

COMFORT

CHILLERS

i-NX

**AIR COOLED LIQUID CHILLERS
FOR OUTDOOR INSTALLATION
FROM 43,9-129 kW**



i-NX

PERFECT COMFORT AND MAXIMUM EFFICIENCY



Air cooled liquid chiller for outdoor installation 43,9-129 kW



Outdoor units for the production of chilled water with hermetic rotary scroll compressors driven by fixed speed and variable speed motors in mono-circuit configuration, using R410A refrigerant, micro-channel condensation coil, brazed plate heat exchanger and electronic expansion valve as standard.

A flexible and reliable machine that adapts to the most diverse load conditions thanks to the accurate temperature control combined with the use of inverter technology. The precise design and use of innovative fixed speed motors together with variable speed motors (inverters) ensure a high level of energy efficiency both at full load and at partial loads.

THE CHILLER FOR EVERY NEED

INNOVATIVE TECHNOLOGICAL CHOICES

With the exclusive 1 + i philosophy both the fixed speed scroll compressor and the scroll inverter compressor are combined in the same circuit. This technology ensures maximum benefit in terms of efficiency at partial loads compared to a solution with separate circuits.

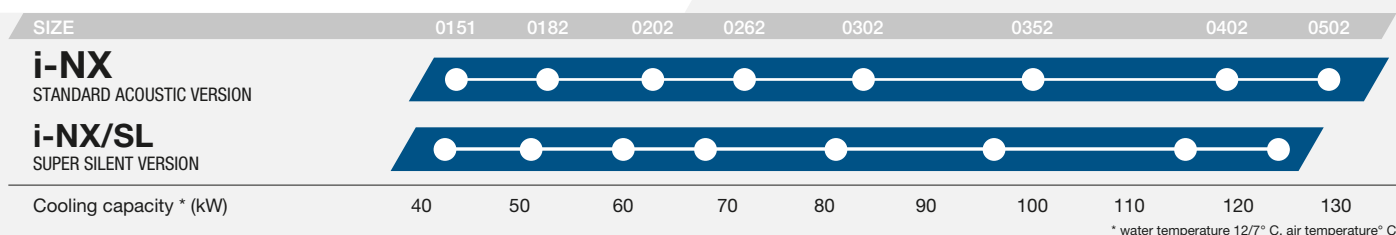
EXTRAORDINARY EFFICIENCIES

In every different load condition, only the most efficient combination of compressors for optimum adaptation to the system load conditions is called upon.

COMFORT APPLICATIONS

- ✓ Shopping centers
- ✓ Offices
- ✓ Hotels and resorts
- ✓ Health facilities
- ✓ Banks
- ✓ Infrastructure for entertainment
- ✓ Museums and theatres

WIDE RANGE OF POWERS AND VERSIONS



ACOUSTIC CONFIGURATIONS

- Standard	Baseline
Units with standard sound level	
Kit Low Noise	-2 dB(A)

SL Super Low Noise	-7 dB(A)
Special acoustic insulation for the compressor and the pumps (if present) compartment, reduction of fan speed and increased condensing section.	
Zero compromises in terms of unit efficiency.	

HEAT RECOVERY CONFIGURATIONS

- Standard	Baseline
Units for the production of chilled water	

D Partial heat recovery	60°C
The partial heat recovery exchanger on the compressor discharge line allows for the recovery of about 20% of the capacity.	

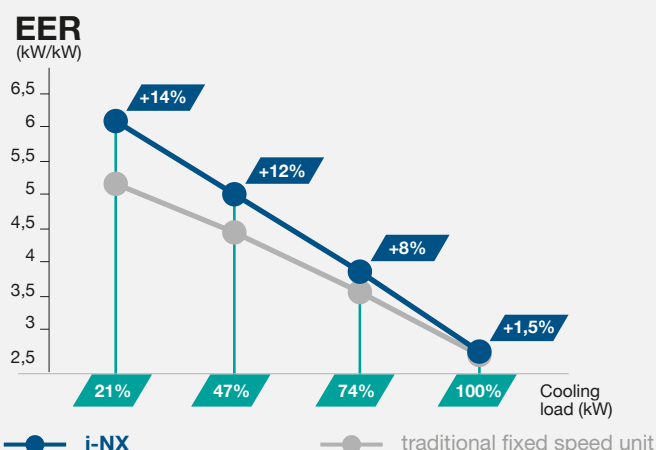
Hot water to be used to produce DHW or combined with air handling units (AHU)

Highest operating reliability, unbeatable energy efficiency, fast-and-easy installation: these are the distinguishing features of i-NX

EFFICIENCY WITHOUT COMPARISON

In a traditional comfort application, a system works at maximum power only for a very limited number of hours per year, while most of the time it operates in partial load conditions.

