

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

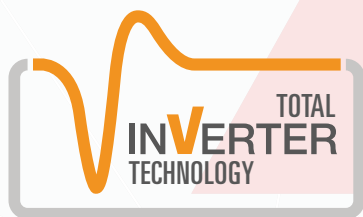
COMFORT

UNITS FOR SIMULTANEOUS AND INDEPENDENT PRODUCTION OF HOT AND COLD WATER

INTΣGRA
i-FX-Q₂

AIR SOURCE UNITS FOR
4-PIPE SYSTEMS,
WITH SCREW COMPRESSORS
AND FULL INVERTER
TECHNOLOGY,
FROM 341 TO 1125 kW





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.



The new inverter driven i-FX-Q2 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 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.

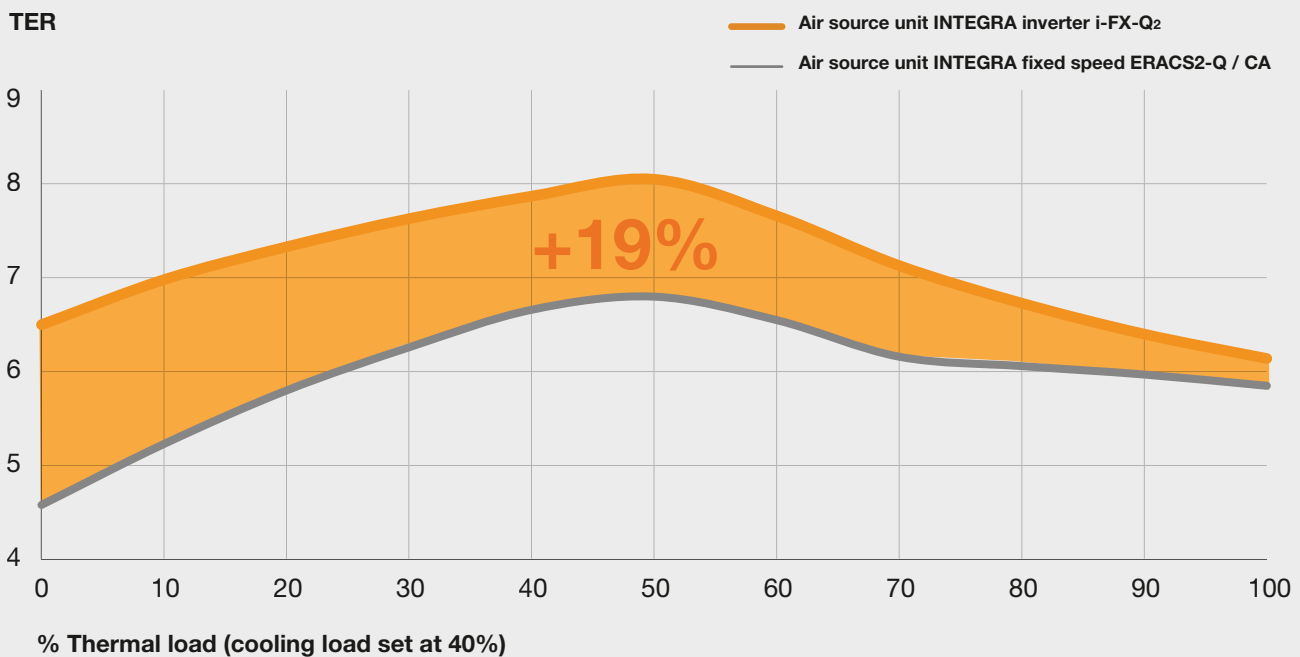
Cooling load [%](*)	Thermal load [%](*)	Median increase in TER VSD vs. fixed speed
0%	0%-100%	+14%
20%	0%-100%	+18%
40%	0%-100%	+19%
60%	0%-100%	+17%
80%	0%-100%	+9%
100%	0%-100%	+5%
Average value		+14%



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.

