



REVERSIBLE HEAT PUMP - Technical Manual

WATER/WATER HEAT PUMP

- HIGH EFFICIENCIES
- PRODUCTION OF HOT WATER UP TO 55°
- PARTIAL HEAT RECOVERY
- USED FOR GEOTHERMAL APPLICATIONS

WRL-H 180/650



Dear Customer,

Thank you for choosing an AERMEC product. This product is the result of many years of experience and in-depth engineering research, and it is built using top quality materials and advanced technologies.

In addition, the CE mark guarantees that our appliances fully comply with the requirements of the European Machinery Directive in terms of safety. We constantly monitor the quality level of our products, and as a result they are synonymous with Safety, Quality, and Reliability.

Product data may be subject to modifications deemed necessary for improving the product without the obligation to give prior notice.

Thank you again.
AERMEC S.p.A

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WRL-H

SERIAL NUMBER	
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DECLARATION OF CONFORMITY

We, the undersigned, hereby declare under our own responsibility that the assembly in question, defined as follows:

NAME WRL-H
TYPE WATER-COOLED REVERSIBLE HEAT PUMP
MODEL

To which this declaration refers, complies with the following harmonised standards:

- | | |
|---|--|
| <p>IEC EN 60335-2-40

 IEC EN 61000-6-1
 IEC EN 61000-6-3

 IEC EN 61000-6-2
 IEC EN 61000-6-4

 EN378

 UNI EN 12735
 UNI EN 14276</p> | <p>Safety standard regarding electrical heat pumps, air conditioners and dehumidifiers.

 Immunity and electromagnetic emissions for residential environments.

 Immunity and electromagnetic emissions for industrial environments.

 Refrigerating system and heat pumps - Safety and environmental requirements.

 Seamless, round copper tubes for air conditioning and refrigeration.
 Pressure equipment for cooling systems and heat pumps.</p> |
|---|--|

Thereby, compliant with the essential requirements of the following directives:

- Machinery Directive 2006/42/CE
- LVD Directive: 2006/95/CE
- Electromagnetic Compatibility Directive 2004/108/CE
- PED Directive regarding pressurised devices PED 97/23/CE, EN 378, UNI12735, UNI14276

The product, in agreement with Directive 97/23/CE, satisfies the Total quality Guarantee procedure (form H) with certificate no. 06/270-QT3664 Rev. 5 issued by the notified body n.1131 CEC via Pisacane 46 Legnano (MI) - Italy

- The person authorised to constitute the technical file is: / The person authorized to compile the technical file is: /
 La personne autorisée à constituer le dossier technique est: / Die Person berechtigt, die technischen Unterlagen zusammenzustellen:

Massimiliano Sfragara
 Via Roma, 996 - 37040 Bevilacqua (VR)

Bevilacqua

15/04/2010

Marketing Manager
 Signature



Standards and Directives complied with when designing and constructing the unit:

Safety:

Machinery Directive
2006/42/CE

Low Voltage Directive
LVD 2006/95/CE

Electromagnetic Compatibility Directive
EMC 2004/108/CE

Directive regarding pressurised devices PED
97/23/CE, EN 378, UNI12735, UNI14276

Electric part:
IEC EN 60335-2-40, IEC EN 61000-6-1/2/3/4

Acoustic part:
ISO DIS 9614/2 (intensimetric method).

Certifications:
Eurovent

Refrigerant GAS:
This unit contains fluoride gases with greenhouse effect covered by the Kyoto Protocol. Maintenance and disposal must only be performed by qualified staff. R410A GWP=1700

1. GENERAL WARNINGS

The WRL-H AERMEC units are constructed according to the recognised technical standards and safety regulations. They are designed for summer and winter conditioning and the production of domestic hot water. Any contractual or extracontractual liability of the Company is excluded for injury/damage to persons, animals or objects owing to installation, regulation and maintenance errors or improper use. All uses not expressly indicated in this manual are prohibited.

1.1. PRESERVATION OF THE DOCUMENTATION

The instructions along with all the related documentation must be given to the user of the system, who assumes the responsibility to conserve the instructions so that they are always at hand in case of need. Read this sheet carefully; the execution of all works must be performed by qualified staff, according to Standards in force on this subject in different countries. (Ministerial Decree 329/2004).

1.2. INSTALLATION

The unit must be installed in such a way that maintenance and/or repairs can be carried out.

1.3. WARRANTY

The appliance warranty does not cover the costs for ladder trucks, scaffolding, or other elevation systems that may become necessary for carrying out servicing under warranty.

Do not modify or tamper with the heat pump as dangerous situations can be created and the manufacturer will not be liable for any damage caused. The validity of the warranty shall be void in the event of failure to comply with the above-mentioned indications.

1.4. WARNINGS REGARDING SAFETY AND INSTALLATION STANDARDS

- The cooler must be installed by a qualified and suitably trained technician, in compliance with the national legislation in force in the country of destination (Ministerial Decree 329/2004). **AERMEC will not assume any responsibility for damage due to failure to follow these instructions.**
- Before beginning any operation, **READ THESE INSTRUCTIONS CAREFULLY AND CARRY OUT THE SAFETY CHECKS TO AVOID ALL RISKS.** All the staff involved must have thorough knowledge of the operations and any dangers that may arise at the moment in which the installation operations are carried out.

2. PRODUCT IDENTIFICATION

The units can be identified through:

- **PACKING LABEL** which shows the product identification data
- **TECHNICAL PLATE** (see position chap. 2.1.).

AERMEC		AERMEC SPA via Roma 396 02046 - Bolognina (VT) ITALIA		CE
Model		Pool size		
W	kW	COEF		
W	W	COEF		
W	A	COEF		
W	A	COEF		
TS (HP) °C	Max	COEF (HP) max		
RES. ELEC. HEATER	W	COEF = A		
RES. ELEC. HEEDINGS	W	COEF = A		
Serious				

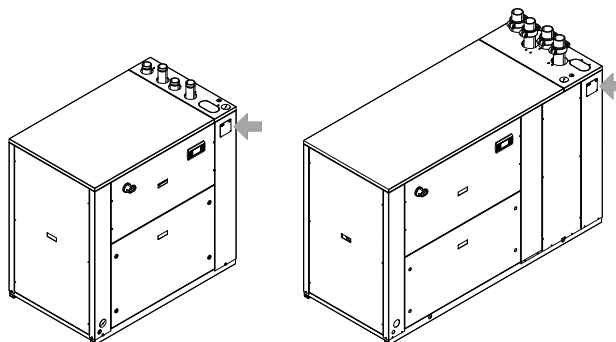
▲
example of technical plate

2.1. TECHNICAL PLATE POSITION



ATTENTION

Tampering, removal, lack of the identification plate or other does not allow the safe identification of the product and will make any installation or maintenance operation to be performed difficult.



3. PRESENTATION

AERMEC presents the new **WRL-H** units, **COOLING CIRCUIT REVERSIBLE HEAT PUMPS, OPTIMISED FOR GEOTHERMIC SYSTEMS** that are water-cooled and operate with R410A refrigerant.

They are **INDOOR UNITS** with hermetic scroll compressors that perfectly meet the requirements of the residential market:

High performance

These units have been designed optimising functioning in heat pump mode, allowing to reach high efficiencies.

Easy installation

The electric and hydraulic connections are all positioned in the upper part of the unit facilitating the installation and maintenance operations. This also allows to reduce the technical spaces and their positioning in as smaller space possible.

Silent

The units are distinguished for their silent operation. Careful soundproofing of the unit with suitable sound-absorbent material confer all units with noise limits that allow them to be used in homes and not necessarily in dedicated technical premises.

Dynamic set point

The electronic regulation, via the aid of an external air temperature probe (ACCESSORY) and according to the external conditions, automatically modifies the set point of the system water temperature, thereby improving the energy efficiency of the system.

THE UNITS ARE OPTIMISED FOR:

- **GEOTHERMIC SYSTEMS**
Production of water for heating systems with FAN COILS, RADIANT PANELS OR LOW TEMPERATURE RADIATORS, up to 55°C.

4. SYSTEM EXAMPLES



The WRL heat pump can manage up to a maximum of 3 ZONES.

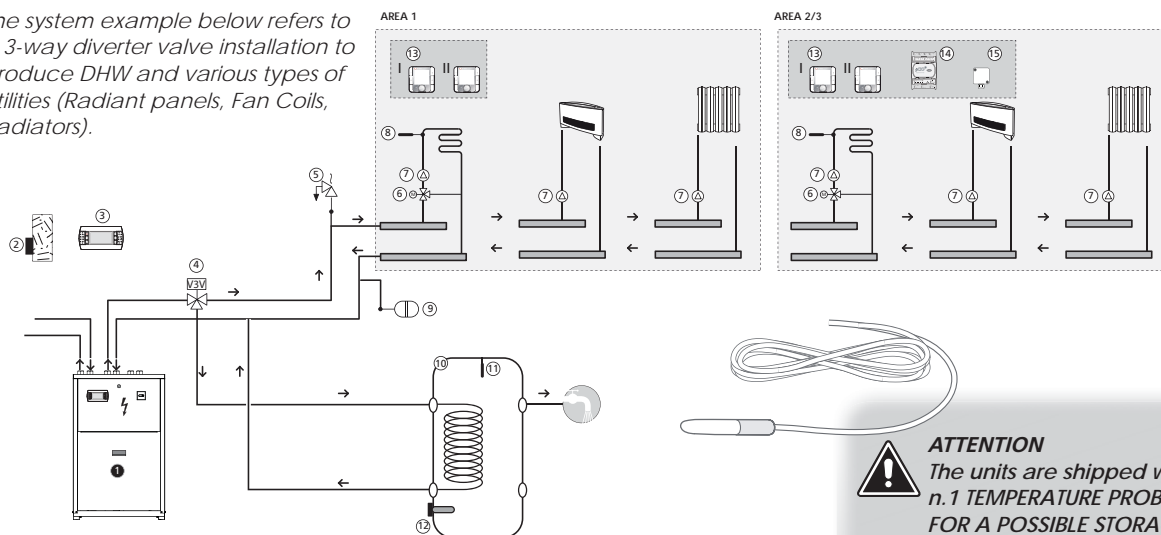
ZONE N° 1: Managed as per standard thanks to last generation electronic regulation. It is recommended to mount the "SSM" electronic marking probe (accessory) to control the flow temperature. (The unit is shipped with n.1 temperature probe for a possible DHW storage tank).

ZONE 2 and ZONE 3 are managed using the VMFCRP + SSM accessories for each zone.

E.G. The heat pump is connected directly to the utility circuit (SYSTEM) and produces domestic hot water (DHW) via the management of a 3-way diverter valve, connected to a storage tank.

The DHW production has priority over that of the system.

The system example below refers to a 3-way diverter valve installation to produce DHW and various types of utilities (Radiant panels, Fan Coils, Radiators).



Examples of hydraulic layouts

NOTE:

VMFCRP can control:

1. n° 2 STA/STH or n° 2 pumps (digital contacts).
2. n° 1 mixing valve (analogue contact) - SSM probes kit necessary.

5. CONFIGURATOR

1,2,3	4,5,6	7	8	9	10	11	12	13	14	15
WRL	180	°	H	°	°	°	°	°	°	°

	CODE	
1,2,3	WRL	
4,5,6	SIZE	180 - 200 - 300 - 400 - 500 - 550 - 600 - 650
7	FIELD OF USE	
	°	Standard with water produced over +4 °C
	Y	Low temperature with water produced to -8 °C
	X	Electronic thermostatic valve with water produced up to 8 °C
8	MODEL	
	H	Reversible cooling circuit
9	VERSION	
	°	Standard
10	HEAT RECOVERY	
	°	Without heat recovery
	D	Desuperheater
11	GEOHERMIC SIDE PUMPS	
	°	Without pump
	B	Low static pressure pump
	U	High static pressure pump
	F	Low static pressure inverter pump
	I	High static inverter pump
12	SYSTEM SIDE PUMPS	
	°	Without pump
	P	Low static pressure pump
	N	High static pressure pump
13	FIELD NOT USED	
	°	
14	SOFT START	
	°	Without Soft Start
	S	Soft Start
15	POWER SUPPLY	
	°	400V-3N-50 Hz
	5	500V-3-50Hz (only models WRL400-550-600-650)

Configuration example: WRL180°H°°°°°°°°

6. DESCRIPTION OF COMPONENTS

6.1. STRUCTURE

Base and support structure.

Made up from hot galvanised sheet steel elements with suitable thickness. All parts painted with polyester powder paints (RAL 9002), resistant to atmospheric agents. Realised in a way to allow total accessibility to the internal components. All panels are covered with sound-absorbent material with suitable thickness.

6.2. COOLING CIRCUIT

Compressor.

High efficiency scroll hermetic compressors (mounted on anti-vibration supports), activated by a 2-pole electric motor with internal heat protection.

Biflow dehydrator filter (sizes 180-500).

Hermetic-mechanical with cartridges made of ceramic and hygroscopic material, able to withhold impurities and any traces of humidity present in the cooling circuit.

Filter dehydrator, with replaceable cartridges (sizes 550-650).

Mechanical with cartridges, made of ceramic and hygroscopic material, able to withhold impurities and any traces of humidity present in the cooling circuit.

Indicator for liquid passage with humidity presence signal.

Used to check the refrigerant gas load and the eventual presence of humidity in the cooling circuit.

Mechanical thermostatic valve.

The mechanical valve, with external equaliser positioned at the evaporator inlet, modulates the flow of gas to the evaporator, according to the heat load, in order to ensure a correct heating level of the intake gas.

Electronic thermostatic valve.

The valve modulates the flow of gas to the evaporator, according to the heat load, in order to ensure a correct heating level of the intake gas.

One-way valves. (sizes 550-650).

Allows the passage of the refrigerant in just one direction.

4-way cycle reversing valve.

Inverts the flow of refrigerant gas.

6.3. HYDRAULIC CIRCUIT

The WRL-H heat pumps are *supplied as standard with*:

- **Water filter.** Equipped with steel filtering mesh; prevents the heat exchangers from clogging.
- **Flow switch.** It checks that there is water circulation. Adversary, it blocks the unit
- **Safety valve (6 bar).** Equipped with a piped discharger and intervenes by discharges the over pressure in case of anomalous pressures.
- **Expansion vessel (versions with pump/s).** With nitrogen pre-load membrane.
- **Drain cock**
- **Victaulic hydraulic connections**

6.4. COMPONENTS THAT CAN BE CONFIGURED

The components that can be selected by the configurator are:

INTERNAL/EXTERNAL CIRCUIT

- Standard pump.
- High static pressure pump.

EXTERNAL CIRCUIT

- Low static pressure inverter pump.
- High static inverter pump.

HEAT RECOVERY

- **Desuperheater (optional).** Plates-type (AISI 316), it is insulated externally with closed cell material to reduce heat loss.

6.5. SAFETY AND CONTROL

Low pressure transducers

Placed on the low pressure side of the cooling circuit, it signals the work pressure to the control board, generating a pre-warning in case of anomalous pressures.

High pressure transducer

Placed on high pressure side of cooling circuit, signals the work pressure to control board, generating a pre-warning in case abnormal pressure occurs.

High pressure switch

With fixed calibration, placed on high pressure side of cooling circuit, inhibits functioning of compressor if abnormal work pressure occurs.

6.6. ELECTRIC CONTROL BOARD AND REGULATION

Electric power and control board, manufactured in compliance with the EN 60204-1/IEC 204-1 Standards, complete with:

- door lock main isolating switch,
- magnet circuit breaker switches and contactors for compressors,
- phase sequence control,
- connection clamps to the remote keyboard (OPTIONAL),
- clamps for signalling the remote alarm,
- clamps for signalling compressor switch-on status,
- clamps for boiler/resistance alarm signal,
- clamps for differential pressure switch alarm signal,
- clamps for external air temperature probe (ACCESSORY),
- electronic control µPC,
- soft-start (OPTIONAL),
- control circuit numbered cables,
- clamps for 3-way valve,
- 0-10V clamps for modulating valve control.

"Chiller" water set-point compensation due to external temp.

Adaptation of the unit set point depending on the external temperature, allowing greater comfort and energy saving. ***The system return Set Point is established in accordance with the external air temperature. Function guaranteed if the external air probe is present (ACCESSORY).***

Electronic controller µPC

The device is the new controller for management of the water-cooled reversible units; the new PGD1 8-digit display is clearly legible, while the icons provide immediate visibility of machine operation.

Some accesses are protected by password and only available to the after-sales technical service.

The electronics also integrates a series of protection algorithms with the purpose of preventing any damage to the main components of the system.

FUNCTIONALITY LIST:

1. Parameterisation of the compressor switch-on/off times prevent switch on/off activation at short intervals.
2. In order to prevent breakage due to freezing water, 3 antifreezes, "geothermic, system and zones" are envisioned which are contained within. The microprocessor also envisions compressor block, whenever the temperature detected by the heat exchanger output probe is lower than the anti-freeze set.
3. Water flow rate alarm activated by the differential pressure

- switches installed in series.
- Condensation control is managed via speed modulation of the pumps with phase cut systems or inverters, a 2-way modulating valve and ON/OFF pumps.
 - Production of DHW through a 3-way diverter valve or the total recovery version.

Additional functions:

- Control of an external integration resource dedicated to DHW.
- System control with heat pump and boiler.
- Anti-Legionella cycle.
- Time periods for the daily / weekly programming.

Heat regulation

⚠ Temperature regulation is based *on the return water from the system*. The configured set points refer to the temperature of the return water. If, for example, the set point is set at +30°C, a flow temperature of +35°C results.

System side circulation pump

The circuit board envisions an output for the management of the circulation pump, always on in COOLING and HEATING mode, switched off with a delay of 1 minute from unit switch off (stand-by).

Source side pump

The circuit board envisions an output for the source side pump control (see pumps available at configurator). The source side pump is switched on before start up of the compressor and switched off about 30 seconds after the compressor is switched off.

Anti-freeze alarm

⚠ *The anti-freeze function is only active if the unit is ON or in stand-by.* In order to prevent breakage of the plate heat exchanger due to freezing of the water it contains, the micro processor envisions the compressor blocking if the temperature detected by the heat exchanger output probe results less than +4°C.

THIS ANTI-FREEZE SET TEMPERATURE CAN ONLY BE VARIED BY AN AUTHORISED AFTER-SALES CENTRE AND ONLY AFTER HAVING CHECKED THAT THERE IS ANTI-FREEZE SOLUTION IN THE WATER SYSTEM.

The intervention of this alarm determines compressor and block but not of the pump, which remains active.

Domestic hot water anti-freeze

The DHW anti-freeze function is only active if it has an integration resource dedicated to the storage of domestic hot water.

The integration resource is activated if

the temperature of the water detected by the sanitary probe is less than +4°C and is switched off at +7°C.

Wizard

To facilitate commissioning the unit, a start-up procedure has been created. This procedure is used upon the first start-up.

Supervision system

- MODBUS

⚠ **For other requirements, contact the head office.**



PGD1 GRAPHIC TERMINAL

- backlit
- LCD
- Icons to identify the type of operation.


7. ACCESSORIES

- **AER485P1**: RS-485 interface for supervising systems with MODBUS protocol.
- **VT**: Anti-vibration mounts to be assembled under the unit's sheet steel base.
- **STA**: Room temperature probe, 230Vac recess kit containing the room probe with display and regulation knob, able to control an ON-OFF valve or a zone pump.
- **STH**: Room/humidity temperature probe. 230Vac recess kit containing the room and humidity probe with display and regulation knob. The STH probe can control an ON-OFF valve or a zone pump and the dehumidifier.
- **SSM**: Electronic marking probe to be used together with the mixer valve in applications with radiant panels. Accessory to be requested along with the VMFCRP zone accessory (for zones 2 and 3).
- **S...I**: System storage tanks; available in sizes 200, 300, 400 and 500 litres (S200I, S300I, S400I and S500I).
- **PGD1**: Simplified remote panel. Allows to perform the basic controls of the unit with alarm signals. Can be controlled from a max of 500 m with 2 PAIRS of TWISTED cable + SHIELD with shielded pairs and TCONN6J000.
- **KSAE**: External air probe. Temperature probe with plastic container.
- **VMFCRP**: Zones Management.
- The WRL heat pump, can manage up to a maximum of n° 3 zones with the following methods:
 - Zone n° 1: Managed as per standard thanks to last generation electronic regulation. It is recommended to mount the "SSM" electronic marking probe (accessory) to control the flow temperature.
 - **The unit is shipped with n.1 temperature probe for a possible DHW storage tank.**
 - Management of the Zone 2 and Zone 3 is possible using the VMFCRP + SSM accessories for each zone.


