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

COMFORT

CHILLERS

formula i-FX(1+i)

AIR AND WATER SOURCE SCREW CHILLERS WITH FIXED AND VARIABLE SPEED COMPRESSORS, FROM 488 TO 1784 kW

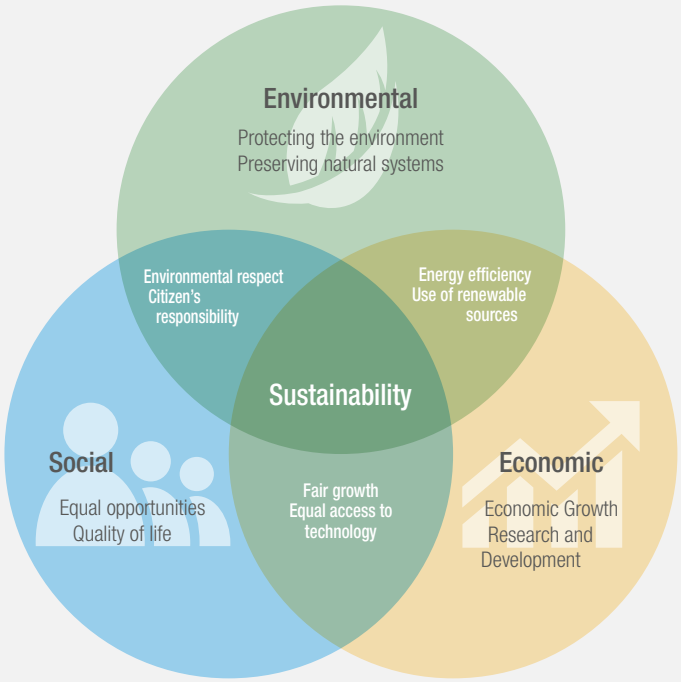
- Premium efficiency
- Low energy consumption
- Quick return on investment
- Environmental compliance

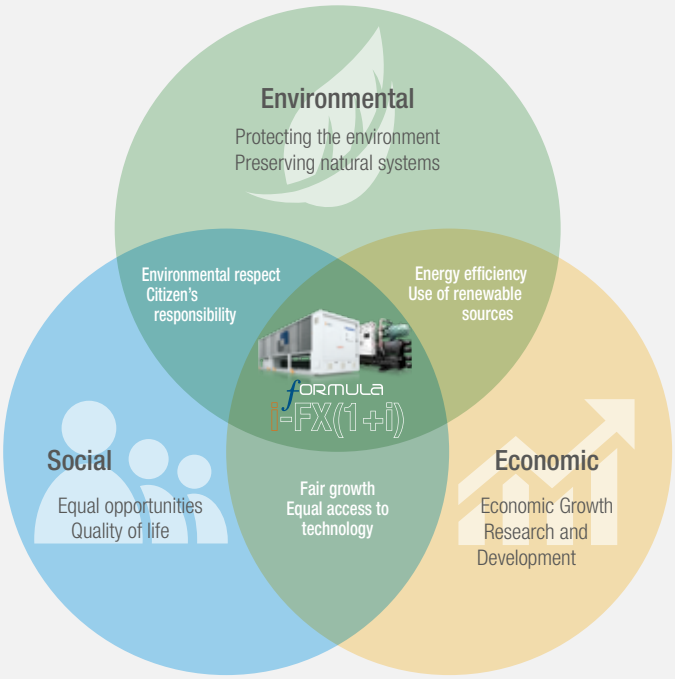
climaveneta.com

CLIMAVENETA®

“SUSTAINABLE DEVELOPMENT IS DEVELOPMENT THAT MEETS THE NEEDS OF THE PRESENT WITHOUT COMPROMISING THE ABILITY OF FUTURE GENERATIONS TO MEET THEIR OWN NEEDS”.

World Commission on
Environment and Development





Highest efficiency, precision of control and system’s simplification are distinguishing features of climaveneta brand units.

Now we want to prove that it is possible to combine our innovative technology with a sustainable concept.

Sustainability is conceived as a continuous process of environmental, social and economic development.

ENVIRONMENTAL SUSTAINABILITY

Environmental sustainability involves making decisions and taking actions that are in the interests of protecting the natural world, with particular emphasis on preserving the capability of the environment to support human life.

ECONOMIC SUSTAINABILITY

Economic sustainability involves continuous economic growth, providing long-term benefits and using available resources in a way that is both efficient and responsible.

SOCIAL SUSTAINABILITY

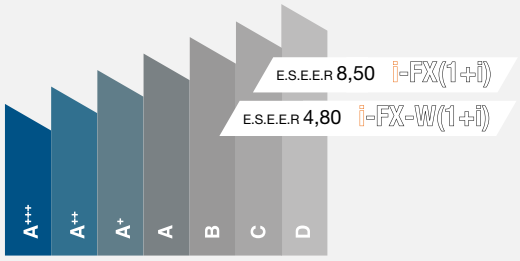
Social sustainability is about creating and maintaining quality of life for people, ensuring that all the people have the same access to social resources.

LAWS AND REGULATIONS

The legislature and international organisations are becoming more and more aware that sustainable development needs to be regulated by laws and programs that aim to integrate social, economic and environmental sustainability.

FORMULA i-FX (1+i) is the new chiller range with Climaveneta brand that has been designed to meet the fast changing efficiency targets of the market. Because sustainability is the key strategy for long-term success.

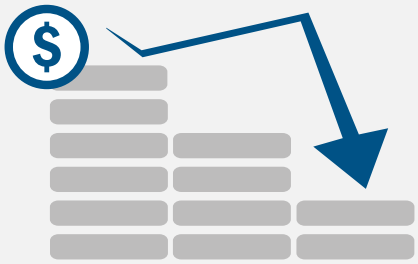
Premium energy efficiency



The FORMULA i-FX (1+i) is the latest range of chillers specifically designed to operate at very high levels of efficiency at both full and partial loads.

