SHERPA AQUADUETOWER®

Air-water split heat pump **MULTIFUNCTIONAL**
with **BOILER 150 L INTEGRATED**

PATENTED TECHNOLOGY

The combination of an inverter air-water heat pump together with a water-water heat pump allows heating/cooling and high temperature DHW production, independently from the outside weather conditions.

COP > 4

DHW 75°C

Energy class ErP[1]: **A+**

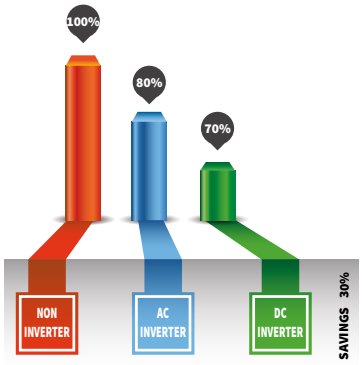
DHW AND COMFORT AT THE SAME TIME

The two interconnected refrigerator cycles allow the decoupling of the heating/cooling from the DHW production, enabling them to operate in parallel, avoiding thus interruptions in the domestic comfort supply.

75°C DOMESTIC HOT WATER

High temperature DHW storage allows a reduction of the boiler volume up to 30%, to heat bathroom heater radiators and avoids highly energyconsumpting anti-legionella cycles that are normally performed through the use of electrical resistances.

OLIMPIA SPLENDID'S FULL INVERTER TECHNOLOGY



150 L INTEGRATED BOILER

150 l integrated high-efficiency boiler

TOUCH SCREEN USER INTERFACE

Sherpa AQUADUE® TOWER control is extremely flexible and configurable, and it allows to:

- customize the response limits of the two cycles at installation
- customize comfort and DHW needs at installation
- optimize energy performances by managing the operation of the double refrigeration circuit.

Compatible with:

AQUADUE CONTROL®

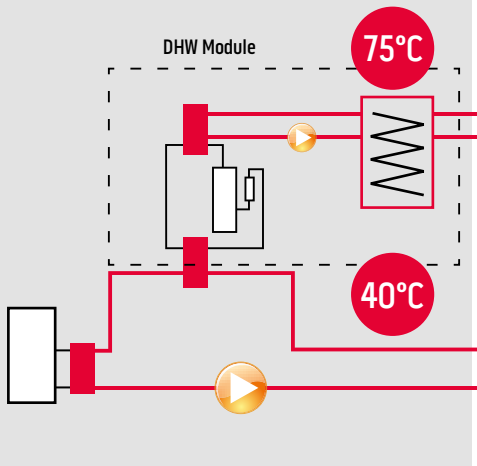
(1) Seasonal energy efficiency class for average climatic area for flow temperature of 55°C.

The AQUADUE® system manages:

- Cooling
- Cooling + DHW at a high temperature
- Heating
- Heating + DHW at a high temperature

HEATING MODE
+ DHW at high temperature

DHW production is guaranteed independently from the outside temperature for an optimal operation throughout the year, which is not guaranteed by traditional heat pumps.

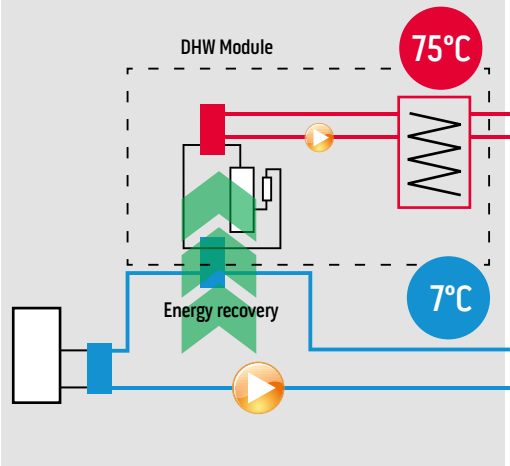


the water-water cycle used for domestic use exchanges with the air conditioning system return water.

the air-water cycle is used for uninterrupted COMFORT and DHW production.

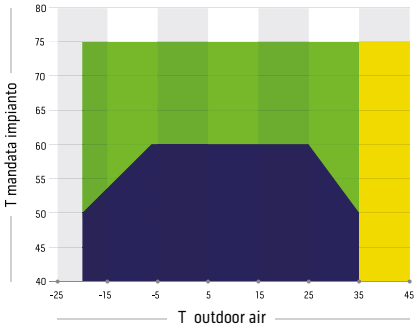
COOLING MODE
+ DHW at a high temperature with energy recovery

The energy normally dissipated outside is recovered and used to produce DHW up to 75 ° C.



