

MITSUBISHI ELECTRIC HYDRONICS & IT COOLING SYSTEMS S.p.A.

COMFORT

UNITS FOR SIMULTANEOUS AND INDEPENDENT PRODUCTION OF HOT AND COLD WATER

INTΣGRA

UNITS FOR 4-PIPE SYSTEMS, AIR AND WATER
SOURCE, WITH SCROLL, SCREW AND INVERTER
SCREW COMPRESSORS,
FROM 33 TO 1125 kW



WHEN COMBINING PERFECT COMFORT AND MAXIMUM, EFFICIENCY IS THE BIGGEST CHALLENGE

Modern mixed-use buildings, shopping centres, large business centres, hotels, swimming pools, and wellness centres are characterised by increasingly complex comfort requirements.

Many years of experience in these applications has led Climaveneta to develop its own solution to the main challenges posed by these structures, without making any compromises:





SIMULTANEOUS HEATING AND COOLING

Due to the fact that in a single building there are areas dedicated to different functions with very variable heat loads, combined with a large percentage of glass surfaces, the simultaneous demand for heating and cooling during the year is increasingly common.



GROWING ATTENTION TO COMFORT

The need to guarantee ideal temperature, humidity, and air quality conditions throughout the year means that system solutions must be provided in order to offer a zero-compromise answer for the comfort requirements of different users.



CHALLENGING ENERGY EFFICIENCY AND SUSTAINABILITY TARGETS

Reduced investment and operating costs, respect for progressively stricter regulatory restrictions, attention to environmental impact, and use of renewables are increasingly vital factors not only for the value of the property but also for the feasibility of carrying it out.



AMBITIOUS ARCHITECTURAL SOLUTIONS

Innovative concepts and a systematic quest for excellence push technology and materials to the limit, in order to guarantee excellent usability of the building and strong visual characterization, as well as zero-compromise on the aesthetic front.



MULTI-USE UNITS ARE THE MOST EVOLVED SOLUTION FOR 4-PIPE SYSTEMS



Maximum comfort, simultaneous hot and cold water production, unbeatable energy and system efficiency. The advantages of the INTEGRA all-in-one units installed in a 4-pipe system are limitless.

MAXIMUM ENERGY EFFICIENCY



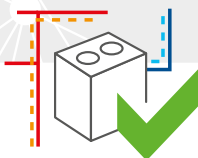
The construction approach that characterizes Climaveneta multi-use units has been designed to maximize their usefulness. The maximum efficiency of the system is reached with simultaneous loads, the energy produced is used to satisfy the hot and cold demands of the total system. In modern buildings with opposite overlapping thermal loads, the INTEGRA units are the greenest and most efficient solution compared to any other.

SELF-ADAPTABILITY WITH SIMULTANEOUS LOADS



Thanks to their advanced control logic, multi-use units are always able to respond to building climate control requirements, especially if overlapping loads occur. The unit can independently produce cooling and heating simultaneously, according to the actual needs.

SYSTEM SIMPLIFICATION



The use of a unit that independently produces both heating and cooling eliminates the need for separate heating and cooling resources.

This significantly simplifies the system: plant areas are reduced, hydronic circuits are simplified, maintenance is reduced by half, and control is rationalized.

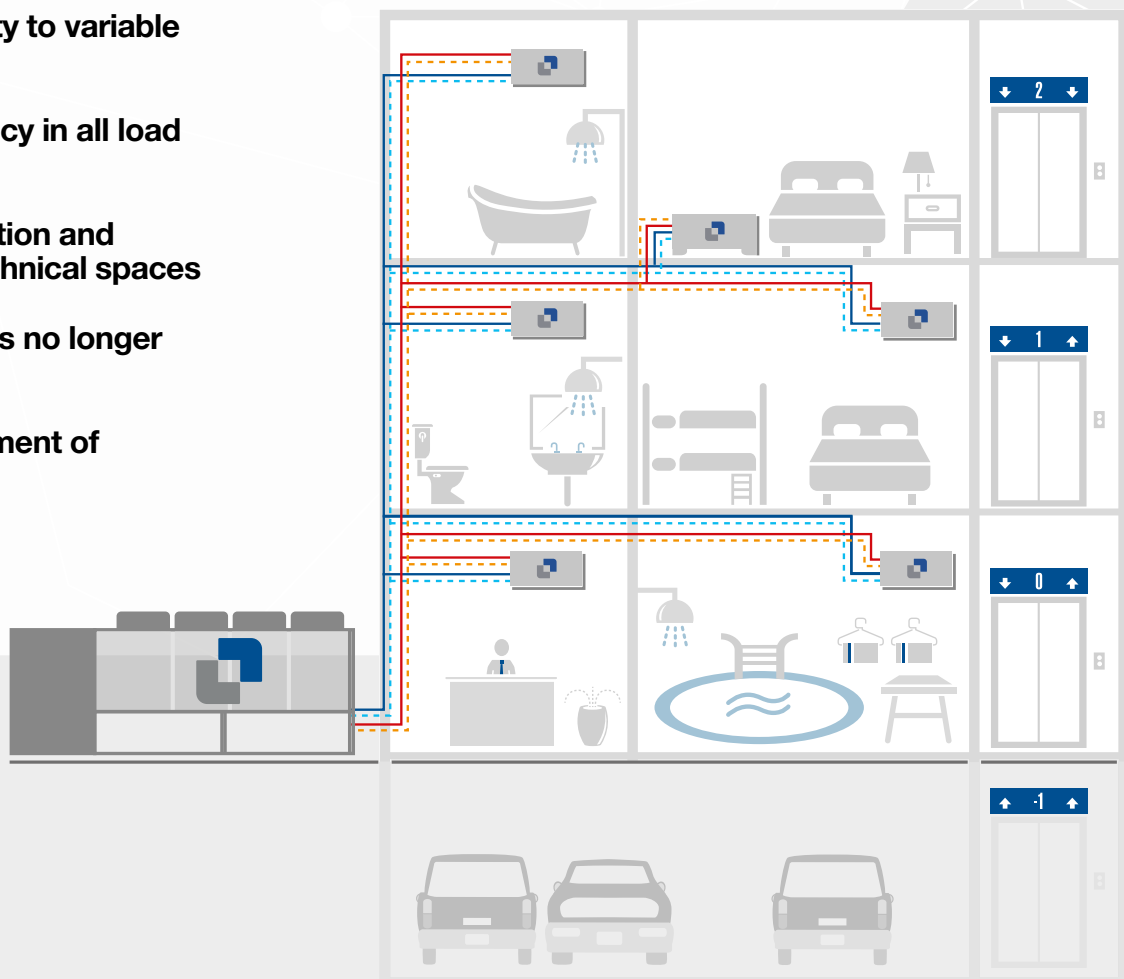
REDUCTION OF ON-SITE OPERATIONS



A simplified system results in a significant reduction in the operations to be carried out on site. In fact, it is no longer necessary to connect it to the gas network, install and commission auxiliary boilers, or manage areas to be used for conventional heating units. This means substantial savings in terms of time and cost for the client.

THE VERSATILE AND MULTI-FUNCTIONAL HEAT PUMP FOR COMFORT APPLICATION

- ✓ Auto adaptability to variable loads
- ✓ Highest efficiency in all load conditions
- ✓ Plant simplification and reduction of technical spaces
- ✓ A gas network is no longer needed
- ✓ Smart management of thermal energy



IDEAL FOR

Mixed-use buildings

Environments with complex and variable thermal loads

Residential applications

Areas with large glass surfaces

To cool and simultaneously heat mixed-use environments is a frequent trend in the building and constructions segment. In these cases, the use of a smart INTEGRA heat pumps is key for producing hot and cold water simultaneously and independently, matching any kind of load combinations whilst ensuring optimal comfort and highest energy efficiency all year long.

TOTAL EFFICIENCY RATIO TER

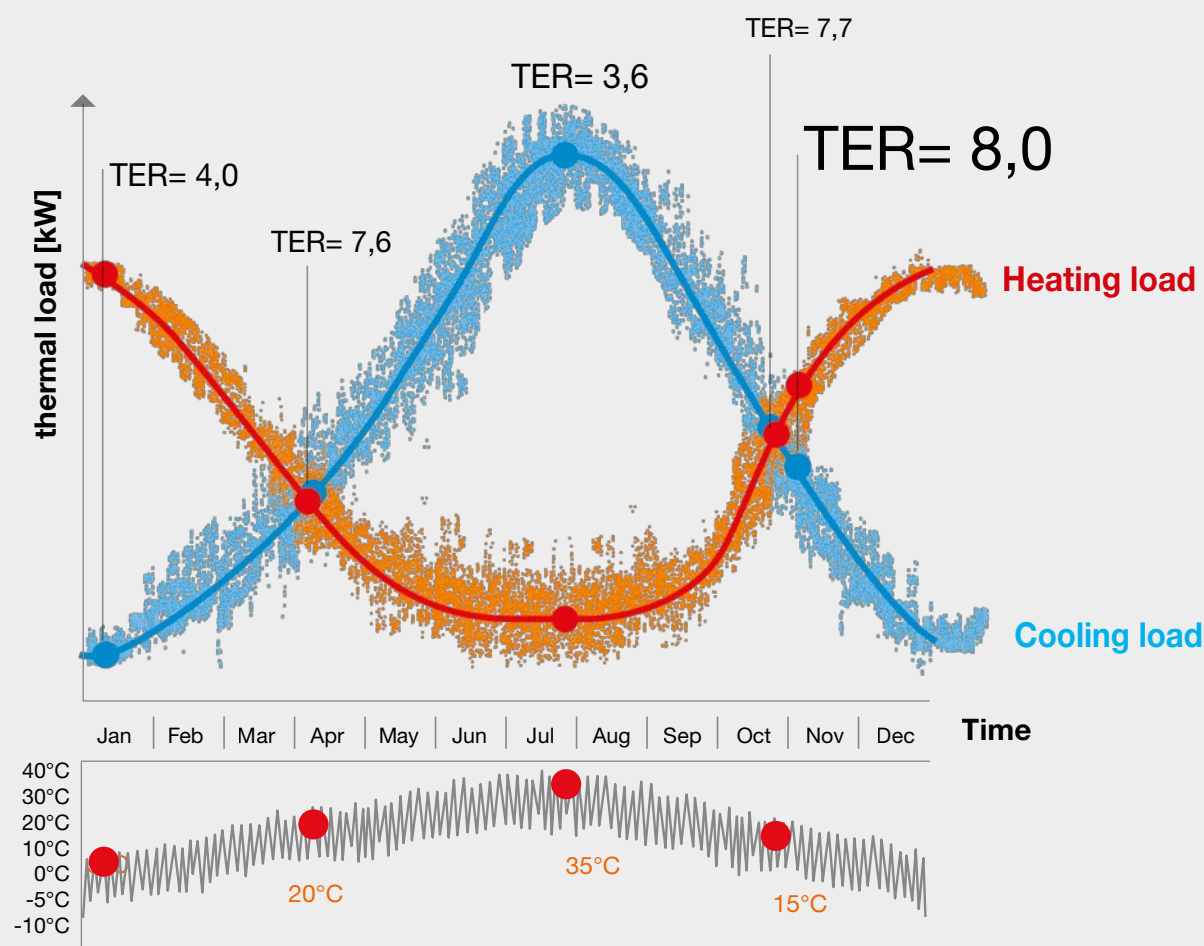
COOLING
POWER

+

HEATING
CAPACITY

POWER CONSUMPTION

In all cases in which INTEGRA simultaneously produces cold and hot water, the real efficiency of the unit is the sum of the performance in hot and cold water production.



Using traditional ratings such as EER and COP to measure efficiency of 4-pipe units would be limiting.

To objectively measure performance under simultaneous load conditions, Climaveneta, a pioneer in the development of this technology, has conceived TER - total efficiency ratio.

The TER is calculated as the ratio between the sum of the delivered heating and cooling power and electrical power input.

Considered today the most effective way of representing the real efficiency of the unit, the TER reaches its maximum value when the loads are completely balanced.

THE MOST PRECISE WAY TO MEASURE EFFICIENCY

Completely integrated functions and maximum performance synergy require an advanced measurement rating for the total efficiency of the unit:

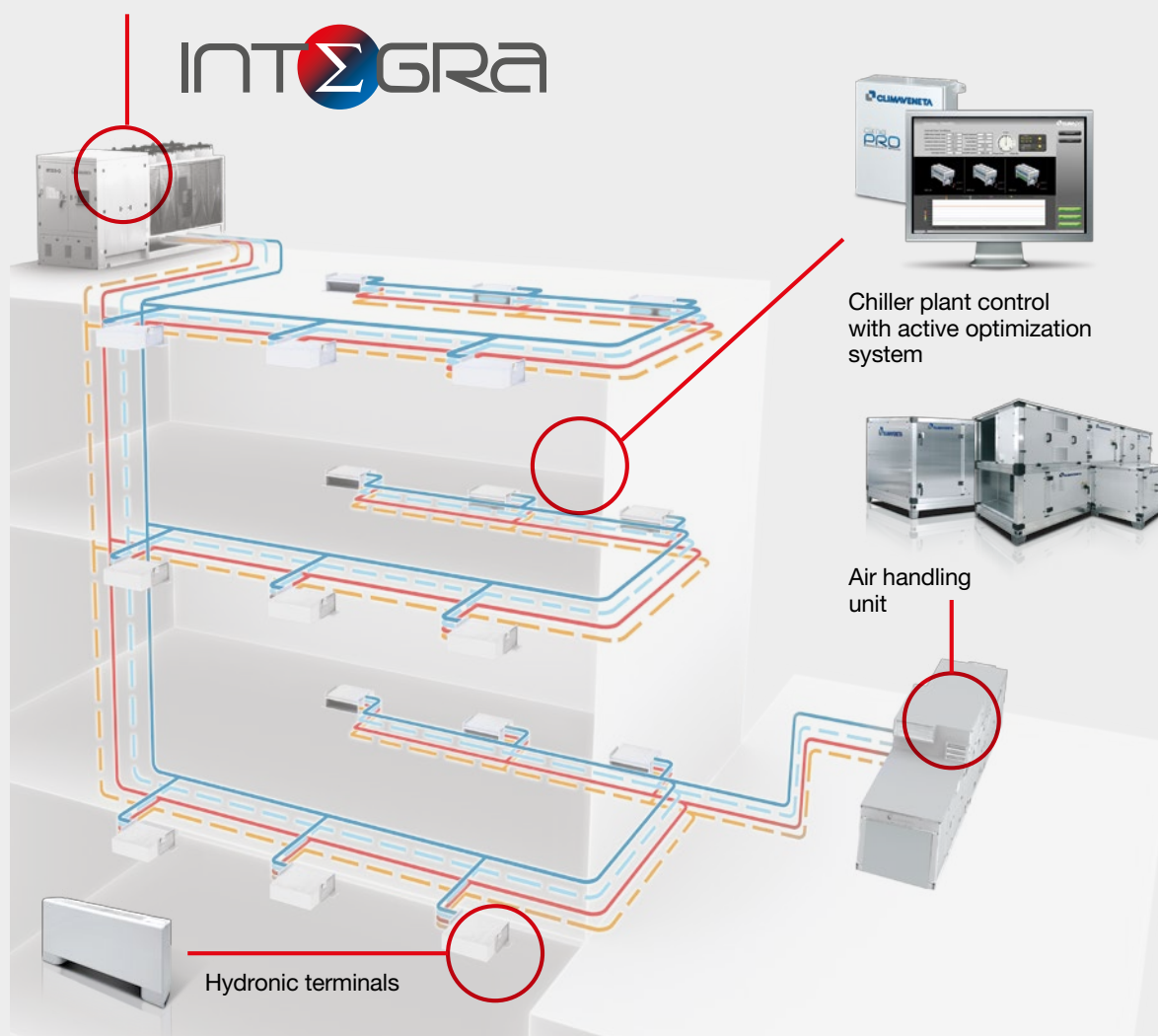
TER - Total Efficiency Ratio.

FOCUS ON: 4-PIPE SYSTEMS

This type of system is suitable for air-conditioning in buildings that require separate areas to be heated and cooled at the same time.

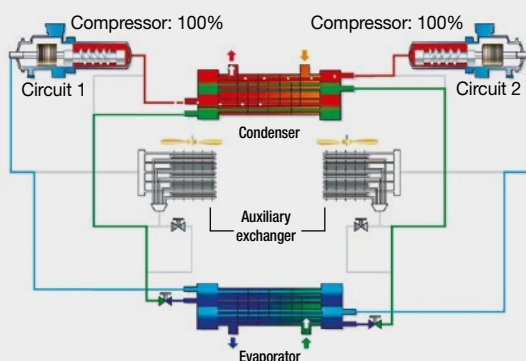
It is combined with centralized solutions capable of producing hot and cold water in the two hydronic circuits of the system, assuring maximum comfort in every room of the building, independently and in any period of the year.

From today, a single intelligent unit is sufficient for the management of these complex systems: INTEGRA.

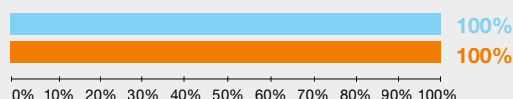




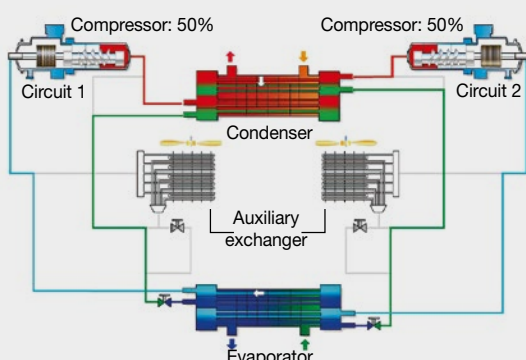
The main feature of INTEGRA units is the ability to manage the overall capacity, which refers to both cooling and heating demands, based on the actual load requirements of the total system. The operational flexibility is total: all combinations of heating and cooling loads can be met.