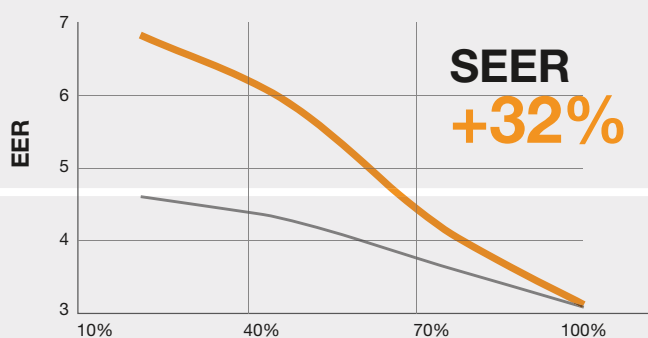


UNBEATABLE EFFICIENCY AT PARTIAL LOADS

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:

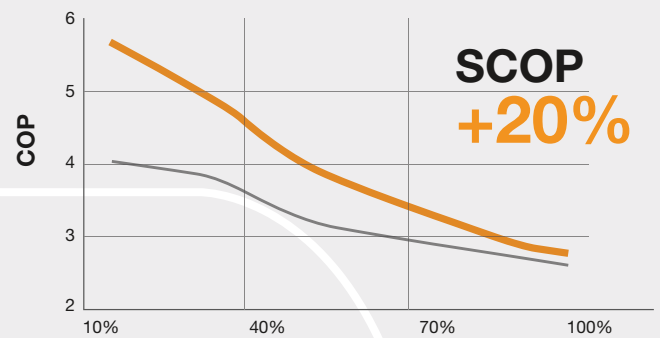
SCOP up to +20%
SEER up to +32%

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



SEER seasonal efficiency as per EN14825:2013

Part load ratio



SCOP seasonal efficiency as per EN14825: 2013

Part load ratio

— Air source unit INTEGRA inverter i-FX-Q2

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

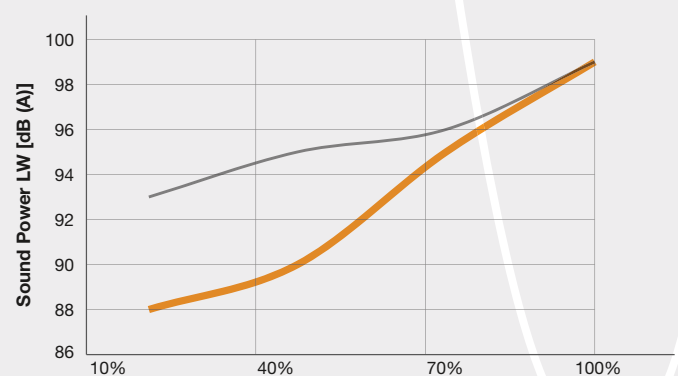
MINIMUM SOUND EMISSIONS. HIGHEST ACOUSTICAL COMFORT

The more you increase the partialisation the lower your sound emissions will be, thanks to capacity of inverter technology to continually modulate the compressor rotation.

For most of the year VSD units will therefore produce lower sound emissions compared to fixed speed units, always ensuring 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 in partialisation



Partialisation SEER values as per EN14825: 2013

Part load ratio

— Air units INTEGRA inverter i-FX-Q2

— Air units INTEGRA fixed speed ERACS2-Q / CA

NO IN-RUSH CURRENT

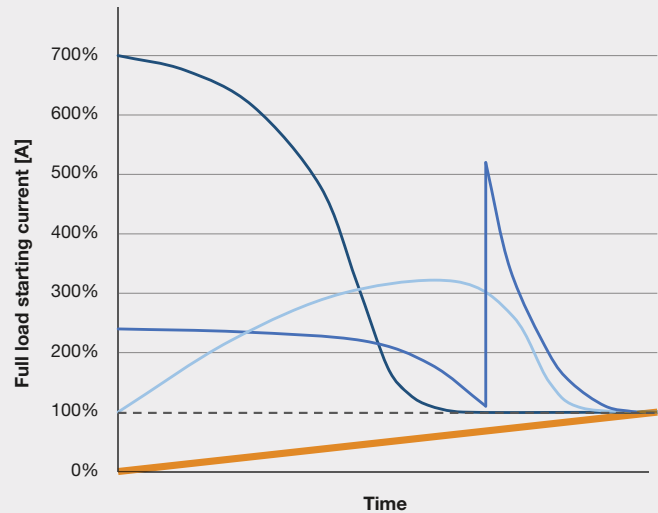
The inverter technology involves a start-up phase with negligible in-rush current, lower than any other starting mode (direct start, star / delta, part winding or soft start).

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 on the electrical components to zero, and improves the reliability of the system.

The frequency converters are characterized by values of Displacement Power Factor of between 0.97 and 0.99. The resulting power factor of the unit at rated nominal operating conditions is always higher than that of similar fixed speed unit. The need to install power factor correction devices of the loads is therefore reduced.