PERFORMANCE AND ENERGY ADVANTAGES

In adverse weather conditions traditional heat pumps decrease thermal output producing water at a lower temperature. Sherpa AQUADUE® as well as extending the area of operation ensures a constant heat output, in the production of Domestic Hot Water.



Optimum area of operation of traditional heat pumps

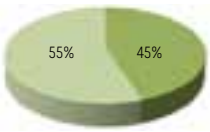
Area of operation extended - AQUADUE® technology
The double refrigerator circuit allows higher DHW production temperatures thanks to the water-water circuit which are independent of outside air temperature.

Heat recovery area - AQUADUE® technology
in summer cooling operation the refrigeration cycle dedicated to DHW production removes heat from the comfort circuit increasing the overall efficiency of the system.

RENEWABLE SHARE COVERAGE FOR DHW PRODUCTION WITHOUT ADDITIONAL EQUIPMENT - RES DIRECTIVE

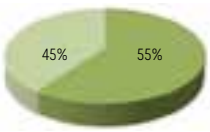
AQUADUE® technology thanks to efficient heat management guarantees, in buildings of a high energy class, the coverage share from renewable energy (Legislative Decree 28/2011) without the installation of additional devices.

Traditional heat pump



Renewable share
Non renewable share

Sherpa AQUADUE® heat pump



Renewable share
Non renewable share

SHERPA AQUADUETOWER®

FEATURES

DHW (Domestic Hot Water) production at a high temperature, up to 75 ° C in the integrated boiler.

DHW management: a group of water-water heat pumps integrated in the indoor unit provides domestic hot water at a high temperature regardless of external weather conditions.

Continuous absolute availablity of DHW: guaranteed by the redundance of the double refrigerating circuit system.

Antilegionella cycles avoidable using the refrigeration cycle at high temperature.

2-stage electric heater: single or double strength activation to support the heat pump through a simple configuration of the electronic control.
Each stage is activated according to the actual need of thermal power in order to optimize power consumption.

Configurable points: two set points in cooling mode Three set points in heating mode (one of them for DHW): the set points are also selectable by remote contact.

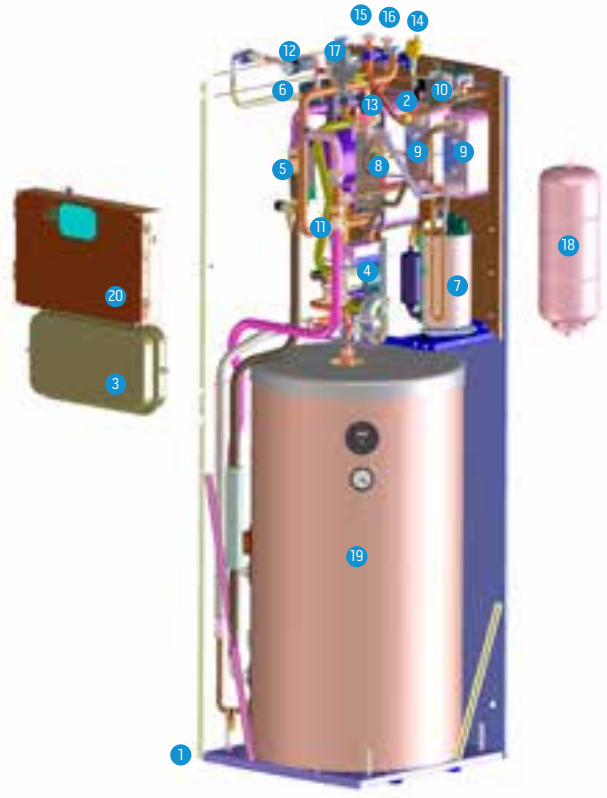
Weekly programmer DHW, holidays and daily with night mode.

Climatic curves with outside air temperature sensor: two curves are available, one for cooling and one for heating. Climatic curves allow you to modify system water temperature supply depending on climate conditions, adapting the heat requirements of the building in order to obtain energy savings.

Refrigerant gas: R410A(1) for the reversible circuit dedicated to air-conditioning and R134a(2) for the high temperature circuit dedicated to DHW production.

