

REVERSIBLE CHILLER - Technical manual

WATER/WATER CHILLER

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

WRL 180/650



Aermec participates in the EUROVENT Program: LCP / W / P / C
The products of interest can be found on the website
www.eurovent-certification.com



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

SERIAL NUMBER	
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EC DECLARATION OF CONFORMITY

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

NAME WRL
TYPE REVERSIBLE WATER-COOLED CHILLERS
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

La persona autorizzata a costituire il fascicolo tecnico è: / 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

IP: 20

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.

1. GENERAL WARNINGS

The WRL 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 unit 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 unit 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 (PG) - ITALIA		CE
Model		Pool size		
P = kW				
RES HEAT		COEF		
W = A		COEF		
S = A		W		
TS (H) (L) °C	Max	TS (H) (L) (H) °C		
	W			
RES ELEL. HEATER	W	RES ELEL. HEATER	W	
RES ELEL. HEATER	W	RES ELEL. HEATER	W	
Seriale				

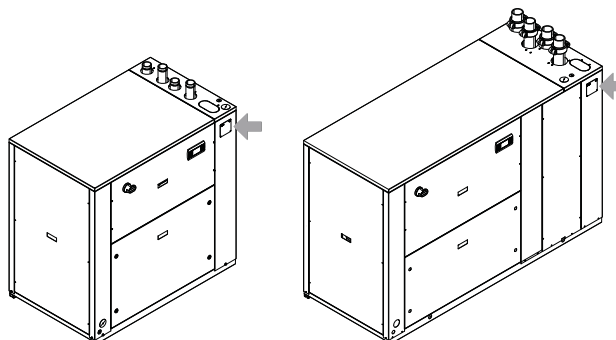
example of technical plate

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** units, **HYDRAULIC CIRCUIT REVERSIBLE CHILLER, 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 unit can manage up to a maximum of 3 ZONES.

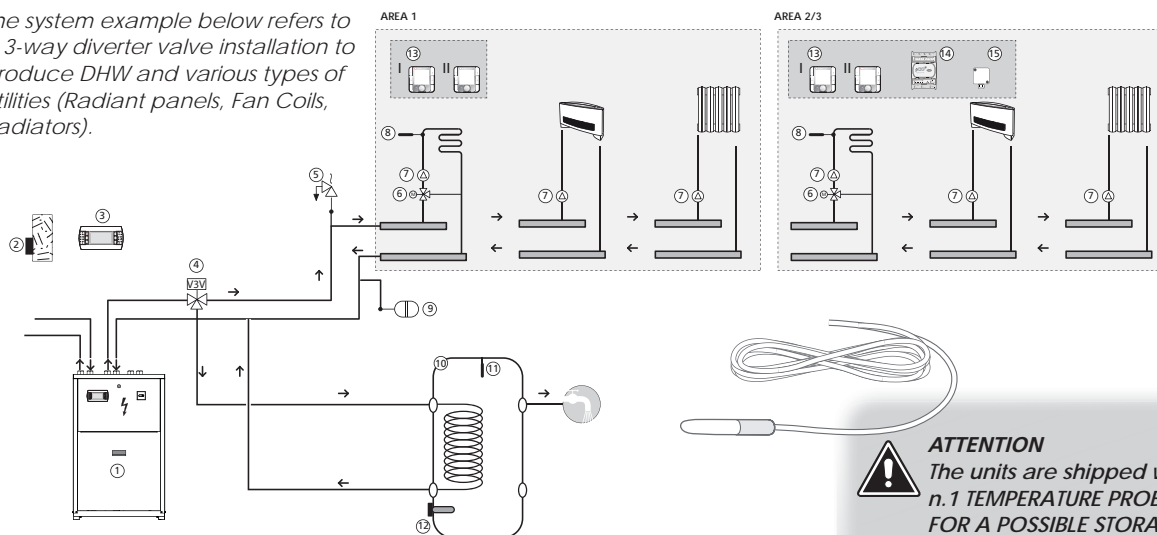
ZONE N° 1: Managed as per standard thanks to last generation electronic regulation. It is recommended to mount the "SSM" electronic marking probe (accessory) to control the flow temperature. (The unit is shipped with n.1 temperature probe for a possible DHW storage tank).

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

E.G. The unit is connected directly to the utility circuit (SYSTEM) and produces domestic hot water (DHW) via a 3-way 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).



ATTENTION
The units are shipped with n.1 TEMPERATURE PROBE FOR A POSSIBLE STORAGE TANK.

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	°	°	°	°	°	°	°	°	°

FIELD	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 +4°C (for different temperature contact the head office)
8	MODEL ° Reversible water side E Condenserless
9	VERSION ° Standard
10	HEAT RECOVERY ° Without heat recovery D Desuperheater
11	PUMPS (CONDENSER SIDE) ° Without pump B Low static pressure pump U High static pressure pump F Low static pressure inverter pump [1] I High static pressure inverter pump [1] V 2-way modulating valve
12	PUMPS (EVAPORATOR SIDE) ° 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°°°°°°°°°°

Note:

[1] The difference in the number of revs is only activated in summer mode for the control of the condensation pressure. The number of revs is fixed (can be set) when in winter mode.

6. DESCRIPTION OF COMPONENTS

6.1. STRUCTURE

Baseand 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 components 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 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 units 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:

EVAPORATOR CIRCUIT

- Standard pump.
- High static pressure pump.

CONDENSER CIRCUIT

- Standard pump.
- High static pressure pump.
- Low static pressure inverter pump^[1].
- High static pressure inverter pump^[1].
- 2-way modulating valve.

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 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 of the plate heat exchanger 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.
4. 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.
5. 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 unit can manage up to a maximum of 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	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	VERSION	U.M.	180	200	300	400	500	550	600	650
 HEATING MODE 10/7 - 40/45°C "FAN COILS"										
Heating capacity	°	kW	52.9	71.6	78.8	92.6	105.2	145.2	166.5	187.2
Total input power	°	kW	12.6	17.2	18.9	21.2	23.3	32.3	37.0	42.2
Total input current	°	A	24.3	31.4	34.0	38.2	42.8	60.2	69.5	79.3
Condenser water flow rate	°	l/h	9090	12310	13550	15930	18090	24980	28640	32200
Condenser pressure drops	°	kPa	22	37	45	64	27	47	54	67
Evaporator water consumption	°	l/h	11890	16080	17690	21100	24140	33300	38190	42780
Evaporator pressure drops	°	kPa	50	82	81	118	60	104	117	144
C.O.P.	°	-	4.18	4.16	4.16	4.38	4.51	4.49	4.51	4.44

COOLING

WRL	VERSION	U.M.	180	200	300	400	500	550	600	650
 COOLING MODE 12/7 - 30/35°C "FAN COILS"										
Cooling capacity	°	kW	49.6	64.0	74.1	85.4	99.5	128.8	149.1	167.6
Total input power	°	kW	10.6	14.1	16.3	17.7	20.1	26.4	30.4	35.0
Total input current	°	A	20.4	26.3	28.5	33.4	37.0	53.0	61.8	71.2
Evaporator water flow rate	°	l/h	8520	11010	12750	14680	17120	22150	25650	28830
Evaporator pressure drops	°	kPa	27	45	45	65	31	48	54	65
Condenser water flow rate	°	l/h	10170	13190	15270	17430	20230	26230	30360	34250
Condenser pressure drops	°	kPa	29	49	60	85	31	50	56	69
Commercial EER	°	W/W	4.66	4.55	4.55	4.82	4.96	4.88	4.91	4.78
Commercial ESEER	°	W/W	5.35	5.31	5.35	5.47	6.37	6.90	6.30	5.86

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	7°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

WRL	VERSION	U.M.	180	200	300	400	500	550	600	650
HEATING MODE 10/5 - 40/45°C "FAN COILS"										
Heating capacity	°	kW	51.21	68.94	75.76	88.38	101.71	139.71	159.99	179.02
Input power	°	kW	12.44	16.83	18.44	20.29	22.87	31.34	35.68	40.40
Total input current	°	A	22.8	29.5	32.0	35.9	41.1	57.8	66.7	76.1
Condenser water flow rate	°	l/h	8810	11860	13030	15200	17490	24030	27520	30790
Condenser pressure drops (inner side heat exchanger)	°	kPa	20	37	44	61	24	44	47	59
Evaporator water consumption	°	l/h	6880	9250	10180	12060	13950	19180	21990	24540
Evaporator pressure drops	°	kPa	19	31	30	41	20	37	38	47
C.O.P.	°	-	4.12	4.10	4.11	4.36	4.45	4.46	4.48	4.43

PUMP ELECTRICAL DATA											
Input power	low static pressure evaporator side pumps	P	kW	0.77	0.90	0.94	1.05	1.14	1.70	1.79	2.67
Input current			A	1.45	1.71	1.78	2.00	2.11	3.15	3.31	4.94
Useful static pressure			kPa	137	123	125	107	123	123	114	161
Input power	high static pressure evaporator side pumps	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	210	197	199	183	199	249	239	221
Input power	low static pressure condenser side pumps	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	135	114	105	154	184	165	150	127
Input power	high static pressure condenser side pumps	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	208	189	234	207	237	225	208	182

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**

Input temperature 10°C
Output temperature 5°C

Condenser

Input temperature 40°C
Output temperature 45°C

COOLING

WRL	VERSION	U.M.	180	200	300	400	500	550	600	650
COOLING MODE - 30/35°C "FAN COILS"										
Cooling capacity	°	kW	49.76	64.50	74.64	86.27	100.03	129.77	150.42	169.34
Input power	°	kW	10.45	13.67	15.84	16.93	19.62	25.48	29.25	33.50
Total input current	°	A	19.9	25.0	28.5	31.9	36.3	50.8	59.3	68.3
Rate of water evaporation	°	l/h	8560	11090	12840	14840	17200	22320	25870	29130
Evaporator pressure drops	°	kPa	27	43	46	60	30	49	53	67
Condenser water consumption	°	l/h	10180	13210	15290	17460	20240	26260	30400	34310
Condenser pressure drops	°	kPa	27	46	62	81	32	52	57	72
EER	°	-	4.76	4.72	4.71	5.10	5.10	5.09	5.14	5.05
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 evaporator side pumps	P	kW	0.87	1.00	1.08	1.17	1.26	1.80	1.88	2.81
Input current			A	1.63	1.90	2.06	2.23	2.34	3.33	3.48	5.19
Useful static pressure			kPa	127	108	101	81	102	102	86	123
Input power	high static pressure evaporator side pumps	N	kW	1.39	1.55	1.66	1.78	1.91	3.12	3.27	3.38
Input current			A	2.79	3.13	3.35	3.59	3.86	5.18	5.43	5.61
Useful static pressure			kPa	201	183	177	158	180	226	208	179
Input power	low static pressure condenser side pumps	B/F	kW	0.95	1.10	1.19	1.93	2.07	2.73	2.84	2.90
Input current			A	1.80	2.08	2.25	3.89	4.18	5.05	5.25	5.37
Useful static pressure			kPa	126	100	78	129	166	148	127	94
Input power	high static pressure condenser side pumps	U/I	kW	1.49	1.68	2.32	2.47	2.66	3.29	3.41	3.49
Input current			A	3.01	3.39	4.13	4.40	4.74	5.45	5.66	5.79
Useful static pressure			kPa	200	176	208	182	220	207	183	146

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 [D]

WRL	VERSION	U.M.	180	200	300	400	500	550	600	650
COOLING DESUPERHEATER										
Recovered power T _{water} 40-45°C	-	kW	7.8	9.9	11.3	13.2	14.4	19.2	22.1	24.8
Quantity	-	n°	1	1	1	1	1	1	1	1
Water flow rate	-	l/h	1340	1700	1940	2260	2480	3310	3810	4270
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	12.7	16.6	18.0	20.5	23.8	32.8	37.5	41.2
Heating capacity (water 40-45 10-7) at the condenser	-	kW	38.5	52.3	57.7	67.9	77.9	107.0	122.5	137.9
Quantity	-	n°	1	1	1	1	1	1	1	1
Water flow rate	-	l/h	2180	2860	3100	3530	4100	5630	6440	7080
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 7°C

Condenser

Input temperature 40°C
Output temperature 45°C

CONDENSERLESS [E]

WRLE	VERSION	U.M.	180	200	300	400	500	550	600	650
Cooling capacity	-	Kw	46.0	60.1	69.6	80.1	90.6	121.3	140.2	158.7
Input power	-	Kw	12.4	16.0	18.5	19.8	23.1	29.6	34.1	38.5
Absorbed current	-	A	22.9	28.5	32.4	35.6	41.8	55.8	64.8	73.9
E.E.R.	-	-	3.7	3.8	3.8	4.1	3.9	4.1	4.1	4.1
Evaporator water flow rate	-	l/h	7900	10340	11980	13770	15580	20860	24110	27300
Evaporator pressure drops	-	kPa	23	39	39	56	25	42	47	57
Gas line	-	mm	28	28	28	28	35	35	35	35
Liquid line	-	mm	22	22	22	22	28	28	28	28

COOLING

Condensation temperature 45°C
Temperature of water produced 7°C; Δt 5°C

GENERAL DATA

WRL	VERSION	U.M.	180	200	300	400	500	550	600	650
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	59.0	99.0	112.0	125.0
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	° - E	dm ³	10.1	10.1	11.7	11.7	13.6	13.6	15.1	15.1
OUTER SIDE / source heat exchanger	°		12.8	12.8	12.8	12.8	16.7	16.7	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	6.0	7.0	7.5	8.5	10.0	12.5	16.0	16.5
Refrigerant	E	Kg	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Oil	-	l	5.04	5.04	5.04	5.67	6.3	12.06	12.06	12.06
SOUND DATA										
Sound power	-	dB(A)	61.1	61.8	62.9	71.1	67.6	79.1	79.1	79.1
Sound pressure [**]	-	dB(A)	29.1	29.8	30.9	39.1	35.6	47.1	47.1	47.1
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	375	375	381	388	518	594	670	715
Empty weight	D	Kg	383	383	389	396	528	604	681	726
Empty weight	E	Kg	346	346	351	358	460	536	615	660

[*] 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.

