Heat Pump KEYMARK certification: The key to access the European market

15 June 2023 at 10.00 (CET)

ehpa

heat pump KEYMARK

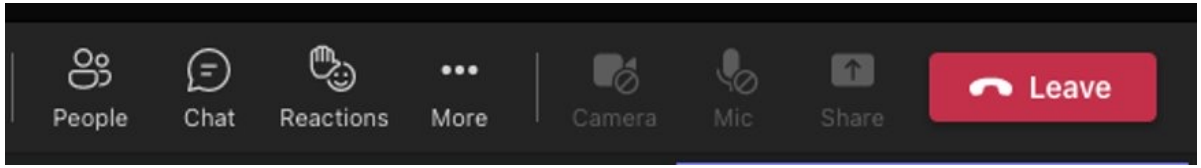
Heat Pump KEYMARK Certification Scheme WEBINAR – 15 June 2023

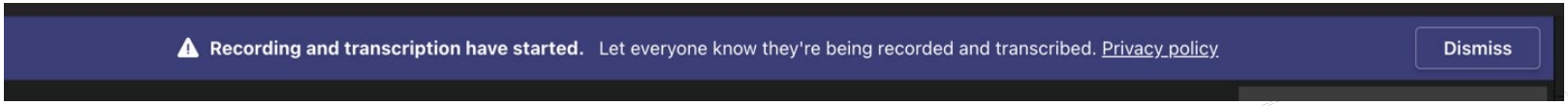
With the participation of

Agenda

Time	Topic	Speaker
10:00-10:05	Welcome & Introduction of EHPA	Danaé Kokkalis (EHPA)
10:05-10:30	Introduction to HPK & certification process	Tarik Bellahcene (EHPA)
10:30-11:00	Testing procedure & Factory Production Control	Mario Reimbold (TÜV Rheinland Energy GmbH)
11:00-11:15	Testimonial from certification holder	Tom Lapere (Daikin Europe N.V.)
11:15-11:30	Recognition of the HPK scheme	Tarik Bellahcene (EHPA)
11:30-12:00	Q&A session	

Teams webinar platform interaction





Feel free to ask your questions in the chat.
Don’t forget to mention the name of the speaker you would like to address your question to.

Introduction to EHPA

EHPA & KEYMARK

Our vision

In a fully decarbonised Europe, heat pump technologies are the number one heating and cooling solution, and a core enabler for a renewable, sustainable and smart energy system.

Our mission

EHPA is a forward-looking association aiming at putting heat pumps at the centre of the energy system by communicating the benefits of heat pumps, providing relevant information and being a reference point and integrator to all stakeholders.

Policy Department

EHPA is the voice of the heat pump sector in the European Union and advocates to raise awareness and create a market environment that facilitates a faster deployment of heat pumps, to unleash their benefits on a European level. Policy work is naturally at the cornerstone of EHPA's activities.

Policy Toolbox
for members only

The website

- Summarised policy status of each major policy dossier
- What's currently high on the agenda
- All relevant documents from EU, EHPA, and Stakeholders
- Concrete proposals on how to get involved

The Weekly Wrap-up

- Fresh Policy news every week!

The Weekly Policy Chat

- Come and chat with us every Friday morning!

For more details send us an email **policy@ehpa.org**

Heat Pump Keymark

The **Heat Pump KEYMARK** is a voluntary European certification mark (ISO type 5 certification) for all heat pumps, combination heat pumps and hot water heaters. The scheme is owned by the European Committee of Standardization (CEN) and is executed by empowered certification bodies across Europe.

Benefits of the Heat Pump KEYMARK

- A single certificate open to all interested parties
- Third-party based on test points from Ecodesign
- Regular factory production control and check of quality management
- Products tested once and recognised everywhere!

secretariat@heatpumpkeymark.com

Our Projects

EHPA is actively involved in several European Funded projects that are part of the H2020, Interreg and Tender programmes, with excellent projects able to apply for the annual Heat Pump Award:

SunHorizon
Coupling Solar PV with Heat Pump Technology

RHC Platform
Multisectorinnovation on Renewable Heating and Cooling

REWARDHeat
Innovating the district heating and cooling sector by developing new technologies and enabling the exploitation of a urban available and sustainable fuel mix

HP4All
Heat Pumps Skills for NZEB construction

Tender
Overview of Heating and Cooling: Perceptions, Markets and Regulatory Frameworks for Decarbonisation

SuperHomes2030
Up-scaling integrated deep renovation home services for Ireland

Heat Pump Award
Where innovative Heat Pump Technology gets recognised

Learn more about our projects:

Contact us **projects@ehpa.org**

Visit our website **ehpa.org/projects**

These projects have received funding from the European Union's Horizon 2020 research and innovation programme under grant agreements No. 857811 (REWARDHeat); No. 890492 (Superhomes2030); No. 891775 (HP4All); No. 825998 (RHC Platform); No. 818329 (SunHorizon)

Introduction to the scheme & certification process

Tarik Bellahcene
HPK Secretariat

Heat Pump KEYMARK Certification Scheme

Tarik Bellahcene
Heat Pump KEYMARK Secretariat
Brussels, June 2023

Introduction to KEYMARK

Introduction to KEYMARK

- The KEYMARK is a voluntary European quality mark for products and services. It is owned by the European standardization organizations CEN and CENELEC

- The KEYMARK quality mark is granted by following a certification process that demonstrates compliance with European Standards and Ecodesign requirements

- The KEYMARK quality mark is issued by empowered certification bodies

KEYMARK quality mark for various types of products

- As a rule, the KEYMARK can be issued for all products and services, that are subject to a European Standard (EN)

- KEYMARK quality mark cover various sectors such solar thermal products, thermal insulation materials, thermostatic radiator valves, ceramic tiles, heat pumps or fire extinguishers

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KEYMARK quality mark scheme for Heat Pumps

KEYMARK quality mark for Heat pumps - Stakeholders

- The European KEYMARK Certification Scheme and rules for heat pumps were developed by:
  - Heat Pump Scheme Group (HPSG)
  - Heat Pump Steering Committee (HPSC)
  - Heat Pump KEYMARK Secretariat run by European Heat Pump Association (EHPA)
- Involving directly the following stakeholders and interested parties:
  - Manufacturers
  - Testing Laboratories
  - Certification Bodies
  - European Heat Pump Association
- With support and supervision of KEYMARK Management Organisation (KMO) on behalf of CEN

Heat Pump KEYMARK Secretariat - Our Mission

KEYMARK RECOGNITION IN ALL MEMBER STATES

ESTABLISHED BRAND AWARNESS AND NEW PARTICIPATING BODIES

IMPROVED DATABASE EXPERIENCE

KEYMARK quality mark for Heat Pumps - Trends

2022 recorded highest number of new certificates since launch of the scheme

Importance of KEYMARK certification scheme is continuously increasing as HP represents a solid option to face energy market pressure and decarbonisation efforts

Growing recognition of HPK Certification thanks to a solid communication plan

HP KEYMARK scheme is generating a lot of interest from both the manufacturing and TIC sectors. Significant increase of participants from both sides was recorded past 12 months

KEYMARK quality mark for Heat Pumps
Scope and products classification

KEYMARK quality mark for Heat pumps – Scope

The scope of this KEYMARK scheme encompasses a large variety of heat pumps. This includes:

- Heat pump space heaters providing heat to water-based central heating systems for space heating purposes, with heating capacities up to 400 kW
- Heat pump combination heaters providing heat to water-based central heating systems for space heating purposes and heat to deliver DHW, with heating capacities up to 400 kW
- Heat pump water heaters, which are dedicated to providing DHW, with heating capacities up to 400 kW
- Air/air heat pumps up to 12 kW cooling capacity (or heating capacity for air/air heating only products)

KEYMARK for Heat pumps
Products classification – **Type**

- A type of heat pumps is defined by the use of the same:
  - Heat source
  - Heat sink
  - Driving energy

- The types covered by the KEYMARK Scheme are:
  - Outdoor air (or exhaust air)/water - heat pumps
  - Water (or brine)/water - heat pumps
  - Direct expansion/water - heat pumps
  - Air/air – outdoor air/recycled air heat pumps and air conditioners

KEYMARK for Heat pumps
Products classification – **Subtype**

- A sub-type is part of a type

- Heat pumps with an identical refrigeration circuit design, including same refrigerant and mass of refrigerant are considered as being the same sub-type if they fulfil all conditions below:

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

KEYMARK for Heat pumps
Products classification – **Model**

- A sub-type may consist of several different models

- Heat pumps using identical refrigeration circuits, but differ in design such:
  - With or without integrated circulator pump(s)
  - With or without integrated storage tank
  - With or without integrated back up heater
  - Different corrosion protection of storage tank(s)
  - Different location and dimensions on pipe connections
  - Different electrical supply (frequency, single/three phases)
  - Different brand names