150 l integrated high-efficiency boiler

Production of mixed DHW at 40° up to 3,6 days(3)



1. Support structure
2. Primary circuit system heat exchanger
3. Expansion tank system circuit
4. Electric resistors collector
5. Primary circuit electronic circulation pump
6. 3-way valve
7. Circuit compressor DHW
8. Expansion valve circuit DHW
9. Heat exchanger circuit DHW
10. DHW circuit electronic circulation pump
11. Flow regulator
12. Gauge
13. Flow gauge
14. Automatic safety vent
15. Refrigerant connections
16. Water connections (system and external boiler)
17. DHW circuit technical water automatic filling
18. DHW expansion vessel
19. Cylinder for domestic hot water
20. Electric control board

STANDARD EQUIPMENT:

- Outside temperature sensor kit

(1) non hermetically sealed equipment containing fluorinated gas with GWP equivalent 2088
(2) non hermetically sealed equipment containing fluorinated gas with GWP equivalent 1430
(3) Qref 2,1 kWh/day for 150lt boiler according to the EN16147,2005 rule

HOME PAGE

The home page shows the following information:

A - Date and time system
B - Current Active Mode (Stand-by, cooling, heating, only DHW)
C - Activated features (climate curve, DHW Turbo, DHW OFF, anti legionella, Night, ECO
D - Alarms/overrides (flashing)
E - Temperature values water system, active system timers, Holiday, Rating
F - Temperature values DHW water boiler, active timers domestic hot water, Holiday
G - Activation icons:
Mode: operating mode
Tset: system and domestic set point
Tshow: reading of temperature sensors
Timers: time programming
Menu: machine functions

OPERATING MODES

Touching the Mode , icon, you can access the operating modes configuration
page. The selection icons for all available operating modes are on this page:
- Stand-by , the system is off
- Cooling , the system produces cold water until it reaches the set-point (set point fixed or dynamically defined by climatic curve)
- Heating the system produces hot water up to the set-point (set point fixed or dynamically defined by climatic curve)
- ECO , energy savings (if climate curve active the ECO set point is not considered)
- Night , the system limits the yield and noise of the outside unit
- Turbo DHW, the system produces hot water using the entire power of the outdoor unit up to the limit set.

SET POINT

Tapping the Tset icon, you can access the configuration page of the set point.
- Cooling water temperature
- ECO cooling water temperature
- Heating water temperature
- ECO heating water temperature
- Domestic hot water temperature (external boiler set point).

The set points for heating and cooling are not considered by the control in the case where the climate curve mode set-point is enabled.
Set point values are changed with a simple touch of the set value .

TIMERS

Tapping the Timers icon you can access available programs.
- Timer heating/cooling
- Timer DHW
- Timer night
- Holidays

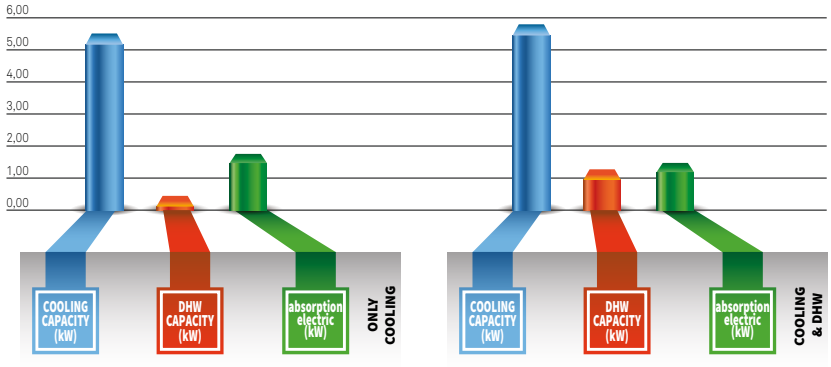
Tapping the "Timer Heat/ Cool" r " DHW Timer" or "Timer Night" icon, you can access the page where the activation bands of each timer can be visualized.