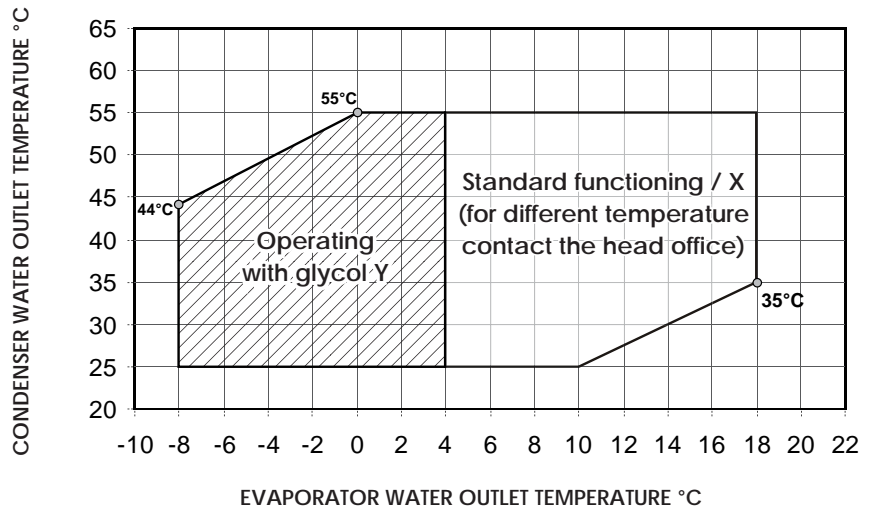
8. OPERATING LIMITS

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: 22° C.

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

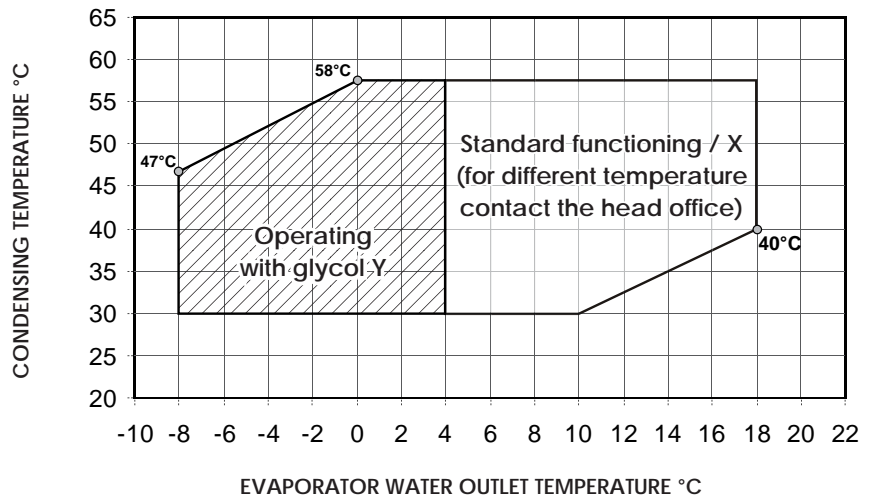
FUNCTIONING LIMITS WRL



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

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

FUNCTIONING LIMITS WRL-E



8.1. DESIGN DATA

REFRIGERANT SIDE FOR WRL 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 WRL 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 WRL 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 VALUES - STANDARD VERSIONS

9.1. WRL180X 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	36.37	7.97	4.56	35.70	8.84	4.04	35.14	9.85	3.57	34.58	10.98	3.15	-	-	-	-	-	-	-	-	-
	-6	39.60	8.06	4.91	38.88	8.91	4.36	38.23	9.91	3.86	37.57	11.03	3.41	36.81	12.22	3.01	-	-	-	-	-	-
	-4	42.69	8.14	5.24	41.92	8.98	4.67	41.20	9.97	4.13	40.43	11.07	3.65	39.54	12.25	3.23	38.44	13.47	2.85	-	-	-
	-3	44.20	8.18	5.41	43.41	9.01	4.82	42.64	9.99	4.27	41.83	11.09	3.77	40.87	12.26	3.33	39.69	13.47	2.95	-	-	-
	-2	45.69	8.21	5.56	44.87	9.04	4.96	44.07	10.02	4.40	43.20	11.11	3.89	42.18	12.27	3.44	40.92	13.48	3.04	-	-	-
	0	48.61	8.28	5.87	47.74	9.10	5.25	46.86	10.06	4.66	45.89	11.14	4.12	44.74	12.30	3.64	43.32	13.49	3.21	41.55	14.68	2.83
	2	51.48	8.35	6.17	50.56	9.15	5.52	49.61	10.11	4.91	48.54	11.18	4.34	47.26	12.32	3.84	45.69	13.50	3.38	43.73	14.68	2.98
	4	54.33	8.41	6.46	53.36	9.20	5.80	52.34	10.15	5.16	51.17	11.21	4.56	49.76	12.34	4.03	48.03	13.51	3.55	45.90	14.68	3.13
	5	55.75	8.44	6.61	54.76	9.23	5.93	53.70	10.17	5.28	52.48	11.23	4.67	51.21	12.44	4.12	49.21	13.52	3.64	46.98	14.69	3.20
	6	57.18	8.47	6.75	56.17	9.26	6.07	55.07	10.20	5.40	53.80	11.25	4.78	52.26	12.37	4.22	50.39	13.53	3.72	48.07	14.69	3.27
	7	58.61	8.49	6.90	57.58	9.28	6.20	56.44	10.22	5.52	55.12	11.27	4.89	53.53	12.39	4.32	51.57	13.54	3.81	49.17	14.70	3.35
	8	60.06	8.52	7.05	59.00	9.31	6.34	57.83	10.24	5.65	56.46	11.29	5.00	54.80	12.40	4.42	52.77	13.55	3.89	50.28	14.70	3.42
	10	62.99	8.58	7.34	61.89	9.36	6.61	60.65	10.29	5.89	59.18	11.33	5.22	57.40	12.44	4.61	55.22	13.58	4.07	52.55	14.72	3.57
12	-	-	-	64.85	9.42	6.88	63.54	10.34	6.14	61.98	11.37	5.45	60.08	12.48	4.81	57.75	13.62	4.24	54.90	14.75	3.72	
14	-	-	-	67.93	9.48	7.16	66.55	10.40	6.40	64.89	11.43	5.68	62.87	12.53	5.02	60.39	13.66	4.42	57.37	14.79	3.88	
16	-	-	-	-	-	-	69.69	10.47	6.66	67.93	11.49	5.91	65.79	12.59	5.23	63.16	13.72	4.61	59.97	14.84	4.04	
18	-	-	-	-	-	-	72.98	10.54	6.93	71.14	11.56	6.15	68.87	12.65	5.44	66.10	13.78	4.80	62.74	14.90	4.21	

9.2. WRL180X 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	30.19	8.13	3.71	28.81	9.02	3.19	27.29	10.06	2.71	25.66	11.21	2.29	-	-	-	-	-	-	-	-	-
	-6	33.55	8.22	4.08	32.12	9.10	3.53	30.50	10.12	3.01	28.73	11.26	2.55	26.81	12.48	2.15	-	-	-	-	-	-
	-4	36.77	8.30	4.43	35.30	9.17	3.85	33.61	10.18	3.30	31.71	11.30	2.81	29.61	12.51	2.37	27.32	13.75	1.99	-	-	-
	-3	38.34	8.34	4.60	36.86	9.20	4.01	35.13	10.20	3.44	33.16	11.32	2.93	30.98	12.52	2.47	28.59	13.75	2.08	-	-	-
	-2	39.88	8.38	4.76	38.39	9.23	4.16	36.62	10.23	3.58	34.60	11.34	3.05	32.34	12.53	2.58	29.85	13.76	2.17	-	-	-
	0	42.90	8.45	5.08	41.39	9.29	4.46	39.57	10.28	3.85	37.44	11.38	3.29	35.03	12.55	2.79	32.34	13.77	2.35	29.38	14.99	1.96
	2	45.84	8.52	5.38	44.33	9.34	4.74	42.46	10.32	4.11	40.25	11.41	3.53	37.69	12.58	3.00	34.81	13.78	2.53	31.62	14.99	2.11
	4	48.73	8.58	5.68	47.24	9.40	5.03	45.33	10.37	4.37	43.03	11.45	3.76	40.34	12.60	3.20	37.29	13.79	2.70	33.88	14.99	2.26
	5	50.16	8.61	5.83	48.68	9.42	5.17	46.76	10.39	4.50	44.42	11.46	3.87	41.67	12.61	3.30	38.54	13.80	2.79	35.02	14.99	2.34
	6	51.59	8.64	5.97	50.11	9.45	5.30	48.18	10.41	4.63	45.81	11.48	3.99	43.01	12.63	3.41	39.79	13.81	2.88	36.17	15.00	2.41
	7	53.01	8.67	6.12	51.55	9.48	5.44	49.76	10.45	4.76	47.21	11.50	4.10	44.36	12.64	3.51	41.06	13.82	2.97	37.33	15.00	2.49
	8	54.43	8.70	6.26	52.99	9.50	5.58	51.05	10.46	4.88	48.62	11.52	4.22	45.71	12.66	3.61	42.34	13.84	3.06	38.52	15.01	2.57
	10	57.29	8.76	6.54	55.89	9.56	5.85	53.95	10.51	5.14	51.47	11.56	4.45	48.46	12.70	3.82	44.95	13.86	3.24	40.94	15.03	2.72
12	-	-	-	58.83	9.62	6.12	56.89	10.56	5.39	54.38	11.61	4.68	51.29	12.74	4.03	47.65	13.90	3.43	43.47	15.06	2.89	
14	-	-	-	61.82	9.68	6.39	59.91	10.62	5.64	57.37	11.67	4.92	54.21	12.79	4.24	50.46	13.95	3.62	46.11	15.10	3.05	
16	-	-	-	-	-	-	63.01	10.68	5.90	60.46	11.73	5.15	57.25	12.85	4.46	53.38	14.00	3.81	48.88	15.15	3.23	
18	-	-	-	-	-	-	66.23	10.76	6.16	63.68	11.80	5.40	60.42	12.92	4.68	56.46	14.07	4.01	51.82	15.22	3.40	

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. WRL200X^{*****} 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	48.96	10.79	4.54	48.06	11.96	4.02	47.30	13.33	3.55	46.55	14.86	3.13	-	-	-	-	-	-	-	-	-
	-6	53.30	10.91	4.89	52.33	12.06	4.34	51.46	13.41	3.84	50.58	14.93	3.39	49.55	16.54	3.00	-	-	-	-	-	-
	-4	57.47	11.01	5.22	56.43	12.15	4.65	55.46	13.49	4.11	54.43	14.98	3.63	53.23	16.58	3.21	51.74	18.22	2.84	-	-	-
	-3	59.51	11.07	5.38	58.43	12.19	4.79	57.41	13.52	4.25	56.31	15.01	3.75	55.02	16.59	3.32	53.43	18.23	2.93	-	-	-
	-2	61.51	11.11	5.53	60.40	12.23	4.94	59.32	13.56	4.38	58.15	15.03	3.87	56.78	16.61	3.42	55.08	18.24	3.02	-	-	-
	0	65.44	11.21	5.84	64.27	12.31	5.22	63.09	13.62	4.63	61.78	15.08	4.10	60.23	16.64	3.62	58.32	18.25	3.20	55.94	19.86	2.82
	2	69.31	11.29	6.14	68.07	12.38	5.50	66.79	13.68	4.88	65.34	15.12	4.32	63.62	16.67	3.82	61.50	18.27	3.37	58.87	19.86	2.96
	4	73.14	11.37	6.43	71.84	12.45	5.77	70.46	13.74	5.13	68.88	15.17	4.54	66.99	16.70	4.01	64.66	18.29	3.54	61.79	19.87	3.11
	5	75.06	11.41	6.58	73.72	12.49	5.90	72.29	13.77	5.25	70.65	15.19	4.65	68.94	16.83	4.10	66.24	18.30	3.62	63.25	19.87	3.18
	6	76.98	11.45	6.72	75.61	12.52	6.04	74.13	13.80	5.37	72.42	15.22	4.76	70.36	16.74	4.20	67.83	18.31	3.70	64.71	19.88	3.26
	7	78.91	11.49	6.86	77.51	12.56	6.17	75.98	13.83	5.50	74.21	15.24	4.87	72.06	16.76	4.30	69.43	18.32	3.79	66.19	19.89	3.33
	8	80.85	11.53	7.01	79.43	12.60	6.31	77.85	13.86	5.62	76.00	15.27	4.98	73.77	16.78	4.40	71.04	18.34	3.87	67.69	19.90	3.40
	10	84.79	11.61	7.30	83.31	12.67	6.58	81.64	13.92	5.86	79.67	15.33	5.20	77.27	16.83	4.59	74.33	18.38	4.04	70.74	19.92	3.55
12	-	-	-	87.30	12.75	6.85	85.54	13.99	6.11	83.44	15.39	5.42	80.87	16.89	4.79	77.74	18.43	4.22	73.91	19.96	3.70	
14	-	-	-	91.44	12.83	7.13	89.59	14.07	6.37	87.35	15.46	5.65	84.63	16.95	4.99	81.29	18.49	4.40	77.23	20.02	3.86	
16	-	-	-	-	-	-	93.81	14.16	6.62	91.45	15.55	5.88	88.56	17.03	5.20	85.03	18.56	4.58	80.73	20.08	4.02	
18	-	-	-	-	-	-	98.25	14.26	6.89	95.76	15.64	6.12	92.72	17.12	5.41	88.99	18.65	4.77	84.45	20.17	4.19	