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

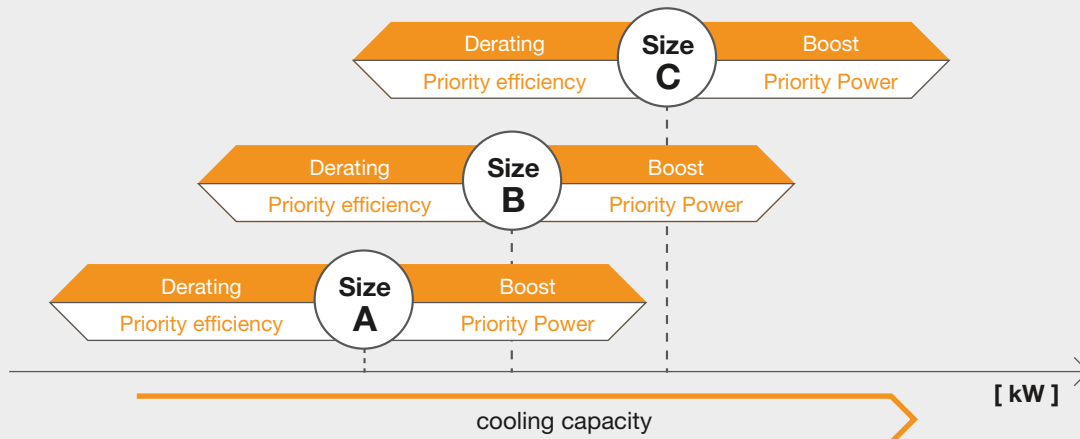
In-rush currents



FLEXIBILITY IN SELECTING UNITS

Thanks to specific technical solutions and proprietary control functions, Climaveneta's inverter units can be selected at various speed conditions, 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 unit.





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

1. Traditional system
(high efficiency chiller + boiler)
2. INTEGRA fixed speed solution
3. INTEGRA full inverter solution

Cooling

FOCS2 SL-CA 2602

ERACS2-Q SL-CA 2422

i-FX-Q2 SL-CA 0602

Heating

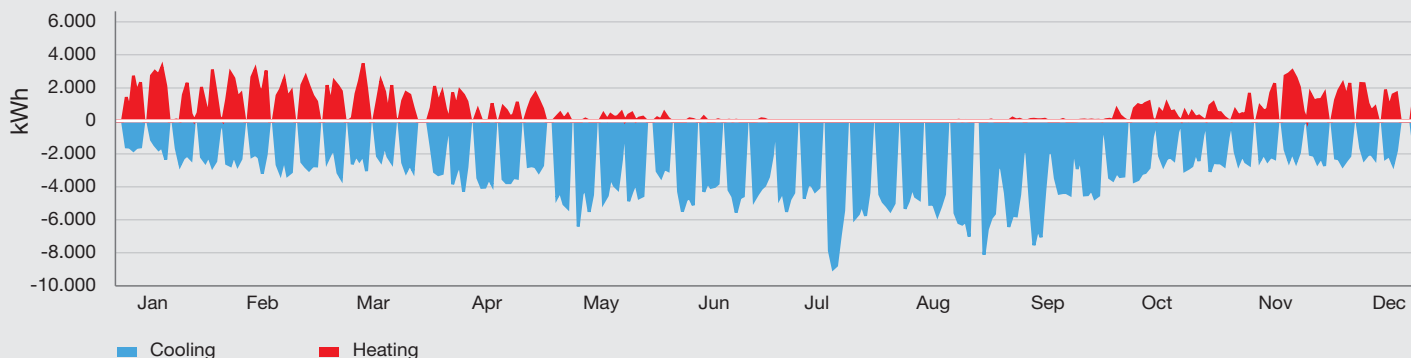
Gas boiler

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



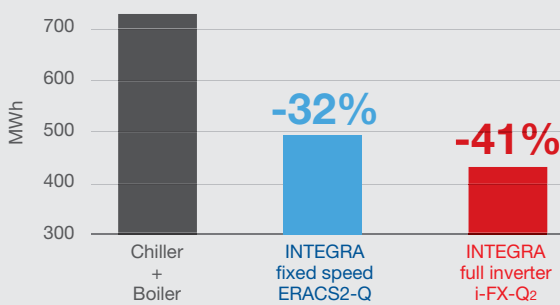
The new INTEGRA inverter units, thanks to their ability to continuously modulate the compressors speed, and their use of special control logic, allow the unit to satisfy the demands of the plant reaching unbeatable efficiencies.

