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

COMFORT

UNITS FOR SIMULTANEOUS AND INDEPENDENT PRODUCTION OF HOT AND COLD WATER

INTEGRA

NX²-Q G06

AIR SOURCE UNITS FOR 4-PIPE SYSTEMS, WITH SCROLL COMPRESSORS, FROM 316 TO 800 kW

R454B

CLIMAVENETA®

NX²-Q G06

MAXIMUM COMFORT FOR A GREENER FUTURE

Air source units for 4-pipe systems, with 4, 6, or 8 scroll compressors and low GWP refrigerant. From 316 to 800 kW

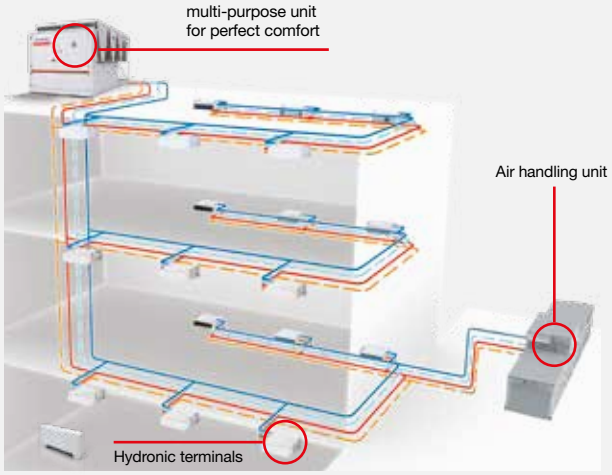
NX2-Q-G06 multi-purpose units are able to satisfy simultaneous heating and cooling needs in buildings while recovering energy at the highest efficiency possible.

The new G06 range offers an ecofriendly approach: reduced refrigerant charge and R454B low GWP refrigerant ensure the lowest CO_2eq tons in the market.

The advanced control logic, developed by Mitsubishi Electric Hydronics & IT Cooling Systems ensures that heating and cooling loads are perfectly met.

THE INTEGRA 4-PIPE SYSTEM

This type of system is suitable for air-conditioning in buildings that require separate areas to be heated and cooled at the same time.
Assuring maximum comfort in every room of the building, independently and at any time of the year.
From today, a single intelligent unit is sufficient for the management of these complex systems: INTEGRA.



HEATING
COOLING

TOP-LEVEL PERFORMANCE IN HEATING AND COOLING

NX2-Q-G06 brings brilliant full load and part load efficiencies,thus helping individuals and businesses reduce the energy bill of their HVAC system.

		UP TO EER	SEER	COP	SCOP	TER
A	Very high efficiency	3,06	4,58	3,32	4,04	7,82

COOLING POWER + HEATING CAPACITY

POWER CONSUMPTION

NX2-Q-G06 with EC fans

EER conditions: evap. 12/7°C, air 35°C – NET values [EN14511 – EN14825]
COP conditions: cond. 40/45°C, air 7(6)°C – NET values [EN14511 – EN14825]
SCOP - Regulation (EU) N.813/2013: average values for sizes with Pdesign,h < 400 kW
SEER - Regulation (EU) N.2281/2016: average values for sizes not included in Reg. (EU) N. 813/2013

SELF-ADAPTABILITY WITH SIMULTANEOUS LOADS

Thanks to their advanced control logics, multi-purpose units are always able to respond to building climate control requirements.
The unit can independently produce heating and cooling simultaneously, according the actual needs.

SYSTEM SIMPLIFICATION

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

REDUCTION OF ON-SITE OPERATIONS

PLUG & PLAY

A simplified system results in a significant reduction in the operations to be carried out on site. This means substantial savings in terms of time and cost for the client.

EXTENDED WORKING RANGE

HOT WATER	UP TO 55°C
AIR TEMPERATURES IN COOLING MODE	UP TO 46°C
AIR TEMPERATURES IN HEATING MODE	UP TO -15°C

An extended working range which ensures unit operation all year long and in any working condition.

2 ACOUSTIC VERSIONS

Standard	Standard soundproofing equipment	**Baseline**	**Super low noise**	The highest level of noise reduction. NO COMPROMISES IN EFFICIENCY	**up to -9 dB(A)**

NX²-Q G06 New generation green refrigerant

R454B

Fully committed to support the creation of a greener tomorrow, Mitsubishi Electric Hydronics & IT Cooling Systems presents the G06 series, chillers and heat pumps with reduced environmental impact.

