



Meeting DTI-Ecodesign and energy labelling in practice –experience, challenges, regulation and impacts|14th-15th November 2016|S. Pähler M.Sc.

**CEN HP-KEYMARK Scheme**

**STIEBEL ELTRON**



**2900**

EMPLOYEES  
WORLDWIDE

**1900**

EMPLOYEES IN GERMANY,  
**1400** OF THEM  
IN HOLZMINDEN

**24**

SUBSIDIARIES

**120**

SALES OFFICES

- We are a global market leader and technological pioneer in home comfort and renewable energies
- Our technical proficiency, quality, innovation, reliability and customer-oriented service stand us out of the crowd
- The medium-sized group of companies is owned by Frank Stiebel and the Stiebel Family Trust (created by Dr Ulrich Stiebel), each of whom holds 50 % equity

# Global production facilities



## **Holzminden** Germany

Main production site  
(heat pumps, instantaneous water heaters, DHW cylinders etc.)



## **Eschwege** Germany

Plastic parts and  
small water heaters



## **Ayutthaya** Thailand

Small instantaneous water  
heaters and shower units



## **Poprad** Slovakia

DHW cylinders and heat pumps



## **Tianjin** China

Electric room heaters

# Tailor-made solutions

selected from 30,000 system versions



Ventilation



Ground source heat pumps



Air source heat pumps



Solar thermal and photovoltaics

RENEWABLES



Instantaneous water heaters



Small water heaters



Wall mounted water heaters / cylinders