9.4. WRL200X^{*****} 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	39.13	10.64	3.68	37.33	11.80	3.16	35.37	13.16	2.69	33.25	14.68	2.27	-	-	-	-	-	-	-	-	-
	-6	43.48	10.76	4.04	41.62	11.90	3.50	39.54	13.25	2.98	37.24	14.74	2.53	34.74	16.33	2.13	32.07	17.97	1.78	-	-	-
	-4	47.66	10.87	4.39	45.75	11.99	3.81	43.56	13.32	3.27	41.09	14.79	2.78	38.37	16.37	2.34	35.41	17.99	1.97	-	-	-
	-3	49.69	10.92	4.55	47.77	12.04	3.97	45.53	13.35	3.41	42.98	14.82	2.90	40.15	16.38	2.45	37.06	18.00	2.06	-	-	-
	-2	51.69	10.97	4.71	49.75	12.08	4.12	47.47	13.39	3.55	44.85	14.84	3.02	41.92	16.40	2.56	38.68	18.00	2.15	35.17	19.61	1.79
	0	55.60	11.06	5.03	53.65	12.15	4.41	51.28	13.45	3.81	48.53	14.89	3.26	45.40	16.43	2.76	41.91	18.02	2.33	38.08	19.61	1.94
	2	59.41	11.14	5.33	57.46	12.23	4.70	55.04	13.51	4.07	52.16	14.93	3.49	48.85	16.46	2.97	45.12	18.03	2.50	40.98	19.61	2.09
	4	63.16	11.23	5.63	61.22	12.30	4.98	58.75	13.56	4.33	55.77	14.98	3.72	52.29	16.49	3.17	48.33	18.05	2.68	43.90	19.61	2.24
	5	65.02	11.27	5.77	63.09	12.33	5.12	60.60	13.59	4.46	57.57	15.00	3.84	54.01	16.51	3.27	49.94	18.06	2.76	45.38	19.62	2.31
	6	66.86	11.30	5.91	64.95	12.37	5.25	62.45	13.62	4.58	59.37	15.03	3.95	55.74	16.53	3.37	51.57	18.08	2.85	46.88	19.63	2.39
	7	68.71	11.34	6.06	66.81	12.40	5.39	64.50	13.67	4.72	61.19	15.05	4.07	57.49	16.55	3.47	53.21	18.09	2.94	48.39	19.63	2.46
	8	70.55	11.38	6.20	68.68	12.44	5.52	66.16	13.68	4.84	63.01	15.08	4.18	59.24	16.57	3.58	54.87	18.11	3.03	49.92	19.64	2.54
	10	74.24	11.46	6.48	72.44	12.51	5.79	69.92	13.75	5.09	66.70	15.13	4.41	62.81	16.61	3.78	58.26	18.14	3.21	53.07	19.67	2.70
12	-	-	-	76.24	12.58	6.06	73.73	13.82	5.34	70.47	15.20	4.64	66.48	16.67	3.99	61.76	18.19	3.40	56.34	19.71	2.86	
14	-	-	-	80.12	12.67	6.33	77.64	13.90	5.59	74.35	15.27	4.87	70.26	16.74	4.20	65.39	18.25	3.58	59.76	19.76	3.02	
16	-	-	-	-	-	-	81.67	13.98	5.84	78.36	15.35	5.11	74.20	16.81	4.41	69.19	18.32	3.78	63.35	19.83	3.19	
18	-	-	-	-	-	-	85.84	14.08	6.10	82.53	15.44	5.34	78.30	16.90	4.63	73.17	18.41	3.97	67.16	19.91	3.37	

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	-	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. WRL300X 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	53.80	11.82	4.55	52.82	13.10	4.03	51.98	14.61	3.56	51.16	16.29	3.14	-	-	-	-	-	-	-	-	-
	-6	58.58	11.95	4.90	57.51	13.21	4.35	56.55	14.70	3.85	55.58	16.35	3.40	54.45	18.12	3.00	-	-	-	-	-	-
	-4	63.16	12.07	5.23	62.02	13.31	4.66	60.94	14.78	4.12	59.81	16.42	3.64	58.50	18.16	3.22	56.86	19.97	2.85	-	-	-
	-3	65.39	12.12	5.39	64.21	13.36	4.81	63.08	14.82	4.26	61.88	16.44	3.76	60.46	18.18	3.33	58.71	19.98	2.94	-	-	-
	-2	67.59	12.18	5.55	66.38	13.40	4.95	65.19	14.85	4.39	63.91	16.47	3.88	62.39	18.20	3.43	60.53	19.98	3.03	-	-	-
	0	71.91	12.28	5.86	70.62	13.49	5.24	69.33	14.92	4.65	67.89	16.52	4.11	66.19	18.23	3.63	64.09	20.00	3.20	61.47	21.77	2.82
	2	76.16	12.37	6.16	74.80	13.57	5.51	73.39	14.99	4.90	71.81	16.57	4.33	69.91	18.27	3.83	67.59	20.02	3.38	64.70	21.77	2.97
	4	80.37	12.46	6.45	78.94	13.65	5.78	77.43	15.05	5.14	75.69	16.62	4.55	73.61	18.30	4.02	71.06	20.04	3.55	67.90	21.77	3.12
	5	82.48	12.51	6.59	81.01	13.69	5.92	79.44	15.08	5.27	77.63	16.65	4.66	75.76	18.30	4.11	72.79	20.05	3.63	69.50	21.77	3.19
	6	84.59	12.55	6.74	83.09	13.72	6.05	81.47	15.12	5.39	79.58	16.68	4.77	77.32	18.34	4.22	74.54	20.06	3.72	71.12	21.78	3.26
	7	86.71	12.59	6.88	85.18	13.76	6.19	83.50	15.15	5.51	81.54	16.70	4.88	79.19	18.36	4.31	76.29	20.08	3.80	72.74	21.79	3.34
	8	88.85	12.64	7.03	87.28	13.80	6.32	85.55	15.18	5.63	83.52	16.73	4.99	81.07	18.39	4.41	78.07	20.10	3.88	74.38	21.80	3.41
	10	93.18	12.73	7.32	91.55	13.88	6.60	89.72	15.26	5.88	87.54	16.79	5.21	84.91	18.44	4.60	81.68	20.14	4.06	77.74	21.83	3.56
12	-	-	-	95.94	13.97	6.87	94.00	15.33	6.13	91.69	16.86	5.44	88.87	18.50	4.80	85.43	20.19	4.23	81.22	21.87	3.71	
14	-	-	-	100.49	14.06	7.15	98.45	15.42	6.38	95.99	16.94	5.67	93.00	18.58	5.01	89.33	20.26	4.41	84.87	21.93	3.87	
16	-	-	-	-	-	-	103.09	15.52	6.64	100.50	17.04	5.90	97.32	18.66	5.22	93.44	20.34	4.59	88.72	22.01	4.03	
18	-	-	-	-	-	-	107.96	15.62	6.91	105.24	17.14	6.14	101.89	18.76	5.43	97.79	20.43	4.79	92.81	22.10	4.20	

9.6. WRL300X 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	45.29	12.32	3.67	43.21	13.67	3.16	40.93	15.25	2.68	38.48	17.00	2.26	-	-	-	-	-	-	-	-	-
	-6	50.32	12.46	4.04	48.17	13.79	3.49	45.75	15.35	2.98	43.09	17.07	2.52	40.21	18.92	2.13	-	-	-	-	-	-
	-4	55.15	12.59	4.38	52.95	13.90	3.81	50.41	15.43	3.27	47.56	17.14	2.77	44.41	18.96	2.34	40.98	20.84	1.97	-	-	-
	-3	57.50	12.65	4.55	55.28	13.95	3.96	52.69	15.47	3.41	49.74	17.17	2.90	46.47	18.98	2.45	42.88	20.85	2.06	-	-	-
	-2	59.82	12.70	4.71	57.58	13.99	4.11	54.93	15.51	3.54	51.90	17.20	3.02	48.51	19.00	2.55	44.77	20.86	2.15	-	-	-
	0	64.34	12.81	5.02	62.08	14.08	4.41	59.35	15.58	3.81	56.16	17.25	3.26	52.54	19.03	2.76	48.50	20.88	2.32	44.07	22.72	1.94
	2	68.76	12.91	5.33	66.49	14.17	4.69	63.69	15.65	4.07	60.36	17.30	3.49	56.53	19.07	2.96	52.21	20.89	2.50	47.42	22.72	2.09
	4	73.09	13.01	5.62	70.85	14.25	4.97	67.99	15.72	4.33	64.54	17.35	3.72	60.51	19.11	3.17	55.93	20.91	2.67	50.81	22.72	2.24
	5	75.24	13.05	5.76	73.01	14.29	5.11	70.13	15.75	4.45	66.62	17.38	3.83	62.50	19.13	3.27	57.80	20.93	2.76	52.52	22.73	2.31
	6	77.38	13.10	5.91	75.16	14.33	5.25	72.27	15.78	4.58	68.71	17.41	3.95	64.51	19.15	3.37	59.68	20.94	2.85	54.25	22.74	2.39
	7	79.51	13.14	6.05	77.32	14.37	5.38	74.44	15.81	4.71	70.81	17.44	4.06	66.53	19.17	3.47	61.58	20.96	2.94	56.00	22.75	2.46
	8	81.64	13.19	6.19	79.48	14.41	5.52	76.57	15.85	4.83	72.92	17.47	4.17	68.56	19.19	3.57	63.50	20.98	3.03	57.77	22.76	2.54
	10	85.92	13.28	6.47	83.83	14.49	5.78	80.91	15.93	5.08	77.19	17.53	4.40	72.69	19.25	3.78	67.42	21.02	3.21	61.41	22.79	2.69
12	-	-	-	88.23	14.58	6.05	85.33	16.01	5.33	81.56	17.60	4.63	76.93	19.31	3.98	71.47	21.07	3.39	65.19	22.84	2.85	
14	-	-	-	92.72	14.68	6.32	89.85	16.10	5.58	86.04	17.69	4.86	81.31	19.39	4.19	75.68	21.14	3.58	69.15	22.90	3.02	
16	-	-	-	-	-	-	94.51	16.20	5.83	90.68	17.78	5.10	85.86	19.48	4.41	80.07	21.23	3.77	73.32	22.97	3.19	
18	-	-	-	-	-	-	99.34	16.31	6.09	95.51	17.89	5.34	90.61	19.59	4.63	84.68	21.33	3.97	77.72	23.07	3.37	

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

9.7. WRL400X^{*****} 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	62.77	13.01	4.83	61.62	14.42	4.27	60.64	16.08	3.77	59.68	17.93	3.33	-	-	-	-	-	-	-	-	-
	-6	68.34	13.15	5.20	67.09	14.54	4.61	65.98	16.18	4.08	64.84	18.00	3.60	63.53	19.95	3.18	-	-	-	-	-	-
	-4	73.68	13.28	5.55	72.35	14.65	4.94	71.10	16.27	4.37	69.78	18.07	3.86	68.24	19.99	3.41	66.34	21.98	3.02	-	-	-
	-3	76.29	13.35	5.72	74.91	14.70	5.09	73.60	16.31	4.51	72.19	18.10	3.99	70.54	20.01	3.52	68.49	21.99	3.11	-	-	-
	-2	78.86	13.40	5.88	77.44	14.75	5.25	76.05	16.35	4.65	74.55	18.13	4.11	72.79	20.03	3.63	70.61	22.00	3.21	-	-	-
	0	83.90	13.52	6.21	82.39	14.85	5.55	80.88	16.42	4.92	79.20	18.19	4.36	77.22	20.07	3.85	74.77	22.01	3.40	71.71	23.96	2.99
	2	88.85	13.62	6.52	87.27	14.94	5.84	85.62	16.50	5.19	83.77	18.24	4.59	81.56	20.11	4.06	78.85	22.03	3.58	75.48	23.96	3.15
	4	93.77	13.72	6.84	92.10	15.02	6.13	90.33	16.57	5.45	88.30	18.30	4.83	85.88	20.15	4.26	82.90	22.06	3.76	79.22	23.96	3.31
	5	96.22	13.77	6.99	94.52	15.06	6.27	92.68	16.60	5.58	90.57	18.33	4.94	88.38	20.29	4.36	84.92	22.07	3.85	81.09	23.97	3.38
	6	98.69	13.81	7.14	96.94	15.11	6.42	95.04	16.64	5.71	92.85	18.35	5.06	90.20	20.19	4.47	86.96	22.08	3.94	82.97	23.97	3.46
	7	101.16	13.86	7.30	99.37	15.15	6.56	97.41	16.68	5.84	95.13	18.39	5.17	92.38	20.21	4.57	89.01	22.10	4.03	84.86	23.98	3.54
	8	103.65	13.91	7.45	101.83	15.19	6.70	99.81	16.71	5.97	97.44	18.42	5.29	94.58	20.24	4.67	91.08	22.12	4.12	86.78	24.00	3.62
	10	108.71	14.01	7.76	106.81	15.28	6.99	104.67	16.79	6.23	102.13	18.49	5.52	99.06	20.30	4.88	95.30	22.17	4.30	90.69	24.03	3.77
	12	-	-	-	111.93	15.37	7.28	109.67	16.88	6.50	106.97	18.56	5.76	103.68	20.37	5.09	99.66	22.22	4.48	94.75	24.08	3.94
14	-	-	-	117.23	15.47	7.58	114.85	16.97	6.77	111.99	18.65	6.00	108.50	20.45	5.31	104.22	22.30	4.67	99.01	24.14	4.10	
16	-	-	-	-	-	-	120.27	17.08	7.04	117.24	18.75	6.25	113.54	20.54	5.53	109.01	22.38	4.87	103.50	24.22	4.27	
18	-	-	-	-	-	-	125.96	17.20	7.32	122.77	18.87	6.51	118.87	20.65	5.76	114.08	22.49	5.07	108.27	24.32	4.45	