RESULTS

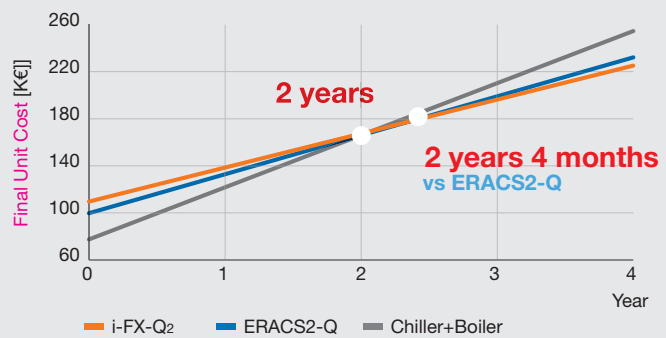
Comparison between traditional system and INTEGRA solutions

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



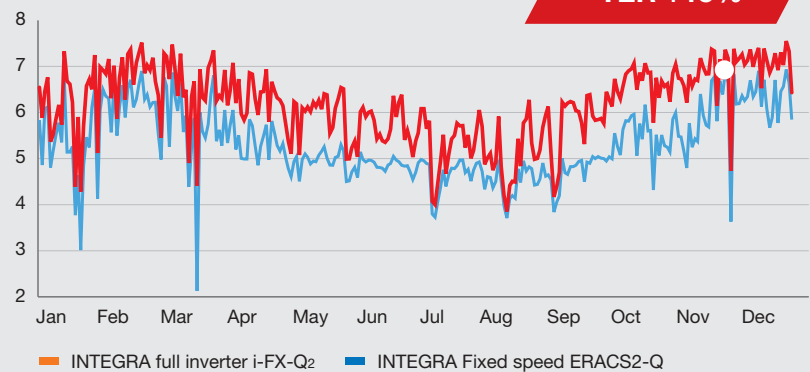
Payback



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

INTEGRA

i-FX-Q₂

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



Versions:

CA Class A Efficiency

SL-CA Super Low noise, Class A Efficiency

XL-CA Extra Low noise, Class A Efficiency

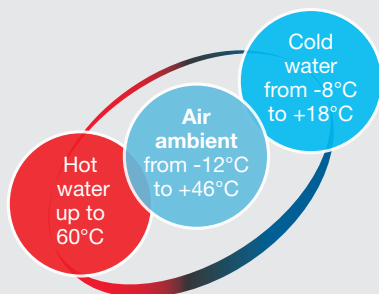
334 1060

341 1125

0 100 200 300 400 500 600 700 800 900 1000 1100 1200 kW

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.

i-FX-Q₂ utilises a system that does not require seasonal switching and is therefore a valid alternative to traditional plants with chiller and boiler. Each circuit works with a variable speed drive semi-hermetic screw compressor using R134a refrigerant, two shell and tubes heat exchangers and a source side coil heat exchanger shared by both circuits. The cold side shell and tube heat exchanger acts as an evaporator for the production of cold water, while the hot side shell and tube heat exchanger works as a condenser for the production of hot water. The source side auxiliary finned coil works as either condenser or evaporator as required by the building loads.



Extended working range

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



Full inverter technology

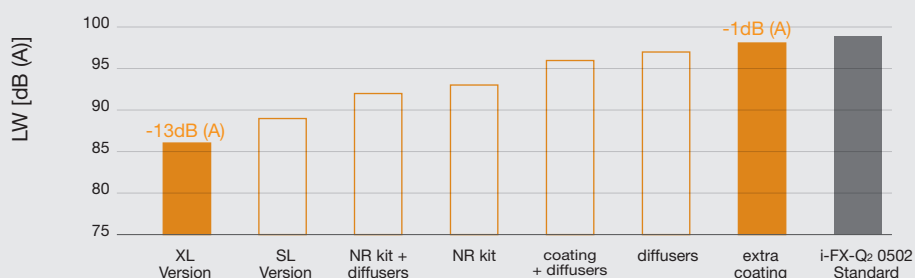
Independent circuits with variable speed drive screw compressor and EC fans.



HFO refrigerant

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

ACOUSTICAL VERSIONS AND ACCESSORIES



Super silent

Up to 8 different sound power levels for a total sound emission control (from -1dB (A) up to -13 dB (A) compared to the standard configuration).