KEYMARK quality mark for Heat Pumps
Standards and References

KEYMARK quality mark for Heat pumps - Testing references

- KEYMARK scheme provides on-going independent assessment and approval to demonstrate that heat pump(s) meets and continues to meet the requirements of COMMISSION REGULATION (EU) No 813/2013 or 814/2013 of 2 August 2013 or COMMISSION REGULATION (EU) No206/2012 of 6 March 2012 including testing which is compliant with the appropriate European standards listed below:
    - EN 14511
    - EN 12309
    - EN 16147
    - EN 14825
    - EN 12102-1
    - EN 12102-2
    - EN 15879-1
    - EN 16905
    - EN 13203-5
    - CEN/CENELEC Internal Regulations

KEYMARK quality mark for Heat pumps - Ecodesign, Energy Labelling

- ENER Lot 1 on Space and combination heaters
  - Ecodesign: Regulation 813/2013
  - Energy Labelling: Delegated Regulation 811/2013
- ENER Lot 2 on Water heaters and tanks
  - Ecodesign: Regulation 814/2013
  - Energy Labelling: Delegated Regulation 812/2013
- ENER Lot 6 on Ventilation units including multifunctional units
  - Ecodesign: Regulation 1253/1024
- ENER Lot 10 on Air conditioners, air-to-air heat pumps, & comfort fans
  - Ecodesign: Regulation 206/2012
  - Energy Labelling: Delegated Regulation 626/2011

KEYMARK quality mark for Heat Pumps
A Third Party Certification Process

KEYMARK quality mark for Heat pumps – Verified by a third party

- Certification Bodies are accredited for the relevant European standards on the basis of ISO/IEC 17065. CBs are empowered by the KEYMARK Management Organization

- Laboratories having an ISO 17025 accreditation for one or more of the relevant standards and test methods as defined and used in HP KEYMARK and recognized by a certification body

KEYMARK for Heat Pumps - Certification Decision

The KEYMARK quality mark for Heat Pumps remains a strong quality reference for the heat pumps industry

The KEYMARK certification scheme is maintained by

HP KEYMARK Testing Laboratories

30

+25 %*

HP KEYMARK Certification Bodies

10

* When comparing June 2022 to June 2023

KEYMARK quality mark for Heat pumps - Certification Bodies

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Associação para a Certificação de Produtos

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CENTRALNY OŚRODEK CHŁODNICTWA
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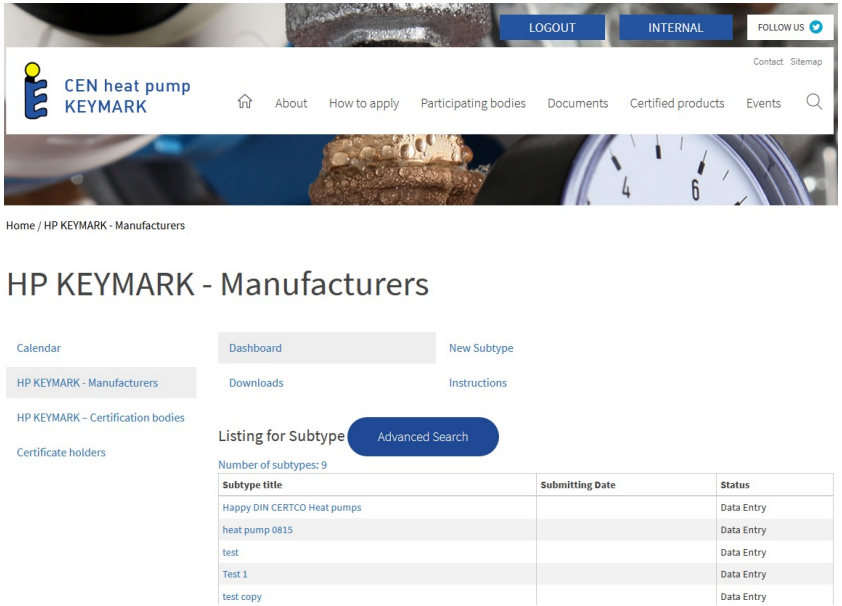
KEYMARK quality mark for Heat pumps - Testing laboratories

KEYMARK quality mark for Heat pumps - Certification process

1. Application: manufacturers or distributors contact one of the empowered certification bodies of their choice
2. Factory inspection and product sampling by an authorized inspector
3. Testing of the sampled units by an authorized testing institute chosen by the manufacturer among the ones recognized by the certification body
4. Conformity assessment of all the reports and documents by the certification body
5. Annual monitoring

KEYMARK quality mark for Heat pumps - Database entry by the manufacturer

The applicant declares the values of the heat pumps in the heat pump KEYMARK database and submit the entries to the certification body for the review.



KEYMARK quality mark for Heat pumps – Extension of KEYMARK certificates to OBL* products

Heat Pump KEYMARK Scheme contains rules for extending HP-KEYMARK certificates to products sold under different brand or/and model name.

The knowledge and following of these rules by the involved parties (manufacturers, testing laboratories, inspection bodies and certification bodies CB) ensures a harmonised procedure

**OBL : Own Brand Labelling*

For further details please refer to Heat Pump KEYMARK Scheme Rules (https://keymark.eu/en/products/heatpumps/documents)

Testing procedure & Factory Production Control

Mario Reimbold
TÜV Rheinland Energy GmbH

ehpa

heat pump KEYMARK

HP Keymark Webinar
Testing Procedures
& Factory Production Control

May 15th 2023

Mario Reimbold

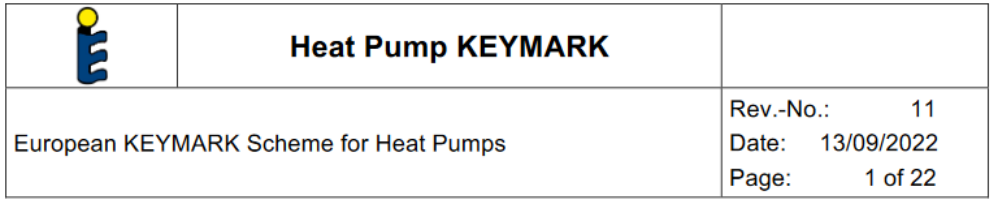
TÜVRheinland®
Genau. Richtig.

Agenda

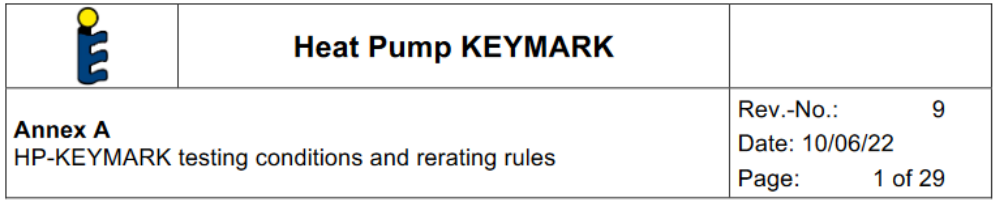
Kapitel	Thema	Dauer	Referent	Seite
1	Overview			
2	Testing Procedure | First Admission & Surveillance Tests			
3	Testing Procedure | Sound Measurements			
4	Factory Production Control			
5	Physical Inspection & Picking			

Overview

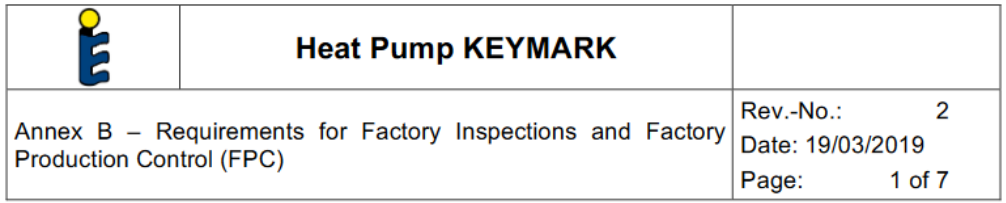
- **Electrical driven heat pumps**
  - Space heating/cooling heat pumps
  - Domestic Hot Water heat pumps
  - Combination heater heat pumps
  - Hybrid Systems (Gas+ HP)
- **Heat pump Technology**
  - Air to Water
  - Brine to Water
  - Air to Air
  - Direct Exchange to Water
- **Different tests**
  - First admission tests
  - Surveillance tests
  - Periodic testing approach
    or one off admission testing approach
  - Efficiency, Operating and Sound tests
- **Audits**
  - Factory Inspection
  - Physical Inspection