It is in this situation that the efficiency achieved by Climaveneta units with the exclusive 1 + i philosophy, a fixed speed scroll compressor and a scroll inverter compressor in the same circuit, is much greater than that with fixed speed compressors.



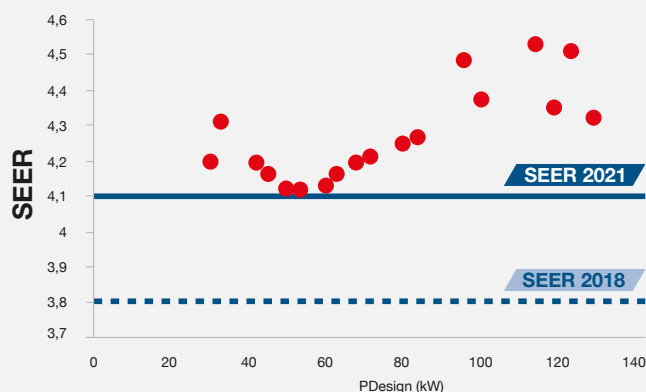
The increase in efficiency compared to similar fixed speed units is expressed by drawing the EER trend to the conditions defined by the ErP directive 2009/125 / EC necessary for the calculation of SEER seasonal parameters.

ErP READY



The ErP directive was introduced with the aim of reducing the energy consumption of products through an environmentally friendly design. A new indicator of seasonal energy efficiency has therefore been defined, the Seasonal Energy Efficiency Ratio (SEER), to allow users to easily compare the efficiency of the chiller.

i-NX, thanks to the inverter technology, complies with the ErP directive, even exceeding the minimum seasonal energy efficiency requirements, SEER, required starting from 2021, becoming in fact the best solution for all applications in the residential and commercial hydronic sector.

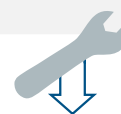


CONFIGURATION FOR EVERY TYPE OF PLANT



The wide availability of configurations and accessories, ensures easy adaptability of i-NX to any application need in commercial or industrial systems.

SIMPLIFIED INSTALLATION



The availability of the integrated hydronic group provides quick and easy installation. Combined with this, the evolved logic of controlling the pump speed reduces the start-up times of the system and of the electric consumption, ensuring unit operation even in critical conditions.



i-NX meets the minimum efficiency requirement contained in the ASHRAE 90.1 - 2013 provisions, which can help obtain LEED certification, thus increasing the prestige of the building.



All units in the i-NX range are Eurovent certified.

TECHNOLOGICAL CHOICES

CONTROLLER W3000TE

The W3000TE controller is equipped with internally developed algorithms from Mitsubishi Electric Hydraulics & IT Cooling Systems.

► Temperature control

It is characterized by continuous capacity modulation, based on sequential regulation + DIP referred to the water delivery temperature (neutral zone regulation + DIP on the output probe for size 0151).

► Connectivity

Supervision is possible through different options, with proprietary devices or with integration in third-party systems through ModBus, Bacnet, Bacnet-over-IP, or Echelon LonWorks protocols. For systems with multiple units it is possible to adjust the resources through ClimaPRO, to calculate consumption and performance by optimizing the operation of the entire HVAC system.

► Diagnostics

Includes a complete management of alarms, with 'black box' functions (via PC) and alarms history (via display or even PC) for a better analysis of the unit's behavior.

User interface W3000Compact



W3000Compact keyboard

- Functional keys.
- Large LCD display
- Quick and easy consultation and maintenance on the unit by means of a multi-level menu.
- As an option, the innovative KIPLink interface is available (replacing or in addition to the Compact keyboard) which allows the unit to be managed directly from a mobile device.

Refrigerant circuit

- 1 + i single circuit to guarantee the best energy efficiency.
- Crankcase heater on each compressors.
- Electronic expansion valve for rapid commissioning and extension of operating limits.

Structure

Structure consisting of load-bearing elements and aesthetic curtain panels made of hot dip galvanized steel panels, painted with polyester powders, RAL 7035.

- Maximum accessibility to all internal components
- High resistance to atmospheric agents
- Easy handling, lifting, and transport thanks to the standard eyebolts.