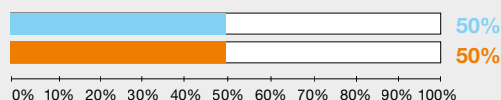
100% cold side / 100% hot side



The two circuits operate at maximum power, evaporating in the cold-side exchanger and condensing in the hot-side one. The source-side heat exchanger (air coil or water exchanger, depending on the type of unit) is not used, which means that in these conditions there is no energy waste.

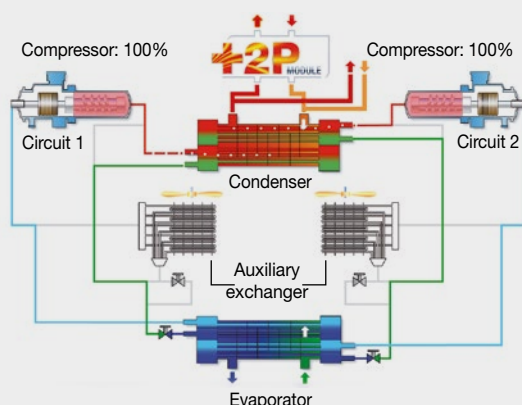


50% cold side / 50% hot side

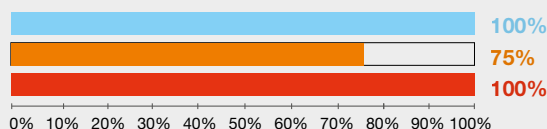


Also in this situation the unit operates like a water-water unit, as all the evaporating and condensing energy is used for the system. Since the system only requires 50% of the total energy, each circuit operates in partial load conditions. In this particular state, the exchangers are oversized, thus achieving an even higher efficiency.

OPERATING MODES WITH



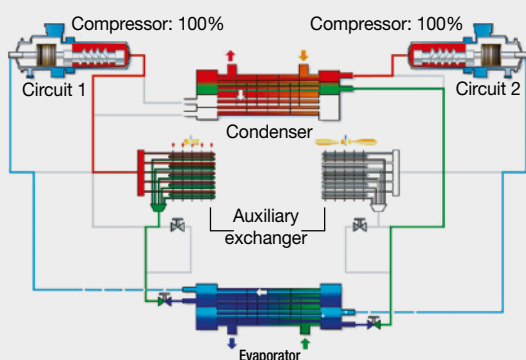
100% cold side 75% hot side 100% very hot side



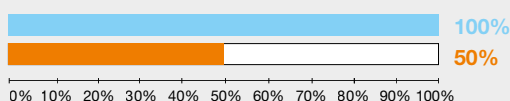
In this state, both the compressors operate at full load in order to meet the demands of the plant. Both circuits evaporate all the refrigerant in the cold-side heat exchanger and condense in the hot-side one, so the auxiliary source-side heat exchanger is not used. Part of the hot temperature water flow produced in the hot-side heat exchanger is used by the +2P module to produce very hot water (up to 78°C).

OPERATING MODE

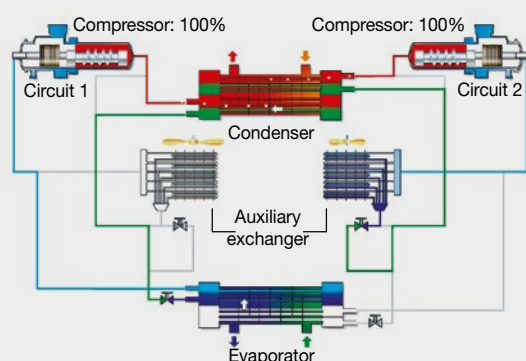
The multi-purpose units are therefore a simple and integrated response for all applications that require simultaneously and independently a hot and a cold load, such as the air conditioning of large plant with complex loads. The following are four of the many possible modes of operation of INTEGRA units.



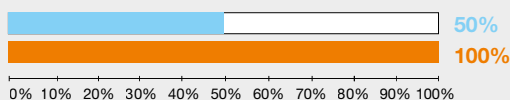
100% cold side / 50% hot side



Both the circuits operate to produce the amount of energy necessary for the cooling of the plant, evaporating all the refrigerant in the cold-side heat exchanger. While one circuit carries out the condensation on the hot-side heat exchanger, thus supplying the total energy necessary to heat the building, the other circuit exchanges the remaining heating energy in the external environment by using the auxiliary source-side heat exchanger (air coil or water exchanger, depending on the type of unit).

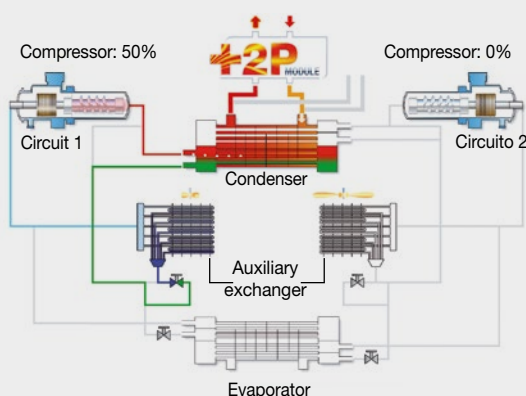


50% cold side / 100% hot side

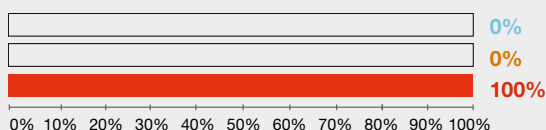


Just like the previous case, in this state both circuits operate differently, to supply the system with the correct amount of required energy. The unit uses two sources to produce the requested hot water flow: in fact, one circuit evaporates the refrigerant in the cold-side heat exchanger, thus producing the cold water demand, while the other circuit uses the auxiliary source-side heat exchanger. In this way both circuits move energy through the hot-side heat exchanger, fulfilling the request for hot water flow.

With the +2P module option, INTEGRA units can simultaneously and independently fulfill 3 different thermal loads (cold, hot and very hot water). The following operating modes are two working examples of INTEGRA units with a +2P module fitted in.



0% cold side 0% hot side 100% very hot side



This particular state, shows the flexibility of the INTEGRA units with a +2P module: even in the case of no thermal loads (neither cooling, nor heating) requested by the plant, the unit can still provide the very hot water if necessary.

In this case, only one circuit is operating partially in order to provide the right amount of hot water needed by the +2P module. A +2P module can produce very hot water (up to 78°C).

ALL-ROUND SUSTAINABILITY



Increasing concerns about the global warming impact of chillers and heat pumps is driving new regulatory policies to push towards even more efficient units with the lowest carbon footprint.

Today, an all-round approach is the only way to effectively reduce the Total Equivalent Warming Impact (TEWI).

Fully committed to support the creation of a greener tomorrow, Mitsubishi Electric Hydronics & IT Cooling Systems designed a complete range with reduced environmental impact, optimized for R513A refrigerant.

Combining brilliant annual efficiency with the use of a low GWP refrigerant, INTEGRA units tackle both the indirect (due to primary energy consumption) and the direct global warming, thus resulting in the perfect choice for any new, forward-looking cooling system.



LOW GWP

-56% GWP vs R134a



Non-flammable

Safety Class A1

REFRIGERANT BENCHMARK

SCROLL

Refrigerant	GWP*	Flammability**
 R410A	2088	NON flammable
 R32	675	MILDLY flammable
 R454B	466	MILDLY flammable
 R452B	698	MILDLY flammable

SCREW

Refrigerant	GWP*	Flammability**
 R134a	1430	NON flammable
 R513A	631	NON flammable
 1234ze	7	MILDLY flammable
 1234yf	4	MILDLY flammable

New regulations like the EU F-gas and the Kigali Amendment to the Montreal Protocol, are driving the industry towards new eco-friendly refrigerants, with reduced greenhouse effect.

Unfortunately, the majority of low GWP refrigerants raises another critical issue: flammability.

The new refrigerant R513A, is a brilliant exception: it offers a -56% GWP reduction compared to R134a's while ensuring complete non-toxicity and non-flammability (Class A1 of ASHRAE 34, ISO 817).

*IPCC AR4 **ASHRAE 34 - ISO 817

AIR SOURCE

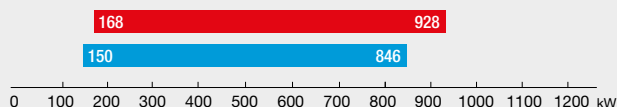
AIR SOURCE UNITS

i-FX-Q2 / i-FX-Q2-G05 / NX-Q / i-NX-Q / NECS-Q / ERACS2-Q / ERACS2-Q-G05



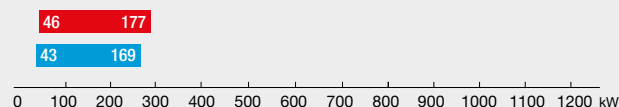
SCROLL NECS-Q

Air source 4-pipe heat pump with scroll compressors



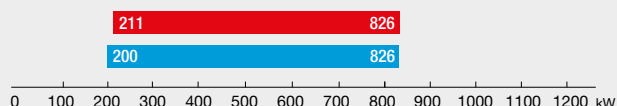
SCROLL NX-Q

Air source 4-pipe heat pump with scroll compressors



SCREW ERACS2-Q

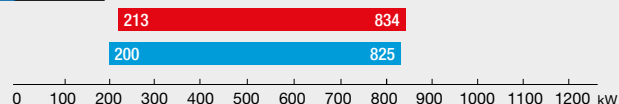
Air source 4-pipe heat pump with screw compressors



SCREW

ERACS2-Q-G05

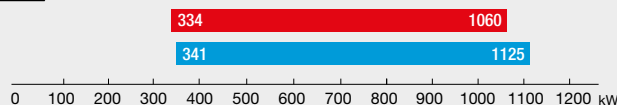
Air source 4-pipe heat pump with screw compressors and R513A refrigerant



SCREW

i-FX-Q2

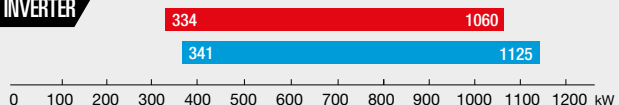
Air source 4-pipe heat pump with full inverter screw compressors



SCREW

i-FX-Q2-G05

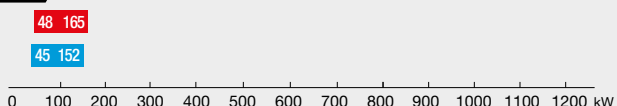
Air source 4-pipe heat pump with full inverter screw compressors and R513A refrigerant



INVERTER

i-NX-Q

Air source 4-pipe heat pump with full inverter scroll compressors



WATER SOURCE

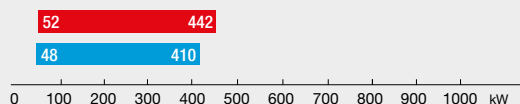
WATER SOURCE UNITS

NECS-WQ / ERACS2-WQ / ERACS2-WQ-G05

SCROLL

NECS-WQ

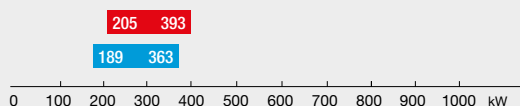
Water source 4-pipe heat pump with scroll compressors



SCREW

ERACS2-WQ

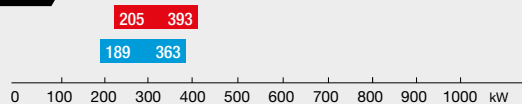
Water source 4-pipe heat pump with screw compressors



SCREW

ERACS2-WQ-G05

Water source 4-pipe heat pump with screw compressors and R513A refrigerant





FULL INVERTER TECHNOLOGY THE HIGHEST ENERGY EFFICIENCY, ALWAYS.

The inverter technology with continuous variable speed shows its advantages particularly when applied to multi-purpose units.



i-FX-Q₂ / i-NX-Q

The new inverter driven i-FX-Q₂ and i-NX-Q units always reach higher efficiencies than fixed speed units, with any combination of cold / hot load, and in any season.

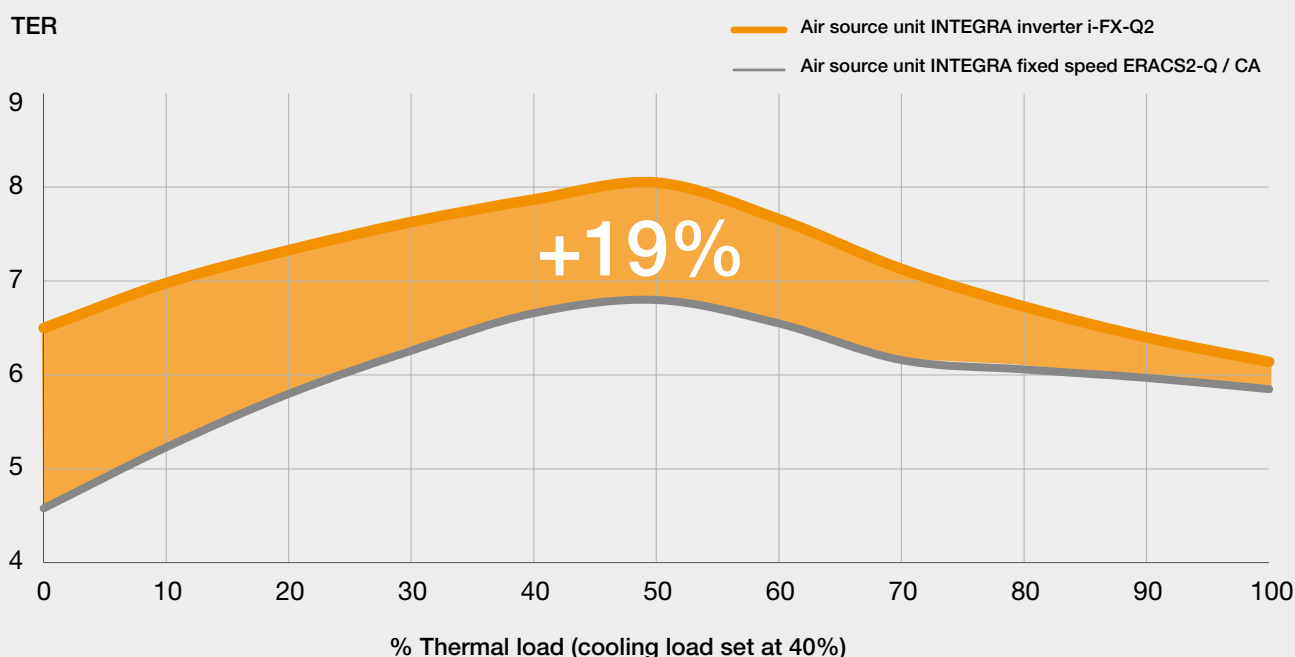
The presence of Variable Speed Drive (VSD) compressors allows the INTEGRA unit, i-FX-Q₂ and i-NX-Q to effectively follow each combination of thermal loads required by the system, with increasingly higher TER efficiencies (up to 19%) compared to those units with fixed speed compressors.

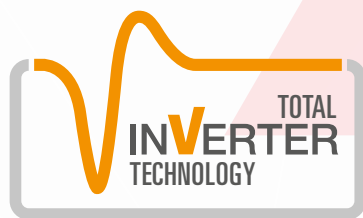
Cooling load [%](*)	Thermal load [%](*)	Median increase in TER VSD vs. fixed speed
0%	0%-100%	+14%
20%	0%-100%	+18%
40%	0%-100%	+19%
60%	0%-100%	+17%
80%	0%-100%	+9%
100%	0%-100%	+5%
Average value		+14%



The comparison was made between an INTEGRA ERACS-Q /CA air source unit with fixed speed screw compressor and an i-FX-Q₂ one with VSD screw compressors.

* Load refers to the maximum cooling capacity of the unit in the following conditions:
 Evaporator water (in / out) = 12/7 ° C
 Condenser water (in / out) = 40/45 ° C
 Air room temperature = 15 ° C





FULL INVERTER TECHNOLOGY THE HIGHEST ENERGY EFFICIENCY, ALWAYS.



UNBEATABLE EFFICIENCY AT PARTIAL LOADS

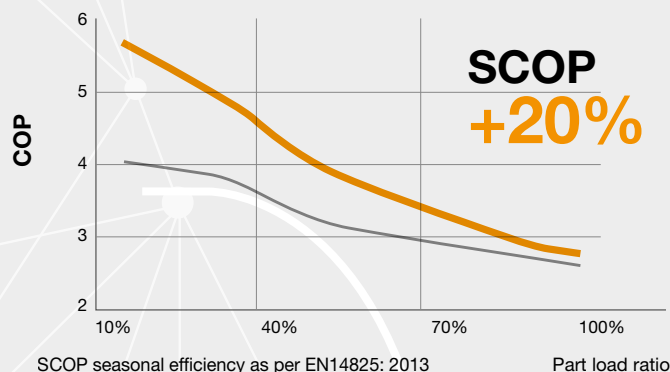
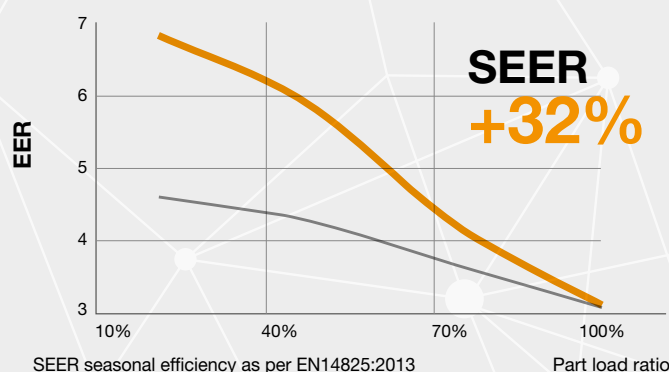
In traditional comfort applications the HVAC plant usually works at full load only for few hours every year. Most of the time the unit works at partial loads.