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	400/3/50
PERFORMANCE											
SELECTION RANGE											
Cooling capacity range	(1) kW		400-520	429-536	456-570	517-671	598-712	630-787	786-982	881-1036	1046-1125
EER (up to)	(1) kW/kW		3,34	3,30	3,36	3,25	3,24	3,32	3,25	3,22	3,03
Heating capacity range	(3) kW		379-492	394-492	421-526	491-638	570-678	606-757	745-931	836-983	986-1060
COP (up to)	(3) kW/kW		3,45	3,42	3,42	3,47	3,45	3,51	3,50	3,51	3,49
SELECTION RATED											
COOLING ONLY (GROSS VALUE)											
Cooling capacity	(1)(10) kW		488	531	570	627	689	787	915	985	1083
Total power input	(1)(10) kW		155	168	182	199	219	251	288	312	360
EER	(1)(10) kW/kW		3,14	3,15	3,14	3,15	3,14	3,13	3,18	3,16	3,01
COOLING ONLY (EN14511 VALUE)											
Cooling capacity	(1)(2)(10) kW		486	529	568	625	687	786	912	982	1079
EER	(1)(2)(10) kW/kW		3,10	3,10	3,10	3,10	3,10	3,10	3,14	3,12	2,97
HEATING ONLY (GROSS VALUE)											
Total heating capacity	(3)(10) kW		458	486	526	593	652	757	862	928	1018
Total power input	(3)(10) kW		133	143	154	171	189	216	248	265	292
COP	(3)(10) kW/kW		3,44	3,40	3,42	3,47	3,45	3,51	3,47	3,50	3,48
HEATING ONLY (EN14511 VALUE)											
Total heating capacity	(2)(3)(10) kW		460	487	527	594	654	759	865	931	1020
COP	(2)(3)(10) kW/kW		3,42	3,38	3,41	3,45	3,43	3,49	3,44	3,48	3,46
COOLING WITH TOTAL HEAT RECOVERY											
Cooling capacity	(4)(10) kW		489	533	571	624	683	785	914	987	1102
Total power input	(4)(10) kW		137	151	161	174	193	221	258	274	310
Recovery heat exchanger capacity	(4)(10) kW		617	675	722	788	864	993	1157	1245	1393
TER	(4)(10) kW/kW		8,08	8,01	8,04	8,11	8,02	8,03	8,02	8,13	8,06
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)		-	-	-	4,93	4,95	4,95	4,57	4,52	4,45
Performance ηs	(12)(14) %		-	-	-	194	195	195	180	178	175
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)											
PDesign	(5)(10) kW		340	364	390	-	-	-	-	-	-
SCOP	(5)(10)(15)		3,91	3,92	3,89	-	-	-	-	-	-
Performance ηs	(5)(10)(16) %		153	154	153	-	-	-	-	-	-
Seasonal efficiency class	(5)(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	(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	(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	235	240	260	260	325	350	470	470
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											
A	(11) mm		8150	8150	8900	9650	10400	10400	10400	11900	11900
B	(11) mm		2260	2260	2260	2260	2260	2260	2260	2260	2260
H	(11) mm		2530	2530	2530	2530	2530	2530	2530	2530	2530
Operating weight	(11) kg		8350	8380	9080	9590	10060	11010	12310	14110	14150

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 performance with inverter compressor at nominal speed.

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

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

13 Seasonal space heating energy index

14 Seasonal energy efficiency of the space cooling

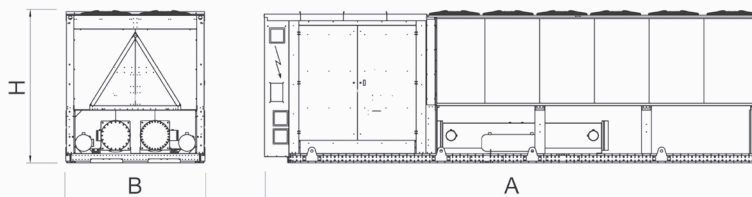
15 Seasonal performance coefficient

16 Seasonal space heating energy efficiency

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

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

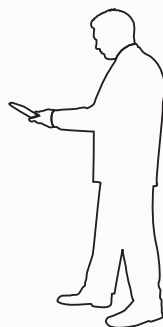




i-FX-Q₂ INTEGRA

4-pipe air source unit, inverter-driven screw compressors and EC fans.
Cooling capacity from 341 to 1125 kW