9.8. WRL400X^{*****} 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	52.34	13.17	3.97	49.94	14.61	3.42	47.31	16.30	2.90	44.48	18.17	2.45	-	-	-	-	-	-	-	-	-
	-6	58.16	13.32	4.37	55.67	14.74	3.78	52.88	16.40	3.22	49.81	18.25	2.73	46.47	20.22	2.30	-	-	-	-	-	-
	-4	63.74	13.45	4.74	61.20	14.85	4.12	58.26	16.49	3.53	54.96	18.31	3.00	51.33	20.26	2.53	47.37	22.27	2.13	-	-	-
	-3	66.46	13.52	4.92	63.89	14.90	4.29	60.89	16.53	3.68	57.49	18.35	3.13	53.71	20.28	2.65	49.56	22.28	2.22	-	-	-
	-2	69.14	13.58	5.09	66.54	14.95	4.45	63.49	16.57	3.83	59.99	18.38	3.26	56.06	20.30	2.76	51.74	22.29	2.32	-	-	-
	0	74.36	13.69	5.43	71.75	15.05	4.77	68.59	16.65	4.12	64.91	18.43	3.52	60.72	20.34	2.99	56.06	22.31	2.51	50.93	24.28	2.10
	2	79.47	13.80	5.76	76.85	15.14	5.08	73.61	16.72	4.40	69.76	18.49	3.77	65.33	20.38	3.21	60.34	22.33	2.70	54.81	24.28	2.26
	4	84.48	13.90	6.08	81.88	15.23	5.38	78.58	16.79	4.68	74.59	18.55	4.02	69.93	20.42	3.43	64.64	22.35	2.89	58.72	24.29	2.42
	5	86.96	13.95	6.23	84.38	15.27	5.53	81.05	16.83	4.82	77.00	18.57	4.15	72.24	20.44	3.53	66.80	22.36	2.99	60.70	24.29	2.50
	6	89.43	14.00	6.39	86.87	15.31	5.67	83.53	16.87	4.95	79.42	18.60	4.27	74.56	20.46	3.64	68.98	22.38	3.08	62.70	24.30	2.58
	7	91.90	14.04	6.54	89.37	15.35	5.82	86.27	16.93	5.10	81.84	18.63	4.39	76.89	20.49	3.75	71.18	22.40	3.18	64.72	24.31	2.66
	8	94.36	14.09	6.70	91.86	15.40	5.97	88.50	16.94	5.22	84.28	18.67	4.52	79.24	20.51	3.86	73.40	22.42	3.27	66.77	24.32	2.75
	10	99.30	14.19	7.00	96.88	15.49	6.26	93.51	17.02	5.49	89.22	18.74	4.76	84.01	20.57	4.08	77.93	22.46	3.47	70.98	24.36	2.91
	12	-	-	-	101.97	15.58	6.54	98.62	17.11	5.76	94.26	18.81	5.01	88.91	20.64	4.31	82.60	22.52	3.67	75.35	24.40	3.09
14	-	-	-	107.16	15.68	6.83	103.85	17.20	6.04	99.45	18.90	5.26	93.98	20.72	4.54	87.46	22.60	3.87	79.93	24.47	3.27	
16	-	-	-	-	-	-	109.24	17.31	6.31	104.81	19.00	5.52	99.24	20.82	4.77	92.54	22.69	4.08	84.74	24.55	3.45	
18	-	-	-	-	-	-	114.81	17.43	6.59	110.39	19.12	5.77	104.73	20.93	5.00	97.87	22.79	4.29	89.82	24.66	3.64	

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. WRL500X 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	72.23	14.66	4.93	70.91	16.25	4.36	69.78	18.12	3.85	68.68	20.20	3.40	-	-	-	-	-	-	-	-	-
	-6	78.64	14.82	5.31	77.21	16.39	4.71	75.92	18.23	4.16	74.61	20.28	3.68	73.11	22.48	3.25	-	-	-	-	-	-
	-4	84.79	14.97	5.66	83.26	16.51	5.04	81.82	18.33	4.46	80.30	20.36	3.94	78.53	22.53	3.49	76.34	24.77	3.08	-	-	-
	-3	87.79	15.04	5.84	86.21	16.57	5.20	84.69	18.38	4.61	83.07	20.39	4.07	81.17	22.55	3.60	78.82	24.78	3.18	-	-	-
	-2	90.74	15.10	6.01	89.11	16.62	5.36	87.52	18.42	4.75	85.79	20.43	4.20	83.76	22.57	3.71	81.26	24.79	3.28	-	-	-
	0	96.55	15.23	6.34	94.81	16.73	5.67	93.07	18.51	5.03	91.14	20.49	4.45	88.86	22.61	3.93	86.04	24.80	3.47	82.52	27.00	3.06
	2	102.25	15.35	6.66	100.42	16.83	5.97	98.53	18.59	5.30	96.40	20.55	4.69	93.86	22.66	4.14	90.74	24.83	3.65	86.86	26.99	3.22
	4	107.90	15.46	6.98	105.98	16.93	6.26	103.95	18.67	5.57	101.62	20.62	4.93	98.82	22.70	4.35	95.39	24.85	3.84	91.16	27.00	3.38
	5	110.73	15.51	7.14	108.76	16.97	6.41	106.65	18.71	5.70	104.22	20.65	5.05	101.71	22.87	4.45	97.73	24.87	3.93	93.31	27.01	3.46
	6	113.56	15.57	7.30	111.55	17.02	6.55	109.37	18.75	5.83	106.84	20.68	5.17	103.80	22.75	4.56	100.07	24.88	4.02	95.47	27.01	3.53
	7	116.41	15.62	7.45	114.35	17.07	6.70	112.10	18.79	5.97	109.48	20.72	5.28	106.31	22.78	4.67	102.43	24.90	4.11	97.65	27.02	3.61
	8	119.28	15.67	7.61	117.18	17.12	6.85	114.85	18.83	6.10	112.13	20.75	5.40	108.84	22.81	4.77	104.81	24.92	4.21	99.86	27.04	3.69
	10	125.10	15.78	7.93	122.91	17.22	7.14	120.44	18.92	6.37	117.53	20.83	5.64	113.99	22.87	4.98	109.66	24.98	4.39	104.36	27.08	3.85
	12	-	-	-	128.80	17.32	7.44	126.20	19.02	6.64	123.09	20.92	5.89	119.31	22.95	5.20	114.69	25.04	4.58	109.04	27.13	4.02
14	-	-	-	134.90	17.43	7.74	132.17	19.12	6.91	128.87	21.02	6.13	124.85	23.04	5.42	119.93	25.12	4.77	113.93	27.20	4.19	
16	-	-	-	-	-	-	138.40	19.24	7.19	134.92	21.13	6.39	130.66	23.14	5.65	125.44	25.22	4.97	119.10	27.29	4.36	
18	-	-	-	-	-	-	144.94	19.38	7.48	141.28	21.26	6.65	136.78	23.27	5.88	131.28	25.34	5.18	124.60	27.40	4.55	

9.10. WRL500X 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	60.69	15.26	3.98	57.90	16.93	3.42	54.85	18.89	2.90	51.57	21.06	2.45	-	-	-	-	-	-	-	-	-
	-6	67.43	15.44	4.37	64.55	17.08	3.78	61.31	19.01	3.23	57.75	21.15	2.73	53.88	23.43	2.30	-	-	-	-	-	-
	-4	73.91	15.59	4.74	70.96	17.21	4.12	67.55	19.11	3.53	63.73	21.23	3.00	59.51	23.48	2.53	54.92	25.82	2.13	-	-	-
	-3	77.06	15.67	4.92	74.08	17.27	4.29	70.60	19.16	3.68	66.66	21.26	3.14	62.27	23.51	2.65	57.47	25.83	2.23	-	-	-
	-2	80.16	15.74	5.09	77.16	17.33	4.45	73.61	19.21	3.83	69.55	21.30	3.27	65.01	23.53	2.76	59.99	25.84	2.32	-	-	-
	0	86.22	15.87	5.43	83.20	17.44	4.77	79.53	19.30	4.12	75.26	21.36	3.52	70.41	23.57	2.99	65.00	25.86	2.51	59.05	28.14	2.10
	2	92.14	15.99	5.76	89.11	17.55	5.08	85.35	19.38	4.40	80.89	21.43	3.77	75.75	23.62	3.21	69.97	25.88	2.70	63.55	28.14	2.26
	4	97.95	16.11	6.08	94.94	17.65	5.38	91.11	19.46	4.68	86.48	21.49	4.02	81.09	23.66	3.43	74.95	25.90	2.89	68.09	28.15	2.42
	5	100.83	16.16	6.24	97.84	17.70	5.53	93.98	19.51	4.82	89.28	21.53	4.15	83.76	23.69	3.54	77.45	25.92	2.99	70.38	28.15	2.50
	6	103.69	16.22	6.39	100.73	17.75	5.68	96.85	19.55	4.95	92.08	21.56	4.27	86.45	23.71	3.65	79.98	25.94	3.08	72.70	28.16	2.58
	7	106.55	16.28	6.55	103.62	17.79	5.82	100.03	19.62	5.10	94.89	21.60	4.39	89.15	23.74	3.76	82.53	25.96	3.18	75.04	28.17	2.66
	8	109.41	16.33	6.70	106.51	17.85	5.97	102.61	19.64	5.23	97.72	21.63	4.52	91.88	23.77	3.86	85.10	25.98	3.28	77.42	28.19	2.75
	10	115.14	16.45	7.00	112.34	17.95	6.26	108.43	19.73	5.50	103.45	21.71	4.76	97.41	23.84	4.09	90.35	26.03	3.47	82.30	28.23	2.92
	12	-	-	-	118.24	18.06	6.55	114.35	19.83	5.77	109.30	21.80	5.01	103.10	23.92	4.31	95.78	26.10	3.67	87.37	28.28	3.09
14	-	-	-	124.25	18.18	6.84	120.41	19.94	6.04	115.31	21.91	5.26	108.97	24.01	4.54	101.41	26.19	3.87	92.67	28.36	3.27	
16	-	-	-	-	-	-	126.66	20.06	6.31	121.53	22.03	5.52	115.07	24.13	4.77	107.30	26.29	4.08	98.25	28.46	3.45	
18	-	-	-	-	-	-	133.12	20.20	6.59	127.99	22.16	5.78	121.43	24.26	5.01	113.48	26.42	4.30	104.15	28.58	3.64	

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. WRL550X^{*****} 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	99.22	20.09	4.94	97.40	22.27	4.37	95.85	24.84	3.86	94.34	27.69	3.41	-	-	-	-	-	-	-	-	-
	-6	108.02	20.31	5.32	106.05	22.46	4.72	104.29	24.99	4.17	102.49	27.80	3.69	100.42	30.81	3.26	-	-	-	-	-	-
	-4	116.47	20.52	5.68	114.37	22.63	5.05	112.39	25.12	4.47	110.30	27.91	3.95	107.87	30.88	3.49	104.86	33.95	3.09	-	-	-
	-3	120.59	20.61	5.85	118.42	22.71	5.21	116.33	25.19	4.62	114.11	27.95	4.08	111.50	30.91	3.61	108.27	33.96	3.19	-	-	-
	-2	124.65	20.70	6.02	122.40	22.79	5.37	120.22	25.25	4.76	117.85	28.00	4.21	115.06	30.94	3.72	111.62	33.97	3.29	-	-	-
	0	132.62	20.87	6.35	130.24	22.93	5.68	127.85	25.37	5.04	125.20	28.09	4.46	122.06	31.00	3.94	118.19	34.00	3.48	113.36	37.00	3.06
	2	140.45	21.03	6.68	137.94	23.07	5.98	135.34	25.48	5.31	132.42	28.17	4.70	128.93	31.05	4.15	124.64	34.03	3.66	119.31	37.00	3.22
	4	148.22	21.19	7.00	145.58	23.20	6.28	142.78	25.59	5.58	139.58	28.26	4.94	135.75	31.12	4.36	131.04	34.06	3.85	125.22	37.01	3.38
	5	152.10	21.26	7.15	149.40	23.27	6.42	146.50	25.64	5.71	143.17	28.30	5.06	139.71	31.34	4.46	134.24	34.08	3.94	128.17	37.02	3.46
	6	155.99	21.34	7.31	153.23	23.33	6.57	150.23	25.70	5.85	146.76	28.35	5.18	142.58	31.18	4.57	137.46	34.11	4.03	131.15	37.03	3.54
	7	159.90	21.41	7.47	157.08	23.40	6.71	153.98	25.76	5.98	150.38	28.40	5.30	146.03	31.22	4.68	140.70	34.13	4.12	134.14	37.04	3.62
	8	163.84	21.48	7.63	160.96	23.46	6.86	157.76	25.81	6.11	154.03	28.44	5.41	149.51	31.26	4.78	143.97	34.16	4.21	137.17	37.06	3.70
	10	171.84	21.63	7.94	168.83	23.60	7.15	165.45	25.94	6.38	161.44	28.55	5.65	156.59	31.35	5.00	150.64	34.23	4.40	143.36	37.11	3.86
	12	-	-	-	176.93	23.74	7.45	173.35	26.07	6.65	169.09	28.67	5.90	163.89	31.45	5.21	157.54	34.32	4.59	149.78	37.19	4.03
14	-	-	-	185.31	23.90	7.75	181.55	26.21	6.93	177.02	28.81	6.15	171.50	31.58	5.43	164.74	34.43	4.78	156.50	37.28	4.20	
16	-	-	-	-	-	-	190.11	26.38	7.21	185.33	28.96	6.40	179.48	31.72	5.66	172.31	34.57	4.98	163.60	37.41	4.37	
18	-	-	-	-	-	-	199.10	26.56	7.50	194.07	29.14	6.66	187.89	31.90	5.89	180.33	34.74	5.19	171.15	37.56	4.56	