Floorstanding cylinders

HOT WATER

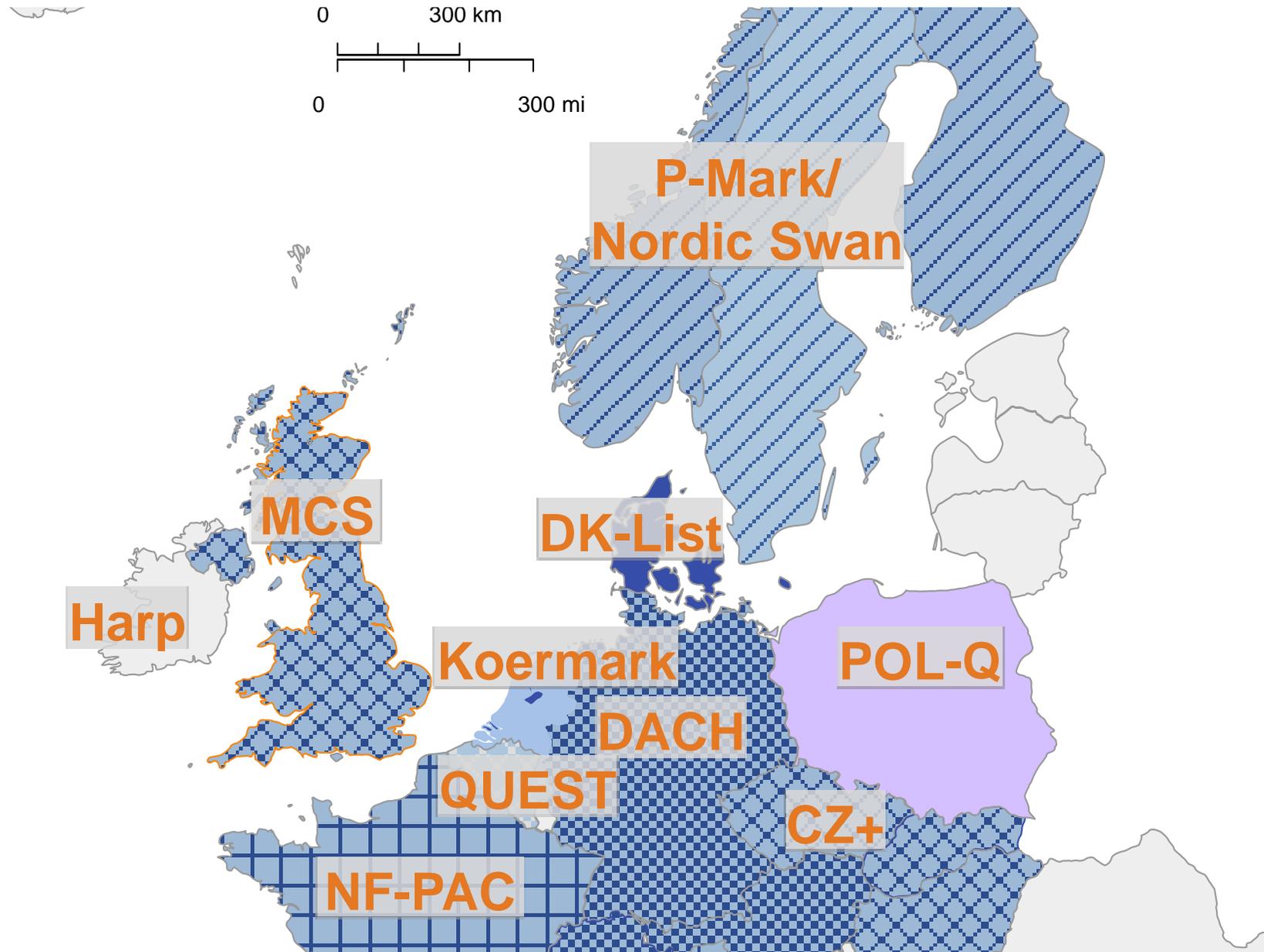


Direct heaters



Comfort heating

ROOM HEATING



# Participants of the heat pump KEYMARK network



# A true certification scheme according ISO 17065 by CEN CENELEC

The ERP performances to be certified on the basis of European standards :

For space heating heat pumps:  $P_{rated}$ ,  $\eta_S$  and sound for average climate at the highest certified application temperature

For combination heat pump :  $P_{rated}$ ,  $\eta_S$ ,  $\eta_{DHW}$  and sound for average climate at the highest certified application temperature

For water heat pumps:  $\eta_{DHW}$ ,  $V_{40}$  and , sound for average climate at the highest certified application temperature

Testing according EN 14511- 4

Factory production control and Quality system

Declared data of the manufacturer are reproducible and true

Model range approach

Yearly surveillance (random choice by CB of unit and some testing points)

Re-rating procedure system (3 step approach)

- Heat pumps covered by Lot 1 and Lot2
  - heat pump space heaters
  - heat pump combination
  - Heat pump water heaters
- Thermal capacity up to 400kW
  - **complement self declaration** as required by EU regulations

### 813/2013

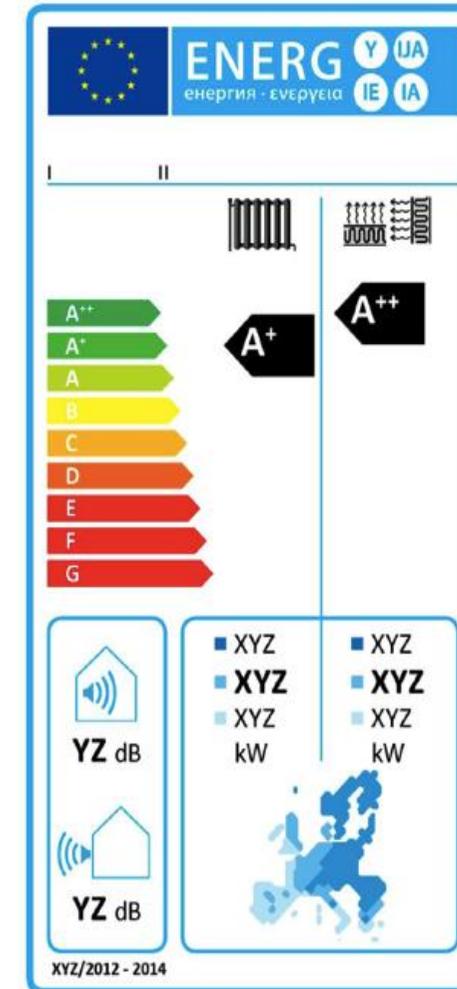
- EN 14825
- EN 12102

### 814/2013

- EN 16147
- EN 12102

### Future

Lot 10 (heat pump air/air)