SHERPA AQUADUETOWER®

		AQUADUE TOWER 7	AQUADUE TOWER 11	AQUADUE TOWER 13	AQUADUE TOWER 13T	AQUADUE TOWER 16	AQUADUE TOWER 16T
Indoor unit	Code	599513A		599512A			
Outdoor unit	Code	OS-CEBSH24EI	OS-CEBCH36EI	OS-CEINH48EI	OS-CETNH48EI	OS-CEINH60EI	OS-CETNH60EI
Air-water cycle (system circuit)							
Heating capacity (a)	kW	6,5	10,5	12,5	12,5	14	16
COP	W/W	4,1	4,1	4,1	4,1	4,1	4,1
Heating capacity (b)	kW	5,0	8,3	10,0	10,0	10,5	12,0
COP	W/W	3,1	3,2	3,1	3,1	2,9	2,9
Heating capacity (c)	kW	6,2	9,9	11,6	11,6	13,0	14,6
COP	W/W	3,4	3,2	3,3	3,3	3,2	3,0
Heating capacity (d)	kW	4,8	7,8	9,3	9,3	9,8	10,9
COP	W/W	2,5	2,3	2,2	2,2	2,3	2,2
Cooling capacity (e)	kW	7,6	12,1	12,6	12,8	13,8	15,3
EER	W/W	4,0	4,4	3,5	3,5	3,1	3,2
Cooling capacity (f)	kW	5,6	8,1	10,4	10,4	11,3	12,8
EER	W/W	3,1	3,1	3	3	2,7	2,8
Energy efficency class (55°C)		A+	A+	A+	A+	A+	A+
Water-water cycle (DHW)							
Heating capacity (h)	kW	2,15	2,15	2,15	2,15	2,15	2,15
COP	W/W	3,12	3,12	3,12	3,12	3,12	3,12
Heating capacity (i)	kW	1,6	1,6	1,6	1,6	1,6	1,6
COP	W/W	2,58	2,58	2,58	2,58	2,58	2,58
Indoor unit noise level							
Sound pressure in heating or cooling mode	dB(A)	30	30	30	30	30	30
Sound power in heating or cooling mode	dB(A)	41	41	41	41	41	41
Sound power in heating or cooling mode and DHW	dB(A)	47	47	47	47	47	47
Outdoor unit noise level							
Sound pressure	dB(A)	51/52	53/55	57/57	57/57	57/57	57/59
Sound power	dB(A)	64/65	66/68	70/70	70/70	70/70	70/72
Refrigerant/water exchangers		Brazed plates	Brazed plates	Brazed plates	Brazed plates	Brazed plates	Brazed plates
Diameter refrigerant inlet connection		3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
Diameter refrigerant outlet connection		5/8"	5/8"	5/8"	5/8"	5/8"	5/8"
Circulator absorption DHW	W	16-43					
System circulator absorption	W	40 - 130					
Available pressure system circulator	kPa	80	82	80	80	78	73
Expansion vessel capacity	l	8	8	8	8	8	8
Expansion vessel capacity DHW	l	7	7	7	7	7	7
Power supply internal unit	V/ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50
Maximum current absorption (g)	A	14,1	14,1	27,2	27,2	27,2	27,2
Power supply external unit	V/ph/Hz	230/1/50	230/1/50	230/1/50	400/3/50	230/1/50	400/3/50
Maximum current absorption	A	13,5	22	28	8,15	28	11,5
Hydraulic connections		1"	1"	1"	1"	1"	1"
Drinking water input and DHW output pipes connections		3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
Additional electric resistors	kW	1,5+1,5	1,5+1,5	3+3	3+3	3+3	3+3
Refrigerant gas air-water cycle	type	R410A	R410A	R410A	R410A	R410A	R410A
Global warming potential	GWP	2088	2088	2088	2088	2088	2088
Refrigerant gas charge	Kg	2,1	2,75	4,45	4,0	4,45	4,2
Refrigerant gas (DHW)	type	R134a	R134a	R134a	R134a	R134a	R134a
Global warming potential	GWP	1430	1430	1430	1430	1430	1430
Cylinder volume	l	150					
Tank interior surface material		Glazed steel					
Heat exchanger in the cylinder		Steel pipe					
Cylinder isolation		Rigid expanded polyurethane					

	7				11				13				13T				16				16T			
	cooling capacity(kW)	Dhw capacity (kW)	Absorption (kW)	EER COP	cooling capacity(kW)	Dhw capacity (kW)	Absorption (kW)	EER COP	cooling capacity(kW)	Dhw capacity (kW)	Absorption (kW)	EER COP	cooling capacity(kW)	Dhw capacity (kW)	Absorption (kW)	EER COP	cooling capacity(kW)	Dhw capacity (kW)	Absorption (kW)	EER COP	cooling capacity(kW)	Dhw capacity (kW)	Absorption (kW)	EER COP
Cooling W7 A35	5,60	0,00	1,81	3,1	8,10	0,00	2,63	3,1	10,40	0,00	3,47	3,0	10,40	0,00	3,47	3,0	11,30	0,00	4,19	2,7	12,80	0,00	4,57	2,8
ACS W65/W12	0,64	1,28	0,56	2,3	0,64	1,28	0,56	2,3	0,64	1,28	0,56	2,3	0,64	1,28	0,56	2,3	0,64	1,28	0,56	2,3	0,64	1,28	0,56	2,3
Cooling W7 A35 e ACS W65/W12	5,60	1,28	1,55	3,6	8,10	1,28	2,35	3,4	10,40	1,28	3,16	3,3	10,40	3,16	3,16	3,3	11,30	1,28	3,65	3,1	12,80	1,28	4,23	3,0