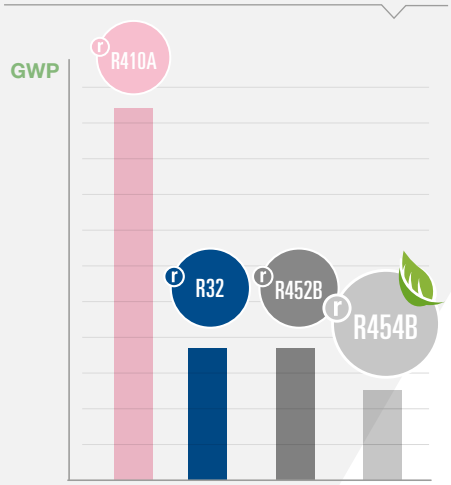
Thanks to the new generation refrigerant R454B, the environmental impact of NX2-Q-G06 is greatly reduced. Combining reduced refrigerant charge with a low GWP refrigerant, these units boast the lowest amount of CO2eq in the scroll unit market, thus resulting as the perfect choice for any new forward looking installation.

R454B REFRIGERANT

High density, **low GWP refrigerant.** Its physical properties are **similar to R410A,** so the same type of equipment / components can be used.

GWP: 467

–76 % compared to R410A
–31 % compared to R32



REDUCED ENVIRONMENTAL IMPACT
- **Low GWP,** only 467
- **Reduced refrigerant charge** (-10% vs R410A)

RELIABILITY
- Use of **well-known components**
- Refrigerant circuit **reliability** is maintained

PERFORMANCE & ENVELOPE
- **Same operating limits** of R410A both in **cooling** and **heating**
- Higher efficiency (full load +3,5%, seasonal +2% vs R410A)

TO LEARN MORE ABOUT GREEN REFRIGERANTS
https://www.melcohit.com/IT/Environment/green_refrigerant/

W3000+
CONTROL SOFTWARE

Fast adaptive responses and functional options, developed fully in-house. For the customer's complete peace of mind.

PATENTED VENTILATION SECTION LAYOUT

Different fans sizes are used in one or more modules, optimizing the capacity of the compressors and ensuring:

- Outstanding reliability on adjacent circuits
- Alternated and independent defrosting cycles during winter operation
- Uniform air distribution
- Reduced footprint
- Increased part load efficiency and accurate fan speed

NIGHT MODE

The advanced control system is engineered to maintain optimal comfort conditions according to occupancy needs and variations.

Thanks to the night mode function, the unit lowers its sound emissions (-3 dB(A) with factory settings) leveraging on a reduced usage of its resources. Offering excellent comfort during low load periods

SMART DEFROST

Thanks to the extensive know-how in heat pump technology, a series of smart proprietary auto adaptive algorithms have been developed to manage the defrosting cycles in the smartest way.

- Reduction in defrosting time
- Minimum impact on leaving water temperature
- Reduction of energy required for defrosting
- Increase of COP

+10%
NET HEATING CAPACITY

compared to units with traditional defrost cycles.

TECHNOLOGICAL CHOICES

W3000+ CONTROL

Management software developed fully in-house

- Proprietary settings for faster adaptive responses to different dynamics
- Enhanced diagnostics thanks to the black box function
- Connectivity with the most commonly used BMS

Large keyboard

- Large LCD display and functional keys
- Quick and easy parameter consultation and adjustment by means of a multi-level menu
- KIPlink, the innovative Wi-Fi interface,

Patented fans lay-out for a truly independent refrigerant circuit management

Scroll compressors

New generation scroll compressors, developed for the use of high density A2L refrigerants (Fluid Group 1 of PED Directive).

- **Tandem configuration** to benefit from **higher seasonal efficiency**
- **Specific oil management solution** for enhanced reliability

Shell&Tube heat exchanger

Dry expansion, single pass S&T evaporator, fully in-house developed.

- Internally grooved cooper tubes
- Possibility of inspection and tubes cleaning
- Low pressure drops

Maximum quality of every single component, attention to detail, dedicated components for R454B refrigerant: this is what makes NX2-Q-G06 the ideal solution for forward-looking heating and cooling systems.

FANS

High performing, axial fans:

- Different sizes and speeds to perfectly fit the requirements of each unit model
- Speed control (DVV) based on refrigerant pressure.

UP TO +8% MORE SEASONAL EFFICIENCY

EC AXIAL

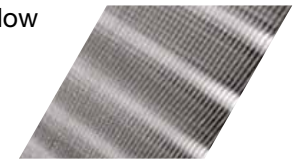
EC fans (std for NX2-Q-G06/A 0606-0808)

- Continuous regulation of the air flow
- Reduced power consumption and increased efficiencies at partial loads

HIGHLY RESISTENT FINNED COILS

Copper and aluminum tube & fins coils for reversible heat pumps

- Ideally designed to optimize airflow and heat transfer
- Protective coating available for harsh industrial and marine environments (Opt.)