With EER in Class A and unbeatable ESEER values, the new Climaveneta brand range is the best solution available on the market. The unit precisely meets the requested cooling capacity, thus ensuring reduced energy consumption. High-efficiency at different loads also results in a large reduction of CO2 emissions: the i-FX (1+i) range features a 20% reduction of CO2 emissions compared to other Class A chillers.

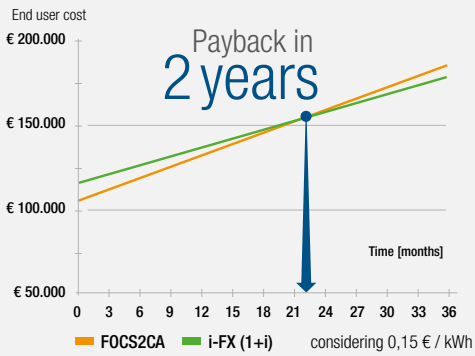
Reduced energy consumption



We always strive to offer high-efficiency and competitive solutions. It is clearly recognised that a low-consumption unit results in a reduction in both CO2 emissions and energy expenses. These cost savings can be reinvested generating new economic value.

Thanks to cutting-edge technologies, the new FORMULA i-FX (1+i) demonstrates that it is possible to combine the highly-efficient levels with a cost savings of 21% (compared to other new generation class A chillers).

Quick return on the investment



Accessibility is a key concept of social development. This means that technology and innovation must be available and affordable.

The high efficiency level of the FORMULA i-FX (1+i) at all operating conditions allows for the small initial investment required to have a payback period of 2 years (compared to other Class A chillers). The new technology of inverter driven screw chillers has never been so accessible.

Compliance with environmental standards

GREEN CERTIFICATION RELEVANT

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

E3 Equipment Energy Efficiency

Climaveneta brand solutions have been alwasy pioneering innovative ideas anticipating the changes established by legislation. The new FORMULA i-FX (1+i) has been conceived to meet the most challenging standards established by the ASHRAE 90.1-2013 protocol, including the values that are imposed since 2015. All units are Eurovent certified and all the components are accurately selected, taking into consideration the aims established by the EU Ecodesign directive-including the more demanding values established for 2015, and meeting the objectives required by the Australian MEPS system (Minimum Energy Performance Standard).

formula i-FX(1+i)

A new concept of efficiency:
Fixed speed compressor (**1**)
+ Variable speed compressor (**i**)

UNBEATABLE EFFICIENCY, IN EVERY LOAD CONDITION

Maximum reliability, wide operating range, continuous capacity modulation, class A effificiency and ESEER 8,5 value for the i-FX-W (1+i). The advantages of the i+i formula represents the no-compromise solution of the new range.

The advantages of 1+i logic

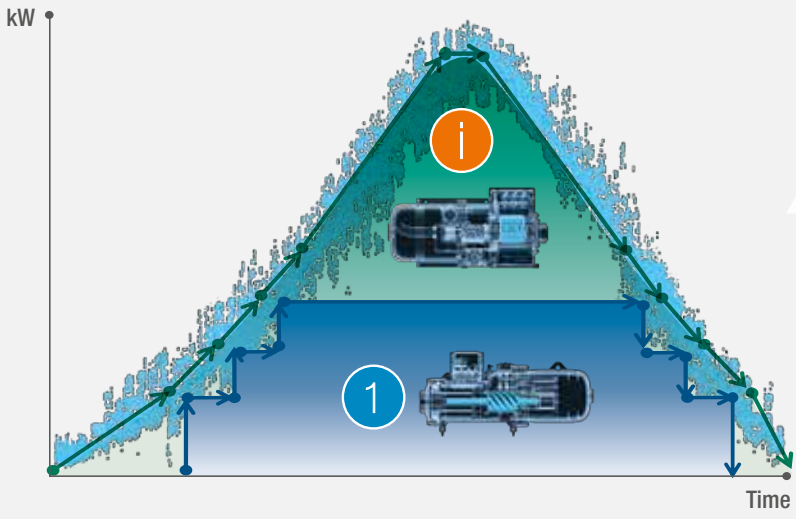
- Always the best combination of compressors
- Continuous modulation from 15% to 100%
- Perfect leaving water temperature stability
- EER in Class A efficiency
- ESEER 8,5 for i-FX-W (1+i)
- ESEER 4,8 for i-FX(1+i)

Climaveneta has developed a new concept of efficiency: the combination of a fixed speed screw compressor (1) with a variable speed inverter driven screw compressor (+ i). This solution, combined with unique and advanced control logic, improves the best features and benefits of each compressor.

The result is a unit that focuses on efficiency in all load conditions, overcoming the limitations traditionally imposed by the full inverter system on full loads and the fixed speed screw compressors on partial loads.

PREMIUM EFFICIENCY THANKS TO THE COMBINATION (1+I) COMPRESSORS

- Cooling load of the variable speed compressor
- Cooling load of the fixed speed compressor
- Total requested cooling load



i-FX(1+i)

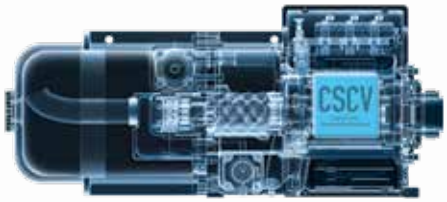
Dedicated Compressors

The new original compressors are the result of a co-development focused on increasing unit performance. A solution that has been specially designed for the FORMULA i-FX (1+i) products.

