

SHERPA **AQUADUE TOWER**®

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: 35° **A+** 55° **A+** 55° per ACS **A+**

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 availability of DHW: guaranteed by the redundancy 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⁾



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 energyconsuming anti-legionella cycles that are normally performed through the use of electrical resistances.



TOUCH SCREEN USER INTERFACE

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

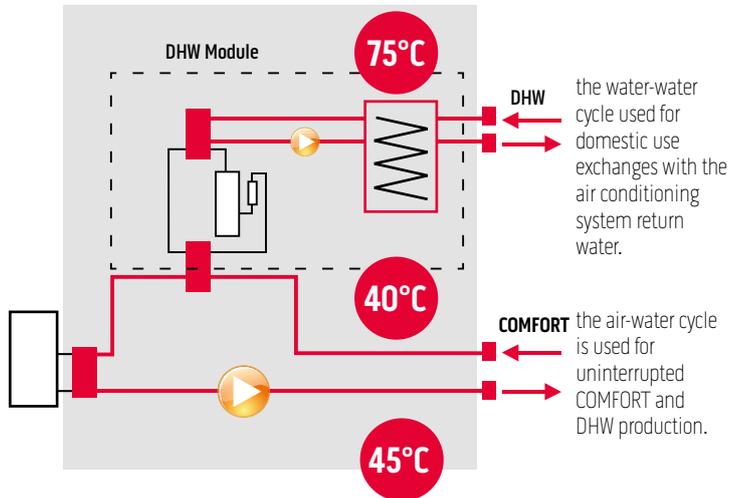
- customize the response limits of the two cycles at installation
- customize comfort and DHW needs at installation
- optimize energy performances by managing the operation of the double refrigeration circuit.



HEATING MODE

+ DHW at high temperature

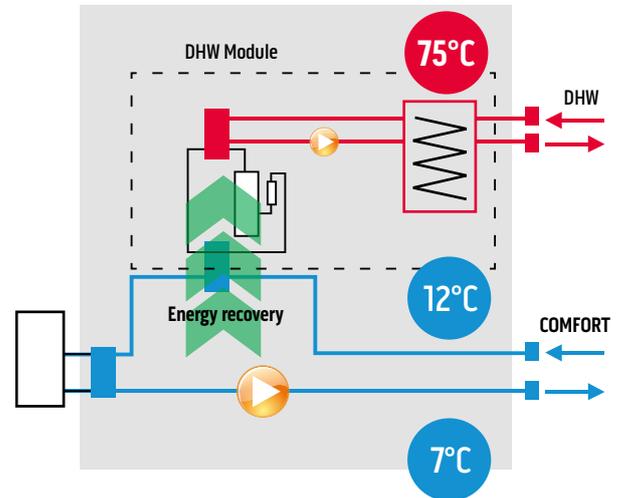
DHW production is guaranteed independently from the outside temperature for an optimal operation throughout the year, which is not guaranteed by traditional heat pumps.



COOLING MODE

+ DHW at a high temperature with energy recovery

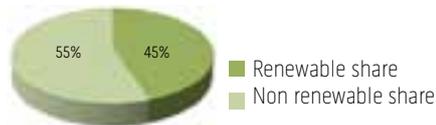
The energy normally dissipated outside is recovered and used to produce DHW up to 75 °C.