7.1. ACCESSORIES COMPATIBILITY TABLE

WRL-H	180	200	300	400	500	550	600	650
AER485P1	•	•	•	•	•	•	•	•
VT	9	9	9	9	15	15	15	15
STA	•	•	•	•	•	•	•	•
STH	•	•	•	•	•	•	•	•
SSM	•	•	•	•	•	•	•	•
S...I (200-300-400-500)	•	•	•	•	•	•	•	•
PGD1	•	•	•	•	•	•	•	•
KSAE	•	•	•	•	•	•	•	•
VMFCRP	•	•	•	•	•	•	•	•

HEATING

WRL-H	VERSION	U.M.	180H	200H	300H	400H	500H	550H	600H	650H
 HEATING MODE 10/* - 40/45°C "FAN COILS"										
Heating capacity	°	kW	52.6	70.4	76.0	93.0	105.4	143.2	163.7	183.1
Total input power	°	kW	12.6	17.2	18.5	21.4	23.5	32.0	36.3	41.5
Total input current	°	A	23	29	31	37	41	57	65	75
Condenser water flow rate	°	l/h	9050	12100	13070	16000	18130	24620	28160	31490
Condenser pressure drops	°	kPa	28	48	48	70	29	52	54	67
Evaporator water consumption	°	l/h	9360	12450	13580	16400	19030	24750	28760	32370
Evaporator pressure drops	°	kPa	31	52	51	74	34	56	57	71
C.O.P.	°	-	4.16	4.09	4.10	4.35	4.48	4.47	4.51	4.42

COOLING

WRL-H	VERSION	U.M.	180H	200H	300H	400H	500H	550H	600H	650H
 COOLING MODE 12/7 - 30/35°C "FAN COILS"										
Cooling capacity	°	kW	44.8	59.5	64.7	79.2	92.8	119.6	139.6	156.6
Total input power	°	kW	10.7	14.3	15.9	17.9	19.8	27.0	30.7	35.1
Total input current	°	A	20	25	28	32	36	52	60	69
Evaporator water flow rate	°	l/h	7710	10230	11120	13620	15960	20570	24010	26930
Evaporator pressure drops	°	kPa	22	37	36	52	25	40	40	49
Condenser water flow rate	°	l/h	9360	12450	13580	16400	19030	24750	28760	32370
Condenser pressure drops	°	kPa	31	52	51	74	34	56	57	71
Commercial EER	°	W/W	4.21	4.15	4.07	4.41	4.69	4.43	4.55	4.46
Commercial ESEER	°	W/W	5.25	5.21	5.25	5.36	6.25	6.25	6.18	5.75

UNI EN14511; *considers the pumping capacity required to overcome the pressure drops of the exchanger, added to the heating capacity and input power and removed from the cooling capacity.*


Note:

[*]; Capacity of the external exchanger during cooling mode.




Attention:

to obtain data with UNI EN 14511 pump, refer to the "MAGELLANO" selection programme.

 Reference conditions when hot: data according to UNI EN 14511 - 2008

Evaporator	Condenser
Input temperature 10°C	Input temperature 40°C
Output temperature *°C	Output temperature 45°C

 Reference conditions when cold: data according to UNI EN 14511 - 2008

Evaporator	Condenser
Input temperature 12°C	Input temperature 30°C
Output temperature 7°C	Output temperature 35°C

HEATING

WRL-H	VERSION	U.M.	180H	200H	300H	400H	500H	550H	600H	650H
HEATING MODE 10/5 - 40/45°C "FAN COILS"										
Heating capacity	°	kW	51.20	68.40	73.90	89.40	102.80	138.80	158.70	177.10
Input power	°	kW	12.50	16.70	18.00	20.80	23.00	31.00	35.00	39.70
Total input current	°	A	23	29	31	37	41	57	65	75
Condenser water flow rate	°	l/h	8810	11760	12710	15380	17680	23870	27290	30460
Condenser pressure drops (inner side heat exchanger)	°	kPa	28	49	46	67	30	54	52	65
Evaporator water consumption	°	l/h	6870	9170	9920	12160	14110	19080	21870	24310
Evaporator pressure drops	°	kPa	16	29	30	43	20	35	33	41
C.O.P.	°	-	4.10	4.10	4.11	4.30	4.47	4.48	4.53	4.46

PUMP ELECTRICAL DATA											
Input power	low static pressure geo side pump	B/F	kW	0.88	1.03	1.08	1.81	1.94	2.65	2.76	2.84
Input current			A	1.66	1.95	2.04	3.65	3.91	4.91	5.11	5.25
Useful static pressure			kPa	126	100	101	149	179	155	145	120
Input power	high static pressure geo side pump	U/I	kW	1.40	1.59	2.13	2.33	2.49	3.19	3.32	3.42
Input current			A	2.83	3.21	3.80	4.15	4.43	5.30	5.51	5.67
Useful static pressure			kPa	200	175	230	202	232	215	202	175
Input power	low static pressure geo side pump	P	kW	0.77	0.90	0.94	1.05	1.14	1.70	1.79	2.67
Input current			A	1.45	1.70	1.78	1.99	2.16	3.15	3.31	4.94
Useful static pressure			kPa	140	125	123	105	123	125	119	167
Input power	high static pressure system side pump	N	kW	1.27	1.43	1.48	1.62	1.74	2.95	3.10	3.21
Input current			A	2.56	2.88	2.98	3.26	3.50	4.90	5.14	5.33
Useful static pressure			kPa	213	199	198	180	200	250	243	226

POWER SUPPLY										
	-	-	400V-3N-50 Hz							

SCROLL COMPRESSORS										
N° of compressors / N° of circuits	-	N°/N°	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1
Capacity control	-	%	0/50	0/50	0/50	0/50	0/50	0/50	0/50	0/50

EXCHANGERS (PLATES)										
INNER SIDE / UTILITIES heat exchanger	-	N°	1	1	1	1	1	1	1	1
SOURCE / OUTER SIDE heat exchanger	-	N°	1	1	1	1	1	1	1	1
Hydraulic (VICTAULIC) connections	-	Ø	2"	2"	2"	2"	2½"	2½"	2½"	2½"

Reference conditions:

Evaporator		Condenser	
Input temperature	10°C	Input temperature	40°C
Output temperature	5°C	Output temperature	45°C

COOLING

WRL-H	VERSION	U.M.	180H	200H	300H	400H	500H	550H	600H	650H
COOLING MODE 12/7 - 30/35°C "FAN COILS"										
Cooling capacity	°	kW	45.00	59.80	65.00	79.80	93.20	120.40	140.50	157.80
Input power	°	kW	10.50	14.00	15.60	17.40	19.40	26.30	29.90	34.00
Total input current	°	A	20	25	28	32	36	52	60	69
Rate of water evaporation	°	l/h	7740	10290	11190	13730	16030	20710	24160	27150
Evaporator pressure drops	°	kPa	20	37	37	55	25	40	40	50
Condenser water consumption	°	l/h	9360	12460	13590	16420	19040	24770	28790	32410
Condenser pressure drops	°	kPa	32	55	53	76	35	58	58	73
EER	°	-	4.29	4.27	4.17	4.59	4.80	4.58	4.70	4.64
ESEER	-	-	5.10	5.06	5.09	5.21	6.07	6.57	6.00	5.58

PUMP ELECTRICAL DATA											
Input power	low static pressure geo side pump	B/F	kW	0.91	1.07	1.12	1.23	1.32	1.86	1.93	2.87
Input current			A	1.72	2.02	2.11	2.33	2.50	3.44	3.57	5.32
Useful static pressure			kPa	122	93	92	59	88	84	69	103
Input power	high static pressure geo side pump	U/I	kW	1.44	1.64	1.71	1.87	2.01	3.23	3.37	3.46
Input current			A	2.90	3.30	3.44	3.77	4.06	5.36	5.59	5.74
Useful static pressure			kPa	196	168	168	137	169	207	190	156
Input power	low static pressure system side pump	P	kW	0.82	0.96	1.01	1.71	1.85	2.53	2.66	2.76
Input current			A	1.55	1.81	1.90	3.46	3.73	4.69	4.93	5.10
Useful static pressure			kPa	135	116	114	166	189	178	168	147
Input power	high static pressure system side pump	N	kW	1.33	1.50	2.02	2.21	2.37	3.04	3.20	3.32
Input current			A	2.68	3.02	3.60	3.93	4.23	5.05	5.32	5.51
Useful static pressure			kPa	208	190	242	219	242	239	228	205

POWER SUPPLY										
	-	-	400V-3N-50 Hz							

SCROLL COMPRESSORS										
N° of compressors / N° of circuits	-	N°/N°	2/1	2/1	2/1	2/1	2/1	2/1	2/1	2/1
Capacity control	-	%	0/50	0/50	0/50	0/50	0/50	0/50	0/50	0/50

EXCHANGERS (PLATES)										
INNER SIDE / UTILITIES heat exchanger	-	N°	1	1	1	1	1	1	1	1
SOURCE / OUTER SIDE heat exchanger	-	N°	1	1	1	1	1	1	1	1
Hydraulic (VICTAULIC) connections	-	Ø	2"	2"	2"	2"	2½"	2½"	2½"	2½"

Reference conditions:

Evaporator		Condenser	
Input temperature	12°C	Input temperature	30°C
Output temperature	7°C	Output temperature	35°C

DESUPERHEATER

WRL-H	VERSION	U.M.	180H	200H	300H	400H	500H	550H	600H	650H
COOLING DESUPERHEATER										
Recovered power T _{water} 40-45°C	-	kW	7.6	9.8	10.5	12.5	14.5	18.3	21.2	23.4
Quantity	-	n°	1	1	1	1	1	1	1	1
Water flow rate	-	l/h	1300	1690	1800	2140	2490	3150	3650	4030
Exchanger pressure drops	-	kPa	0.5	0.8	1.0	1.5	1.7	2.9	3.5	4.2
HEATING DESUPERHEATER										
Recovered power T _{water} 40-45°C	-	kW	13.2	17.0	18.1	21.4	25.3	32.8	37.4	41.0
Heating capacity (water 40-45 10-5) at the condenser	-	kW	38.0	51.3	55.7	68.1	77.5	106.0	121.3	136.1
Quantity	-	n°	1	1	1	1	1	1	1	1
Water flow rate	-	l/h	2270	2930	3120	3670	4350	5650	6430	7060
Exchanger pressure drops	-	kPa	1.5	2.4	2.9	3.8	4.5	8.0	9.8	11.7
Minimum flow rate	-	l/h	700	700	700	700	850	850	1000	1000
Maximum flow rate	-	l/h	17000	17000	17000	17000	17000	17000	17000	17000
Hydraulic connections (VICTAULIC)	-	Ø	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"

Reference conditions: (COOLING)

Evaporator

Input temperature 12°C
Output temperature 7°C

Condenser

Input temperature 30°C
Output temperature 35°C

Reference conditions: (HEATING)

Evaporator

Input temperature 10°C
Output temperature 5°C

Condenser

Input temperature 40°C
Output temperature 45°C

GENERAL DATA

WRL-H	VERSION	U.M.	180H	200H	300H	400H	500H	550H	600H	650H
PROTECTION RATING OF THE MACHINE										
IP	-	-	20	20	20	20	20	20	20	20
ELECTRICAL DATA										
Maximum current	°	A	32.6	41.8	45.2	52.1	59	99	112	125
Peak current with soft-start	°	A	119	123	125	167	174	265	310	323
Peak current with soft-start	°	A	88	93	95	124	131	201	232	245
WATER CONTENT										
inner side / utilities heat exchanger	-	dm3	10.1	10.1	11.7	11.7	15.2	15.2	20.6	20.6
outer side / source heat exchanger	-		10.1	10.1	11.7	11.7	15.2	15.2	20.6	20.6
MINIMUM SYSTEM WATER CONTENT										
Minimum content (standard)	-	l/kW	7	7	7	7	7	7	7	7
Minimum content [*]	-	l/kW	14	14	14	14	14	14	14	14
GEOHERMAL SIDE EXPANSION VESSEL (standard in versions with pump)										
Quantity	B	n°	1	1	1	1	1	1	1	1
	U		1	1	1	1	1	1	1	1
	F		1	1	1	1	1	1	1	1
	I		1	1	1	1	1	1	1	1
Capacity	-	l	8	8	8	8	12	12	12	12
SYSTEM SIDE EXPANSION VESSEL (standard in versions with pump)										
Quantity	P	n°	1	1	1	1	1	1	1	1
	N		1	1	1	1	1	1	1	1
Capacity	-	l	8	8	8	8	12	12	12	12
HYDRAULIC CIRCUIT SAFETY VALVE (standard in all versions)										
Quantity	-	n°	1	1	1	1	1	1	1	1
Calibration	-	bar	6	6	6	6	6	6	6	6
HIGH PRESSURE REFRIGERANT CIRCUIT SIDE SAFETY VALVE (standard in all versions)										
Quantity	-	n°	-	-	-	-	-	-	-	1
Calibration	-	bar	-	-	-	-	-	-	-	45
LOAD (ATTENTION: the declared data can be amended at any time by Aermec, if deemed necessary).										
Refrigerant	-	Kg	5.3	5.3	6.6	7.5	9.4	10.0	17.0	17.5
Oil	-	l	5.0	5.0	5.0	5.7	6.3	12.1	12.1	12.1
SOUND DATA										
Sound power	-	dB(A)	68.0	68.4	74.2	73.0	76.3	81.1	81.1	81.1
Sound pressure [**]	-	dB(A)	61.1	61.8	62.9	71.1	67.6	79.1	79.1	79.1
DIMENSIONS										
Height	°	mm	1380	1380	1380	1380	1380	1380	1380	1380
Width	°	mm	1320	1320	1320	1320	2009	2009	2009	2009
Depth	°	mm	845	845	845	845	845	845	845	845
WEIGHTS										
Empty weight	°	kg	370	370	381	388	522	598	708	753
Empty weight	D	kg	385	385	396	403	540	616	727	772

[*] Minimum water content for process applications or operation with low load.

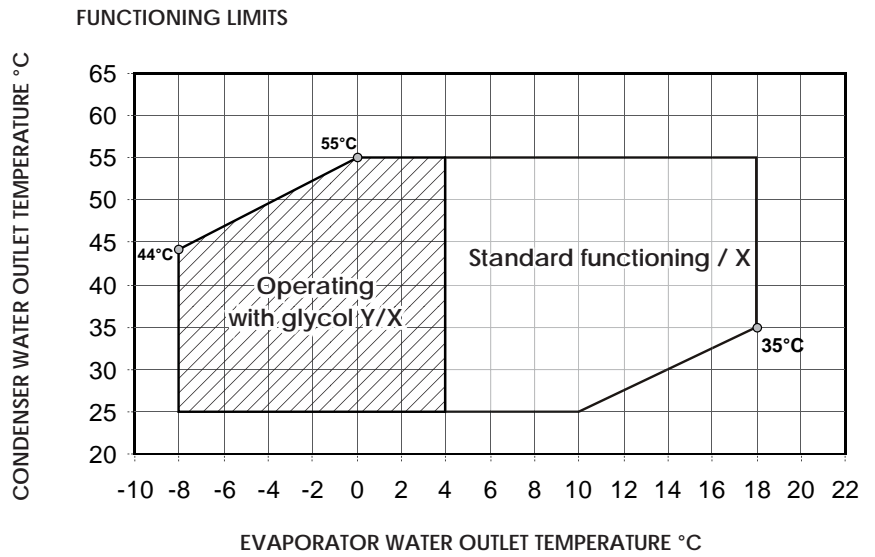
[**] Sound pressure in free field conditions with a reflective surface (directivity factor Q=2) in compliance with ISO 3744.

8. OPERATING LIMITS

The operating limits diagram is relative to a Δt on the evaporator and the condenser of 5°C.

Condenser outlet *inlet difference* (Δt_c):
min: 5° C.
max: 15° C.

Evaporator outlet *inlet difference* (Δt_e):
min: 3° C.
max: 10° C.



8.1. DESIGN DATA

REFRIGERANT SIDE FOR WRLH 180-200-300-500	U.M.	High pressure side	Low pressure side
Acceptable maximum pressure	bar	42	22
Acceptable maximum temperature	°C	125	38
Acceptable minimum temperature	°C	-10	-30

REFRIGERANT SIDE FOR WRLH 400-550-600	U.M.	High pressure side	Low pressure side
Acceptable maximum pressure	bar	42	30
Acceptable maximum temperature	°C	125	51
Acceptable minimum temperature	°C	-10	-30

REFRIGERANT SIDE FOR WRLH 650	U.M.	High pressure side	Low pressure side
Acceptable maximum pressure	bar	45	30
Acceptable maximum temperature	°C	125	51
Acceptable minimum temperature	°C	-10	-30

9. PERFORMANCE AND ABSORPTION THAT DIFFER FROM THE NOMINAL - STANDARD VERSIONS

9.1. WRL180XH***** HEATING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.
		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
EVAPORATOR WATER OUTLET TEMPERATURE °C	-8	36.38	8.02	4.54	35.71	8.89	4.02	35.14	9.91	3.55	34.59	11.05	3.13	-	-	-	-	-	-	-	-	-
	-6	39.61	8.11	4.89	38.88	8.96	4.34	38.24	9.97	3.83	37.58	11.10	3.39	36.82	12.30	2.99	-	-	-	-	-	-
	-4	42.70	8.19	5.22	41.93	9.03	4.64	41.21	10.03	4.11	40.44	11.14	3.63	39.55	12.32	3.21	38.45	13.55	2.84	-	-	-
	-3	44.21	8.23	5.38	43.42	9.06	4.79	42.65	10.05	4.24	41.84	11.16	3.75	40.88	12.34	3.31	39.70	13.55	2.93	-	-	-
	-2	45.70	8.26	5.53	44.88	9.09	4.94	44.08	10.08	4.37	43.21	11.17	3.87	42.19	12.35	3.42	40.93	13.56	3.02	-	-	-
	0	48.62	8.33	5.84	47.75	9.15	5.22	46.87	10.12	4.63	45.90	11.21	4.10	44.75	12.37	3.62	43.33	13.57	3.19	41.56	14.77	2.81
	2	51.50	8.39	6.13	50.58	9.21	5.49	49.62	10.17	4.88	48.55	11.24	4.32	47.27	12.39	3.81	45.70	13.58	3.37	43.74	14.77	2.96
	4	54.34	8.46	6.43	53.38	9.26	5.76	52.35	10.21	5.13	51.18	11.28	4.54	49.77	12.42	4.01	48.04	13.59	3.53	45.91	14.77	3.11
	5	55.77	8.49	6.57	54.78	9.28	5.90	53.71	10.23	5.25	52.49	11.30	4.65	51.20	12.50	4.10	49.22	13.60	3.62	46.99	14.77	3.18
	6	57.19	8.52	6.72	56.18	9.31	6.03	55.08	10.26	5.37	53.81	11.31	4.76	52.28	12.44	4.20	50.40	13.61	3.70	48.08	14.78	3.25
	7	58.63	8.54	6.86	57.59	9.34	6.17	56.46	10.28	5.49	55.14	11.33	4.87	53.54	12.46	4.30	51.59	13.62	3.79	49.18	14.78	3.33
	8	60.07	8.57	7.01	59.01	9.36	6.30	57.84	10.30	5.61	56.47	11.35	4.97	54.82	12.48	4.39	52.78	13.63	3.87	50.29	14.79	3.40
	10	63.00	8.63	7.30	61.90	9.42	6.57	60.66	10.35	5.86	59.19	11.39	5.19	57.41	12.51	4.59	55.23	13.66	4.04	52.56	14.81	3.55
12	-	-	-	64.87	9.48	6.85	63.56	10.40	6.11	62.00	11.44	5.42	60.09	12.55	4.79	57.76	13.70	4.22	54.92	14.84	3.70	
14	-	-	-	67.94	9.54	7.12	66.56	10.46	6.36	64.91	11.50	5.65	62.88	12.60	4.99	60.40	13.74	4.40	57.38	14.88	3.86	
16	-	-	-	-	-	-	69.70	10.53	6.62	67.95	11.56	5.88	65.80	12.66	5.20	63.18	13.80	4.58	59.98	14.93	4.02	
18	-	-	-	-	-	-	73.00	10.60	6.89	71.15	11.63	6.12	68.89	12.73	5.41	66.12	13.86	4.77	62.75	14.99	4.19	