9.12. WRL550X^{*****} 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	78.73	19.82	3.97	75.12	21.99	3.42	71.16	24.53	2.90	66.90	27.35	2.45	-	-	-	-	-	-	-	-	-
	-6	87.49	20.05	4.36	83.74	22.18	3.78	79.55	24.68	3.22	74.92	27.46	2.73	69.90	30.43	2.30	-	-	-	-	-	-
	-4	95.89	20.25	4.74	92.06	22.35	4.12	87.64	24.82	3.53	82.68	27.56	3.00	77.21	30.50	2.53	71.25	33.52	2.13	-	-	-
	-3	99.98	20.34	4.91	96.11	22.43	4.28	91.60	24.88	3.68	86.48	27.61	3.13	80.79	30.53	2.65	74.56	33.54	2.22	-	-	-
	-2	104.00	20.43	5.09	100.10	22.51	4.45	95.50	24.94	3.83	90.24	27.66	3.26	84.34	30.56	2.76	77.83	33.55	2.32	-	-	-
	0	111.86	20.61	5.43	107.93	22.65	4.77	103.18	25.06	4.12	97.64	27.74	3.52	91.34	30.61	2.98	84.32	33.58	2.51	76.61	36.54	2.10
	2	119.54	20.77	5.76	115.61	22.79	5.07	110.73	25.17	4.40	104.94	27.83	3.77	98.28	30.67	3.20	90.77	33.61	2.70	82.45	36.54	2.26
	4	127.08	20.92	6.08	123.17	22.92	5.38	118.20	25.28	4.68	112.20	27.91	4.02	105.20	30.73	3.42	97.23	33.64	2.89	88.34	36.55	2.42
	5	130.81	20.99	6.23	126.93	22.98	5.52	121.93	25.33	4.81	115.83	27.96	4.14	108.67	30.76	3.53	100.49	33.66	2.99	91.31	36.56	2.50
	6	134.53	21.07	6.39	130.68	23.04	5.67	125.65	25.39	4.95	119.46	28.00	4.27	112.16	30.80	3.64	103.76	33.68	3.08	94.31	36.57	2.58
	7	138.24	21.14	6.54	134.43	23.11	5.82	129.77	25.48	5.09	123.11	28.05	4.39	115.66	30.83	3.75	107.07	33.71	3.18	97.36	36.59	2.66
	8	141.94	21.21	6.69	138.19	23.17	5.96	133.12	25.50	5.22	126.78	28.09	4.51	119.20	30.87	3.86	110.41	33.74	3.27	100.44	36.60	2.74
	10	149.38	21.36	6.99	145.74	23.31	6.25	140.67	25.62	5.49	134.21	28.20	4.76	126.38	30.96	4.08	117.22	33.81	3.47	106.77	36.66	2.91
	12	-	-	-	153.39	23.45	6.54	148.35	25.75	5.76	141.79	28.32	5.01	133.75	31.06	4.31	124.26	33.90	3.67	113.35	36.73	3.09
14	-	-	-	161.20	23.60	6.83	156.22	25.89	6.03	149.60	28.45	5.26	141.37	31.18	4.53	131.57	34.01	3.87	120.23	36.83	3.26	
16	-	-	-	-	-	-	164.32	26.05	6.31	157.66	28.60	5.51	149.28	31.33	4.76	139.21	34.14	4.08	127.47	36.95	3.45	
18	-	-	-	-	-	-	172.71	26.24	6.58	166.05	28.78	5.77	157.54	31.50	5.00	147.22	34.31	4.29	135.12	37.11	3.64	

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. WRL600X 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	113.62	22.87	4.97	111.54	25.36	4.40	109.76	28.27	3.88	108.03	31.52	3.43	-	-	-	-	-	-	-	-
-6	123.70	23.13	5.35	121.45	25.57	4.75	119.43	28.45	4.20	117.37	31.65	3.71	114.99	35.08	3.28	-	-	-	-	-	-	
-4	133.38	23.36	5.71	130.97	25.76	5.08	128.70	28.60	4.50	126.31	31.77	3.98	123.53	35.15	3.51	120.08	38.65	3.11	-	-	-	
-3	138.09	23.47	5.89	135.60	25.85	5.24	133.22	28.68	4.65	130.67	31.82	4.11	127.68	35.19	3.63	123.98	38.66	3.21	-	-	-	
-2	142.74	23.57	6.06	140.17	25.94	5.40	137.67	28.75	4.79	134.95	31.88	4.23	131.76	35.22	3.74	127.82	38.68	3.30	-	-	-	
0	151.87	23.76	6.39	149.14	26.11	5.71	146.40	28.88	5.07	143.37	31.98	4.48	139.77	35.29	3.96	135.34	38.71	3.50	129.81	42.13	3.08	
2	160.84	23.95	6.72	157.96	26.26	6.02	154.99	29.01	5.34	151.64	32.07	4.73	147.64	35.35	4.18	142.73	38.74	3.68	136.63	42.12	3.24	
4	169.73	24.12	7.04	166.71	26.41	6.31	163.51	29.13	5.61	159.84	32.17	4.97	155.45	35.42	4.39	150.06	38.78	3.87	143.39	42.13	3.40	
5	174.18	24.21	7.20	171.09	26.49	6.46	167.76	29.19	5.75	163.95	32.22	5.09	159.99	35.68	4.48	153.72	38.80	3.96	146.78	42.14	3.48	
6	178.64	24.29	7.35	175.47	26.56	6.61	172.04	29.26	5.88	168.06	32.27	5.21	163.28	35.50	4.60	157.41	38.83	4.05	150.18	42.15	3.56	
7	183.11	24.37	7.51	179.88	26.63	6.75	176.33	29.32	6.01	172.21	32.33	5.33	167.22	35.54	4.71	161.12	38.86	4.15	153.61	42.17	3.64	
8	187.62	24.46	7.67	184.32	26.71	6.90	180.66	29.39	6.15	176.38	32.38	5.45	171.20	35.59	4.81	164.86	38.89	4.24	157.08	42.19	3.72	
10	196.78	24.63	7.99	193.34	26.87	7.20	189.46	29.53	6.42	184.88	32.50	5.69	179.31	35.69	5.02	172.50	38.97	4.43	164.16	42.25	3.89	
12	-	-	-	202.60	27.03	7.50	198.51	29.68	6.69	193.63	32.64	5.93	187.68	35.81	5.24	180.40	39.08	4.62	171.52	42.33	4.05	
14	-	-	-	212.20	27.21	7.80	207.90	29.84	6.97	202.72	32.79	6.18	196.39	35.95	5.46	188.65	39.20	4.81	179.22	42.44	4.22	
16	-	-	-	-	-	-	217.70	30.03	7.25	212.23	32.97	6.44	205.53	36.12	5.69	197.32	39.36	5.01	187.35	42.59	4.40	
18	-	-	-	-	-	-	228.00	30.24	7.54	222.24	33.17	6.70	215.16	36.31	5.93	206.50	39.54	5.22	195.99	42.76	4.58	

9.14. WRL600X 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	91.26	22.76	4.01	87.07	25.25	3.45	82.49	28.16	2.93	77.55	31.40	2.47	-	-	-	-	-	-	-	-
-6	101.41	23.02	4.41	97.07	25.47	3.81	92.20	28.34	3.25	86.84	31.53	2.75	81.03	34.94	2.32	-	-	-	-	-	-	
-4	111.15	23.25	4.78	106.71	25.66	4.16	101.59	28.50	3.56	95.84	31.65	3.03	89.49	35.02	2.56	82.59	38.49	2.15	-	-	-	
-3	115.89	23.36	4.96	111.40	25.75	4.33	106.18	28.57	3.72	100.24	31.70	3.16	93.65	35.05	2.67	86.42	38.51	2.24	-	-	-	
-2	120.55	23.46	5.14	116.03	25.84	4.49	110.70	28.64	3.87	104.60	31.76	3.29	97.76	35.09	2.79	90.22	38.52	2.34	-	-	-	
0	129.67	23.66	5.48	125.11	26.01	4.81	119.60	28.77	4.16	113.18	31.86	3.55	105.88	35.15	3.01	97.74	38.55	2.54	88.80	41.96	2.12	
2	138.56	23.84	5.81	134.01	26.16	5.12	128.35	28.90	4.44	121.65	31.95	3.81	113.92	35.22	3.23	105.22	38.59	2.73	95.57	41.96	2.28	
4	147.30	24.02	6.13	142.77	26.31	5.43	137.01	29.02	4.72	130.06	32.05	4.06	121.94	35.28	3.46	112.71	38.62	2.92	102.39	41.97	2.44	
5	151.63	24.10	6.29	147.13	26.39	5.58	141.33	29.09	4.86	134.26	32.10	4.18	125.96	35.32	3.57	116.48	38.65	3.01	105.84	41.98	2.52	
6	155.94	24.19	6.45	151.48	26.46	5.72	145.64	29.15	5.00	138.47	32.15	4.31	130.00	35.36	3.68	120.27	38.67	3.11	109.32	41.99	2.60	
7	160.24	24.27	6.60	155.82	26.53	5.87	150.42	29.25	5.14	142.70	32.20	4.43	134.07	35.40	3.79	124.11	38.70	3.21	112.85	42.01	2.69	
8	164.53	24.36	6.76	160.18	26.61	6.02	154.31	29.28	5.27	146.96	32.26	4.56	138.17	35.45	3.90	127.98	38.74	3.30	116.43	42.03	2.77	
10	173.15	24.53	7.06	168.93	26.76	6.31	163.06	29.41	5.54	155.56	32.38	4.80	146.49	35.55	4.12	135.88	38.82	3.50	123.76	42.09	2.94	
12	-	-	-	177.81	26.93	6.60	171.96	29.56	5.82	164.36	32.51	5.06	155.04	35.67	4.35	144.03	38.92	3.70	131.38	42.17	3.12	
14	-	-	-	186.86	27.10	6.89	181.08	29.73	6.09	173.40	32.67	5.31	163.87	35.81	4.58	152.51	39.05	3.91	139.36	42.29	3.30	
16	-	-	-	-	-	-	190.47	29.91	6.37	182.76	32.84	5.56	173.04	35.97	4.81	161.36	39.20	4.12	147.75	42.43	3.48	
18	-	-	-	-	-	-	200.19	30.12	6.65	192.47	33.04	5.82	182.61	36.17	5.05	170.65	39.39	4.33	156.62	42.61	3.68	

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. WRL650X^{*****} 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	127.14	25.90	4.91	124.81	28.70	4.35	122.82	32.01	3.84	120.89	35.68	3.39	-	-	-	-	-	-	-	-
-6	138.42	26.18	5.29	135.90	28.95	4.69	133.64	32.20	4.15	131.33	35.83	3.67	128.68	39.71	3.24	-	-	-	-	-	-	
-4	149.25	26.44	5.64	146.55	29.17	5.02	144.01	32.38	4.45	141.34	35.96	3.93	138.23	39.80	3.47	134.37	43.75	3.07	-	-	-	
-3	154.52	26.56	5.82	151.74	29.27	5.18	149.07	32.46	4.59	146.21	36.03	4.06	142.87	39.84	3.59	138.73	43.77	3.17	-	-	-	
-2	159.72	26.68	5.99	156.85	29.37	5.34	154.05	32.54	4.73	151.01	36.09	4.18	147.44	39.87	3.70	143.03	43.79	3.27	-	-	-	
0	169.94	26.90	6.32	166.89	29.55	5.65	163.82	32.69	5.01	160.43	36.20	4.43	156.40	39.95	3.92	151.45	43.82	3.46	145.25	47.69	3.05	
2	179.97	27.11	6.64	176.76	29.73	5.95	173.43	32.84	5.28	169.68	36.31	4.67	165.21	40.02	4.13	159.71	43.86	3.64	152.88	47.69	3.21	
4	189.93	27.31	6.96	186.55	29.90	6.24	182.96	32.98	5.55	178.86	36.42	4.91	173.95	40.10	4.34	167.91	43.90	3.82	160.45	47.70	3.36	
5	194.90	27.40	7.11	191.44	29.98	6.38	187.73	33.05	5.68	183.45	36.48	5.03	179.02	40.40	4.43	172.01	43.93	3.92	164.24	47.71	3.44	
6	199.89	27.50	7.27	196.35	30.07	6.53	192.51	33.12	5.81	188.06	36.54	5.15	182.70	40.19	4.55	176.14	43.96	4.01	168.05	47.72	3.52	
7	204.90	27.59	7.43	201.28	30.15	6.68	197.31	33.19	5.94	192.69	36.60	5.27	187.12	40.24	4.65	180.29	43.99	4.10	171.89	47.74	3.60	
8	209.95	27.69	7.58	206.25	30.24	6.82	202.16	33.27	6.08	197.37	36.66	5.38	191.57	40.29	4.76	184.48	44.03	4.19	175.77	47.77	3.68	
10	220.19	27.88	7.90	216.34	30.41	7.11	212.00	33.43	6.34	206.87	36.80	5.62	200.65	40.40	4.97	193.02	44.12	4.37	183.69	47.83	3.84	
12	-	-	-	226.71	30.60	7.41	222.13	33.60	6.61	216.67	36.95	5.86	210.01	40.54	5.18	201.87	44.24	4.56	191.92	47.93	4.00	
14	-	-	-	237.45	30.80	7.71	232.63	33.79	6.89	226.84	37.13	6.11	219.76	40.70	5.40	211.10	44.38	4.76	200.54	48.05	4.17	
16	-	-	-	-	-	-	243.60	34.00	7.17	237.48	37.33	6.36	229.98	40.89	5.62	220.80	44.56	4.96	209.64	48.21	4.35	
18	-	-	-	-	-	-	255.13	34.23	7.45	248.68	37.55	6.62	240.76	41.11	5.86	231.07	44.77	5.16	219.31	48.41	4.53	

