

Compliant input data for building energy performance certificates



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In order to establish the Energy Performance Certificates of buildings required by national transpositions of the EPBD, input data for energy performance calculation are needed that describe the building and its systems. This article from the QUALICheck project identifies existing approaches that contribute to compliant and/or easily accessible input data.

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The European Directive on the Energy Performance of Buildings (EPBD) [1] requires that Member States set up a calculation of the energy performance (article 3) and a certification (article 11), with an Energy Performance Certificate (EPC) (article 12) showing to the owner or tenant the energy performance of his or her building compared to reference values. Member States must also establish an independent control system for the energy performance certificates (article 18), including a check of the results

stated and of the input data used. According to article 27, non-compliance must be sanctioned.

These energy performance calculations resulting in EPCs need input data describing the building (location, climate, orientation, area, construction products used and their implementation) and its systems (HVAC, lighting, solar shading, local production of electricity...). In order to get a correct assessment of the energy performance, it is necessary that:

- the input data for the energy performance calculation are compliant and an evidence of this compliance exists;
- these input data are easily accessible to experts in charge of the calculations.

This article describes examples of existing approaches in European countries that help for compliant and/or easily accessible EPC input data for HVAC systems. These examples are taken from a report [2] of the European project QUALICheck, co-funded by the Intelligent Energy Europe Programme of the European Union.

Definitions

In QUALICheck, the following definitions are applied:

1. A quantity used as an input data for the calculation or the assessment of the energy performance of a building, and/or the declaration of its energy performance in the Energy Performance Certificate

(EPC), is compliant if this data has been established in line with the procedures in force in the context of the applicable legislation.

2. It is easily accessible if it is able to be found, seen and used by taking reasonable time, effort or money.

The procedures to obtain compliant data should be publicly available and may be integrated into regulations, codes, standards, professional rules,...

The evidence that the data have been obtained according to these procedures may rely on:

- the control by an independent third-party;
- the declaration by the manufacturer;
- the proven competence of the expert in charge of assessing the data;

Note that compliant does not necessarily mean accurate. The procedure to get a data may introduce an error, but if this procedure is recognised, the data will be compliant. Therefore, compliant data may be far from real values. For example, a default value used as an input data according to the procedures may be too pessimistic or too optimistic compared to the real value. Nevertheless, it will meet the definition of compliant data.

Considering that an information can be found and used by taking reasonable time, effort and money is subjective. It has to be appreciated in the context of the best available information technologies. In Europe, a data will be considered as easily accessible if it can be found with quite the same time, effort and money as an information that would be available for free on an Internet page.

Easy access to EPC input data

One of the identified examples described in report of the European project QUALICHeCK [2] contributes to easily accessible data.

A voluntary scheme has been implemented in France by the ventilation system manufacturers under the umbrella of their national association, Uniclimate, with the technical support of CETIAT, in order to publish harmonized data.

Requirements have been defined about the characteristics to be published in the manufacturer documentations (technical sheet, website, catalogue, and packaging) for 19 different ventilation and air handling products, together with the conditions for obtaining

and displaying them (standards to be used, quantities and units to be published).

Data published according to this scheme are identified by a specific logo. Joining the scheme is free. The development and update is operated by manufacturers within Uniclimate.



Logo to identify data published according to the scheme.

The scheme allows professionals to easily find data that are published in a harmonised way, compatible with their use for the EPC calculation.

This approach is described in more details in a dedicated QUALICHeCK factsheet [3].

Compliant EPC input data

One of the identified examples contributes to compliant data.

In order to reduce the variability in the values of building airtightness between testers and to improve the consistency between test results and EPC input data, several countries (the Czech Republic, Denmark, France, Germany, Ireland, Sweden, the United Kingdom) have implemented schemes to qualify testers.

Such schemes reduce the risk of wrong values due to unintentional mistakes (caused by lack of competence) and lead to more reliable test results, that are used as input data for the EPC calculation.

This approach is described in details in a dedicated article of the same issue of REHVA Journal ([4]).

