

EHPA regulations for granting the European Quality Label for electrically driven heat pumps



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Revisions of the document

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1 General

1.1 The European Quality Label for Heat Pumps

The European Quality Label was founded in 1998 by the countries Austria, Germany and Switzerland, and organized in the European Heat Pump Association (EHPA). The Quality Label is targeted to help the end-customer choosing a high-quality product and can be employed in further developing the growing market for heat pumps and contribute to reach the goals of environment protection.

In particular, it

- a. provides purchase security and improved long term benefits to the customer.
- b. provides market orientation and strong arguments for all parties seeking governmental support – institutional as well as financial.
- c. supports the current image of heat pumps as energy efficient, reliable, high-quality products.
- d. contributes to establish heat pumps as innovative technology to produce renewable and environmentally friendly ambient heat.
- e. helps to protect the existing heat pump markets against low-quality, low-price competition.
- f. provides a basis for Quality Labels which extend the scope beyond the heat-generator

This Quality Label shall only be granted to durable, reliable and energy efficient products with a high service standard. It is based on

- a. proven technical parameters (via independent technical testing)
- b. high-quality product documentation
- c. reliable customer service

The Quality Label is valid in each country for which an individual application is made. The labelling scheme itself is available in all participating countries throughout Europe. A separate application is necessary per country and distribution organisation. Heat pumps certified under the scheme are automatically included in the Quality Label database of EHPA, with reference to the countries in which the products are certified.

1.2 Scope of the Quality Label

- a. This regulation applies to mass-produced electrically driven heat pumps for space heating with or without domestic hot water heating capability, with heat outputs up to 400 kW from air, geothermal or water sources.
- b. The regulation applies to mass-produced electrically driven heat pumps for the production of domestic hot water (DHW) from air, geothermal or water sources.
- c. In case the unit consists of separate located parts in different housings, the regulation applies to those designed and supplied as a complete package, for instance indoor and outdoor unit of a split heat pump.

1.3 International Quality Label Committee

EHPA established a technical committee »International Quality Label for heat pumps« henceforth referred to as “Quality Label Committee”. The tasks of this committee are:

- a. the creation and application of coherent rules and regulations for the process of granting the Label of quality.
- b. to establish a total quality management system for this process
- c. to act as an umbrella for the National Quality Label Commissions.

The Quality Label Committee establishes rules and regulations to regulate competencies, tasks and communication processes within the committee and the communication procedures and links to the EHPA organization.

1.4 National Quality Label Commission

In order to use the Quality Label in a country, a national Quality Label Commission needs to be established. Its creation is governed by the Rules and regulations for the International Quality Label committee of the European Heat Pump Association (EHPA).

This Commission is responsible for granting the Quality Label once all application documents are complete and all criteria are fulfilled. The Commission grants the applicant the Quality Label for the corresponding model or model range (s. chapter 2.1).

The national Quality Label Commission can perform spot checks at end customer sites for existence and accuracy of manufacturer documentation and conformity of installed equipment to (local) regulations (main components).

Only one Quality Label Commission can exist per country.

The list of all national Quality Label commissions and contact information is published on the EHPA website.

1.5 Applicants for the Quality Label

Applicants and Quality Label holders can either be manufacturers or distributional organisations. Companies may apply for or hold a Quality Label only if they have their own sales and service organisation in the country concerned. If a manufacturer's heat pump is sold by different sales organisations (including its own distribution organisation), a separate Quality Label must be applied for each sales organisation. However, the inspection of the heat pump in accordance with EHPA testing regulations or CEN heat pump KEYMARK is required only once. models

1.6 Technical testing and Test Centres

Before a Quality Label can be issued, the performance (efficiency, capacity), sound power level and safety of the heat pump unit must be tested by an independent 3rd party, authorised by the EHPA. The tests must be executed in accordance with the EHPA testing regulations, based on existing CEN standards.