	Heat Pump KEYMARK	
European KEYMARK Scheme for Heat Pumps		Rev.-No.: 11 Date: 13/09/2022 Page: 1 of 22



	Heat Pump KEYMARK	
Annex A HP-KEYMARK testing conditions and rerating rules		Rev.-No.: 9 Date: 10/06/22 Page: 1 of 29



	Heat Pump KEYMARK	
Annex B – Requirements for Factory Inspections and Factory Production Control (FPC)		Rev.-No.: 2 Date: 19/03/2019 Page: 1 of 7

Overview

Test Standards

- EN 14511-1/2/3/4 Air conditioners, liquid chilling packages and heat pumps for space heating and cooling and process chillers, with electrically driven compressors
- EN 14825 Air conditioners, liquid chilling packages and heat pumps, with electrically driven compressors, for space heating and cooling - Testing and rating at part load conditions and calculation of seasonal performance
- EN 16147 Heat pumps with electrically driven compressors - Testing, performance rating and requirements for marking of domestic hot water units
- EN 12102-1/2 Air conditioners, liquid chilling packages, heat pumps, process chillers and dehumidifiers with electrically driven compressors - Determination of the sound power level - Part 1: Air conditioners, liquid chilling packages, heat pumps for space heating and cooling, dehumidifiers and process chillers
- EN 15879-1 Testing and rating of direct exchange ground coupled heat pumps with electrically driven compressors for space heating and/or cooling - Part 1: Direct exchange-to-water heat pumps

Agenda

Testing Procedure acc. HP Keymark

Space Heating Heat Pump acc. Annex A

1.	Test description	Admission	Surveillance
1.1.	Space heating tests	For low and medium temperature heat pump: a. A7/W35/55; A20/W35/55; B0/W35/55; W10/W35/55 according to EN 14511-2 and E4/W35 according to EN 15879-1. b. Bivalent temperature condition according to EN 14825 for average climate c. One other testing condition to be chosen by the certification body according to EN 14825 for average climate d. For any other climate, bivalent temperature condition shall be tested according to EN 14825	For low or medium temperature heat pump if certified: a. A7/W35/55; A20/W35/55; B0/W35/55; W10/W35/55 according to EN 14511-2 and E4/W35 according to EN 15879-1. b. Bivalent temperature condition according to EN 14825 for average climate c. One other testing condition to be chosen by the certification body according to EN 14825 for average climate d. For any other climate, bivalent temperature condition shall be tested according to EN 14825
1.2.	Space cooling tests	If to be certified: a. "A" testing condition according to EN 14825; b. One other testing condition to be chosen by the certification body according to EN 14825	If certified only one application (7/12°C and 18/23°C) is tested
1.3.	Sound Power level tests	Sound tests acc. EN 12102-1, ODU+IDU	Sound tests acc. EN 12102-1, ODU+IDU
1.5.1.	Operating Tests	Operating tests shall be performed according to EN 14511-4 as follows: • Starting and operating tests • Shutting off the heat transfer medium flows, • Complete power supply failure.	The test is to be chosen by the certification body among the two following tests: • Shutting off the heat transfer medium flow • Complete power supply failure

Testing Procedure acc. HP Keymark

Domestic Hot Water Heat Pump acc. Annex A

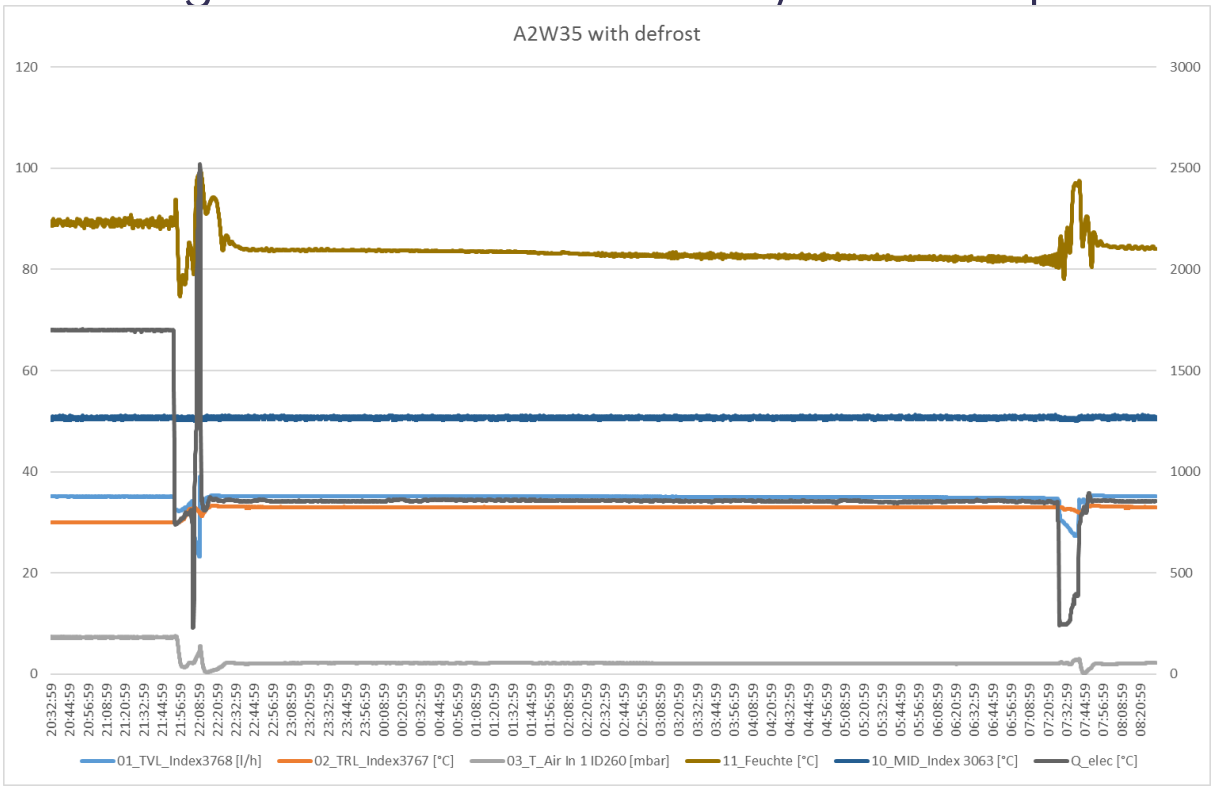
1.	Test description	Admission	Surveillance
1.3.1.	Sound Power level tests Heat pump for hot water only Acc. EN 12102-2	Sound tests acc. EN 12102-2	Sound tests acc. EN 12102-2
1.4.2.	Hot Water Tests Heat pump for hot water only acc. EN 16147 for average climate	Acc. EN 16147 for average and any other declared climate with the declared load profile For Brine/Water only one heat source.	Acc. EN 16147 for average and any other declared climate with the declared load profile For Brine/Water only one heat source.
1.5.2.	Operating tests	Heat pump for hot water only acc. EN 16147 • 8.1: temperature operating range • 8.3.: safety devices checking test • 8.4.: condensate draining	The test is to be chosen by the certification body among the two following tests: • 8.3.: safety devices checking test • 8.4.: condensate draining