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



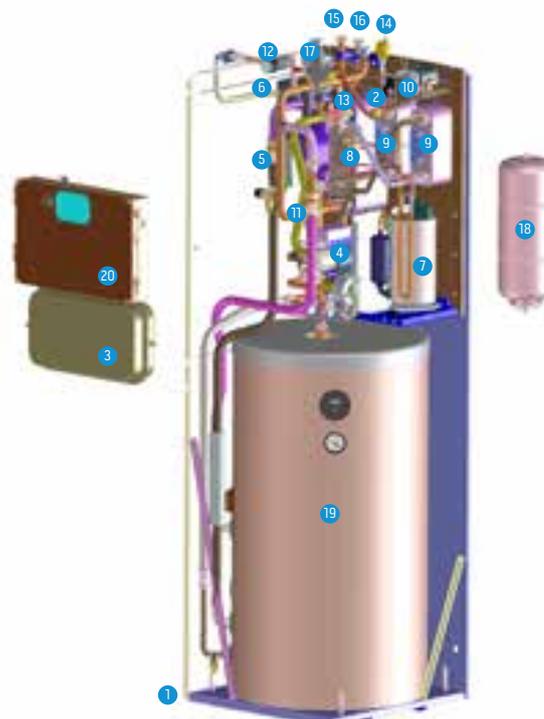
Sherpa AQUADUE® heat pump



- 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



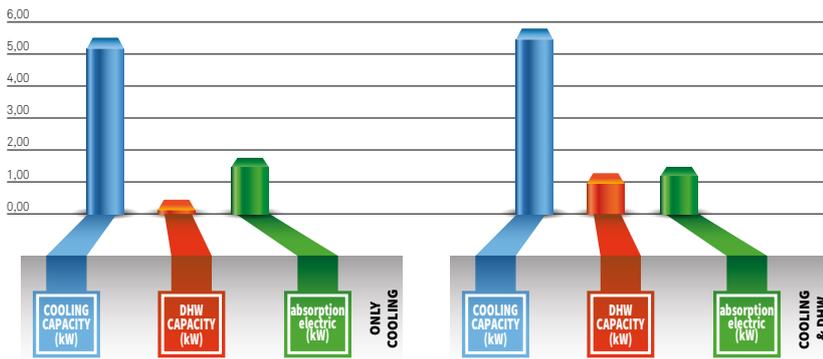
SHERPA AQUADUETOWER®

		AQUADUE TOWER 7				AQUADUE TOWER 11				AQUADUE TOWER 13				AQUADUE TOWER 13T				AQUADUE TOWER 16				AQUADUE TOWER 16T			
Indoor unit	Cod.	599513A								599512A															
Outdoor Unit S1	Cod.	OS CESH24E1		OS CESH36E1		OS CESH48E1		OS CESH48E1		OS CESH48E1		OS CESH48E1		OS CESH48E1		OS CESH48E1		OS CESH48E1		OS CESH48E1		OS CESH48E1			
Refrigerant/water exchanger		Braze plates		Braze plates		Braze plates		Braze plates		Braze plates		Braze plates		Braze plates		Braze plates		Braze plates		Braze plates		Braze plates			
Heating capacity (a)	kW	6,50		10,50		12,50		12,50		12,50		12,50		12,50		12,50		12,50		12,50		12,50			
COP (a)	W/W	4,10		4,10		4,10		4,10		4,10		4,10		4,10		4,10		4,10		4,10		4,10			
Heating capacity (b)	kW	5		8,30		10		10		10,50		10,50		10,50		10,50		10,50		10,50		10,50			
COP (b)	W/W	3,10		3,20		3,10		3,10		2,90		2,90		2,90		2,90		2,90		2,90		2,90			
Heating capacity (c)	kW	6,20		9,90		11,60		11,60		13		13		13		13		13		13		13			
COP (c)	W/W	3,40		3,20		3,30		3,30		3,20		3,20		3,20		3,20		3,20		3,20		3,20			
Heating capacity (d)	kW	4,80		7,80		9,30		9,30		9,80		9,80		9,80		9,80		9,80		9,80		9,80			
COP (d)	W/W	2,50		2,30		2,20		2,20		2,30		2,30		2,30		2,30		2,30		2,30		2,30			
Cooling capacity (e)	kW	7,60		12,10		12,60		12,80		13,80		13,80		13,80		13,80		13,80		13,80		13,80			
EER (e)	W/W	4		4,40		3,50		3,50		3,10		3,10		3,10		3,10		3,10		3,10		3,10			
Cooling capacity (f)	kW	5,60		8,10		10,40		10,40		11,30		11,30		11,30		11,30		11,30		11,30		11,30			
EER (f)	W/W	3,10		3,10		3		3		2,70		2,70		2,70		2,70		2,70		2,70		2,70			
Energy efficiency class heating mode 35°/55 °C		A+		A+		A+		A+		A+		A+		A+		A+		A+		A+		A+			
DHW circuit heating capacity (g)	kW	2,15		2,15		2,15		2,15		2,15		2,15		2,15		2,15		2,15		2,15		2,15			
COP (g)	W/W	3,12		3,12		3,12		3,12		3,12		3,12		3,12		3,12		3,12		3,12		3,12			
DHW circuit heating capacity (h)	kW	1,60		1,60		1,60		1,60		1,60		1,60		1,60		1,60		1,60		1,60		1,60			
COP (h)	W/W	2,58		2,58		2,58		2,58		2,58		2,58		2,58		2,58		2,58		2,58		2,58			
Sound pressure of indoor unit (i)	dB(A)	35		35		35		35		35		35		35		35		35		35		35			
Sound power indoor unit	dB(A)	41		41		41		41		41		41		41		41		41		41		41			