It is in this situation that the efficiency achieved by the units with inverter technology is much higher than traditional fixed speed units:

SCOP up to +20%

SEER up to +32%

The minimum efficiency requirements of the EU regulation, ErP 2009/125 / EC, are also pinpointed in TIER 2021



— Air units INTEGRA inverter i-FX-Q2

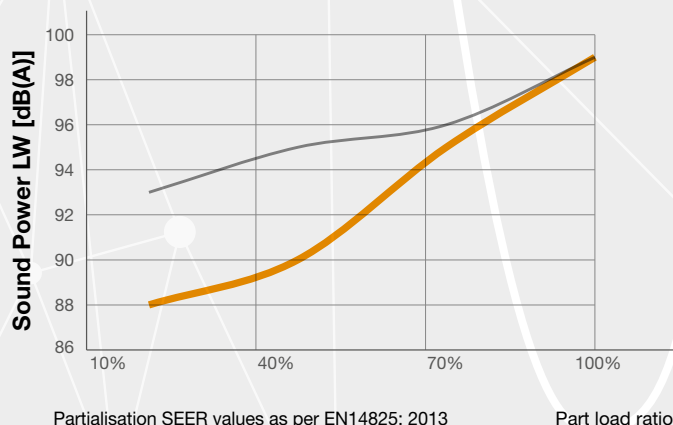
— Air units INTEGRA fixed speed ERACS2-Q / CA

HIGHEST ACOUSTICAL COMFORT

The more you increase the partialisation activity the lower your sound emissions will be, thanks to capacity of inverter technology to continually modulate the compressor rotation. Most of the time the units are characterized by lower capacities compared to fixed speed compressor units, this always ensures the highest acoustical comfort.

The sound emissions can be further reduced thanks to dedicated versions and a vast array of accessories.

Sound Power of the two units partialisation



— Air source units INTEGRA inverter i-FX-Q2

— Air source units INTEGRA fixed speed ERACS2-Q / CA

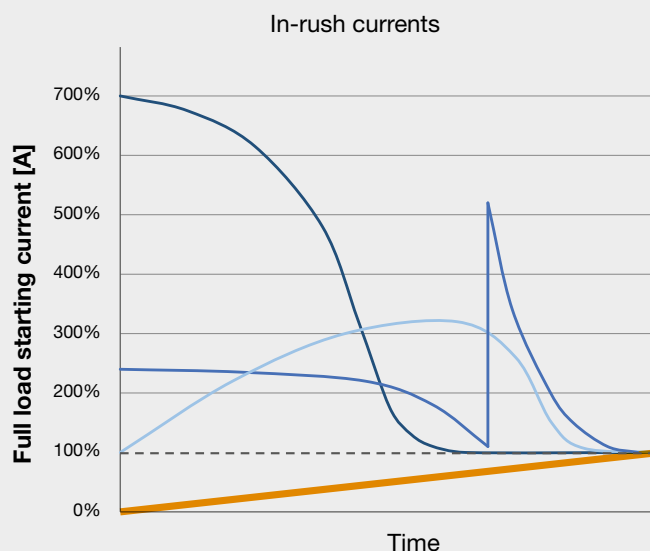
i-FX-Q₂

i-NX-Q

NO IN-RUSH CURRENT

The inverter technology involves a start-up phase with very low in-rush current, lower than any other mode (direct start, star / delta, part winding or soft start). The absence of sudden peaks and abrupt changes in the starting torque, in addition to eliminating possible disturbances to the electricity power network, reduces the stress to zero on the electrical components and improves the reliability of the system.

The frequency converters chosen by Climaveneta are characterized by values of Displacement Power Factor of between 0.97 and 0.99. The resulting unit power factor at rated nominal operating conditions is always higher than that of similar technology without an inverter unit. The need to install power factor correction devices of the loads is therefore reduced.

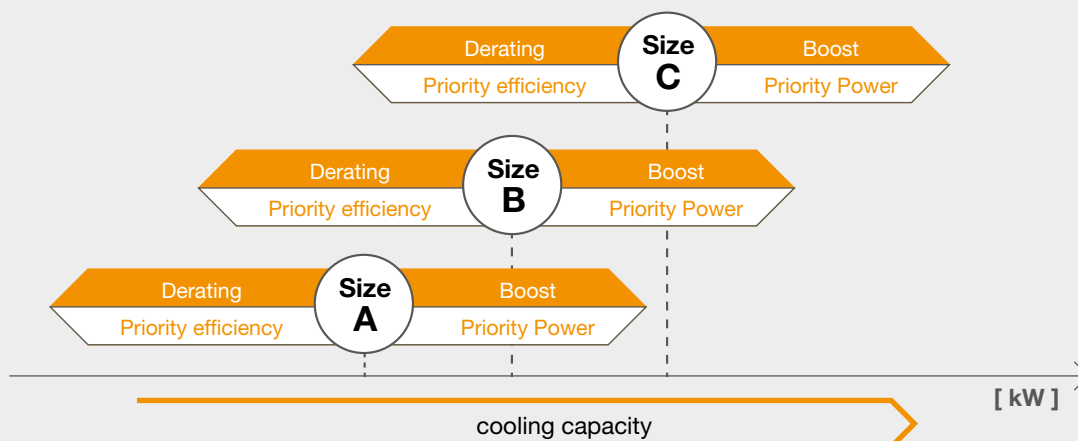


— direct on line — soft starter
— star delta — frequency converter

FLEXIBILITY IN SELECTING UNITS

Thanks to specific technical solutions and proprietary control functions, Climaveneta's inverter units can be selected at various speed conditions, which is different from the nominal ones.

Whatever the needs to be met: maximum operating efficiency, reducing the initial investment, future power increase of the plant, it is always possible to identify the most suitable units.



INTEGRa

i-NX-Q

**4-PIPE AIR SOURCE UNIT WITH
INVERTER-DRIVEN SCROLL COMPRESSORS.
COOLING CAPACITY FROM 44,7-152 KW**



SEER +22%
SCOP +13%

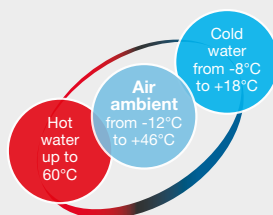
VERSIONS:

Standard

SL Super-low noise version

i-NX-Q is the new multi-purpose outdoor unit featuring scroll compressors with full inverter technology.

The unit satisfies the demand for hot and cold water simultaneously through a system consisting of two completely independent circuits. The system does not require seasonal switching and is therefore a valid alternative to traditional plants with chillers and boilers.



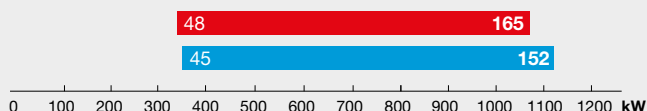
Wide operating range

The extended working range ensures the unit's operation all year-round, with temperatures ranging from -15°C to +46°C, and leaving water temperatures up to 60°C even in the summer, down to -10°C in the winter.



The highest configurability

Thanks to the flexible selection of the unit, two acoustic versions available, and a wide range of dedicated accessories, i-NX-Q represents the ideal solution for the most demanding application requirements.



Main accessories:

- Variable speed hydronic kit (constant or variable flow)
- EC fans
- Night Mode



Full inverter technology

i-NX-Q is equipped with two inverter scroll compressors installed in two independent circuits, for a better operating flexibility and the highest efficiency at any load condition.



Compact design

i-NX-Q features a rational design and a compact structure which is 8% smaller than other traditional units with inverter scroll compressors. This new layout ensures a fast and easy installation, even for small surface spaces.

KIPlink, the keyboard in your pocket

KIPlink is the innovative system that allows you to directly control the unit via smartphone or tablet through the QR code and using the Wi-Fi directly installed in the equipment.

Thanks to dedicated visuals and graphics, KIPlink allows the user to directly access the same functions as with a traditional keyboard. KIPlink is installed as standard in all i-FX-Q₂ units, as option in i-NX-Q units.

INTEGRAL

i-FX-Q₂

4-PIPE AIR SOURCE UNIT, INVERTER-DRIVEN SCREW COMPRESSORS AND EC FANS. COOLING CAPACITY FROM 341-1125 kW



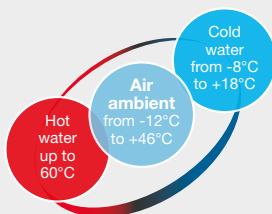
VERSIONS:

CA Class A Efficiency

SL-CA Super Low noise, Class A Efficiency

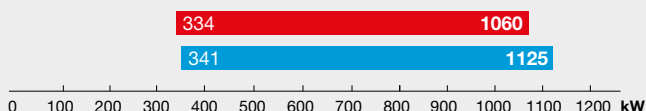
XL-CA Extra Low noise, Class A Efficiency

i-FX-Q₂ is a multi-purpose outdoor unit able to simultaneously produce chilled and hot water by means of two independent hydronic circuits. Thanks to the full inverter technology of the screw compressors and the EC fans, these units effectively follow each combination of thermal loads, always providing the exact thermal energy required by the system. This results in top-level efficiency values and very low energy consumption throughout the year, whatever the cooling mode and the weather condition.



Extended working range

An extended working range which ensures the working operation of the unit all year long and in any working mode.



Main accessories:

- ▶ "LT" kit for working down to -12°C in heat pump mode
- ▶ NOISE REDUCER (only on not silenced versions)
- ▶ Special fan diffusers
- ▶ Thicker soundproofing cladding
- ▶ Hydronic group
- ▶ VPF (Variable Primary Flow) system
- ▶ Set-up for remote connectivity with
- ▶ ModBus, Echelon, Bacnet, Bacnet over-IP.
- ▶ Touch Screen visual display
- ▶ Leak detector



Full inverter technology

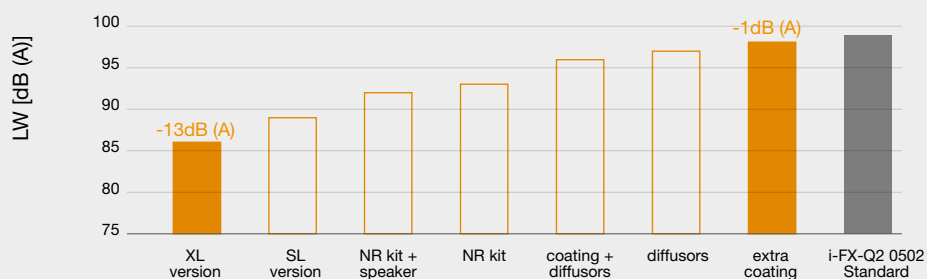
Independent circuits with screw compressors inverters and EC standard fans.



GREEN refrigerant

Use of innovative green refrigerants, with minimal environmental impact (very low GWP).

ACOUSTICAL CONFIGURATIONS



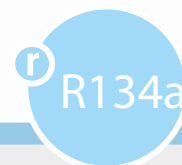
Super silent

Up to 8 different acoustic casings for a total sound emission control (of -1dB (A) up to -13 dB (A) compared to the standard configuration).



i-FX-Q₂

Air source 4-pipe heat pump with
full inverter screw compressors



i-FX-Q2 CA			0502	0532	0602	0652	0702	0802	0902	1002	1102
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											
PERFORMANCE MAX											
COOLING ONLY (GROSS VALUE)											
Cooling capacity	(1)(11)	kW	520,5	536,1	570,0	670,8	712,2	787,4	982,0	1048	1125
TOTAL POWER INPUT	(1)(11)	KW	173,4	174,1	181,7	220,9	229,8	251,4	331,2	342,7	395,2
EER	(1)(11)	kW/kW	3.002	3.079	3.137	3.037	3.099	3.132	2.965	3.058	2.847
Water flow		l/s	24,89	25,64	27,26	32,08	34,06	37,65	46,96	50,12	53,78
Pressure drop at the heat exchanger		KPa	46,5	52,6	32,5	46,4	48,6	29,0	45,7	47,8	55,5
COOLING ONLY (EN14511 VALUE)											
Cooling capacity	(1)(2)(11)	kW	518,6	533,9	568,5	668,4	709,6	785,6	978,8	1044	1121
EER	(1)(2)(11)	kW/kW	2.960	3.030	3.100	2.990	3.050	3.100	2.930	3.020	2.810
HEATING ONLY (GROSS VALUE)											
Total heating capacity	(3)(11)	kW	491,9	491,9	525,7	637,5	678,1	757,2	930,6	978,9	1060
Total power input	(3)(11)	kW	146,7	146,7	153,6	187,6	197,6	215,5	282,2	298,9	318,9
COP	(3)(11)	kW/kW	3.353	3.353	3.423	3.398	3.432	3.514	3.298	3.275	3.324
WATER FLOW	(3)(11)	L/S	23,74	23,74	25,38	30,77	32,73	36,55	44,92	47,25	51,17
Pressure drop at the heat exchanger	(3)(11)	kPa	25,9	25,9	21,4	31,3	34,6	32,2	48,6	38,8	32,6
HEATING ONLY (EN14511 VALUE)											
TOTAL HEATING CAPACITY	(2)(3)(11)	kW	493,0	493,0	526,7	639,1	680,0	759,1	933,9	981,7	1063
COP	(2)(3)(11)	kW/kW	3.340	3.340	3.410	3.380	3.410	3.490	3.270	3.250	3.310
COOLING WITH TOTAL HEAT RECOVERY											
Cooling capacity	(4)(11)	kW	527,3	539,2	571,2	676,3	708,6	784,8	991,2	1054	1145
Total power input	(4)(11)	kW	152,0	154,9	160,9	192,8	201,4	221,3	286,0	299,7	327,9
Recovery heat exchanger capacity	(4)(11)	kW	670,2	684,8	722,4	857,5	897,9	992,8	1260	1336	1453
TER	(4)(11)	kW/kW	7.882	7.902	8.042	7.956	7.974	8.034	7.871	7.978	7.923
SELECTION RATED											
COOLING ONLY (EN14511 VALUE)											
Cooling capacity	(1)(2)(10)	kW	485,9	529,2	568,5	624,8	686,6	785,6	912,3	982,3	1079
EER	(1)(2)(10)	kW/kW	3.100	3.100	3.100	3.100	3.100	3.100	3.140	3.120	2.970
HEATING ONLY (EN14511 VALUE)											
Total heating capacity	(2)(3)(10)	kW	459,5	487,4	526,7	594,0	654,1	759,1	864,6	930,9	1020
COP	(2)(3)(10)	kW/kW	3.420	3.380	3.410	3.450	3.430	3.490	3.440	3.480	3.460
COOLING WITH TOTAL HEAT RECOVERY (EN14511 VALUE)											
Cooling capacity	(4)(10)	kW	487,0	531,0	569,0	622,0	680,3	782,5	911,8	984,4	1098
Total power input	(4)(10)	kW	140,0	154,2	163,8	178,3	197,6	225,3	265,0	281,1	316,6
Recovery heat exchanger capacity	(4)(10)	kW	618,8	676,1	723,1	789,9	866,3	994,5	1161	1249	1396
TER	(4)(10)	kW/kW	7.900	7.827	7.890	7.919	7.829	7.887	7.819	7.944	7.877
ENERGY EFFICIENCY											
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)											
Ambient refrigeration											
Prated,c	(12)	kW	-	-	-	625	687	786	912	982	1079
SEER	(12)(13)		-	-	-	5,15	5,22	5,09	4,75	4,68	4,65
Performance η _s	(12)(14)	%	-	-	-	203	206	201	187	184	183
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)											
PDesign	(5)(10)	kW	368	368	389	-	-	-	-	-	-
SCOP	(5)(10)(15)		3,98	3,98	3,94	-	-	-	-	-	-
PERFORMANCE H _S	(5)(10)(16)	%	156	156	155	-	-	-	-	-	-
Seasonal efficiency class	(17)(10)		-	-	-	-	-	-	-	-	-
EXCHANGERS											
HEAT EXCHANGER USER SIDE IN REFRIGERATION											
Water flow	(1)(10)	l/s	23,31	25,41	27,26	29,97	32,95	37,65	43,76	47,12	51,77
Pressure drop at the heat exchanger	(1)(10)	kPa	40,8	51,6	32,5	40,5	45,4	29,0	39,7	42,3	51,4
HEAT EXCHANGER USER SIDE IN HEATING											
Water flow	(3)(10)	l/s	22,13	23,47	25,38	28,61	31,49	36,55	41,61	44,81	49,14
Pressure drop at the heat exchanger	(3)(10)	kPa	22,5	25,4	21,4	27,0	32,0	32,2	41,7	34,9	30,0
REFRIGERANT CIRCUIT											
Compressors nr.	N°		2	2	2	2	2	2	2	2	2
No. Circuits	N°		2	2	2	2	2	2	2	2	2
Regulation			STEPLESS	STEPLESS	STEPLESS	STEPLESS	STEPLESS	STEPLESS	STEPLESS	STEPLESS	STEPLESS
Refrigerant			R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
Refrigerant charge	kg		230	250	279	307	338	386	410	430	430
NOISE LEVEL											
Sound Pressure	(6)(10)	dB(A)	67	67	68	69	69	68	70	70	70
Sound power level in cooling	(7)(8)(10)	dB(A)	100	100	101	102	102	101	103	103	103
Sound power level in heating	(7)(9)(10)	dB(A)	100	100	101	102	102	101	103	103	103
SIZE AND WEIGHT											
Length	(11)	mm	8150	8150	8900	9650	10400	10400	10400	11900	11900
Width	(11)	mm	2260	2260	2260	2260	2260	2260	2260	2260	2260
Height	(11)	mm	2530	2530	2530	2530	2530	2530	2530	2530	2530
Operating weight	(11)	kg	8350	8380	9080	9590	10060	11010	12310	14110	14150

Notes:

- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.
- Values in compliance with EN14511
- Plant (side) heat exchanger water (in/out) 40°C/45°C;
Source (side) heat exchanger air (in) 7°C - 87% R.H.
- Plant (side) cooling exchanger water (in/out) 12°C/7°C;
Plant (side) heat exchanger water (in/out) 40°C/45°C.
- Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 813/2013]
- Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
- Sound power on the basis of measurements made in compliance with ISO 9614.
- Sound power level in cooling, outdoors.
- Sound power level in heating, outdoors.