i-FX-Q ₂ SL-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											
SELECTION RANGE											
Cooling capacity range	(1)	kW	384-499	410-513	439-549	498-647	577-687	613-766	724-905	835-982	966-1039
EER (up to)	(1)	kW/kW	3,24	3,21	3,29	3,22	3,22	3,20	3,14	3,11	3,02
Heating capacity range	(3)	kW	375-487	390-487	417-521	486-631	564-672	599-749	735-919	824-969	977-1050
COP (up to)	(3)	kW/kW	3,47	3,44	3,47	3,48	3,48	3,53	3,51	3,53	3,52
SELECTION RATED											
COOLING ONLY (GROSS VALUE)											
Cooling capacity	(1)(10)	kW	468	508	549	604	665	766	881	952	1039
Total power input	(1)(10)	kW	155	169	181	196	215	251	293	316	370
EER	(1)(10)	kW/kW	3,01	3,00	3,03	3,08	3,10	3,05	3,00	3,02	2,81
COOLING ONLY (EN14511 VALUE)											
Cooling capacity	(1)(2)(10)	kW	466	507	548	602	663	764	879	949	1036
EER	(1)(2)(10)	kW/kW	2,98	2,96	3,00	3,04	3,06	3,03	2,97	2,98	2,77
HEATING ONLY (GROSS VALUE)											
Total heating capacity	(3)(10)	kW	454	482	521	587	647	749	852	919	1008
Total power input	(3)(10)	kW	131	141	151	168	186	212	245	262	289
COP	(3)(10)	kW/kW	3,46	3,41	3,44	3,49	3,48	3,53	3,47	3,52	3,49
HEATING ONLY (EN14511 VALUE)											
Total heating capacity	(2)(3)(10)	kW	455	483	522	588	648	751	854	922	1010
COP	(2)(3)(10)	kW/kW	3,44	3,39	3,42	3,47	3,45	3,50	3,45	3,49	3,47
COOLING WITH TOTAL HEAT RECOVERY											
Cooling capacity	(4)(10)	kW	489	533	571	624	683	785	914	987	1102
Total power input	(4)(10)	kW	137	151	161	174	193	221	258	274	310
Recovery heat exchanger capacity	(4)(10)	kW	617	675	722	788	864	993	1157	1245	1393
TER	(4)(10)	kW/kW	8,08	8,01	8,04	8,11	8,02	8,03	8,02	8,13	8,06
ENERGY EFFICIENCY											
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)											
Ambient refrigeration											
Prated,c	(12)	kW	-	-	-	602	663	764	879	949	1036
SEER	(12)(13)		-	-	-	4,93	4,98	4,93	4,58	4,50	4,44
Performance ηs	(12)(14)	%	-	-	-	194	196	194	180	177	174
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)											
PDesign	(5)(10)	kW	364	363	385	-	-	-	-	-	-
SCOP	(5)(10)(15)		4,01	3,92	4,00	-	-	-	-	-	-
Performance ηs	(5)(10)(16)	%	157	154	157	-	-	-	-	-	-
Seasonal efficiency class	(5)(10)		-	-	-	-	-	-	-	-	-
EXCHANGERS											
HEAT EXCHANGER USER SIDE IN REFRIGERATION											
Water flow	(1)(10)	l/s	22,36	24,32	26,26	28,89	31,80	36,61	42,14	45,52	49,69
Pressure drop	(1)(10)	kPa	37,5	47,3	30,2	37,6	42,3	27,4	36,8	39,5	47,4
HEAT EXCHANGER USER SIDE IN HEATING											
Water flow	(3)(10)	l/s	21,92	23,25	25,14	28,33	31,22	36,15	41,10	44,37	48,64
Pressure drop	(3)(10)	kPa	22,1	24,9	21,1	26,5	31,5	31,5	40,7	34,2	29,4
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	235	240	260	260	325	350	470	470
NOISE LEVEL											
Sound Pressure	(6)(10)	dB(A)	57	58	58	59	59	59	61	61	59
Sound power level in cooling	(7)(8)(10)	dB(A)	90	91	91	92	92	92	94	94	92
Sound power level in heating	(7)(9)(10)	dB(A)	90	91	91	92	92	92	94	94	92
SIZE AND WEIGHT											
A	(11)	mm	8150	8150	8900	9650	10400	10400	10400	11900	11900
B	(11)	mm	2260	2260	2260	2260	2260	2260	2260	2260	2260
H	(11)	mm	2530	2530	2530	2530	2530	2530	2530	2530	2530
Operating weight	(11)	kg	8800	8830	9530	10040	10510	11450	12750	14560	14600