1 Fixed Speed Compressor

The new generation of fixed speed compressors is the result of our commitment to avoid the efficiency loss in part-load operation: the new compressor features a better lubrication system and an innovative internal geometry that allows a jump in performance at partial loads.

i Variable Speed Compressor

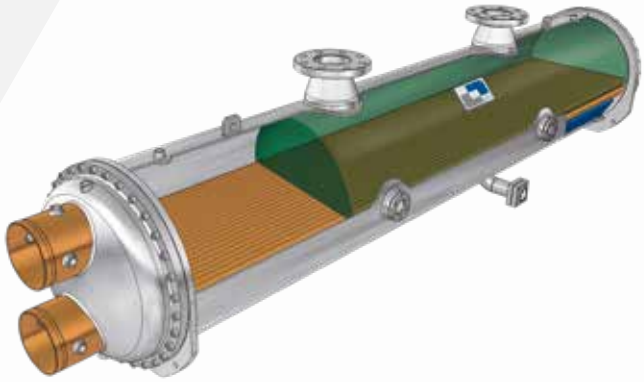


The new inverter driven compressor is compact, with an oil separator, frequency inverter and cooling system integrated all within a single casing. The Vi control allows automatic adaptation to the different operating conditions thus ensuring that different refrigeration load levels are always at the highest values of energy efficiency.

High-performance fans

Both the fans and the ducts meet the performance requirements specified in the European Eco-Design Regulation. As an option, fans are available with special ducts featuring an innovative profile, which increases the efficiency of the ventilation system in line with the most challenging objectives set out in regulations starting in 2015. The new fans, with ducts having a convergent-divergent profile that incorporate straightening vanes for the air flow, lead to the availability of ESP static pressure up to 130 Pa. They are the perfect solution for critical installations where air flow channeling is necessary.

i-FX-W(1+i)



Innovative design of Heat Exchangers

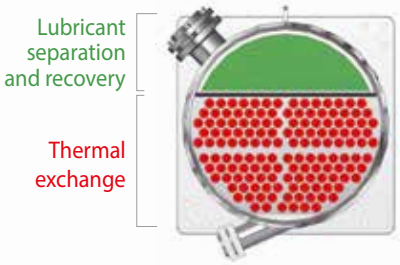
The flooded evaporator and the shell and tube condenser, both fully designed and built internally, present an exclusive design aimed to maximise the cooling power and optimise the operation of the compressors.

The shell and tube condenser is designed in order to guarantee reduced pressure drops on the water side and to decrease the pumping costs as much as possible.

In the evaporator the complete flooding of the tubes is guaranteed also during partial load conditions by an electronic expansion valve, managed by proprietary control logics.

On the evaporator the presence of refrigerant fluid in the shell side and water in the tube side allows:

- Minimisation of pressure drops
- Perfect unified temperature as well as complete refrigerant evaporation
- No surface for the over-heating
- Easy cleaning operations

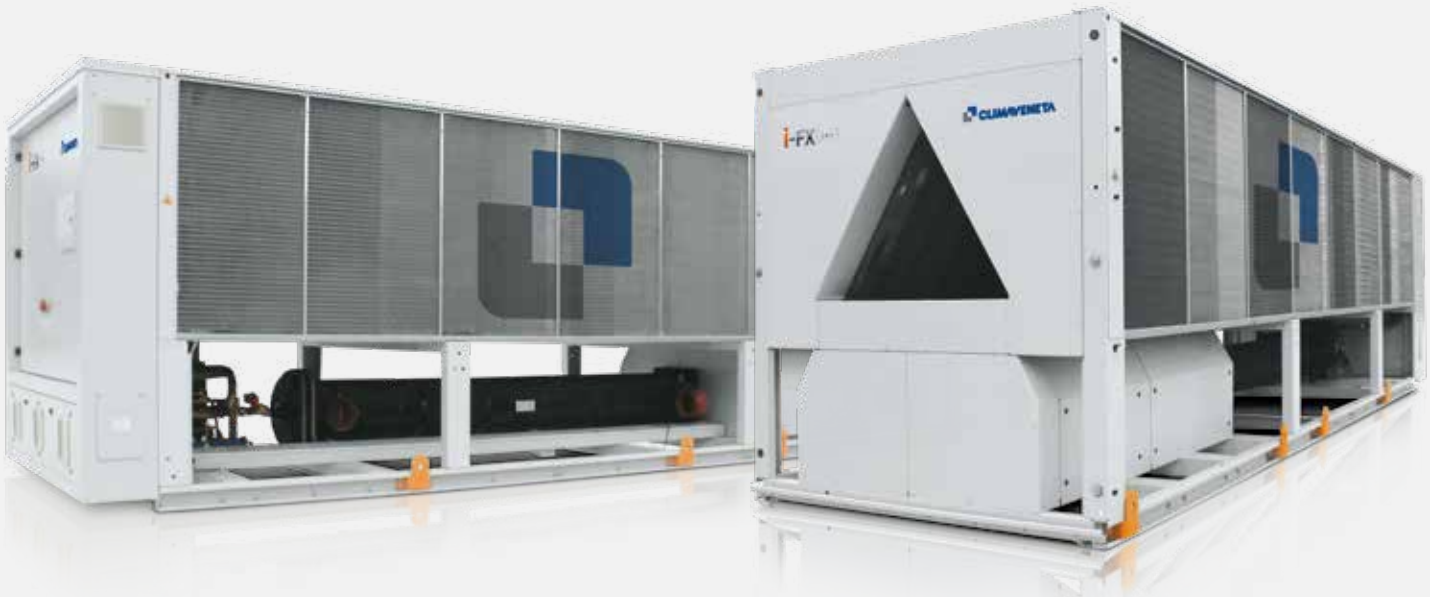


Perfect lubricant recovery

Unique design of the heat exchangers that provides the perfect separation and complete recovery of the lubricant in order to guarantee proper lubrication of the compressors and the relevant cleaning of the shell and tube exchanging surfaces.

i-FX(1+i) 2602-5403

High efficiency chiller, air source for outdoor installation.
567 - 1273 kW



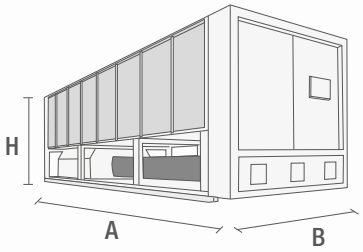
EXCELLENCE IN RESULTS
Compliance with the most strict European standards

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com
UP TO 1500 kW

All i-FX (1+i) units are certified by the EUROVENT program for units with capacities over 600 kW. Climaveneta brand products are among the few units which participate in this non-tcompulsory certification program.