10 Unit performance with inverter compressor at nominal speed.

11 Unit in standard configuration/execution, without optional accessories.

12 Parameter calculated according to [REGULATION (EU) N. 2016/2281]

13 Seasonal energy efficiency ratio

14 Seasonal space cooling energy efficiency

15 Seasonal coefficient of performance

16 Seasonal space heating energy efficiency

17 Energy efficiency class referred to LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 811/2013]

The units highlighted in this publication contain R134a [GWP 1430]
fluorinated greenhouse gases.

Certified data in EUROVENT



i-FX-Q 2-G05

INTEGRA unit for 4-pipe systems, air source, VSD screw compressors and EC fans, for outdoor installation



i-FX-Q2-G05 /CA

			0502	0532	0602	0652	0702	0802	0902	1002	1102
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	400/3/50
PERFORMANCE											
PERFORMANCE MAX											
COOLING ONLY (GROSS VALUE)											
Cooling capacity	(1)(11) kW		520,5	536,1	570,0	670,8	712,2	787,4	982,0	1048	1125
TOTAL POWER INPUT	(1)(11) kW		180,4	181,2	189,0	229,8	238,9	261,5	344,9	356,6	411,4
EER	(1)(11) kW/kW		2.885	2.959	3.016	2.919	2.981	3.011	2.847	2.939	2.735
Water flow	l/s		24,89	25,64	27,26	32,08	34,06	37,65	46,96	50,12	53,78
Pressure drop at the heat exchanger	KPa		46,5	52,6	32,5	46,4	48,6	29,0	45,7	47,8	55,5
COOLING ONLY (EN14511 VALUE)											
Cooling capacity	(1)(2)(11) kW		518,6	533,9	568,5	668,4	709,6	785,6	978,8	1044	1121
EER	(1)(2)(11) kW/kW		2.840	2.910	2.980	2.880	2.940	2.980	2.810	2.900	2.700
HEATING ONLY (GROSS VALUE)											
Total heating capacity	(3)(11) kW		496,8	496,8	531,0	643,9	684,9	764,8	939,9	988,7	1071
Total power input	(3)(11) kW		152,9	152,9	160,1	195,5	205,8	224,6	294,3	311,5	332,4
COP	(3)(11) kW/kW		3.249	3.249	3.317	3.294	3.328	3.405	3.194	3.174	3.222
WATER FLOW	(3)(11) L/S		23,98	23,98	25,63	31,08	33,06	36,92	45,37	47,73	51,68
Pressure drop at the heat exchanger	(3)(11) kPa		26,5	26,5	21,9	31,9	35,3	32,9	49,6	39,6	33,2
HEATING ONLY (EN14511 VALUE)											
TOTAL HEATING CAPACITY	(2)(3)(11) kW		497,9	497,9	532,0	645,6	686,8	766,8	943,3	991,6	1074
COP	(2)(3)(11) kW/kW		3.230	3.230	3.300	3.270	3.310	3.380	3.170	3.150	3.210
COOLING WITH TOTAL HEAT RECOVERY											
Cooling capacity	(4)(11) kW		527,3	539,2	571,2	676,3	708,6	784,8	991,2	1054	1145
Total power input	(4)(11) kW		158,4	161,4	167,6	200,9	209,8	230,6	298,1	312,2	341,7
Recovery heat exchanger capacity	(4)(11) kW		676,2	690,9	728,8	865,2	905,8	1002	1271	1348	1466
TER	(4)(11) kW/kW		7.601	7.621	7.757	7.670	7.693	7.745	7.591	7.694	7.641
SELECTION RATED											
COOLING ONLY (EN14511 VALUE)											
Cooling capacity	(1)(2)(10) kW		485,9	529,2	568,5	624,8	686,6	785,6	912,3	982,3	1079
EER	(1)(2)(10) kW/kW		2.980	2.980	2.980	2.990	2.980	2.980	3.020	3.000	2.850
HEATING ONLY (EN14511 VALUE)											
Total heating capacity	(2)(3)(10) kW		464,1	492,3	532,0	600,0	660,7	766,8	873,3	940,2	1030
COP	(2)(3)(10) kW/kW		3.320	3.280	3.300	3.340	3.330	3.380	3.340	3.370	3.350
COOLING WITH TOTAL HEAT RECOVERY (EN14511 VALUE)											
Cooling capacity	(4)(10) kW		487,0	531,0	569,0	622,0	680,3	782,6	911,8	984,4	1098
Total power input	(4)(10) kW		145,8	160,6	170,6	185,8	205,7	234,7	275,9	292,7	329,6
Recovery heat exchanger capacity	(4)(10) kW		624,2	682,1	729,5	796,9	874,0	1003	1171	1260	1408
TER	(4)(10) kW/kW		7.620	7.553	7.613	7.637	7.555	7.609	7.546	7.667	7.603
ENERGY EFFICIENCY											
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)											
Ambient refrigeration											
Prated,c	(12) kW		-	-	-	625	687	786	912	982	1079
SEER	(12)(13)		-	-	-	5,08	5,12	5,02	4,73	4,66	4,63
Performance ηs	(12)(14)		-	-	-	200	202	198	186	183	182
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)											
PDesign	(5)(10) kW		372	372	393	-	-	-	-	-	-
SCOP	(5)(10)(15)		3,93	3,93	3,88	-	-	-	-	-	-
PERFORMANCE HS	(5)(10)(16)		154	154	152	-	-	-	-	-	-
Seasonal efficiency class	(17)(10)		-	-	-	-	-	-	-	-	-
EXCHANGERS											
HEAT EXCHANGER USER SIDE IN REFRIGERATION											
Water flow	(1)(10) l/s		23,31	25,41	27,26	29,97	32,95	37,65	43,76	47,12	51,77
Pressure drop at the heat exchanger	(1)(10) kPa		40,8	51,6	32,5	40,5	45,4	29,0	39,7	42,3	51,4
HEAT EXCHANGER USER SIDE IN HEATING											
Water flow	(3)(10) l/s		22,35	23,71	25,63	28,89	31,81	36,92	42,02	45,26	49,63
Pressure drop at the heat exchanger	(3)(10) kPa		23,0	25,9	21,9	27,6	32,7	32,9	42,6	35,6	30,6
REFRIGERANT CIRCUIT											
Compressors nr.	N°		2	2	2	2	2	2	2	2	2
No. Circuits	N°		2	2	2	2	2	2	2	2	2
Regulation			STEPLESS	STEPLESS	STEPLESS	STEPLESS	STEPLESS	STEPLESS	STEPLESS	STEPLESS	STEPLESS
Refrigerant			R513A	R513A	R513A	R513A	R513A	R513A	R513A	R513A	R513A
Refrigerant charge	kg		253	275	307	338	372	425	451	473	473
NOISE LEVEL											
Sound Pressure	(6)(10) dB(A)		67	67	68	69	69	68	70	70	70
Sound power level in cooling	(7)(8)(10) dB(A)		100	100	101	102	102	101	103	103	103
Sound power level in heating	(7)(9)(10) dB(A)		100	100	101	102	102	101	103	103	103
SIZE AND WEIGHT											
Length	(11) mm		8150	8150	8900	9650	10400	10400	10400	11900	11900
Width	(11) mm		2260	2260	2260	2260	2260	2260	2260	2260	2260
Height	(11) mm		2530	2530	2530	2530	2530	2530	2530	2530	2530
Operating weight	(11) kg		8350	8380	9080	9590	10060	11010	12310	14110	14150

Notes:

- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.
- Values in compliance with EN14511
- Plant (side) heat exchanger water (in/out) 40°C/45°C;
Source (side) heat exchanger air (in) 7°C - 87% R.H.
- Plant (side) cooling exchanger water (in/out) 12°C/7°C;
Plant (side) heat exchanger water (in/out) 40°C/45°C.
- Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 813/2013]
- Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
- Sound power on the basis of measurements made in compliance with ISO 9614.
- Sound power level in cooling, outdoors.
- Sound power level in heating, outdoors.

10 Unit performance with inverter compressor at nominal speed.

11 Unit in standard configuration/execution, without optional accessories.

12. Parameter calculated according to [REGULATION (EU) N. 2016/2281]

13 Seasonal energy efficiency ratio

14 Seasonal space cooling energy efficiency

15 Seasonal coefficient of performance

16 Seasonal space heating energy efficiency

17 Energy efficiency class referred to LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 811/2013]

The units highlighted in this publication contain R513A [GW fluorinated greenhouse gases.

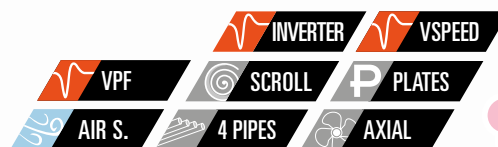
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Certified data in EUROVENT



i-NX-Q

Air source 4-pipe heat pump with full inverter scroll compressors



i-NX-Q

			0152P	0182P	0202P	0252P	0262P	0302P	0352P	0402P	0502P	0552P
Power supply			400/3+N/50									
PERFORMANCE												
COOLING ONLY (GROSS VALUE)												
Cooling capacity	(1)	kW	44,75	51,29	60,92	67,68	79,19	88,03	101,0	114,3	133,3	152,0
Total power input	(1)	kW	15,11	17,80	20,14	24,00	26,72	31,66	32,38	39,37	44,83	50,80
EER	(1)	kW/kW	2,960	2,882	3,030	2,821	2,966	2,776	3,117	2,901	2,975	2,992
COOLING ONLY (EN14511 VALUE)												
Cooling capacity	(1)(2)	kW	44,70	51,20	60,80	67,50	79,00	87,80	100,7	114,0	132,9	151,7
EER	(1)(2)	kW/kW	2,930	2,840	2,990	2,780	2,930	2,740	3,070	2,860	2,920	2,950
ESEER	(1)(2)	kW/kW	-	-	-	-	-	-	-	-	-	-
HEATING ONLY (GROSS VALUE)												
Total heating capacity	(3)	kW	48,01	55,96	66,13	73,93	85,50	95,24	108,0	122,5	143,3	164,8
Total power input	(3)	kW	14,92	17,47	20,43	23,35	25,68	29,25	31,75	36,81	42,81	49,26
COP	(3)	kW/kW	3,221	3,200	3,240	3,158	3,327	3,260	3,396	3,329	3,348	3,343
HEATING ONLY (EN14511 VALUE)												
Total heating capacity	(2)(3)	kW	48,10	56,10	66,30	74,10	85,70	95,50	108,3	122,9	143,6	165,2
COP	(2)(3)	kW/kW	3,190	3,160	3,210	3,120	3,290	3,220	3,350	3,280	3,300	3,290
COOLING WITH TOTAL HEAT RECOVERY												
Cooling capacity	(4)	kW	47,07	53,06	61,55	68,77	79,93	89,25	102,1	116,5	135,0	154,5
Total power input	(4)	kW	13,78	16,52	18,81	22,06	24,94	29,03	30,59	36,51	42,80	48,49
Recovery heat exchanger capacity	(4)	kW	60,02	68,59	79,23	89,50	103,4	116,5	130,8	150,8	175,3	200,1
TER		kW/kW	7,761	7,370	7,489	7,163	7,361	7,097	7,611	7,323	7,250	7,311
ENERGY EFFICIENCY												
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)												
PDesign	(5)	kW	32,5	39,8	47,0	52,8	64,5	71,4	81,2	91,3	107	123
SCOP	(5)(11)		3,85	3,97	3,87	3,97	3,94	3,96	4,08	4,11	4,12	4,16
Performance η_s	(5)(12)	%	151	156	152	156	155	155	160	162	162	163
Seasonal efficiency class	(13)		A++	A++	A++	A++	A++	-	-	-	-	-
EXCHANGERS												
HEAT EXCHANGER USER SIDE IN REFRIGERATION												
Water flow	(1)	l/s	2,140	2,453	2,913	3,237	3,787	4,210	4,829	5,465	6,372	7,271
Pressure drop	(1)	kPa	25,0	32,9	26,1	32,3	29,4	36,3	34,1	41,0	43,4	42,1
HEAT EXCHANGER USER SIDE IN HEATING												
Water flow	(3)	l/s	2,317	2,701	3,192	3,569	4,127	4,597	5,214	5,914	6,917	7,957
Pressure drop	(3)	kPa	29,4	39,9	31,4	39,2	34,9	43,3	39,8	48,0	51,1	50,4
REFRIGERANT CIRCUIT												
Compressors nr.		N°	2	2	2	2	2	2	2	2	2	2
No. Circuits		N°	2	2	2	2	2	2	2	2	2	2
Refrigerant charge		kg	16,4	20,6	22,2	22,6	30,6	30,8	38,4	38,8	53,2	60,0
NOISE LEVEL												
Sound Pressure	(6)	dB(A)	52	53	55	55	55	56	56	57	59	61
Sound power level in cooling	(7)(8)	dB(A)	84	85	87	87	87	88	88	89	91	93
Sound power level in heating	(7)(9)	dB(A)	84	85	87	87	87	88	88	89	91	93
SIZE AND WEIGHT												
A	(10)	mm	2000	2000	2625	2625	2625	2625	3250	3250	3875	4500
B	(10)	mm	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350
H	(10)	mm	2070	2070	2070	2070	2070	2070	2070	2070	2070	2070
Operating weight	(10)	kg	800	820	930	930	1050	1050	1290	1300	1480	1630

Notes:

- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.
- Values in compliance with EN14511
- Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Plant (side) heat exchanger water (in/out) 40°C/45°C.
- Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 813/2013]
- Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

7 Sound power on the basis of measurements made in compliance with ISO 9614.

8 Sound power level in cooling, outdoors.

9 Sound power level in heating, outdoors.

10 Unit in standard configuration/execution, without optional accessories.

11 Seasonal coefficient of performance

12 Seasonal space heating energy efficiency

13 Energy efficiency class referred to LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 811/2013]

The units highlighted in this publication contain HFC R410A [GWP₁₀₀ 2088] fluorinated greenhouse gases.

Certified data in EUROVENT





NX-Q

Air source 4-pipe heat pump with scroll compressors



NX-Q			0152P	0182P	0202P	0252P	0262P	0302P	0402P	0502P	0602P
Power supply	V/ph/Hz		400/3+N/50								
PERFORMANCE											
COOLING ONLY (GROSS VALUE)											
Cooling capacity	(1)	kW	43,9	50,8	58,1	64,0	71,6	85,5	111	138	169
Total power input	(1)	kW	12,7	14,8	17,6	19,2	22,2	25,6	33,4	42,3	56,5
EER	(1)	kW/kW	3,46	3,43	3,30	3,33	3,23	3,34	3,31	3,26	2,98
COOLING ONLY (EN14511 VALUE)											
Cooling capacity	(1)(2)	kW	43,8	50,6	57,9	63,8	71,4	85,2	110	137	168
EER	(1)(2)	kW/kW	3,41	3,38	3,26	3,28	3,18	3,29	3,27	3,21	2,94
ESEER	(1)(2)	kW/kW	4,17	4,11	4,02	4,15	3,97	4,05	4,03	3,97	3,68
HEATING ONLY (GROSS VALUE)											
Total heating capacity	(3)	kW	46,4	53,2	60,6	67,3	75,2	90,1	115	145	177
Total power input	(3)	kW	13,5	15,3	17,5	19,3	21,4	25,6	32,7	41,3	52,1
COP	(3)	kW/kW	3,44	3,48	3,46	3,49	3,51	3,52	3,52	3,51	3,40
HEATING ONLY (EN14511 VALUE)											
Total heating capacity	(2)(3)	kW	46,6	53,4	60,8	67,6	75,5	90,4	116	145	178
COP	(2)(3)	kW/kW	3,41	3,44	3,43	3,46	3,48	3,49	3,49	3,47	3,37
COOLING WITH TOTAL HEAT RECOVERY											
Cooling capacity	(4)	kW	44,0	51,1	58,9	64,3	73,1	86,9	112	140	176
Total power input	(4)	kW	11,6	13,4	15,7	17,3	19,8	23,4	30,5	39,5	50,7
Recovery heat exchanger capacity	(4)	kW	54,9	63,7	73,7	80,5	91,7	109	141	177	224
TER		kW/kW	8,53	8,57	8,45	8,37	8,32	8,37	8,28	8,01	7,90
ENERGY EFFICIENCY											
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)											
PDesign	(5)	kW	33,2	38,2	43,6	49,4	55,6	65,8	83,0	106	135
SCOP	(5)(14)		3,59	3,60	3,63	3,75	3,77	3,71	3,69	3,66	3,64
Performance η_s	(5)(15)	%	141	141	142	147	148	145	144	143	143
Seasonal efficiency class	(5)		A+	A+	A+	A+	A+	A+	-	-	-
EXCHANGERS											
HEAT EXCHANGER USER SIDE IN REFRIGERATION											
Water flow	(1)	l/s	2,10	2,43	2,78	3,06	3,42	4,09	5,29	6,59	8,06
Pressure drop	(1)	kPa	14,7	19,7	15,8	19,2	17,1	19,4	22,3	26,2	31,8
HEAT EXCHANGER USER SIDE IN HEATING											
Water flow	(3)	l/s	2,24	2,57	2,93	3,25	3,63	4,35	5,56	6,99	8,56
Pressure drop	(3)	kPa	16,7	21,9	17,5	21,6	19,3	21,9	24,6	29,5	35,9
REFRIGERANT CIRCUIT											
Compressors nr.		N°	2	2	2	2	2	2	2	2	2
No. Circuits		N°	2	2	2	2	2	2	2	2	2
Refrigerant charge		kg	20,8	22,4	22,9	30,2	30,9	37,2	53,2	64,8	66,6
NOISE LEVEL											
Sound Pressure	(6)	dB(A)	53	53	53	53	53	54	55	56	56
Sound power level in cooling	(7)(8)	dB(A)	85	85	85	85	85	86	87	88	88
Sound power level in heating	(7)(9)	dB(A)	85	85	85	85	85	86	87	88	88
SIZE AND WEIGHT											
A	(10)	mm	2625	2625	2625	2625	2625	3250	3875	4500	4500
B	(10)	mm	1350	1350	1350	1350	1350	1350	1350	1350	1350
H	(10)	mm	2070	2070	2070	2070	2070	2070	2070	2070	2070
Operating weight	(10)	kg	850	870	890	960	970	1130	1430	1670	1730

Notes:

- 1 Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.
- 2 Values in compliance with EN14511-3:2013.
- 3 Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
- 4 Plant (side) cooling exchanger water (in/out) 12°C/7°C; Plant (side) heat exchanger water (in/out) 40°C/45°C.
- 5 Seasonal space heating energy efficiency class LOW TEMPERATURE in AVERAGE climate conditions [REGULATION (EU) N. 813/2013]
- 6 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
- 7 Sound power on the basis of measurements made in compliance with ISO 9614.

