



EW-HT

Water to water heat pumps for very high temperature water production, capacity from 70 to 279 kW.

No need for a gas network

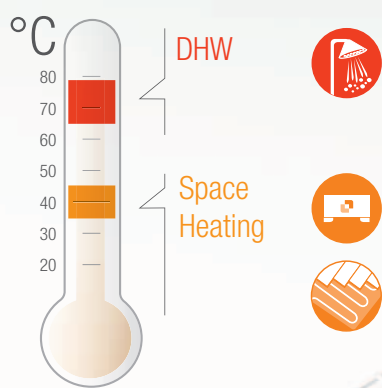
Revolutionary operating range

Low primary energy consumption

New usage opportunities

Seeking high efficiency and sustainable heating equipment, able to achieve very high temperatures while perfectly integrating the overall system is the greatest challenge of today's modern buildings.





Efficiency in very hot water production

Heating loads of residential and commercial buildings are typically aligned on two different temperature levels: one around 35-45°C, for space heating, and the other around 65-75°C for domestic hot water. While the first load can be covered by efficient and sustainable equipment such as heat pumps, solar collectors etc., a concrete and reliable alternative to gas boilers for the high temperature loads until now had not been found.



Integration and synergy

The knowledge that one gets the best results not by optimising the single component but the whole system itself, leads to an increase in the level of integration and synergy between different kinds of devices and technologies. Flexibility and aptitude to synergy makes a good machine become the ideal solution for both new generation plants and refurbishment of already existing structures.



Gas network independence

The most common means to produce very high-temperature water are gas boilers. Nevertheless the gas network connection is not always dependable and sometimes it is not available at all. Being dependent on an unreliable primary energy source is definitely risky, especially in the applications where the service needs to be uninterrupted.



Indoor installation

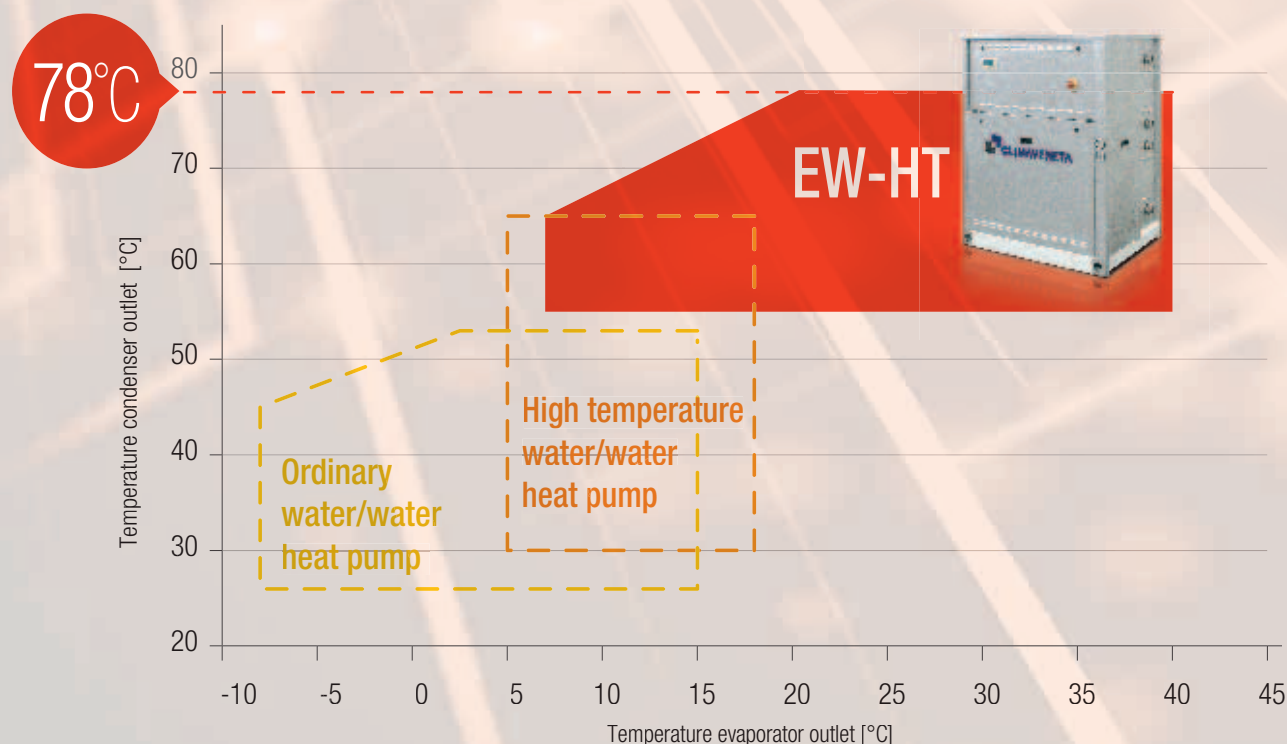
Plant rooms are usually located within the buildings. Narrow spaces and tangled unorganised pipes are huge obstacles for the installation and the maintenance operations of a machine. Furthermore raised noise levels and vibrations may seriously compromise the usability of the adjacent rooms. Today, reduced footprint, easy installation and quiet operation are crucial features for any technical unit.