Evaporator

- Brazed heat exchanger plate made of AISI 316 stainless steel, externally coated with a anti-condensation mat in a closed cell neoprene (CFC and HCFC-free).
- Electric resistance thermostat and differential pressure switch to protect against ice formation inside the unit.
- Low pressure drops and optimized energy exchange.



Maximum quality of every single component, attention to detail, and advanced application of inverter technology: i-NX is the ideal solution for all comfort applications.

Fans

High efficiency axial electric fans with standard speed modulation (DVV).

- ▶ Precise airflow management, reduced energy consumption, and lower sound level at partial loads.
- ▶ Condensation control for an extended operating range.

UP TO + 8% SEASONAL EFFICIENCY



Fans with EC motor (opt.)

- ▶ Continuous regulation of the air flow.
- ▶ Reduction of consumption and increased efficiencies at partial loads

Microchannel battery

Aluminum microchannel batteries arranged in a V structure for optimal air distribution and energy exchange.

- ▶ Reduction of refrigerant charge compared to the traditional Cu / Al battery
- ▶ Less weight of the unit
- ▶ Protective e-coating available as an option for industrial and marine environments.

Integrated hydronic unit (opt.)



The integrated hydronic group assembled in the factory encompasses the main hydraulic components for a quick and easy installation, reducing start-up times.

- ▶ Single or twin in-line pumps available, high or low head, fixed or variable speed.
- ▶ Advanced control logic of the variable water flow rate with pumps controlled by VPF inverter. This reduces the electric consumption, ensuring the operation of the unit even in critical conditions.

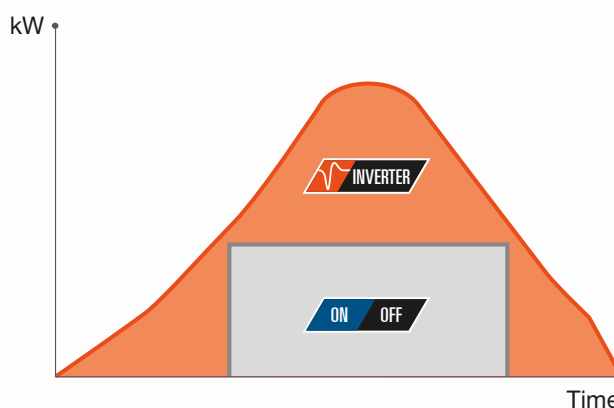


PHILOSOPHY INVERTER 1+i



i-NX has been designed according to the exclusive 1+i philosophy, in which the fixed speed scroll compressor and the scroll inverter compressor are combined not only in the same unit but also in the same refrigerating circuit.

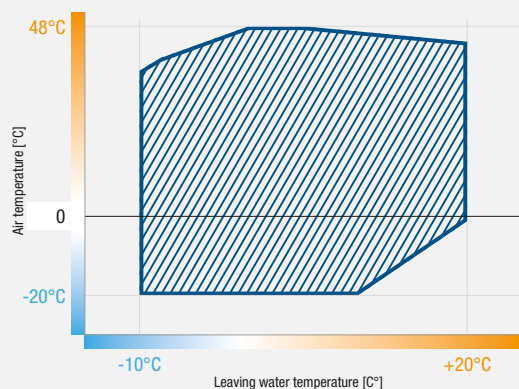
- ▶ Continuous power modulation.
- ▶ Energy distribution according to the real needs of the building.
- ▶ Maximum efficiency in any load condition.
- ▶ High temperature stability of the chilled water.
- ▶ Proprietary logic for the correct management of the oil level inside each compressor.



DISTINCTIVE FEATURES OF THE i-NX

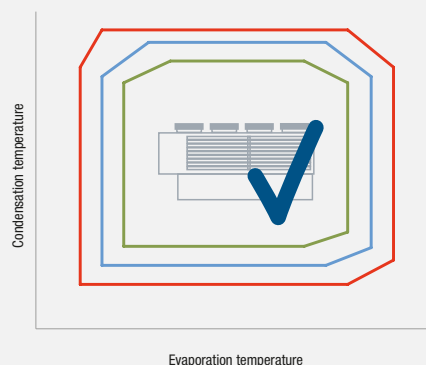
EXTENDED OPERATING LIMITS

Full load operation is guaranteed up to 48 °C outdoor air temperature during the summer season, and up to -20 °C during the winter season thanks to dedicated accessories which depend on the operating conditions. The unit can produce chilled water with evaporator outlet temperatures from -10 °C to 20 °C.