8 Sound power level in cooling, outdoors.

9 Sound power level in heating, outdoors.

10 Unit in standard configuration/execution, without optional accessories.

11 Seasonal energy efficiency of the cooling environment in AVERAGE climatic conditions [REGULATION (EU) N. 2016/2281]

12 Seasonal space heating energy index

13 Seasonal energy efficiency of the space cooling

14 Seasonal performance coefficient

15 Seasonal space heating energy efficiency

The units highlighted in this publication contain HFC R410A [GWP100 2088] fluorinated greenhouse gases.

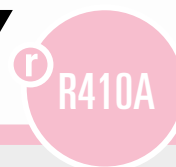
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NECS-Q

Air source 4-pipe heat pump with scroll compressors



NECS-Q / B			0604	0704	0804	0904	1004	1104	1204
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
PERFORMANCE									
COOLING ONLY (GROSS VALUE)									
Cooling capacity	(1)	kW	150	166	189	211	240	277	311
Total power input	(1)	kW	58,9	69,0	75,8	85,2	95,6	107	120
EER	(1)	kW/kW	2,54	2,41	2,49	2,48	2,51	2,58	2,58
COOLING ONLY (EN14511 VALUE)									
Cooling capacity	(1)(2)	kW	149	166	188	210	239	276	310
EER	(1)(2)	kW/kW	2,50	2,37	2,45	2,44	2,48	2,54	2,54
ESEER	(1)(2)	kW/kW							
HEATING ONLY (GROSS VALUE)									
Total heating capacity	(3)	kW	167	185	209	234	266	306	344
Total power input	(3)	kW	58,0	64,9	72,1	79,8	92,0	104	116
COP	(3)	kW/kW	2,88	2,86	2,90	2,93	2,90	2,94	2,96
HEATING ONLY (EN14511 VALUE)									
Total heating capacity	(2)(3)	kW	168	186	210	235	268	308	346
COP	(2)(3)	kW/kW	2,86	2,83	2,87	2,91	2,87	2,91	2,93
COOLING WITH TOTAL HEAT RECOVERY									
Cooling capacity	(4)	kW	151	173	194	220	246	280	317
Total power input	(4)	kW	49,8	57,1	64,5	72,1	79,8	92,8	105
Recovery heat exchanger capacity	(4)	kW	198	226	255	288	321	368	415
TER		kW/kW	7,00	6,99	6,96	7,04	7,10	6,98	6,99
ENERGY EFFICIENCY									
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)									
PDesign	(5)	kW	127	143	157	172	205	231	255
SCOP	(5)(14)		3,25	3,24	3,34	3,20	3,21	3,27	3,25
Performance η_s	(5)(15)	%	127	127	131	125	125	128	127
Seasonal efficiency class	(5)		-	-	-	-	-	-	-
EXCHANGERS									
HEAT EXCHANGER USER SIDE IN REFRIGERATION									
Water flow	(1)	l/s	7,17	7,95	9,03	10,09	11,48	13,25	14,86
Pressure drop	(1)	kPa	41,9	43,0	43,7	42,8	44,4	47,3	47,2
HEAT EXCHANGER USER SIDE IN HEATING									
Water flow	(3)	l/s	8,07	8,95	10,10	11,30	12,86	14,79	16,60
Pressure drop	(3)	kPa	56,9	59,2	61,4	61,9	66,5	65,7	67,5
REFRIGERANT CIRCUIT									
Compressors nr.		N°	4	4	4	4	4	4	4
No. Circuits		N°	2	2	2	2	2	2	2
Refrigerant charge		kg	41,0	42,0	56,0	61,0	63,0	80,0	108
NOISE LEVEL									
Sound Pressure	(6)	dB(A)	60	60	60	61	62	63	63
Sound power level in cooling	(7)(8)	dB(A)	92	92	92	93	94	95	95
Sound power level in heating	(7)(9)	dB(A)	92	92	92	93	94	95	95
SIZE AND WEIGHT									
A	(10)	mm	3110	3110	3110	4110	4110	4110	4110
B	(10)	mm	2220	2220	2220	2220	2220	2220	2220
H	(10)	mm	2150	2150	2150	2150	2150	2150	2150
Operating weight	(10)	kg	1600	1840	2120	2320	2480	2680	2860

Notes:

- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.
- Values in compliance with EN14511-3:2013.
- Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Plant (side) heat exchanger water (in/out) 40°C/45°C.
- Seasonal space heating energy efficiency class LOW TEMPERATURE in AVERAGE climate conditions [REGULATION (EU) N. 813/2013]
- Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
- Sound power on the basis of measurements made in compliance with ISO 9614.

8 Sound power level in cooling, outdoors.

9 Sound power level in heating, outdoors.

10 Unit in standard configuration/execution, without optional accessories.

11 Seasonal energy efficiency of the cooling environment in AVERAGE climatic conditions [REGULATION (EU) N. 2016/2281]

12 Seasonal space heating energy index

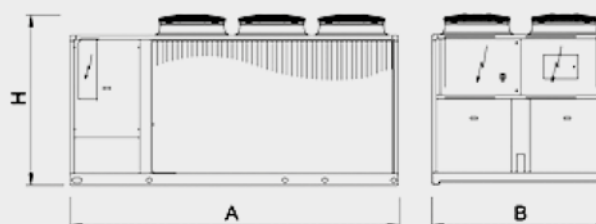
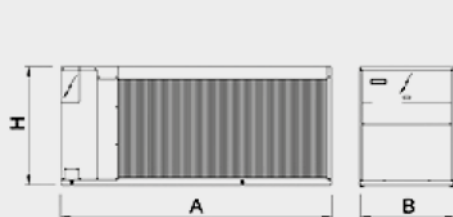
13 Seasonal energy efficiency of the space cooling

14 Seasonal performance coefficient

15 Seasonal space heating energy efficiency

The units highlighted in this publication contain HFC R410A [GWP100 2088] fluorinated greenhouse gases.

Certified data in EUROVENT





NECS-Q

Air source 4-pipe heat pump with scroll compressors



NECS-Q / CA			1314	1414	1614	1716	1816	2016	2116	2416	2418	2618	2818	3018	3218
Power supply	V/ph/Hz		400/3/50												
PERFORMANCE															
COOLING ONLY (GROSS VALUE)															
Cooling capacity	(1)	kW	362	387	425	471	524	559	581	637	680	724	775	813	850
Total power input	(1)	kW	122	128	145	157	173	185	192	217	230	244	256	272	289
EER	(1)	kW/kW	2,96	3,03	2,94	3,01	3,04	3,03	3,03	2,94	2,95	2,96	3,03	2,99	2,94
COOLING ONLY (EN14511 VALUE)															
Cooling capacity	(1)(2)	kW	361	385	423	470	522	557	579	635	677	720	773	810	846
EER	(1)(2)	kW/kW	2,91	2,98	2,89	2,97	2,99	2,99	2,99	2,89	2,91	2,91	2,99	2,94	2,89
ESEER	(1)(2)	kW/kW													
HEATING ONLY (GROSS VALUE)															
Total heating capacity	(3)	kW	394	420	462	507	546	603	630	693	729	788	840	882	924
Total power input	(3)	kW	120	127	140	155	166	183	189	210	221	239	253	266	280
COP	(3)	kW/kW	3,30	3,31	3,30	3,28	3,29	3,30	3,32	3,30	3,29	3,29	3,33	3,31	3,30
HEATING ONLY (EN14511 VALUE)															
Total heating capacity	(2)(3)	kW	396	422	464	509	549	606	633	696	732	792	843	886	928
COP	(2)(3)	kW/kW	3,26	3,28	3,26	3,25	3,26	3,27	3,29	3,27	3,26	3,26	3,30	3,28	3,27
COOLING WITH TOTAL HEAT RECOVERY															
Cooling capacity	(4)	kW	355	379	423	460	500	547	568	636	667	711	758	802	848
Total power input	(4)	kW	107	113	126	139	150	163	170	189	200	213	226	240	252
Recovery heat exchanger capacity	(4)	kW	455	485	542	590	640	700	728	814	854	911	971	1027	1085
TER		kW/kW	7,55	7,66	7,64	7,55	7,63	7,67	7,64	7,68	7,62	7,61	7,63	7,63	7,67
ENERGY EFFICIENCY															
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)															
Ambient refrigeration															
Prated,c	(11)	kW	-	-	-	-	-	557	579	635	677	720	773	810	846
SEER	(11)(12)		-	-	-	-	-	4,26	4,22	4,16	4,10	4,13	4,24	4,23	4,14
Performance η_s	(11)(13)	%	-	-	-	-	-	167	166	164	161	162	167	166	163
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)															
PDesign	(5)	kW	283	317	363	376	390	-	-	-	-	-	-	-	-
SCOP	(5)(14)		3,75	3,86	3,73	3,86	3,77	-	-	-	-	-	-	-	-
Performance η_s	(5)(15)	%	147	151	146	152	148	-	-	-	-	-	-	-	-
Seasonal efficiency class	(5)		-	-	-	-	-	-	-	-	-	-	-	-	-
EXCHANGERS															
HEAT EXCHANGER USER SIDE IN REFRIGERATION															
Water flow	(1)	l/s	17,32	18,49	20,32	22,54	25,06	26,74	27,80	30,46	32,51	34,60	37,07	38,87	40,63
Pressure drop	(1)	kPa	56,4	49,2	59,4	41,5	51,3	44,5	48,1	49,3	50,7	57,4	44,5	48,9	53,5
HEAT EXCHANGER USER SIDE IN HEATING															
Water flow	(3)	l/s	19,02	20,27	22,30	24,48	26,38	29,12	30,41	33,44	35,18	38,05	40,54	42,57	44,60
Pressure drop	(3)	kPa	68,0	59,1	71,5	48,9	56,8	52,7	57,5	59,4	59,3	69,4	53,3	58,7	64,4
REFRIGERANT CIRCUIT															
Compressors nr.		N°	4	4	4	6	6	6	6	6	8	8	8	8	8
No. Circuits		N°	2	2	2	3	3	3	3	3	4	4	4	4	4
Refrigerant charge		kg	99,0	106	106	139	139	152	158	158	185	198	211	211	211
NOISE LEVEL															
Sound Pressure	(6)	dB(A)	65	65	65	64	65	65	65	66	66	66	67	67	67
Sound power level in cooling	(7)(8)	dB(A)	97	97	97	97	98	98	98	99	99	99	100	100	100
Sound power level in heating	(7)(9)	dB(A)	97	97	97	97	98	-	-	-	-	-	-	-	-
SIZE AND WEIGHT															
A	(10)	mm	5080	5080	5080	6255	7430	7430	7430	7430	9780	9780	9780	9780	9780
B	(10)	mm	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260
H	(10)	mm	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
Operating weight	(10)	kg	3850	3950	3980	5460	5740	5890	5970	6020	7350	7500	7700	7740	7770

Notes:

- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.
- Values in compliance with EN14511-3:2013.
- Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Plant (side) heat exchanger water (in/out) 40°C/45°C.
- Seasonal space heating energy efficiency class LOW TEMPERATURE in AVERAGE climate conditions [REGULATION (EU) N. 813/2013]
- Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
- Sound power on the basis of measurements made in compliance with ISO 9614.

8 Sound power level in cooling, outdoors.

9 Sound power level in heating, outdoors.

10 Unit in standard configuration/execution, without optional accessories.

11 Seasonal energy efficiency of the cooling environment in AVERAGE climatic conditions [REGULATION (EU) N. 2016/2281]

12 Seasonal space heating energy index

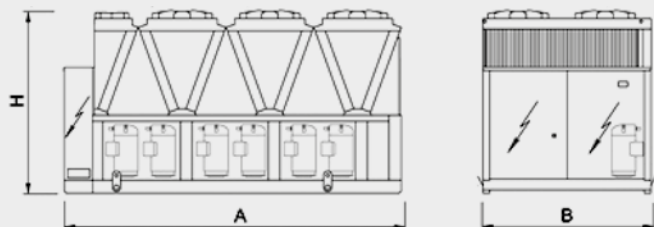
13 Seasonal energy efficiency of the space cooling

14 Seasonal performance coefficient

15 Seasonal space heating energy efficiency

The units highlighted in this publication contain HFC R410A [GWP100 2088] fluorinated greenhouse gases.

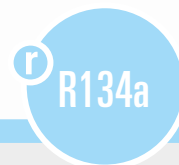
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ERACS2-Q

Air source 4-pipe heat pump with screw compressors



ERACS2-Q/ CA

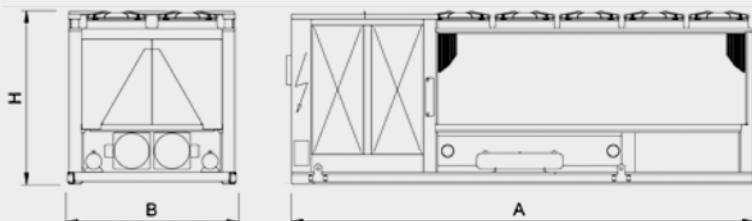
Power supply			400/3/50											
V/ph/Hz														
PERFORMANCE														
COOLING ONLY (GROSS VALUE)														
Cooling capacity	(1)	kW	210	248	302	329	380	425	483	525	554	624	701	826
Total power input	(1)	kW	72,1	84,8	101	109	129	144	156	167	176	201	222	264
EER	(1)	kW/kW	2,91	2,93	2,98	3,01	2,95	2,95	3,10	3,14	3,16	3,10	3,15	3,13
COOLING ONLY (EN14511 VALUE)														
Cooling capacity	(1)(2)	kW	209	247	301	328	379	424	482	524	552	623	700	824
EER	(1)(2)	kW/kW	2,88	289	2,94	2,97	2,91	2,92	3,07	3,11	3,12	3,08	3,12	3,10
ESEER	(1)(2)	kW/kW												
HEATING ONLY (GROSS VALUE)														
Total heating capacity	(3)	kW	218	258	308	339	396	434	492	541	571	615	711	826
Total power input	(3)	kW	67,0	80,7	92,2	101	122	131	149	159	169	178	207	240
COP	(3)	kW/kW	3,25	3,20	3,35	3,35	3,25	3,32	3,31	3,41	3,38	3,46	3,43	3,44
HEATING ONLY (EN14511 VALUE)														
Total heating capacity	(2)(3)	kW	218	259	310	340	397	435	493	543	572	616	713	828
COP	(2)(3)	kW/kW	3,23	3,17	3,32	3,32	3,23	3,31	3,29	3,38	3,36	3,44	3,41	3,42
COOLING WITH TOTAL HEAT RECOVERY														
Cooling capacity	(4)	kW	209	248	305	329	381	428	484	522	550	631	701	826
Total power input	(4)	kW	60,6	72,2	87,1	92,5	111	122	134	145	153	170	193	228
Recovery heat exchanger capacity	(4)	kW	266	316	386	416	486	542	609	658	694	791	883	1041
TER		kW/kW	7,83	7,81	7,93	8,06	7,80	7,97	8,18	8,14	8,12	8,35	8,19	8,17
ENERGY EFFICIENCY														
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)														
Ambient refrigeration														
Prated,c	(11)	kW	-	-	-	-	-	-	-	-	-	-	700	824
SEER	(11)(12)		-	-	-	-	-	-	-	-	-	-	4,17	4,20
Performance ηs	(11)(13)	%	-	-	-	-	-	-	-	-	-	-	164	165
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)														
PDesign	(5)	kW	155	210	219	241	282	311	359	387	353	398	-	-
SCOP	(5)(14)		3,41	3,21	3,45	3,53	3,40	3,54	3,48	3,60	3,60	3,61	-	-
Performance ηs	(5)(15)	%	133	125	135	138	133	139	136	141	141	141	-	-
Seasonal efficiency class	(5)		-	-	-	-	-	-	-	-	-	-	-	-
EXCHANGERS														
HEAT EXCHANGER USER SIDE IN REFRIGERATION														
Water flow	(1)	l/s	10,04	11,88	14,46	15,75	18,19	20,33	23,09	25,11	26,49	29,84	33,54	39,48
Pressure drop	(1)	kPa	28,8	40,2	36,6	43,4	40,3	27,9	26,7	29,0	32,3	23,1	30,5	30,9
HEAT EXCHANGER USER SIDE IN HEATING														
Water flow	(3)	l/s	10,51	12,47	14,89	16,37	19,10	20,95	23,75	26,13	27,55	29,67	34,34	39,85
Pressure drop	(3)	kPa	31,5	44,3	38,8	46,9	44,4	29,6	28,2	31,4	34,9	22,8	31,9	31,5
REFRIGERANT CIRCUIT														
Compressors nr.		N°	2	2	2	2	2	2	2	2	2	2	2	2
No. Circuits		N°	2	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge		kg	83,0	97,0	132	132	160	167	210	240	250	254	312	360
NOISE LEVEL														
Sound Pressure	(6)	dB(A)	65	65	65	66	66	66	66	68	68	68	68	69
Sound power level in cooling	(7)(8)	dB(A)	97	97	97	98	99	99	99	101	101	101	101	102
Sound power level in heating	(7)(9)	dB(A)	97	97	97	98	99	99	99	101	-	-	-	-
SIZE AND WEIGHT														
A	(10)	mm	4610	4610	5610	5610	6610	6610	6300	7200	7200	7200	8400	9700
B	(10)	mm	2220	2220	2220	2220	2220	2220	2260	2260	2260	2260	2260	2260
H	(10)	mm	2150	2420	2430	2430	2430	2430	2350	2350	2350	2350	2350	2350
Operating weight	(10)	kg	3600	3870	4620	5040	5520	5670	7580	8060	8160	8600	9160	11380

Notes:

- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.
- Values in compliance with EN14511-3:2013.
- Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Plant (side) heat exchanger water (in/out) 40°C/45°C.
- Seasonal space heating energy efficiency class LOW TEMPERATURE in AVERAGE climate conditions [REGULATION (EU) N. 813/2013]
- Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
- Sound power on the basis of measurements made in compliance with ISO 9614.