EW-HT the revolution in the hot water production

Energetic, environmental and economic advantages of heat pumps compared to traditional gas boilers are well known, but providing very high water temperature has always been the limit of these units. EW-HT revolutionizes this condition and opens the doors to a brand new application category for heat pumps.

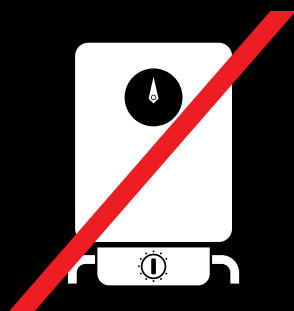
Beyond ordinary operating limits

EW-HT redefines the heat pump operating limits: this unique heat pump exploits medium temperature water as a source to provide water up to 78°C. This incredibly extended operating range allows EW-HT to be perfectly integrated in any heating systems.



When very high temperature water is needed, gas burners and electric heaters are not the only answers anymore.

No need for a gas network



EW-HT makes it possible to have a very high temperature source without a gas burner, nor any electric heaters. It just needs an ordinary electric connection and a medium temperature water source. The possibility to avoid fossil fuel is much more than a matter of energy saving and sustainability, it's also a matter of plant simplification: no gas network nor oversized electric connection are needed.

One single unit for many applications

EW-HT is the ideal solution for every application where very high temperature water is needed.

Residential and commercial applications

In the era of heat pump technology maturity, most of the time domestic hot water production is still provided by gas or electric boilers. EW-HT offers a smart alternative: thanks to its innovative operating range, it fills the gap between the medium temperature level required by space heating terminals, and the high temperature level needed for domestic hot water. EW-HT is the perfect water temperature 'upgrader'.



IT Cooling

The heat generated by powerful computer servers is usually considered as a waste product to be eliminated. EW-HT not only eliminates this heat, but also exploits it as a source to produce very high temperature water which can serve the heating requirements of the buildings located nearby.



Industrial process

Industrial processes are characterised by many heat transfers: machines, motors, molds must be cooled, whereas material streams, air flows, working fluids must be heated or pre-heated. Medium/low temperature heat recovery is often not economical, so great amounts of thermal energy is simply lost. EW-HT represents the most important opportunity to recover and move this heat from one process to another, avoiding kWh waste.



Low primary
energy consumption

The heat pump technology is by far more efficient and sustainable than any fossil fuel combustion system and, all the more, than any electric heater. EW-HT achieves great performance, also at partial loads, where ordinary heat pumps don't even work.

COP = 4,2 (hot water production 70/78°C *)
COP = 6,0 (hot water production 60/65°C *)

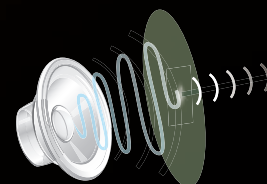
* evaporation 45/40°C



Superior
reliability

Developed to be the only source of high temperature water for a building, EW-HT represents a no-compromise solution in terms of reliability.

High quality components, accurate design, devoted control algorithms and redundancies grant uninterrupted unit operation in any conditions.



Reduced size
and noise level

This water to water heat pump is purposely designed to fit the requirement of indoor installation. The smart component disposal minimizes the footprint but still grants simple and safe access to the internal parts. Furthermore, as a result of a soundproofing oriented design and a dedicated acoustical enclosure, the units achieve a remarkable noise emission of only 70 dB(A).

EW-HT for many applications: the flexible link that



Residential and commercial applications

Unbeatable integration

The perfect water temperature "upgrader"

Enhancing overall system efficiency

Ideal for...