(a) Water outlet temperature 35°C / External air temperature 7°C
(b) Water outlet temperature 35°C / External air temperature -2°C
(c) Water outlet temperature 45°C / External air temperature 7°C
(d) Water outlet temperature 45°C / External air temperature -2°C
(e) Water outlet temperature 18°C / External air temperature 35°C
(f) Water outlet temperature 7°C / External air temperature 35°C
(g) With inserted resistors
(h) Water outlet temperature 55°C / Water temperature heating circuit 35°C
(i) Water outlet temperature 55°C / Water temperature heating circuit 12°C

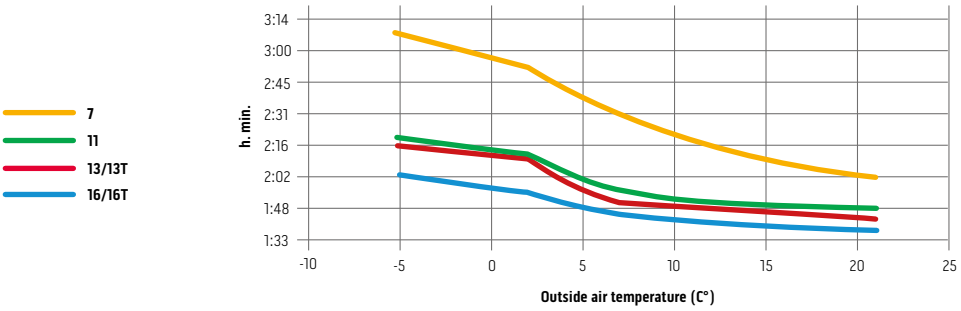


COOLING + DHW WITH ENERGY RECOVERY
During summer operation in cooling mode, the cycle dedicated to DHW production extracts heat from return water from the system circuit.

The cooling requirements of the building is partially satisfied by the DHW cycle and the comfort refrigerating cycle must deliver less power by reducing the speed of the inverter compressor.

The heat taken from the system is recovered in hot water for domestic use.
The efficiency of the integrated system increases (ratio between the energy produced and the energy absorbed from the mains).

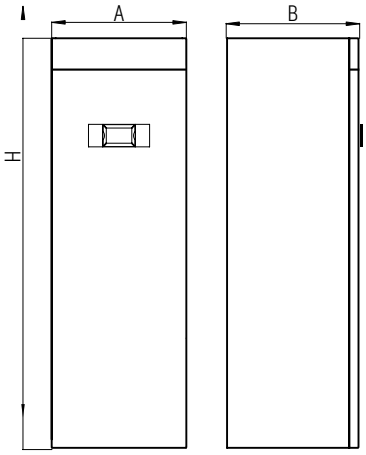
LOADING TIME OF BOILERS With 150 litre tank, with 15-65 °C water
The patented Aquadue® double cycle allows rapid loading times of boilers, up to 40% faster than an equally capacious heat pump boiler.*



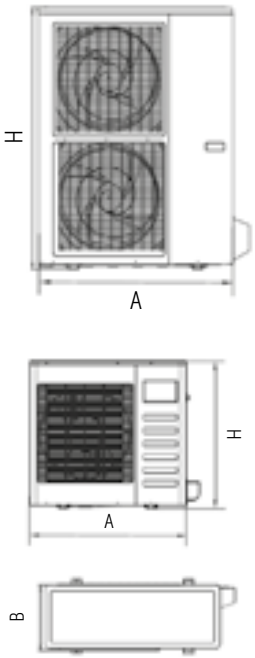
INTERNAL UNIT		AQUADUE TOWER 7	AQUADUE TOWER 11	AQUADUE TOWER 13	AQUADUE TOWER 13T	AQUADUE TOWER 16	AQUADUE TOWER 16T
		SMALL		BIG			
A	mm	600	600	600	600	600	600
B	mm	600	600	600	600	600	600
H	mm	1980	1980	1980	1980	1980	1980
Peso	kg	171	171	173	173	173	173

