



Heat Pumps Programmes and Statistics of the Products with Natural Refrigerants in ECC

ISKID & TTMD Seminar, 25 October 2022
Eurovent Summit 2022

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Introduction

1. Eurovent Certita Certification (ECC) Programmes under Thermodynamics Department
 - Programme Specifications
 - Certification marks related to the product families
 - Main standards used for testing and rating the units
2. Eurovent-Heat Pumps Programme
 - Certified performances & characteristics
3. Certified products with natural refrigerants in ECC
 - a. In Thermodynamics Department
 - b. In Other ECC Programmes

1. Eurovent programmes under Thermodynamics Department

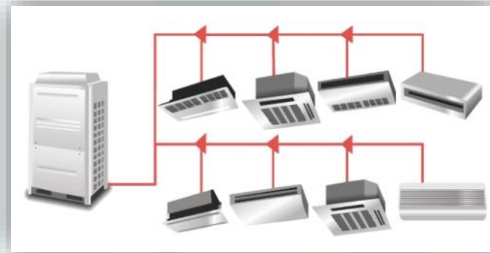
AC

Air Conditioners



VRF

Variable Refrigerant
Flow



RT

Rooftops



LCP-HP

Chillers and
Hydronic Heat
Pumps



ITCU

IT Cooling Units



1. Eurovent programmes under Thermodynamics Department

AC Air Conditioners	VRF Variable Refrigerant Flow	RT Rooftops	LCP-HP Chillers and Hydronic HPs	ITCU IT Cooling Units
<ul style="list-style-type: none"> Split / Multi split Air-to-air <ul style="list-style-type: none"> Cooling only Reversible Up to 100 kW 	<ul style="list-style-type: none"> Air- / Water-cooled <ul style="list-style-type: none"> Cooling only Heating Only Reversible Up to 100 kW 	<ul style="list-style-type: none"> Air- / Water-to-air <ul style="list-style-type: none"> Cooling only Reversible Up to 100 kW or more* 	<ul style="list-style-type: none"> Air- / Water-to-water <ul style="list-style-type: none"> Cooling only Heating only Reversible Polyvalent units Process chillers Up to 1500 kW or more* 	<ul style="list-style-type: none"> CRAC / CRAH / hybrid Room Row Rack Up-flow Down-flow Horizontal-flow Up to 120 kW
<p>47 brands</p> <p>5527 units</p> <p>certified</p>	<p>25 brands</p> <p>2741 units</p> <p>certified</p>	<p>12 brands</p> <p>597 units</p> <p>certified</p>	<p>39 brands</p> <p>55994 units</p> <p>certified</p>	<p>1 brand</p> <p>1008 units</p> <p>certified</p>

*in participant's laboratory

25 October 2022

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1. Eurovent programmes under Thermodynamics Department

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<p>47 brands</p> <p>5525 units</p> <p>certified</p>	<p>25 brands</p> <p>2741 units</p> <p>certified</p>	<p>12 brands</p> <p>401 units</p> <p>certified</p>	<p>37 brands</p> <p>16815 units</p> <p>certified</p>	<p>N/A</p>

*in participant's laboratory

25 October 2022

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1. Eurovent programmes under Thermodynamics Department

NF_414 Heat Pumps NF





Issued by the authorization of Afnor. Certifies compliance with European and French standards. Available for 11 product families, in the fields of Indoor Climate and Ventilation.

MCS_007 Heat Pumps MCS



Quality mark for the British market. Certifies that the products comply with the standards in force. British Ministry of Energy and Climate Change has authorised Eurovent to issue MCS certificates for heat pumps.

1. Eurovent programmes under Thermodynamics Department

NF_414 Heat Pumps NF	MCS_007 Heat Pumps MCS
<ul style="list-style-type: none"> air-to-air ground-to-water brine/water-water on Solar Collector air-to-water brine-to-water Heating only / Reversible Up to 100 kW Electrically- or gas-driven Programme allows multi-brand certification for: <div data-bbox="397 998 840 1156">  </div> <div data-bbox="853 1065 924 1098" data-label="Text"> <p>and</p> </div> <div data-bbox="930 988 1116 1175">  </div> <p><i>25 brands and 2260 units certified</i></p>	<p>With the authorization given to ECC by British Ministry of Energy and Climate Change, all the NF414 heat pumps up to 45 kW in accordance with the MCS 007: Product Certification Scheme Requirements for heat pumps.</p> <p>MCS certification does not require NF414 certification, it can be applicable for stand-alone requests.</p> <p><i>3 brands and 5 units certified</i></p>

1. Eurovent programmes under Thermodynamics Department

Main standards and regulations followed for the certification tests of the heat pumps...