9.2. WRL180XH***** COOLING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER
		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
EVAPORATOR WATER OUTLET TEMPERATURE °C	-8	27.29	8.18	3.34	26.04	9.07	2.87	24.67	10.12	2.44	23.19	11.28	2.06	-	-	-	-	-	-	-	-	-
	-6	30.32	8.27	3.67	29.03	9.15	3.17	27.57	10.19	2.71	25.97	11.33	2.29	24.23	12.56	1.93	-	-	-	-	-	-
	-4	33.24	8.36	3.98	31.91	9.22	3.46	30.38	10.24	2.97	28.66	11.37	2.52	26.76	12.58	2.13	24.70	13.83	1.79	-	-	-
	-3	34.65	8.39	4.13	33.31	9.26	3.60	31.75	10.27	3.09	29.98	11.39	2.63	28.00	12.60	2.22	25.84	13.84	1.87	-	-	-
	-2	36.05	8.43	4.27	34.70	9.29	3.74	33.10	10.29	3.22	31.28	11.41	2.74	29.23	12.61	2.32	26.98	13.85	1.95	-	-	-
	0	38.77	8.50	4.56	37.41	9.35	4.00	35.76	10.34	3.46	33.84	11.45	2.96	31.66	12.63	2.51	29.23	13.86	2.11	26.55	15.08	1.76
	2	41.43	8.57	4.84	40.07	9.40	4.26	38.38	10.39	3.70	36.38	11.48	3.17	34.07	12.66	2.69	31.46	13.87	2.27	28.58	15.08	1.90
	4	44.05	8.63	5.10	42.69	9.46	4.51	40.97	10.43	3.93	38.89	11.52	3.38	36.46	12.68	2.88	33.70	13.88	2.43	30.62	15.08	2.03
	5	45.34	8.66	5.23	44.00	9.48	4.64	42.26	10.45	4.04	40.15	11.54	3.48	37.67	12.69	2.97	34.83	13.89	2.51	31.65	15.09	2.10
	6	46.63	8.69	5.36	45.30	9.51	4.76	43.55	10.48	4.16	41.41	11.55	3.58	38.87	12.71	3.06	35.97	13.90	2.59	32.69	15.09	2.17
	7	47.92	8.72	5.49	46.60	9.54	4.89	45.00	10.50	4.28	42.67	11.57	3.69	40.09	12.72	3.15	37.11	13.91	2.67	33.75	15.10	2.24
	8	49.20	8.75	5.62	47.90	9.56	5.01	46.14	10.52	4.39	43.94	11.59	3.79	41.32	12.74	3.24	38.27	13.92	2.75	34.81	15.10	2.30
	10	51.78	8.81	5.87	50.52	9.62	5.25	48.76	10.57	4.61	46.52	11.64	4.00	43.81	12.78	3.43	40.63	13.95	2.91	37.01	15.13	2.45
12	-	-	-	53.17	9.68	5.49	51.42	10.63	4.84	49.15	11.68	4.21	46.36	12.82	3.62	43.07	13.99	3.08	39.29	15.16	2.59	
14	-	-	-	55.88	9.74	5.74	54.15	10.68	5.07	51.85	11.74	4.42	49.00	12.87	3.81	45.60	14.03	3.25	41.67	15.20	2.74	
16	-	-	-	-	-	-	56.96	10.75	5.30	54.65	11.80	4.63	51.74	12.93	4.00	48.25	14.09	3.42	44.18	15.25	2.90	
18	-	-	-	-	-	-	59.86	10.83	5.53	57.56	11.88	4.85	54.61	13.00	4.20	51.03	14.16	3.60	46.83	15.31	3.06	

WARNING!

The Power efficiency and absorbed Power data in these tables refer to the performance and absorption of the WRL units without considering the capacity of the pump units UNI EN 14511: 2008 (as require by Eurovent).

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	3	5	8	10
Cooling capacity	0.99	1	1.02	1.03
Input power	0.99	1	1.01	1.02
Heating capacity	0.99	1	1.02	1.03
AL CONDENSER	-	5	10	15
Cooling capacity	-	1	1.01	1.02
Input power	-	1	0.99	0.98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0.00001	0.00002	0.00005
Cooling capacity	1	0.99	0.98
Input power	1	1	1
Heating capacity	1	1	0.99
Input power	1	1	1.02

- KEY
- Ph Heating capacity
 - Pc Cooling capacity
 - Pe Input power

9.3. WRL200XH***** HEATING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.
		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
EVAPORATOR WATER OUTLET TEMPERATURE °C	-8	48.57	10.73	4.53	47.68	11.89	4.01	46.92	13.26	3.54	46.18	14.78	3.12	-	-	-	-	-	-	-	-	-
	-6	52.88	10.84	4.88	51.91	11.99	4.33	51.05	13.34	3.83	50.17	14.84	3.38	49.15	16.45	2.99	-	-	-	-	-	-
	-4	57.01	10.95	5.21	55.98	12.08	4.63	55.01	13.41	4.10	53.99	14.90	3.62	52.80	16.48	3.20	51.33	18.12	2.83	-	-	-
	-3	59.03	11.00	5.36	57.96	12.12	4.78	56.94	13.45	4.23	55.85	14.92	3.74	54.58	16.50	3.31	53.00	18.13	2.92	-	-	-
	-2	61.01	11.05	5.52	59.92	12.16	4.93	58.85	13.48	4.37	57.69	14.95	3.86	56.32	16.52	3.41	54.64	18.14	3.01	-	-	-
	0	64.92	11.14	5.83	63.75	12.24	5.21	62.58	13.54	4.62	61.28	14.99	4.09	59.75	16.55	3.61	57.85	18.15	3.19	55.49	19.75	2.81
	2	68.75	11.23	6.12	67.52	12.31	5.48	66.25	13.60	4.87	64.82	15.04	4.31	63.11	16.58	3.81	61.01	18.16	3.36	58.40	19.75	2.96
	4	72.55	11.31	6.41	71.26	12.38	5.75	69.89	13.66	5.12	68.32	15.08	4.53	66.45	16.61	4.00	64.14	18.18	3.53	61.29	19.76	3.10
	5	74.45	11.35	6.56	73.13	12.42	5.89	71.71	13.69	5.24	70.08	15.11	4.64	68.40	16.70	4.10	65.71	18.19	3.61	62.74	19.76	3.18
	6	76.36	11.39	6.70	75.01	12.45	6.02	73.54	13.72	5.36	71.84	15.13	4.75	69.79	16.65	4.19	67.28	18.21	3.70	64.19	19.77	3.25
	7	78.27	11.43	6.85	76.89	12.49	6.16	75.37	13.75	5.48	73.61	15.16	4.86	71.48	16.67	4.29	68.87	18.22	3.78	65.66	19.77	3.32
	8	80.20	11.47	6.99	78.79	12.52	6.29	77.22	13.78	5.60	75.39	15.18	4.97	73.18	16.69	4.39	70.47	18.24	3.86	67.14	19.78	3.39
	10	84.11	11.55	7.28	82.64	12.60	6.56	80.98	13.84	5.85	79.03	15.24	5.19	76.65	16.73	4.58	73.74	18.27	4.03	70.17	19.81	3.54
	12	-	-	-	86.60	12.67	6.83	84.85	13.92	6.10	82.77	15.30	5.41	80.22	16.79	4.78	77.11	18.32	4.21	73.31	19.85	3.69
14	-	-	-	90.71	12.76	7.11	88.87	13.99	6.35	86.65	15.38	5.64	83.95	16.86	4.98	80.64	18.38	4.39	76.61	19.90	3.85	
16	-	-	-	-	-	-	93.06	14.08	6.61	90.72	15.46	5.87	87.85	16.93	5.19	84.35	18.45	4.57	80.08	19.97	4.01	
18	-	-	-	-	-	-	97.46	14.18	6.87	95.00	15.55	6.11	91.97	17.03	5.40	88.27	18.54	4.76	83.78	20.05	4.18	

9.4. WRL200XH***** COOLING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER
		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
EVAPORATOR WATER OUTLET TEMPERATURE °C	-8	36.29	10.91	3.33	34.62	12.11	2.86	32.80	13.50	2.43	30.84	15.06	2.05	-	-	-	-	-	-	-	-	-
	-6	40.32	11.04	3.65	38.60	12.21	3.16	36.66	13.59	2.70	34.53	15.12	2.28	32.22	16.75	1.92	-	-	-	-	-	-
	-4	44.20	11.15	3.96	42.43	12.31	3.45	40.39	13.66	2.96	38.11	15.18	2.51	35.59	16.79	2.12	32.84	18.46	1.78	-	-	-
	-3	46.08	11.20	4.11	44.30	12.35	3.59	42.22	13.70	3.08	39.86	15.20	2.62	37.24	16.81	2.22	34.36	18.46	1.86	-	-	-
	-2	47.93	11.25	4.26	46.14	12.39	3.72	44.02	13.73	3.21	41.59	15.23	2.73	38.87	16.82	2.31	35.87	18.47	1.94	-	-	-
	0	51.56	11.34	4.54	49.75	12.47	3.99	47.56	13.80	3.45	45.00	15.27	2.95	42.10	16.85	2.50	38.86	18.49	2.10	35.31	20.12	1.76
	2	55.10	11.43	4.82	53.28	12.54	4.25	51.04	13.86	3.68	48.37	15.32	3.16	45.30	16.89	2.68	41.84	18.50	2.26	38.00	20.12	1.89
	4	58.57	11.52	5.09	56.77	12.62	4.50	54.48	13.92	3.91	51.71	15.37	3.37	48.49	16.92	2.87	44.82	18.52	2.42	40.71	20.12	2.02
	5	60.29	11.56	5.22	58.50	12.65	4.62	56.20	13.95	4.03	53.39	15.39	3.47	50.09	16.94	2.96	46.31	18.53	2.50	42.08	20.13	2.09
	6	62.00	11.60	5.35	60.23	12.69	4.75	57.91	13.98	4.14	55.06	15.42	3.57	51.69	16.95	3.05	47.82	18.54	2.58	43.47	20.13	2.16
	7	63.71	11.64	5.47	61.96	12.72	4.87	59.80	14.00	4.27	56.74	15.44	3.67	53.31	16.97	3.14	49.35	18.56	2.66	44.87	20.14	2.23
	8	65.42	11.68	5.60	63.69	12.76	4.99	61.36	14.04	4.37	58.43	15.47	3.78	54.94	17.00	3.23	50.89	18.57	2.74	46.29	20.15	2.30
	10	68.85	11.76	5.85	67.17	12.83	5.23	64.84	14.10	4.60	61.86	15.52	3.98	58.25	17.04	3.42	54.03	18.61	2.90	49.21	20.18	2.44
	12	-	-	-	70.70	12.91	5.48	68.38	14.18	4.82	65.35	15.59	4.19	61.65	17.10	3.60	57.27	18.66	3.07	52.24	20.22	2.58
14	-	-	-	74.30	13.00	5.72	72.00	14.26	5.05	68.95	15.66	4.40	65.16	17.17	3.79	60.64	18.72	3.24	55.41	20.28	2.73	
16	-	-	-	-	-	-	75.74	14.34	5.28	72.67	15.75	4.61	68.80	17.25	3.99	64.16	18.80	3.41	58.75	20.34	2.89	
18	-	-	-	-	-	-	79.60	14.44	5.51	76.53	15.85	4.83	72.61	17.34	4.19	67.85	18.89	3.59	62.28	20.43	3.05	

WARNING!

The Power efficiency and absorbed Power data in these tables refer to the performance and absorption of the WRL units without considering the capacity of the pump units UNI EN 14511: 2008 (as require by Eurovent).

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	3	5	8	10
Cooling capacity	0.99	1	1.02	1.03
Input power	0.99	1	1.01	1.02
Heating capacity	0.99	1	1.02	1.03
AL CONDENSER	-	5	10	15
Cooling capacity	-	1	1.01	1.02
Input power	-	1	0.99	0.98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0.00001	0.00002	0.00005
Cooling capacity	1	0.99	0.98
Input power	1	1	1
Heating capacity	1	1	0.99
Input power	1	1	1.02

- KEY
- Ph Heating capacity
 - Pc Cooling capacity
 - Pe Input power

9.5. WRL300XH***** HEATING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.
		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
EVAPORATOR WATER OUTLET TEMPERATURE °C	-8	52.47	11.53	4.55	51.51	12.78	4.03	50.69	14.25	3.56	49.89	15.88	3.14	-	-	-	-	-	-	-	-	-
	-6	57.13	11.65	4.90	56.09	12.88	4.35	55.15	14.33	3.85	54.20	15.95	3.40	53.11	17.67	3.00	-	-	-	-	-	-
	-4	61.60	11.77	5.23	60.48	12.98	4.66	59.44	14.41	4.12	58.33	16.01	3.64	57.05	17.71	3.22	55.45	19.47	2.85	-	-	-
	-3	63.77	11.82	5.39	62.62	13.03	4.81	61.52	14.45	4.26	60.34	16.03	3.76	58.96	17.73	3.33	57.26	19.48	2.94	-	-	-
	-2	65.92	11.88	5.55	64.73	13.07	4.95	63.58	14.48	4.39	62.32	16.06	3.88	60.85	17.75	3.43	59.03	19.49	3.03	-	-	-
	0	70.14	11.97	5.86	68.88	13.15	5.24	67.61	14.55	4.65	66.21	16.11	4.11	64.55	17.78	3.63	62.50	19.50	3.20	59.95	21.23	2.82
	2	74.28	12.07	6.16	72.95	13.23	5.51	71.58	14.62	4.90	70.03	16.16	4.33	68.18	17.81	3.83	65.92	19.52	3.38	63.10	21.22	2.97
	4	78.39	12.15	6.45	76.99	13.31	5.79	75.51	14.68	5.14	73.82	16.21	4.55	71.79	17.85	4.02	69.30	19.54	3.55	66.22	21.23	3.12
	5	80.44	12.20	6.60	79.01	13.35	5.92	77.48	14.71	5.27	75.71	16.23	4.66	73.90	18.00	4.11	70.99	19.55	3.63	67.78	21.23	3.19
	6	82.50	12.24	6.74	81.04	13.38	6.06	79.45	14.74	5.39	77.62	16.26	4.77	75.40	17.89	4.22	72.69	19.56	3.72	69.36	21.24	3.27
	7	84.57	12.28	6.89	83.07	13.42	6.19	81.43	14.77	5.51	79.53	16.29	4.88	77.23	17.91	4.31	74.41	19.58	3.80	70.94	21.25	3.34
	8	86.65	12.32	7.03	85.12	13.46	6.32	83.43	14.81	5.63	81.46	16.32	4.99	79.07	17.93	4.41	76.14	19.60	3.89	72.54	21.26	3.41
	10	90.88	12.41	7.32	89.29	13.54	6.60	87.50	14.88	5.88	85.38	16.38	5.21	82.81	17.98	4.61	79.66	19.64	4.06	75.81	21.29	3.56
	12	-	-	-	93.57	13.62	6.87	91.68	14.95	6.13	89.42	16.45	5.44	86.68	18.04	4.80	83.31	19.69	4.23	79.21	21.33	3.71
14	-	-	-	98.00	13.71	7.15	96.01	15.04	6.39	93.62	16.52	5.67	90.70	18.11	5.01	87.12	19.75	4.41	82.77	21.39	3.87	
16	-	-	-	-	-	-	100.54	15.13	6.64	98.01	16.61	5.90	94.92	18.20	5.22	91.13	19.83	4.60	86.52	21.46	4.03	
18	-	-	-	-	-	-	105.29	15.24	6.91	102.63	16.71	6.14	99.37	18.30	5.43	95.37	19.92	4.79	90.51	21.55	4.20	

9.6. WRL300XH***** COOLING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER
		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
EVAPORATOR WATER OUTLET TEMPERATURE °C	-8	39.46	12.11	3.26	37.65	13.43	2.80	35.66	14.98	2.38	33.53	16.70	2.01	-	-	-	-	-	-	-	-	-
	-6	43.84	12.24	3.58	41.97	13.55	3.10	39.87	15.07	2.64	37.55	16.77	2.24	35.03	18.58	1.89	-	-	-	-	-	-
	-4	48.06	12.37	3.89	46.14	13.65	3.38	43.92	15.16	2.90	41.44	16.83	2.46	38.69	18.62	2.08	35.71	20.47	1.74	-	-	-
	-3	50.11	12.42	4.03	48.17	13.70	3.52	45.91	15.20	3.02	43.34	16.86	2.57	40.49	18.64	2.17	37.37	20.48	1.82	-	-	-
	-2	52.12	12.48	4.18	50.17	13.74	3.65	47.86	15.23	3.14	45.22	16.89	2.68	42.27	18.66	2.26	39.01	20.49	1.90	-	-	-
	0	56.06	12.58	4.46	54.09	13.83	3.91	51.71	15.30	3.38	48.93	16.94	2.89	45.78	18.70	2.45	42.26	20.51	2.06	38.40	22.32	1.72
	2	59.91	12.68	4.72	57.94	13.91	4.16	55.50	15.37	3.61	52.59	16.99	3.09	49.25	18.73	2.63	45.49	20.52	2.22	41.32	22.32	1.85
	4	63.69	12.77	4.99	61.73	13.99	4.41	59.24	15.44	3.84	56.23	17.05	3.30	52.72	18.77	2.81	48.73	20.54	2.37	44.27	22.32	1.98
	5	65.56	12.82	5.11	63.61	14.03	4.53	61.11	15.47	3.95	58.05	17.07	3.40	54.46	18.79	2.90	50.36	20.56	2.45	45.76	22.33	2.05
	6	67.42	12.86	5.24	65.49	14.07	4.65	62.97	15.50	4.06	59.87	17.10	3.50	56.21	18.81	2.99	52.00	20.57	2.53	47.27	22.33	2.12
	7	69.28	12.91	5.37	67.37	14.11	4.77	65.00	15.60	4.17	61.70	17.13	3.60	57.97	18.83	3.08	53.66	20.59	2.61	48.79	22.34	2.18
	8	71.14	12.95	5.49	69.25	14.15	4.89	66.72	15.57	4.28	63.54	17.16	3.70	59.74	18.85	3.17	55.33	20.60	2.69	50.34	22.35	2.25
	10	74.86	13.04	5.74	73.04	14.23	5.13	70.50	15.65	4.51	67.26	17.22	3.91	63.34	18.91	3.35	58.75	20.65	2.85	53.51	22.39	2.39
	12	-	-	-	76.88	14.32	5.37	74.35	15.72	4.73	71.06	17.29	4.11	67.03	18.97	3.53	62.27	20.70	3.01	56.81	22.43	2.53
14	-	-	-	80.79	14.42	5.60	78.29	15.81	4.95	74.97	17.37	4.32	70.85	19.04	3.72	65.94	20.77	3.17	60.25	22.49	2.68	
16	-	-	-	-	-	-	82.35	15.91	5.18	79.02	17.47	4.52	74.82	19.13	3.91	69.77	20.85	3.35	63.88	22.57	2.83	
18	-	-	-	-	-	-	86.56	16.02	5.40	83.22	17.58	4.73	78.96	19.24	4.10	73.78	20.95	3.52	67.72	22.66	2.99	

WARNING!

The Power efficiency and absorbed Power data in these tables refer to the performance and absorption of the WRL units without considering the capacity of the pump units UNI EN 14511: 2008 (as require by Eurovent).