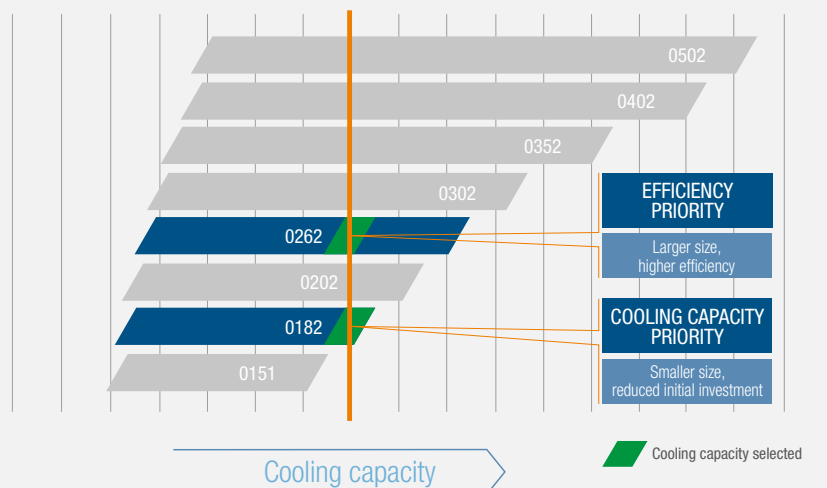
OPERATION UNDER CONTROL

Thanks to the advanced proprietary logics, multiple parameters are constantly checked (temperatures, pressures, rpm) ensuring that the compressor is always kept safe, in all conditions. The result is a better reliability of the unit.

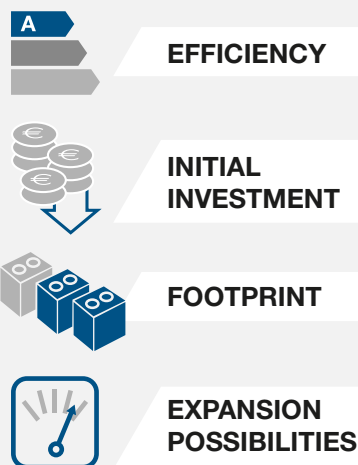


EASY SELECTION OF THE PERFECT UNIT

Whatever the demand, maximum operating efficiency, reduction of the initial investment, or future increase in plant power, it is always possible to identify the most suitable unit from the various possible selections.



Choose your target



KIPLink user interface

The innovative Wi-Fi interface for easy and effective unit management.

The innovative KIPLink interface is available as an option that replaces the traditional on-board keyboard and allows the user to manage and control the unit directly from a mobile device (smartphone, tablet, or notebook) by scanning the QR code positioned on the unit.

- ▶ Communication based on Wi-Fi functionality (internet connection is not required)
- ▶ User-friendly monitoring of device status
- ▶ Graphs and trends in real time
- ▶ Proprietary logic for the correct management of oil levels inside every compressor.



ACCESSORIES

Hydraulic modules and flow control

i-NX can be equipped with a hydronic module complete with the main hydraulic components, making it possible to reduce and facilitate installation, start-up, and optimize space requirements. Connections also available separately to manage external pumps at fixed or variable speed.

Pump group

Single or twin in-line pumps available, high or low head (approximately 100kPa or 200kPa), with fixed or variable speed. A pump group with a buffer tank is also provided in case the minimum system volume is not guaranteed.

Fixed speed pumps

n° 1 Pump 2P Low Prev. (FIX SPEED)
n° 1 PUMP 2P High Prev. (FIX SPEED)
n° 2 PUMPS 2P Low Prev. (FIX SPEED)
n° 2 PUMPS 2P High Prev. (FIX SPEED)

Variable speed pumps

n° 1 PUMP 2P Low Prev. (VAR. SPEED)
n° 1 PUMP 2P High Prev. (VAR. SPEED)
n° 2 PUMPS 2P Low Prev. (VAR. SPEED)
n° 2 PUMPS 2P High Prev. (VAR. SPEED)

Buffer tank

Connections for external pump groups

Dedicated terminals available for the management of 1 or 2 external pumps at fixed or variable speed.

ON / OFF Signal

1 pump / 2 pumps

Modulating signal

1 pump / 2 pumps



VPF

VPF CONTROL LOGICS

The logic of the VPF (Variable Primary Flow) series regulates the speed of the pumps following the thermal load and at the same time positively influencing the unit's thermoregulation algorithm, optimizing it for variable flow operation. In this way maximum energy savings, stability of operation, and reliability are always guaranteed.