## **Type definition**

A type is declared by the manufacturer. All heat pumps defined by a type must use the same heat source, heat sink and driving energy (gas, electricity etc.). The types covered by the KEYMARK Scheme are:

- Air/water - heat pumps
- Water/water (including brine/water) - heat pumps
- DHW heat pumps
- Exhaust air/water - heat pumps
- Direct expansion/water - heat pumps

**1.e.g. B/W 5kW, B/W 7 kW, B/W 10 kW → same types**

**2.e.g. A/W 5 kW; A/W 7 kW, A/W 10 kW → same types**

## Model range definition (Annex A)

### Sub-type definition

A sub-type is part of a type. Heat pumps with an identical refrigeration circuit design are considered as being the same sub-type if they fulfill all conditions below:

- Same compressor: identical (same manufacturer and commercial reference)
- Same condenser and evaporator: identical (same manufacturer and commercial reference)
- Same defrost process (when relevant)
- Expansion device: same technology

In addition for heat pumps only designed for domestic hot water production:

- Same tank volume
- Same heat exchanger

e.g. **A/W 5 kW (same refrigerent circuit, but just heating),  
A/W 5 KW same refrigerent circuit, but heating and cooling),  
→ same sub-type**

### Model definition

A sub-type may consist of several different models, i.e. heat pumps using identical refrigeration circuits, but otherwise differ in design. Examples of such differences are given, but not limited to the list below

- With or with-out integrated circulator pump(s)
- With or with-out integrated storage tank
- With or without integrated back up heater
- Different sizes and corrosion protection of storage tank(s)
- Different location and dimensions on pipe connections
- Different brand names

e.g. **Model 1: A/W 5 kW (same refrigerant circuit, but just heating),**  
**Model 2: A/W 5 KW same refrigerant circuit, but heating and cooling),**

e.g. **Model 1: A/W 5 kW (same refrigerant circuit, with DHW storage tank),**  
**Model 2: A/W 5 KW same refrigerant circuit, without DHW storage tank),**

→ same sub-type different model

### Low temperature heat pump

1. A7/W35 (EN 14511-2)
2. Bivalent point (EN 14825), average climate
3. One other testing condition to be chosen by the certification body (EN 14825, average climate)
4. For any other climate, bivalent testing point shall be tested (EN 14825)

### Medium temperature heat pump

1. A7/W35/55 (EN 14511-2)
2. Bivalent point (EN 14825, average climate)
3. One other testing condition to be chosen by the certification body (EN 14825, average climate)
4. For any other climate, bivalent testing point shall be tested (EN 14825)

### Domestic hot water tests

- Tests shall be carried out according to EN 16147

### Safety test (EN 14511-4)

Air/Water

1. chapter 4.2.1 starting test according to table 1
2. chapter 4.4 shutting off the heat transfer medium flow
3. chapter 4.5 complete power supply failure
4. chapter 4.7 defrost test

Brine/Water

1. chapter 4.2.1 starting test according to table 1
2. chapter 4.4 shutting off the heat transfer medium flow
3. chapter 4.5 complete power supply failure

Water/Water

1. chapter 4.2.1 starting test according to table 1
2. chapter 4.4 shutting off the heat transfer medium flow
3. chapter 4.5 complete power supply failure

### Acoustic characteristics

Acoustic test according to EN 12102 for average climate at the highest certified application temperature

### Gas-fired absorption and adsorption air-conditioning

EN 12309-5 and EN 12309-6

# Certificate of HP KEYMARK



## CERTIFICATE

**Certificate holder** Stiebel Eltron GmbH & Co. KG  
Dr.-Stiebel-Str. 33  
37603 Holzminden  
GERMANY

**Production facility** Holzminden

**Product** Heat pumps

**Type, Model** Air/Water - WPL 25 AS, WPL 25 ACS

**Testing basis** DIN EN 14511-1:2013-12  
DIN EN 14511-2:2013-12  
DIN EN 14511-3:2013-12  
DIN EN 14511-4:2013-12  
DIN EN 12102:2013-10  
European KEYMARK Scheme Heat Pumps Rev. 1.1 (2016-05)

**Mark of conformity** 

**Registration No.** 011-1W0003

**Valid until** 2026-08-31

**Right of use** This certificate entitles the holder to use the mark of conformity shown above in conjunction with the specified registration number.  
See annex for further information.