- ✓ Residential and commercial buildings
- ✓ Hotels, resorts
- ✓ Wellness centers, spas
- ✓ Hospitals, nursing homes, clinics
- ✓ Schools, office buildings

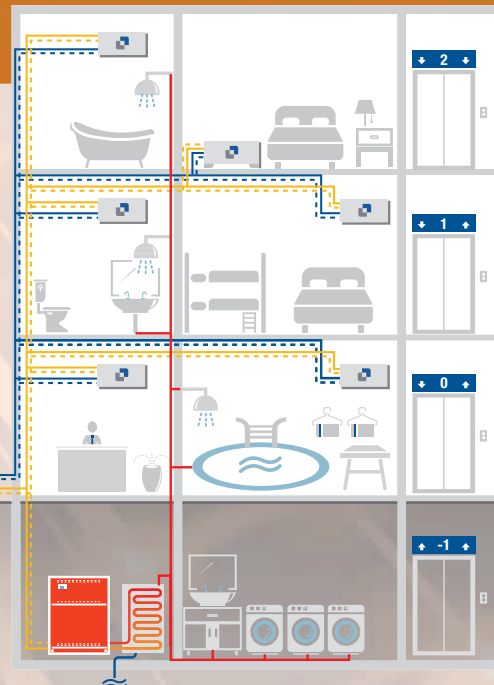
Perfect with...

- ✓ 4-pipe system units
- ✓ Heat pumps with partial or total heat recovery
- ✓ Medium temperature heat recovery
- ✓ Solar heat collectors
- ✓ Water loop systems

Excellent in...

- ✓ Domestic hot water production
- ✓ Legionella prevention cycle
- ✓ Laundry water pre-heating

Ensuring comfort in residential and commercial buildings means fulfilling three different thermal loads: space cooling, space heating and domestic hot water. In the last few years, 4-pipe system units are gaining more and more attention because of their superior efficiency in matching independent and simultaneous space cooling and heating loads. The only thing these units lack is domestic hot water production.



EW-HT is purposely developed to complete 4-pipe systems with unbeatable integration.

This unique heat pump uses a part of the medium temperature water provided by the 4-pipe unit as a source to produce very high temperature water, up to 78°C. The need for domestic hot water, as well as legionella prevention cycles or even laundry water pre-heating can be finally satisfied in an efficient and sustainable way, saying goodbye to old boilers.



Industrial process

Heat recovery is surely a recommended and cost-effective practice, especially in the industrial sector, where processes involve so many heat transfers between several different temperature levels. The ability to use any water stream up to 45°C as a source and the possibility to reach a water temperature production of 78°C is the key feature that makes EW-HT the perfect link between the different heat levels available. The heat removed from electrical motors or industrial machines is transferred from medium-low temperature levels, which make it not usable, to higher temperature levels, which make it attractive for several usages.

New temperatures, new usage opportunities

Making heat recovery easy and profitable

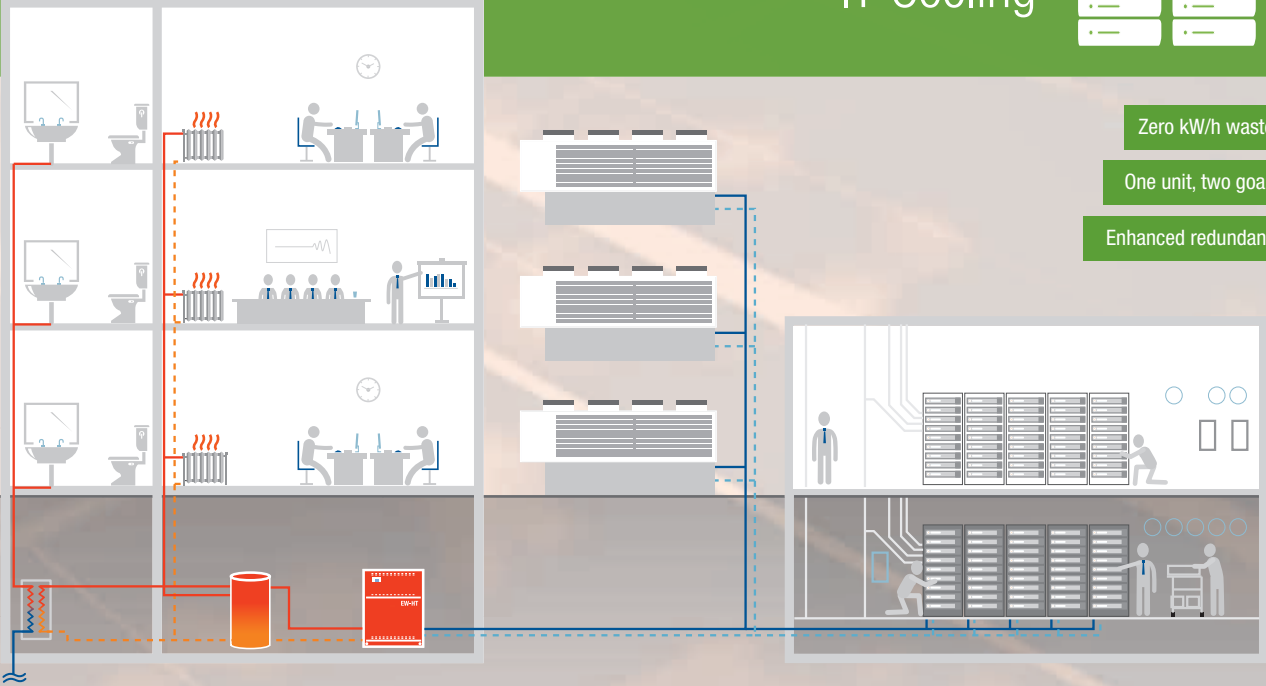
Adaptability to any kind of systems

The extraordinary operating range of EW-HT opens the doors to an infinite number of recovered heat usages, till now impossible.

