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<i>Technology</i> Renewables in multi-energy systems Ventilation and airtightness	<i>Aspect</i> Compliant and easily accessible EPC input data	<i>Country</i> Europe
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## EUROPEAN CERTIFICATION OF HVAC PRODUCTS CAN PROVIDE EPC INPUT DATA

*Systems providing space heating, ventilation, space cooling and/or domestic hot water (HVAC) to residential or commercial buildings are playing a major role in the building energy performance.*

*Eurovent Certita Certification manages a voluntary certification of the performance of heating, ventilation and air conditioning products, under the European mark "Eurovent Certified Performance".*

*Such a certification increases confidence in the published performance data of products and provides an easier access to input data for calculation of a building's energy performance.*

Residential buildings <input checked="" type="checkbox"/>	Non-residential buildings <input checked="" type="checkbox"/>	Specific buildings: .....
New buildings <input checked="" type="checkbox"/>	Existing buildings <input checked="" type="checkbox"/>	

### Context

Energy Performance Certificates (EPCs) must be established on the basis of compliant and easily accessible input data, especially data for describing the energy performance of heating, ventilation, cooling and domestic hot water systems installed in new or existing buildings.

Product certification schemes, through testing of products sampling and factory audits by an independent third party, provide reliable product data, usually published in electronic catalogues and databases. These data can be referred to by national or European regulations. If so, certification can provide compliant and easily accessible EPC input data.

This factsheet describes the example of a voluntary certification of the performance of heating, ventilation and cooling products managed by Eurovent Certita Certification, under the European mark "Eurovent Certified Performance". It shows how such certification at the European level can be useful for products that are dedicated to different national markets, with a possibility to link certified data with the input data required for the local energy performance calculation of buildings.

### Objectives and problems addressed

Certification provides reliable and easily accessible data for building systems for space heating, ventilation, space cooling and domestic hot water production that will be installed in new buildings or as replacement in existing buildings.

The objectives of certification are to build up customer confidence in the product data published by manufacturers and to increase the reliability and accuracy of these data.

Electronic catalogues of products and databases that are publically available facilitate access to data. In addition, certified product data, if determined with the same rules as those required by the regulations, can provide compliant data, used for example as input data for the energy performance calculation of buildings.

This implies:

- ✓ To implement a robust certification scheme,
- ✓ To make a link between certified product data useful as input data for energy performance calculation and EPC calculation tools.

## Approach to overcome identified problems

### *Certification of product performance*

Since 1994 Eurovent Certification, integrated into Eurovent Certita Certification (ECC) in 2013, is a private certification body that implements and manages a voluntary certification of the performance of air-conditioning products at the European level ([www.eurovent-certification.com](http://www.eurovent-certification.com)). Among the 21 operated certification programmes<sup>1</sup> for residential and commercial buildings and industrial applications, the following heating, ventilation and cooling products are covered:

- ✓ Heat Pumps (Euro-HP)
- ✓ Comfort Air Conditioners (AC)
- ✓ Variable Refrigerant Flow systems (VRF)
- ✓ Rooftop units (RT)
- ✓ Liquid Chilling Packages and Heat Pumps (LCP-HP)
- ✓ Residential Air Handling Units (RAHU)
- ✓ Air Handling Units (AHU)
- ✓ Ventilation Ducts (DUCT)
- ✓ Fan Coil Units (FCU)
- ✓ Chilled Beams (CB)
- ✓ Cooling Towers (CT)

The "Eurovent Certified Performance" mark is delivered according to a yearly follow-up process, based mainly on factory audits and testing of sampled products. ECC is a certification body according to ISO 17065<sup>2</sup>. "Eurovent Certified Performance" relies on 15 European testing laboratories that are accredited according to ISO 17025<sup>3</sup> for performing independent third party testing of products.