This is consistent with Climaveneta brand commitment to transparency as the best guarantee of quality and reliability for our partners and customers.

Accessories:
- Hydronic group
- VPF (Variable Primary Flow) kit: variable flow pumps with on board regulation
- Noise reducer (non-silenced versions only)
- EC fans with electronic DC brushless motor
- Axial fans with External Static Pressure (ESP)up to 130 Pa
- Remote control keyboard (distance up to 200m and up to 500m)
- Set-up for remote connectivity with ModBus/Echelon protocol cards



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 Average sound pressure level, at 10m distance, unit in a free field on a reflective surface; non-binding value obtained from the sound power level.
4 Sound power on the basis of measurements made in compliance with ISO 9614 and Eurovent 8/1 for Eurovent certified units; in compliance with ISO 3744 for non-certified units.
5 Unit in standard configuration/execution, without optional accessories.
The units highlighted in this publication contain HFC R134a [GWP_{100} 1430] fluorinated greenhouse gases.

NEW! EUROVENT CERTIFIED PERFORMANCE VSPEED VPF R HFC R134a AXIAL A ENERG.CL. COOLING SCREW T SHELL&T.

i-FX (1+i) /CA			2602	2662	2722	3152	3602	3902	4212	4513	4953	5403
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	400/3/50
PERFORMANCE												
COOLING ONLY (GROSS VALUE)												
Cooling capacity	(1)	kW	567	631	700	785	858	951	1045	1127	1196	1273
Total power input	(1)	kW	181	201	224	249	273	302	333	359	380	405
EER	(1)	kW/kW	3,13	3,14	3,13	3,15	3,14	3,15	3,14	3,14	3,15	3,14
ESEER	(1)	kW/kW	4,81	4,81	4,78	4,79	4,84	4,79	4,82	4,84	4,79	4,82
COOLING ONLY (EN14511 VALUE)												
Cooling capacity	(1)(2)	kW	566	629	698	783	855	949	1042	1123	1192	1269
EER	(1)(2)	kW/kW	3,10	3,10	3,10	3,12	3,10	3,11	3,10	3,10	3,11	3,10
ESEER	(1)(2)	kW/kW	4,62	4,62	4,62	4,61	4,63	4,61	4,61	4,60	4,60	4,60
Cooling energy class			A	A	A	A	A	A	A	A	A	A
ENERGY EFFICIENCY												
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)												
Ambient refrigeration												
Prated,c	(7)	kW	566	629	698	783	855	949	1042	1123	1192	1269
SEER	(7)(8)		4,72	4,73	4,77	4,76	4,77	4,82	4,77	4,74	4,73	4,75
Performance ηs	(7)(9)	%	186	186	188	187	188	190	188	187	186	187
EXCHANGERS												
HEAT EXCHANGER USER SIDE IN REFRIGERATION												
Water flow	(1)	l/s	27,14	30,17	33,48	37,55	41,03	45,49	49,96	53,90	57,18	60,88
Pressure drop	(1)	kPa	36,0	35,4	31,1	34,5	41,02	36,7	44,3	51,6	43,6	49,5
REFRIGERANT CIRCUIT												
Compressors nr.		N°	2	2	2	2	2	2	2	3	3	3
No. Circuits		N°	2	2	2	2	2	2	2	3	3	3
Refrigerant charge		kg	115	180	190	200	200	210	220	255	245	255
NOISE LEVEL												
Sound Pressure	(3)	dB(A)	67	68	68	68	69	70	71	72	72	72
Sound power level in cooling	(4)(5)	dB(A)	100	101	101	101	102	103	104	105	105	105
SIZE AND WEIGHT												
A	(6)	mm	7000	7900	7900	7900	9860	10790	11720	12630	12630	12630
B	(6)	mm	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260
H	(6)	mm	2530	2530	2530	2530	2530	2530	2530	2530	2530	2530
Operating weight	(6)	kg	6130	7170	7460	7970	9110	10080	10140	11640	12570	12950