VPF: constant ΔP on the plant side

For systems composed of the primary circuit only

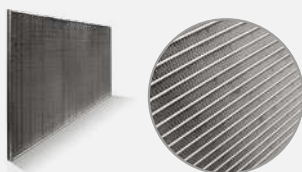
VPF.D: constant ΔT on the plant side

For systems composed of primary and secondary circuits separated by hydraulic circuit breaker

BATTERY AND TREATMENTS

MICROCHANNEL

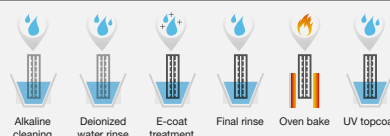
Al - Regular (std)



Al - E-coating

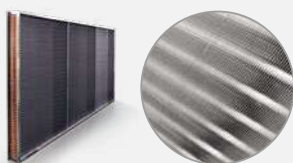


E-coating process



COPPER & ALUMINUM

Al - Regular (std)



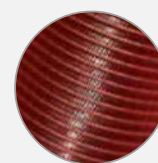
Cu/Al - Pre-painted fins

- ▶ Fins treated with protective polyester resin paint.
- ▶ Over 1000h of salt spray protection as per ASTM B117.
- ▶ Resistance to UV rays..

Cu/Al - Fin guard silver treatment

- ▶ Polyurethane paint with metallic emulsion.
- ▶ Over 3000h of salt spray protection as per ASTM B117.
- ▶ Resistance to UV rays.

Cu/Cu - Tube & fin coil





i-NX 0151P - 0502P

Liquid chiller with source air for outdoor installation
43,9-129 kW



i-NX			0151P	0182P	0202P	0262P	0302P	0352P	0402P	0502P
Power supply	V/ph/Hz		400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3/50	400/3/50	400/3/50
PERFORMANCE										
COOLING ONLY (GROSS VALUE)										
Cooling capacity	(1)	kW	43,9	52,9	63,1	72,1	83,8	101	120	129
Total power input	(1)	kW	15,7	18,8	21,4	25,0	29,2	35,2	41,9	46,8
EER	(1)	kW/kW	2,80	2,81	2,95	2,88	2,87	2,87	2,86	2,76
ESEER	(1)	kW/kW	4,56	4,55	4,51	4,54	4,51	4,66	4,58	4,53
COOLING ONLY (EN14511 VALUE)										
Cooling capacity	(1)(2)	kW	43,6	52,6	62,7	71,7	83,4	100	119	129
EER	(1)(2)	kW/kW	2,73	2,75	2,88	2,82	2,82	2,82	2,80	2,72
ESEER	(1)(2)	kW/kW	4,27	4,19	4,17	4,23	4,24	4,36	4,27	4,25
Cooling energy class			C	C	C	C	C	C	C	C
ENERGY EFFICIENCY										
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)										
Ambient refrigeration										
Prated,c	(7)	kW	43,6	52,6	62,7	71,7	83,4	100	119	129
SEER	(7)(8)		4,15	4,11	4,13	4,18	4,23	4,36	4,32	4,30
Performance η_s	(7)(9)	%	163	161	162	164	166	171	170	169
EXCHANGERS										
HEAT EXCHANGER USER SIDE IN REFRIGERATION										
Water flow	(1)	l/s	2,10	2,53	3,02	3,45	4,01	4,82	5,73	6,18
Pressure drop	(1)	kPa	37,2	41,2	42,3	39,4	35,0	36,2	42,9	38,9
REFRIGERANT CIRCUIT										
Compressors nr.		N°	1	2	2	2	2	2	2	2
No. Circuits		N°	1	1	1	1	1	1	1	1
Refrigerant charge		kg	7,00	7,20	8,90	9,40	9,50	12,5	12,9	13,5
NOISE LEVEL										
Sound Pressure	(3)	dB(A)	51	52	53	53	54	55	57	57
Sound power level in cooling	(4)(5)	dB(A)	83	84	85	85	86	87	89	89
SIZE AND WEIGHT										
A	(6)	mm	2000	2000	2625	2625	2625	3250	3250	3250
B	(6)	mm	1350	1350	1350	1350	1350	1350	1350	1350
H	(6)	mm	2070	2070	2070	2070	2070	2170	2170	2170
Operating weight	(6)	kg	600	660	750	780	810	1060	1070	1080

Notes:

ADDITIONAL OPTIONS

ELECTRICAL EQUIPMENT

Compressor re-phasing

Power factor correction capacitors are installed on the compressors supply to increase the unit cos (phi).