Sound power of indoor unit in heat. or cool. and DHW mode	dB(A)	47		47		47		47		47		47		47		47		47		47		47			
Sound pressure outdoor unit (l)	dB(A)	54/55		56/58		60/60		60/60		60/60		60/60		60/60		60/60		60/60		60/60		60/60			
Sound power outdoor unit	dB(A)	64/65		66/68		70/70		70/70		70/70		70/70		70/70		70/70		70/70		70/70		70/70			
Diameter refrigerant connections	"	3/8-5/8		3/8-5/8		3/8-5/8		3/8-5/8		3/8-5/8		3/8-5/8		3/8-5/8		3/8-5/8		3/8-5/8		3/8-5/8		3/8-5/8			
Circulator absorption DHW	W	16-43		16-43		16-43		16-43		16-43		16-43		16-43		16-43		16-43		16-43		16-43			
System circulator absorption	W	40-130		40-130		40-130		40-130		40-130		40-130		40-130		40-130		40-130		40-130		40-130			
Capacity of expansion vessel	l	8		8		8		8		8		8		8		8		8		8		8			
Capacity of expansion vessel DHW	l	7		7		7		7		7		7		7		7		7		7		7			
Power supply of indoor unit	V/ph/ Hz	230/1/50		230/1/50		230/1/50		230/1/50		230/1/50		230/1/50		230/1/50		230/1/50		230/1/50		230/1/50		230/1/50			
Maximum current absorption indoor unit (electrical heaters activated)	A	18,0		18,0		31,0		31,0		31,0		31,0		31,0		31,0		31,0		31,0		31,0			
Maximum current absorption indoor unit (electrical heaters deactivated)	A	5,0		5,0		5,0		5,0		5,0		5,0		5,0		5,0		5,0		5,0		5,0			
Additional electrical heater elements	kW	1,5 + 1,5		1,5 + 1,5		3 + 3		3 + 3		3 + 3		3 + 3		3 + 3		3 + 3		3 + 3		3 + 3		3 + 3			
Hydraulic connections	"	1		1		1		1		1		1		1		1		1		1		1			
Outdoor unit power supply	V/ph/ Hz	230/1/50		230/1/50		230/1/50		400/3/50		230/1/50		400/3/50		230/1/50		400/3/50		230/1/50		400/3/50		400/3/50			
Outdoor unit maximum absorbed current	A	13,5		22		28		8,15		28		8,15		28		8,15		28		8,15		11,5			
Hydraulic connections DHW	"	3/4		3/4		3/4		3/4		3/4		3/4		3/4		3/4		3/4		3/4		3/4			
Refrigerant gas (system circuit) (m)		R410A		R410A		R410A		R410A		R410A		R410A		R410A		R410A		R410A		R410A		R410A			
Refrigerant gas charge (outdoor unit) R410A	Kg	1,95		3,20		4,00		4,00		4,00		4,00		4,00		4,00		4,00		4,00		4,30			
Refrigerant gas (DHW circuit) (n)		R134a		R134a		R134a		R134a		R134a		R134a		R134a		R134a		R134a		R134a		R134a			
Refrigerant gas charge (indoor unit) R134a	Kg	0,35		0,35		0,35		0,35		0,35		0,35		0,35		0,35		0,35		0,35		0,35			
DHW tank capacity	l	150		150		150		150		150		150		150		150		150		150		150			
Tank interior surface		Glazed steel																							
Tank heat exchanger		Steel pipe																							
Tank insulation		Hard expanded polyurethane																							