Thermal performances

EN 14511:2018 – All parts (2022 version approved by the CEN and already released)
EN 14825:2018 (2022 version approved by the CEN and already released)
+ other national standards (for the certification according to other markets than EU)

Acoustic Performances

EN 12102-1:2017 (2022 version approved by the CEN and already released)



European Regulations

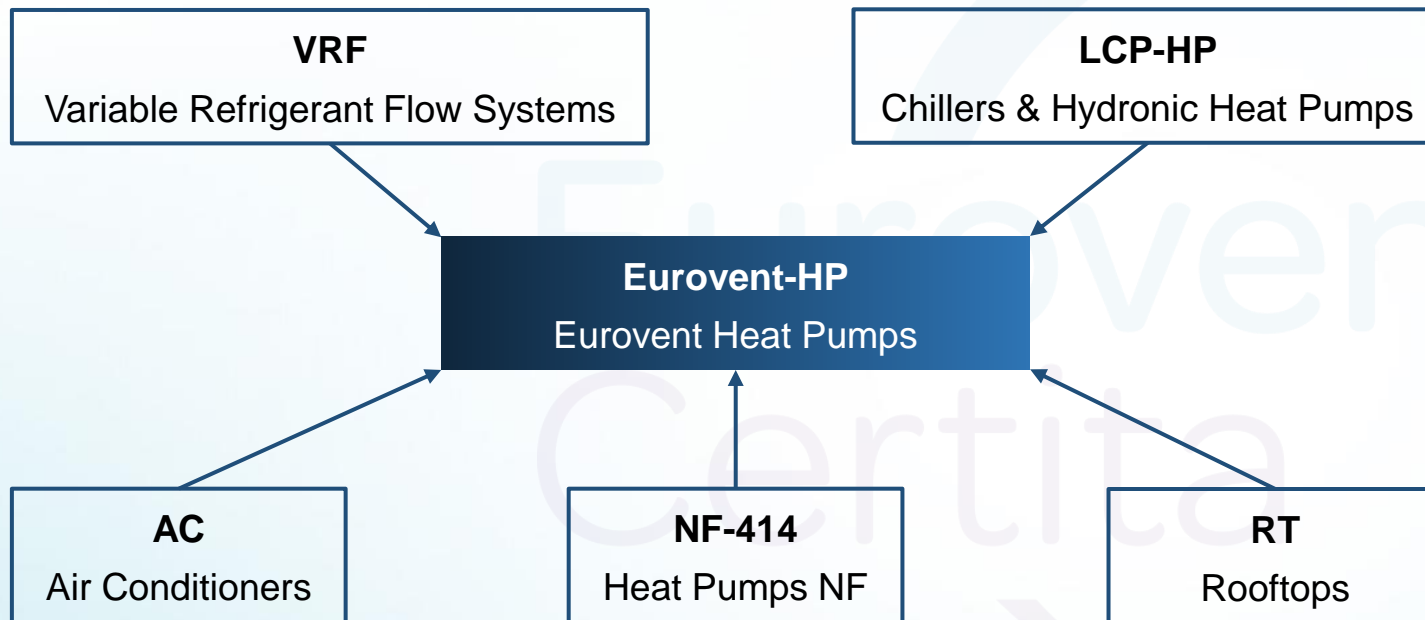
Commission Regulation (EU) 811/2013
Commission Regulation (EU) 813/2013



Eurovent does not certify if a declared unit is compliant with any regulation, but the performances related to them.

2. Eurovent-Heat Pumps (Eurovent-HP) Programme

Shared database of Eurovent Programmes covering the **heat pumps**.