Only test centres authorized by the Quality Label Committee and listed by the EHPA can perform the necessary technical testing based on EHPA testing regulations. These registered test centres have established the necessary test facilities for the testing of heat pumps and comply with quality requirements as set by the Quality Label Committee. The applicant decides on his own which model(s) he is going to provide for testing. The number of models to be tested is defined in chapter 2.5. The test centre compiles a final test report. A list of test centres is published on the EHPA webpage.

The CEN heat pump Keymark is accepted as a proof of technical testing. The EHPA Quality Label may be granted on this basis for exactly and exclusively those models with a valid CEN heat pump Keymark.

1.7 Application procedure

The scope of an application can only be one Quality Label. The scope of a Quality Label can only be one model or a model range (s. chapter 2.1).

The initial application for a Quality Label of a single model or model range is named and handled as a Parent Quality Label (=initial Quality Label), which requires the submission of all documents listed in following figure

(details of the documentation are listed in chapter a).

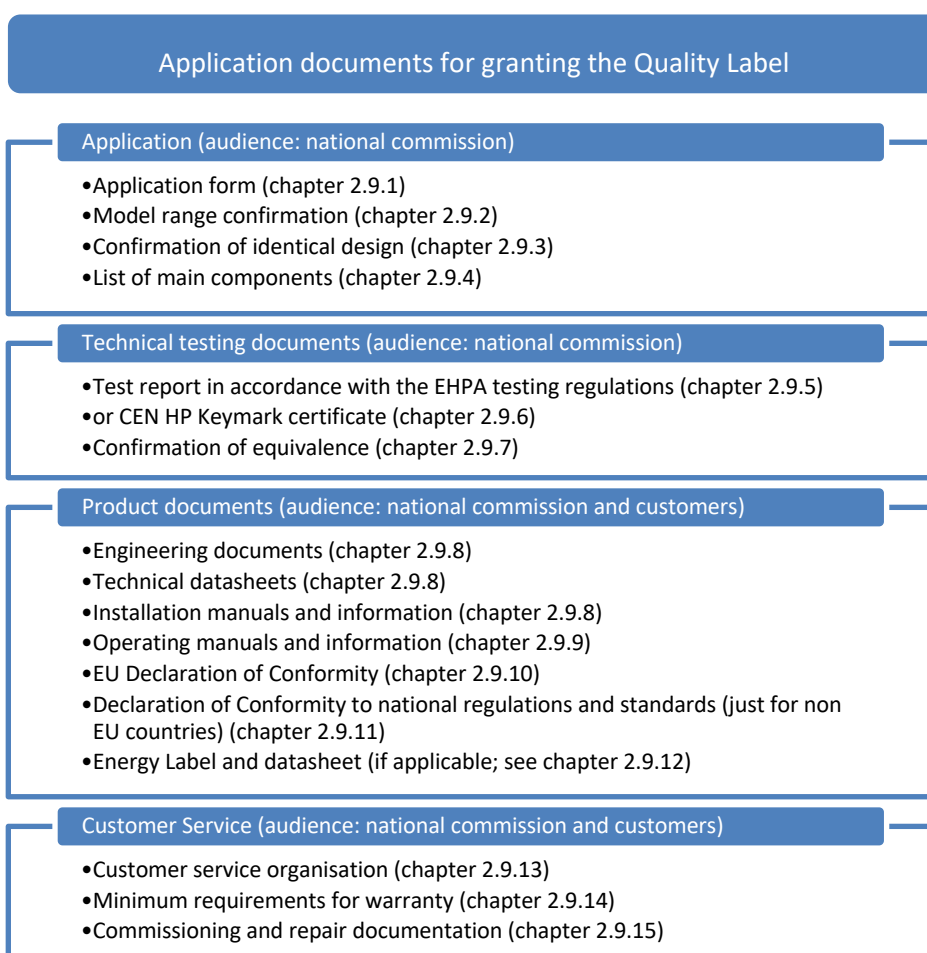
Parent Quality Labels may be changed during the validity period (extended by new models, change of main components, change of model designation). All application documents which are affected from the changes need to be handed in as revised documents.