(a) Heating mode, inlet/outlet water temperature 30°C/35°C, outdoor air temperature 7°C d.b./6°C w.b.
 (b) Heating mode, inlet/outlet water temperature 30°C/35°C, outdoor air temperature -2°C d.b./-1°C w.b.
 (c) Heating mode, inlet/outlet water temperature 40°C/45°C, outdoor air temperature 7°C d.b./6°C w.b.
 (d) Heating mode, inlet/outlet water temperature 40°C/45°C, outdoor air temperature -2°C d.b./-1°C w.b.
 (e) Cooling mode, inlet/outlet water temperature 23°C/18°C, outdoor air temperature 35°C
 (f) Cooling mode, inlet/outlet water temperature 12°C/7°C, outdoor air temperature 35°C

(g) Water outlet temperature 55°C/water temperature heating circuit 35°C
 (h) Water outlet temperature 55°C/water temperature heating circuit 12°C
 (i) Sound pressure values measured at a distance of 4 m in a free field
 (l) Sound pressure values measured at a distance of 1 m in semi-anechoic chamber
 (m) Equipment not hermetically sealed containing fluorinated gases with an equivalent GWP of 2088
 (n) Equipment hermetically sealed containing fluorinated gases with an equivalent GWP of 1430

	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	1,28	3,16	3,3	11,30	1,28	3,65	3,1	12,80	1,28	4,23	3,0



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.

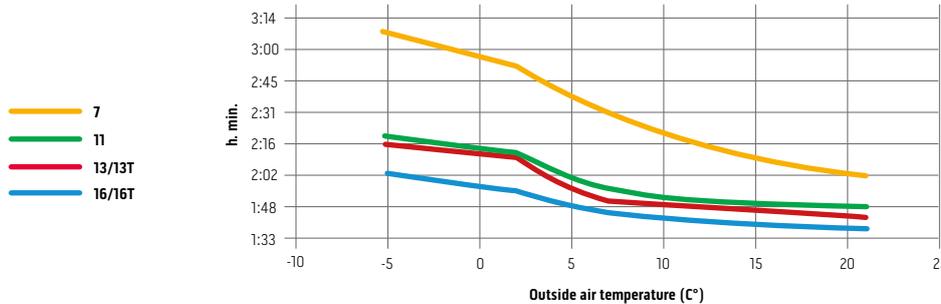
The cooling requirements of the building is partially satisfied by the DHW cycle and the comfort refrigerating cycle must deliver less power by reducing the speed of the inverter compressor.

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.*

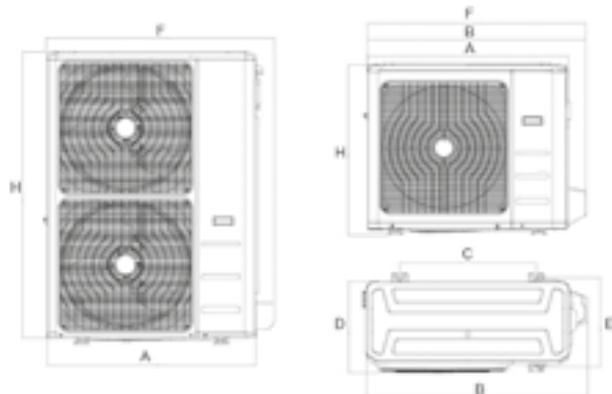
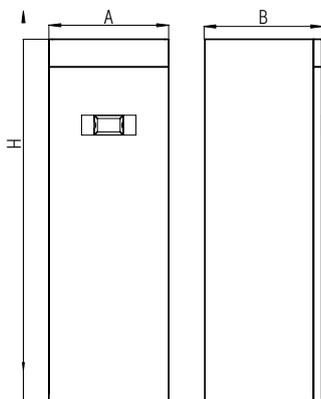