PROGRAMME SCOPE

- Electrically driven heat pumps for space heating (incl. cooling function)
- Electrically driven heat pumps used for heating swimming pool water
- Dual-mode heat pumps, i.e., designed for space heating and domestic hot water production
- Gas absorption heat pumps (incl. cooling function)
- Engine-driven gas heat pumps (incl. cooling function)

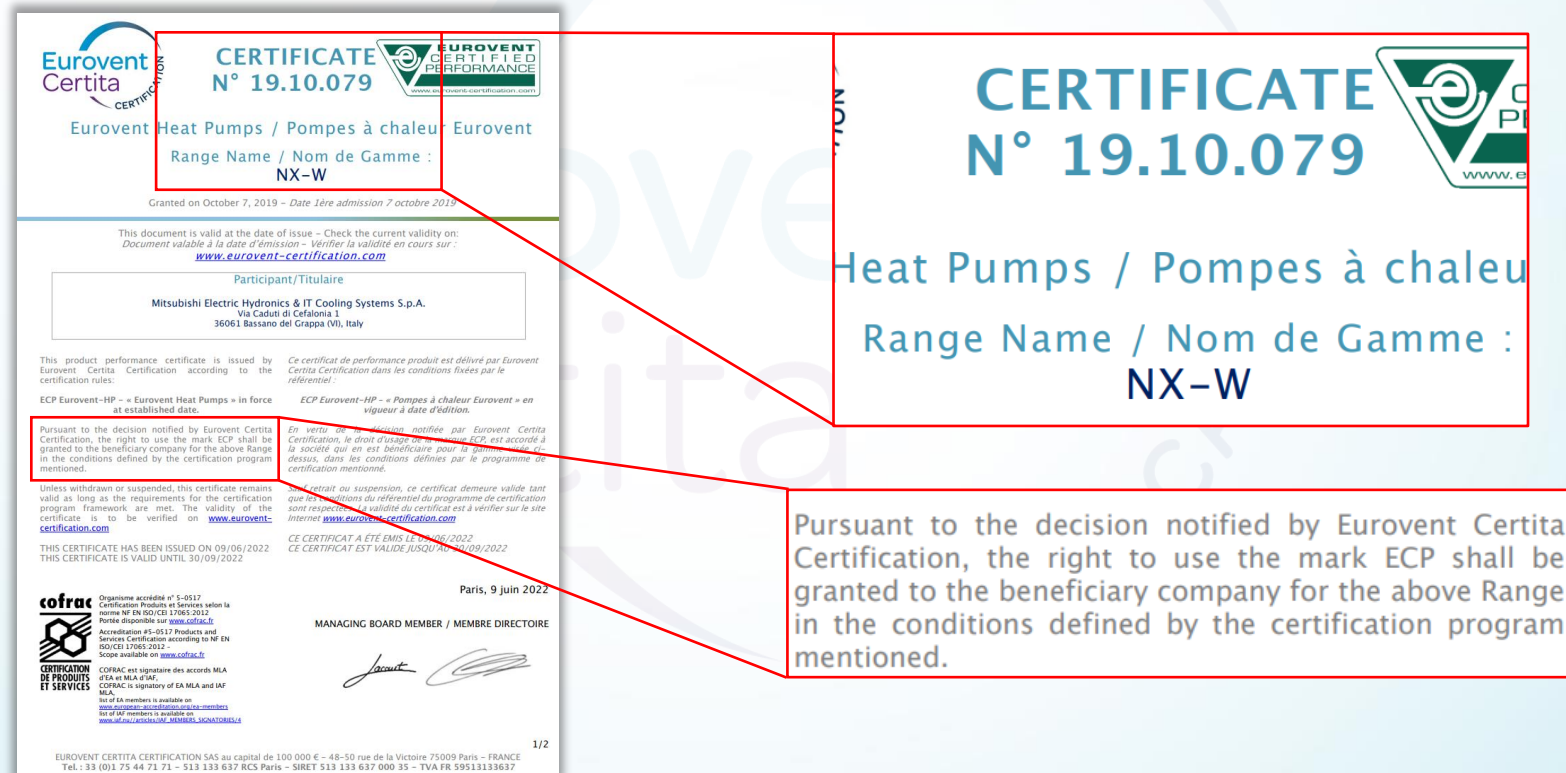
*67 brands and 27364
heat pumps certified*

Consists of the certified units of selected ranges by the participant who is already a member of these programmes. **Certify-all rule does not apply in EURO-HP.**

2. Eurovent-Heat Pumps (Eurovent-HP) Programme

Cooling-only units are excluded from the scope, so that only the certified heating-only and reversible heat pumps through different Eurovent programmes can be promoted in one programme/database.