Some examples are plastic or food drying, material pre-heating processes or also facilities space heating through high temperature ceiling radiant panels.

completes today's systems and creates new usage opportunities

IT Cooling

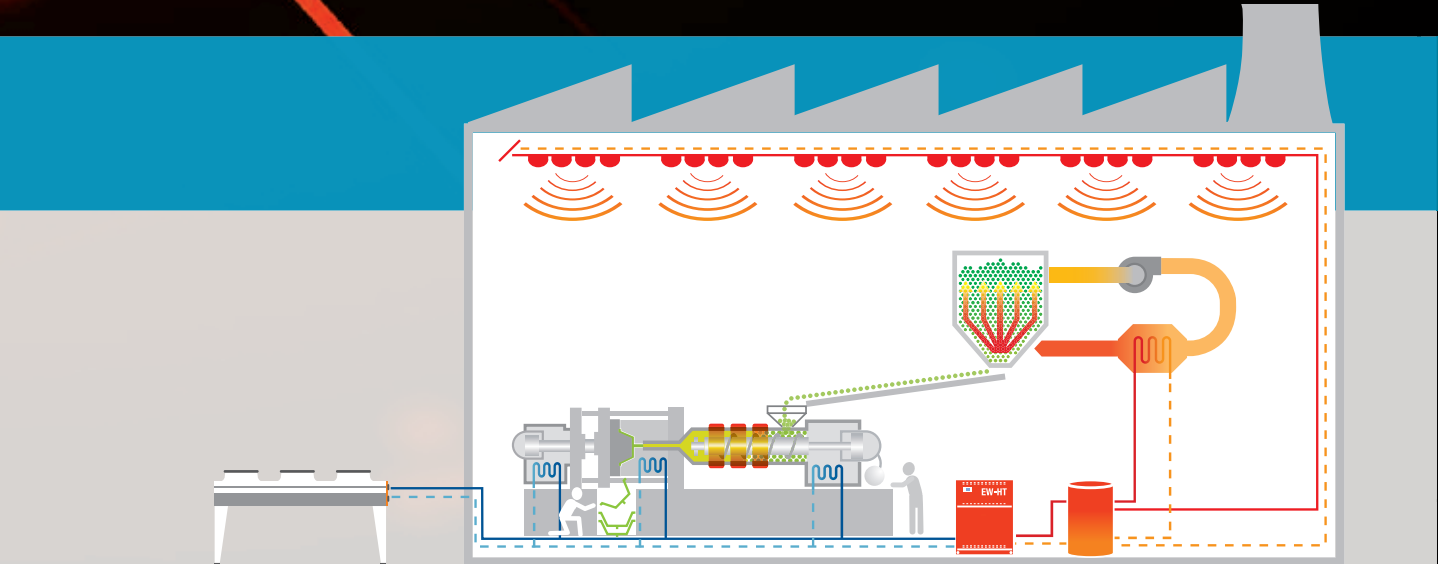


- Zero kWh wasted
- One unit, two goals!
- Enhanced redundancy

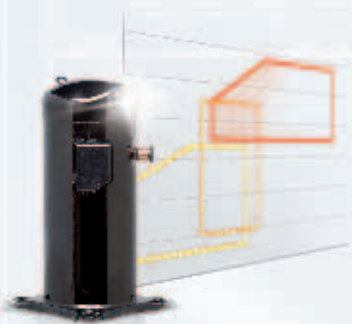
Modern data centers require reliable and efficient cooling systems, able to ensure 24/7 operation whilst ensuring low energy expense. Free cooling units or regular chillers combined with close control air conditioners are the most common solution. But looking at the system from a wider point of view, a new great opportunity can be found: when server rooms are located near an office building, EW-HT makes the difference covering the entire heating demand of the offices while simultaneously contributing to the cooling of the data center.

Not a single kWh of energy is wasted while providing a enhanced redundancy to the IT cooling system.

Additionally, this innovative concept can also be successfully applied to the already existing buildings, where traditional boilers and radiators are installed. In fact EW-HT can provide hot water at the same temperature level of a boiler, thus resulting in the perfect idea for boiler retrofitting as well.