TECHNICAL DATA
NX²-Q G06

NX²-Q G06

Patented ventilation section layout

PATENTED SOLUTION TO ENSURE COMPLETE INDEPENDENCE WITHIN ALL THE CIRCUITS

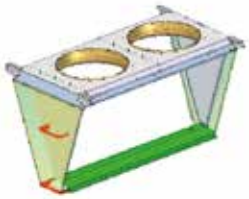
The patented ventilation solution for complete independence of circuits sharing the same V module.

Generally, the ventilation modules consist of single row of 800mm-diameter fans. With NX2-Q-G06 units, one or more modules can be made of two rows of 450mm-diameter fans separated by a vertical baffle.

Two fan sizes, many advantages

This technological solution, exclusively patented by Mitsubishi Electric Hydronics & IT Cooling Systems, ensures the complete independent operation of the circuits sharing a V module, with great advantages in terms of partial load operation and during the drefrost phase.

VENTILATION SECTION: an in-depth look



Standard module configuration:

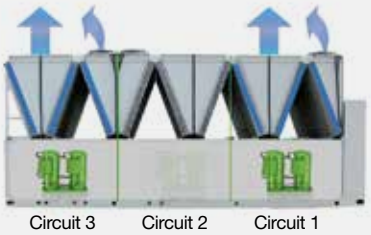
2 coils and 2 axial fans (800mm-diameter)

Alternative module configuration:

2 coils and **8 axial fans** (450mm-diameter) with a vertical baffle

ELIMINATION OF THE RECIPROCAL DEPENDENCY ON ADJACENT CIRCUITS

Circuits can be completely managed independently, thus reducing wasted energy.



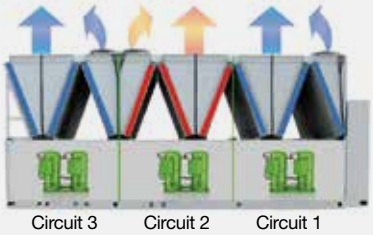
In the figure shown:

- Circuit 2 is OFF
- Circuit 3 can properly manage the air flow through the coil on the shared module

SMART AND INDEPENDENT MANAGEMENT OF THE DEFROST CYCLES

Defrost cycles are managed in a smart way, ensuring that the defrost cycle of one circuit does not affect on the working operation of the adjacent circuit:

- **Increased heating capacity thanks to the independent and nonsimultaneous defrost cycles**
- **Stable outlet water temperature delivered during defrosting**



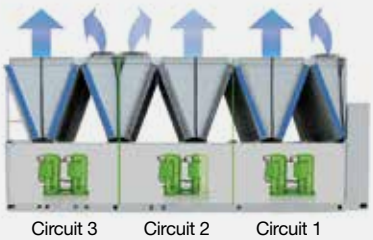
In the figure shown:

- circuit 2 is in defrost mode
- the ventilation on circuit 3 (with the “shared module”) is still working, guaranteeing circuit 3 power and not affecting the defrost cycle of the adjacent circuit 2

INCREASED PART LOAD EFFICIENCY BOTH IN SUMMER AND IN WINTER

Higher efficiency in part load conditions thanks to a more accurate fan speed management. Thus, the thermal loads can be accurately and flexibly managed, reducing compressor operation.

- **Reduced compressor energy expense**
- **Minimised energy waste due to accurate ventilation operation**



In the figure shown:

- circuit 2 operates in part load with just one compressor working
- thanks to this patented solution, the ventilation on circuit 2 can be reduced compared to full load operation

MORE COMPACT LAYOUT

NX2-Q-G06 - Technical insight

The patented solution optimizes the number of coils for each circuit. Consequently, the total footprint of the unit is reduced.

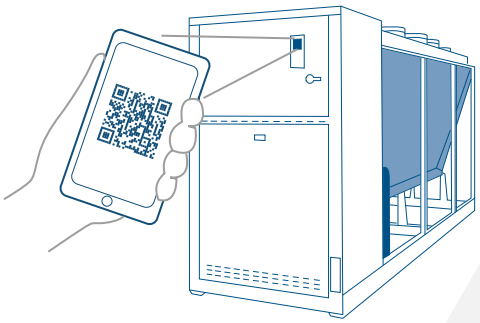
ACCESSORIES AND SERVICES

KIPLink INTERFACE

KIP LINK
Keyboard In your Pocket

An exclusive product of Mitsubishi Electric Hydronics & IT Cooling Systems.