Testing Procedure acc. HP Keymark

Combination Heat Pump acc. Annex A

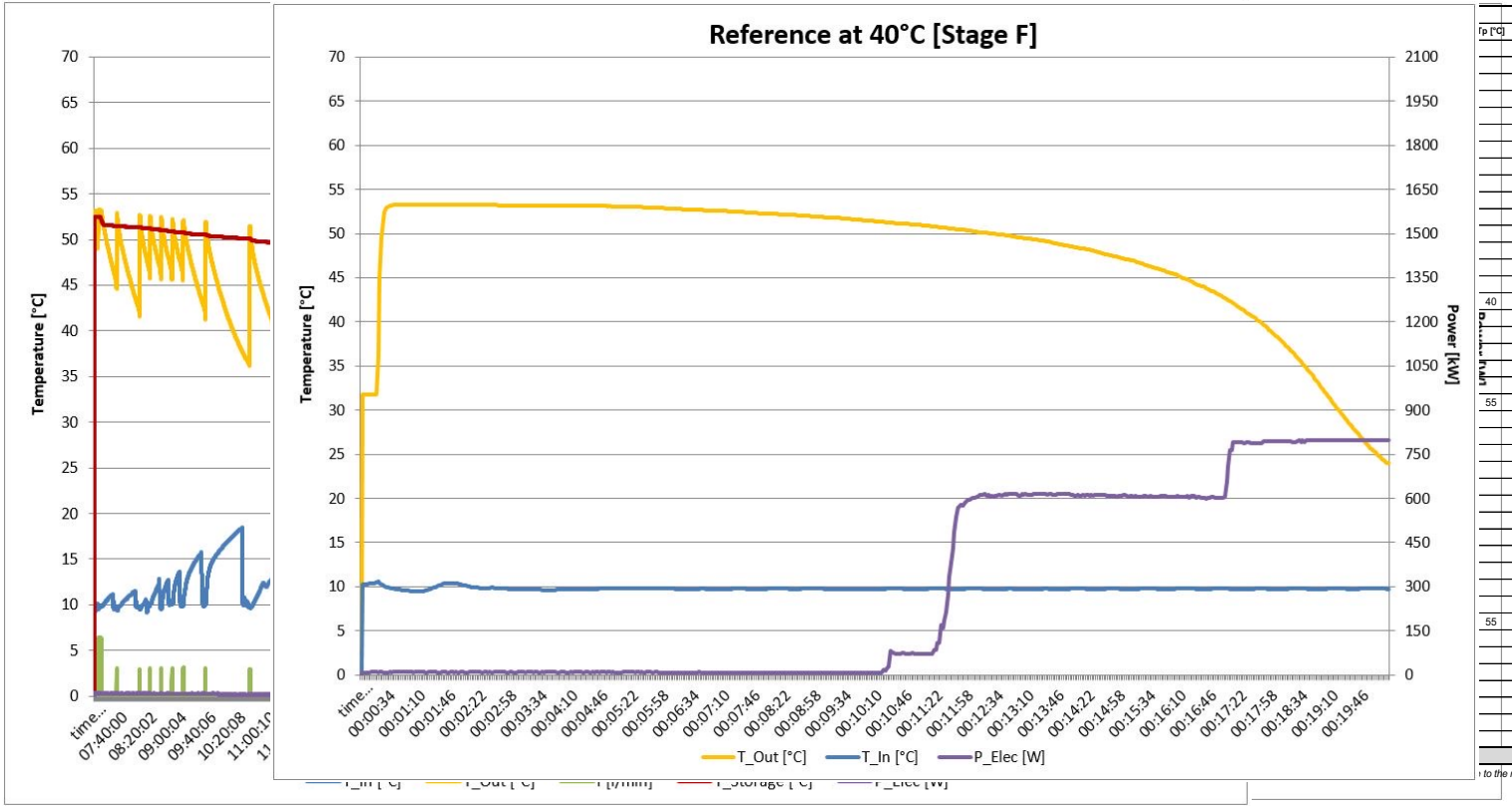
1.	Test description	Admission	Surveillance
1.1.	Space heating tests	For low and/or medium temperature heat pump	For low or medium temperature heat pump if certified
1.2.	Space cooling tests	If to be certified	If certified only one application (7/12°C and 18/23°C) is tested
1.3.	Sound Power level tests	Sound tests acc. EN 12102-1, ODU+IDU	Sound tests acc. EN 12102-1, ODU+IDU
1.4.1.	Hot Water Tests	Acc. EN 16147 for average and any other declared climate with the declared load profile For Brine/Water only one heat source.	Acc. EN 16147 for average and any other declared climate with the declared load profile For Brine/Water only one heat source.
1.5.1.	Operating Tests	Operating tests shall be performed according to EN 14511-4 as follows: • Starting and operating tests • Shutting off the heat transfer medium flows, • Complete power supply failure. Heat pump for hot water acc. EN 16147 • 8.1: temperature operating range • 8.3.: safety devices checking test • 8.4.: condensate draining	The test is to be chosen by the certification body among the two following tests: • Shutting off the heat transfer medium flow • Complete power supply failure The test is to be chosen by the certification body among the two following tests: • 8.3.: safety devices checking test • 8.4.: condensate draining

Testing Procedure acc. HP Keymark – Space Heating



Test conditions			A2W35
			EN 14511
Partial Load		%	
Duration		min	70
Date		dd.mm.jjjj	25.01.2020
Measurements Heat usage system (HUS)	**Symbol**	**Unit**	
Volume flow on the warm side	q_W	l/h	1268,7
Flow temperature	T_{out}	°C	35,11
Return temperature	T_{in}	°C	33,02
Static pressure over system	Δp	kPa	27,48
Static pressure	Δp	kPa	44,5
Measurements Heat source system (HSS)			
Compressor speed		rps	35
Temperature air inlet	T_{db}	°C	2,00
Relative Humidity		%	83,77
Measurements Power consumption			
Average electrical power consumption	$P_{HP,Aver.}$	W	855
Average operation current	I	A	3,8
Max. start current (inverter)	I_A	A	3,9
Output factor	cos φ		0,939
Inverter off power consumption		W	31
Standby power consumption		W	29
Cdh			0,964
Pump correction (Heating capacity)		W	41,3
Pump correction (Power input)			56,99
Defrosting			
Lenght of the defrost phases during the w orking cycles	τ_D	h	-
Lenght of the working cycles with defrosting	τ_H	h	1,2
Relative defrost time	τ_{rel}	%	-
Acoustic power level	L_P	dB(A)	-
Calculations			
Average heat output, corr	$Q_{HP,aver.}$	W	3015
Average water temperature	$T_{Aver.}$	°C	34,06
Density at return temperature T_R	$\rho_W(T_R)$	kg/m³	0,995
Specific heat capacity	c_{pW}	kJ/(kg K)	4,178
Average electrical power consumption corr.	$P_{HP,Aver.}$	W	798,4
Coefficient of performance (COP)	**ε_{WP}**		**3,776**
Water flow rate in m3/s	Q	m3/s	0,00
P hydraulic	Ph	Pa m3/s	15,688
Efficency glandless circulation pump	η	%	0,275

Testing Procedure acc. HP Keymark - Domestic Hot Water



		Achieved Values				
Tp [°C]	Q_{HP-tab} [kWh]	f [l/min]	Tm [°C]	Tp [°C]	θ_{WC} [K]
	0,106	3	28		11
	1,377	6	49		10
	0,102	3	45		10
					11
	0,105	3	42		10
	0,103	3	46		10
	0,105	3	46		10
	0,105	3	46		10
	0,103	3	45		10
	0,103	3	41		10
40	0,104	3	36	51	10
	0,102	3	36		10
	0,101	3	44		10
55	0,309	4	36	50,3	10
	0,104	3	33		10
	0,102	3	36		10
	0,104	3	37		10
	0,105	3	34		10
	0,106	3	45		10
	0,103	3	45		10
	0,105	3	41		10
55	0,733	4	33	51,3	10
	0,102	3	38		10
	1,376	6	44		10
	5,765	Q_{H2O}			

to the required Tp will calculate additionally, see next page 7.9.1

15.
05.

Testing Procedure acc. HP Keymark - Domestic Hot Water

Description for Heating up period [Stage C]	Chapter EN 16147	Parameter	Value	Unit
Measured electrical energy consumption during heating up	7.7	W_{eh-M}	2,754	kWh
Test duration during heating up	7.7	t_h	2,496	h
Power input correction (fans for heat pumps with duct connection)	7.4.1	$W_{EL-Corr}$	0,000	kWh
Power input correction (liquid pumps)	7.4.2	$W_{EL-Corr}$	0,000	kWh
Total electrical energy consumption during heating up	7.7	W_{eh-HP}	2,7540	kWh

Description for Standby power input [Stage D]	Chapter EN 16147	Parameter	Value	Unit
Calculated electrical energy consumption for off-peak products	7.3	W_{EL-OFF}	0,000	kWh
Measured electrical energy consumption during the last on-/off-cycle	7.8	W_{es-M}	1,013	kWh
Power input correction (fans for heat pumps with duct connection)	7.4.1	$W_{EL-Corr}$	0,000	kWh
Power input correction (liquid pumps)	7.4.2	$W_{EL-Corr}$	0,000	kWh
Duration of last on-/off-cycle during standy-by time	7.8	t_{es}	104654	sec
the standby power input	7.8	P_{es}	0,0348	kW