2016-08-11  
Robert Zorn M.Sc.  
Managing Director





DIN CERTCO Gesellschaft für Konformitätsbewertung mbH · Albinstraße 56 · D-12103 Berlin · www.dincertco.de

	<b>Heat Pump KEYMARK</b>	 TÜVRheinland® DIN CERTCO Genau. Richtig.
<b>Annex D1</b> Data sheet template	Rev.-No.: 1 Date: 14.12.2015 Page: 1 of 7	

Data has to be declared for all Models inside a sub-type.

**1. AIR/WATER; BRINE/WATER; WATER/WATER HEAT PUMPS (IF APPLICABLE)**

Certificate data	
Certificate holder name	Stiebel Eltron GmbH & Co. KG
Address	Dr.-Stiebel-Straße 33, 37603 Holzminden Germany
Type of heat pump	Air/Water
Reg. No.	011-1W003
Certification Body	DIN CERTCO Gesellschaft für Konformitätsbewertung mbH
Name of testing laboratory	VDE Prüf- und Zertifizierungsinstitut

	<b>Heat Pump KEYMARK</b>	 TÜVRheinland® DIN CERTCO Genau. Richtig.
<b>Annex D1</b> Data sheet template	Rev.-No.: 1 Date: 14.12.2015 Page: 4 of 7	

Average Climate Low temperature application (if applicable)		
Declared values EN 14825		
$T_{biv}$ [°C]	$T_{biv}$ at low temperature conditions	
heat output [kW]	11,8	11,8
El input [kW]	3,71	3,71
COP	3,18	3,18
Sound power level according EN 12102		
Sound power level indoor if relevant) [dB(A)]	-	-
Sound power level outdoor [dB(A)]	(See 55° C application)	(See 55° C application)
Declared data regarding ErP regulation		
$\eta_p$	177	177
$P_{rated}$ [kW]	15	15
SCOP	4,35	4,35
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature $T_j$		
$P_{dh}: T_j = -7 °C$ [kW]	13,0	13,0
$COP_{dh}: T_j = -7 °C$	3,02	3,02
$P_{dh}: T_j = +2 °C$ [kW]	8,0	8,0
$COP_{dh}: T_j = +2 °C$	4,40	4,40
$P_{dh}: T_j = +7 °C$ [kW]	8,1	8,1
$COP_{dh}: T_j = +7 °C$	5,64	5,64
$P_{dh}: T_j = +12 °C$ [kW]	7,2	7,2
$COP_{dh}: T_j = +12 °C$	7,41	7,41
$P_{dh}: T_j = \text{bivalent temperature}$ [kW]	11,8	11,8
$COP_{dh}: T_j = \text{bivalent temperature}$	3,18	3,18
$P_{dh}: T_j = -15 °C$ (if $TOL < -20 °C$ ) [kW]	17,8	17,8
$COP_{dh}: T_j = -15 °C$ (if $TOL < -20 °C$ )	2,68	2,68
$T_{biv}$ [°C]	-5	-5
TOL [°C]	-20	-20
WTOL [°C]	65	65
Annual energy consumption $Q_{he}$ [kWh]	6731	6731
Power input „compressor off“	10	10
$P_{off}$ [W]	16	16
$P_{TO}$ [W]	16	16
$P_{SB}$ [W]	16	16
$P_{OK}$ [W]	42	42
$P_{SUP}$ [kW]	0,00	0,00
Type of energy input (e.g. electricity)	electricity	electricity