Allows to compare the units which are the same product type but registered under different Eurovent programmes.



CERTIFICATE
N° 19.10.079

Eurovent Heat Pumps / Pompes à chaleur Eurovent

Range Name / Nom de Gamme :
NX-W

Granted on October 7, 2019 - Date 1ère admission 7 octobre 2019

This document is valid at the date of issue - Check the current validity on:
Document valable à la date d'émission - Vérifier la validité en cours sur :
www.eurovent-certification.com

Participant/Titulaire
Mitsubishi Electric Hydronics & IT Cooling Systems S.p.A.
Via Caduti di Cefalonia 1
36061 Bassano del Grappa (VI), Italy

This product performance certificate is issued by Eurovent Certita Certification according to the certification rules.

ECP Eurovent-HP - « Eurovent Heat Pumps » in force at established date.

Pursuant to the decision notified by Eurovent Certita Certification, the right to use the mark ECP shall be granted to the beneficiary company for the above Range in the conditions defined by the certification program mentioned.

Unless withdrawn or suspended, this certificate remains valid as long as the requirements for the certification program framework are met. The validity of the certificate is to be verified on www.eurovent-certification.com

THIS CERTIFICATE HAS BEEN ISSUED ON 09/06/2022
THIS CERTIFICATE IS VALID UNTIL 30/09/2022

Paris, 9 juin 2022

MANAGING BOARD MEMBER / MEMBRE DIRECTOIRE

cofrac
Organisme accrédité n° S-0517
Certification Produits et Services selon la norme NF EN ISO/CEI 17065:2012.
Portée disponible sur www.cofrac.fr
Accréditation #S-0517 Produits et Services Certification according to NF EN ISO/CEI 17065:2012 -
Scope available on www.cofrac.fr
COFRAC est signataire des accords MLA d'EA et MLA d'ISF.
COFRAC is signatory of EA MLA and IAF MLA.
List of EA members is available on www.cofrac.fr
List of IAF members is available on www.cofrac.fr

1/2

EUROVENT CERTITA CERTIFICATION SAS au capital de 100 000 € - 48-50 rue de la Victoire 75009 Paris - FRANCE
Tel : 33 (0)1 75 44 71 71 - 513 133 637 RCS Paris - SIRET 513 133 637 000 35 - TVA FR 5951313637

2. Eurovent-Heat Pumps (Eurovent-HP) Programme

Certified Performances & Characteristics

For **all heating-only** and **reversible** units :

- Heating capacity [kW] & Coefficient of Performance (COP) [kW/kW] & Electrical power inputs [kW]
- If applicable, Water pressure difference [kPa], ESP of ducted units [Pa]
- Seasonal Efficiency (SCOP & SCOPnet & η_s) [-] & Auxiliary power consumptions & Capacity at Pdesignh [kW]
- A-weighted sound power level in heating mode [dB(A)]

For **reversible** units, in addition to the standard points above :

- Cooling capacity [kW] & Energy efficiency Ratio (EER) [kW/kW] & Electrical power inputs [kW]
- If applicable, Water pressure difference [kPa], ESP of ducted units [Pa]
- Seasonal Efficiency in Cooling (SEER & η_{sc}) [-] & Auxiliary power consumptions
- A-weighted sound power level in cooling mode [dB(A)]



Most of the ECC programmes under Thermodynamic Department has several condition options, which are given in the EN 14511-2:2018 as Application Rating Conditions (i.e., Outdoor Air: 2 °C or -7 °C, Water Inlet-Outlet: 30-35).

If the unit is used for also Domestic Hot Water, related performances are certified too (*only linked to the NF414 certification*).

2. Eurovent-Heat Pumps (Eurovent-HP) Programme

Certified Performances & Characteristics

Depending on the programme;

- Refrigerant (and charge)
- Unit capacity control
- Compressor type
- Compressor number
- Compressor electric motor type
- Variable Speed Drive presence
- Pump presence & pump speed control type
- Type of water regulation
 - Fixed water flow rate/Fixed temperature outlet : FW/FO
 - Variable water flow rate/Fixed temperature outlet : VW/FO
 - FW/VO
 - VW/VO
- Main power supply [Voltage (V) - Phase - Frequency (Hz)]
- Heat exchanger types and dimensions
- Expansion valve type
- **Selection Tool (Selection Software)** – *Only for the units certified under LCP-HP.*