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	3	5	8	10
Cooling capacity	0.99	1	1.02	1.03
Input power	0.99	1	1.01	1.02
Heating capacity	0.99	1	1.02	1.03
AL CONDENSER	-	5	10	15
Cooling capacity	-	1	1.01	1.02
Input power	-	1	0.99	0.98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0.00001	0.00002	0.00005
Cooling capacity	1	0.99	0.98
Input power	1	1	1
Heating capacity	1	1	0.99
Input power	1	1	1.02

- KEY
- Ph Heating capacity
 - Pc Cooling capacity
 - Pe Input power

9.7. WRL400XH***** HEATING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.
		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
EVAPORATOR WATER OUTLET TEMPERATURE °C	-8	63.50	13.31	4.77	62.33	14.76	4.22	61.34	16.46	3.73	60.38	18.35	3.29	-	-	-	-	-	-	-	-	-
	-6	69.13	13.46	5.14	67.87	14.88	4.56	66.75	16.56	4.03	65.59	18.42	3.56	64.27	20.42	3.15	-	-	-	-	-	-
	-4	74.54	13.60	5.48	73.19	15.00	4.88	71.93	16.65	4.32	70.59	18.49	3.82	69.04	20.46	3.37	67.11	22.50	2.98	-	-	-
	-3	77.18	13.66	5.65	75.79	15.05	5.04	74.45	16.69	4.46	73.03	18.52	3.94	71.36	20.48	3.48	69.29	22.50	3.08	-	-	-
	-2	79.77	13.72	5.81	78.34	15.10	5.19	76.94	16.73	4.60	75.42	18.55	4.06	73.64	20.50	3.59	71.44	22.51	3.17	-	-	-
	0	84.88	13.83	6.14	83.35	15.20	5.49	81.82	16.81	4.87	80.13	18.61	4.30	78.12	20.54	3.80	75.64	22.53	3.36	72.55	24.52	2.96
	2	89.89	13.94	6.45	88.28	15.29	5.78	86.62	16.88	5.13	84.75	18.67	4.54	82.51	20.58	4.01	79.77	22.55	3.54	76.36	24.52	3.11
	4	94.86	14.04	6.76	93.17	15.37	6.06	91.38	16.96	5.39	89.33	18.73	4.77	86.88	20.62	4.21	83.86	22.57	3.72	80.14	24.52	3.27
	5	97.34	14.09	6.91	95.62	15.42	6.20	93.76	16.99	5.52	91.63	18.76	4.89	89.40	20.80	4.30	85.91	22.59	3.80	82.03	24.53	3.34
	6	99.84	14.14	7.06	98.07	15.46	6.34	96.15	17.03	5.65	93.93	18.79	5.00	91.25	20.66	4.42	87.97	22.60	3.89	83.93	24.54	3.42
	7	102.34	14.19	7.21	100.53	15.50	6.48	98.55	17.07	5.77	96.24	18.82	5.11	93.46	20.69	4.52	90.04	22.62	3.98	85.85	24.55	3.50
	8	104.86	14.24	7.37	103.01	15.55	6.63	100.97	17.11	5.90	98.58	18.85	5.23	95.68	20.71	4.62	92.14	22.64	4.07	87.79	24.56	3.57
	10	109.97	14.34	7.67	108.05	15.64	6.91	105.88	17.19	6.16	103.32	18.92	5.46	100.21	20.77	4.82	96.41	22.69	4.25	91.75	24.59	3.73
	12	-	-	-	113.23	15.73	7.20	110.94	17.27	6.42	108.21	19.00	5.70	104.89	20.84	5.03	100.82	22.75	4.43	95.86	24.64	3.89
14	-	-	-	118.60	15.84	7.49	116.19	17.37	6.69	113.29	19.09	5.94	109.76	20.93	5.25	105.43	22.82	4.62	100.16	24.71	4.05	
16	-	-	-	-	-	-	121.67	17.48	6.96	118.61	19.19	6.18	114.86	21.02	5.46	110.28	22.91	4.81	104.71	24.79	4.22	
18	-	-	-	-	-	-	127.42	17.60	7.24	124.20	19.31	6.43	120.25	21.14	5.69	115.41	23.02	5.01	109.53	24.89	4.40	

9.8. WRL400XH***** COOLING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER
		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
EVAPORATOR WATER OUTLET TEMPERATURE °C	-8	48.44	13.50	3.59	46.21	14.98	3.09	43.78	16.71	2.62	41.16	18.63	2.21	-	-	-	-	-	-	-	-	-
	-6	53.82	13.65	3.94	51.52	15.11	3.41	48.94	16.81	2.91	46.09	18.70	2.46	43.00	20.72	2.08	-	-	-	-	-	-
	-4	58.99	13.79	4.28	56.63	15.22	3.72	53.92	16.90	3.19	50.86	18.77	2.71	47.50	20.77	2.29	43.83	22.83	1.92	-	-	-
	-3	61.51	13.86	4.44	59.12	15.28	3.87	56.35	16.95	3.33	53.20	18.81	2.83	49.70	20.79	2.39	45.87	22.84	2.01	-	-	-
	-2	63.98	13.92	4.60	61.58	15.33	4.02	58.75	16.99	3.46	55.51	18.84	2.95	51.88	20.81	2.49	47.88	22.85	2.10	-	-	-
	0	68.82	14.03	4.90	66.40	15.43	4.30	63.48	17.07	3.72	60.07	18.90	3.18	56.19	20.85	2.70	51.87	22.87	2.27	47.13	24.89	1.89
	2	73.54	14.14	5.20	71.12	15.52	4.58	68.12	17.14	3.97	64.56	18.95	3.41	60.46	20.89	2.89	55.84	22.89	2.44	50.72	24.89	2.04
	4	78.18	14.25	5.49	75.77	15.61	4.85	72.72	17.22	4.22	69.02	19.01	3.63	64.72	20.93	3.09	59.82	22.91	2.61	54.34	24.89	2.18
	5	80.47	14.30	5.63	78.09	15.65	4.99	75.01	17.25	4.35	71.26	19.04	3.74	66.85	20.95	3.19	61.82	22.93	2.70	56.17	24.90	2.26
	6	82.76	14.35	5.77	80.39	15.70	5.12	77.30	17.29	4.47	73.49	19.07	3.85	69.00	20.97	3.29	63.83	22.94	2.78	58.02	24.91	2.33
	7	85.04	14.40	5.91	82.70	15.74	5.25	79.80	17.40	4.59	75.74	19.10	3.96	71.15	21.00	3.39	65.87	22.96	2.87	59.89	24.92	2.40
	8	87.32	14.45	6.04	85.01	15.78	5.39	81.89	17.37	4.72	77.99	19.13	4.08	73.33	21.03	3.49	67.92	22.98	2.96	61.79	24.93	2.48
	10	91.90	14.55	6.32	89.66	15.88	5.65	86.54	17.45	4.96	82.56	19.21	4.30	77.75	21.09	3.69	72.11	23.03	3.13	65.68	24.97	2.63
	12	-	-	-	94.37	15.97	5.91	91.27	17.54	5.20	87.23	19.29	4.52	82.28	21.16	3.89	76.44	23.09	3.31	69.73	25.02	2.79
14	-	-	-	99.17	16.08	6.17	96.10	17.64	5.45	92.03	19.38	4.75	86.97	21.24	4.09	80.94	23.16	3.49	73.96	25.08	2.95	
16	-	-	-	-	-	-	101.09	17.74	5.70	96.99	19.48	4.98	91.84	21.34	4.30	85.64	23.25	3.68	78.42	25.17	3.12	
18	-	-	-	-	-	-	106.25	17.87	5.95	102.15	19.60	5.21	96.92	21.45	4.52	90.57	23.37	3.88	83.12	25.27	3.29	

WARNING!

The Power efficiency and absorbed Power data in these tables refer to the performance and absorption of the WRL units without considering the capacity of the pump units UNI EN 14511: 2008 (as require by Eurovent).

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	3	5	8	10
Cooling capacity	0.99	1	1.02	1.03
Input power	0.99	1	1.01	1.02
Heating capacity	0.99	1	1.02	1.03
AL CONDENSER	-	5	10	15
Cooling capacity	-	1	1.01	1.02
Input power	-	1	0.99	0.98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0.00001	0.00002	0.00005
Cooling capacity	1	0.99	0.98
Input power	1	1	1
Heating capacity	1	1	0.99
Input power	1	1	1.02

- KEY
- Ph Heating capacity
 - Pc Cooling capacity
 - Pe Input power

9.9. WRL500XH***** HEATING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.
		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
EVAPORATOR WATER OUTLET TEMPERATURE °C	-8	73.00	14.77	4.94	71.66	16.37	4.38	70.52	18.26	3.86	69.41	20.35	3.41	-	-	-	-	-	-	-	-	-
	-6	79.48	14.93	5.32	78.03	16.51	4.73	76.73	18.37	4.18	75.41	20.44	3.69	73.88	22.65	3.26	-	-	-	-	-	-
	-4	85.70	15.08	5.68	84.15	16.63	5.06	82.69	18.47	4.48	81.16	20.51	3.96	79.37	22.70	3.50	77.15	24.95	3.09	-	-	-
	-3	88.72	15.15	5.86	87.12	16.69	5.22	85.59	18.52	4.62	83.95	20.55	4.09	82.03	22.72	3.61	79.66	24.96	3.19	-	-	-
	-2	91.71	15.22	6.03	90.06	16.75	5.38	88.45	18.56	4.77	86.71	20.58	4.21	84.66	22.74	3.72	82.12	24.97	3.29	-	-	-
	0	97.57	15.34	6.36	95.82	16.86	5.68	94.06	18.65	5.04	92.11	20.65	4.46	89.80	22.78	3.94	86.96	24.99	3.48	83.40	27.20	3.07
	2	103.34	15.46	6.68	101.49	16.96	5.99	99.58	18.73	5.32	97.43	20.71	4.70	94.86	22.83	4.16	91.70	25.01	3.67	87.78	27.20	3.23
	4	109.05	15.57	7.00	107.11	17.05	6.28	105.05	18.81	5.59	102.70	20.77	4.94	99.88	22.87	4.37	96.41	25.04	3.85	92.13	27.20	3.39
	5	111.91	15.63	7.16	109.92	17.10	6.43	107.79	18.85	5.72	105.33	20.80	5.06	102.80	23.00	4.47	98.77	25.05	3.94	94.30	27.21	3.47
	6	114.77	15.68	7.32	112.74	17.15	6.57	110.53	18.89	5.85	107.98	20.84	5.18	104.91	22.92	4.58	101.13	25.07	4.03	96.49	27.22	3.55
	7	117.65	15.74	7.48	115.57	17.20	6.72	113.29	18.93	5.98	110.64	20.87	5.30	107.44	22.95	4.68	103.52	25.09	4.13	98.69	27.23	3.62
	8	120.55	15.79	7.63	118.42	17.25	6.87	116.07	18.97	6.12	113.32	20.91	5.42	110.00	22.98	4.79	105.92	25.11	4.22	100.92	27.24	3.70
	10	126.43	15.90	7.95	124.22	17.35	7.16	121.73	19.06	6.39	118.78	20.99	5.66	115.21	23.04	5.00	110.83	25.16	4.40	105.47	27.28	3.87
	12	-	-	-	130.17	17.45	7.46	127.54	19.16	6.66	124.41	21.07	5.90	120.59	23.12	5.22	115.91	25.23	4.59	110.20	27.33	4.03
14	-	-	-	136.34	17.57	7.76	133.57	19.27	6.93	130.25	21.17	6.15	126.18	23.21	5.44	121.21	25.31	4.79	115.15	27.41	4.20	
16	-	-	-	-	-	-	139.87	19.39	7.21	136.36	21.29	6.41	132.05	23.32	5.66	126.78	25.41	4.99	120.37	27.50	4.38	
18	-	-	-	-	-	-	146.49	19.52	7.50	142.79	21.42	6.67	138.24	23.45	5.90	132.68	25.53	5.20	125.92	27.61	4.56	

9.10. WRL500XH***** COOLING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER
		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
EVAPORATOR WATER OUTLET TEMPERATURE °C	-8	56.53	15.13	3.74	53.93	16.79	3.21	51.09	18.73	2.73	48.04	20.88	2.30	-	-	-	-	-	-	-	-	-
	-6	62.81	15.30	4.10	60.13	16.93	3.55	57.11	18.84	3.03	53.79	20.96	2.57	50.19	23.23	2.16	-	-	-	-	-	-
	-4	68.85	15.46	4.45	66.09	17.06	3.87	62.92	18.95	3.32	59.36	21.04	2.82	55.43	23.28	2.38	51.16	25.59	2.00	-	-	-
	-3	71.78	15.53	4.62	69.00	17.12	4.03	65.77	18.99	3.46	62.09	21.08	2.95	58.01	23.30	2.49	53.53	25.60	2.09	-	-	-
	-2	74.67	15.60	4.79	71.87	17.18	4.18	68.57	19.04	3.60	64.79	21.11	3.07	60.55	23.33	2.60	55.88	25.61	2.18	-	-	-
	0	80.32	15.73	5.11	77.49	17.29	4.48	74.08	19.13	3.87	70.10	21.18	3.31	65.58	23.37	2.81	60.54	25.63	2.36	55.01	27.90	1.97
	2	85.83	15.85	5.41	83.00	17.39	4.77	79.50	19.21	4.14	75.35	21.24	3.55	70.56	23.41	3.01	65.17	25.65	2.54	59.20	27.90	2.12
	4	91.24	15.97	5.71	88.44	17.49	5.06	84.87	19.30	4.40	80.56	21.31	3.78	75.53	23.46	3.22	69.81	25.68	2.72	63.42	27.90	2.27
	5	93.92	16.02	5.86	91.13	17.54	5.20	87.54	19.34	4.53	83.16	21.34	3.90	78.02	23.48	3.32	72.15	25.70	2.81	65.56	27.91	2.35
	6	96.59	16.08	6.01	93.83	17.59	5.33	90.21	19.38	4.66	85.77	21.37	4.01	80.53	23.51	3.43	74.50	25.71	2.90	67.72	27.92	2.43
	7	99.25	16.14	6.15	96.52	17.64	5.47	93.20	19.40	4.80	88.39	21.41	4.13	83.04	23.54	3.53	76.87	25.73	2.99	69.90	27.93	2.50
	8	101.91	16.19	6.29	99.21	17.69	5.61	95.58	19.46	4.91	91.02	21.45	4.24	85.58	23.57	3.63	79.27	25.75	3.08	72.11	27.94	2.58
	10	107.25	16.31	6.58	104.64	17.79	5.88	101.00	19.56	5.16	96.36	21.53	4.48	90.74	23.63	3.84	84.16	25.81	3.26	76.66	27.98	2.74
	12	-	-	-	110.13	17.90	6.15	106.51	19.66	5.42	101.81	21.62	4.71	96.03	23.71	4.05	89.21	25.88	3.45	81.38	28.04	2.90
14	-	-	-	115.74	18.02	6.42	112.16	19.77	5.67	107.41	21.72	4.95	101.50	23.81	4.26	94.46	25.96	3.64	86.32	28.11	3.07	
16	-	-	-	-	-	-	117.98	19.89	5.93	113.20	21.84	5.18	107.18	23.92	4.48	99.95	26.06	3.83	91.52	28.21	3.24	
18	-	-	-	-	-	-	124.00	20.03	6.19	119.22	21.97	5.43	113.11	24.05	4.70	105.70	26.19	4.04	97.01	28.33	3.42	

WARNING!

The Power efficiency and absorbed Power data in these tables refer to the performance and absorption of the WRL units without considering the capacity of the pump units UNI EN 14511: 2008 (as require by Eurovent).

KEY

- Ph Heating capacity
- Pc Cooling capacity
- Pe Input power

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	3	5	8	10
Cooling capacity	0.99	1	1.02	1.03
Input power	0.99	1	1.01	1.02
Heating capacity	0.99	1	1.02	1.03
AL CONDENSER	-	5	10	15
Cooling capacity	-	1	1.01	1.02
Input power	-	1	0.99	0.98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0.00001	0.00002	0.00005
Cooling capacity	1	0.99	0.98
Input power	1	1	1
Heating capacity	1	1	0.99
Input power	1	1	1.02

9.11. WRL550XH***** HEATING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.
EVAPORATOR WATER OUTLET TEMPERATURE °C		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
		-8	98.58	19.85	4.97	96.77	22.00	4.40	95.23	24.53	3.88	93.73	27.35	3.43	-	-	-	-	-	-	-	-
-6	107.32	20.07	5.35	105.37	22.19	4.75	103.62	24.68	4.20	101.83	27.46	3.71	99.77	30.44	3.28	-	-	-	-	-	-	
-4	115.72	20.27	5.71	113.63	22.36	5.08	111.66	24.82	4.50	109.59	27.57	3.98	107.17	30.50	3.51	104.18	33.53	3.11	-	-	-	
-3	119.81	20.36	5.88	117.65	22.43	5.24	115.58	24.88	4.64	113.37	27.61	4.11	110.77	30.53	3.63	107.57	33.55	3.21	-	-	-	
-2	123.84	20.45	6.06	121.61	22.51	5.40	119.44	24.94	4.79	117.09	27.66	4.23	114.32	30.56	3.74	110.90	33.56	3.30	-	-	-	
0	131.76	20.62	6.39	129.40	22.65	5.71	127.02	25.06	5.07	124.39	27.75	4.48	121.27	30.62	3.96	117.42	33.59	3.50	112.62	36.55	3.08	
2	139.54	20.78	6.72	137.05	22.79	6.01	134.47	25.17	5.34	131.56	27.83	4.73	128.09	30.68	4.18	123.83	33.62	3.68	118.54	36.55	3.24	
4	147.26	20.93	7.04	144.64	22.92	6.31	141.86	25.28	5.61	138.68	27.92	4.97	134.87	30.74	4.39	130.19	33.65	3.87	124.40	36.56	3.40	
5	151.12	21.00	7.19	148.43	22.98	6.46	145.55	25.33	5.75	142.24	27.96	5.09	138.80	31.00	4.48	133.37	33.67	3.96	127.34	36.57	3.48	
6	154.98	21.08	7.35	152.24	23.05	6.61	149.26	25.39	5.88	145.81	28.00	5.21	141.66	30.80	4.60	136.57	33.69	4.05	130.30	36.58	3.56	
7	158.87	21.15	7.51	156.06	23.11	6.75	152.99	25.44	6.01	149.40	28.05	5.33	145.08	30.84	4.70	139.78	33.72	4.15	133.27	36.59	3.64	
8	162.78	21.22	7.67	159.91	23.18	6.90	156.74	25.50	6.15	153.03	28.10	5.45	148.54	30.88	4.81	143.03	33.75	4.24	136.28	36.61	3.72	
10	170.72	21.37	7.99	167.74	23.31	7.20	164.37	25.62	6.42	160.40	28.20	5.69	155.57	30.97	5.02	149.66	33.82	4.43	142.43	36.66	3.88	
12	-	-	-	175.78	23.45	7.49	172.23	25.75	6.69	167.99	28.32	5.93	162.83	31.07	5.24	156.52	33.91	4.62	148.81	36.73	4.05	
14	-	-	-	184.11	23.61	7.80	180.37	25.90	6.97	175.88	28.46	6.18	170.39	31.19	5.46	163.67	34.02	4.81	155.49	36.83	4.22	
16	-	-	-	-	-	-	188.88	26.06	7.25	184.13	28.61	6.44	178.31	31.34	5.69	171.20	34.15	5.01	162.54	36.95	4.40	
18	-	-	-	-	-	-	197.81	26.24	7.54	192.81	28.79	6.70	186.67	31.51	5.92	179.16	34.31	5.22	170.04	37.11	4.58	

9.12. WRL550XH***** COOLING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER
EVAPORATOR WATER OUTLET TEMPERATURE °C		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
		-8	73.04	20.45	3.57	69.69	22.69	3.07	66.02	25.30	2.61	62.07	28.21	2.20	-	-	-	-	-	-	-	-
-6	81.16	20.68	3.92	77.69	22.88	3.40	73.79	25.46	2.90	69.50	28.33	2.45	64.85	31.39	2.07	-	-	-	-	-	-	
-4	88.96	20.89	4.26	85.40	23.06	3.70	81.30	25.60	3.18	76.70	28.43	2.70	71.62	31.46	2.28	66.10	34.58	1.91	-	-	-	
-3	92.75	20.99	4.42	89.16	23.14	3.85	84.98	25.67	3.31	80.23	28.48	2.82	74.95	31.49	2.38	69.17	34.60	2.00	-	-	-	
-2	96.48	21.08	4.58	92.86	23.22	4.00	88.60	25.73	3.44	83.71	28.53	2.93	78.24	31.52	2.48	72.21	34.61	2.09	-	-	-	
0	103.78	21.26	4.88	100.13	23.37	4.29	95.72	25.85	3.70	90.58	28.62	3.16	84.74	31.58	2.68	78.23	34.64	2.26	71.07	37.70	1.89	
2	110.90	21.42	5.18	107.25	23.50	4.56	102.73	25.96	3.96	97.36	28.71	3.39	91.17	31.64	2.88	84.21	34.67	2.43	76.49	37.70	2.03	
4	117.89	21.58	5.46	114.27	23.64	4.83	109.66	26.08	4.21	104.09	28.79	3.61	97.59	31.70	3.08	90.20	34.70	2.60	81.95	37.71	2.17	
5	121.35	21.66	5.60	117.75	23.71	4.97	113.11	26.13	4.33	107.45	28.84	3.73	100.81	31.73	3.18	93.22	34.72	2.68	84.71	37.71	2.25	
6	124.80	21.73	5.74	121.23	23.77	5.10	116.56	26.19	4.45	110.82	28.88	3.84	104.05	31.77	3.28	96.26	34.75	2.77	87.50	37.73	2.32	
7	128.24	21.81	5.88	124.71	23.84	5.23	120.40	26.30	4.58	114.21	28.93	3.95	107.30	31.81	3.37	99.33	34.77	2.86	90.32	37.74	2.39	
8	131.68	21.88	6.02	128.19	23.91	5.36	123.50	26.30	4.69	117.61	28.98	4.06	110.58	31.85	3.47	102.42	34.80	2.94	93.18	37.76	2.47	
10	138.58	22.03	6.29	135.20	24.04	5.62	130.50	26.43	4.94	124.50	29.09	4.28	117.24	31.94	3.67	108.75	34.88	3.12	99.05	37.81	2.62	
12	-	-	-	142.30	24.19	5.88	137.63	26.56	5.18	131.54	29.21	4.50	124.08	32.04	3.87	115.27	34.97	3.30	105.15	37.89	2.78	
14	-	-	-	149.55	24.35	6.14	144.92	26.71	5.43	138.78	29.35	4.73	131.15	32.17	4.08	122.06	35.08	3.48	111.54	37.99	2.94	
16	-	-	-	-	-	-	152.44	26.88	5.67	146.26	29.51	4.96	138.49	32.32	4.28	129.14	35.22	3.67	118.25	38.12	3.10	
18	-	-	-	-	-	-	160.22	27.06	5.92	154.04	29.69	5.19	146.15	32.50	4.50	136.58	35.39	3.86	125.35	38.28	3.27	

WARNING!