Follow-Up Quality Labels of these Parent Quality Labels for other countries or sales organizations can be applied for. Follow-Up Quality Labels are directly linked to their Parent Quality Label in terms of their models (technical specification are the same, model designations may be different), validity and period of validity. Follow-Up Labels do not need new technical testing. Hence the application is simplified.

All application documents have to be sent to the national Quality Label Commission. By applying for a Quality Label, the applicant grants the right of access to the test data to the Quality Label Commission. The national Quality Label Commission inspects the documents for compliance with the regulations.

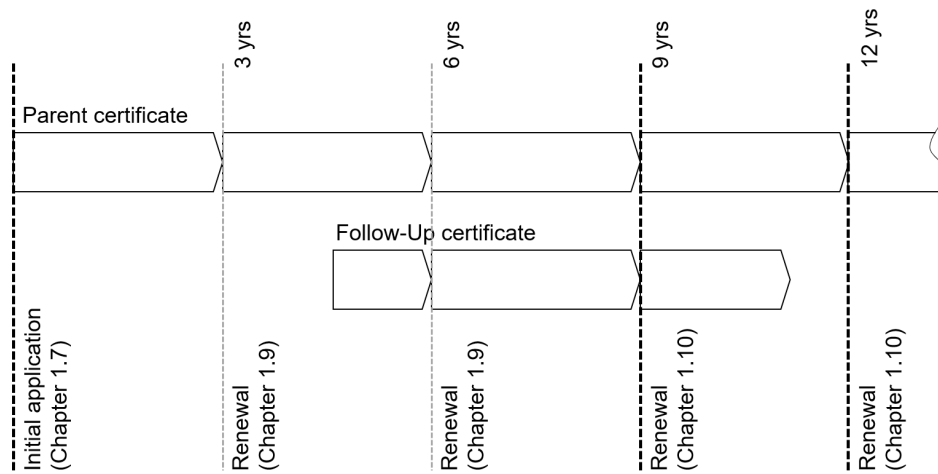
Application forms are available from the national Quality Label Commission or via online application.

If the Quality Label is granted, the applicant agrees that the test results according to test report level 2 (see chapter 2.6.6) or the *CEN heat pump Keymark certificate* will be published on the EHPA/member organisations website.



1.8 Validity of the Quality Label

Parent Quality Labels are valid for 3 years from the date of issue (labelling date) and may be continuously renewed (chapter 1.9). The validity period of Follow-Up Quality Labels corresponds to the validity period of their Parent Quality Label.



The Quality Label (Parent and/or Follow Up) and its associated rights for the products will expire:

- automatically after validity date (max. 3 years), if Quality Label is not being renewed
- if breaches of Quality Label rules and regulations occur
- if unauthorised changes (see point 2.6) are made to a labelled model
- if Quality Label issuing fees are not paid within three months after the issue of its invoice
- in case of misrepresentation of Quality Label information in advertising
- in case of revocation of the CEN heat pump Keymark certificate (in case the Quality Label is based on CEN heat pump Keymark)
- if the Quality Label holder is dissolved

The national Quality Label Commission will inform the holder of the Quality Label in writing of its intention to revoke the Quality Label. The Quality Label holder concerned has the right of appeal within 30 days.

Place of jurisdiction: the location of the respondent's headquarters in Europe.

1.9 Renewal of the Quality Label

If the holder of a Label wants to extend its period of validity, he must apply for a renewal at the national Quality Label Commission concerned. The Commission will decide on the application within three months. Renewals will be granted based on the regulations in force at the time of renewal. Expanding or modification of a model or a model range does not extend the validity of the Label.

In case the CEN heat pump Keymark is used to document unit performance the National Quality Label Commissions must be informed about any changes of the CEN heat pump Keymark certification that may occur due to the annual testing (e. g. performance data, revocation).