Description for Water draw-offs and COP calculation [Stage E]	Chapter EN 16147	Parameter	Value	Unit
In addition, the energy required to reach Tp (extrapolation) 12:45	7.9.1	$Q_{EL-Tap1}$	0,043	kWh
In addition, the energy required to reach Tp (extrapolation) 20:30	7.9.1	$Q_{EL-Tap2}$	0,065	kWh
Calculated heat energy produced by electrical resistance heater during the whole load profile	7.9.1	Q_{EL-LP}	0,107	kWh
Useful energy content	7.9.1	Q_{LP}	5,872	kWh
Measured period of the load profile	7.9.2	t_{TTC}	42,2	h
Measured electrical energy consumption during the whole load profile	7.9.2	$W_{EL-M-LP}$	3,604	kWh
Power input correction (fans for heat pumps with duct connection)	7.4.1	$W_{EL-Corr}$	0,000	kWh
Power input correction (liquid pumps)	7.4.2	$W_{EL-Corr}$	0,000	kWh
Total electrical energy consumption during the whole load profile	7.9.2	W_{EL-LP}	3,078	kWh
Coefficient of Performance	7.9.3	COP_{DHW}	1,91	

Description for mixed water at 40°C [Stage F]	Chapter EN 16147	Parameter	Value	Unit
Time from starting the draw-offs until less than 40°C	7.10	t_{40}	1046	sec
Sum of outgoing hot water temperature	7.10	$\int\theta_{WH}(t)dt$	26447	
the reference hot water temperature	7.10	θ'_{WH}	50,6	°C
Calculated maximum volume of mixed water at 40°C	7.10	V_{40}	**242,1**	l

Description for energy efficiency calculation	Chapter EN 16147	Parameter	Value	Unit
Smart control factor	7.11.2	SFC	0	
k-Value	7.12	k	0,23	
Electrical consumption during standy-by time	7.12	P_{stby}	0,09	kW
Ambient correction term	7.12	Q_{cor}	-0,48	kWh
Daily electricity consumption (corrected)	7.13.1	Q_{elec}	3,064	kWh
Conversion coefficient	7.13.2	CC	2,5	
Indicator of the smart control compliance	7.13.2	smart	0	
Reference energy of the load profile	Annex A	Q_{ref}	5,845	kWh
Water heating energy efficiency	7.13.2	η_{wh}	**81%**	
Annual Electricity Consumption	7.13.3	AEC	631	kWh
Water heating energy efficiency class			**A**	

Description for used water	Chapter EN 16147	Parameter	Value	Unit
Density from water at 10,0°C		ρ(T)	999,7	kg/m³
spez. Heat capacity from water at 10°C		c_p	4,195	kJ/(kg*K)

Testing Procedure acc. HP Keymark

Aditional Information arround the tests

Type of Heat Pump	Duration Of Tests	Common Problems	Required Equipment
Central Heating Heat Pump	Approx 1 week	• Setting up compressor frequencies • Ducted systems need special equipment • Wrong set up, defect sensors etc are detected after or late during tests	• Heat Pump with indoor and outdoor unit • Refrigerant pipes • Information about refrigerant amount and type if filled by test institute • Exact setup parameters for testing, otherwise out of the box testing • Computer or equal system to control frequences • A fitting duct system
Combination Heat Pump	Approx 2 weeks		
DHW Heat Pump	Approx 1 week		

Agenda

Kapitel	Thema	Dauer	Referent	Seite
1	Overview			
2	Testing Procedure | First Admission & Surveillance Tests			
3	Testing Procedure | Sound Measurements			
4	Factory Production Control			
5	Physical Inspection & Picking			

Sound Measurements

Overview

Domestic Hot Water Heat Pumps with Canalization

- Reverberant piping
- Sound absorbing piping can have an influence on measurement results
- Sound emission from actual machine can be absorbed
- Tests acc EN 12102-2 take long time

Split Units (refrigerant split and hydraulic split)

- Indoor Units are very silent
- Outddor units mostly tested in climate chamber under „C“ point conditions with 55°C flow temperature

15.
05.

Sound Measurements

Practical Example for DHW HP

- 5.3 Volumetric Power Density (VPD)

$$VPD = \frac{P_{Nenn}}{V_{Tank}} \times 1000$$

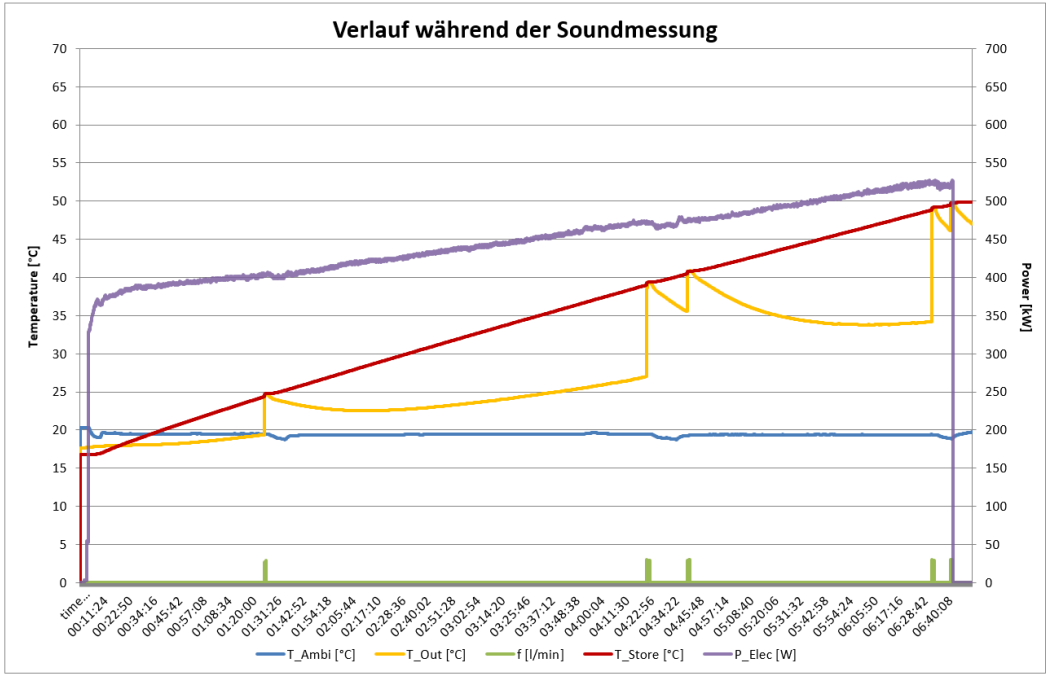
- VPD = 2.2kW / 302l * 1000 = 7.3kW/l
- Requirement according to appendix C –
- setpoint hot water temperature Thw

— 25 °C;

— $(T_{Soll} + 25)/2$ °C;

— $(T_{Soll} - 5)$ °C.

- Point 2: 40 °C
- Point 3: 50 °C

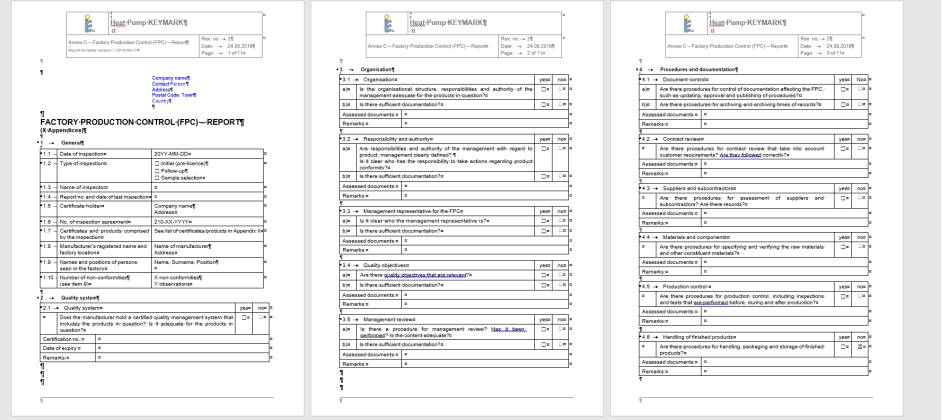


Agenda

Factory Production Control

- Ensure that products marked with the KEYMARK fulfil the requirements set out in the certification rules
- Abbreviated examination with ISO 9001 Certification
- Report Template Annex C
- Mostly Focus on production line and measurement instruments
  - Electrical Tests
  - Leackage tests with Inert Gas
  - Refrigerant Filling Station
  - Labelling and Identification
- Check of QM Documentation in relation to the product
  - DOC and Responsibility
  - Working Instructions
  - Qualification of staff

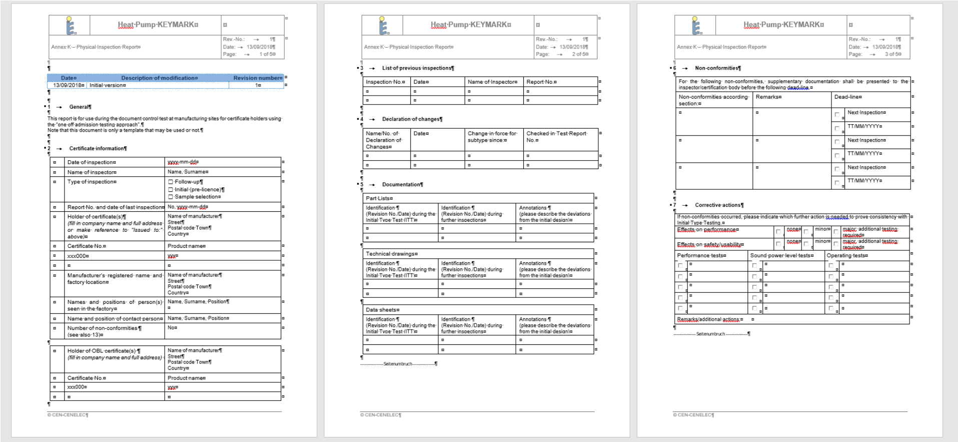
- Audit duration approx 5-6 hours



Agenda

Physical Inspection and Picking

- Physical Inspection to identify the product and it´s components
- Refrigerant Circuit
  - Compressor
  - Expansion Valve
  - Heat Exchanger, Condensor and Evaporator
- Software Version
- Picking acc. to Certification Body
- Device is picked at storage or directly after production line



Thank you!