- Sound power level in cooling, outdoors.
 - Sound power level in heating, outdoors.
 - Unit in standard configuration/execution, without optional accessories.
 - Seasonal energy efficiency of the cooling environment in AVERAGE climatic conditions [REGULATION (EU) N. 2016/2281]
 - Seasonal space heating energy index
 - Seasonal energy efficiency of the space cooling
 - Seasonal performance coefficient
 - Seasonal space heating energy efficiency
- The units highlighted in this publication contain HFC R134a [GWP₁₀₀ 1430] fluorinated greenhouse gases.

Certified data in EUROVENT





ERACS2-Q-G05

Air source for 4-pipe systems, air source for outdoor installation



ERACS2-Q-G05			1062	1162	1362	1562	1762	1962	2022	2222	2422	2622	2722	3222
Power supply	V/ph/Hz		400/3/50											
PERFORMANCE														
COOLING ONLY (GROSS VALUE)														
Cooling capacity	(1)	kW	210,0	248,3	302,3	329,4	380,3	425,2	482,7	525,0	553,8	624,1	701,4	825,6
Total power input	(1)	kW	74,78	88,09	105,5	113,5	134,1	149,7	161,8	173,6	182,3	209,0	231,2	274,4
EER	(1)	kW/kW	2,80	2,81	2,86	2,90	2,83	2,84	2,98	3,02	3,03	2,98	3,034	3,009
COOLING ONLY (EN14511 VALUE)														
Cooling capacity	(1)(2)	kW	209,3	247,4	301,3	328,2	379,0	424,2	481,6	523,7	552,3	622,9	699,7	823,6
EER	(1)(2)	kW/kW	2,77	2,78	2,83	2,86	2,80	2,81	2,96	2,99	3,01	2,960	3,00	2,98
ESEER	(1)(2)	kW/kW	-	-	-	-	-	-	-	-	-	-	-	-
HEATING ONLY (GROSS VALUE)														
Total heating capacity	(3)	kW	219,8	261,0	311,6	342,6	399,6	438,3	496,9	546,8	576,4	617,8	718,5	833,8
Total power input	(3)	kW	69,66	84,00	95,98	105,5	126,7	135,8	154,8	165,5	175,5	185,2	215,7	249,9
COP	(3)	kW/kW	3,15	3,10	3,24	3,24	3,15	3,22	3,21	3,30	3,28	3,33	3,33	3,33
HEATING ONLY (EN14511 VALUE)														
Total heating capacity	(2)(3)	kW	220,5	262,0	312,7	344,0	401,1	439,5	498,1	548,3	578,1	619,0	720,4	835,9
COP	(2)(3)	kW/kW	3,13	3,08	3,22	3,22	3,13	3,21	3,19	3,28	3,26	3,32	3,31	3,32
COOLING WITH TOTAL HEAT RECOVERY														
Cooling capacity	(4)	kW	208,6	248,1	304,6	329,4	381,4	427,5	483,5	521,5	550,3	631,2	701,1	826,1
Total power input	(4)	kW	63,13	75,25	90,73	96,42	115,9	126,9	139,3	150,9	159,8	177,6	201,5	238,0
Recovery heat exchanger capacity	(4)	kW	267,9	318,8	389,9	420,0	490,3	546,8	614,5	663,4	700,5	798,1	890,5	1050
TER		kW/kW	7,55	7,53	7,65	7,77	7,52	7,67	7,88	7,85	7,82	8,04	7,90	7,88
ENERGY EFFICIENCY														
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)														
Ambient refrigeration														
Prated,c	(11)	kW	-	-	-	-	-	-	-	-	-	-	700	84
SEER	(11)(12)		-	-	-	-	-	-	-	-	-	-	4,12	4,11
Performance η_s	(11)(13)	%	-	-	-	-	-	-	-	-	-	-	162	161
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)														
PDesign	(5)		157	213	221	244	285	314	362	391	357	400	-	-
SCOP	(5)(14)		3,36	3,20	3,40	3,47	3,35	3,49	3,42	3,54	3,55	3,55	-	-
Performance η_s	(5)(15)		131	125	133	136	131	137	134	139	139	139	-	-
Seasonal efficiency class	(16)		-	-	-	-	-	-	-	-	-	-	-	-
EXCHANGERS														
HEAT EXCHANGER USER SIDE IN REFRIGERATION														
Water flow	(1)	l/s	10,04	11,88	14,46	15,75	18,19	20,33	23,09	25,11	26,49	29,84	33,54	39,48
Pressure drop	(1)	kPa	28,8	40,2	36,6	43,4	40,3	27,9	26,7	29,0	32,3	23,1	30,5	30,9
HEAT EXCHANGER USER SIDE IN HEATING														
Water flow	(3)	l/s	10,61	12,60	15,04	16,54	19,29	21,16	23,99	26,39	27,82	29,82	34,68	40,25
Pressure drop	(3)	kPa	32,1	45,2	39,6	47,9	45,3	30,2	28,8	32,1	35,6	23,1	32,6	32,1
REFRIGERANT CIRCUIT														
Compressors nr.		N°	2	2	2	2	2	2	2	2	2	2	2	2
No. Circuits		N°	2	2	2	2	2	2	2	2	2	2	2	2
Refrigerant charge		kg	108	129	155	184	191	198	219	242	276	291	322	380
NOISE LEVEL														
Sound Pressure	(6)	dB(A)	65	65	65	66	66	66	66	68	68	68	68	69
Sound power level in cooling	(7)(8)	dB(A)	97	97	97	98	99	99	99	101	101	101	101	102
Sound power level in heating	(7)(9)	dB(A)	97	97	97	98	99	99	99	101	101	101	101	102
SIZE AND WEIGHT														
A	(10)	mm	4610	4610	5610	5610	6610	6610	6300	7200	7200	7200	8400	9700
B	(10)	mm	2220	2220	2220	2220	2220	2220	2260	2260	2260	2260	2260	2260
H	(10)	mm	2150	2420	2430	2430	2430	2430	2350	2350	2350	2350	2350	2350
Operating weight	(10)	kg	3600	3870	4620	5040	5520	5670	7580	8060	8160	8600	9160	11380

Notes:

- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.
- Values in compliance with EN14511
- Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Plant (side) heat exchanger water (in/out) 40°C/45°C.
- Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 813/2013]
- Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
- Sound power on the basis of measurements made in compliance with ISO 9614.

8 Sound power level in cooling, outdoors.

9 Sound power level in heating, outdoors.

10 Unit in standard configuration/execution, without optional accessories.

11 Parameter calculated according to [REGULATION (EU) N. 2016/2281]

12 Seasonal energy efficiency ratio

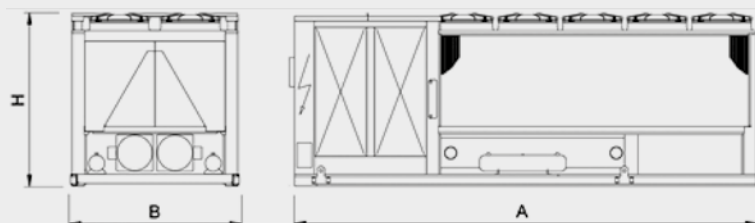
13 Seasonal space cooling energy efficiency

14 Seasonal coefficient of performance

15 Seasonal space heating energy efficiency

The units highlighted in this publication contain R513A [GWP100 631] fluorinated greenhouse gases.

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NECS-WQ

Water source 4-pipe heat pump with scroll compressors

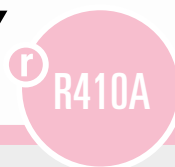
NECS-WQ			0152	0182	0202	0252	0262	0302	0412	0512
Power supply	V/ph/Hz		400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE										
COOLING ONLY (GROSS VALUE)										
Cooling capacity	(1)	kW	48,4	55,6	64,6	73,4	82,8	97,0	127	158
Total power input	(1)	kW	8,56	9,73	11,2	13,2	14,7	17,4	22,8	28,2
EER	(1)	kW/kW	5,65	5,71	5,77	5,56	5,63	5,57	5,56	5,59
COOLING ONLY (EN14511 VALUE)										
Cooling capacity	(1)(2)	kW	48,2	55,4	64,3	73,1	82,4	96,6	126	157
EER	(1)(2)	kW/kW	5,45	5,53	5,59	5,39	5,45	5,40	5,38	5,41
HEATING ONLY (GROSS VALUE)										
Total heating capacity	(3)	kW	52,1	59,7	69,3	79,0	88,9	104	135	169
Total power input	(3)	kW	12,4	13,8	16,2	18,5	20,4	23,9	31,0	38,4
COP	(3)	kW/kW	4,20	4,33	4,28	4,27	4,36	4,37	4,35	4,40
HEATING ONLY (EN14511 VALUE)										
Total heating capacity	(2)(3)	kW	52,4	60,0	69,6	79,4	89,3	105	136	170
COP	(2)(3)	kW/kW	4,10	4,23	4,19	4,18	4,26	4,27	4,25	4,30
COOLING WITH TOTAL HEAT RECOVERY										
Cooling capacity	(4)	kW	40,4	46,7	54,1	61,7	69,7	82,0	106	133
Total power input	(4)	kW	12,4	13,8	16,2	18,5	20,4	23,9	31,0	38,4
Recovery heat exchanger capacity	(4)	kW	52,1	59,7	69,3	79,0	88,9	104	135	169
TER	kW/kW		7,46	7,71	7,62	7,61	7,77	7,80	7,75	7,85
ENERGY EFFICIENCY										
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)										
PDesign	(5)	kW	62,2	71,1	82,8	94,4	106	125	162	202
SCOP	(5)(14)		5,71	5,88	5,93	5,74	5,79	5,79	5,73	5,72
Performance ηs	(5)(15)	%	220	227	229	222	224	224	221	221
Seasonal efficiency class	(5)		A++	-	-	-	-	-	-	-
EXCHANGERS										
HEAT EXCHANGER USER SIDE IN REFRIGERATION										
Water flow	(1)	l/s	2,31	2,66	3,09	3,51	3,96	4,64	6,06	7,54
Pressure drop	(1)	kPa	28,4	25,6	25,0	28,7	31,9	33,8	39,1	42,4
HEAT EXCHANGER SOURCE SIDE IN REFRIGERATION										
Water flow	(1)	l/s	0,85	0,97	1,13	1,28	1,45	1,70	2,22	2,76
Pressure drop	(1)	kPa	3,79	3,42	3,32	3,85	4,26	4,53	5,25	5,68
HEAT EXCHANGER USER SIDE IN HEATING										
Water flow	(4)	l/s	2,51	2,88	3,35	3,82	4,29	5,04	6,51	8,15
Pressure drop	(4)	kPa	33,5	30,1	29,3	34,0	37,5	39,8	45,1	49,5
HEAT EXCHANGER SOURCE SIDE IN HEATING										
Water flow	(3)	l/s	1,38	1,60	1,85	2,11	2,38	2,80	3,61	4,53
Pressure drop	(3)	kPa	10,1	9,25	8,95	10,4	11,5	12,3	13,9	15,3
REFRIGERANT CIRCUIT										
Compressors nr.		N°	2	2	2	2	2	2	2	2
No. Circuits		N°	2	2	2	2	2	2	2	2
Refrigerant charge		kg	5,60	6,40	7,40	8,20	8,80	10,0	14,0	16,4
NOISE LEVEL										
Sound Pressure	(6)	dB(A)	42	43	43	43	44	45	46	47
Sound power level in cooling	(7)(8)	dB(A)	73	74	74	74	75	76	77	78
Sound power level in heating	(7)(9)	dB(A)	73	74	74	74	75	76	77	78
SIZE AND WEIGHT										
A	(10)	mm	1220	1220	1220	1220	1220	1220	1220	1220
B	(10)	mm	877	877	877	877	877	877	877	877
H	(10)	mm	1496	1496	1496	1496	1496	1496	1496	1496
Operating weight	(10)	kg	450	470	490	505	525	550	745	825

Notes:

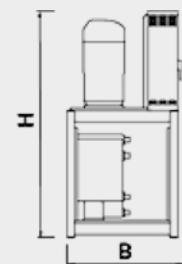
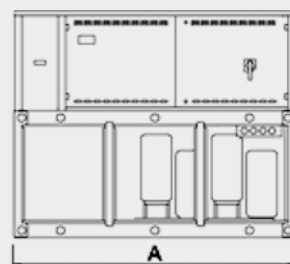
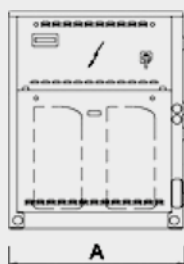
- 1 Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.
- 2 Values in compliance with EN14511-3:2011.
- 3 Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
- 4 Plant (side) cooling exchanger water (in/out) 12°C/7°C; Plant (side) heat exchanger water (in/out) 40°C/45°C.
- 5 Seasonal space heating energy efficiency class LOW TEMPERATURE in AVERAGE climate conditions [REGULATION (UE) N. 811/2013]

- 6 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
 - 7 Sound power on the basis of measurements made in compliance with ISO 9614.
 - 8 Sound power level in cooling, outdoors.
 - 9 Sound power level in heating, outdoors.
 - 10 Unit in standard configuration/execution, without optional accessories
- The units highlighted in this publication contain HFC R410A [GWP100 2088] fluorinated greenhouse gases.**

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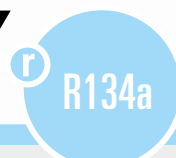
NECS-WQ			0612	0604	0704	0804	0904	1004	1104	1204
Power supply		V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE										
COOLING ONLY (GROSS VALUE)										
Cooling capacity	(1)	kW	205	193	224	254	284	315	363	412
Total power input	(1)	kW	36,6	34,7	40,1	45,5	50,9	56,4	64,8	73,0
EER	(1)	kW/kW	5,60	5,57	5,59	5,59	5,58	5,59	5,60	5,64
COOLING ONLY (EN14511 VALUE)										
Cooling capacity	(1)(2)	kW	204	192	223	253	283	314	362	410
EER	(1)(2)	kW/kW	5,43	5,40	5,43	5,43	5,43	5,44	5,45	5,49
HEATING ONLY (GROSS VALUE)										
Total heating capacity	(3)	kW	219	208	240	270	303	338	388	440
Total power input	(3)	kW	49,9	47,7	54,7	61,8	69,2	76,8	88,4	99,6
COP	(3)	kW/kW	4,39	4,36	4,38	4,37	4,38	4,40	4,39	4,41
HEATING ONLY (EN14511 VALUE)										
Total heating capacity	(2)(3)	kW	220	209	241	271	305	339	390	442
COP	(2)(3)	kW/kW	4,29	4,27	4,29	4,28	4,30	4,31	4,31	4,33
COOLING WITH TOTAL HEAT RECOVERY										
Cooling capacity	(4)	kW	172	163	188	212	238	266	305	346
Total power input	(4)	kW	49,9	47,7	54,7	61,8	69,2	76,8	88,4	99,6
Recovery heat exchanger capacity	(4)	kW	219	208	240	270	303	338	388	440
TER		kW/kW	7,83	7,79	7,82	7,80	7,83	7,86	7,84	7,89
ENERGY EFFICIENCY										
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)										
Ambient refrigeration										
Prated,c	(11)	kW	-	-	-	-	-	297	342	387
SEER	(11)(12)		-	-	-	-	-	5,14	5,24	5,25
Performance η_s	(11)(13)	%	-	-	-	-	-	198	202	202
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)										
PDesign	(5)	kW	262	248	289	325	360	-	-	-
SCOP	(5)(14)		5,76	5,80	5,65	5,77	5,93	-	-	-
Performance η_s	(5)(15)	%	222	224	218	223	229	-	-	-
Seasonal efficiency class	(5)		-	-	-	-	-	-	-	-
EXCHANGERS										
HEAT EXCHANGER USER SIDE IN REFRIGERATION										
Water flow	(1)	l/s	9,79	9,24	10,72	12,16	13,58	15,08	17,35	19,69
Pressure drop	(1)	kPa	44,0	41,7	44,1	43,7	43,0	43,9	43,7	44,2
HEAT EXCHANGER SOURCE SIDE IN REFRIGERATION										
Water flow	(1)	l/s	3,58	3,38	3,93	4,45	4,97	5,52	6,35	7,20
Pressure drop	(1)	kPa	5,89	5,60	5,91	5,85	5,77	5,89	5,86	5,91
HEAT EXCHANGER USER SIDE IN HEATING										
Water flow	(4)	l/s	10,57	10,05	11,56	13,04	14,64	16,30	18,74	21,22
Pressure drop	(4)	kPa	51,2	49,3	51,3	50,2	50,0	51,3	51,0	51,4
HEAT EXCHANGER SOURCE SIDE IN HEATING										
Water flow	(3)	l/s	5,88	5,58	6,43	7,24	8,14	9,07	10,42	11,82
Pressure drop	(3)	kPa	15,8	15,2	15,8	15,5	15,5	15,9	15,8	15,9
REFRIGERANT CIRCUIT										
Compressors nr.		N°	2	4	4	4	4	4	4	4
No. Circuits		N°	2	2	2	2	2	2	2	2
Refrigerant charge		kg	21,2	22,6	25,0	30,4	31,2	33,2	37,4	40,2
NOISE LEVEL										
Sound Pressure	(6)	dB(A)	48	54	55	56	57	58	59	59
Sound power level in cooling	(7)(8)	dB(A)	79	86	87	88	89	90	91	91
Sound power level in heating	(7)(9)	dB(A)	79	86	87	88	89	0	0	0
SIZE AND WEIGHT										
A	(10)	mm	1220	2560	2560	2560	2560	2560	2560	2560
B	(10)	mm	877	891	891	891	891	891	891	891
H	(10)	mm	1496	1810	1810	1810	1810	1810	1810	1810
Operating weight	(10)	kg	910	975	1165	1365	1445	1610	1710	1810