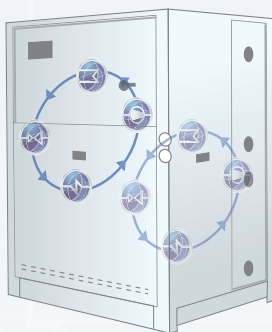


Technological choices



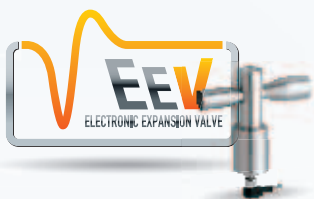
Dedicated scroll compressors

EW-HT adopts the new generation compressors dedicated to heat pumps. They feature a special scroll design, which greatly extends the operating envelope towards both high evaporating and condensing pressures. Additionally, fewer moving parts, robust running gear and the low vibrations resulting from a balanced compression mechanism ensure perfect durability, safety and quietness.



Double refrigerant circuit

Redundancy is the key to reliability. Two independent refrigerant circuits ensure continuous and dependable operation in all conditions or situations that may arise. This technical feature makes EW-HT suitable to be the sole source of high temperature heating.



Electronic expansion valve

The electronic valve ensures ideal unit operation in all conditions. The fast processing of the acquired data allows a quick, fluctuating-free regulation, and therefore a highly accurate adjustment to the load swings. Due to an integrated design, the synergy among the expansion valve, the compressor and the compressor driver is complete.



Advanced control system

The W3000TE control, thanks to dedicated algorithms, ensures the optimised management of the units in every working condition. It features an LCD display and an easy-to-use interface. The internal clock allows the scheduling of a time frame to plan unit operations. The control is also available with a remote keyboard and is compatible with BMS.

The innovation of EW-HT is the result of the best technology and the most accurate design.

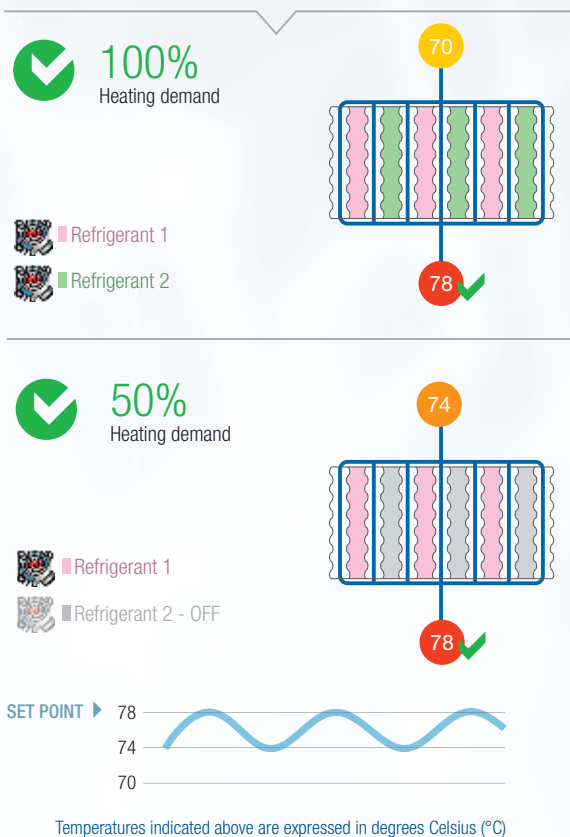
Dual circuit plate heat exchangers

The evaporator and the condenser are two high efficiency dual circuit plate heat exchangers, properly designed to be connected with two independent refrigerant circuits. The special design ensures that each refrigerant circuit is in contact with the entire water flow, therefore the partial load (only one circuit running) efficiency is maximized. The second great benefit is that water heating is always uniform, also at partial loads, unlike in traditional configurations. This ensures to get the best advantage from the extended operating range of the compressors.

Traditional solution



Dual circuit solution



Traditional solution Vs Dual circuit solution - set point 78°C, constant water flow rate

100% heating demand (water inlet 70°C)

Both solutions fulfill the demand, heating the water up to 78°C.

50% heating demand (water inlet 74°C)

With the traditional solution, in order to get a 78°C overall outlet, the water flow rates coming from the two independent PHEs should be 74°C (refrigerant circuit off) and 82°C (refrigerant circuit on). However, the maximum water condensing temperature allowed by the compressor envelope is 78°C. Therefore neither of the two refrigerant circuits are able to run. The water is not heated at all and the 78°C set point is not achieved. With the dual circuit PHE solution, when only one refrigerant circuit is running, the water is heated from 74°C to 78°C and the set point is met.



Refrigerant R134a

Thanks to its physical characteristics, R134a is particularly suitable to work at high temperatures with an excellent heat exchange performance.

