Competent tester schemes for building airtightness

Several hundreds of thousands of building airtightness tests are performed every year in the EU. Competent tester schemes have been developed in eight countries to increase confidence in the results and values reported in Energy Performance Certificates. About 2000 testers are now qualified through those schemes.

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Building airtightness is a key issue to reach low- and very low-energy targets. Therefore, an increasing number of tests are performed in European countries for various reasons, including:

- compliance to the energy performance regulation;
- compliance to a specific energy programme; or
- wish of the building owner.

To illustrate this trend, to our knowledge, measuring the airtightness of all new buildings or at least part of them is required by the energy performance regulation in UK, France, Ireland and Denmark. Other countries give a significant reward in the energy performance assessment for better-than-default airtightness values. In addition, specific energy programmes (such as Passivhaus or Minergie) that require or encourage building airtightness testing are increasingly popular in many other countries. Consequently, likely within a few years, over a million tests will be performed every year in Europe.

Reasons behind the development of competent tester schemes

Performing and reporting correctly an airtightness test requires knowledge and know-how as well as pre-requisite on the tools used by the tester. Because of related legal and financial issues, having confidence in the test results as well as the consistency between the measurement results and values used in the energy performance assessment have become crucial issues. In fact, the building's compliance to the regulation may be affected in particular because:

- the test is not performed although required;
- the test is wrongly performed and/or reported;
- the test results are such that the EPC does not meet the regulatory requirements.

Therefore, competent tester schemes have been developed in several countries to prevent errors. The following objectives were implicitly or explicitly sought:

- Ensure testers are competent to perform a test;
- Give a quality seal to airtightness testing;
- Bring trust to the market;
- Avoid the pitfalls experienced with EPC experts;
- Follow-up the testers' service.

Key components of testers' schemes

The key components we identified in 8 competent tester schemes from various countries (BE, FR, IE, DE, DK, SE, UK, CZ) are:

- To set a minimum standard for the knowledge of

QUALICHeCK responds to the challenges related to compliance of Energy Performance Certificate (EPC) declarations and the quality of the building works. Find out more at http://qualicheck-platform.eu.

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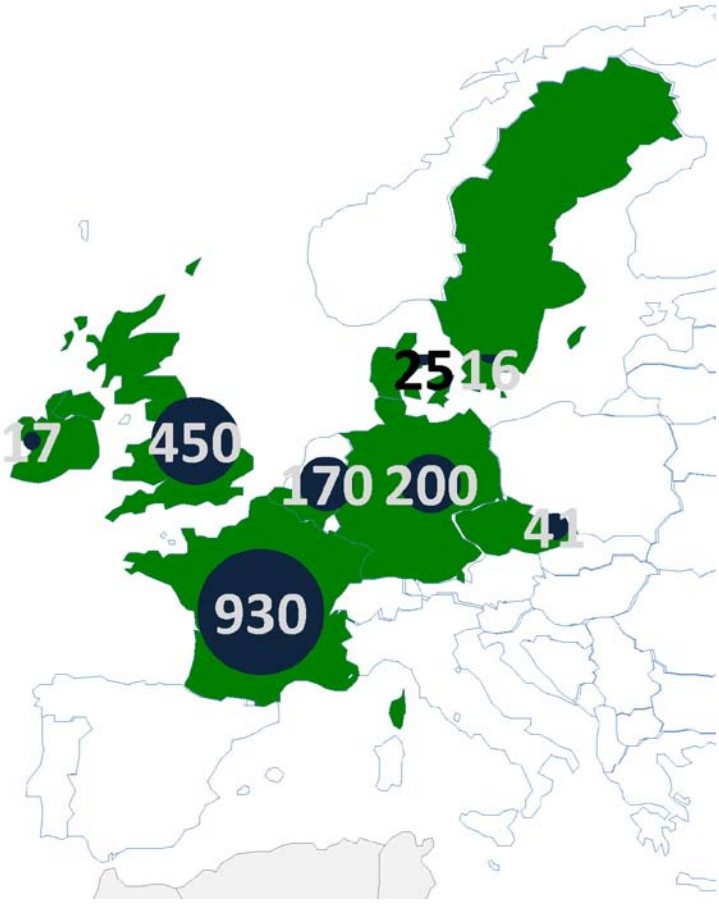
the tester (in particular on the regulatory or the programme context, the fundamentals of ventilation and infiltration, and the fundamentals of airtightness measurement);
- To set pre-requisites on the tools used (equipment, analysis and reporting tools);
- To set a minimum standard for the know-how of the tester (including the building preparation, the steps of the test, the proper use the equipment on site, the data analysis and calculation of derived quantities, the writing and filing of the report);
- To follow-up the testers' service, for instance, through periodic checks of reports, on-site checks, or test data lodgement.

These components are supported by technical documents, training programmes and evaluation procedures.

About 2000 qualified testers with competent tester schemes

Thanks to members of the TightVent Airtightness Associations Committee (TAAC), we have counted about 2000 qualified testers distributed in 8 countries as shown in **Figure** below.



Number of qualified testers in 8 European countries in February 2015.

Database developments

Six schemes (BE, DK, DE, CZ, FR, UK) require reporting in a database specific to each scheme. This has several advantages, provided that the database is well-structured:

- It becomes easy to analyse large samples and extract meaningful trends, e.g. per building type or construction methods. The French database expects to grow by over 100 000 tests per year;
- The database can be used as a means to secure the data and check the consistency between the test results and the values used in the Energy Performance assessment;
- The database can be used to ease and initiate on-site checks by the scheme holder. To our knowledge, on-site checks are operational at this time only in Belgian and, to a lesser extent, in France although such procedures are considered or under development in other countries;
- It is possible to track suspicious results. To our knowledge, this is not operational in any scheme now but simple checks (and maybe cross-checks with energy performance certificates) could be performed to check the consistency of the results. It can be one step to check the testers' honesty (e.g. by cross-checking the number of tests performed in a single day and the distance travelled).

Conclusions

Several competent tester schemes are now operational. Because they require specific knowledge and know-how as well as pre-requisites for the tools used, they can only improve the quality of measurements. It is now difficult to quantify this improvement although there are positive signs from the market. Future developments, in particular with databases and on-site checks, should help better evaluate those schemes and further secure the data produced and reported by the testers. ■

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