9.16. WRL650X^{*****} 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	102.74	26.07	3.94	98.02	28.92	3.39	92.86	32.26	2.88	87.31	35.96	2.43	-	-	-	-	-	-	-	-
-6	114.17	26.36	4.33	109.28	29.17	3.75	103.80	32.46	3.20	97.77	36.11	2.71	91.22	40.01	2.28	-	-	-	-	-	-	
-4	125.13	26.63	4.70	120.13	29.39	4.09	114.37	32.64	3.50	107.90	36.25	2.98	100.75	40.10	2.51	92.98	44.08	2.11	-	-	-	
-3	130.47	26.75	4.88	125.42	29.49	4.25	119.53	32.72	3.65	112.86	36.31	3.11	105.43	40.14	2.63	97.30	44.10	2.21	-	-	-	
-2	135.71	26.87	5.05	130.63	29.59	4.41	124.63	32.80	3.80	117.76	36.37	3.24	110.06	40.18	2.74	101.57	44.12	2.30	-	-	-	
0	145.98	27.10	5.39	140.85	29.78	4.73	134.65	32.95	4.09	127.42	36.48	3.49	119.20	40.26	2.96	110.04	44.15	2.49	99.98	48.05	2.08	
2	156.00	27.31	5.71	150.86	29.96	5.04	144.50	33.10	4.37	136.95	36.59	3.74	128.25	40.33	3.18	118.45	44.19	2.68	107.60	48.05	2.24	
4	165.83	27.51	6.03	160.74	30.13	5.33	154.25	33.24	4.64	146.42	36.70	3.99	137.28	40.41	3.40	126.89	44.24	2.87	115.27	48.06	2.40	
5	170.70	27.60	6.18	165.64	30.22	5.48	159.11	33.31	4.78	151.15	36.76	4.11	141.81	40.45	3.51	131.13	44.26	2.96	119.16	48.07	2.48	
6	175.55	27.70	6.34	170.53	30.30	5.63	163.97	33.38	4.91	155.89	36.82	4.23	146.36	40.50	3.61	135.41	44.29	3.06	123.08	48.09	2.56	
7	180.39	27.80	6.49	175.43	30.39	5.77	169.34	33.50	5.05	160.65	36.88	4.36	150.94	40.54	3.72	139.72	44.33	3.15	127.05	48.11	2.64	
8	185.23	27.89	6.64	180.33	30.47	5.92	173.72	33.53	5.18	165.44	36.94	4.48	155.55	40.59	3.83	144.08	44.36	3.25	131.07	48.13	2.72	
10	194.94	28.09	6.94	190.19	30.65	6.20	183.57	33.69	5.45	175.13	37.08	4.72	164.92	40.71	4.05	152.97	44.46	3.44	139.33	48.20	2.89	
12	-	-	-	200.17	30.84	6.49	193.60	33.86	5.72	185.04	37.24	4.97	174.54	40.85	4.27	162.15	44.57	3.64	147.91	48.30	3.06	
14	-	-	-	210.36	31.04	6.78	203.86	34.05	5.99	195.22	37.41	5.22	184.48	41.01	4.50	171.69	44.72	3.84	156.89	48.43	3.24	
16	-	-	-	-	-	-	214.43	34.26	6.26	205.75	37.61	5.47	194.81	41.20	4.73	181.66	44.90	4.05	166.34	48.59	3.42	
18	-	-	-	-	-	-	225.38	34.50	6.53	216.69	37.85	5.73	205.59	41.42	4.96	192.12	45.11	4.26	176.32	48.80	3.61	

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	-	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

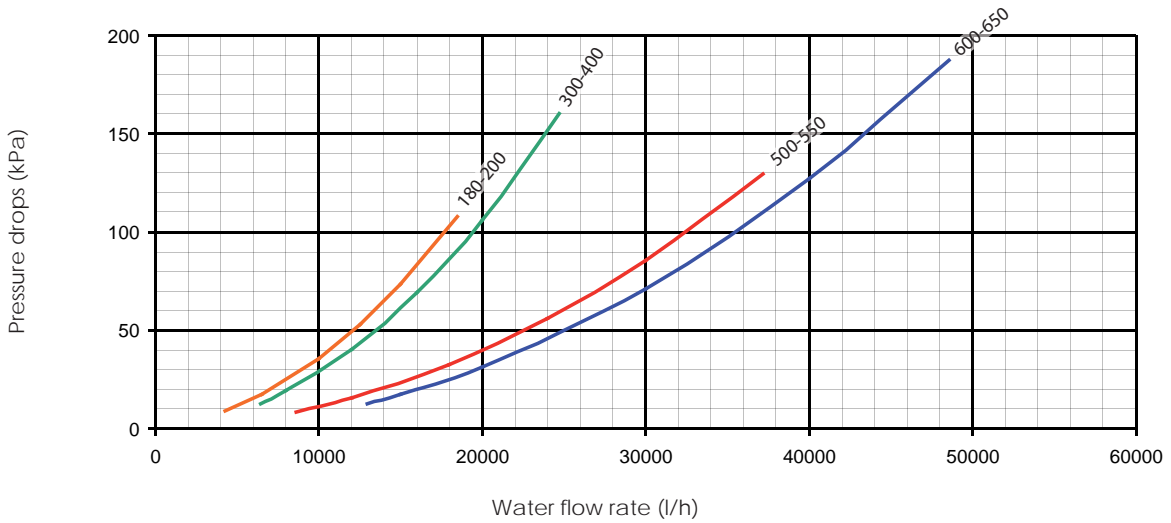
KEY

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

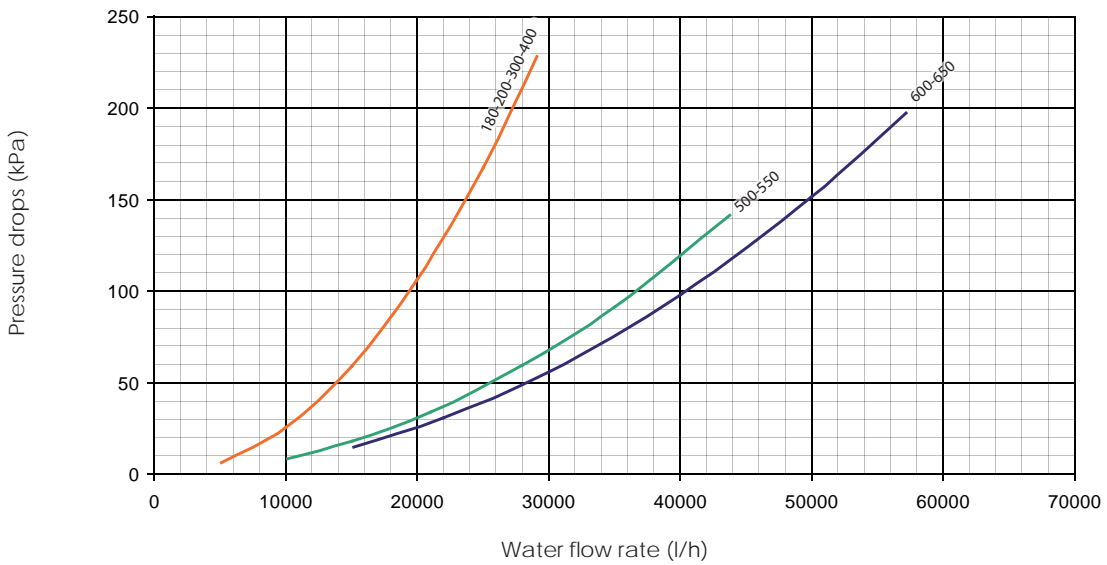
10. PRESSURE DROPS

COOLING MODE FUNCTIONING

EVAPORATOR



CONDENSER



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



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.

Condenser

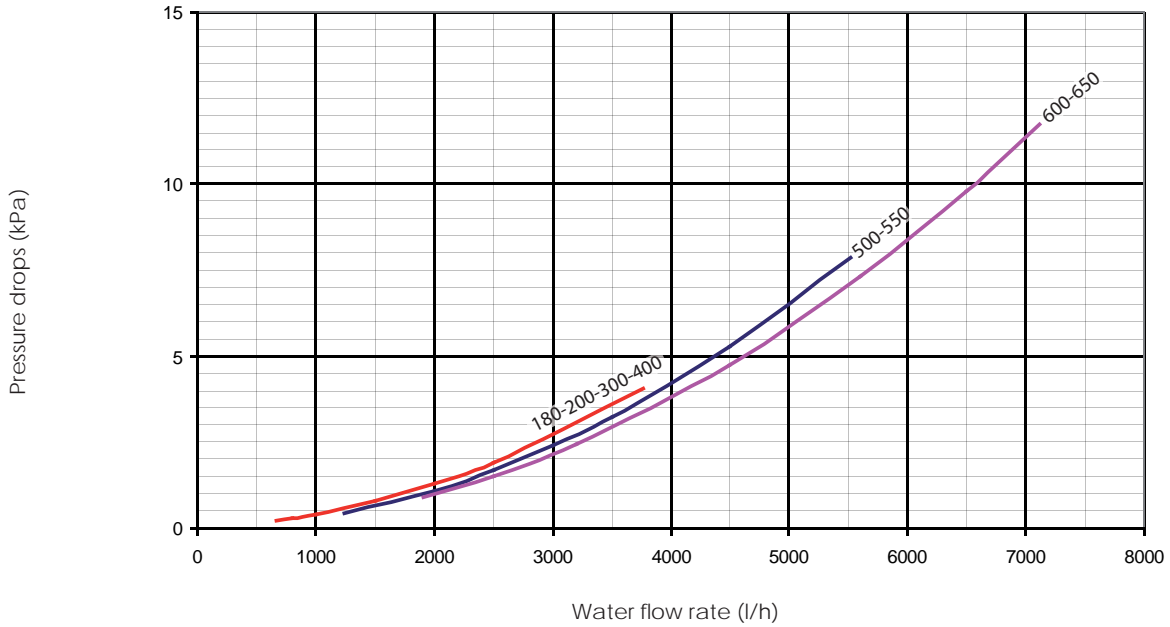
Average water temperature °C	23	28	33	38	43	48	53	58
Multiplicative coefficient	1.02	1.01	1.00	0.99	0.98	0.97	0.96	0.95

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

COOLING MODE FUNCTIONING

DESUPERHEATER



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



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.

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

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.

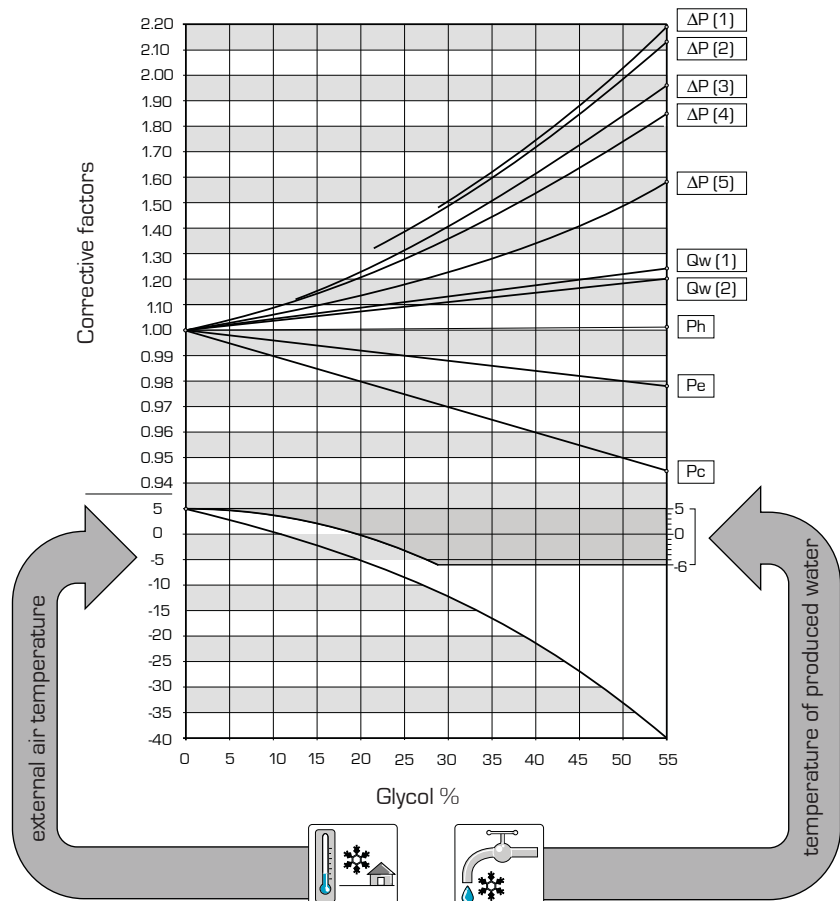
NOTE

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 intercept all



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.