Phase sequence control

Protects loads from failures resulting from a reversed phase start.

Phase sequence control and over / under voltage

Protects the loads from faults arising from a reversed phase start, and checks the lowering and exceeding of a set voltage in a three-phase network.

Soft-starter

Electronic static starter for compressor starting management.

AUXILIARY INPUTS

4-20mA auxiliary signal

Analog input that modifies the working setpoint of the unit based on the current value applied to its input.

Double set-point remote signal

Digital input to change the unit working setpoint by opening or closing a remote contact.

Demand Limit remote control input

Clean digital input (voltage free) that limits the power absorbed by the unit.

Compressor operation signal

Digital output for remote operation of compressors.

Water set point compensation for outdoor air temperature

The external air probe can change the unit's working setpoint according to summer and winter climatic curves (only for reversible units).

Hydraulic separator water temperature probe

The unit turns on according to the water temperature read by the probe present in the hydraulic decoupler (in systems composed of primary and secondary circuits), reducing the energy consumption of pump operation to monitor the water temperature.

Night function

Limits the sound level of the unit, reducing the frequency of the compressor and fan speed.

U.L.C. - Control of user limits

This option guarantees the start and operation of the unit even in critical conditions that usually generate a block of the system. The W3000TE controller can manage a 3-way modulating valve, not supplied, through a 0-10V signal, which allows the unit to operate with water temperatures within the permitted operating limits, independently avoiding protection interventions and alarms, that can arise during the start-up phase

MANAGEMENT, CONTROL, AND REMOTE CONNECTIVITY SYSTEMS

Serial / LonWorks / BACnet MS / TP / BACnet over IP card to allow integration into supervisory systems

ClimaPRO ModBUS RS485 - MID, ClimaPRO BacNET over IP

This accessory allows data to be collected concerning the electrical energy absorbed by the unit and shared with the ClimaPRO system by means of ModBUS or BacNET serial communication. This specific energy meter model is MID certified and the value of energy detected can therefore be used by the user for tax purposes for energy calculation.

Network analyzer for BMS

Detects data of electrical energy absorbed by the unit and communicates it via the RS-485 bus to the BMS, for energy metering.



i-NX / SL			0151P	0182P	0202P	0262P	0302P	0352P	0402P	0502P
Power supply	V/ph/Hz		400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE										
COOLING ONLY (GROSS VALUE)										
Cooling capacity	(1)	kW	42,6	51,2	60,1	68,1	81,2	96,7	115	124
Total power input	(1)	kW	14,4	17,8	20,9	24,5	28,3	33,9	39,3	44,3
EER	(1)	kW/kW	2,96	2,88	2,88	2,78	2,87	2,85	2,93	2,81
ESEER	(1)	kW/kW	4,48	4,58	4,49	4,55	4,54	4,75	4,78	4,70
COOLING ONLY (EN14511 VALUE)										
Cooling capacity	(1)(2)	kW	42,3	50,9	59,8	67,7	80,8	96,3	115	124
EER	(1)(2)	kW/kW	2,89	2,81	2,81	2,73	2,82	2,80	2,88	2,76
ESEER	(1)(2)	kW/kW	4,21	4,26	4,20	4,25	4,26	4,48	4,50	4,43
Cooling energy class			C	C	C	C	C	C	C	C
ENERGY EFFICIENCY										
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)										
Ambient refrigeration										
Prated,c	(7)	kW	42,3	50,9	59,8	67,7	80,8	96,3	115	124
SEER	(7)(8)		4,18	4,10	4,11	4,17	4,22	4,46	4,50	4,48
Performance ηs	(7)(9)	%	164	161	162	164	166	176	177	176
EXCHANGERS										
HEAT EXCHANGER USER SIDE IN REFRIGERATION										
Water flow	(1)	l/s	2,04	2,45	2,87	3,26	3,88	4,62	5,50	5,95
Pressure drop	(1)	kPa	35,1	38,7	38,3	35,2	32,9	33,2	39,6	36,0
REFRIGERANT CIRCUIT										
Compressors nr.		N°	1	2	2	2	2	2	2	2
No. Circuits		N°	1	1	1	1	1	1	1	1
Refrigerant charge		kg	8,10	8,30	8,70	9,20	11,8	12,3	14,7	15,2
NOISE LEVEL										
Sound Pressure	(3)	dB(A)	45	45	46	46	47	48	50	50
Sound power level in cooling	(4)(5)	dB(A)	77	77	78	78	79	80	82	82
SIZE AND WEIGHT										
A	(6)	mm	2625	2625	2625	2625	3250	3250	3875	3875
B	(6)	mm	1350	1350	1350	1350	1350	1350	1350	1350
H	(6)	mm	2070	2070	2070	2070	2170	2170	2170	2170
Operating weight	(6)	kg	700	760	790	820	980	1090	1180	1200

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.