i-FX-Q2 XL-CA			0502	0532	0602	0652	0702	0802	0902	1002
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										
SELECTION RANGE										
Cooling capacity range	(1)	kW	341-443	386-484	421-526	440-572	532-633	586-732	678-848	775-912
EER (up to)	(1)	kW/kW	3,31	3,18	3,33	3,29	3,25	3,27	3,31	3,15
Heating capacity range	(3)	kW	334-434	370-462	402-502	431-560	522-621	577-721	660-825	756-889
COP (up to)	(3)	kW/kW	3,49	3,46	3,50	3,49	3,49	3,54	3,56	3,57
SELECTION RATED										
COOLING ONLY (GROSS VALUE)										
Cooling capacity	(1)(10)	kW	443	484	526	572	633	732	848	912
Total power input	(1)(10)	kW	146	162	172	185	204	239	282	302
EER	(1)(10)	kW/kW	3,02	2,98	3,05	3,09	3,11	3,06	3,01	3,02
COOLING ONLY (EN14511 VALUE)										
Cooling capacity	(1)(2)(10)	kW	442	482	524	570	631	730	845	910
EER	(1)(2)(10)	kW/kW	2,99	2,94	3,02	3,06	3,07	3,03	2,98	2,99
HEATING ONLY (GROSS VALUE)										
Total heating capacity	(3)(10)	kW	434	462	502	560	621	721	825	888
Total power input	(3)(10)	kW	125	134	144	160	178	204	235	250
COP	(3)(10)	kW/kW	3,48	3,44	3,47	3,50	3,50	3,54	3,51	3,55
HEATING ONLY (EN14511 VALUE)										
Total heating capacity	(2)(3)(10)	kW	435	463	503	562	622	723	828	891
COP	(2)(3)(10)	kW/kW	3,47	3,42	3,46	3,49	3,48	3,52	3,48	3,53
COOLING WITH TOTAL HEAT RECOVERY										
Cooling capacity	(4)(10)	kW	464	509	549	591	651	752	883	921
Total power input	(4)(10)	kW	129	142	151	165	182	212	247	262
Recovery heat exchanger capacity	(4)(10)	kW	586	643	690	746	822	951	1116	1167
TER	(4)(10)	kW/kW	8,11	8,08	8,22	8,11	8,07	8,02	8,09	7,98
ENERGY EFFICIENCY										
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)										
Ambient refrigeration										
Prated,c	(12)	kW	-	-	-	570	631	730	845	910
SEER	(12)(13)		-	-	-	4,96	5,02	4,98	4,53	4,43
Performance ηs	(12)(14)	%	-	-	-	195	198	196	178	174
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)										
PDesign	(5)(10)	kW	316	343	368	-	-	-	-	-
SCOP	(5)(10)(15)		4,23	4,20	4,26	-	-	-	-	-
Performance ηs	(5)(10)(16)	%	166	165	167	-	-	-	-	-
Seasonal efficiency class	(5)(10)		-	-	-	-	-	-	-	-
EXCHANGERS										
HEAT EXCHANGER USER SIDE IN REFRIGERATION										
Water flow	(1)(10)	l/s	21,18	23,12	25,14	27,34	30,25	35,00	40,54	43,63
Pressure drop	(1)(10)	kPa	33,7	42,7	27,7	33,7	38,3	25,1	34,1	36,3
HEAT EXCHANGER USER SIDE IN HEATING										
Water flow	(3)(10)	l/s	20,95	22,29	24,23	27,05	29,96	34,81	39,83	42,89
Pressure drop	(3)(10)	kPa	20,2	22,9	19,6	24,2	29,0	29,2	38,2	31,9
REFRIGERANT CIRCUIT										
Compressors nr.		N°	2	2	2	2	2	2	2	2
No. Circuits		N°	2	2	2	2	2	2	2	2
Regulation			STEPLESS	STEPLESS	STEPLESS	STEPLESS	STEPLESS	STEPLESS	STEPLESS	STEPLESS
Refrigerant			R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
Refrigerant charge		kg	230	235	240	260	260	325	350	470
NOISE LEVEL										
Sound Pressure	(6)(10)	dB(A)	53	54	55	55	55	56	55	56
Sound power level in cooling	(7)(8)(10)	dB(A)	86	87	88	88	88	89	88	89
Sound power level in heating	(7)(9)(10)	dB(A)	87	88	89	89	89	90	89	90
SIZE AND WEIGHT										
A	(11)	mm	8150	8150	8900	9650	10400	10400	10400	11900
B	(11)	mm	2260	2260	2260	2260	2260	2260	2260	2260
H	(11)	mm	2530	2530	2530	2530	2530	2530	2530	2530
Operating weight	(11)	kg	8800	8830	9530	10040	10510	11450	12750	14560

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 using the Wi-Fi generated by the unit.

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.