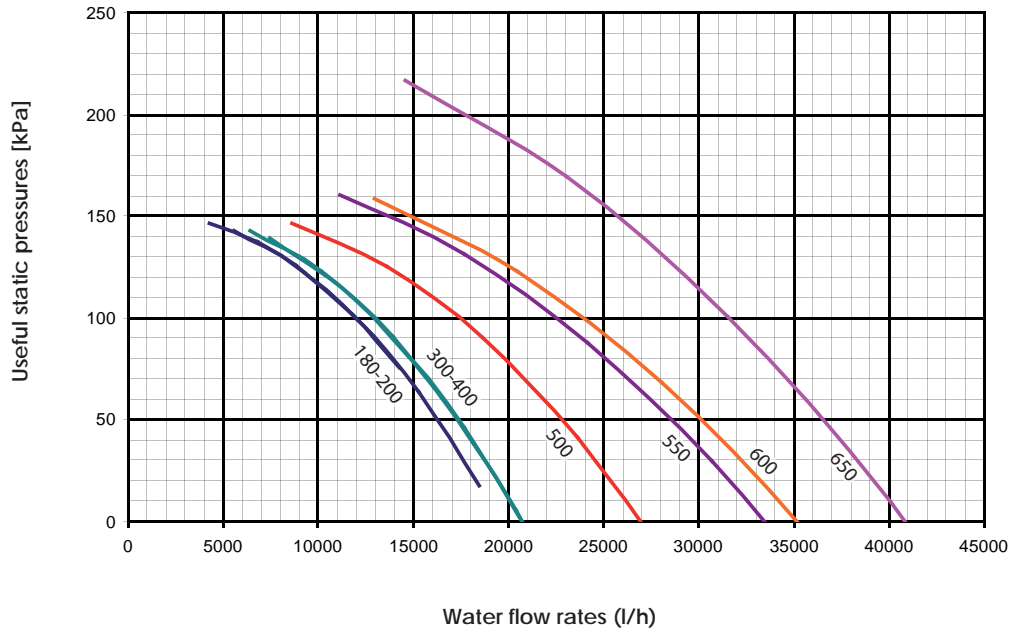
the other curves; the points obtained from the upper curves represent the coefficients for the correction of the cooling capacity and input power, the flow rates and the pressure drops (remember that these coefficients must be multiplied by the nominal value of the size in question); while the lower 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.

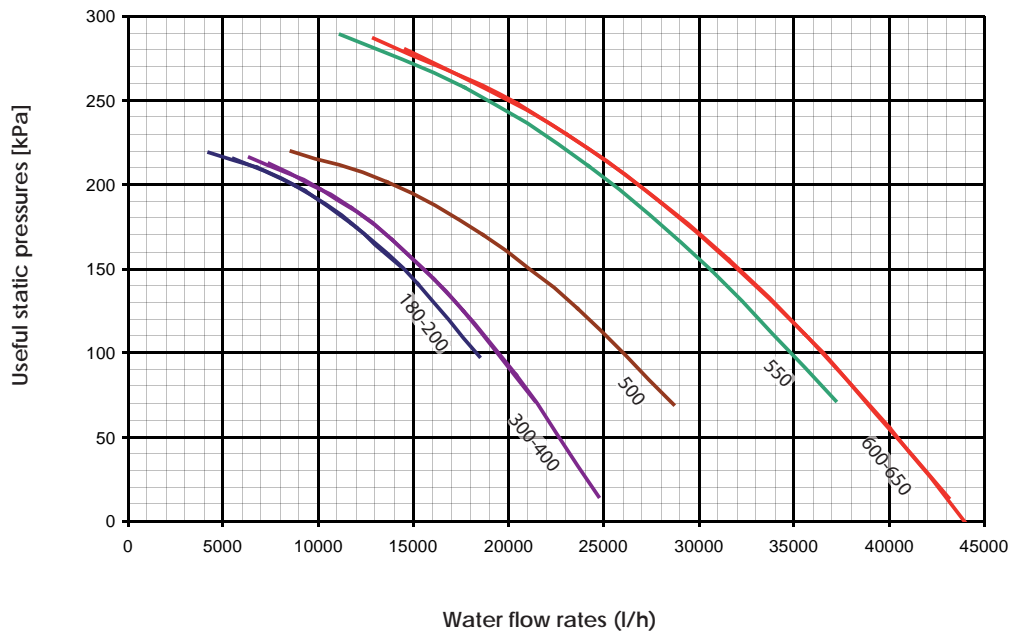
12. USEFUL STATIC PRESSURES

COOLING MODE FUNCTIONING

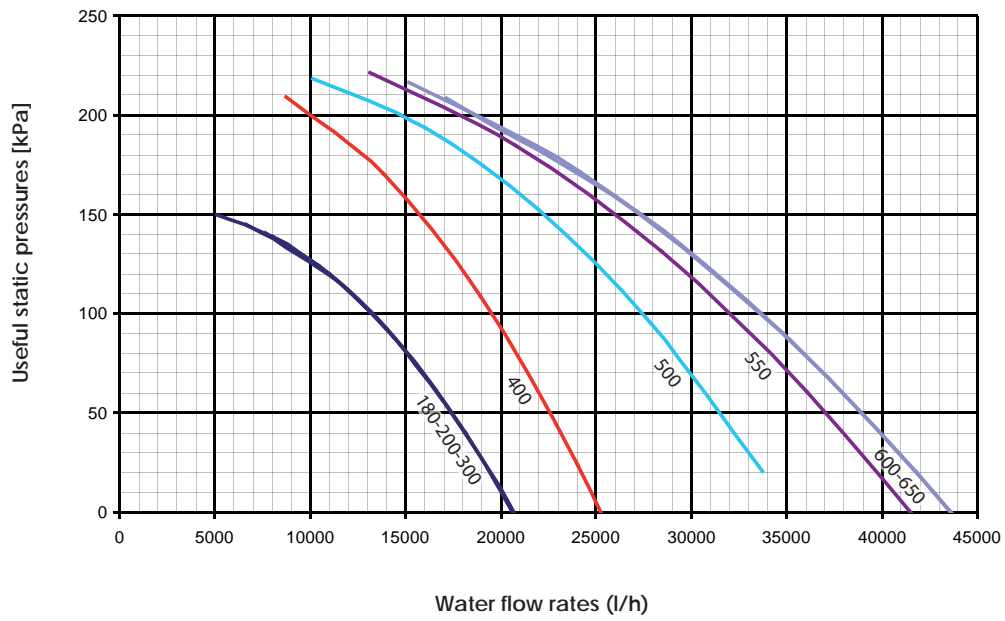
LOW STATIC PRESSURE EVAPORATOR SIDE PUMPS [P]



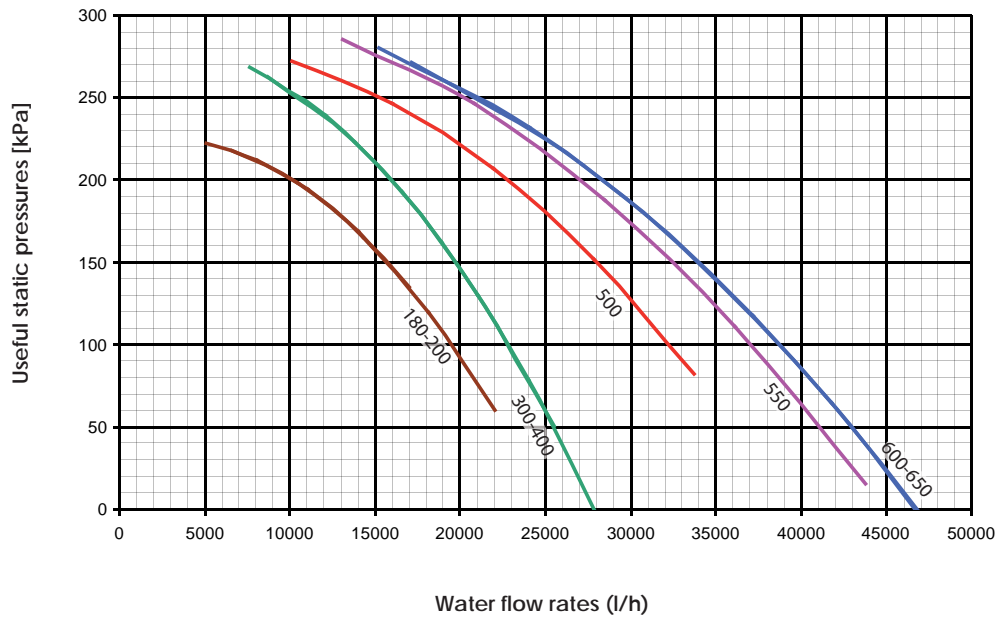
HIGH STATIC PRESSURE EVAPORATOR SIDE PUMPS [N]



LOW STATIC PRESSURE CONDENSER SIDE PUMPS [B-F]



HIGH STATIC PRESSURE CONDENSER SIDE PUMPS [U-I]



13. EXPANSION VESSEL CALIBRATION

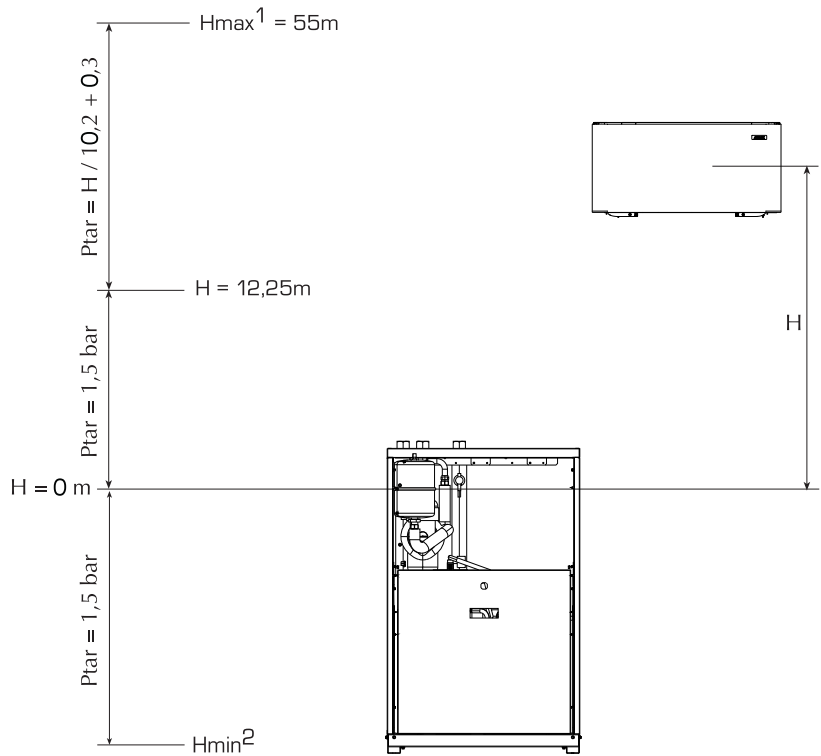
The standard pressure pre-load value of the expansion vessel is 1.5 bar, maximum value is 6 bar.

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 a reflective surface (directivity factor Q=2) in compliance with ISO 3744.

Nominal value referred to:

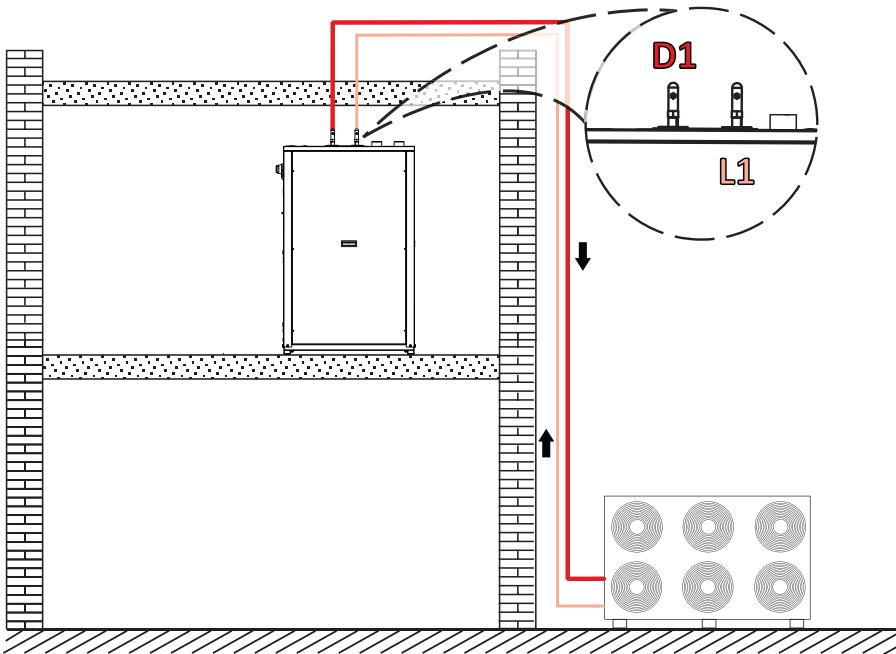
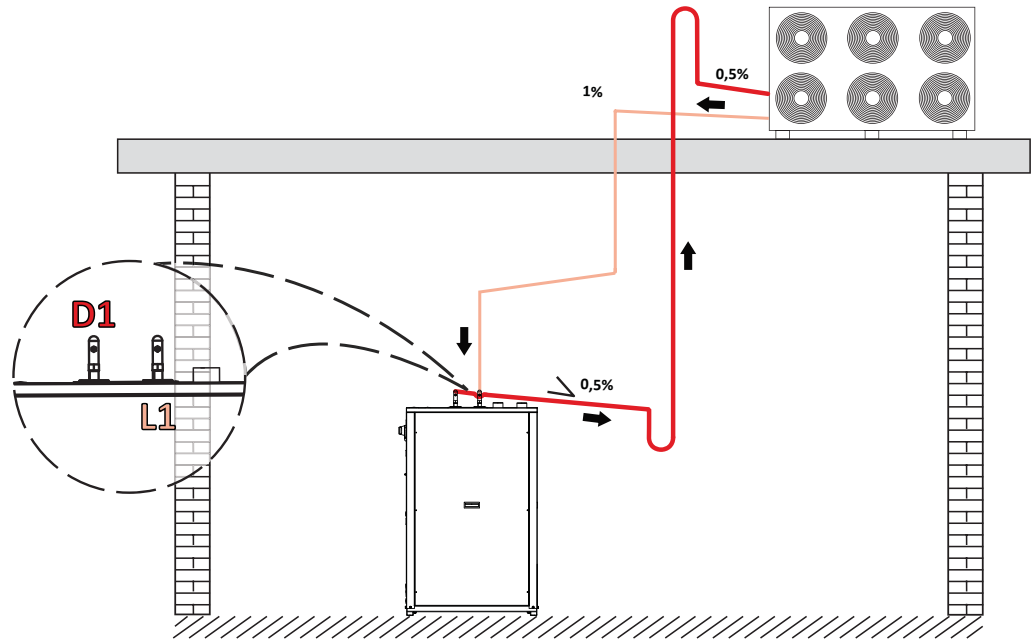
Evaporator water temperature.....12/7 °C
 Condenser air temperature.....35 °C
 Δt 5°C

WRL	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	61.1	29.1	65.0	61.0	62.0	53.0	46.0	44.0	37.0
200	61.8	29.8	65.1	61.9	62.8	53.4	46.7	44.6	37.7
300	62.9	30.9	73.6	62.9	59.6	54.2	52.9	50.0	38.8
400	71.1	39.1	63.1	60.5	69.2	68.8	58.1	52.8	38.2
500	67.6	35.6	75.5	60.3	65.6	62.1	59.9	48.2	40.9
550	79.1	47.1	71.9	69.3	77.3	76.8	65.3	60.4	46.2
600	79.1	47.1	71.9	69.3	77.3	76.8	65.3	60.4	46.2
650	79.1	47.1	71.9	69.3	77.3	76.8	65.3	60.4	46.2

15. REFRIGERANT LINES WRL-E

KEY;

- L1 Liquid
- D1 Pressing



ATTENTION:



For more information (maximum height difference evaporating or condensing, etc..) CONTACT AERMEC.