The reference documents for the certification programmes are developed within Compliance Committees, i.e. manufacturers groups, dedicated to families of products. The technical content is established on the basis of European standards for testing of products. They are regularly updated to the latest versions of the standards and revised to follow the implementation of European regulations in order to provide input data where relevant.

Any manufacturer can apply for the "Eurovent Certified Performance", for the European market or abroad as far as the certification is valuable.

In most of the above certification programmes, the manufacturer shall declare all products covered by the programme or none (so-called "certify-all" procedure). Otherwise, certification is delivered by product range.

Product data are certified by annual testing of randomly selected products and annual factory audits.

In case of deviation between declared values and measured ones (within defined tolerances) is confirmed, the manufacturer shall choose between rerating or complete withdrawal of the product family from the catalogues.

Administration fees and publication fees for the electronic database, as well as factory audits and testing costs, are paid by the applicant/participant. No public funding is supporting this private process.

Today, the "Eurovent Certified Performance" is awarded to more than 115 000 product references, representing some 1600 tests and 160 factory audits conducted each year.

### *Availability of data*

Certified products are available via the free access electronic directory from which performance data for different products can be compared, selected and extracted to an Excel sheet, with the assurance that the data have been checked.

<sup>1</sup> [http://www.eurovent-certification.com/en/Certification\\_Programmes/Programme\\_Descriptions.php?rub=03&srub=01&ssrub=&lg=en](http://www.eurovent-certification.com/en/Certification_Programmes/Programme_Descriptions.php?rub=03&srub=01&ssrub=&lg=en)

<sup>2</sup> ISO/IEC 17065:2012 - Conformity assessment - Requirements for bodies certifying products, processes and services

<sup>3</sup> ISO/IEC 17025:2005 - General requirements for the competence of testing and calibration laboratories

**EUROVENT CERTIFIED PERFORMANCE**  
Some brands never mislead

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### Access by programme

- If you want to apply for certification, please use [apply@eurovent-certification.com](mailto:apply@eurovent-certification.com)  
 - If you want to correct your own data, please write to the technician in charge of your list.

Data are updated on a regular basis at least every month. If you have tried by all means to find a product and you still have special enquiries you can contact us at [technical@eurovent-certification.com](mailto:technical@eurovent-certification.com). Please note that we don't issue yet specific certificates dedicated to one particular product: if you see the product on our website, it means that the performance of the product are certified. In case you don't, please contact the Participant directly.

Menu > LCP-HP > CIAT - (CIAT) > LCP / A / S / R

Liquid Chilling Packages and Heat Pumps / Chiller or heat pump / Air cooled / Split / Reverse cycle  
 LCP / A / S / R

(Export to XLS format) - (Export ALL products to XLS format)

Range : YUNA II  
 Diploma Nr. : 96.01.126

Model	Heating Floor (-)			High Temperatures (-)			Seasonal Efficiency for Heating - Average					
	Ph kW	Peh kW	COP @ 7	Dph Indoor kPa	Aph Indoor kPa	Ph kW	Peh kW	Pdesignh Average W55 kW	SCOP Average W55			
YUNA II 12 HKT/ YUNA II 12-156 D	12,0	2,58	4,65	-	45,0	11,5	3,68	3,12	66,0	8,37	3,45	
YUNA II 15 HKT/ YUNA II 12-156 D	15,0	3,49	4,30	-	25,0	11,9	3,84	3,10	-	66,0	9,38	3,29

Figure 1: Extract of certified data available at <http://www.eurovent-certification.com>

### Use of data

The database of certified data can be used for many purposes such as product selection or design of a building heating/cooling/ventilation system.

Certified data can also be used as input data for energy performance calculation of buildings in the framework of national implementation of EPBD, provided that the national procedures for determining input data are consistent with the methods (European or International standards) used for determining certified data.

Certified performance provides confidence in the quality of product data and in each manufactured product having the certified performance level. As a consequence, national regulations sometimes require certified EPC input data, with an option to use non-certified data with a penalty.