i-FX (1+i) /SL			2602	2662	2722	3152	3903	3953	4013	4063	4953	5403
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	400/3/50
PERFORMANCE												
COOLING ONLY (GROSS VALUE)												
Cooling capacity	(1)	kW	544	611	679	752	805	880	946	1018	1143	1209
Total power input	(1)	kW	181	201	222	249	268	295	311	335	380	411
EER	(1)	kW/kW	3,01	3,04	3,06	3,03	3,01	2,98	3,04	3,04	3,01	2,94
ESEER	(1)	kW/kW	4,91	4,90	4,87	4,92	4,87	4,86	4,89	4,91	4,90	4,91
COOLING ONLY (EN14511 VALUE)												
Cooling capacity	(1)(2)	kW	542	610	677	750	802	878	944	1015	1140	1205
EER	(1)(2)	kW/kW	2,98	3,01	3,03	3,00	2,97	2,95	3,01	3,00	2,97	2,90
ESEER	(1)(2)	kW/kW	4,72	4,72	4,71	4,74	4,68	4,69	4,70	4,70	4,71	4,69
Cooling energy class			B	B	B	B	B	B	B	B	B	B
ENERGY EFFICIENCY												
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)												
Ambient refrigeration												
Prated,c	(7)	kW	542	610	677	750	802	878	944	1015	1140	1205
SEER	(7)(8)		4,84	4,85	4,86	4,88	4,81	4,83	4,84	4,80	4,81	4,78
Performance ηs	(7)(9)	%	190	191	192	192	189	190	191	189	190	188
EXCHANGERS												
HEAT EXCHANGER USER SIDE IN REFRIGERATION												
Water flow	(1)	l/s	26,00	29,22	32,46	35,97	38,48	42,09	45,25	48,67	54,66	57,83
Pressure drop	(1)	kPa	33,0	33,2	29,2	31,7	36,3	31,5	36,4	42,1	39,9	44,6
REFRIGERANT CIRCUIT												
Compressors nr.		N°	2	2	2	2	3	3	3	3	3	3
No. Circuits		N°	2	2	2	2	3	3	3	3	3	3
Refrigerant charge		kg	115	180	190	200	200	200	210	220	255	255
NOISE LEVEL												
Sound Pressure	(3)	dB(A)	58	59	60	60	60	60	60	61	61	64
Sound power level in cooling	(4)(5)	dB(A)	91	92	93	93	93	93	93	94	94	97
SIZE AND WEIGHT												
A	(6)	mm	7000	7900	7900	7900	9900	10800	10800	11700	11700	12630
B	(6)	mm	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260
H	(6)	mm	2530	2530	2530	2530	2530	2530	2530	2530	2530	2530
Operating weight	(6)	kg	6410	7400	7690	8370	9570	10080	10650	11090	12600	13530

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 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.
4 Sound power on the basis of measurements made in compliance with ISO 9614.
5 Sound power level in cooling, outdoors.
6 Unit in standard configuration/execution, without optional accessories.
7 Seasonal energy efficiency of the cooling environment in AVERAGE climatic conditions [REGULATION (EU) N. 2016/2281]
8 Seasonal space heating energy index
9 Seasonal energy efficiency of the space cooling
The units highlighted in this publication contain HFC R134a [GWP_{100}1430] fluorinated greenhouse gases.

Certified data in EUROVENT

i-FX(1+i)

Case Study

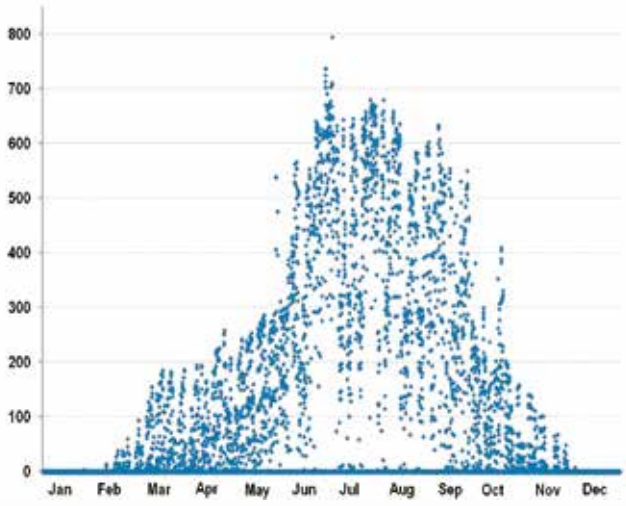
Milan Residential Building in Via Bernina

COMFORT COOLING

Project

Renovation of an existing building with 3 floors plus the ground floor. The aim of the project was to reduce the energy consumption.

The refurbishment included an outer insulation cladding, new glass windows with reduced energy losses and the correction of most thermal bridges.



Cooling load

The primary cooling circuit feeds a 2,5 m3 storage tank. The secondary circuit serves fan coils and air handling units (AHU).

The load required by the primary cooling circuit is characterised by high variability, depending on the season.

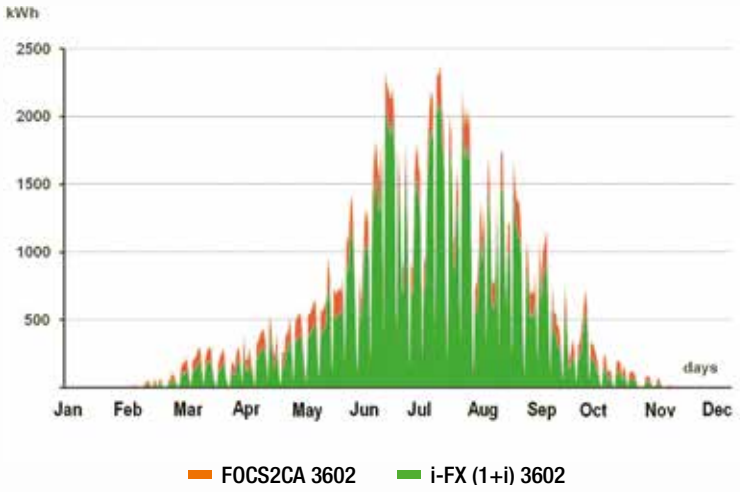
The cooling requirement of the building (office building in the tertiary sector) is all year round, 6 out of 7 days, from 10am to 8pm.