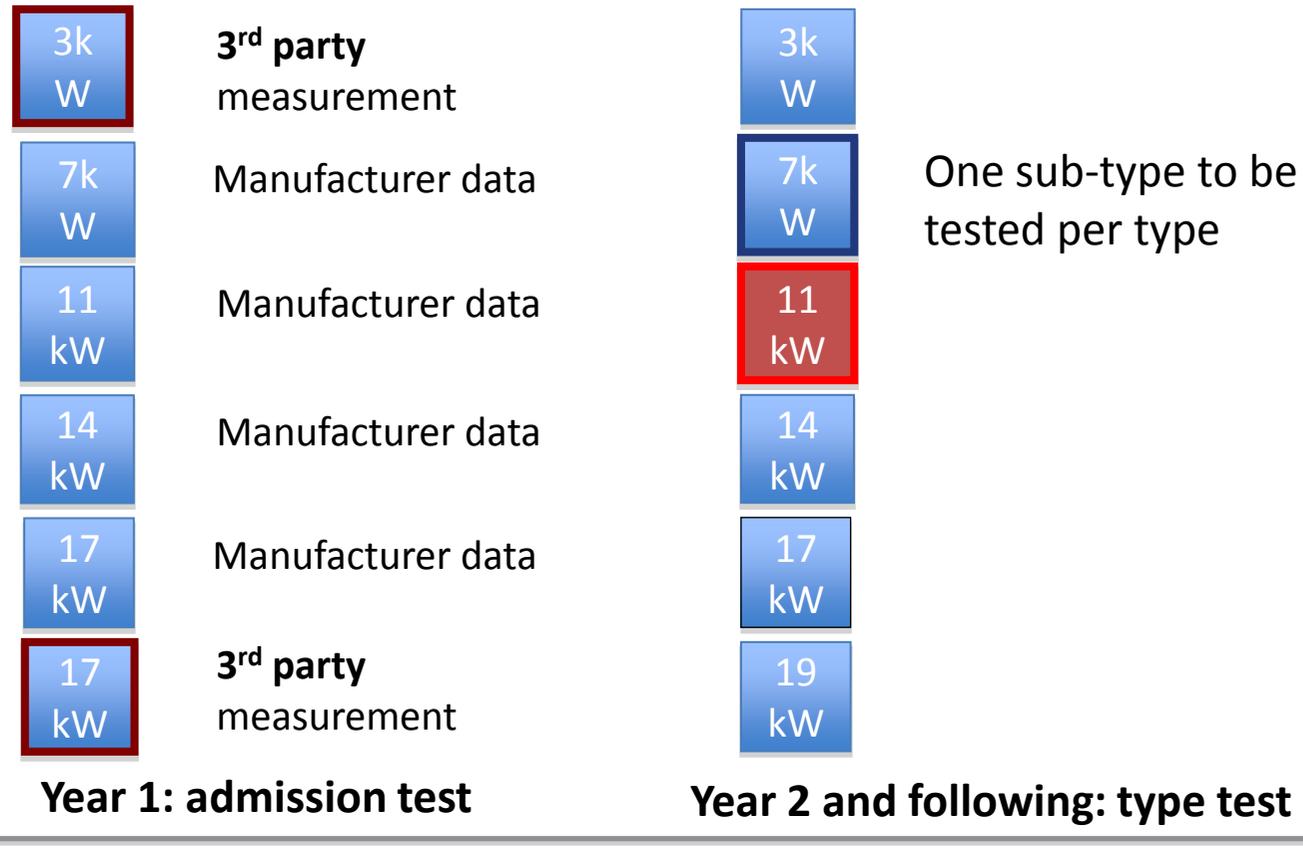
database DIN CERTCO:

<http://www.dincertco.tuv.com/search?locale=en&q=Stiebel+Eltron>

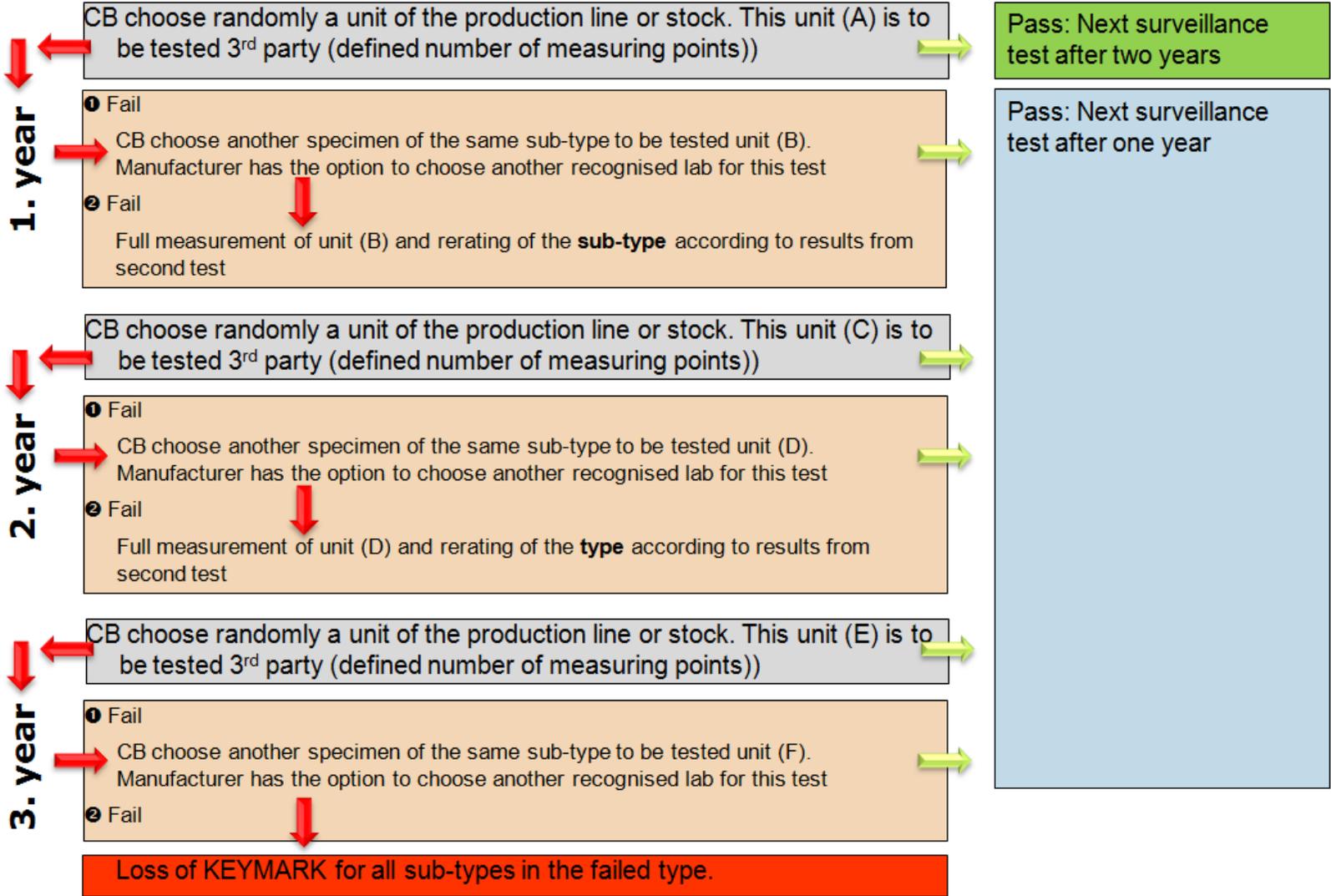
CEN CENELEC database:

<http://esearch.cen.eu/keymark/>

Type: Air-water  
6 subtypes



# Penalty Scheme



## From authorities point of few

- test data is certified according ISO 17065
- penalty scheme
- yearly surveillance
- Factory Production Control (FPC)
- comparability with other manufactures → same certified values
- can be used for evidence of market surveillance