Mario Reimbold
Business Field Manager Energy Appliances

TÜV Rheinland Energy GmbH
Am Grauen Stein
51105 Cologne

TÜVRheinland®
Precisely Right.

Tom Lapere
Daikin Europe N.V.

Testimonial from certificate holder Daikin Europe

ehpa

heat pump KEYMARK

Heat Pump KEYMARK certification:

A label of trust for the European heat pump user

15 June 2023

Tom Lapere

- Reasons for DAIKIN to step in
- Benefits of the Heat Pump KEYMARK
- Challenges and solutions in the certification process

Why DAIKIN stepped into Heat Pump KEYMARK?

Heat Pump KEYMARK objectives

- A **single certificate**
- Open to all interested parties – certification bodies, test labs, auditors
- Transparent and strong to create **trust** in the market
- Mutually accepted by all participating Certification Bodies
- In line with Ecodesign and as such minimum requirements eta s and sound apply.

DAIKIN objectives

- A **single certificate** to cover our large portfolio for residential heat pumps
- **Recognized** in the whole of Europe
- In line with Ecodesign and as such minimum requirements eta s and sound apply.
- Flexible and market-driven
- **Without depending on only one or a few parties**: certification body, test lab, auditor

DAIKIN

Which additional benefits does the Heat Pump KEYMARK bring us?

- Clear contributor to the energy transition
- Non-mandatory character of the marking
- Customer-oriented

Challenges to overcome with the certification of heat pumps

Challenges

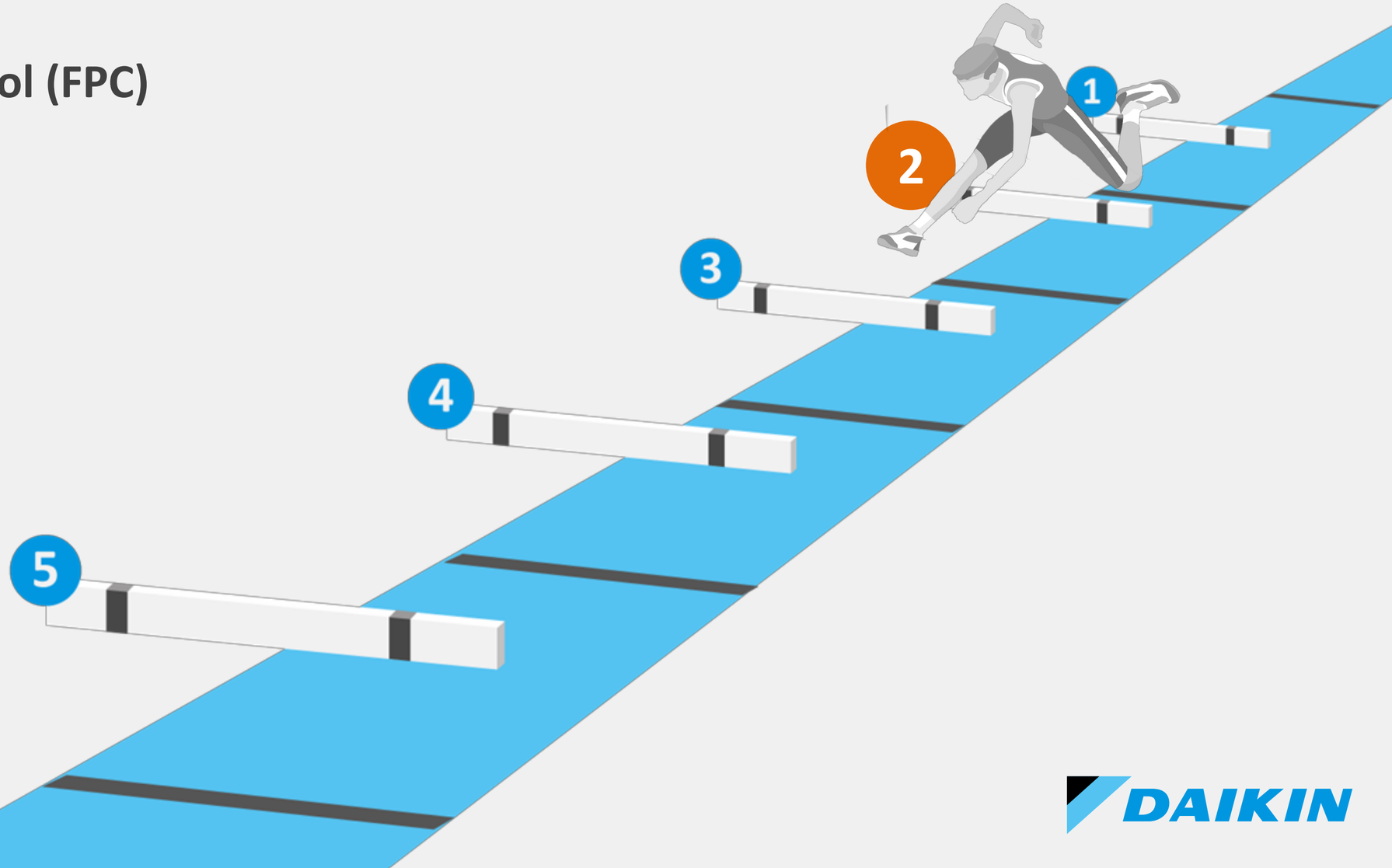
Complexity of the portfolio

- **Model classification**
- **Product identifier**

Challenges

Factory Production Control (FPC)

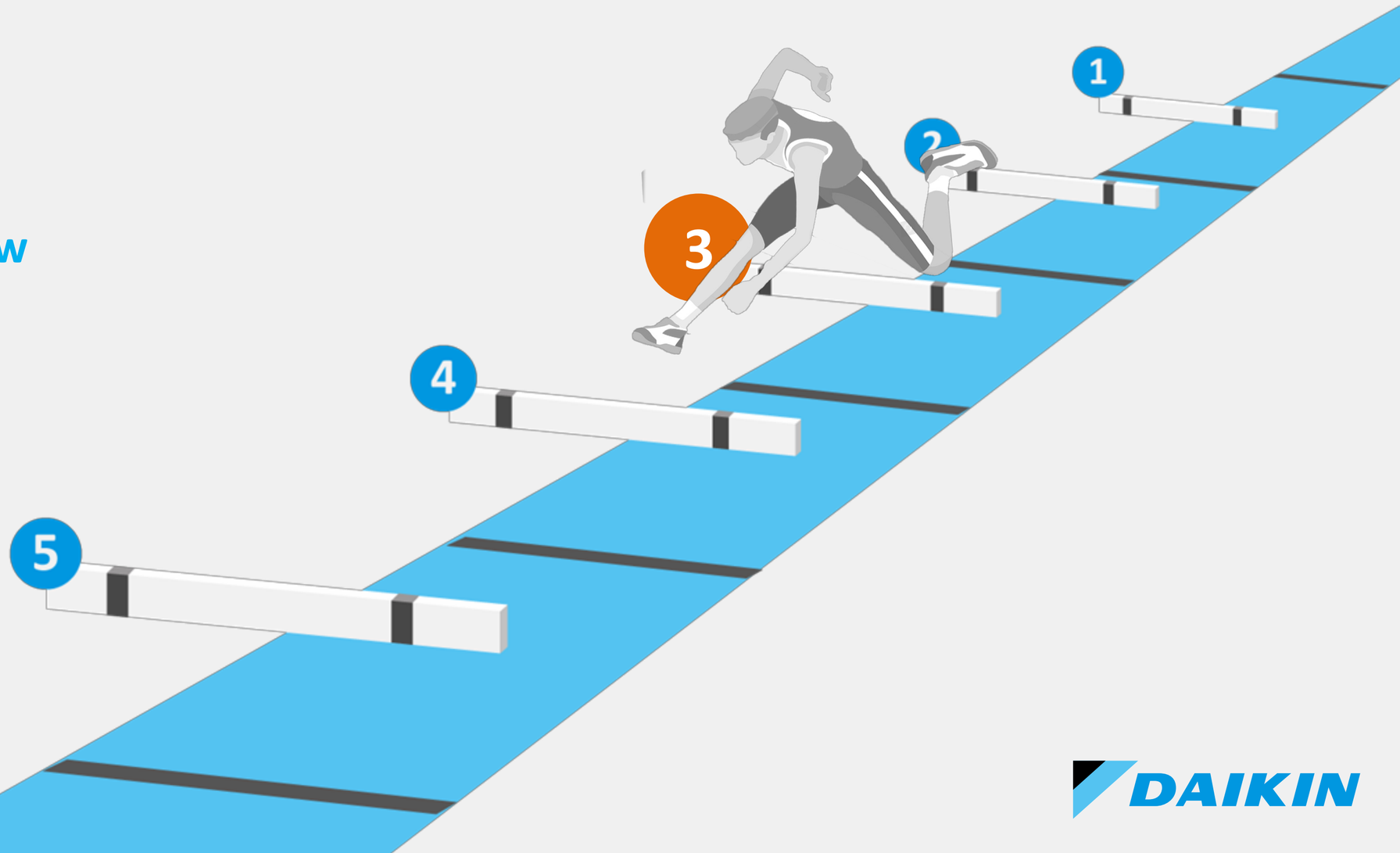
- **Non-conformities and observations**
- **Sampling**