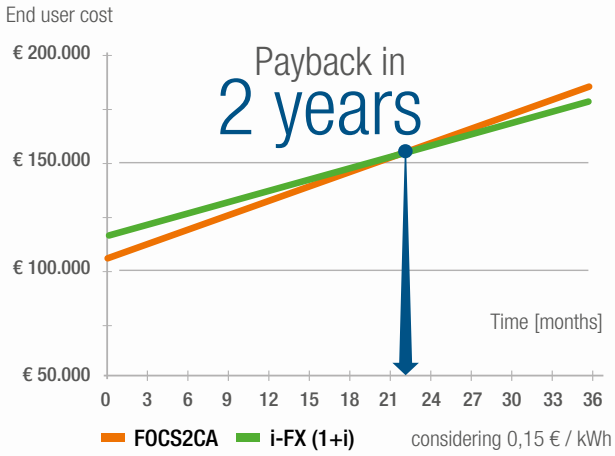
The new i-FX (1+i), with wide continuous modulation capacity always at the highest levels of efficiency, as the best solution for all types of applications.

FOCS2/CA versus i-FX (+i)

The units selected in this application are a FOCS2/CA and i-FX (1+i).

The diagram shows that i-FX (1+i) achieves annual energy savings of 21%, when compared with a class A chiller of the latest design.





Results

Considering an energy cost equal to 0,15 €/kWh, the i-FX (1+i) solution, due to its unbeatable advantage in terms of energy efficiency, results in a payback period of 2 years.

The renovation to improve the energy performance can be assessed according to the international Green Building LEED certification system. The facility with i-FX (1+i) involves the acquisition of 5 LEED points, against the 2 points acquired by the FOCS2/CA unit.

AT A GLANCE

Power input saving	CO_2 saved per year	Payback period	Building with i-FX (1+i)
37.680 kWh per year	20.720 kg, equivalent to CO_2 emissions produced by a petrol car driving 121.900 km	2 years	**5 LEED points** (2 LEED points with FOCS2/CA)

GREEN CERTIFICATION RELEVANT

i-FX-W(1+i) 1402 - 4652

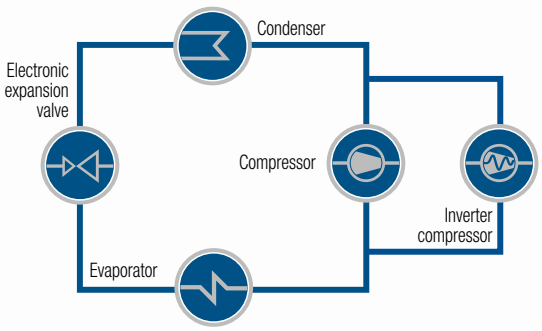
High efficiency water source chillers for indoor installation.
488 - 1784 kW

i-FX-W is the Climaveneta brand water cooled chiller with 1+i innovative logics that combines fifixed speed and variable speed screw compressors, thus ensuring continuous modulation of loads and a perfect leaving water stability.
All the units come with an exclusive flooded evaporator and a shell and tube condenser, specifically conceived and developed in-house.

Their exclusive design ensures a perfect heat exchange coefficient and provides EER results not only above class A but also among the highest values available on the market of water chillers with screw compressors.

Developed to answer to the most stringent design conditions, i-FX-W(1+i) is highly confifigurable thanks to a full range of accessories:

- VPF or VPF.D signal
- compressors' soundproofing (noise power reduction of 6dB(A))
- EMC electromagnetic compatibility for residential environments
- fast restart
- /H version (heat pump reversible on hydraulic side)
- refrigerant leak detector, available in 3 versions, one with refrigerant migration in case of leakages



Two compressors in one single refrigerant circuit

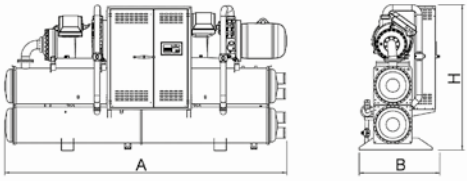
The fixed screw compressor and the inverter one are not only combined in the same unit, but also on the same refrigerant circuit. A revolutionary solution ensuring higher efficiency at partial loads in comparison with a proposal with independent circuits.

The accurate design of electrical and electronic components ensures:

VSPEED VPF HEATING SCREW ENERG.CL. COOLING HFC R134a FLOODED

i-FX-W (1+i)			1402	1752	1902	2152	2602	3002	3402	3852	4252	4652
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	400/3/50
PERFORMANCE												
COOLING ONLY (GROSS VALUE)												
Cooling capacity	(1)	kW	488	610	661	752	917	1049	1189	1351	1486	1637
Total power input	(1)	kW	87,6	107	116	132	161	184	206	233	260	289
EER	(1)	kW/kW	5,57	5,70	5,69	5,68	5,68	5,71	5,76	5,79	5,71	5,66
ESEER	(1)	kW/kW	8,52	8,57	8,47	8,62	8,63	8,55	8,56	8,60	8,44	8,39
COOLING ONLY (EN14511 VALUE)												
Cooling capacity	(1)(2)	kW	487	608	659	750	914	1046	1186	1348	1482	1632
EER	(1)(2)	kW/kW	5,37	5,49	5,48	5,47	5,48	5,52	5,58	5,62	5,52	5,47
ESEER	(1)(2)	kW/kW	7,46	7,51	7,40	7,53	7,53	7,59	7,65	7,74	7,49	7,44
Cooling energy class												
ENERGY EFFICIENCY												
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)												
Ambient refrigeration												
Prated,c	(7)	kW	487	608	659	750	914	1046	1186	1348	1482	1632
SEER	(7)(8)		7,64	7,62	7,53	7,65	7,72	7,84	7,77	7,89	7,55	7,60
Performance ηs	(7)(9)	%	298	297	293	298	301	306	303	307	294	296
EXCHANGERS												
HEAT EXCHANGER USER SIDE IN REFRIGERATION												
Water flow	(1)	l/s	23,34	29,16	31,62	35,96	43,84	50,15	56,88	64,63	71,06	78,30
Pressure drop	(1)	kPa	30,5	34,7	33,8	33,2	37,1	37,5	31,9	30,9	37,3	45,3
HEAT EXCHANGER SOURCE SIDE IN REFRIGERATION												
Water flow	(1)	l/s	27,44	34,18	37,07	42,16	51,41	58,76	66,56	75,57	83,27	91,86
Pressure drop	(1)	kPa	37,4	35,4	41,7	41,5	38,7	30,0	33,3	29,6	35,9	29,5
REFRIGERANT CIRCUIT												
Compressors nr.		N°	2	2	2	2	2	2	2	2	2	2
No. Circuits		N°	1	1	1	1	1	1	1	1	1	1
Refrigerant charge		kg	136	170	188	212	264	289	328	372	410	450
NOISE LEVEL												
Sound Pressure	(3)	dB(A)	80	79	79	81	81	81	80	80	82	82
Sound power level in cooling	(4)(5)	dB(A)	98	98	98	100	100	100	100	100	102	102
SIZE AND WEIGHT												
A	(6)	mm	2950	3350	3350	3350	4500	4500	4600	4650	4650	4650
B	(6)	mm	1380	1450	1450	1480	1420	1420	1450	1510	1510	1510
H	(6)	mm	2000	2270	2270	2270	2270	2270	2350	2500	2500	2500
Operating weight	(6)	kg	3340	4190	4280	4680	6420	7260	7960	8490	8580	8970