“EXPERIENCE IS BY FAR THE BEST PROOF”

Sir Francis Bacon
British philosopher (1561 - 1626)

The New BNL Roma Tiburtina Headquarters

Roma - Italy

Application:

Office buildings

Plant type:

Hydronic System

Cooling capacity:

5036 kW

Heating capacity:

4130 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.



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 KlimaPRO



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.

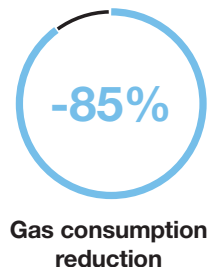
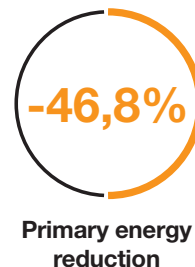
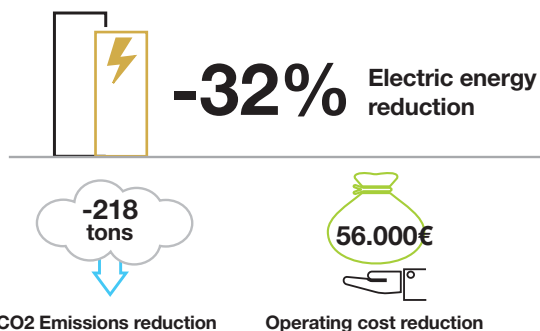
CASE STUDY

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.

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 €.



MORE THAN 1000 PROJECTS ALL OVER THE WORLD

Ministry of Science
Buenos Aires - Argentina
2016



Inditex Logistical Platform
Cabanillas del Campo - Spain
2014



Application:
Office buildings

Installed machines:
2x ERACS2-Q/CA 1962

Cooling capacity:
850 kW

Heating capacity:
868 kW

Application:
Industrial process

Cooling capacity:
3030 kW

Heating capacity:
1084 kW

Installed machines:
1x ERACS2-Q/CA 1162,
1x ERACS2-Q/CA 3222,
2x FOCS2/CA 4202

Kinetic
Boulogne - France
2015



SKF Argentina
Tortuguitas - Argentina
2014



Certifications:
BREEAM Excellent

Installed machines:
2x ERACS-Q/SL 2722

Application:
Mixed-Use Development

Cooling capacity:
1200 kW

Application:
Tools & machinery

Cooling capacity:
1042 kW

Heating capacity:
1056 kW

Installed machines:
2x NECS-Q 1816,
2x AX 26 Close Control Units,
9x WIZARD

Fondazione Prada
Milan - Italy
2015



CDC Canberra Data center
Canberra - Australia - 2015



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

Application:
Data Center

Cooling capacity:
3975 kW

Heating capacity:
496 kW

Machines installed:
2x FX-FC-NG-SL 5204,
2x ERACS2-Q 1162 SL CA,
1x FX-FC-NG-SL 5402

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

Shanghai - China - 2013



Application:
Schools and Universities

Cooling capacity:
3880 kW

Heating capacity:
4250 kW

Machines installed:
3x smart heat pumps for heating and cooling,
3x reversible air cooled heat pumps

Amazon Logistic Hub

Piacenza - Italy
2013



Investor:
Amazon

Application:
Industrial process

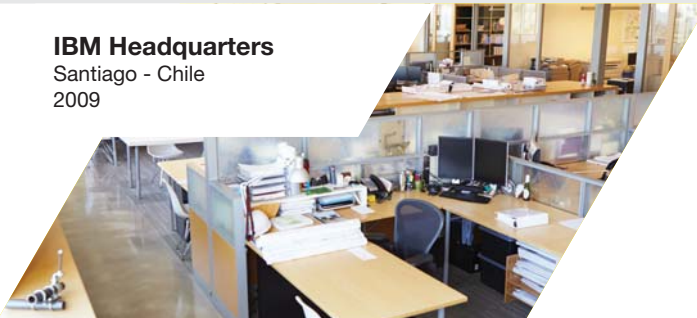
Cooling capacity:
3980 kW

Heating capacity:
4126 kW

Installed machines:
3x ERACS2-Q 3222,
2x FOCS-N/CA 3222,
1x ClimaPRO

IBM Headquarters

Santiago - Chile
2009



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

Strasbourg - France
2013



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 - Swatch Group

Neuchatel - Switzerland
2014



Investor:
Universo - Swatch Group

Application:
Office building

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

Austria - 2015



Application:
Hotel

Cooling capacity:
1672 kW

Heating capacity:
1175 kW

Machines installed:
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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