The Power efficiency and absorbed Power data in these tables refer to the performance and absorption of the WRL units without considering the capacity of the pump units UNI EN 14511: 2008 (as require by Eurovent).

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	3	5	8	10
Cooling capacity	0.99	1	1.02	1.03
Input power	0.99	1	1.01	1.02
Heating capacity	0.99	1	1.02	1.03
AL CONDENSER	-	5	10	15
Cooling capacity	-	1	1.01	1.02
Input power	-	1	0.99	0.98
Heating capacity	-	the variations can be ignored		

FOULING FACTOR [K*M²]/[W]			
	0.00001	0.00002	0.00005
Cooling capacity	1	0.99	0.98
Input power	1	1	1
Heating capacity	1	1	0.99
Input power	1	1	1.02

- KEY
Ph Heating capacity
Pc Cooling capacity
Pe Input power

9.13. WRL600XH^{*****} HEATING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.
EVAPORATOR WATER OUTLET TEMPERATURE °C		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
		-8	112.69	22.44	5.02	110.62	24.88	4.45	108.86	27.74	3.92	107.15	30.92	3.46	-	-	-	-	-	-	-	-
-6	122.68	22.69	5.41	120.45	25.09	4.80	118.45	27.91	4.24	116.40	31.05	3.75	114.05	34.41	3.31	-	-	-	-	-	-	
-4	132.28	22.92	5.77	129.89	25.28	5.14	127.65	28.06	4.55	125.28	31.17	4.02	122.52	34.49	3.55	119.09	37.92	3.14	-	-	-	
-3	136.96	23.02	5.95	134.49	25.37	5.30	132.12	28.13	4.70	129.59	31.22	4.15	126.63	34.52	3.67	122.96	37.93	3.24	-	-	-	
-2	141.57	23.12	6.12	139.02	25.45	5.46	136.54	28.20	4.84	133.85	31.27	4.28	130.68	34.56	3.78	126.77	37.95	3.34	-	-	-	
0	150.62	23.31	6.46	147.92	25.61	5.78	145.20	28.33	5.12	142.19	31.37	4.53	138.63	34.62	4.00	134.23	37.98	3.53	128.74	41.33	3.12	
2	159.52	23.49	6.79	156.67	25.77	6.08	153.72	28.46	5.40	150.39	31.47	4.78	146.43	34.69	4.22	141.56	38.01	3.72	135.50	41.33	3.28	
4	168.34	23.67	7.11	165.34	25.91	6.38	162.16	28.58	5.67	158.53	31.56	5.02	154.17	34.75	4.44	148.83	38.05	3.91	142.21	41.34	3.44	
5	172.75	23.75	7.27	169.68	25.99	6.53	166.39	28.64	5.81	162.60	31.61	5.14	158.70	35.00	4.53	152.46	38.07	4.00	145.57	41.35	3.52	
6	177.17	23.83	7.43	174.03	26.06	6.68	170.63	28.70	5.94	166.68	31.66	5.26	161.94	34.83	4.65	156.12	38.10	4.10	148.95	41.36	3.60	
7	181.61	23.91	7.59	178.40	26.13	6.83	174.89	28.77	6.08	170.79	31.72	5.39	165.85	34.87	4.76	159.79	38.12	4.19	152.35	41.37	3.68	
8	186.08	24.00	7.75	182.81	26.21	6.98	179.18	28.83	6.21	174.93	31.77	5.51	169.80	34.91	4.86	163.51	38.16	4.29	155.79	41.40	3.76	
10	195.16	24.16	8.08	191.75	26.36	7.27	187.90	28.97	6.49	183.36	31.89	5.75	177.84	35.01	5.08	171.08	38.24	4.47	162.82	41.45	3.93	
12	-	-	-	200.94	26.52	7.58	196.88	29.12	6.76	192.04	32.02	6.00	186.14	35.13	5.30	178.92	38.34	4.67	170.11	41.53	4.10	
14	-	-	-	210.46	26.69	7.88	206.19	29.28	7.04	201.06	32.17	6.25	194.78	35.27	5.52	187.10	38.46	4.86	177.75	41.64	4.27	
16	-	-	-	-	-	-	215.91	29.46	7.33	210.49	32.35	6.51	203.84	35.43	5.75	195.71	38.61	5.07	185.81	41.78	4.45	
18	-	-	-	-	-	-	226.13	29.67	7.62	220.41	32.55	6.77	213.40	35.63	5.99	204.81	38.80	5.28	194.38	41.96	4.63	

9.14. WRL600XH^{*****} COOLING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER
EVAPORATOR WATER OUTLET TEMPERATURE °C		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
		-8	85.24	23.23	3.67	81.32	25.77	3.16	77.04	28.74	2.68	72.43	32.04	2.26	-	-	-	-	-	-	-	-
-6	94.71	23.49	4.03	90.66	25.99	3.49	86.12	28.92	2.98	81.11	32.18	2.52	75.68	35.65	2.12	-	-	-	-	-	-	
-4	103.81	23.73	4.38	99.66	26.19	3.81	94.88	29.08	3.26	89.51	32.30	2.77	83.59	35.73	2.34	77.14	39.28	1.96	-	-	-	
-3	108.24	23.84	4.54	104.05	26.28	3.96	99.16	29.15	3.40	93.63	32.35	2.89	87.46	35.77	2.45	80.72	39.30	2.05	-	-	-	
-2	112.59	23.94	4.70	108.37	26.37	4.11	103.39	29.23	3.54	97.69	32.41	3.01	91.30	35.80	2.55	84.26	39.31	2.14	-	-	-	
0	121.11	24.14	5.02	116.85	26.54	4.40	111.71	29.36	3.80	105.71	32.51	3.25	98.89	35.87	2.76	91.29	39.34	2.32	82.94	42.82	1.94	
2	129.41	24.33	5.32	125.16	26.70	4.69	119.88	29.49	4.06	113.61	32.61	3.48	106.40	35.94	2.96	98.27	39.38	2.50	89.26	42.82	2.08	
4	137.57	24.51	5.61	133.35	26.85	4.97	127.97	29.62	4.32	121.47	32.70	3.71	113.89	36.01	3.16	105.27	39.42	2.67	95.63	42.83	2.23	
5	141.62	24.60	5.76	137.42	26.93	5.10	132.00	29.68	4.45	125.40	32.76	3.83	117.65	36.04	3.26	108.79	39.44	2.76	98.85	42.84	2.31	
6	145.64	24.68	5.90	141.48	27.00	5.24	136.03	29.74	4.57	129.33	32.81	3.94	121.42	36.08	3.37	112.33	39.47	2.85	102.11	42.85	2.38	
7	149.66	24.77	6.04	145.54	27.08	5.38	140.50	29.90	4.70	133.28	32.86	4.06	125.22	36.13	3.47	115.91	39.50	2.93	105.40	42.87	2.46	
8	153.67	24.85	6.18	149.60	27.15	5.51	144.12	29.88	4.82	137.25	32.92	4.17	129.04	36.17	3.57	119.53	39.53	3.02	108.74	42.89	2.54	
10	161.72	25.03	6.46	157.78	27.31	5.78	152.29	30.02	5.07	145.29	33.04	4.40	136.82	36.27	3.77	126.90	39.61	3.20	115.59	42.95	2.69	
12	-	-	-	166.07	27.48	6.04	160.61	30.17	5.32	153.51	33.18	4.63	144.80	36.40	3.98	134.52	39.72	3.39	122.71	43.04	2.85	
14	-	-	-	174.52	27.66	6.31	169.12	30.34	5.57	161.95	33.33	4.86	153.05	36.54	4.19	142.44	39.85	3.57	130.16	43.15	3.02	
16	-	-	-	-	-	-	177.89	30.53	5.83	170.69	33.51	5.09	161.61	36.71	4.40	150.70	40.01	3.77	138.00	43.30	3.19	
18	-	-	-	-	-	-	186.97	30.74	6.08	179.77	33.72	5.33	170.56	36.91	4.62	159.38	40.20	3.96	146.28	43.48	3.36	

WARNING!

The Power efficiency and absorbed Power data in these tables refer to the performance and absorption of the WRL units without considering the capacity of the pump units UNI EN 14511: 2008 (as require by Eurovent).

KEY

- Ph Heating capacity
- Pc Cooling capacity
- Pe Input power

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	3	5	8	10
Cooling capacity	0.99	1	1.02	1.03
Input power	0.99	1	1.01	1.02
Heating capacity	0.99	1	1.02	1.03
AL CONDENSER	5	10	15	
Cooling capacity	-	1	1.01	1.02
Input power	-	1	0.99	0.98
Heating capacity	the variations can be ignored			

FOULING FACTOR [K*M²]/[W]			
	0.00001	0.00002	0.00005
Cooling capacity	1	0.99	0.98
Input power	1	1	1
Heating capacity	1	1	0.99
Input power	1	1	1.02

9.15. WRL650XH***** HEATING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.	Ph	Pe	C.O.P.
		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
EVAPORATOR WATER OUTLET TEMPERATURE °C	-8	125.77	25.46	4.94	123.46	28.22	4.38	121.50	31.47	3.86	119.58	35.08	3.41	-	-	-	-	-	-	-	-	-
	-6	136.92	25.74	5.32	134.43	28.46	4.72	132.19	31.66	4.18	129.91	35.23	3.69	127.29	39.04	3.26	-	-	-	-	-	-
	-4	147.64	26.00	5.68	144.97	28.67	5.06	142.46	31.83	4.48	139.82	35.36	3.95	136.74	39.12	3.50	132.92	43.01	3.09	-	-	-
	-3	152.86	26.12	5.85	150.10	28.77	5.22	147.46	31.91	4.62	144.64	35.42	4.08	141.33	39.16	3.61	137.24	43.03	3.19	-	-	-
	-2	158.00	26.23	6.02	155.16	28.87	5.37	152.38	31.99	4.76	149.38	35.48	4.21	145.85	39.20	3.72	141.48	43.04	3.29	-	-	-
	0	168.10	26.45	6.36	165.09	29.05	5.68	162.05	32.14	5.04	158.69	35.59	4.46	154.72	39.27	3.94	149.81	43.08	3.48	143.68	46.88	3.06
	2	178.03	26.65	6.68	174.85	29.23	5.98	171.56	32.28	5.31	167.85	35.70	4.70	163.43	39.35	4.15	157.99	43.11	3.66	151.23	46.88	3.23
	4	187.88	26.84	7.00	184.53	29.39	6.28	180.99	32.42	5.58	176.93	35.80	4.94	172.07	39.42	4.36	166.10	43.16	3.85	158.72	46.89	3.38
	5	192.80	26.94	7.16	189.37	29.48	6.42	185.70	32.49	5.72	181.47	35.86	5.06	177.10	39.70	4.46	170.16	43.18	3.94	162.47	46.90	3.46
	6	197.73	27.03	7.31	194.23	29.56	6.57	190.43	32.56	5.85	186.03	35.92	5.18	180.73	39.51	4.57	174.23	43.21	4.03	166.23	46.91	3.54
	7	202.69	27.13	7.47	199.11	29.64	6.72	195.18	32.63	5.98	190.61	35.98	5.30	185.10	39.55	4.68	178.34	43.25	4.12	170.03	46.93	3.62
	8	207.68	27.22	7.63	204.02	29.73	6.86	199.97	32.71	6.11	195.24	36.04	5.42	189.51	39.61	4.78	182.49	43.28	4.22	173.87	46.96	3.70
	10	217.81	27.41	7.95	214.00	29.90	7.16	209.71	32.86	6.38	204.64	36.17	5.66	198.48	39.72	5.00	190.94	43.37	4.40	181.71	47.02	3.86
	12	-	-	-	224.26	30.08	7.46	219.73	33.03	6.65	214.33	36.33	5.90	207.75	39.85	5.21	199.69	43.49	4.59	189.85	47.12	4.03
14	-	-	-	234.89	30.28	7.76	230.12	33.21	6.93	224.39	36.50	6.15	217.39	40.01	5.43	208.82	43.63	4.79	198.38	47.24	4.20	
16	-	-	-	-	-	-	240.97	33.42	7.21	234.92	36.69	6.40	227.50	40.19	5.66	218.42	43.80	4.99	207.38	47.40	4.38	
18	-	-	-	-	-	-	252.37	33.65	7.50	245.99	36.92	6.66	238.16	40.41	5.89	228.58	44.01	5.19	216.94	47.59	4.56	

9.16. WRL650XH***** COOLING MODE

		Condenser water outlet temperature °C																				
		25			30			35			40			45			50			55		
		Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER	Pc	Pe	EER
		[kW]			[kW]			[kW]			[kW]			[kW]			[kW]			[kW]		
EVAPORATOR WATER OUTLET TEMPERATURE °C	-8	95.76	26.45	3.62	91.36	29.34	3.11	86.55	32.73	2.64	81.37	36.48	2.23	-	-	-	-	-	-	-	-	-
	-6	106.41	26.74	3.98	101.86	29.59	3.44	96.75	32.93	2.94	91.12	36.64	2.49	85.02	40.60	2.09	-	-	-	-	-	-
	-4	116.63	27.02	4.32	111.96	29.82	3.75	106.60	33.11	3.22	100.56	36.78	2.73	93.91	40.69	2.31	86.66	44.73	1.94	-	-	-
	-3	121.60	27.14	4.48	116.89	29.92	3.91	111.41	33.20	3.36	105.18	36.84	2.86	98.26	40.73	2.41	90.68	44.75	2.03	-	-	-
	-2	126.49	27.26	4.64	121.75	30.03	4.05	116.16	33.28	3.49	109.75	36.90	2.97	102.58	40.77	2.52	94.67	44.76	2.11	-	-	-
	0	136.06	27.49	4.95	131.28	30.22	4.34	125.50	33.43	3.75	118.76	37.02	3.21	111.10	40.84	2.72	102.56	44.80	2.29	93.18	48.76	1.91
	2	145.39	27.71	5.25	140.61	30.40	4.63	134.68	33.58	4.01	127.64	37.13	3.44	119.54	40.92	2.92	110.40	44.84	2.46	100.28	48.76	2.06
	4	154.56	27.91	5.54	149.81	30.57	4.90	143.77	33.72	4.26	136.47	37.24	3.66	127.95	41.00	3.12	118.26	44.88	2.64	107.44	48.77	2.20
	5	159.10	28.01	5.68	154.38	30.66	5.04	148.29	33.80	4.39	140.88	37.30	3.78	132.17	41.04	3.22	122.22	44.91	2.72	111.06	48.78	2.28
	6	163.62	28.11	5.82	158.94	30.75	5.17	152.82	33.87	4.51	145.30	37.36	3.89	136.41	41.09	3.32	126.20	44.94	2.81	114.71	48.79	2.35
	7	168.13	28.20	5.96	163.50	30.83	5.30	157.80	34.00	4.64	149.74	37.42	4.00	140.68	41.14	3.42	130.22	44.97	2.90	118.41	48.81	2.43
	8	172.64	28.30	6.10	168.07	30.92	5.44	161.91	34.02	4.76	154.20	37.48	4.11	144.98	41.19	3.52	134.28	45.01	2.98	122.16	48.84	2.50
	10	181.69	28.50	6.38	177.26	31.10	5.70	171.09	34.18	5.01	163.23	37.62	4.34	153.71	41.30	3.72	142.57	45.11	3.16	129.86	48.91	2.66
	12	-	-	-	186.57	31.29	5.96	180.44	34.35	5.25	172.46	37.78	4.57	162.68	41.44	3.93	151.13	45.22	3.34	137.86	49.00	2.81
14	-	-	-	196.06	31.49	6.23	190.00	34.55	5.50	181.95	37.96	4.79	171.94	41.61	4.13	160.02	45.37	3.53	146.23	49.13	2.98	
16	-	-	-	-	-	-	199.86	34.76	5.75	191.76	38.16	5.02	181.57	41.80	4.34	169.31	45.55	3.72	155.04	49.30	3.14	
18	-	-	-	-	-	-	210.06	35.00	6.00	201.96	38.40	5.26	191.61	42.03	4.56	179.06	45.77	3.91	164.34	49.51	3.32	

WARNING!

The Power efficiency and absorbed Power data in these tables refer to the performance and absorption of the WRL units without considering the capacity of the pump units UNI EN 14511: 2008 (as require by Eurovent).

ΔT DIFFERENT FROM NOMINAL (ΔT 5)				
AT THE EVAPORATOR	3	5	8	10
Cooling capacity	0.99	1	1.02	1.03
Input power	0.99	1	1.01	1.02
Heating capacity	0.99	1	1.02	1.03
AL CONDENSER	-	5	10	15
Cooling capacity	-	1	1.01	1.02
Input power	-	1	0.99	0.98
Heating capacity	the variations can be ignored			

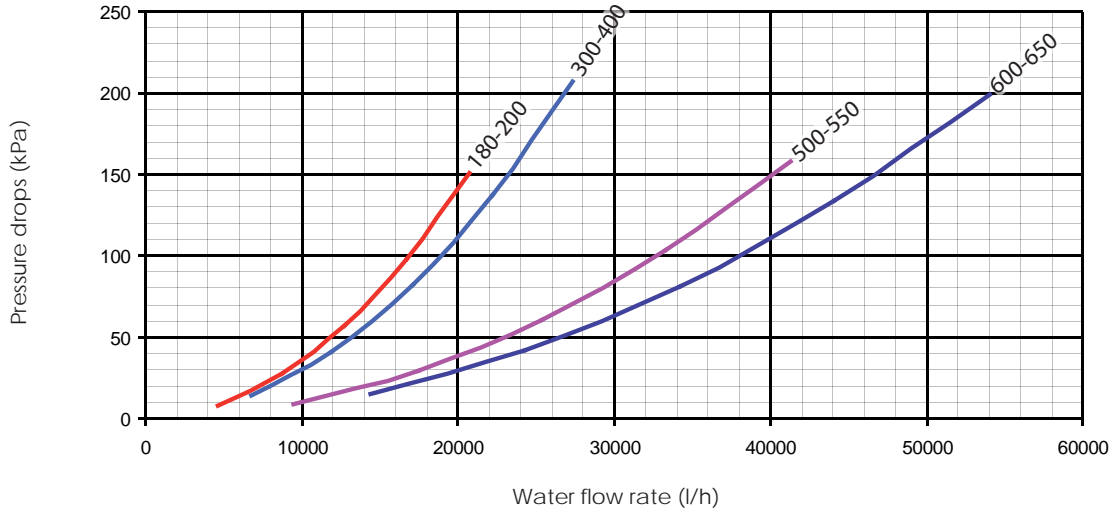
FOULING FACTOR [K*M²]/[W]			
	0.00001	0.00002	0.00005
Cooling capacity	1	0.99	0.98
Input power	1	1	1
Heating capacity	1	1	0.99
Input power	1	1	1.02