Notes:
1 Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger water (in/out) 30°C/35°C.
2 Values in compliance with EN14511-3:2013.
3 Average sound pressure level at 1m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
4 Sound power on the basis of measurements made in compliance with ISO 9614.
5 Sound power level in cooling, indoors.
6 Unit in standard configuration/execution, without optional accessories.
7 Seasonal energy efficiency of the cooling environment in AVERAGE climatic conditions [REGULATION (EU) N. 2016/2281]
8 Seasonal space heating energy index
9 Seasonal energy efficiency of the space cooling
The units highlighted in this publication contain HFC R134a [GWP_{100}1430] fluorinated greenhouse gases.
Certified data in EUROVENT



Power Factor and Displacement Power Factor

DPF (Displacement Power Factor) above 0,97 in every load condition
PF (Power Factor) of 0,9 at full load

Optimised compressors

Screw compressors optimised for applications with low condensing temperature.

This enhances their efficiency and makes the ESEER/IPLV values achieved exceed by far the common standard of compact screw compressors.

i-FX-W(1+i) Comparison between technologies

THE SOLUTION

The i-FX-W (1+i) unit achieves efficiencies both at full and partial loads that are among the highest available on the market.

Such a great performance level comes from the use of cutting-edge compressors optimised for low condensing pressures, but also from the accurate design of high-performing heat exchangers.

COMFORT COOLING

The project

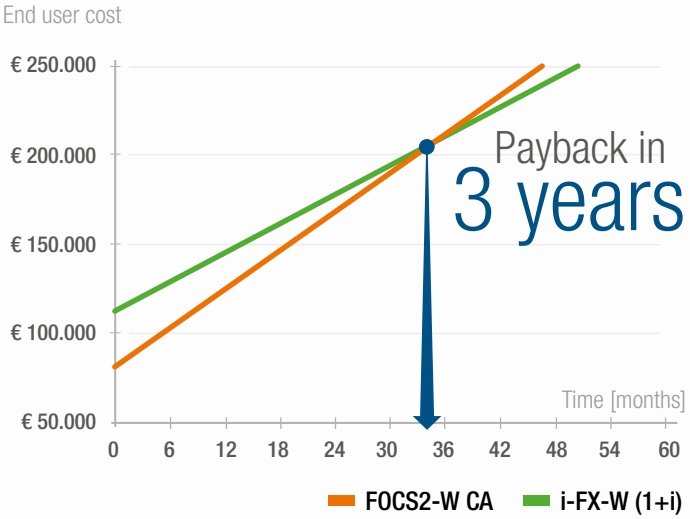
In a typical comfort application, the cooling load requirements are highly variable and mostly depend on the season.

For this reason, the selected unit is intended to operate at full load conditions for a short time, and the rest of the time the compressors unload to achieve the required set point.

Cooling load

We have taken into consideration an installation that needs to air-condition 9 months a year, from 10 a.m. to 12 p.m., 6 days a week.The following thermal loads have been supposed according to the ESEER distribution:

100% load for 3% of the time
75% load for 33% of the time
50% load for 41% of the time
25% load for 23% of the time



Comparison between technologies

We have supposed to match the load requests with two high-efficiency FOCS2-W/CA and i-FX-W(1+i) units. i-FX-W(1+i), thanks to an uncomparable ESEER level, ensures an annual energy savings of around 23%. Considering an energy cost of 0,15 €/kWh, the i-FX-W(1+i), thanks to its high efficiency, achieves payback levels within 3 years.

Highest energy efficiency both at full and partial loads.

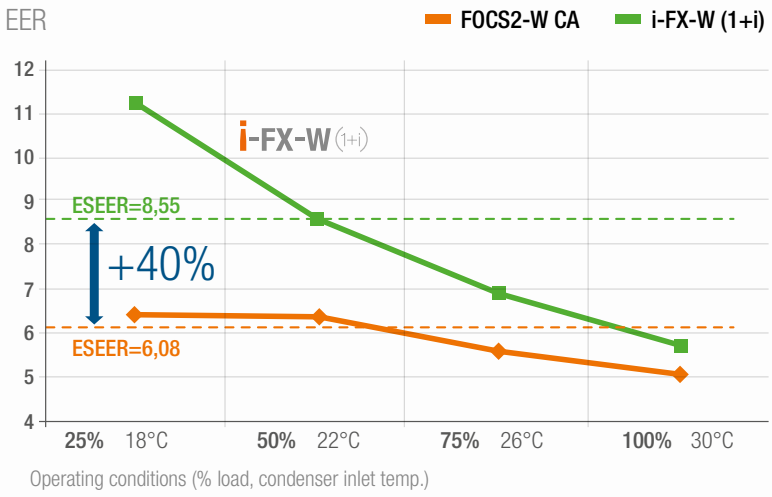
The latest i-FX-W (1+i) units represent the perfect solution for those applications where flexibility, efficiency and minimum environmental impact are the main project requirements.