As of the third renewal, the Commission again carries out a detailed examination of the model(s) concerned. Therefore, the manufacturer must provide

- an EHPA test report based on the current EHPA testing regulations (chapter 2.6.6) OR
- a valid CEN heat pump Keymark Certificate (chapter 2.6.7) OR
- a technical assessment based on chapter 1.10

1.10 Technical assessment

The technical assessment is carried out by the national Quality Label Commission which may consult the national EHPA registered test centre. If there is no test centre in the country concerned, an external testing body must be appointed by the national Commission to carry out the assessment.

The technical assessment guarantees that SCOP requirement at the time of application is fulfilled. If changes of main components were made since initial application, the technical assessment provides evidence that these changes lead to an equivalent or better performance than the originally certified model.

Documentation to be delivered by the manufacturer and checked by the Commission:

- a. EHPA test report (Level 1) or CEN heat pump Keymark certificate from the initial labelling process. The test report must contain a full list of the main components
- b. An up-to-date list of the main components
- c. Current technical datasheet with efficiency values
- d. Any testing results of manufacturer or external testing labs (if available)

The Commission will check, if

- a. any changes to main components of initially tested unit occurred
- b. minimum SCOP value is fulfilled

If changes to main components occurred without reporting to the national Commission based on chapter 2.6 of these regulations, the national Commission can request a partial retest (chapter 2.6.1) prior to any further checking.

If no changes of main components occurred or those changes were already reported and decided upon by the national Commission, the Commission shall verify the efficiency data provided by the manufacturer. If the minimum efficiency value as stated in chapter 2.3. is reached without doubts (e.g. declared SCOP \geq minimum SCOP + permissible tolerance if main components changed), a renewal may be granted without further testing. If the manufacturer cannot provide the necessary information, a partial retest based on chapter 2.6.1 can be requested.

1.11 Modification of requirements

Stricter requirements (e. g. minimum SCOP) or a change of testing regulations during the validity period do not affect the validity. However, in the event of such changes, renewal of validity will require the heat pump to comply with the new performance requirements. If a model range is expanded, and testing is necessary, the additional unit or units can be tested according to the regulations valid at the time the basic range was initially tested.

1.12 Rights of Quality Label holders

The holder of the Quality Label is entitled to:

- a. mark the labelled model or model range with the Quality Label.
- b. attach the Quality Label logo to labelled model or model range.
- c. use the logo for marketing purposes in relation to the labelled model(s)

1.13 Responsibilities of Quality Label Holders

The holder of the Quality Label is responsible to:

- a. Changes of main components to labelled models must be immediately reported to the national Commission, who will then decide on continued validity of the Quality Label.
- b. Substantial changes of the customer service organization and warranty guidelines must be reported

immediately to the national Commission, who will check their conformity with these regulations.

1.14 Dissemination of information

The most recent regulations and information is provided on the EHPA website www.ehpa.org. It provides:

- a. List of participating countries, authorized test centres, and contact details of national commissions
- b. List of labelled heat-pump models
- c. Latest version of all documents governing the Quality Label.

1.15 Referenced Documents

The Quality Label Scheme consists of the following additional documents, which are available on the EHPA homepage:

- a. Quality Label Committee Rules and Regulations
- b. EHPA Testing Regulation – Testing of Air/Water Heat Pumps
- c. EHPA Testing Regulation – Testing of Air/Air Heat Pumps
- d. EHPA Testing Regulation – Testing of Water/Water and Brine/Water Heat Pumps
- e. EHPA Testing Regulation – Testing of Direct Exchange Ground Coupled/Water Heat Pumps EHPA
- f. EHPA Testing Regulation – Testing of Heat Pumps for Domestic Hot Water Production
- g. Application form(s)

2 Technical conditions and additional requirements

Heat pumps must meet the following technical conditions in order to be eligible for the Quality Label.

2.1 Model range definition

Different models which are built in a similar way can be combined in a model range.