- KEY
- Ph Heating capacity
 - Pc Cooling capacity
 - Pe Input power

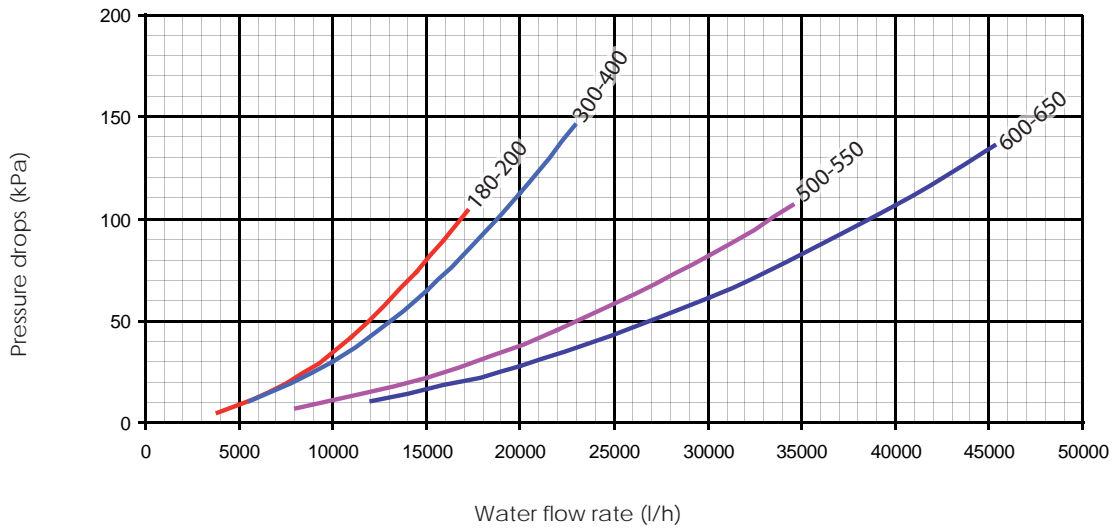
10. PRESSURE DROPS

COOLING MODE FUNCTIONING

CONDENSER



EVAPORATOR



The curves represent the pressure drops (Min. $\Delta 10$), (Max $\Delta 3$);

Condenser

Average water temperature °C	23	28	33	38	43	48	53	58
Multiplicative coefficient	1.02	1.01	1.00	0.99	0.98	0.97	0.96	0.95

Evaporator

Average water temperature °C	5	10	15	20	25	30	35
Multiplicative coefficient	1.02	1.00	0.98	0.97	0.96	0.95	0.94

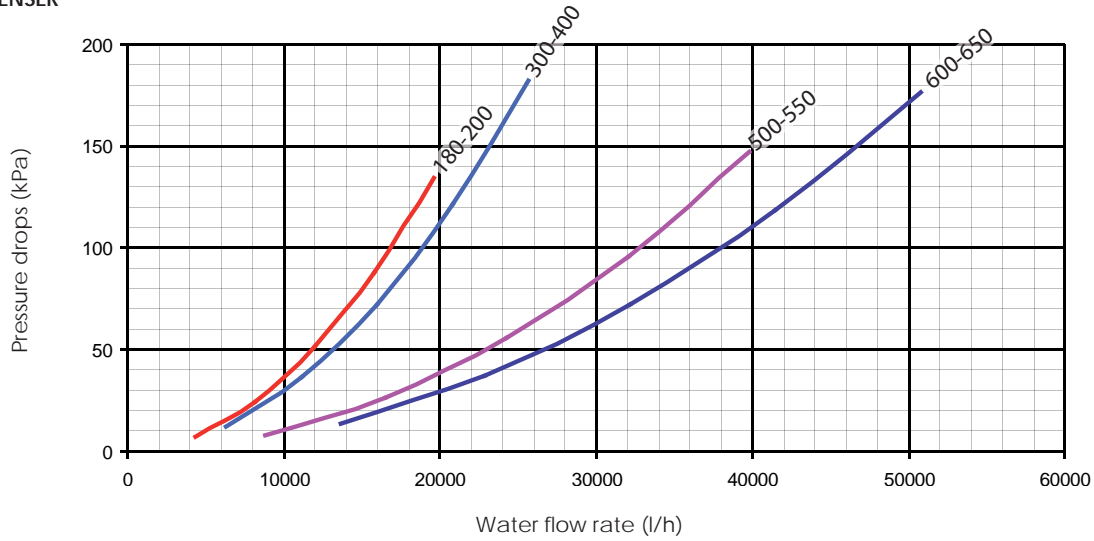


WARNING: verify the calibration of the flow switch according to the system operating conditions.

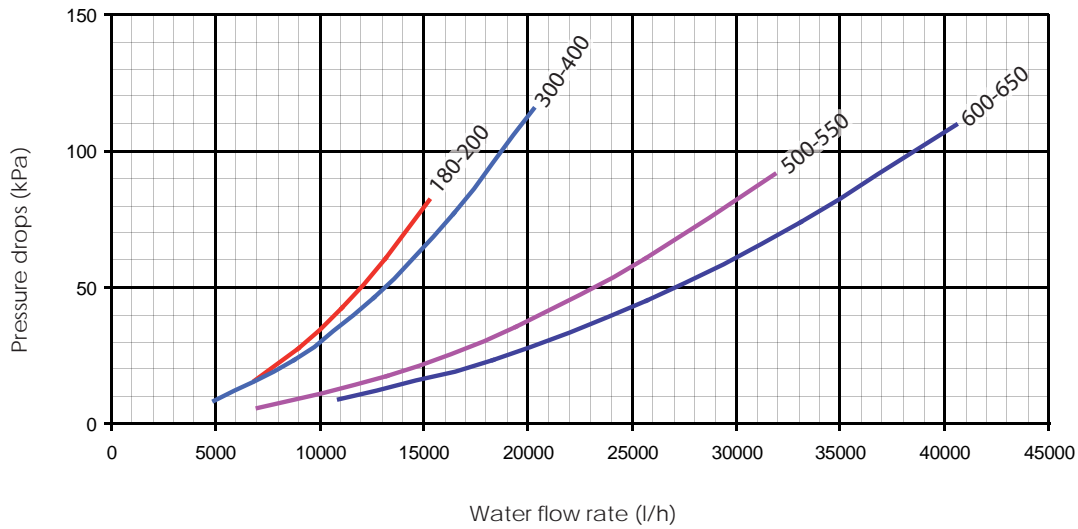
The hydraulic circuit is protected by a safety valve calibrated at 6 bar.

FUNCTIONING IN HEATING MODE

CONDENSER



EVAPORATOR



The curves represent the pressure drops (Min. $\Delta 10$), (Max $\Delta 3$);

Condenser

Average water temperature °C	23	28	33	38	43	48	53	58
Multiplicative coefficient	1.02	1.01	1.00	0.99	0.98	0.97	0.96	0.95

Evaporator

Average water temperature °C	5	10	15	20	25	30	35
Multiplicative coefficient	1.02	1.00	0.98	0.97	0.96	0.95	0.94

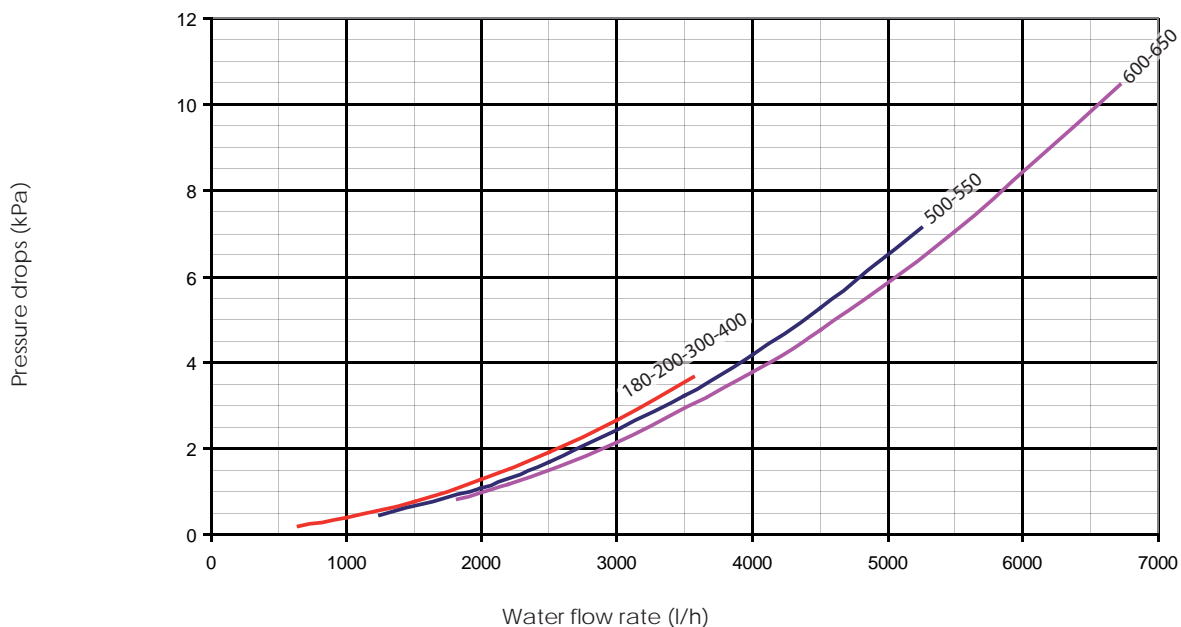


WARNING: verify the calibration of the flow switch according to the system operating conditions.

The hydraulic circuit is protected by a safety valve calibrated at 6 bar.

COOLING MODE FUNCTIONING

DESUPERHEATER



The curves represent the pressure drops (Min. $\Delta 10$), (Max $\Delta 3$).

Desuperheater

Average water temperature °C	23	28	33	38	43	48	53	58
Multiplicative coefficient	1.02	1.01	1.00	0.99	0.98	0.97	0.96	0.95



WARNING: verify the calibration of the flow switch according to the system operating conditions.

The hydraulic circuit is protected by a safety valve calibrated at 6 bar.

11. ETHYLENE GLYCOL SOLUTIONS

- The corrective factors of cooling capacity and input power take into account the presence of glycol and the difference in evaporation temperatures.
- The pressure drop correction factor considers the different flow rate resulting from the application of the water flow rate correction factor.
- The water flow rate correction factor is calculated to keep the same Δt that would be present with the absence of glycol.

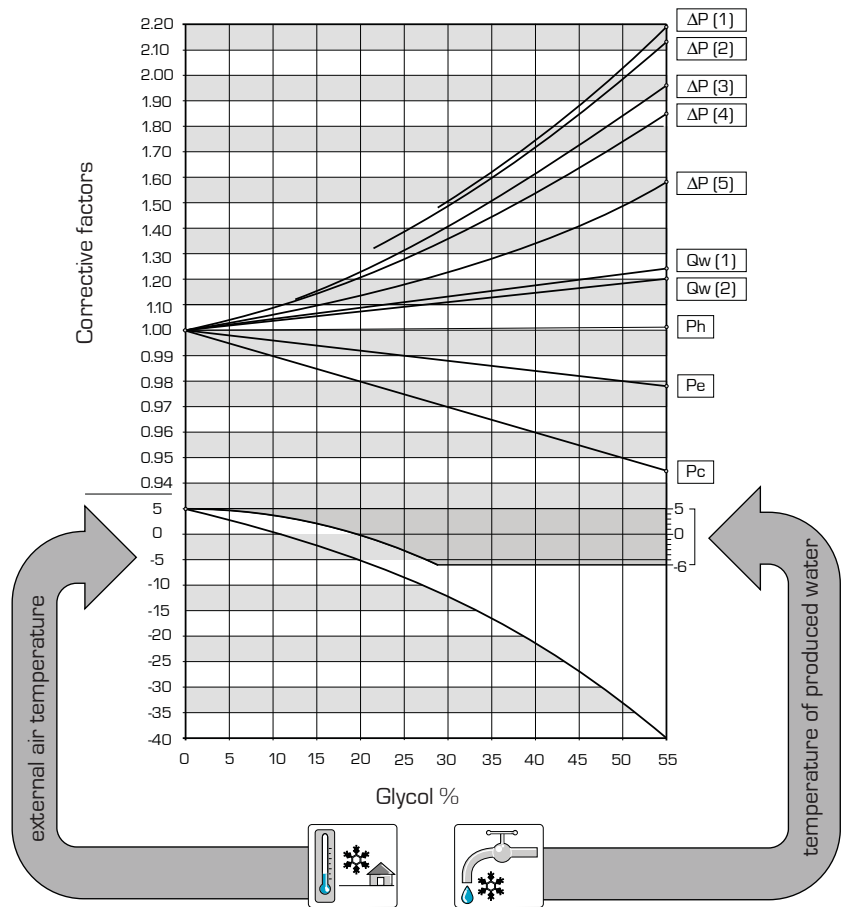
NOTE

On the following page an example is given to help graph reading. to determine the percentage of glycol required, see diagram below; this percentage calculation can take into consideration one of the following factors: Depending on which fluid is considered (water or air), the graph is interpreted by the right or left side at the crossing point on the curves with the external temperature line or the water produced line. A point from which the vertical line will pass is obtained and this will distinguish both glycol percentage and relative correction coefficients.

11.1. HOW TO INTERPRET GLYCOL CURVES

The curves shown in the diagram summarise a significant number of data, each of which is represented by a specific curve. In order to use these curves correctly it is first necessary to make some initial reflections.

- If you wish to calculate the percentage of glycol on the basis of the external air temperature, enter from the left axis and on reaching the curve draw a vertical line, which in turn will intercept all the other curves; the points obtained from the upper curves represent the coefficients for the correction of the cooling capacity and input power, the flow rates and the pressure drops (remember that these coefficients must be multiplied by the nominal value of the size in question); while the glycol percentage value recommended to produce desired water temperature is on the lower axis.
- If you wish to calculate the percentage of glycol on the basis of the temperature of the water produced, enter from the right axis and on reaching the curve draw a vertical line, which in turn will



KEY:

- Pc Corrective factors for cooling capacity
- Pe Corrective factors of the input power
- Ph Corrective factor for heating capacity
- ΔP (1) Corrective factor for pressure drops with an average fluid temp. = -3.5 °C
- ΔP (2) Corrective factor for pressure drops with an average fluid temp. = 0.5 °C
- ΔP (3) Corrective factor for pressure drops with an average fluid temp. = 5.5 °C
- ΔP (4) Corrective factor for pressure drops with an average fluid temp. = 9.5 °C
- ΔP (5) Corrective factor for pressure drops with an average fluid temp. = 47.5 °C
- Qw (1) Corrective factor for pressure drops (evap) with an average fluid temp. = 9.5 °C
- Qw (2) Corrective factor of flow rates (condenser) with an average fluid temp. = 47.5 °C

NOTE

Although the graph shows a max external air temperature of -40°C, the unit operational limits must be complied with.

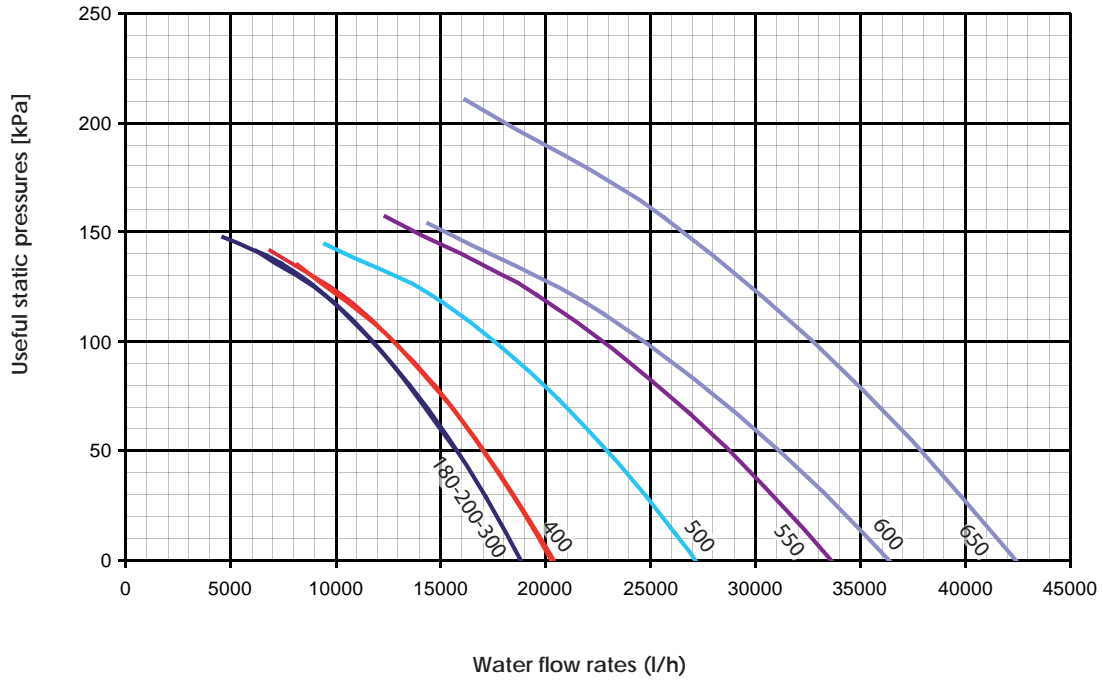
intercept all the other curves; the points obtained from the upper curves represent the coefficients for the correction of the cooling capacity and input power, the flow rates and the pressure drops (remember that these coefficients must be multiplied by the nominal value of the size in question); while the lower axis recommends the glycol percentage value necessary to produce water at the desired temperature.

Initial rates for "EXTERNAL AIR TEMPERATURE" and "TEMPERATURE OF PRODUCED WATER", are not directly related, therefore it is not possible to refer to the curve of one of these rates to obtain corresponding point on the curve of the other rate.

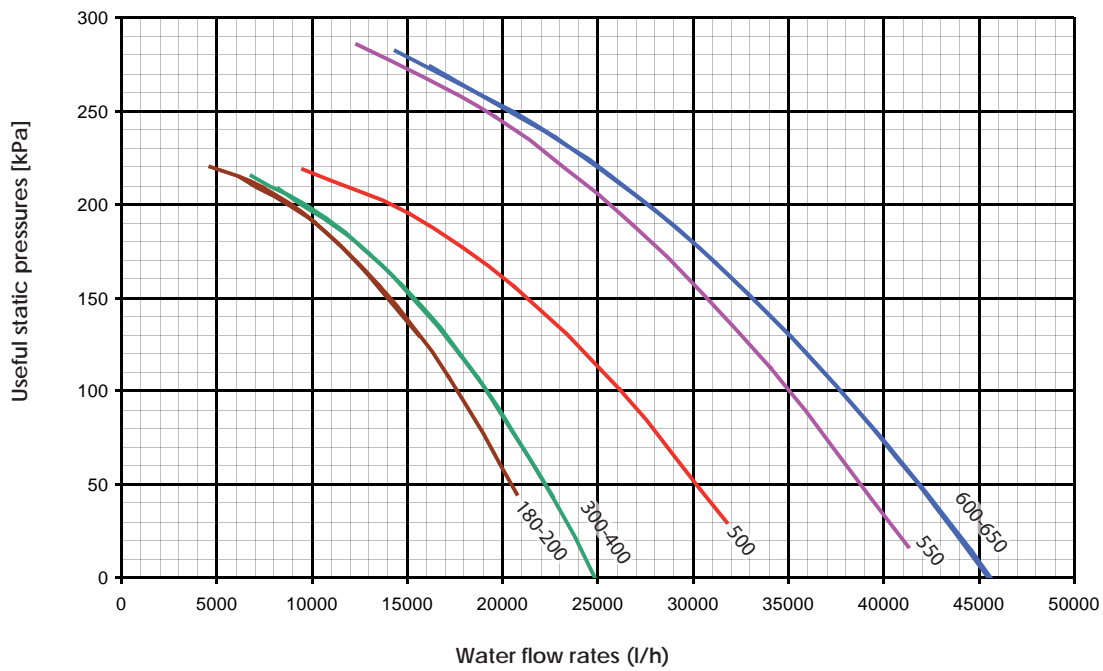
12. USEFUL STATIC PRESSURES

COOLING MODE FUNCTIONING

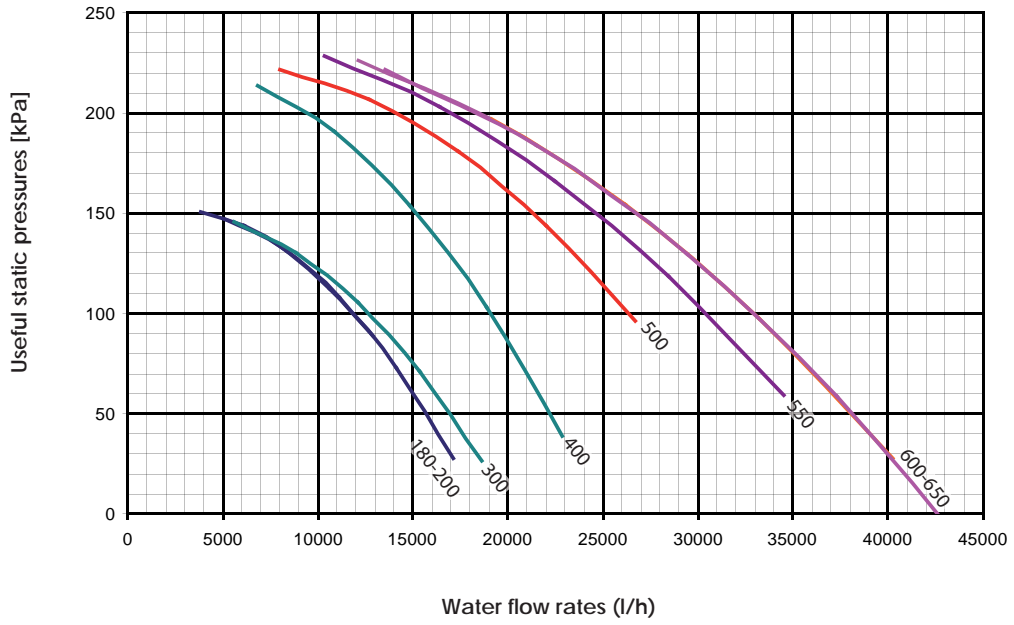
GEOTHERMAL SIDE USEFUL STATIC PRESSURES / PUMP LOW STATIC PRESSURE [B-F]