EXTERNAL UNIT		AQUADUE TOWER 7	AQUADUE TOWER 11	AQUADUE TOWER 13	AQUADUE TOWER 13T	AQUADUE TOWER 16	AQUADUE TOWER 16T
		MONO-FAN		DOUBLE FAN			
A	mm	847	990	938	938	938	938
B	mm	330	350	392	392	392	392
H	mm	700	950	1369	1369	1369	1369
Peso	kg	58	82	99	102	99	107

INTERNAL UNIT



EXTERNAL UNIT

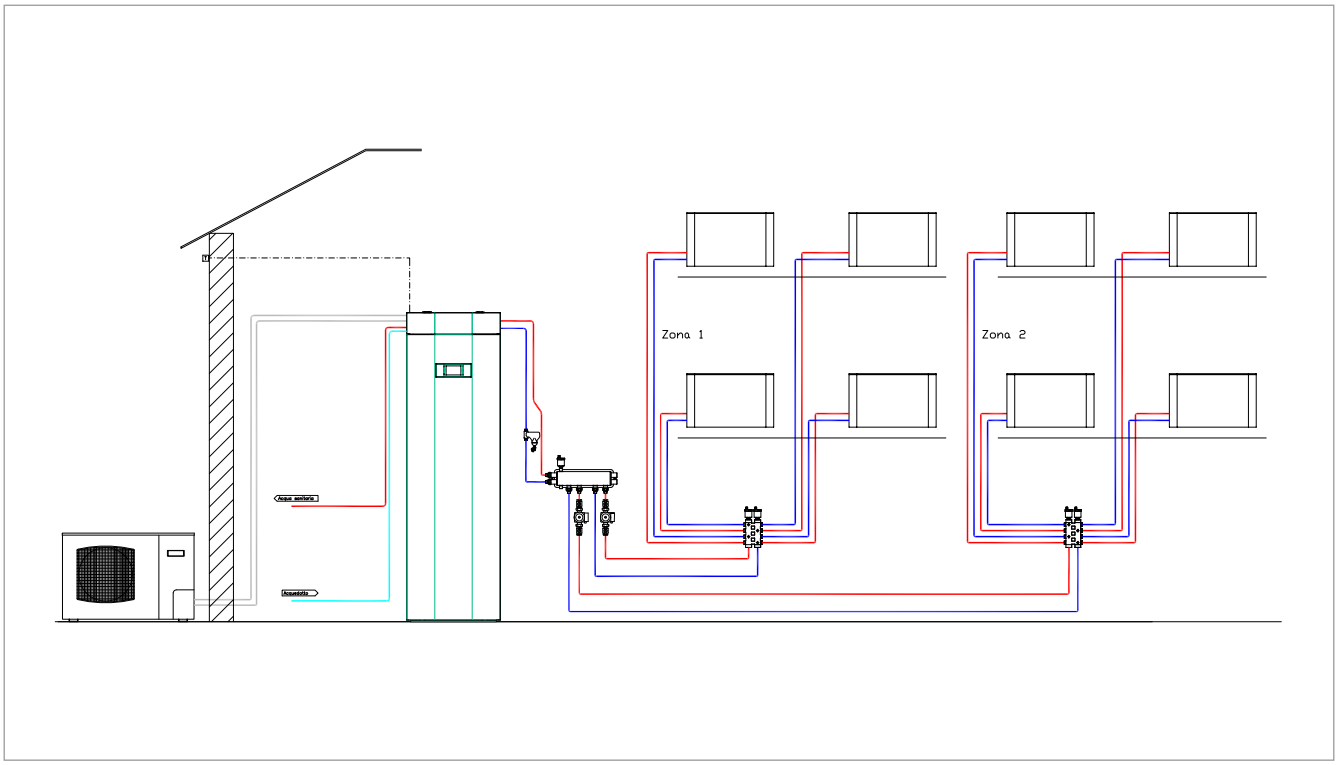


Code B0665 - HEATING CABLE KIT
Prevents the formation of ice on the bottom of the external unit in the event of prolonged operation in particularly severe conditions.

* Olimpia Splendid internal tests.

SHERPA AQUADUE TOWER

SHERPA AQUADUE TOWER Heat Pump (Heating and Cooling); High temperature DHW production; Radiator fan coils terminals Bi2 SLR : example of 2 zone plant with manifold / collector



- Non-return valve
- Thermostatic mixer
- Automatic air vent
- Expansion vessel
- Water temperature sensor
- Off valve
- Diverter valve
- Water temperature sensor
- Dirt separator filter
- Antifreeze valve
- Immersion thermosthat