ALWAYS THE HIGHEST EFFICIENCY

Power input saving Payback period The chart shows that i-FX-W (1+i) features an efficiency level that is much higher than a traditional class A chiller.

The EER increased efficiency at full load is around 13%, while the advantages in terms of seasonal efficiency (ESEER) are around 40%.

As a result the water cooled chiller, thanks to the innovative 1+i technology, is the ideal solution for applications with different needs of both comfort and process cooling type.



Operating conditions (% load, condenser inlet temp.)

AT A GLANCE

Power input saving	Payback period
23%	3 years

“BY FAR THE BEST PROOF IS EXPERIENCE”

Sir Francis Bacon
British Philosopher (1561-1626)

Ajaccio Hospital

2016 - 2018 Ajaccio, Corse - France

Application:
Healthcare / Hospitals
Plant type:
Hydronic System - Air to Air System
Cooling capacity:
4000 kW
Air flow:
72000 M³/h
Installed machines:
4x i-FX-W (1+i) 3402,
640 fan coils,
83xWizard,
16x ACU,
ClimaPRO

PROJECT

The new Ajaccio Hospital, located on the east side of the city with a scenic view of the sea, will replace the old one and it will become the main medical centre for the whole island.

With its 340 beds, the hospital will offer all types of facilities for patient care, including the emergency room, radiology, general medicine, surgery with eight operating theaters, gynecology and obstetrics, intensive care, and cardio-vascular divisions.

CHALLENGE

The Hospital has been built in strict compliance with environmental and energy saving standards, according to the French certification HQE (Haute Qualité Environnementale).

SOLUTION

In the new Ajaccio Hospital, 4 Climaveneta high efficiency water cooled chillers i-FX-W (1+i) 3402 for a total cooling capacity of about 4.000kW have been installed.

For the air distribution in the hospital they have selected 640 fan coil units, belonging to a-LIFE and a-HWD2 ranges, while the air treatment is provided by 60 Wizard air handling units.

Moreover 23 AHUs have been installed as extractors.

The supply contract also includes 16 Accurate close control units, to be installed in the data center of the hospital.

The whole HVAC system is managed by ClimaPRO, Climaveneta's management and optimization system.

“BY FAR THE BEST PROOF IS EXPERIENCE”

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Botswana Innovation Hub

2015 Gaborone - Botswana

Application:
Offices
Plant type:
Hydronic System
Cooling capacity:
2803 kW
Heating capacity:
2133 kW
Installed machines:
3x ERACS2-Q XL-CA 2722,
1x i-FX (1+i) CA 2722

PROJECT

The Botswana Innovation Hub is located strategically on a 57 hectares site, near the Sir Seretse Khama International Airport in Gaborone, the capital city of Botswana and the centre of the country's business activity.

The facility will provide an attractive location for technology driven and knowledge intensive business to develop and compete in the global market.

SOLUTION

The air conditioning system is based on 3 INTEGRA multipurpose ERACS2-Q XL-CA 2722 and 1 high efficiency air cooled chiller i-FX (1+i) CA 2722, all supplied by Climaveneta.

CHALLENGE

The building has been designed to save energy and be as many efficient as possible.

The roof design of the Botswana Innovation Hub incorporates large overhangs to passively shade the building's interior volumes, mechanisms to collect and re-use water, and both passive and active photovoltaic systems to harness solar energy.

MORE THAN 1000 PROJECTS ALL OVER THE WORLD

BANK OF ITALY
ROME - ITALY

Period: 2016
Application: Offices
Plant type: Hydronic System
Cooling capacity: 917 kW
Installed machines: 1x i-FX-W(1+i)/CA 2602

COLT TECNOLOGY SERVICES
MILAN - ITALY

Period: 2017
Application: Offices
Plant type: Hydronic System
Cooling capacity: 2100 kW
Installed machines: 3x i- FX(1+i) CA 2722, ClimaPRO

HANNOVER MESSE
HANNOVER - GERMANY

Period: 2014 - 2015
Application: Fair
Plant type: Hydronic System
Cooling capacity: 785 kW
Installed machines: 1x i-FX (1+i)/CA 3152

Every project is characterised by different usage conditions and system specifications for many different latitudes.

All these projects share high energy efficiency, maximum integration and total reliability of the Climaveneta brand.

HOSPITAL DE VIC
BARCELONA - SPAIN

Period: 2016 - 2017
Application: Healthcare / Hospitals
Plant type: Hydronic System
Cooling capacity: 2510 kW
Installed machines: 2x i-FX (1+i)/SL 3903, 1x TECS2/SL-CA-E 0853, 1x ClimaPRO

NATIONAL SPORTS CLUB OF INDIA
WORLI - MUMBAI - INDIA

Period: 2013
Application: Sport structures
Plant type: Hydronic System
Cooling capacity: 2476 kW
Installed machines: 1x FOCS2/CA 4822, 1x i-FX/CA 5403

HYVINKÄÄ CITY HOSPITAL, H-BUILDING
HYVINKAA - FINLAND

Period: 2017
Application: Healthcare / Hospitals
Plant type: Hydronic System - HPAC System
Cooling capacity: 1005 kW
Installed machines: 1x FOCS-W/S 1502, 1x i-FX-W (1+i)/S 1752, 3x ABU Basic 0302

i-FX(1+i)_ENG_02-2018

CLIMAVENETA®

eco Changes 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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