Compliant and easily accessible EPC input data

Some of the identified examples provide interesting approaches to achieve compliant and easily accessible data.

Product characteristics databases have been implemented in Belgium, the United Kingdom and France.



Belgian EPBD product database (<http://www.epbd.be>) - Web page (in French) showing the list of products covered: insulation products, opaque construction products, sunscreens, ventilation components/systems.

They provide data related to products that are useful for the EPC calculation, with an easy access, through an online public website.

In addition, the data are compliant together with an evidence of their compliance as they are controlled by a third-party (Belgium, France), or because the manufacturer must provide the data with validated evidence of their performance (UK).

The Belgian EPBD product database gives the characteristics of hundreds of ventilation and thermal insulation products, as well as sunscreens. It is managed by BBRI on behalf of the three Regions of Belgium.

The database implemented in the United Kingdom covers heating systems, ventilation systems and heat recovery systems. It is managed by BRE on behalf of the Department of Energy & Climate Change.

The French database is focused on heating systems (boilers, heat pumps, solar thermal systems, domestic hot water systems, hot water radiators, independent gas-fired space heaters). It has been launched by Uniclimate (French association of heating system manufacturers) and is managed by the French association ATITA.

The use of these databases by product manufacturers is voluntary. The cost of their operation is paid by manufacturers who decide to join. The success of such databases is rather high, with possible or actual connections to the software used to calculate the building energy performance.

How to deal with innovative products

A possible way to generate compliant and accessible EPC input data for innovative products is illustrated by one of the identified examples. A scheme implemented in Belgium allows assessing the performance of innovative products thanks to specific procedures, defined by a collective of relevant industrial associations, assisted by experts and with representatives of the Regions. To a certain extent, similar schemes (but with some substantial differences) exist in France and The Netherlands.

The Belgian example is implemented in the framework of the Belgian technical body for the approval of construction products. The manufacturers may use this scheme on a voluntary basis and pay for the corresponding costs.



The screenshot shows the homepage of the 'Données Techniques du Génie Climatique RT 2012' website. The header includes the logos for Uniclimate (Syndicat des industries thermiques, aérodynamiques et frigorifiques) and ATITA (Association technique des industries thermiques et aérodynamiques). The main content area contains a welcome message, instructions on how to use the site, and a list of product categories: Chaudières, PAC, Solaire, CET, ECS, Radiateurs, and Radiateurs à Gaz. There is also a 'Mentions légales' link at the bottom.

French product database (<http://www.rt2012-chauffage.com>) - Web page showing the list of products covered.

The scheme has so far mainly been used for innovative ventilation products, and especially for demand-controlled residential ventilation systems, for which the procedure consists in the calculation of a performance coefficient from the characteristics of the product. This performance coefficient is then used as an input data into the building energy performance calculation.

The scheme provides compliant input data with an evidence of compliance, as the product characteristics are checked by a third-party and the correct implementation of the assessment procedure is checked by the approval body.

The data to be used for the EPC calculation are easily accessible as they are published on the regional public authorities' websites.

Conclusions regarding replication in European Member States

In order to make the access to the EPC input data easier, the approach may be to set up rules for a harmonized publication of product performance (example in France).

In order to improve the compliance and evidence of compliance of EPC input data, the approach may be to implement a qualification scheme, as e.g. for building airtightness testers in the Czech Republic, Denmark, France, Germany, Ireland, Sweden and the United Kingdom, thus securing the test result used as an input data for the EPC calculation.

In order to improve the compliance and evidence of compliance of the EPC input data and the easy access to them, the approach may be:

- to establish a database of product characteristics (examples in Belgium, France and the United Kingdom), combined with either a control by a third party, or a validated performance of the published values;
- to set up a procedure for generating compliant EPC input data for innovative products (example in Belgium).

These approaches often have a high potential for replication in other countries. Their potential of extension to other products is also often high.

All the approaches that provide compliant data contribute to a more accurate calculation of the energy performance and thus reduce the risk for non-compliance of the actual building energy performance with the minimum requirements of the regulations. ■

References

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