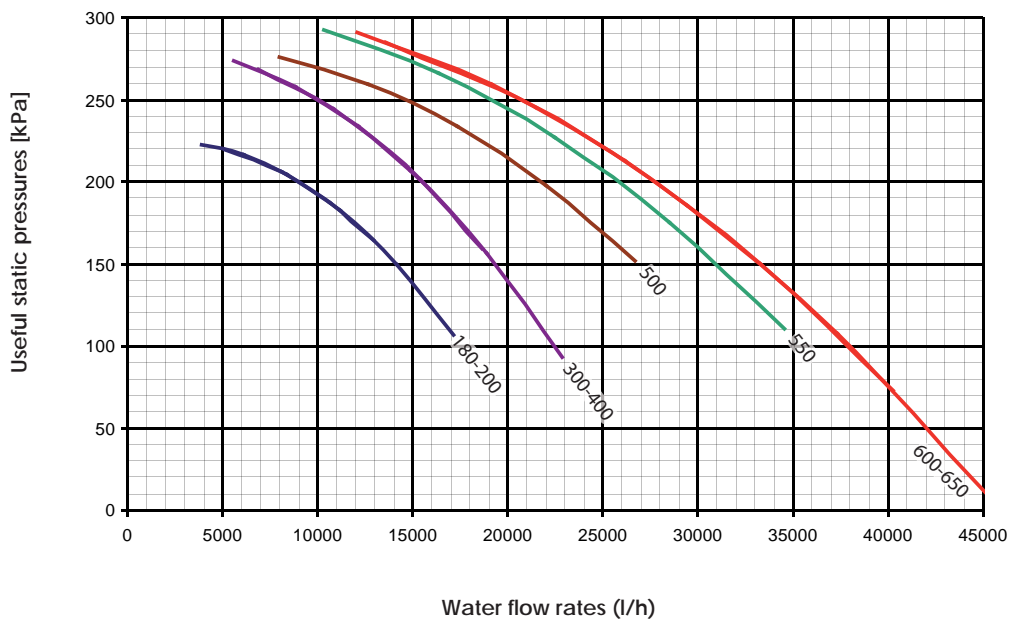
GEOTHERMAL SIDE USEFUL STATIC PRESSURES / PUMP HIGH STATIC PRESSURE [U-I]



SYSTEM SIDE USEFUL STATIC PRESSURES / PUMP LOW STATIC PRESSURE [P]

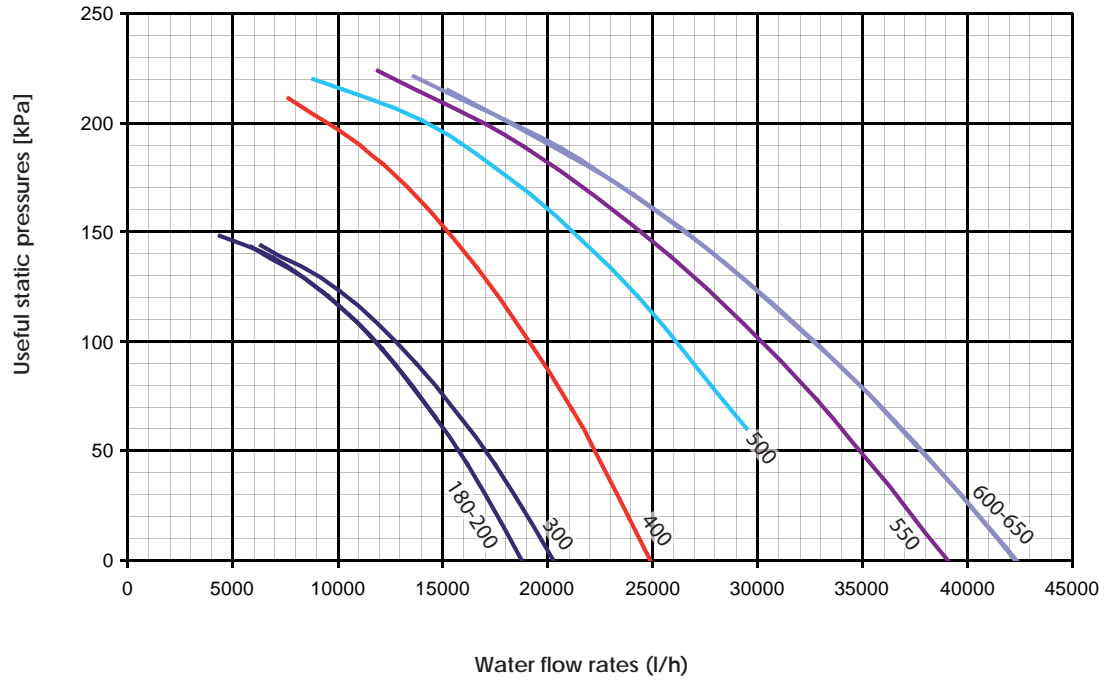


SYSTEM SIDE USEFUL STATIC PRESSURES / PUMP HIGH STATIC PRESSURE [N]

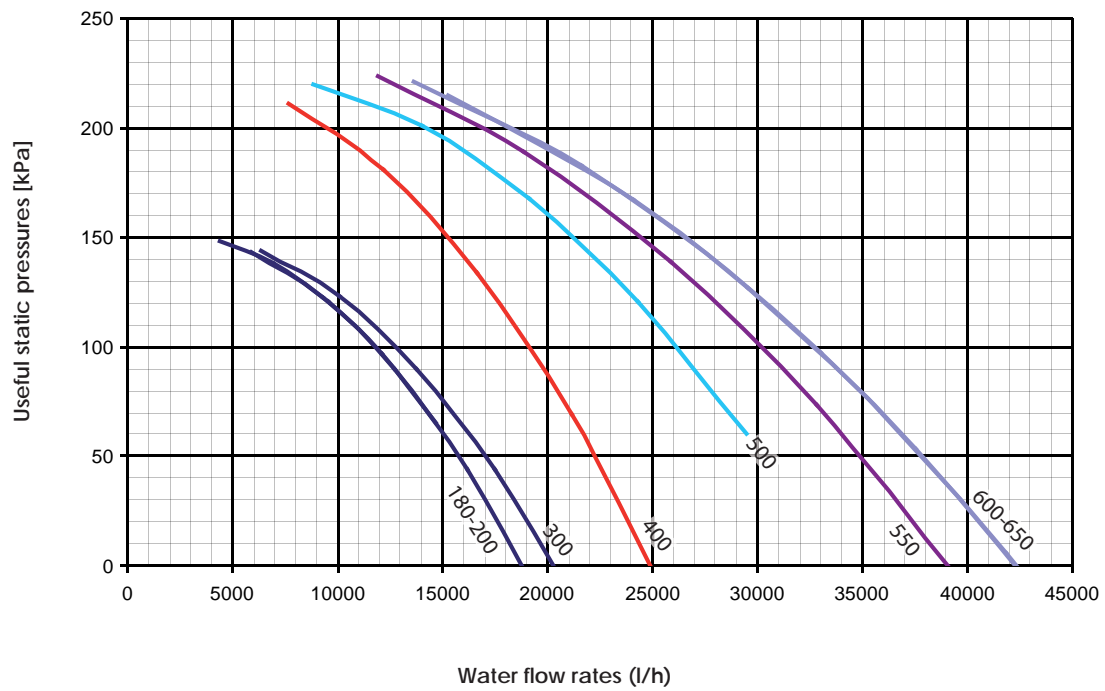


FUNCTIONING IN HEATING MODE

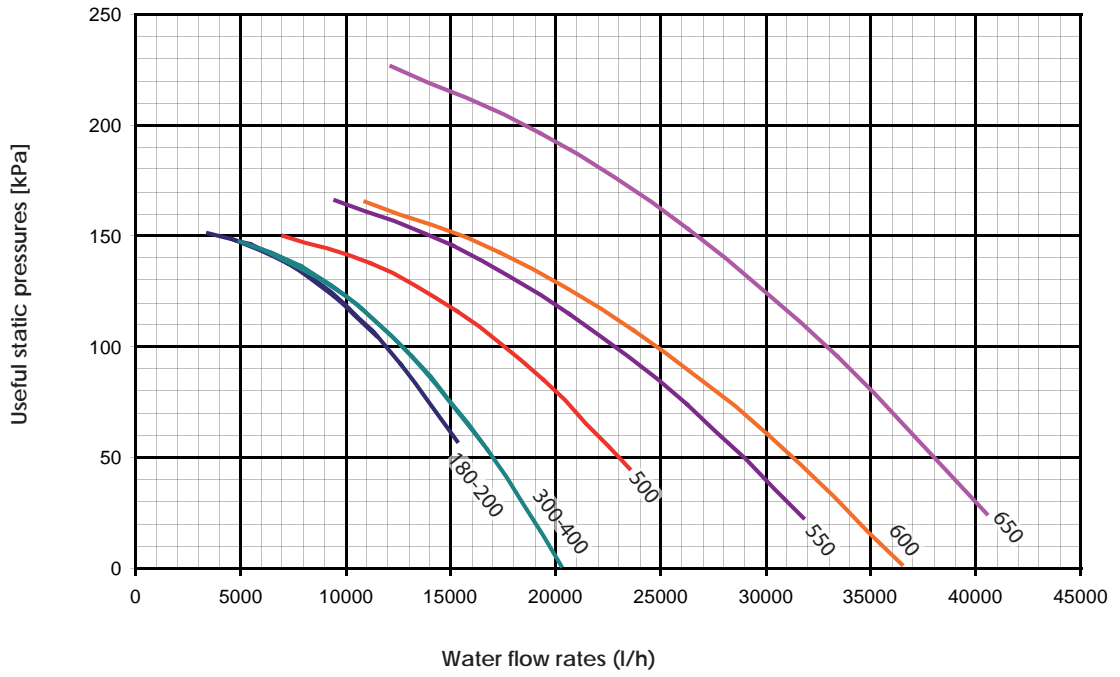
GEOHERMAL SIDE USEFUL STATIC PRESSURES / PUMP LOW STATIC PRESSURE [B-F]



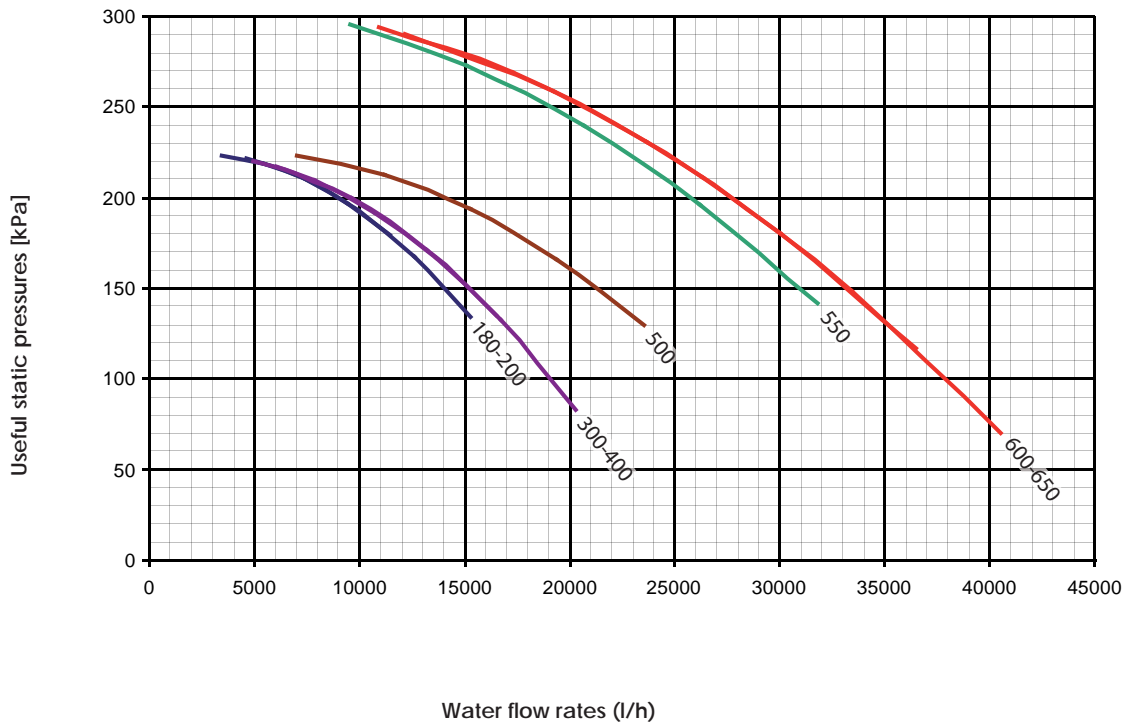
GEOHERMAL SIDE USEFUL STATIC PRESSURES / PUMP HIGH STATIC PRESSURE [U-I]



SYSTEM SIDE USEFUL STATIC PRESSURES / PUMP LOW STATIC PRESSURE [P]



SYSTEM SIDE USEFUL STATIC PRESSURES / PUMP HIGH STATIC PRESSURE [N]



13. EXPANSION VESSEL CALIBRATION

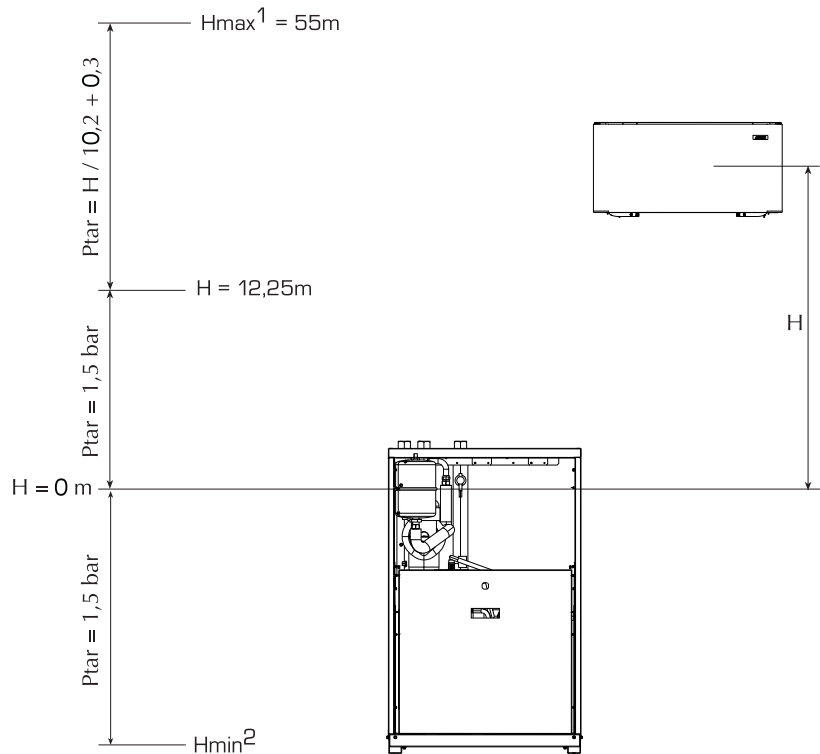
The standard pressure pre-load value of the expansion vessel is 1.5 bar, maximum value is 6 bar.

The calibration of the vessel must be regulated in accordance with the maximum level difference (H) of the user (see diagram) using the following formula:

$$p \text{ (calibration) [bar]} = H \text{ [m]} / 10.2 + 0.3.$$

For example: if level difference H is equal to 20 m, the calibration value of the vessel will be 2.3 bar.

If the calibration value obtained from the formula is less than 1.5 bar (i.e. for $H < 12.25$), use the standard calibration.



KEY

- (1) Check that highest installation is not higher than 55 metres.
- (2) Ensure that lowest installation can withstand global pressure in that position.

Reference operational conditions:

- (1) Cooling: Max water temp. = 40 °C, min water temp. = 4 °C.
- (2) Heating (heat pump): Max water temp. = 60 °C, Min water temp. = 4 °C

14. SOUND DATA

Sound power
Aermec determines the sound power value based on the readings taken in accordance with the 9614-2 Standard, in compliance with that requested by the Eurovent certification.

Sound pressure
Sound pressure measured in free field conditions with reflective surface (directivity factor Q=2) in compliance with the ISO 3744 Standard.

Nominal value referred to:
Evaporator water temperature.....12/7 °C
Condenser air temperature.....35 °C
Δt 5°C

WRL-H	Total sound levels		Octave band [Hz]						
	Power dB(A)	Pressure dB (A)	125	250	500	1000	2000	4000	8000
			Sound power for central band frequency [dB]						
180	68.0	61.1	65.0	61.0	62.0	53.0	46.0	44.0	37.0
200	68.4	61.8	65.1	61.9	62.8	53.4	46.7	44.6	37.7
300	74.2	62.9	73.6	62.9	59.6	54.2	52.9	50.0	38.8
400	73.0	71.1	63.1	60.5	69.2	68.8	58.1	52.8	38.2
500	76.3	67.6	75.5	60.3	65.6	62.1	59.9	48.2	40.9
550	81.1	79.1	71.9	69.3	77.3	76.8	65.3	60.4	46.2
600	81.1	79.1	71.9	69.3	77.3	76.8	65.3	60.4	46.2
650	81.1	79.1	71.9	69.3	77.3	76.8	65.3	60.4	46.2

15. SAFETY AND CHECK PARAMETER SETTING

CHECK PARAMETERS			
Cold Setting	Water inlet temperature in cooling mode.	MIN.	5°C
		MAX.	20°C
		DEFAULT	12°C
Heating Setting	Water inlet temperature in heat mode.	MIN.	20°C
		MAX.	55°C
		DEFAULT	38°C
Anti-freeze intervention	Intervention temperature for the anti-freeze alarm, on EV side (water outlet temperature).	MIN.	-
		MAX.	-
		DEFAULT	4°C
Total differential	Proportional temperature band within which the compressors are activated and deactivated.	MIN.	0°C
		MAX.	15°C
		DEFAULT	4°C

COMPRESSOR THERMOMAGNETIC SWITCHES			
WRL/H Size	TENSION	POSITION	THERMOMAGNETIC SWITCHES
180	230V-1-50Hz	CP=CPA	32A
	400V-3N-50Hz	CP=CPA	16A
200	230V-1-50Hz	CP=CPA	21A
	400V-3N-50Hz	CP=CPA	40A
300	230V-1-50Hz	CP	40A
		CPA	52A
	400V-3N-50Hz	CP=CPA	22.5A
400	230V-1-50Hz	CP=CPA	52A
	400V-3N-50Hz	CP=CPA	28A
500	230V-1-50Hz	CP=CPA	56A
	400V-3N-50Hz	CP=CPA	29A
550	400V-3N-50Hz	CP=CPA	40A
600	400V-3N-50Hz	CP	40A
		CPA	51A
650	400V-3N-50Hz	CP=CPA	51A

PUMPS	ALIMENTATION	180	200	300	400	500	550	600	650
P	230V-1-50Hz	5A	5A	5A	5A	5A	6A	6A	8.7A
	400V-3N-50Hz	2.8A	2.8A	2.8A	2.8A	2.8A	3.5A	3.5A	5A
N	230V-1-50Hz	11A	11A	11A	11A	11A	11A	11A	11A
	400V-3N-50Hz	6.3A	6.3A	6.3A	6.3A	6.3A	6.3A	6.3A	6.3A
B/F	230V-1-50Hz	5A	5A	5A	11A	11A	8.7A	8.7A	8.7A
	400V-3N-50Hz	2.8A	2.8A	2.8A	6.3A	6.3A	5A	5A	5A
U/I	230V-1-50Hz	11A	11A	10A	10A	10A	11A	11A	11A
	400V-3N-50Hz	6.3A	6.3A	5.8A	5.8A	5.8A	6.3A	6.3A	6.3A

TRANSDUCERS AND PRESSURE SWITCHES										
WRL/H	U.M.	180	200	300	400	500	550	600	650	
Pressure switch high press. (HP)	bar	42	42	42	42	42	42	42	40	
High pressure transducer (THP)	bar	40	40	40	40	40	40	40	39	
Low pressure transducer (TLP)	bar	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	

COOLING CIRCUIT SAFETY										
WRL/H	U.M.	180	200	300	400	500	550	600	650	
High-pressure valve	bar	-	-	-	-	-	-	-	45	

16. SELECTION AND PLACE OF INSTALLATION

The unit is set-up for *INDOOR* applications.