An example of such use of product certification can be found in the French building energy performance calculation method (RT2012 <sup>4</sup>) which for example applies penalising values for non-certified data of heat pumps, chillers and air conditioners.

Approved software for the energy performance calculation according to this French regulation are linked to product databases which are used to provide certified input data.

For example, Edibatec, a French organisation of software providers, collects input data for national EPBD implementing regulations on building equipment, for automatic download of certified performance data. Edibatec database can be activated from EPC calculation software, allowing the user to select the input data required for the calculation without intermediate "copy/paste" operation.

A direct link between Edibatec and the "Eurovent Certified Performance" database allows automatic access to certified data of heating and cooling systems for RT2012 calculations.

### Market acceptance of the approach

Eurovent Certified Performance is a voluntary certification scheme developed by ECC together with manufacturers. Since the first certification programme for small air conditioners in 1994, the interest of such a scheme which can fit the needs of manufacturers on regulation and market aspects increased so that today 21 certification programmes are dedicated to HVAC&R products.

<sup>4</sup> [http://www.bulletin-officiel.developpement-durable.gouv.fr/fiches/BO20139/met\\_20130009\\_0100\\_0006.pdf](http://www.bulletin-officiel.developpement-durable.gouv.fr/fiches/BO20139/met_20130009_0100_0006.pdf)

This European scheme is followed by some 280 manufacturers representing 350 certified trade names and more than 115 000 certified products. Almost 300 members are participating in the so-called Compliance Committees for supporting and improving these programmes.

In 2016, 1 600 product tests and 200 factory audits were performed.

The free access to the directory of certified products allows other manufacturers, dealers, installers and end-users to find out certified data.

### Pros and cons of possible options

The pros and cons of the options chosen for the described certification scheme are summarised in the table below.

Option	Pros	Cons
✓ Voluntary scheme	✓ Only interested people are participating	✓ Development of certification programmes for new products requires the interest of at least three industrial manufacturers from three countries
✓ Scheme developed and managed/steered in close cooperation with manufacturers	<ul style="list-style-type: none"> <li>✓ Organised and managed by involved members</li> <li>✓ Opportunity for manufacturers to get awareness on upcoming standardisation and regulations</li> </ul>	✓ Consensus sometimes difficult to achieve
✓ European perimeter	✓ Uniform approach	✓ May not take into account national specificities in EPC input data, making the certified data not compliant with the specific requirements of the national regulation
✓ Certification scheme open to all manufacturers	✓ Allows all interested manufacturers or distributors to apply for the certification scheme, even if not being a member of a manufacturer association	✓
✓ Public electronic directory	<ul style="list-style-type: none"> <li>✓ Centralized access to trustworthy performance data for all stakeholders</li> <li>✓ Possible comparison of product data</li> </ul>	✓ Comparison limited to certified products under the "Eurovent Certified Performance" scheme
✓ Direct link with EPC calculation tools	<ul style="list-style-type: none"> <li>✓ Direct use of certified data with no possible "copy/paste" errors</li> <li>✓ Advantage of certified products over non-certified products in some regulations (as for example in France)</li> </ul>	✓ The certification may not cover all input data for EPC calculations
✓ Third party testing based on European standards and by accredited laboratories	<ul style="list-style-type: none"> <li>✓ Uniform approach</li> <li>✓ High chance that the certified data comply with the requirements of the regulation if both refer to European standards</li> </ul>	

✓ Funding by manufacturers	✓ No public money needed	✓ Cost for manufacturers
✓ Yearly testing and factory audits	✓ Opportunity for manufacturers to review production processes and benchmark test rig ✓ Constant update of performance data and products	✓ Additional costs for manufacturers for testing and factory audits
✓ Certify-all approach	✓ Same level of treatment of all products ✓ The end-user cannot be misled by similar references of certified and not-certified products	✓

Table 2: description of pros and cons of the chosen options

### Compliance concerns related to EP certificates and to the QM approach

No reporting <input type="checkbox"/>	Wrong reporting <input checked="" type="checkbox"/>	Not meeting the performance requirements <input checked="" type="checkbox"/>
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Compliance concerns related to EP certificates (see QUALICHeCK terms and definitions)

The Eurovent certification scheme can be seen as contributing to the publication of more surely trustworthy data, with an easy access.