The following characteristics need to be fulfilled:

Main components:

- a. The same refrigerant
- b. The same compressor technology
- c. The same expansion valve technology
- d. The same evaporator technology
- e. The same condenser technology
- f. The same construction of hot water storage tank incl. insulation (if storage integrated)
- g. The variable characteristics follow a regular pattern

Operating principle and control:

- h. The same defrosting principle
- i. The same refrigeration process (e. g. same number of compressors)
- j. The same principle of capacity control
- k. The same generation of control software. Same functional parts within the interior condenser casing

These conditions ensure that the performance figures of all models within a model range meet the requirements, even if only a limited number (see chapter 2.5) of a model range are tested.

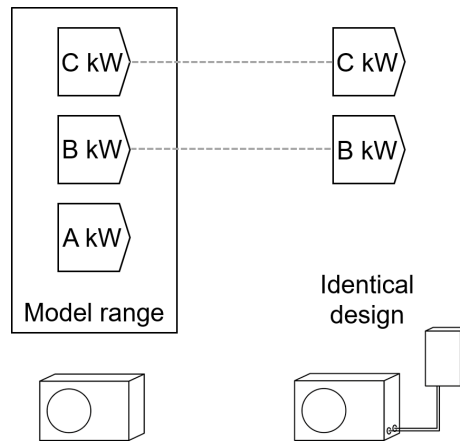
The main components and operating principle and control, as defined above, of the mass-produced unit and tested unit must be identical.

2.2 Heat pumps of identical design

Heat pumps may perform equally, even though the construction may not be entirely identical (e. g. by integrating a hot water storage tank). A heat pump is of “identical design” to a labelled model if it has identical

- a. heating capacity
- b. refrigerant cycle (incl. refrigerant mass)
- c. heat source and sink medium
- d. main components / operating principle and control (as described in 2.1)
- e. same outdoor casing

This ensures that the performance of this heat pump corresponds to the labelled model. Components that play no significant part in heat output, performance or sound level are not affected by the term “identical design”. Models that are of identical design to labelled models do not count to the number of heat pumps to be tested (see chapter 2.5). These models can also be labelled without any further technical testing, but they need to comply with all other requirements (incl. documentation according to chapters 1.7 and a).



Exampels (non-exhaustive):

- a. Heat pumps with/without integrated storage tanks
- b. Package unit (Monobloc) and split version (see figure above)
- c. Heat pumps with single/three phase(s) electrical supply
- d. Indoor/outdoor versions of a heat pump

Heat pumps of identical design do not require a separate Quality Label.

2.3 Minimum efficiency requirements

The performance figures (SCOP), determined in accordance with the EHPA heat pump test regulations must comply with the following minimum requirements:

Minimum SCOP requirements for heat pumps for space heating for average climate and low temperature application:

Brine to water:	4.30
Water to water:	4.30
Air to water:	3.50
Direct exchange ground coupled to water:	4.10
Exhaust air to water:	3.50
Air to Air:	3.40

Minimum SCOP requirements for heat pumps for space heating for average climate and medium temperature application (as of 1.7.2022):

Brine to water:	3.38
Water to water:	3.38
Air to water:	3.00
Direct exchange ground coupled to water:	3.38

Minimum requirements for heat pumps for domestic hot water production:

- a. Minimum reference hot water temperature of 52°C
- b. There is no minimum SCOP requirement for domestic hot water heat pumps

These requirements are subject to revision to reflect technical developments in components, plant etc. as well as modifications to legal requirements.

2.4 Permissible tolerances of declared performance data

Performance (efficiency, capacity), and sound power level data declared by the manufacturer (e. g. technical datasheet) must not deviate by more than $\pm 5\%$ (efficiency, capacity) and 2 dB(A) (sound power level) from the values determined by the test centre. If the test results deviate by more than 5 % / 2 dB(A) from the values declared by the manufacturer, the manufacturer’s values must be altered to those of the test results. Declared data of the units that were not tested are to be adjusted to the deviation found in the tested specimen.

2.5 Number of Heat Pumps to be tested according to EHPA Testing Regulations

Heat Pumps that use CEN heat pump Keymark to document unit performance must follow the Keymark scheme regulations.