Based on Wi-Fi technology, KIPlink is an option that allows one to operate on the unit directly from a mobile device (smartphone, tablet, or notebook) by simply scanning the QR code positioned on the unit.



MAIN FEATURES

Easier on-site operation
Monitor each component while moving around the unit for maintenance operations.
View and change all parameters with easyto- understand screenshots and dedicated tooltips. Get devoted “help” messages / for alarm reset and trouble shooting.

Real-time graphs and trends
Monitor the immediate labor status of the compressors, heat exchangers, cooling circuits, and pumps. View the real-time graphs of the key operating variable trends.

Data logger function
View history of events and use the filter for a simple search. Enhance diagnostics with data and graphs of 10 minutes before and after each alarm. Download all the data for detailed analysis.

HYDRONIC MODULES

The **fully integrated hydronic module** (opt.) includes the pumps and all the main hydraulic components, for the best **optimization of the installation space, time and costs.**

Pumps

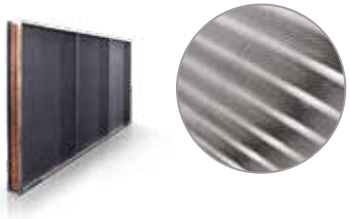
- In-line configuration
- 2-pole motor
- Single or twin pumps
- Low or high head (approx. 100 or 200 kPa).

Pumps + Inverter

- External inverter to adjust the waterflow
- Reduced energy consumption through speed regulation
- Available flow control logics: Constant flow paramenter-set, variable flow with VPF and VPF.D systems

TUBE & FINS COILS

Cu/Al - Regular (std for NX2-Q-G06)



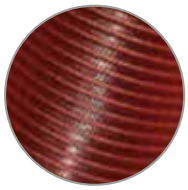
Cu/Al - Pre-painted fins

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

Cu/Al - Fin Guard Silver SB

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

Cu/Cu - Tube & fin coil



FURTHER OPTIONS

Set-point adjustment

4-20 mA: Enables remote set-point adjustments (analog input).
Double set-point: Enables the remote switch between 2 set-points (digital input).
Set-point compensation: Automatic adjustment of the set-point on the basis of the outdoor temperature.

Control functions

Night mode: Limits the unit sound level reducing the usage of the resources.
U.L.C. User Limit Control: Controls a mixing valve (not included) to ensure a safe start-up and operation of the unit even in critical conditions.
Remote probe: Controls the unit's and pump's activation on the base of the water temperature of the buffer tank or hydraulic decoupler.
Demand limit: Limits the unit's power absorption for safety reasons or in temporary situations (digital input).

Electrical

Compressor rephasing: The capacitors on the compressors' line increase the unit's power factor.
Soft-starter: Manages the inrush current enabling lower motor windings' mechanical wear, avoidance of mains voltage fluctuations during starting and favorable sizing for the electrical system.

Connectivity

Serial card interface module to allow integration with BMS protocols: **Modbus / LonWorks / BACnet MS/TP / BACnet over IP / Konnex / Modbus TCP/IP/ SNMP**

Energy Meter

Energy meter for BMS: Acquires electrical data and the power absorbed by the unit and sends them the BMS for energy metering (Modbus RS485).

Energy meter for W3000: The electrical data acquired is available directely on the unit's control.

Refrigerant Circuit

Compressor suction and discharge valves: Installed for each compressor tandem the valves simplify maintenance activities. The user can work on the isolated valve for periodic maintenance or replacement, without removing the refrigerant from the circuit.

Refrigerant leak detector

Leak detector: Factory installed device. In case of a gas leak detection it raises an alarm.

Leak detector + compressor off: Factory installed device. In case of a gas leak detection it raises an alarm and stops the units.

Hydraulic

Water flow switch: Designed to protect the unit when the water flow across the evaporator is not sufficient and falls outside of the operating parameters.

Structure

Anti-intrusion grilles: Perimeter metal grilles to protect against the intrusion of solid bodies into the unit structure.

Spring or rubber type anti-vibration mountings: Reduce vibrations, keeping noise transmission to a minimum.

Packing

Standard or nylon packing: The unit is provided with plastic supports, with or without a protective nylon layer.

Container slides or packing: The unit is provided with metal slides to load it in a conrtainer, with or without a protective nylon layer.