If these data can be considered as compliant according to the procedures of the applicable legislation (i.e. they have been determined by following these procedures), then the certified data can be used as EPC input data. In this case:

- ✓ Easy and free access to EPC input data via the electronic directory of certified products or through a link inside calculation software makes easier producing an EPC, rather than if no data is available or shall be found out in the technical documentation from the manufacturer.
- ✓ Wrong reporting can be limited or avoided by:
  - Extracting data from the Eurovent Directory via an Excel sheet
  - Direct link to database used by calculation software for EPC

### Financial aspects

Besides the administrative and promotion costs, a large part of the certification costs is dedicated to certification qualification and follow-up procedures. These are namely the test measurements (installation, energy, immobilisation of the test rig, staff...) and the factory audits (audit preparation, on-site audit, and review of the corrective actions...). The budget can in some cases become important for manufacturers having a large number of products to certify, or represent a significant fixed cost for very small productions.

Test sampling is therefore defined as the best possible compromise between the acceptable number of random tests to be performed (from test duration and cost points of view) and the lifetime of models within a products family.

Nevertheless, this financial aspect is moderated by the following important facts:

- ✓ certification can be used as a marketing tool for reducing the communication budget, especially for a small or mid-size company,
- ✓ certification is often part of a continuous improvement approach by the manufacturer, which takes benefit of the tests and audit reports in its production, as well as the information received during the meetings and the communications,
- ✓ manufacturer can use the independent tests for benchmarking of products and/or own test facilities.

### Overall evaluation

The overall evaluation of the approach is summarised in the following tables.

Pros	Cons
✓ Voluntary scheme developed by and for manufacturers and adapted to the market needs and regulation targets	✓ Cost of a third-party certification (tests, audits...)
✓ Free access to certified input data or direct link to EP calculation software reducing the risk of incomplete data and contributing to more surely compliant EPCs	✓

Table 3: Overall pros and cons of the approach

<b>Level of complexity</b> (dark orange = simplest)		<b>Prerequisites</b>  Interest from manufacturers and from the market
<b>Potential for replication</b> (dark orange = best)		

Hints	Pitfalls
<ul style="list-style-type: none"> <li>✓ Involve manufacturers and other stakeholders in the development of the certification rules</li> <li>✓ If the certification has to produce compliant data to be used as EPC input data, make sure that certification rules are based on the procedures of the regulation for the determination of input data</li> <li>✓ Implement, where possible, a link between database of certified product/data and software for the building energy performance calculation</li> </ul>	<ul style="list-style-type: none"> <li>✓ Certification costs must remain acceptable for manufacturers</li> <li>✓ National regulations can require different sets of EPC input data, making it difficult for the certification to provide compliant EPC input data for all countries</li> </ul>

Table 4: Overall hints and pitfalls to avoid when developing such an approach

## References

- [1] Sandrine Marinhas - Certification of product data: Eurovent Certification for heating and air-conditioning products. *QUALICHeCK Workshop, Lyon, 17 January 2017*, <http://qualicheck-platform.eu/wp-content/uploads/2017/01/QUALICHeCK-Lyon-3.1-Marinhas.pdf>
- [2] Sylvain Courtey - Certified Performance Database: tool for quality and compliance. *REHVA Journal, August 2015, pp. 28-29*
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- [4] François Durier, Susanne Geissler, Peter Wouters - Source book for improved compliance of Energy Performance Certificates (EPCs) of buildings. *QUALICHeCK report*, <http://qualicheck-platform.eu/results/reports>

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