Table 2.1: Number of heat pumps to be tested (space heating), depending on Heating Capacity (Q) according to EHPA Testing Regulations (Performance tests)

¹ n _{HP} serie	Ratio Q _{max} / Q _{min}	Q _{max} -Q _{min}	
		≤ 30 kW	>30 kW
≤ 4	-	1	2
> 4	≤ 3	2	2
> 4	> 3	2	3

Table 2.2: Number of heat pumps, to be tested (domestic hot water production). Depending on volume (V) water in the storage tank

¹ n _{HP} serie	V _{max} -V _{min}	
	≤ 300 L	>300 L
≤ 4	1	2
> 4	2	3

¹ n_{HP} serie indicates the number of heat pumps in a series (model range).

2.6 Changes to tested units

Changes to main components must be reported immediately to the responsible national Quality Label Commission. Heat Pumps that use CEN heat pump Keymark to proof unit performance must follow the CEN heat pump Keymark scheme rules and regulations. If the model range or the single model was tested according to EHPA Testing Regulations, the following rules apply.

The examining Quality Label Commission will decide whether the change concerned is substantial or not. Any changes made to existing quality labelled model ranges or single models must be set out in detail. Changes to main components are deemed insignificant if the following conditions are met:

- a. Compressor: The characteristics of the changed compressor are equal or better.
- b. Evaporator and condenser: The surface areas of the changed heat exchanger are equal or larger.
- c. Charge quantities: Changes to charge quantities are less than 15 %.

If the refrigerant circuit concept is changed (installation of an accumulator tank, suction line accumulator, intermediate injection, use of changed output control, defroster or defroster control or similar), retesting and/or partial retesting in accordance with EHPA test regulations will be required.

In each individual case, the original test centre will decide whether a design review, partial retest or complete retest is necessary.

The unit within the model range can be retained if it can be proven that after the component replacement, the performance labelled is equally good or better than for the original unit.

If the technology of one or more components is changed, the heat pump requires a new Quality Label application.

2.6.1 Partial retesting requirement

If an applicant is unable, or does not wish to submit detailed data on the changes made, a partial retest of the unit in accordance with EHPA Testing Regulations will be necessary. A partial retest comprises the determination of heat output and performance coefficients at three operating points for units using air as heat source and two operating points for units using brine, water or ground as heat source.

- a. Application documents

The documents need to be handed out in their final version, not a draft version. All documents shall be

- b. In local language (country of application) or English for documents addressed to the national Commission only (chapters 2.6.2 to 2.6.8)
- c. In local language for all documents for installers, planners and end-users (chapters 2.6.9 to 2.6.16)

The following minimum requirements on submitted documentation must be met.

2.6.2 Application forms

Depending on the type of application, the appropriate application form must be filled out completely, stamped and signed from a legally authorized employee of the applicant.

2.6.3 Model range confirmation

The model range confirmation must affirm, that the range of models follow the definition of EHPA model range (see chapter 2.1).

2.6.4 Confirmation of identical design

The confirmation of identical design must affirm that the listed models follow the definition of EHPA identical design (see chapter 2.2).

2.6.5 List of main components / Operating principle and control

The list of main components and description of operating principle and control need to contain a manufacturer's name, an exact manufacturer designations name or number and describing keywords for all main components (e. g. compressor technology).

2.6.6 Test Report in accordance to EHPA testing regulations

In case the heat pump unit is tested according to EHPA testing regulations, the applicant has to hand out a full test report (level 1) according to corresponding "EHPA Testing Regulation" with all details on measurements and a test report (level 2) which presents a summary of the results.

The test reports must include information about the technical data necessary for the allocation of the Quality Label, such as heat output, SCOP, flow rates, heat transfer medium and refrigerant mass and for direct expansion heat pumps, a description of the evaporator. For tests of a model range, one to three representative models (see chapter 2.5) are tested separately and appropriate technical data for the applicant's remaining models are declared.

