns mainly the address of the building, the type of building, the name of the tester and a tentative date.

Before starting the measurement it is required to send a short message by phone (SMS) to BCCA with the file number and the expected finish time. At the end of the measurement another SMS must be send (from the same phone) with the air leakage rate.

There can be on-site controls during or after the measurement. If any, the tester receives a SMS at the latest 15 minutes after having sent the completion message.

When available, the test report must be uploaded through the web application. Controls are also organised at that stage.

Respecting all requirements and the whole procedure permits to deliver a declaration of conformity generated by the web application. This declaration is required for all measurements to be valued in the framework of the Energy Performance of Buildings (EPB) regulation in the Flemish region.

Market acceptance of the approach
At the time of writing this factsheet (March 2015), about 170 Belgian companies are already recognised.

Compliance concerns related to EPC
The increasing market for pressurisation tests is quite attractive. But it appears that a lot of testers who start their activities do not have the needed skills. The consequences are a wrong report and a discredit of the airtightness measurement. The quality framework prevents such situations.

Table 1 shows whether the described scheme avoids or limits some of the most typical cases of non-compliance.
<table>
<thead>
<tr>
<th>No reporting</th>
<th>Wrong reporting</th>
<th>Not meeting the performance requirements</th>
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</table>

Table 1: Compliance concerns related to EPC
(for more information about typical cases of non-compliance see http://qualicheck-platform.eu/results/terms/)

Financial aspects

✓ An extra cost has to be charged to the customer as follows:
  - around 40 € per dwelling;
  - in the case of apartments: 40 € for the first apartment and 10 € for the remaining apartments in the same building.

✓ Testers undertake:
  - the training (optional);
  - the theoretical exam: 150 € (half day);
  - the practical exam: 475 € (one day);
  - the encoding of the results in order to build up a database (half hour per measure).

Overall evaluation

The overall benefits per target group are summarised as follows.

✓ For the clients and the final user:
  - availability of a list of recognised competent professionals;
  - assurance of results and quality.

✓ For the authorities:
  - reliable input data;
  - less control needed at the moment of energy performance declarations.

✓ For the airtightness testers:
  - higher confidence of the owners;
  - value for higher quality.

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
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<tbody>
<tr>
<td>✓ Higher compliance to standards and reference document</td>
<td>✓ Extra-cost</td>
</tr>
<tr>
<td>✓ Cheating is becoming very hard</td>
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<tr>
<td>✓ Only competent testers may perform conform measurements</td>
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Table 2: Overall pros and cons of the approach

Level of complexity (dark orange = simplest)  
Potential for replication (dark orange = best)  

Prerequisites

References