## From manufacturer point of few

### *Reduction of cost and time saving in a medium term*

- Only one approval for all European countries
- Only one FPC for all European countries
- Less initial testing → fast introduction of the heat pumps on the market

### *Sales benefits*

- Good comparability with competitors - Equivalent certification system in whole Europe to evaluate the heat pumps
- The certificate could be used as an evidence for subsidies

# Staus quo European Countries

Country	Specifications	Organisation	Action	In charge	Du date	Status
UK	MCS required for subsidies => equivalence between HP-keymark and MCS for product certification IS needed	OFGEM	Meeting organised to discuss about MCS equivalence	Martin Forsen		done
		OFGEM	To be contacted again in september			
Germany	HP to be listed in BAFA list to get the subsidies => acceptance of HP-keymark certified product in the BAFA list is needed	BAFA	Next meeting is scheduled to make a decision	Johannes Brugmann	2016-09-12	Posponed
France	For RT2012, EN14511 data is used and shall be certified => acceptance of EN14825 certified data was requested	DHUP	Methodology for declaring a performance matrix using EN 14825 data instead of EN 14511 has been provided and accepted by DHUP. Official acceptance and publication are expected soon	Michèle Mondot		
Czech	certified ErP data required to get subsidies	CZ government	first discussion with the goverment	Vaclav Helebrant		
Danemark	HP to be listed in positiv list to get the subsidies => acceptance of HP-keymark certified product in the positiv list is needed		First meeting organised			Done
		DTI	Next meeting to be organised	Thomas Nowak		
Nordic countries	Nordic countries are looking for conditions to give the subsidies	Swedich Energy agency	Meeting organised in Stockolm to present the HP-Keymark New meeting to be organised	Martin Forsen	2016-04-12	done 
Austria	EHPA Quality label requirements	AIT	HP KEYMARK can be used to tarnsfer it to EHPA			
Switzerland	EHPA Quality label requirements	FSW	HP KEYMARK can be used to tarnsfer it to EHPA			
Ireland	EPBD requirements => acceptance of EN14825 certified data-was requested	SEAI	HP KEYMAR is introduced , general exaptance by the SEAI, final decision by HPAI Next step, get HP KEYMARK listed on Harp List	Stephan Pähler	2016-09-12	
Poland	EHPA Quality label requirements	PORT PC	Discussion about HP KEYMARK to uses itin alternative of EHPA Quality Label		January 2017	
Netherlands	Kiwa (certification body)	DHPA	Discussion about HP KEYMARK to uses it in alternative of certified data from kiwa	Jaap Akueme Harold Pauwels	Novemb er 2016	

# Participants

## Certification Bodies

- DIN CERTCO
- SP Technical Research Institute
- SZU Engineering Test Institut
- VDE Prüf- und Zertifizierungsinstitut GmbH
- BRE Global (in process)
- BBA British Board of Agreement

## Test Center

- Austrian Institute of Technology, Austria
- CEIS, Spain
- CERTIAT, France
- Universität Stuttgart Institut für Gebäudeenergetik
- TÜV Rheinland Energy GmbH
- VDE Prüf- und Zertifizierungsinstitut GmbH
- SP – Sweden Cert (SE; empowered)
- SZU – Strojírenský zkušební ústav, s.p. Cert (CZ; empowered)
- BSRIA (test center BBA)

[www.heatpumpkeymark.com](http://www.heatpumpkeymark.com)

## Inspectors

- Christian Köfinger (AIT)
- Ansgar Pomp and Reiner Verbert (TÜV Rheinland Energy)
- Helmut Böhn (VDE)
- Universität Stuttgart, IGE

## Companies

- Nibe
- Atlantic
- Stiebel Eltron
- Vaillant
- Viessmann
- Ochsner
- Glen Dimplex
- Daikin

# **Thanks for Attention !**

**Invitation to the development group for the air-air heat pumps on 28.11.2016 in Brussels**

**European Heat Pump Association AISBL  
Rue d'Arlon 63-67  
1040 Brussels**