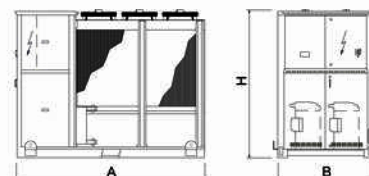
7 Seasonal energy efficiency of the cooling environment [REGULATION (EU) N. 2016/2281]

8 Seasonal space heating energy index

9 Seasonal energy efficiency of the space cooling

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

Certified data in EUROVENT

**REFRIGERANT CIRCUIT****Working range of unit:**

The option includes a thermostatic valve suitable for the water temperature produced to obtain the best performance in any condition.

Tout < 0 °C (0 / -10 °C) opt. 87 °, Tout > 10 °C (10 / + 18 °C) opt. 87C, Double SET (12/7, -5 / -10 °C) opt. 87D.

HYDRAULIC CIRCUIT

Antifreeze pipes and pumps, antifreeze pipes, pumps and tank

Water flow switch**STRUCTURE****Soundproofing kit**

Soundproofing of the compressor compartment and pump casing, in polyester fibers (Fiberform), reducing the sound level of the unit.

Anti-intrusion grid

Prevents the intrusion of foreign bodies inside the structure.

Rubber anti-vibration mounts

“BY FAR THE BEST PROOF IS EXPERIENCE”

Sir Francis Bacon

British Philosopher (1561 - 1626)

Every project is characterised by different needs and system specifications for various climates. All these projects share high energy efficiency, maximum integration, and total reliability resulting from the Climaveneta brand experience.

ESSELUNGA NOVARA NOVARA - ITALY

Period: 2017

Application: Supermarket

Plant type: Hydronic System

Cooling capacity: 541 kW

Heating capacity: 601 kW

Installed machines: 2x NX-N SL CA T 0904,
1x NX-N/CA 0202 P, 1x MANAGER 3000



HOTEL MELIA CAYO COCO CAYO COCO - CUBA

Period: 2016 - 2017

Application: Hotel and resorts

Plant type: Hydronic System

Cooling capacity: 381 kW

Installed machines: 3x NECS/B/D 512T



PENGUIN SYDNEY AQUARIUM SYDNEY - AUSTRALIA

Period: 2016 - 2018

Application: Museum

Plant type: Hydronic System

Cooling capacity: 420 kW

Installed machines: 2x NX/K/S 1014P



IKEA MUSEUM

2016-18 Almhult - Sweden

Application:

Retail - Museum

Plant type:

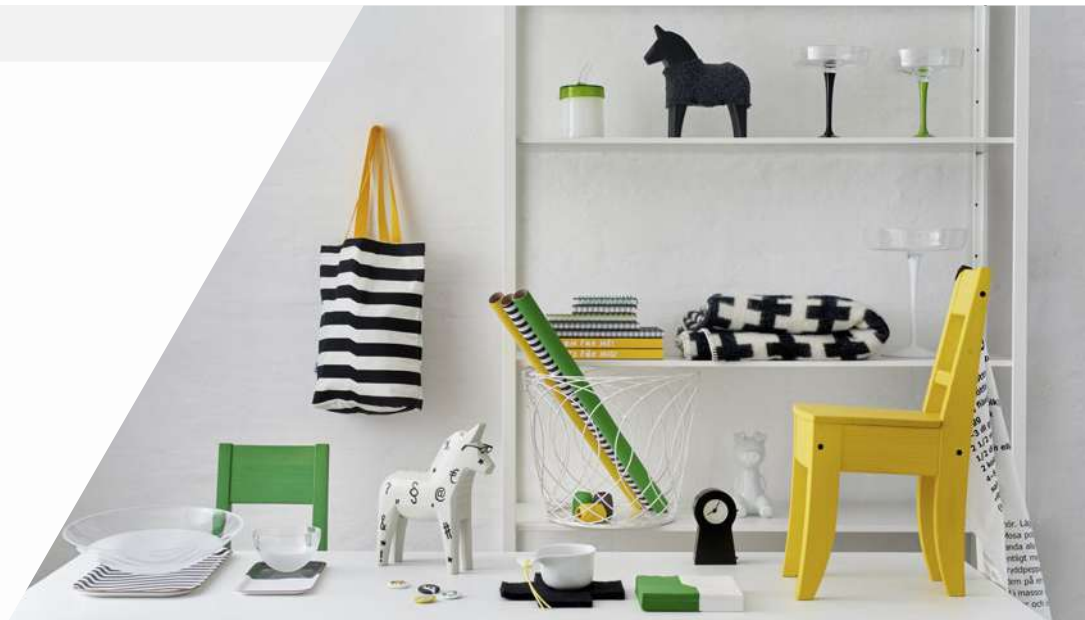
Hydronic System

Cooling capacity:

880 kW

Installed machines:

1x NX/K 1214P,
2x NECS-FC/SL/S 0904



PROJECT

The Ikea Museum is a 7,000 sqm structure located in Almhult, the Ikea's historical headquarters. It celebrates the 70 years story of the firm through its products and the stories of people who have bought its furniture over the years and is expected to become a tourist attraction. The four floors include fully furnished rooms, old catalogues, living spaces of the future and exhibits dedicated to the store's most popular and not-so-popular items.

CHALLENGE

The structure required a reliable and efficient HVAC system both in visitors areas and in technical rooms, in order to ensure a pleasant visiting experience, in line with the values celebrated by Ikea all over the world through a unique shopping experience.

SOLUTION

The M&E consultants opted for Climaveneta units for this prestigious project. A NX air source chiller with scroll compressors was installed for the air conditioning of the museum. The local temperate climate has made possible to equip the cooling system of the technical rooms with 2 NECS-FC chillers. Thanks to Climaveneta advanced free cooling technology system, they use outdoor temperature as a free source for cooling much more often than traditional free cooling chillers, thus maximising the energy saving achievable.

GALERIA PÓŁNOCNA WARSAW - POLAND

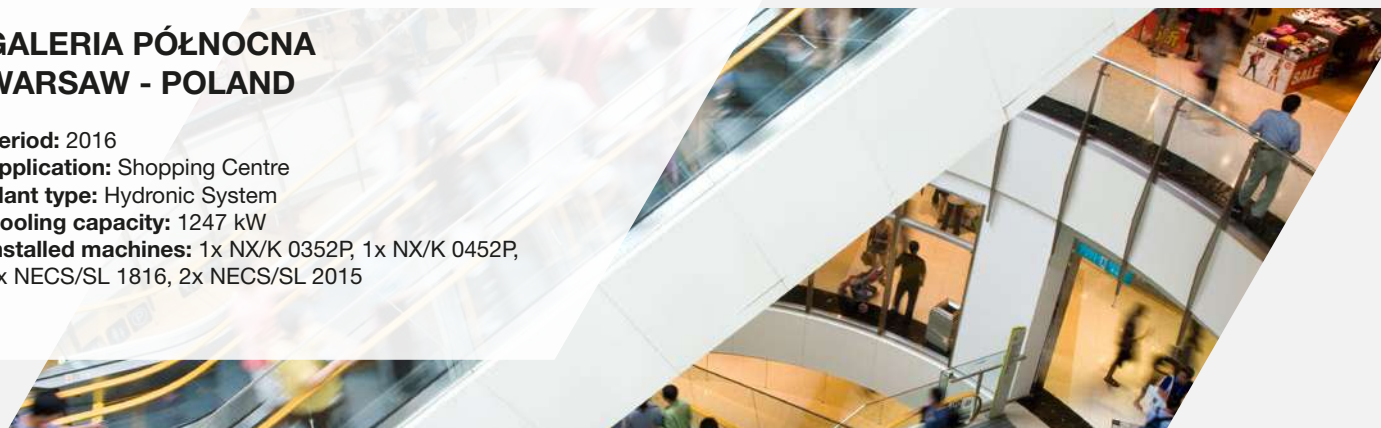
Period: 2016

Application: Shopping Centre

Plant type: Hydronic System

Cooling capacity: 1247 kW

Installed machines: 1x NX/K 0352P, 1x NX/K 0452P,
1x NECS/SL 1816, 2x NECS/SL 2015



UNION HOUSE CAPE TOWN - SOUTH AFRICA

Period: 2016 - 2018

Application: Offices

Plant type: Hydronic System

Cooling capacity: 659 kW

Heating capacity: 423 kW

Installed machines: 1x HRAT B 0914T;
1x ERACS2-Q/CA 1162; 1x HRAT B 0512;
1x HRAQ B 0604





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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