Challenges

Testing

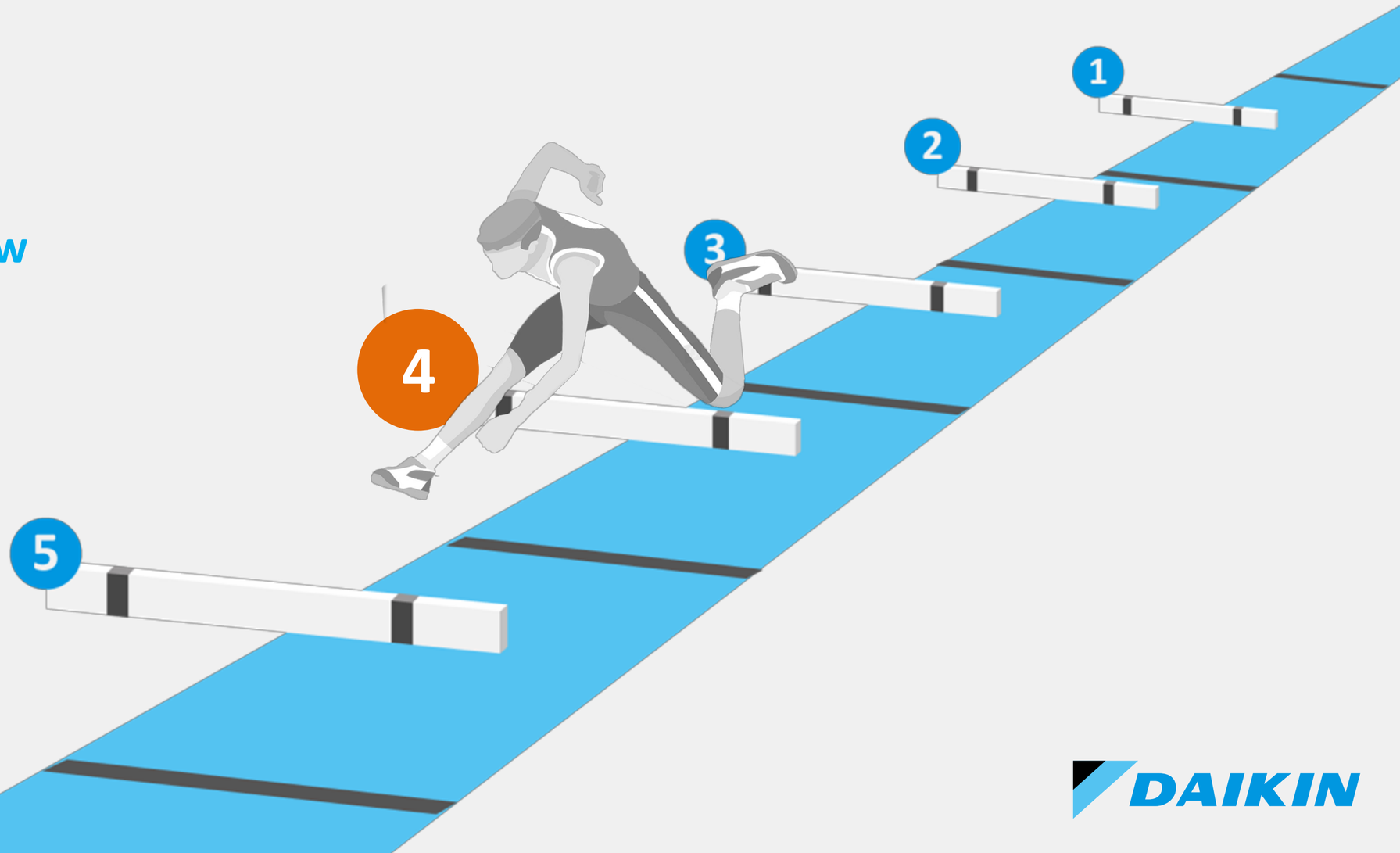
- **Admission tests for new developments**
- **Sampling**



Challenges

Database input

- **Admission tests for new developments**



Challenges

Local schemes

- **Acceptance for incentive schemes**
- **Simplified certification process**

Conclusion

- Assurance of quality
- Energy efficiency
- Reduced admin and testing costs
- Accepted in many EU countries
- Alignment with European standards

- Heat Pump KEYMARK can contribute to the energy transition in Europe.

- At the same we are a big defender of a further acceptance in those markets where local certifications are the reference.
- We believe the next step will be to seek for a direct link between future incentive schemes and the Heat Pump KEYMARK certificate.