ERACS2-WQ

Water source 4-pipe heat pump
with screw compressors



ERACS2-WQ			0802	1002	1102	1302	1502
Power supply	V/ph/Hz		400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE							
COOLING ONLY (GROSS VALUE)							
Cooling capacity	(1) kW		189	234	268	318	363
Total power input	(1) kW		35,7	44,9	50,6	59,7	68,7
EER	(1) kW/kW		5,31	5,22	5,30	5,32	5,29
COOLING ONLY (EN14511 VALUE)							
Cooling capacity	(1)(2) kW		189	233	267	317	362
EER	(1)(2) kW/kW		5,19	5,09	5,15	5,20	5,18
HEATING ONLY (GROSS VALUE)							
Total heating capacity	(3) kW		205	255	291	344	393
Total power input	(3) kW		45,7	56,9	65,8	76,3	86,9
COP	(3) kW/kW		4,49	4,48	4,43	4,51	4,52
HEATING ONLY (EN14511 VALUE)							
Total heating capacity	(2)(3) kW		206	256	293	346	394
COP	(2)(3) kW/kW		4,42	4,40	4,33	4,42	4,44
COOLING WITH TOTAL HEAT RECOVERY							
Cooling capacity	(4) kW		162	201	229	272	311
Total power input	(4) kW		45,7	56,9	65,8	76,3	86,9
Recovery heat exchanger capacity	(4) kW		205	255	291	344	393
TER	kW/kW		8,05	8,01	7,91	8,08	8,10
ENERGY EFFICIENCY							
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)							
Ambient refrigeration							
Prated,c	(12) kW		-	-	-	-	349
SEER	(12)(13)		-	-	-	-	5,15
Performance η_s	(12)(14) %		-	-	-	-	198
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)							
PDesign	(5) kW		249	309	353	418	-
SCOP	(5)(15)		5,59	5,56	5,18	5,45	-
Performance η_s	(5)(16) %		215	214	199	210	-
Seasonal efficiency class	(5)		-	-	-	-	-
PDesign	(6) kW		220	274	315	368	-
SCOP	(6)(15)		4,33	4,46	3,97	4,26	-
Performance η_s	(6)(16) %		165	170	151	162	-
Seasonal efficiency class	(6)		-	-	-	-	-
EXCHANGERS							
HEAT EXCHANGER USER SIDE IN REFRIGERATION							
Water flow	(1) l/s		9,06	11,20	12,82	15,20	17,38
Pressure drop	(1) kPa		27,6	34,9	46,8	40,4	36,5
HEAT EXCHANGER SOURCE SIDE IN REFRIGERATION							
Water flow	(1) l/s		3,34	4,14	4,73	5,61	6,41
Pressure drop	(1) kPa		3,76	4,78	6,38	5,50	4,98
HEAT EXCHANGER USER SIDE IN HEATING							
Water flow	(4) l/s		9,91	12,30	14,06	16,61	18,96
Pressure drop	(4) kPa		33,1	42,1	56,3	48,3	43,5
HEAT EXCHANGER SOURCE SIDE IN HEATING							
Water flow	(3) l/s		5,55	6,88	7,83	9,31	10,63
Pressure drop	(3) kPa		10,4	13,2	17,5	15,2	13,7
REFRIGERANT CIRCUIT							
Compressors nr.	N°		2	2	2	2	2
No. Circuits	N°		2	2	2	2	2
Refrigerant charge	kg		46,0	56,0	56,0	58,0	75,0
NOISE LEVEL							
Sound Pressure	(7) dB(A)		62	63	65	65	65
Sound power level in cooling	(8)(9) dB(A)		94	95	97	97	97
Sound power level in heating	(8)(10) dB(A)		94	95	97	97	0
SIZE AND WEIGHT							
A	(11) mm		3680	3680	3680	3680	3680
B	(11) mm		1170	1170	1170	1170	1170
H	(11) mm		1950	1950	1950	1950	1950
Operating weight	(11) kg		2420	2470	2880	3580	3690

Notes:

- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.
- Values in compliance with EN14511-3:2011.
- Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Plant (side) heat exchanger water (in/out) 40°C/45°C.
- Seasonal space heating energy efficiency class LOW TEMPERATURE in AVERAGE climate conditions [REGULATION (UE) N. 811/2013]
- Average sound pressure level at 10m distance, unit in a free field on a

reflective surface; non-binding value calculated from the sound power level.

7 Sound power on the basis of measurements made in compliance with ISO 9614.

8 Sound power level in cooling, outdoors.

9 Sound power level in heating, outdoors.

10 Unit in standard configuration/execution, without optional accessories

The units highlighted in this publication contain HFC R134a [GWP₁₀₀ 1430] fluorinated greenhouse gases.

Certified in data EUROVENT



ERACS2-WQ-G05

Unit for 4-pipe systems,
water source



ERACS2-WQ-G05			0802	1002	1102	1302	1502
Power supply	V/ph/Hz		400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE							
COOLING ONLY (GROSS VALUE)							
Cooling capacity	(1)	kW	189,4	234,2	268,0	317,9	363,4
Total power input	(1)	kW	37,24	46,82	52,74	62,16	71,58
EER	(1)	kW/kW	5,091	5,004	5,085	5,111	5,075
COOLING ONLY (EN14511 VALUE)							
Cooling capacity	(1)(2)	kW	188,8	233,4	266,9	316,8	362,3
EER	(1)(2)	kW/kW	4,980	4,890	4,950	4,990	4,970
HEATING ONLY (GROSS VALUE)							
Total heating capacity	(3)	kW	207,2	257,0	293,8	347,1	396,3
Total power input	(3)	kW	47,65	59,29	68,60	79,47	90,51
COP	(3)	kW/kW	4,344	4,334	4,283	4,366	4,379
HEATING ONLY (EN14511 VALUE)							
Total heating capacity	(2)(3)	kW	207,9	258,0	295,2	348,5	397,8
COP	(2)(3)	kW/kW	4,270	4,260	4,190	4,290	4,310
COOLING WITH TOTAL HEAT RECOVERY							
Cooling capacity	(4)	kW	162,4	201,3	229,3	272,4	311,2
Total power input	(4)	kW	47,65	59,29	68,60	79,47	90,51
Recovery heat exchanger capacity	(4)	kW	207,2	257,0	293,8	347,1	396,3
TER		kW/kW	7,746	7,728	7,625	7,794	7,817
ENERGY EFFICIENCY							
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)							
Ambient refrigeration							
Prated,c	(12)	kW	-	-	-	-	349
SEER	(12)(13)		-	-	-	-	5,10
Performance ηs	(12)(14)	%	-	-	-	-	196
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)							
PDesign	(5)	kW	251	311	355	421	-
SCOP	(5)(15)		5,48	5,45	5,09	5,37	-
Performance ηs	(5)(16)	%	211	210	195	207	-
Seasonal efficiency class	(5)		-	-	-	-	-
PDesign	(6)	kW	222	277	318	372	-
SCOP	(6)(15)		4,27	4,39	3,91	4,19	-
Performance ηs	(6)(16)	%	163	168	149	160	-
Seasonal efficiency class	(6)		-	-	-	-	-
EXCHANGERS							
HEAT EXCHANGER USER SIDE IN REFRIGERATION							
Water flow	(1)	l/s	9,056	11,20	12,82	15,20	17,38
Pressure drop	(1)	kPa	27,6	34,9	46,8	40,4	36,5
HEAT EXCHANGER SOURCE SIDE IN REFRIGERATION							
Water flow	(1)	l/s	3,363	4,170	4,761	5,641	6,455
Pressure drop	(1)	kPa	3,81	4,85	6,46	5,57	5,04
HEAT EXCHANGER USER SIDE IN HEATING							
Water flow	(4)	l/s	10,00	12,41	14,18	16,76	19,13
Pressure drop	(4)	kPa	33,7	42,9	57,3	49,1	44,3
HEAT EXCHANGER SOURCE SIDE IN HEATING							
Water flow	(3)	l/s	5,548	6,877	7,835	9,308	10,63
Pressure drop	(3)	kPa	10,4	13,2	17,5	15,2	13,7
REFRIGERANT CIRCUIT							
Compressors nr.		N°	2	2	2	2	2
No. Circuits		N°	2	2	2	2	2
Refrigerant charge		kg	42,0	48,0	55,0	61,0	79,0
NOISE LEVEL							
Sound Pressure	(7)	dB(A)	62	63	65	65	65
Sound power level in cooling	(8)(9)	dB(A)	94	95	97	97	97
Sound power level in heating	(8)(10)	dB(A)	94	95	97	97	97
SIZE AND WEIGHT							
A	(11)	mm	3680	3680	3680	3680	3680
B	(11)	mm	1170	1170	1170	1170	1170
H	(11)	mm	1950	1950	1950	1950	1950
Operating weight	(11)	kg	2420	2470	2880	3580	3690

Notes:

1 Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.

2 Values in compliance with EN14511.

3 Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.

4 Plant (side) cooling exchanger water (in/out) 12°C/7°C; Plant (side) heat exchanger water (in/out) 40°C/45°C.

5 Parameter calculated for LOW - TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 813/2013]

6 Parameter calculated for MEDIUM TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 813/2013]

7 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

8 Sound power on the basis of measurements made in compliance with ISO 9614.

9 Sound power level in cooling, outdoors.

10 Sound power level in heating, outdoors.

11 Unit in standard configuration/execution, without optional accessories.

12 Parameter calculated according to [REGULATION (EU) N. 216/2281]

13 Seasonal energy efficiency ratio

14 Seasonal space cooling energy efficiency

15 Seasonal coefficient of performance

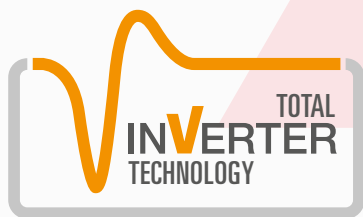
16 Seasonal space heating energy efficiency

17 Parameter calculated for LOW - TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 811/2013]

18 Parameter calculated for MEDIUM TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 811/2013]

The units highlighted in this publication contain R513A [GWP100 631] fluorinated greenhouse gases.

Certified data in EUROVENT



INTEGRA-INVERTER CASE STUDY

- ▶ London
- ▶ Mixed-use building

THE PROJECT

Plant renovation of a multifunctional complex in London.

The building is composed of 7 floors of over 1488 m² each and has both areas for commercial activities and offices.

The HVAC system is a 4-pipe system.



A COMPARISON OF THE DIFFERENT SYSTEMS SOLUTIONS:

Solution

Cooling

Heating

1. Traditional system
(high efficiency chiller + boiler)

FOCS2 SL-CA 2602

Gas boiler

2. INTEGRA fixed speed solution

ERACS2-Q SL-CA 2422

3. INTEGRA full inverter solution

i-FX-Q2 SL-CA 0602

HEATING LOADS AND UNITS CONSIDERED

Maximum power used for sizing:

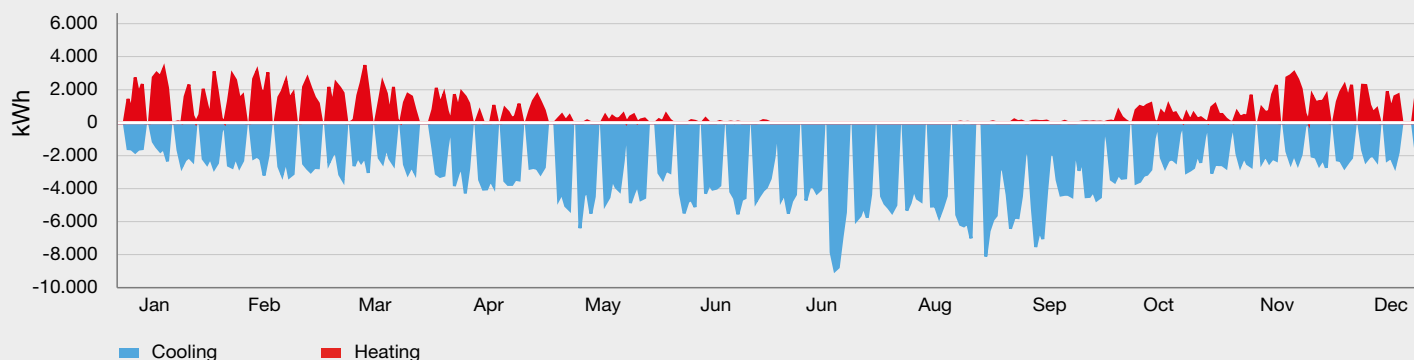
Cooling: 509 kW – Set point: 7°C

Heating: 476 kW – Set point: 45°C

Operating methods in the analysis:

In operation from 9:00 to 19:00, Monday to Friday.

Daily heating loads



The new INTEGRA inverter units, thanks to their ability to continuously modulate the compressors speed, and their use of special control logic, allow the unit to satisfy the demands of the plant reaching unbeatable efficiencies.

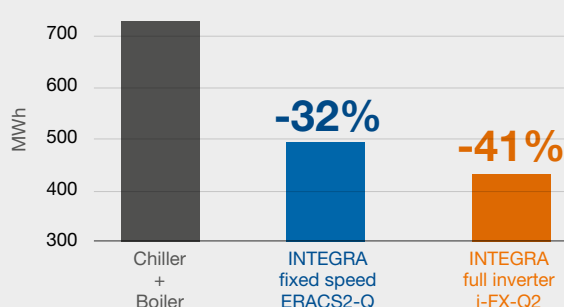
RESULTS

Comparison between traditional system and INTEGRA solutions

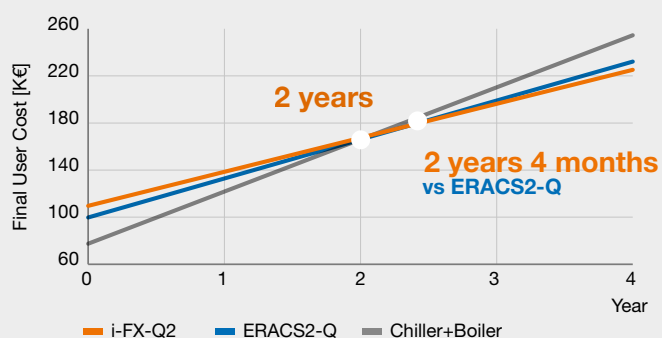
Assuming the cost of electricity is equal to 0,15 € / kWh and the cost of natural gas is 0,42 €/m³, both INTEGRA solutions are much more efficient than a traditional HVAC plant of chiller + boiler.

The consumption of primary energy is reduced by more than 1/3, allowing the return on investment in about two years for both solutions.

Primary energy



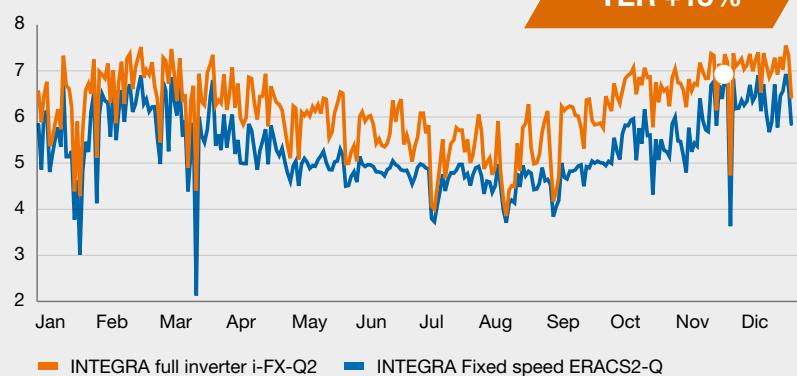
Payback



Comparison between INTEGRA Full inverter and INTEGRA Fixed speed solutions

The variable speed drive technology (VSD) applied to INTEGRA i-FX-Q2 allows an average annual increase of 15% TER and then a payback of 2 years and 4 months with respect to the INTEGRA fixed speed solution.

Daily average TER comparison



AT A GLANCE

	Reduction of primary energy*	Reduction of CO ₂ emissions*	Payback*
INTEGRA full inverter i-FX-Q2	298.046 kWh	61.338 Kg = 1 car that runs 360.800 km	2 years
INTEGRA fixed speed ERACS2-Q	235.564 kWh	47.647 Kg = 1 car that runs 280.300 km	

*Compared to the traditional chiller+boiler solution

+2P MODULE

An integrated module for the independent production of high temperature water (up to 78°C). From 70 to 279 kW



+2P is the innovative solution for the production of high temperature water (up to 78 °C). Designed as a fully integrated module, +2P is installed inside the unit for support and grants efficiencies without compromise. The multipurpose heat pump with integrated +2P module is therefore able to satisfy,

independently and simultaneously, 3 different thermal requirements at 3 different temperatures, without limiting operational flexibility.