Wooden cage packing: The unit is provided with a robust wooden cage, with or without a protective nylon layer.

WITNESS TESTING EXPERIENCE

TEST YOUR 4-PIPE UNIT BEFORE INSTALLATION AND MAKE SURE ITS' PERFORMANCE IS TOTALLY RELIABLE

FACTORY ACCEPTANCE TESTS

Factory Acceptance Tests are available as additional service in order to test the unit under specific conditions.

Carried out within modern and sophisticated facilities, this service gives the customer the possibility to choose among different test options in order to:

- Verify unit operation under severe conditions
- Check performance, both at full and partial loads
- Test the unit with low outdoor air temperature operation
- Detect sound emissions
- Time the fast restart

TO LEARN ABOUT THIS FACILITY
https://www.youtube.com/watch?v=Cy2FXAfhvj8&t

“BY FAR THE BEST PROOF IS EXPERIENCE”

Sir Francis Bacon
British Philosopher (1561 - 1626)

CENTRO PER L’ARTE CONTEMPORANEA LUIGI PECCI

2015 - 2017 Prato, Florence - Italy

Application:
Museum

Cooling capacity:
416 kW

Installed machines:
2x NECS-WQ 0512, 1x MANAGER 3000, 1x NECS-Q-0262

Plant type:
Hydronic System

Heating capacity:
438 kW

PROJECT

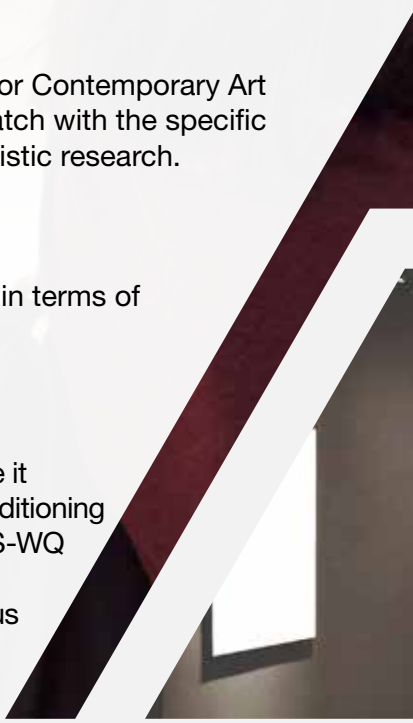
After 6 years of construction and being closed for 3 years, The Luigi Pecci Centre for Contemporary Art reopened again in Autumn 2016. It is the first institution in Italy to be built from scratch with the specific intent to exhibit, collect, preserve, document, and distribute the most advanced artistic research.

CHALLENGE

The Pecci centre is innovative not only from an architectural point of view, but also in terms of its state-of-the-art and sustainable mechanical systems.

SOLUTION

The intensive preparatory work carried out by the experts involved in the project, made it possible to optimize the position of the plant room to combine the needs of the air conditioning and lighting systems. The heart of the plant room is composed of 2 Climaveneta NECS-WQ 0512 water cooled multi-purpose heat pumps, controlled by MANAGER 3000.
The multi-purpose heat pumps can work in cooling only, heating only, and simultaneous heating and cooling mode, to satisfy the building’s needs, all year round.



TO LEARN MORE ABOUT THIS PROJECT

https://www.melcohit.com/EN/Projects/6435/Calimala-Hotel.html

MORE THAN 1000 PROJECTS ALL OVER THE WORLD

2019 - 2022 Venice - Italy

Procuratie Vecchie

Application: Institutions
Plant type: Hydronic System
Cooling capacity: 408 kW
Heating capacity: 460 kW
Installed machines:
4 x NX-Q/S 0402P

2018 - 2019 Milan - Italy

Rolex Italy

Application: Offices
Plant type: Hydronic System
Cooling capacity: 280 kW
Heating capacity: 301 kW
Installed machines:
1x NX-Q/SL 0502, 1x NECS-WQ 0512

Climaveneta's heat pump units, with their unbeatable advantages in terms of efficiency, quality, and precision are already the preferred choice of the major brands in the most prestigious projects all over the world.

2020 - Den Helder – Netherland

Tuna Submarine Marine Museum

Application: Museum
Plant type: Hydronic System
Cooling capacity: 44 kW
Heating capacity: 46 kW
Installed machines:
1x NX-Q /SL 0152

2019 Melbourne – Australia

Ekera Medical Center

Application: Healthcare / Hospitals
Plant type: Hydronic System
Cooling capacity: 131 kW
Heating capacity: 142 kW
Installed machines:
1x NX-Q/SL 0512P

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