It is shipped pre-tested and only requires the electrical and hydraulic connections.

Before beginning the installation process, decide with the client where the unit is to be installed, whilst paying attention to the following:

- The support surface must be capable

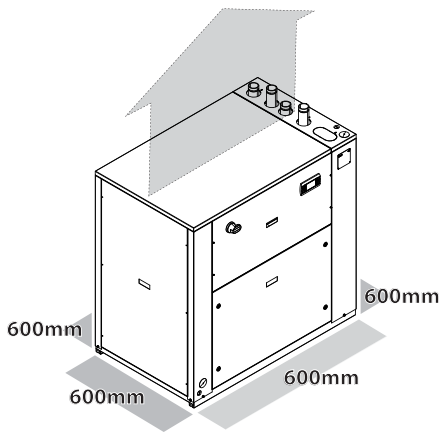
of supporting the unit weight.

- The safety distances between the units and other appliances or structures must be scrupulously respected.
- The unit must be installed by a qualified technician in compliance with national laws in the country of destination.
- It is mandatory to foresee to the

necessary technical space in order to allow ROUTINE AND EXTRAORDINARY MAINTENANCE interventions.

- Remember that during operation, the chiller can cause vibrations; therefore "VT" anti-vibration mounts (ACCESSORIES) are recommended, fixed on the base according to the assembly layout.
- Fix the unit checking that it is level.

16.1. ► MINIMUM TECHNICAL MEASUREMENTS

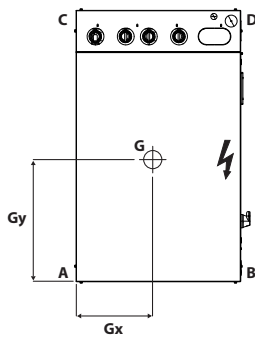


WARNING

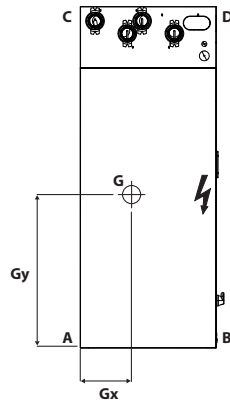
It is obligatory to comply with the indicated minimum measurements; the height and the back must be sized according to the type of system and place of installation.

16.2. BARYCENTRES

WRL 180 / 400



WRL 500 / 650



WRLH	Total weight when empty (to be shipped)	Gx	Gy	Unit total weight when running	Gx	Gy	Rest point A [kg]	Rest point B [kg]	Rest point C [kg]	Rest point D [kg]
180	380	415	534	390	411	553	109.1	115.0	80.8	85.2
200	380	415	534	390	411	553	109.1	115.0	80.8	85.2
300	391	413	543	404	408	564	112.0	116.6	85.9	89.4
400	398	416	538	411	411	559	113.9	120.4	85.8	90.8
500	534	387	976	552	383	1006	143.1	131.5	144.8	133.0
550	610	386	916	628	383	944	172.9	158.8	154.7	142.1
600	720	381	949	749	377	980	201.9	180.3	194.0	173.1
650	765	381	912	794	378	943	221.6	198.1	197.8	176.8

17. ANTI-LEGIONELLA FUNCTION

The **ANTI-LEGIONELLA** function is designed to eliminate legionella germs that can reside in the DHW tanks. *This function is only available if the electric resistance or an integration system inside the sanitary storage tank is enabled.*

Once this procedure is activated, the **DHW reaches a maximum of 65°C for at least 5 minutes and a maximum of 120 minutes, every Sunday at 3.00 a.m. (EDITABLE PARAMETERS).** Remember that the specific parameters are found beneath the SANITARY WATER menu (assistance).

⚠ ATTENTION:
Changing parameters that are identified by this symbol could cause unit malfunctioning.
THESE SETTINGS CAN ONLY BE EDITED BY AUTHORISED PERSONNEL.




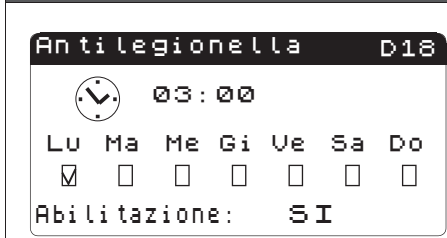
A weekly programme can be activated from the user panel and if the set-point is increased it prevents legionella-related

problems from arising through the domestic water integration outlet.


ON the user panel:

- press the PRG key and the menu will appear;
- select the SANITARY icon;
- press ENTER,
- select the ANTI-LEGIONELLA D18 icon.

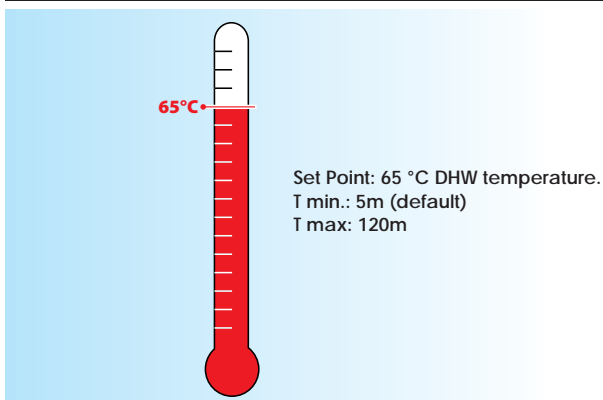
Anti-legionella treatment								
Mask Index	Display description	Description	Default	UOM	min.	Max	RW	
D18	Anti-legionella							
	 Start function time		3.00 a.m.	h	0	23		RW
	Mo, Tu... Sun	The day when the cycle is to begin		Sun				RW
	Enabling	Enabling the function				0	1	RW



DHW menu (assistance) - To set anti-legionella cycle

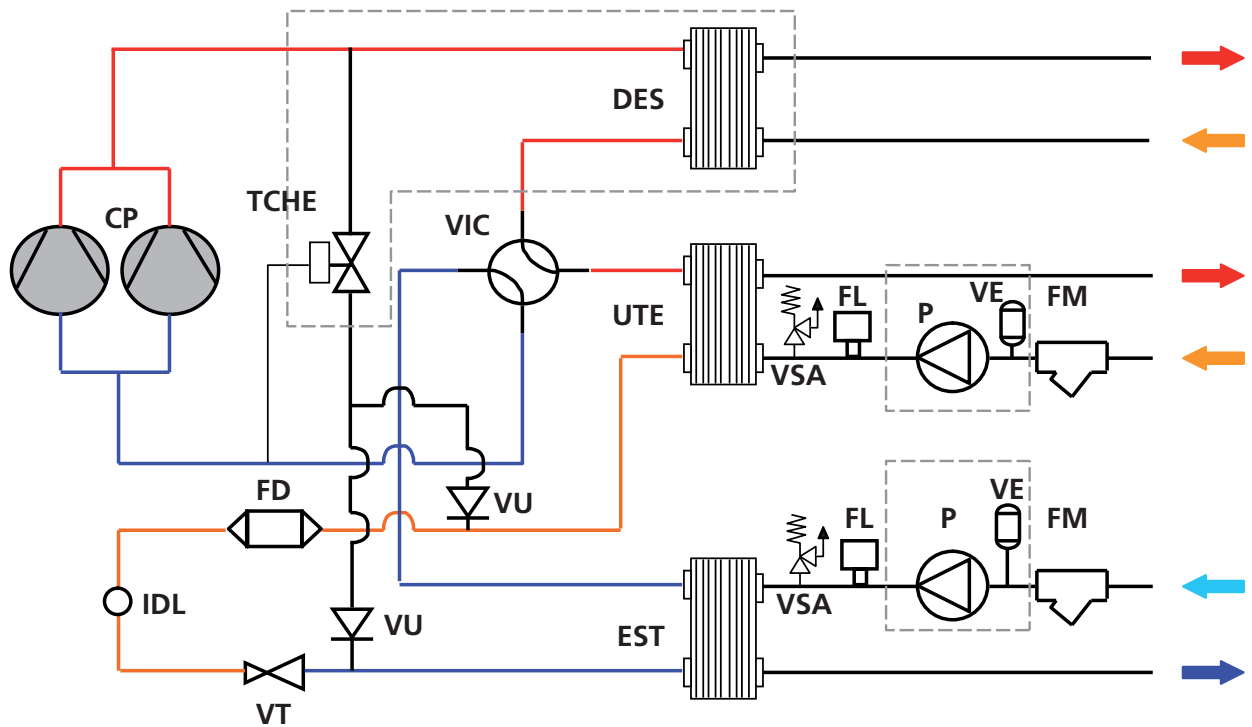
Unit display	Index	Display/Parameter
	A	Domestic hot water: this menu allows the parameters linked to DHW production management to be set at after-sales service level.
	B	End set-point: this parameter indicates the temperature to be used to perform the anti-legionella cycle; remember this temperature is maintained for a minimum time set in the subsequent parameter.
	C	Minimum time: this parameter indicates the minimum time for which the DHW temperature must exceed the end set point for the anti-legionella cycle to be considered complete.
	D	Maximum time: this parameter indicates the maximum duration of the anti-legionella cycle and the "anti-legionella cycle not completed" alarm will be triggered once this time elapses (alarm code AL45).

N.B. This function is also active with the unit in STAND-BY.

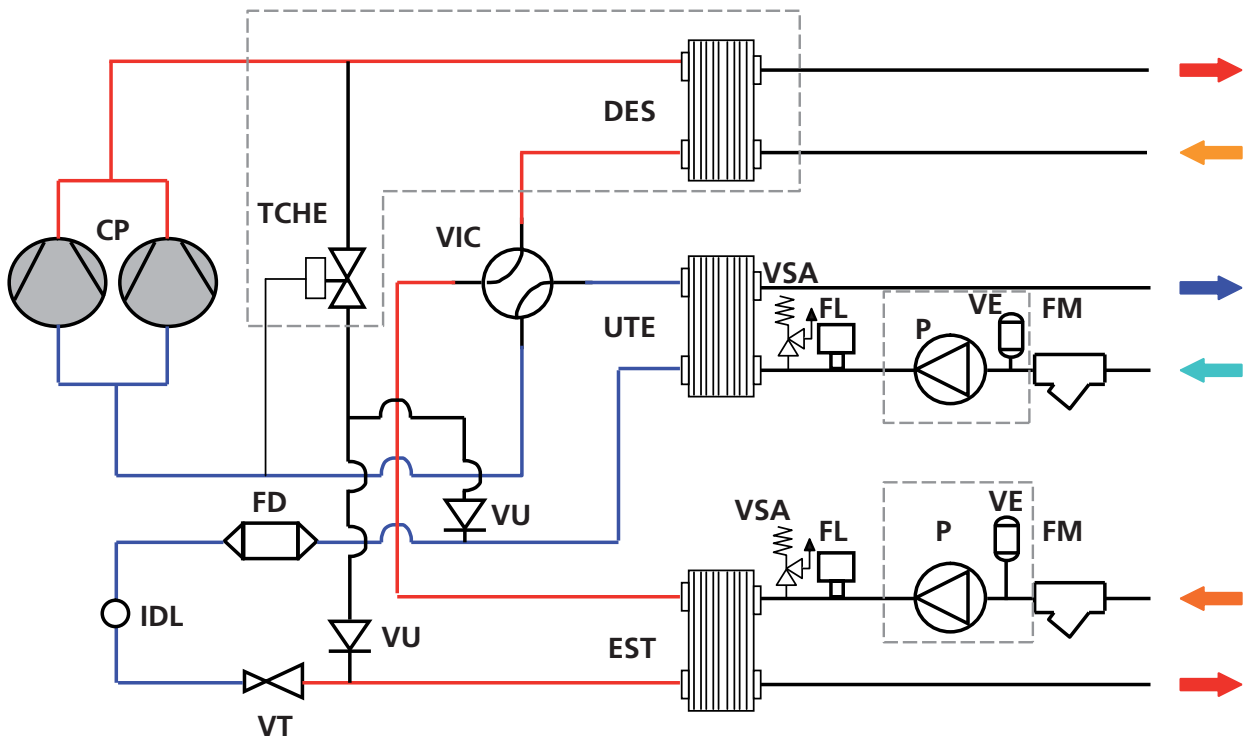


18. REFRIGERANT CIRCUITS

18.1. WRLH 180-500 GAS SIDE CYCLE INVERSION IN HEATING MODE // BIFLOW EXPANSION LINE



18.2. WRLH 180-500 GAS SIDE CYCLE INVERSION IN COOLING MODE // BIFLOW EXPANSION LINE



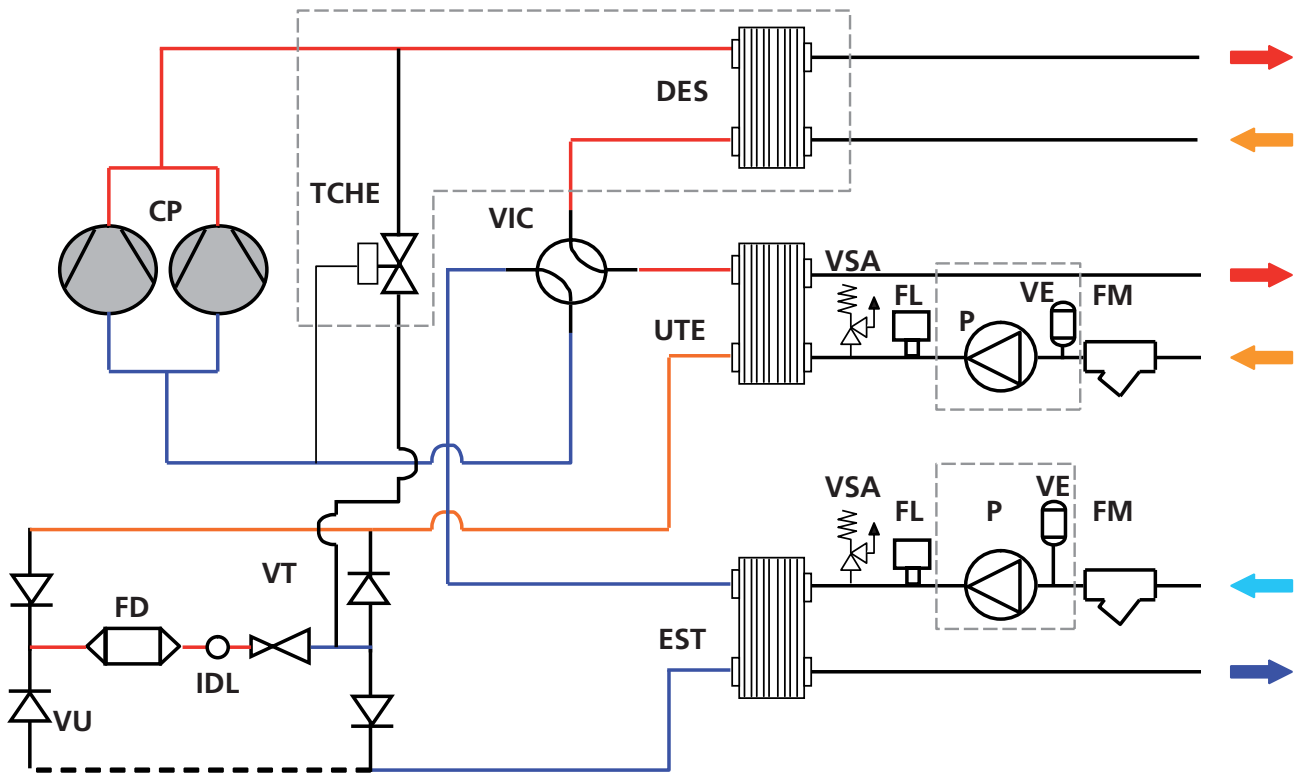
CP	compressor	P	pump
DES	desuperheater	TCHE	hot gas bypass valve
SUM	(geothermic) external side	UTE	user side
FD	biflow dehydrator filter	VE	expansion vessel
FL	flow switch	VIC	cycle reversing valve
FM	water filter	VSA	safety valve
IDL	liquid indicator	VT	thermostatic valve

WARNING:

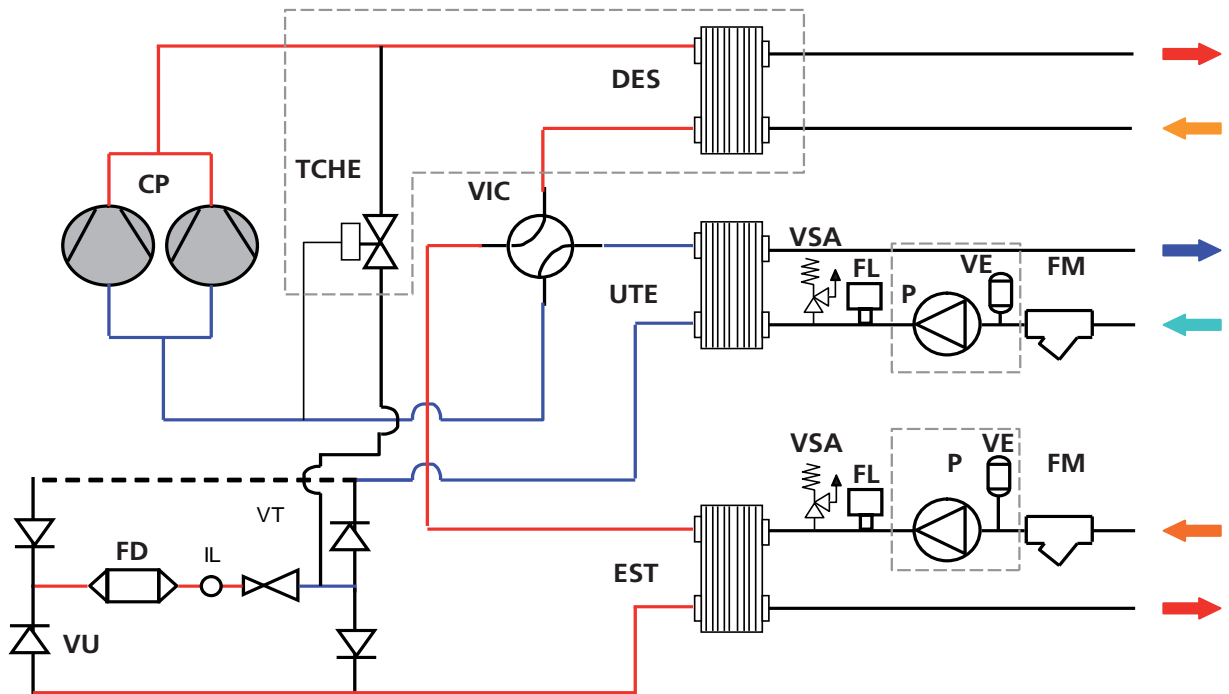
If an electronic thermostatic valve (x) and desuperheater (D) are present, the hot gas bypass valve (TCHE) is not present.

--- = Components that can be selected by the configurator.

18.3. WRLH 550-650 GAS SIDE CYCLE INVERSION IN HEATING MODE // MONOFLOW EXPANSION LINE



18.4. WRLH 550-650 GAS SIDE CYCLE INVERSION IN COOLING MODE // MONOFLOW EXPANSION LINE



CP	compressor
DES	desuperheater
SUM	(geothermic) external side
FD	biflow dehydrator filter
FL	flow switch
FM	water filter
IDL	liquid indicator

P	pump
TCHE	hot gas bypass valve
UTE	user side
VE	expansion vessel
VIC	cycle reversing valve
VSA	safety valve
VT	thermostatic valve
VU	one-way valve

WARNING:
If an electronic thermostatic valve (x) and desuperheater (D) are present, the hot gas bypass valve (TCHE) is not present.

--- = Components that can be selected by the configurator.



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