Thanks to +2P, other supplementary sources will no longer be necessary for the production of high temperature water

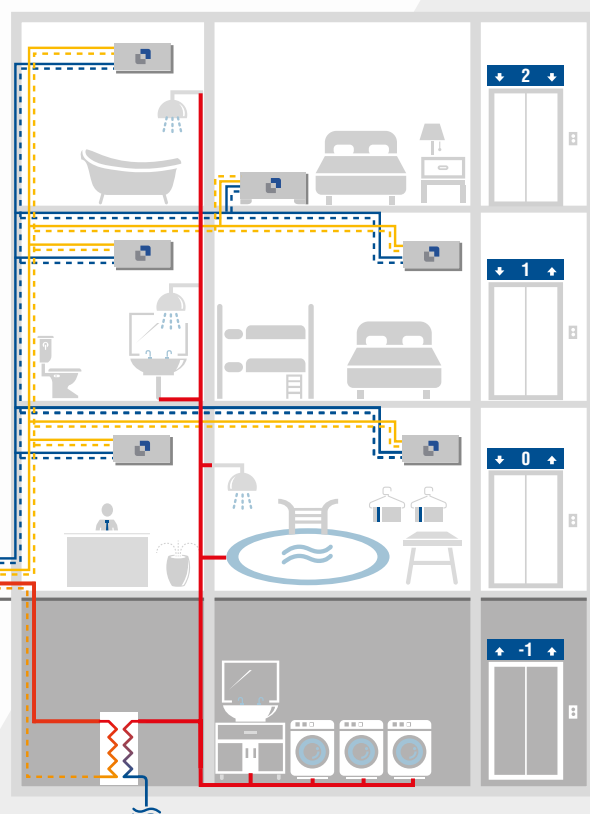
The INTEGRA +2P solution is ideal in all cases where there is the need to achieve independently and simultaneously 3 thermic loads (cold, warm, and hot water):

- ✓ Centralized HVAC systems for residential and public buildings that require cooling, heating and sanitary hot water
- ✓ Hospitals/ Healthcare centres
- ✓ Hotels with laundry and spa facilities
- ✓ Industrial processes

The +2P module is available in different sizes so as to ensure maximum flexibility and adaptability to the different installation requirements.

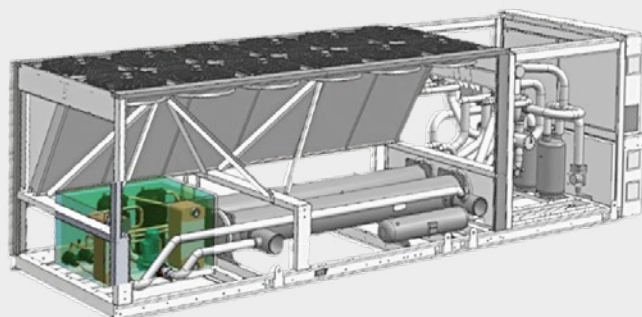
12/7 °C →
40/45 °C →
70/78 °C →

Full independence
of thermal flows



+2P MODULE

is a two-circuit solution that ensures absolute reliability in operation and continuity of service.



INTEGRA ERACS2-Q/SL-CA 3222 with +2P		COP	
		+2P 200 kW	+2P 285 kW
Cold	12-7°C		
Very Hot	65-75°C	3,79	4,08
External air temperature 30°C			
Hot	40-45°C		
Very hot	65-75°C	2,34	2,43
External air temperature 7°C			
Cold	12-7°C		
Hot	40-45°C	4,83	4,83
Very hot	65-75°C		
VERY HOT only 65-75°C		1,83	1,95
External air temperature 7°C			

Efficiency values of the +2P module are calculated considering the 200kW size and the 285kW size, combined with a INTEGRA unit ERACS2Q/SL-CA (size 3222, nominal cooling capacity = 790kW, nominal thermal capacity= 815 kW)

CASE STUDY

RETROFIT OF AN EXISTING PLANT

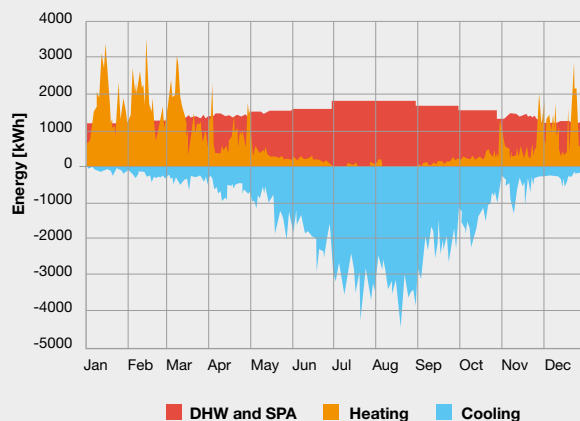
INTEGRA and +2P, module, together to improve system performance and increase efficiency.

PROJECT

Renewal of the thermal plant of an historic building converted into a hotel in the central coastal area of the Mediterranean Sea.

	Set	Current	Retrofit
Cooling	12/7°C	Air cooled chiller	
Heating	40/45°C	Gas Boiler	
DHW and SPA	60/65°C		

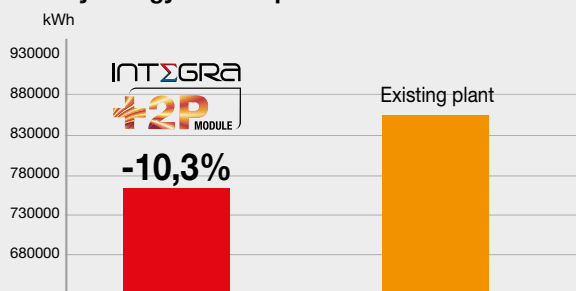
Termal Loads



RESULTS

The use of integrated + 2P module allows you to achieve, with a single unit, 3 different thermal requirements, providing enhanced efficiencies and reduced costs with respect to the current plant, with annual savings of 30.4% and a reduction of 10.3% of primary energy consumption.

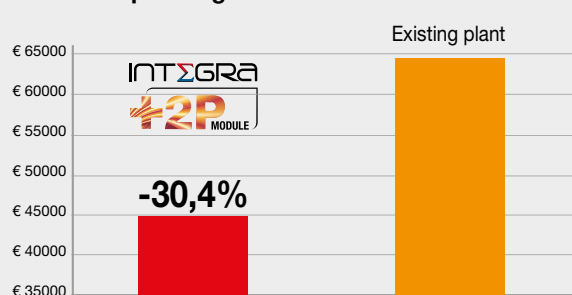
Primary energy consumption



Terms

Seasonal efficiency of gas boiler 85%
Fuel cost 0,77 €/t

Annual operating costs



Cost of Electricity Production 0,12 €/kWh_{el}
Efficiency Electricity 46%



AT A GLANCE

Primary Energy
Consumption

-10,3%

Annual
cost

-30,4%

Annual CO₂
emissions

-42,4%

“BY FAR THE BEST PROOF IS EXPERIENCE”

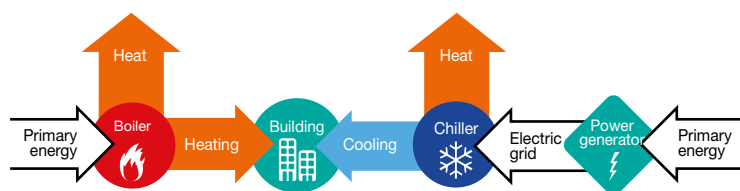
Sir Francis Bacon

British philosopher (1561 - 1626)

TRADITIONAL SYSTEM BASED ON CHILLER + BOILER

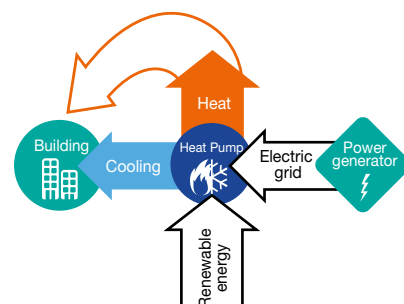
VS

NEW SYSTEM BASED ON SMART HEAT PUMPS WITH HEAT RECOVERY



- ▶ 3 boilers for heating, total capacity 1380kW
- ▶ 2 air-cooled chillers, total capacity 2180 kW

- ▶ 1 ERACS2-Q/SL-CA/S air source heat pump providing heating and cooling
- ▶ 1x TECS2/SL-CAE/S air cooled chiller with magnetic levitation compressors
- ▶ 1x ClimaPRO system



350 Euston Road

London - Great Britain
2015

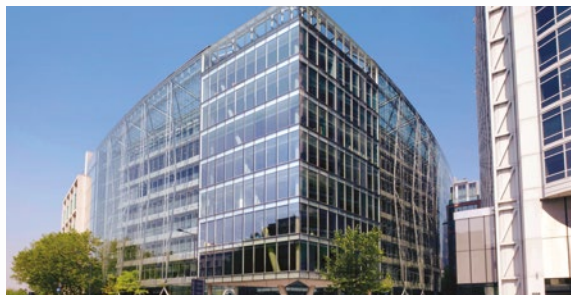
Application:
Office buildings

Plant type:
Hydronic System

Cooling capacity:
1022 kW

Heating capacity:
541 kW

Installed machines:
1x ERACS2-Q/SL-CA/S 2222,
1x TECS2/SL-CAE/S 0512,
1x ClimaPRO



CASE STUDY

In order to investigate the advantages of replacing a traditional HVAC system based on existing boilers and chillers with smart heat pumps with heat recovery, an official case study was conducted.

Starting from the energy analysis of the previous system, the data revealed that the building was characterized by a high cooling demand, even during the winter, together with a considerable overlap of heating and cooling requirements, as is frequently the case in office buildings.

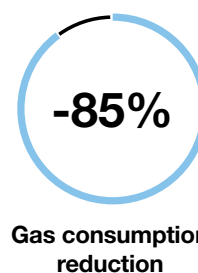
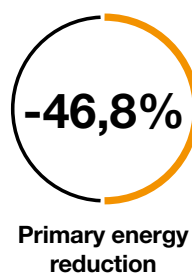
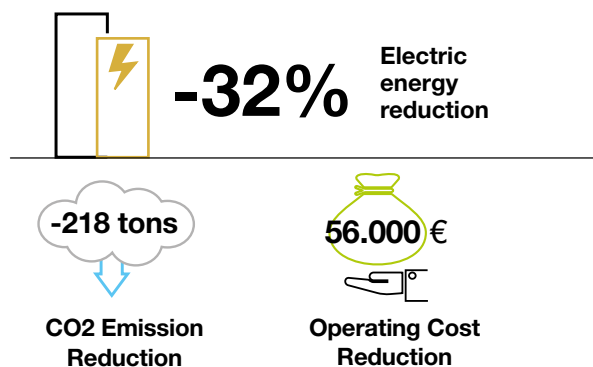
PROJECT

350 Euston Road is a grade A seven-storey office building that forms part of Regent's Place, a 13 acre, fully managed estate in the heart of London. Owned by British Land and managed by Broadgate Estates, the building features the latest sustainable design for a lively mix of retail, leisure and public spaces.

In this high-demanding context, the replacement of the previous HVAC system was aimed to be in line with the energy targets established by the property owner.

SOLUTION

The units selected to serve the building's requirements were: one ERACS2-Q SLCA 2722 unit, from the INTEGRA range, and one TECS2/SL-CAE/S 0512 chiller with magnetic levitation compressors. The results of the study revealed that replacing existing old chillers and boilers with heat recovery heat pumps would lead to significant enhancements in terms of environmental, economic, and energy related aspects. After one year the new system has resulted in 218 less tons of CO2 emissions and a reduction of primary energy consumption of around 50%, thus leading to an annual cost savings of 56000 €.



The New BNL Roma Tiburtina Headquarters

Rome - Italy
2015

Application:
Office Building

Plant type:
Hydronic System

Cooling capacity:
5036 kW

Heating capacity:
2133 kW

Installed machines:
4x ERACS2-Q/SL-CA 3222
+2P MODULE,
1x ERACS2-Q/SL-CA 3222,
1x FOCS2/SL-CA 3902

Architect:
5+ 1AA Alfonso Femia Gianluca
Peluffo



PROJECT

The new BNL Headquarters, designed by 5+1AA Alfonso Femia Gianluca Peluffo, is located near the Rome Tiburtina high speed railroad station. The building – 67.000 sqm including 20.000 underground – is centered around employees well-being. It will provide 3.800 ergonomic workplaces and a vast range of facilities for employees including gym, service center, nursery school, restaurants.

CHALLENGE

BNL Rome Tiburtina fits well in the urban context where the building is located, and combines the values of environmental, economical and social sustainability.

SOLUTION

To satisfy with utmost efficiency the heating and cooling needs of the buildings, the HVAC designer selected 5 Climaveneta INTEGRA multiuse ERACS2-Q 3.222 units, 4 of which equipped with +2P MODULE (a patented solution with 2 additional pipes for hot water for domestic usage at temperatures up to 80°C) and 1 Super Low noise version, Class A Efficiency FOCS2/SL-CA chiller.



Botswana Innovation Hub

Gaborone - Botswana
2015

Application:
Office Building

Cooling capacity:
2803 kW

Heating capacity:
2133 kW

Installed machines:
3x ERACS2-Q XL-CA 2722,
1x i-FX (1+i) CA 2722,
1x ClimaPRO



PROJECT

Botswana Innovation Hub is strategically located, near the Sir Seretse Khama International Airport in Gaborone, Botswana's capital city and center of business activities in the country. The new development, an area of 57 hectares, will serve as a magnet for technology and business and will be able to compete on the global market.

CHALLENGE

The building is designed to conserve energy and be as efficient as possible. The project of the Innovation Hub in Botswana includes large roof overhangs created specifically to bring shade to interior spaces, mechanisms for the collection and reuse of water, and both active and passive solar systems to harness solar energy.



SOLUTION

The air-conditioning system is based on three INTEGRA units: ERACS2-Q XL-CA 2722 and 1 chiller with high efficiency air condensed air cooled i-FX (1+i) CA 2722. The whole system is managed and optimized by ClimaPRO, the new Climaveneta controller, able to actively optimize the entire refrigeration system through the management and control of each component directly involved in the production and distribution of thermal loads.

MORE THAN 1000 PROJECTS ALL OVER THE WORLD

Ministry of Science

2016 Buenos Aires
Argentina



Application:
Office buildings

Installed machines:
2x ERACS2-Q/CA 1962

Cooling capacity:
850 kW

Heating capacity:
868 kW

Abele Ajello Hospital

2015 - 2016 Marzara Del Vallo
Italy



Application:
Healthcare / Hospitals

Heating capacity:
2477 kW

Plant type:
Hydronic System

Installed machines:
3x i-FX-Q/LN-CA/S 0802

Cooling capacity:
2387 kW

Kinetic

2015 Boulogne - France



Certifications:
BREEAM Excellent

Installed machines:
2x ERACS2-Q/SL 2722

Application:
Mixed-Use Development

Cooling capacity:
1200 kW

Cajamar Almeria

2014 Almeria - Spain



Application:
Office Buildings

Heating capacity:
856 kW

Plant type:
Hydronic System

Installed machines:
2x TECS2/SL-CA-E/S 0512,
1x i-FX-Q/SL-CA/S 0802,
1x ClimaPRO

Cooling capacity:
1805 kW

Fondazione Prada

2015 Milan - Italy



Application:
Museums

Installed machines:
4x ERACS2/WQ 3202,
1x ClimaPRO,
1x EW-HT 0152,
2x NECS-W 0262

Cooling capacity:
3625 kW

Heating capacity:
3834 kW

Emergency House

2015 - 2017 Milan
Italy



Application:
Mixed-Use Development

Heating capacity:
270 kW

Plant type:
Hydronic System

Installed machines:
2x NECS WQ 0412

Cooling capacity:
254 kW

Every project is characterized by different usage conditions and system specifications for many different latitudes. All these projects share high energy efficiency, maximum integration, and total reliability due to the unique experience of Climaveneta branded solutions.

Shanghai Institute of Technical Physics

2013 Shanghai - China



Application:
Schools and Universities

Cooling capacity:
3880 kW

Heating capacity:
4250 kW

Installed machines:
3x smart heat pumps for heating and cooling,
3x reversible air cooled heat pumps

Aqualux Bardolino

2011 Bardolino - Italy



Application:
Hotel and resorts

Plant type:
Hydronic System

Cooling capacity:
1469 kW

Heating capacity:
1027 kW

Installed machines:
2x ERACS2-WQ 1902,
1x TECS2-W LC 0511

IBM Headquarters - Chile

2009 Santiago - Chile



Investor:
IBM

Application:
Offices

Cooling capacity:
1687 kW

Heating capacity:
1821 kW

Installed machines:
2x ERACS-Q/B 1762,
3x ERACS-Q/B 1562

Palais de l'Europe

2013 Strasbourg - France



Application:
Institutions

Plant type:
Hydronic System

Cooling capacity:
9952 kW

Heating capacity:
3764 kW

Installed machines:
4x ERACS2-WQ 3202,
4x TECS2-W/HC H 1614

Universo Group

2014 Neuchatel Switzerland



Investor:
Swatch Group

Application:
Office buildings

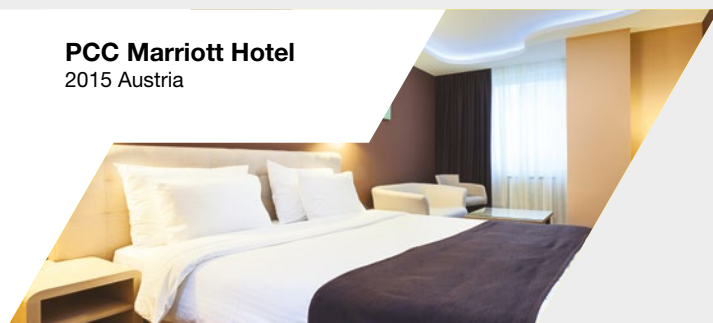
Cooling capacity:
1208 kW

Heating capacity:
1230 kW

Installed machines:
3x ERACS2-WQ 2152 with VPF-D system,
3x ERACS2-WQ 1902 with VPF-D system,
2x Manager 3000

PCC Marriott Hotel

2015 Austria



Application:
Hotel

Cooling capacity:
9952 kW

Heating capacity:
3764 kW

Installed machines:
1x ERACS2-WQ 2702,
1x NECS-WQ 1204,
1x FOCS3-W 2101



for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.



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