The test report 2 must refer to both the CEN standard used and the EHPA rules and regulations. Both test reports must clearly state that the test centre is accredited for the used method and the tests are performed under this accreditation.

A test report is only valid, if it is signed with a digital signature certificate or by hand.

2.6.7 CEN heat pump Keymark Certificate

The submitted documents must include the report of the technical data of each model of the model range and the certificate-number.

2.6.8 Confirmation of equivalence

The confirmation of equivalence shall confirm that model(s) with name(s) "A" are equivalent to model(s) with name(s) "B" in the following cases:

- a. Parent Quality Labels: Application model names are different to those on the test report or CEN heat pump Keymark
- b. Follow-Up Quality Labels: Model names are different to those on the Parent Quality Label
- c. Follow-Up Quality Labels: The Parent Quality Label holder is different to the Follow-Up Quality Label applicant, whether the model names are different or not.

Equivalent means that the models consist of exactly the same components and have the same construction and the same casing (except the colour).

2.6.9 Engineering documents, technical datasheets, installation manuals and information:

- a. Operating range
- b. Type of refrigerant and mass
- c. Performance data covering heat output, efficiency and drive (input) power over the whole operating range
- d. Flow rates sink/source side
- e. SCOP for all temperature applications (as far as applicable)
- f. Volume of storage tanks (if applicable)
- g. Sound power level according energy labelling-regulation
- h. Maximum sound power level(s) (over the whole operating range) incl. corresponding heating capacity
- i. Maximum sound power level(s) of silent mode(s) incl. corresponding heating capacities (if applicable)
- j. Weight of the heat pump
- k. Starting / Maximum current
- l. Installation regulations
- m. Installation aspects regarding safety requirements
- n. Dimension drawing(s) of the heat pump, incl. minimum clearances
- o. General information and safety recommendations for installation
- p. Schematic diagrams: Refrigerant, water circuits, electrical system

2.6.10 Operating manuals and information

- a. General information and safety recommendations for proper use
- b. Spare parts lists with item numbers or type name and name of manufacturer / supplier
- c. Heat pump operation (start-up, temperature adjustment, manual operation)
- d. Maintenance
- e. Trouble-shooting
- f. Customer service contact data

2.6.11 EU Declaration of Conformity

The EU Declaration of Conformity must affirm that the concerned models meet the current EU and national regulations and standards, and it is to be signed by a legally authorized employee of the applicant.

2.6.12 Declaration of Conformity to national regulations and standards

This declaration is necessary just if the application country is not part of the European Union. It must affirm, that the concerned models meet the current national regulations and standards and is to be signed by a legally authorized employee of the applicant.

2.6.13 Energy Label and datasheet

For heat pumps with a rated heat output ≤ 70 kW, an Energy Label and technical documentation (“datasheet”) is mandatory.

For heat pumps with a rated heat output ≤ 400 kW, only a technical documentation (“Datasheet”) is mandatory.

The content of the Energy Label and technical documentation needs to fulfil the Commission Delegated Regulation (EU) No 811/2013, 812/2013, 813/2013 and 814/2013.

2.6.14 Customer service organisation

A functioning and qualified customer service network must be established in the sales area. Customer service must be available on site (reaction time) within 24 hours when necessary. How to get in contact with customer service and/or contact addresses for the sales areas must be listed in the manual and/or made easily available on a service website.

2.6.15 Minimum requirements for warranty

Two years full warranty on the heat pump, commencing from the date of purchase must be granted to the end customer. The warranty shall include a declaration on the availability of heat pump spare parts for at least ten years .

2.6.16 Commissioning and repair documentation

The heat pump documentation must include at least a template for the installation/repair log.

3 Handling of controversial issues

In case of doubt, difficulty or of controversial application of the rules and regulations by a National Commission or a test centre, the case shall be reported to the International Quality Label Committee which is the superior decision-making body.

4 Annex

Checklists for application documents of different application procedures are available on the EHPA homepage.