INTERNAL UNIT

		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	600	600	600	600	600	600
B	mm	600	600	600	600	600	600	600	600	600	600	600	600
H	mm	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980
Weight	kg	171	171	173	173	173	173	173	173	173	173	173	173

EXTERNAL UNIT S1

		7	11	13	13T	16	16T
		CESH24EI	CESH36EI	CESH48EI	CEST48EI	CESH60EI	CEST60EI
		MONO-FAN			DOUBLE FAN		
A	mm	845	946	952	952	952	952
B	mm	914	1030	1045	1045	1045	1045
C	mm	540	673	634	634	634	634
D	mm	363	410	415	415	415	415
E	mm	350	403	404	404	404	404
F	mm	915	1036	1032	1032	1032	1032
H	mm	702	810	1333	1333	1333	1333
Weight	kg	49	67	95	108	95	113



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.

* test interni gamma Olimpia Splendid.

TOUCH SCREEN INTERFACE

SHERPA AQUADUE - SHERPA AQUADUE TOWER

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.



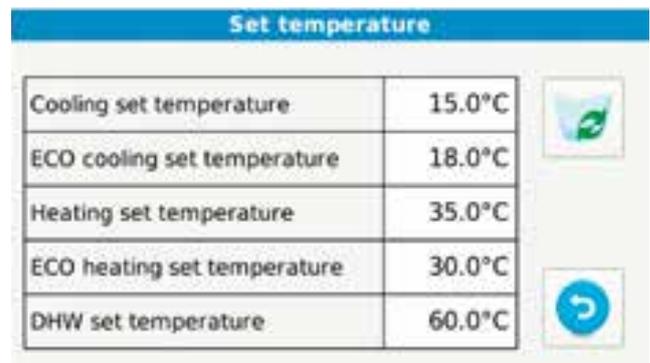
SET POINT

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

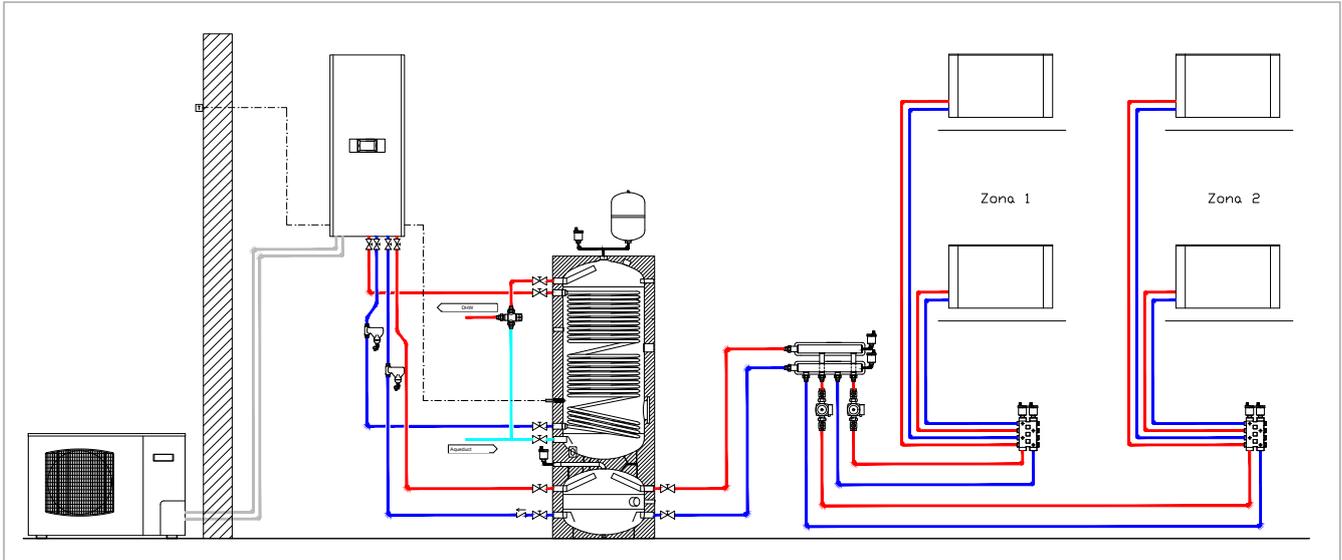
Tapping the "Timer Heat/ Cool" or "DHW Timer" or "Timer Night" icon, you can access the page where the activation bands of each timer can be visualized.