MODELS	Line length	Gas line	Liquid line	Charge R410A
	m	mm	mm	[g/m]
WRL180	0 - 10	18	18	214
	10 - 20	18	18	214
	20 - 30	18	18	214
WRL200	0 - 10	22	22	335
	10 - 20	22	22	335
	20 - 30	22	22	335
WRL300	0 - 10	22	22	335
	10 - 20	22	22	335
	20 - 30	22	22	335
WRL400	0 - 10	28	28	566
	10 - 20	28	28	566
	20 - 30	28	28	566
WRL500	0 - 10	28	28	566
	10 - 20	28	28	566
	20 - 30	28	28	566
WRL550	0 - 10	28	28	566
	10 - 20	35	28	595
	20 - 30	35	28	595
WRL600	0 - 10	35	35	857
	10 - 20	35	35	857
	20 - 30	35	35	857
WRL650	0 - 10	35	35	857
	10 - 20	35	35	857
	20 - 30	35	35	857

16. 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	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	U.M.	180	200	300	400	500	550	600	650	
High-pressure valve	bar	-	-	-	-	-	-	-	45	

17. 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

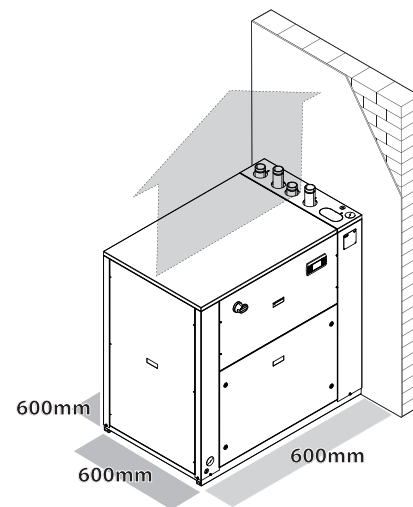
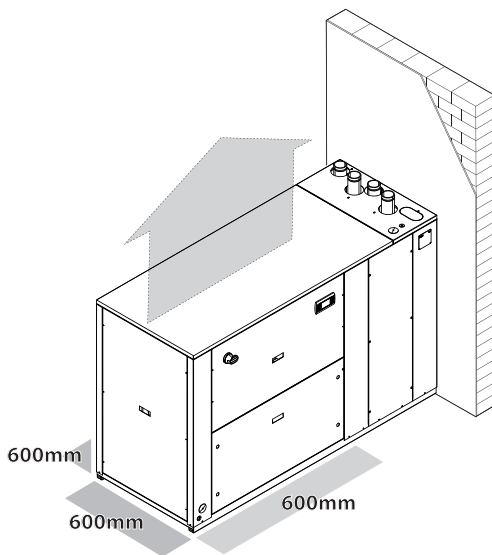
of supporting the unit weight.

- 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.

17.1. ► MINIMUM TECHNICAL MEASUREMENTS

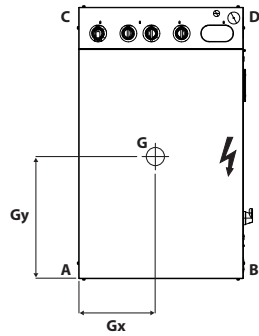


WARNING

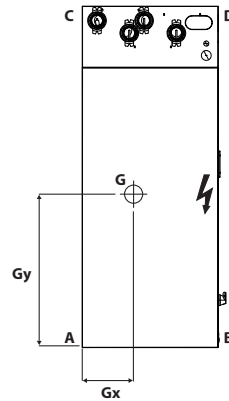
It is obligatory to comply with the indicated minimum measurements; the height and the back must be sized according to the type of system and place of installation.

17.2. BARYCENTRES

WRL 180 / 400



WRL 500 / 650



WRL	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	385	416	542	398	412	562	109.5	116.4	83.4	88.7
200	385	416	542	398	412	562	109.5	116.4	83.4	88.7
300	391	414	547	406	409	568	111.7	116.7	86.7	90.6
400	398	417	541	413	412	562	113.5	120.5	86.6	91.9
500	530	391	976	548	388	1005	140.5	132.2	142.0	133.6
550	606	390	915	624	387	944	170.2	159.6	152.0	142.6
600	682	389	924	706	386	953	190.9	178.4	173.9	162.5
650	727	389	886	751	386	916	210.4	196.4	177.9	166.1

WRLE	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	346	411	503	346	405	516	103.1	105.7	67.7	69.4
200	346	411	503	346	405	516	103.1	105.7	67.7	69.4
300	351	408	509	352	401	523	105.0	105.6	70.7	71.1
400	358	412	504	359	405	518	106.8	109.5	70.7	72.5
500	460	376	894	463	370	914	135.3	116.3	113.8	97.8
550	536	377	836	539	372	856	165.2	143.4	123.5	107.2
600	615	369	857	624	362	879	191.2	158.3	149.9	124.2
650	660	370	821	669	364	842	211.0	176.0	153.5	128.0

18. 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.




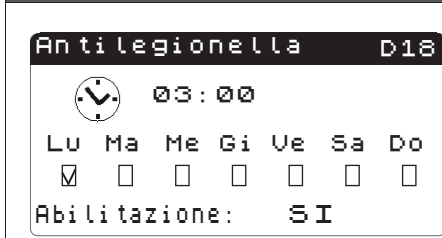
A weekly programme can be activated from the user panel and if the set-point is increased it prevents legionella-related

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.

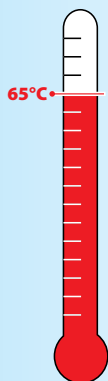
Anti-legionella treatment								
Mask Index	Display description	Description	Default	UOM	min.	Max	RW	
D18	Anti-legionella							
	 Start function time		3.00 a.m.	h	0	23		RW
	Mo, Tu... Sun	The day when the cycle is to begin	Sun					RW
	Enabling	Enabling the function			0	1		RW



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).

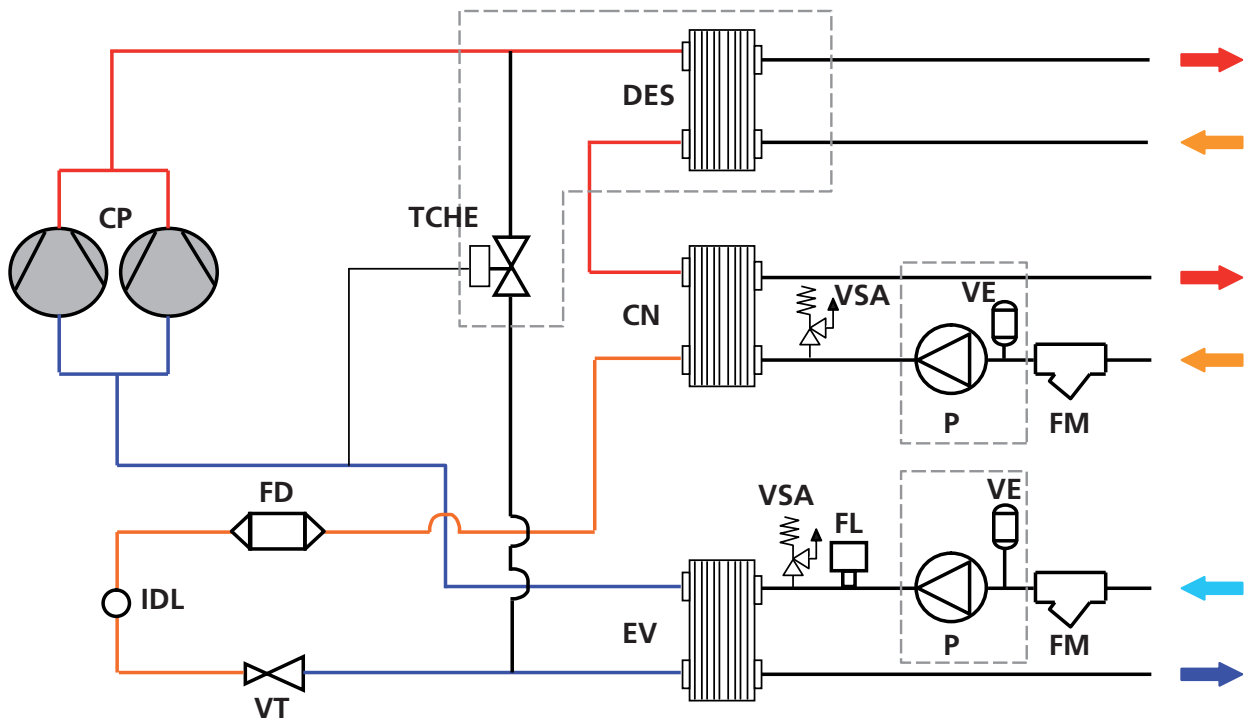
N.B. This function is also active with the unit in STAND-BY.



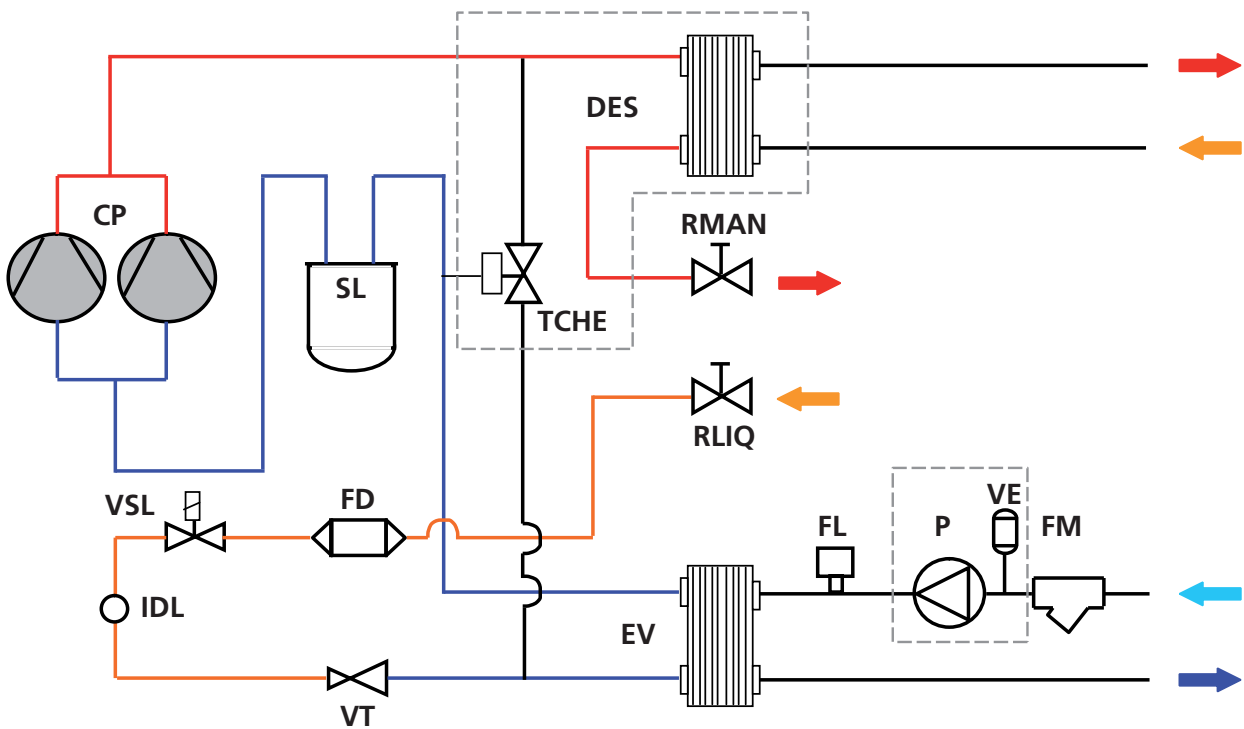
Set Point: 65 °C DHW temperature.
T min.: 5m (default)
T max: 120m

19. REFRIGERANT CIRCUITS

19.1. WRL 180-650 WATER SIDE CYCLE INVERSION



19.2. WRLE 180-650 CONDENSERLESS



CP	compressor	RLIQ	liquid return cock
DES	desuperheater	RMAN	liquid cock
FD	biflow dehydrator filter	TCHE	hot gas bypass valve
FL	flow switch	VE	expansion vessel
FM	water filter	VSA	safety valve
IDL	liquid indicator	VSL	liquid solenoid valve
P	pump	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.



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carta riciclata
recycled paper
papier recyclé
recycled papier



The technical data given on the following documentation is not binding. Aermec reserves the right to apply at any time all the modifications deemed necessary for improving the product.