EW-HT

Water to water heat pumps for very high temperature water production, capacity from 70 to 279 kW.

EW-HT

			0152	0182	0202	0262	0302	0412	0512	0612
Power supply	V/ph/Hz		400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE										
Total heating capacity	(1) kW		70,2	79,3	92,5	113	139	181	225	279
Total power input	(1) kW		17,0	18,9	22,0	27,9	34,2	43,7	55,1	67,6
COP	(1) -		4,13	4,20	4,20	4,05	4,08	4,14	4,08	4,13
COMPRESSORS										
Type						Scroll				
No.			2	2	2	2	2	2	2	2
CIRCUITS										
Refrigerant			R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
No.			2	2	2	2	2	2	2	2
Expansion valve						Electronic				
HEAT EXCHANGER USER SIDE IN HEATING										
Type						PHE Dual				
No.			1	1	1	1	1	1	1	1
Water flow	(1) m³/h		7,72	8,72	10,2	12,4	15,3	19,9	24,7	30,7
Pressure drop	(1) -		23,9	25,0	24,2	24,2	19,7	19,8	19,8	20,1
HEAT EXCHANGER SOURCE SIDE IN HEATING										
Type						PHE Dual				
No.			1	1	1	1	1	1	1	1
Water flow	(1) m³/h		9,42	10,7	12,5	15,1	18,6	24,3	30,1	37,5
Pressure drop	(1) -		45,4	46,7	51,8	53,8	49,7	50,1	37,6	37,7
NOISE LEVEL										
Noise power	(2) dB(A)		74	74	74	76	76	78	78	80
Noise power with acoustical encl. (opt)	(2) dB(A)		70	70	70	72	72	74	74	76
SIZE AND WEIGHT										
A	(3) mm		1223	1223	1223	1223	1223	1223	1223	1223
B	(3) mm		877	877	877	877	877	877	877	877
H	(3) mm		1496	1496	1496	1496	1496	1496	1496	1496
Operating weight	(3) kg		365	380	390	415	430	610	675	740

Notes:

(1) Plant (side) heating exchanger water (in/out) 70°C/78°C ; Source (side) heat exchanger water (in/out) 45°C/40°C .

(2) Sound power on the basis of measurements made in compliance with ISO 9614.

(3) Unit in standard configuration/execution, without optional accessories.



Plant (side) water (in/out) 70°C/78°C

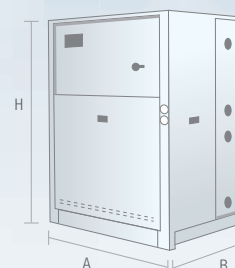
				0152	0182	0202	0262	0302	0412	0512	0612
Source (side) water (in/out)	45°C/40°C	Heating capacity	kW	70,2	79,3	92,5	113	139	181	225	279
		Total power input	kW	17,0	18,9	22,0	27,9	34,2	43,7	55,1	67,6
		Cooling capacity	kW	54,2	61,5	71,8	86,8	107	140	173	215
		COP	-	4,13	4,20	4,20	4,05	4,06	4,14	4,08	4,13
	40°C/35°C	Heating capacity	kW	63,4	71,5	83,4	102	123	160	199	247
		Total power input	kW	17,0	18,9	22,1	28	33,8	43,5	54,9	67,4
		Cooling capacity	kW	47,4	53,7	62,6	75,7	91,2	119	147	184
		COP	-	3,73	3,78	3,77	3,65	3,68	3,63	3,67	3,67
	35°C/30°C	Heating capacity	kW	56,9	64,2	74,8	91,9	109	142	176	219
		Total power input	kW	17,0	18,9	22,1	28,0	33,6	43,5	54,9	67,3
		Cooling capacity	kW	40,9	46,4	54,0	65,6	77,4	101	124	156
		COP	-	3,35	3,40	3,38	3,28	3,25	3,26	3,21	3,26

Plant (side) water (in/out) 60°C/65°C

				0152	0182	0202	0262	0302	0412	0512	0612
Source (side) water (in/out)	45°C/40°C	Heating capacity	kW	72,1	81,5	94,9	116	151	195	242	300
		Total power input	kW	12,7	14,1	16,5	20,9	26,9	32,5	41,1	50,3
		Cooling capacity	kW	60,2	68,2	79,4	96,4	126	164	203	253
		COP	-	5,68	5,78	5,75	5,56	5,61	5,99	5,88	5,97
	40°C/35°C	Heating capacity	kW	66,4	75,0	87,5	107	133	172	213	265
		Total power input	kW	12,9	14,4	16,8	21,2	26,4	32,1	40,5	49,6
		Cooling capacity	kW	54,3	61,5	71,7	87,1	108	142	175	218
		COP	-	5,15	5,21	5,21	5,05	5,05	5,34	5,26	5,34
	35°C/30°C	Heating capacity	kW	60,5	68,3	79,8	97,7	118	151	187	233
		Total power input	kW	13,0	14,5	16,9	21,4	26,0	31,9	40,2	49,2
		Cooling capacity	kW	48,3	54,7	63,9	77,6	93,6	121	149	187
		COP	-	4,65	4,71	4,72	4,57	4,52	4,73	4,66	4,73