3. Certified products with **natural refrigerants** in ECC

In Thermodynamics Department

LCP-HP
Chillers and
Hydronic Heat
Pumps

PROPANE

Product Type	R1234yf	R1234ze	R134a	R290	R32	R407C	R410A	R452B	R454B	R513A	R515B
LCP/A/P/C	39	2506	5833	46	1866	2	5365	210	2893	3305	0
LCP/W/P/C	0	450	1269		20	0	1180	0	355	607	31
LCP/A/P/R	0	0	424	33	1863	41	4993	271	2379	278	0
LCP/A/S/R	0	0	0		145	0	93	0	0	0	0
LCP/W/P/R	0	295	562		33	33	1391	117	286	201	31
LCP-HP/A/P/H	0	0	0	17	0	42	0	0	0	0	0
LCP-HP/A/S/H	0	0	0		0	0	1	0	0	0	0
LCP-HP/W/P/H	0	35	87		0	0	38	0	0	0	0
LCP-PC/A/P	39	1250	3122	8	776	0	2938	0	1201	1598	0
LCP-PC/W/P	0	233	490	0	0	0	118	0	0	214	31
MP/A/2+2P/HR	0	0	0	0	0	0	395	0	0	0	0
MP/A/4P/HR	0	0	462	0	0	0	1793	95	886	434	0
MP/W/2+2P/HR	0	0	0	0	0	0	38	0	0	0	0
MP/W/4P/HR	0	0	22	0	0	0	165	0	0	20	0
TOTAL	78	4769	12271	104	4703	118	18508	693	8000	6657	93

The units with natural refrigerants (propane and CO₂ as well) are now covered by the Certify-all rule. It is therefore expected to have more certified unit in the next months in the programme.

3. Certified products with **natural refrigerants** in ECC

In Thermodynamics Department

NF 414 Heat Pumps NF

	PROPANE				AMMONIA		
	R134a	R290	R32	R407C	R410A	R513A	R717
NF414/ELEC/DM/H/A-A			6		6		
NF414/ELEC/DM/H/A-W				12	8		
NF414/ELEC/DM/H/BRW-W			7		118		
NF414/ELEC/DM/H/GR-W					14		
NF414/ELEC/DM/H/GW-W					28		
NF414/ELEC/DM/R/A-A			6		6		
NF414/ELEC/DM/R/A-W		16			735		
NF414/ELEC/DM/R/BRW-W			11		24		
NF414/ELEC/PO/H/A-W			4		13		
NF414/ELEC/SM/H/A-W			10	10	6		
NF414/ELEC/SM/H/BRW-W			4	24	110		
NF414/ELEC/SM/H/BRW-WSC						2	
NF414/ELEC/SM/H/GR-W					9		
NF414/ELEC/SM/H/GW-W				20	32		
NF414/ELEC/SM/R/A-A			1036				
NF414/ELEC/SM/R/A-W			10		287		
NF414/ELEC/SM/R/BRW-W			4		40		
NF414/ELEC/SM/R/WL-RA	4			10		18	
NF414/GAS-abso/SM/H/A-W							4
NF414/GAS-ICE/SM/R/A-A					4		
NF414/GAS-ICE/SM/R/A-W					2		
TOTAL	4	16	1098	76	1442	20	4

3. Certified products with **natural refrigerants** in ECC

In Other ECC Programmes

RDC
Commercial
Refrigeration

		CO ₂
Product Types	R404A	R744
Combi-freezer R/CF		24
Multi decker or semi-vertical open R/O	12	282
Semi-vertical or vertical, with doors R/WD	10	192
Island R/I		36
Service counter R/SC		55
TOTAL	22	589



3. Certified products with **natural refrigerants** in ECC

In Other ECC Programmes

HE
Heat
Exchangers

				CO ₂
	Product Types	R404A	R507A	R744
Condensers	HE/COND/COND	23960	866	
Gas Cooler CO ₂	HE/GASCOOLER			1498
Dx Air coolers CO ₂	HE/COOL/CO2			23814
Dx Air coolers HFC	HE/COOL/COOL	15275		
	TOTAL	39235	866	25312

Even though they are within the scope of the programme dry coolers not included to the table

Thank you !



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#BuildingBridges

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