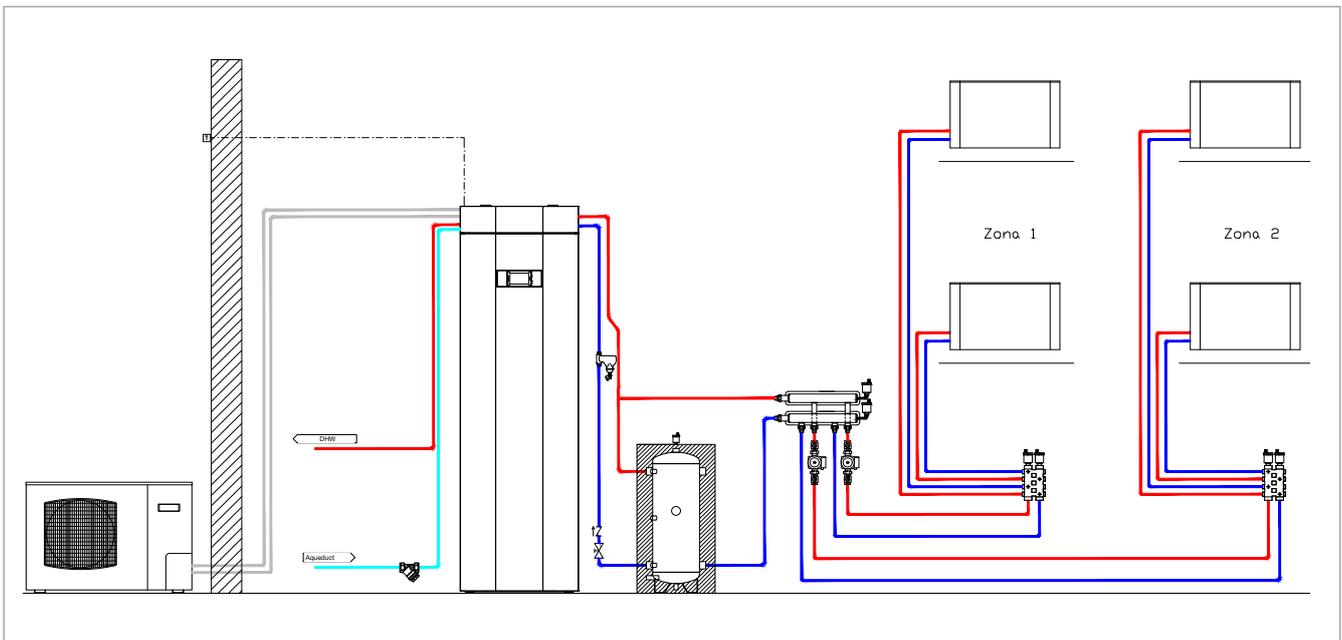
PLANT LAYOUTS

SHERPA AQUADUE - SHERPA AQUADUE TOWER

SHERPA AQUADUE heat pump (heating and cooling; high-temperature DHW production); fan coil terminals Bi2 SLR; example of two zone layout with simple manifold and integrated inertial storage tank for the cooling plant.

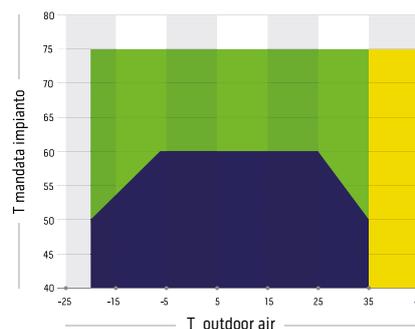


SHERPA AQUADUE heat pump (heating and cooling; high-temperature DHW production); Fan coil terminals Bi2 SLR; example of two zone layout with manifold/separator.



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.