Main accessories:

- Phase sequence relay
- Numbered wiring on electrical board (std)
- Automatic circuit breakers on loads (std)
- Set-up for remote connectivity (Modbus, Lonworks, Bacnet MS/TP RS485, Bacnet over IP)
- Remote signal for double set point
- Demand limit
- Touch screen interface
- Remote control keyboard with LCD display (distance up to 200m or 500m)
- Soft starters
- High pressure and low pressure gauges
- Compressor suction and discharge valves
- Acoustical enclosure: extra insulation on compressor section
- Rubber type anti-vibration mounting
- Grooved coupling kit with threaded pipe user side (std)



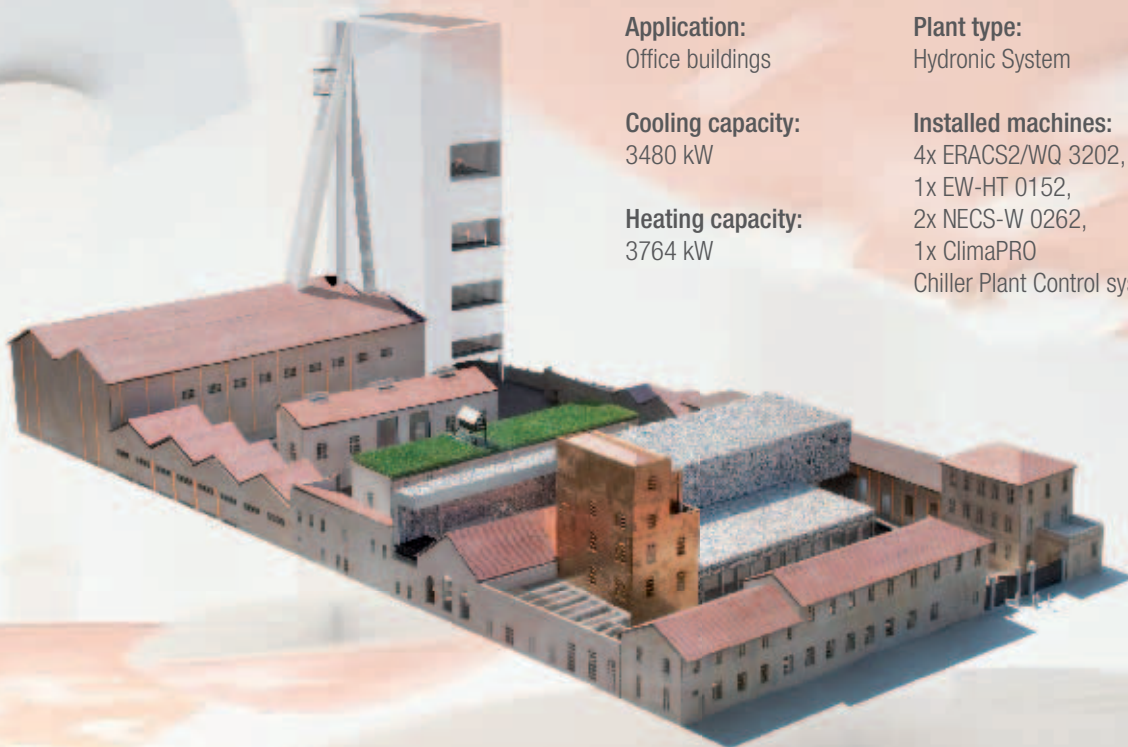
“Experience is by far the best proof”

Sir Francis Bacon
British philosopher
(1561 - 1626)



Fondazione Prada

2014 Milan - Italy



Application:
Office buildings

Plant type:
Hydronic System

Cooling capacity:
3480 kW

Heating capacity:
3764 kW

Installed machines:
4x ERACS2/WQ 3202,
1x EW-HT 0152,
2x NECS-W 0262,
1x KlimaPRO
Chiller Plant Control system

Project

Conceived by OMA Architecture Studio and led by Rem Koolhaas, the new Fondazione Prada venue is a new exhibition site located in Largo Isarco, an industrial area far from Milan's city centre. The new project involves a complex refurbishment where seven preexisting buildings of a former distillery from the 1910s will be linked by three new structures— an exhibition venue, an auditorium and a museum tower — occupying the courtyard spaces in between.