THANKS FOR LISTENING

KEYMARK quality mark for Heat Pumps
Scheme Recognition

KEYMARK for Heat Pumps - Certificates issued

The KEYMARK certification scheme is still gaining momentum

HP KEYMARK Certificate Holders

106

+41 %*

HP KEYMARK Certificates Issued

1587

+38 %*

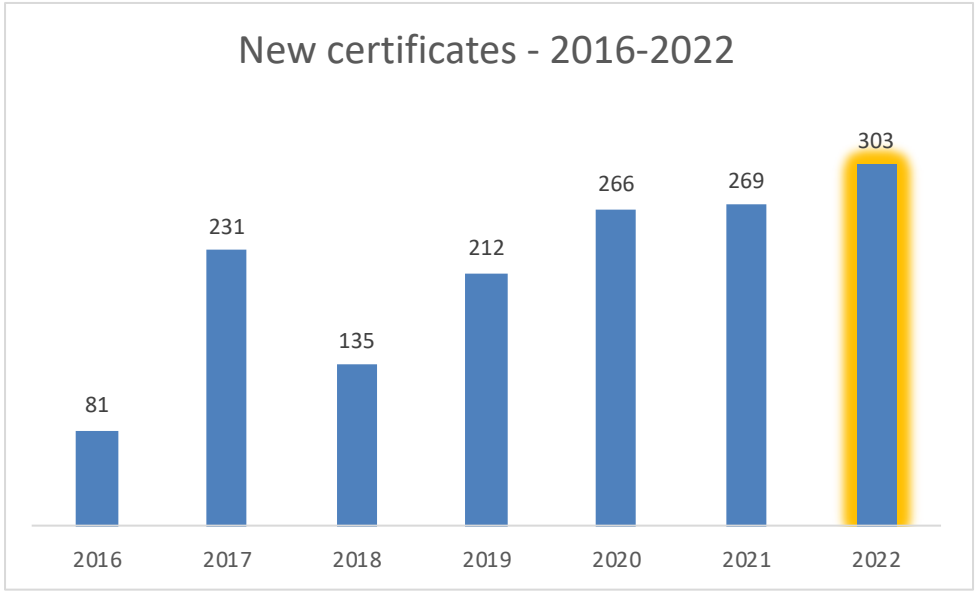
HP KEYMARK Certified Models

6996

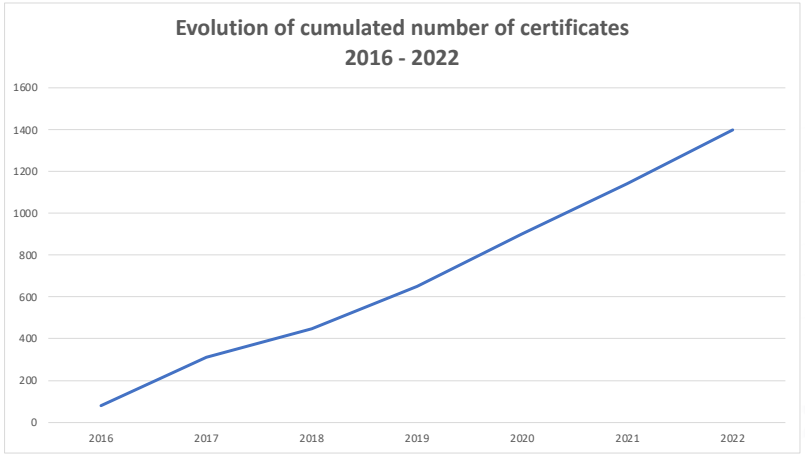
+40 %*

* When comparing June 2022 to June 2023

KEYMARK for Heat Pumps - Steady growth



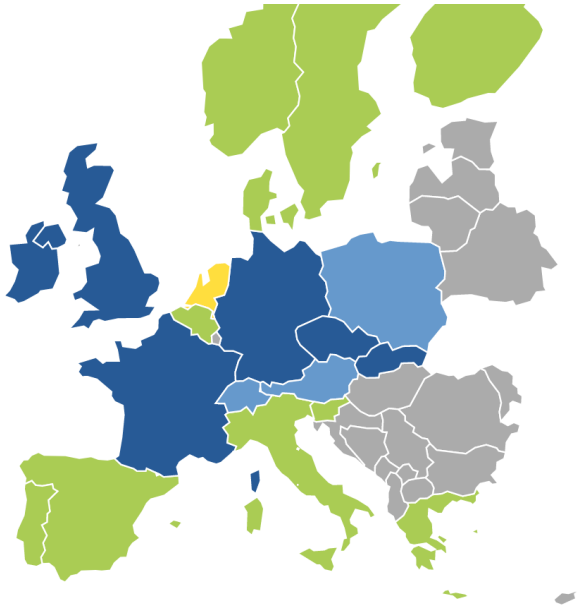
111 new certificates in Q1 2023



KEYMARK for Heat Pumps - Scheme recognition at EU level

Euro Countries recognising HP KEYMARK

10



HP KEYMARK is fully recognised

No certification is required

HP KEYMARK recognised or EHPA Quality Label required

HP KEYMARK recognised in January 2023

KEYMARK quality marks – Over 5000 certificates!

2290 Thermal Insulation Products for Buildings KEYMARK Certificates

1587 Heat Pump KEYMARK Certificates

1020 Solar Thermal Products for Buildings KEYMARK Certificates

81 Thermostatic Radiator Valves KEYMARK Certificates

41 Thermal Insulation Products for Industrial Applications KEYMARK Certificates

TOTAL KEYMARK Certificates

5000

32% are Heat Pumps Certificates!

CEN KEYMARK

CONTACT US info@keymark.eu

Search ... GO

HOME ABOUT KEYMARK PRODUCTS THIRD PARTIES CERTIFICATES NEWS CON

heat pump KEYMARK

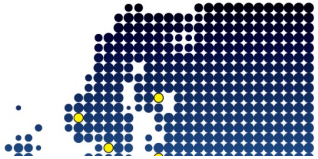
Home › Products › Heat Pumps › Heat Pump KEYMARK

- Heat Pump KEYMARK
- Why heat pumps?
- Where is Heat Pump KEYMARK Recognized?
- How to apply
- Testing and Certification

Heat Pumps

A Single Certificate for a Single European Market

The Heat Pump **KEYMARK is a voluntary, independent European certification mark** (ISO type 5 certification) for all heat pumps, combination heat pumps and hot water heaters (as covered by Ecodesign, EU Regulation 813/2013 and 814/2013)



ehpa

Heat Pump KEYMARK Certificates

Login

English

Advanced Search

Number of subtypes	1445
Number of models	6159

Certificate Holders

Acond a.s.
Advantix S.p.A.
AERMEC S.p.A.
Airwell Residential S.A.S.
ait-deutschland GmbH
Alpha Therm Ltd.
Argoclima S.p.A
Ariston Thermo Group
August Brötje GmbH
BAXI Climatización S.L.U
BAXI Heating UK Limited
BAXI Potterton Myson
BAXI S.p.A.
BDR THERMEA FR (BRÖTJE)
BDR Thermea FR (CHAPPEE)
BDR Thermea FR (DE DIETRICH)
BDR Thermea FR (OERTLI)

Heat Pump KEYMARK Certificates

Login

English

SUBTYPE

I-32V5 16/18

Certificate Holder	Advantix S.p.A. Via San Giuseppe Lavoratore, 24 37040 Arcole Verona Italy
Reg. No.	ICIM-PDC-000074-00
Certification Body	ICIM S.p.A.
Subtype title	i-32V5 16/18
Driving energy	Electricity
Heat Pump Type	Outdoor Air/Water
Refrigerant	R32
Mass of Refrigerant	4,000 kg
Certification Date	26.05.2020
Testing basis	HP KEYMARK certification scheme rules rev. no. 7

Generate PDF | Export model CSV | Download certificate

Number of models 5

MODELS

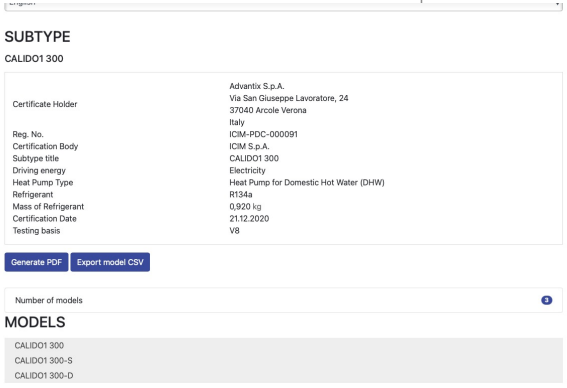
- i-32V516
- i-32V518T
- i-32V516T
- i-32V5SL16
- i-32V5SL16T

EN 14511-2

	Low temperature	Medium temperature
Heat output	10.00 kW	9.01 kW
EI input	2.30 kW	3.89 kW
COP	4.34	2.32

EN 14511-4

Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed
Defrost test	passed



SUBTYPE

CALIDO1 300

Certificate Holder	Advantix S.p.A. Via San Giuseppe Lavoratore, 24 37040 Arcole Verona Italy
Reg. No.	ICIM-PDC-000091
Certification Body	ICIM S.p.A.
Subtype title	CALIDO1 300
Driving energy	Electricity
Heat Pump Type	Heat Pump for Domestic Hot Water (DHW)
Refrigerant	R134a
Mass of Refrigerant	0,920 kg
Certification Date	21.12.2020
Testing basis	V8

Generate PDF | Export model CSV

Number of models 3

MODELS

CALIDO1 300
CALIDO1 300-S
CALIDO1 300-D

ACCREDIA

PRD N° 004 B

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

ICIM

Heat Pump Keymark
Certification Body
CEN 025

Certificazione di Prodotto
Product Certification

Certificato N. / *Certificate No.* **ICIM-PDC-000072-00**

TITOLARE DEL CERTIFICATO / *CERTIFICATE HOLDER*

Advantix S.p.A.

Via San Giuseppe Lavoratore, 24 – 37040 Arcole (VR) - IT

UNITÀ PRODUTTIVE / *PRODUCTION SITES*

Arcole (VR) - IT

PRODOTTI / *PRODUCT*

POMPE DI CALORE
HEAT PUMPS

KEYMARK quality mark for Heat Pumps
Benefits

KEYMARK for Heat pumps – Benefits

- A Third-party certification aids the purchasing decision and gives the consumers confidence that they have bought a quality product

- The recognized KEYMARK quality mark can be used to have access to public subsidies in majority of the European countries

- The scheme is open to all interested parties and details of certificate holders and certified products are publicly visible

Any questions?

Q & A session

Feel free to ask your questions in the chat.

Don’t forget to mention the name of the speaker you would like to address your question to.

Give us your feedback!

Heat Pump KEYMARK webinar

Website

Twitter

LinkedIn

Thank you

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European Heat Pump Association

www.ehpa.org