The complex will host Fondazione Prada's array of events, relating to disciplines including cinema, design, architecture, philosophy, fashion and performance.

Challenge

The compound has a gross surface area of 19000 m² / 205000 ft², of which 11000 m² / 118000 ft² is dedicated to exhibition space. The main challenge of the project was to face the complexity of combining the different heating and cooling requirements of the seven buildings, including the refurbished and new structures.

Solution

The most suitable system for the museum was the installation of 4 ERACS2-WQ water to water INTEGRA units, integrated with 1 EW-HT water to water heat pump for very high temperature. While the ERACS2-WQ exploit the well water to produce simultaneous cold and hot water dedicated to space cooling and heating, the EW-HT was the key element for the production of domestic hot water. Two additional NECS-W water cooled chillers were used to serve the air handling units.

Due to the complexity of the project and the building's different requirements, the HVAC system is managed by KlimaPRO, Climaveneta's advanced chiller plant optimisation system. Depending on the energy requests of the building and the external air temperature, the control system manages all the heat pumps, the pumps on the primary circuit and those for the ground water extraction, always activating the best combination of units in order to ensure the highest system performance all year round.

“Experience is by far the best proof”

Sir Francis Bacon
British Philosopher (1561 - 1626)

Darling Walk Theatre

2011 Darling Harbour - Australia

Application: Theatres

Cooling capacity: 224 kW

Heating capacity: 240 kW

Installed machines:
1x NECS-WQ



Aqualux Bardolino

2011 Bardolino - Italy

Application: Hotel and resorts

Cooling capacity: 1469,4 kW

Heating capacity: 1027 kW

Installed machines: 2x ERACS2-WQ
1902, 1x TECS2-W LC 0511
Designer: Studio Tecnico Carlini



CEIBS - China Europe International Business School

2012 Beijing China

Application: School / University

Cooling capacity: 4230 kW

Heating capacity: 4700 kW

Installed machines: 6x air cooled
screw heat pumps with partial and
total heat recovery



Hospital De Talca

2012 Talca - Chile

Application: Healthcare/Hospitals

Cooling capacity: 5800 kW

Heating capacity: 4800 kW

Installed machines: 4x RECS-W,
2x RECS-W, 2x FOCS2-W/CA H,
2x NECS-N-ST, 2x NECS-N-ST,
2x AW 29, 1x AW, 3x AX 3x HCAT



Pnera Beach Hotel

2012 Paralimni - Cyprus

Application: Hotel and resorts

Cooling capacity: 611 kW

Heating capacity: 643 kW

Installed machines:
1x FOCS-WNR/S



Samaranch Memorial Hall

2013 Tianjin - China

Application: Institutions

Cooling capacity: 1580 kW

Heating capacity: 1400 kW

Installed machines:
2x ERACS-WQ 2602



Coming from over 40-year experience in providing high efficiency and sustainable solutions for residential and commercial applications, EW-HT is just the latest innovation in Climaveneta's comprehensive range of heat pumps. More than one thousand prestigious projects all over the world are the best proof of the company's experience in these kinds of applications.

Porta Nuova Bosco Verticale

2011 Milan - Italy

Investor: Hines

Application: Office Buildings

Installed machines:

4x ERACS2-WQ 2152

Certifications: LEED Gold



Domaine de Manville

2013 Les Baux de Provence - France

Application: Hotel and resorts

Cooling capacity: 380 kW

Heating capacity: 396 kW

Installed machines:

1x ERACS2-Q/XL 1762



BNP Paribas

2013 Nice - France

Investor: BNP Paribas

Application: Bank Offices

Cooling capacity: 142 kW

Heating capacity: 159 kW

Installed machines:

2x NECS-Q/B 0604



B4E Boulogne Billancourt

2013 Boulogne - France

Application: Mixed-Use Development

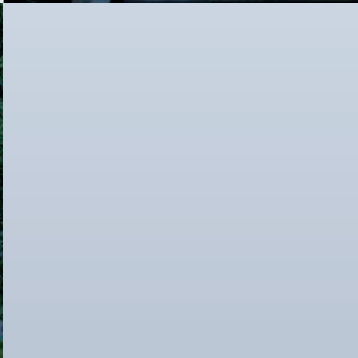
Cooling capacity: 1200 kW

Installed machines:

2x ERACS-Q/SL

Certifications: BREEAM

Excellent



Sheraton Mirage Resort

2013 Gold Coast - Australia

Investor: Sheraton Hotel Group

Application: Hotel and resorts

Cooling capacity: 3000 kW

Installed machines:

2x TECS2, 1x ERACS-W,

1x ClimaPRO



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