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

COMFORT

HEAT PUMPS

NX²-N G06

AIR SOURCE HEAT PUMPS FOR OUTDOOR INSTALLATION, FROM 316 TO 800 kW

R454B

CLIMAVENETA®

NX²-N G06

NEW GENERATION HEAT PUMPS FOR PERFECT COMFORT

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

Air source heat pumps with scroll compressors and R454B refrigerant. From 316 to 800 kW

R454B

NX2-N-G06 are air-to-water heat pumps utilizing 4, 6, or 8 scroll compressors for maximum reliability and a comfortable building environment.

Available with the low GWP R454B, NX2-N-G06 features reduced refrigerant charge and very low CO_2eq tons, for an environmental-friendly approach.

COMFORT APPLICATIONS

- Hotels
- Shopping centres
- Office buildings
- Museums
- Education centres
- Sport facilities
- Banks
- Institutions

TOP-LEVEL PERFORMANCE IN HEATING AND COOLING

NX2-N-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	
A	Very high efficiency	3,06	4,64	3,32	4,04	HEATING / COOLING

NX2-N-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

EXTENDED OPERATING RANGE

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

An extended operating 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)**

HEAT RECOVERY CONFIGURATIONS

Standard unit	Unit without heat recovery.	-
Partial heat recovery	A desuperheater on the compressor discharge line recovers approximately 20% of the unit's capacity. **Suitable for DHW production or other secondary uses, such as the integration of an existing boiler.**	**60°C**

NX²-N G06 New generation green refrigerant

R454B

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

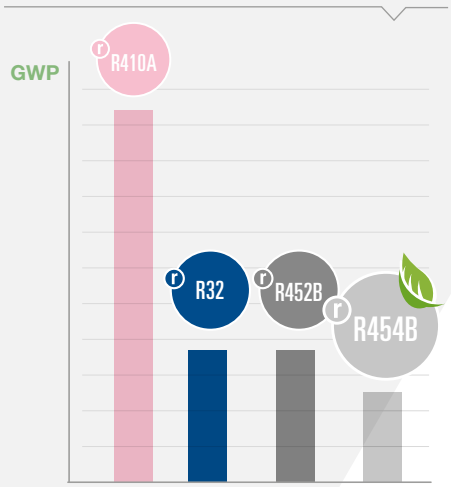
Thanks to the new generation refrigerant R454B, the environmental impact of NX2-N-G06 is greatly reduced. Combining reduced refrigerant charge with a low GWP refrigerant, these units boast the lowest amount of CO2eq in the scroll unit market, thus resulting as the perfect choice for any new forward looking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

Compact 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, is available as an option

Patented fan section 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, developed fully in-house.

- 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-N-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

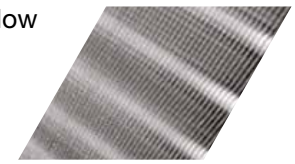
EC fans (std for NX2-N-G06/A 0606-0808)

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

HIGHLY RESISTENT FINNED COILS

Copper and aluminum tube & fin 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-N G06

NX²-N G06

Patented ventilation section layout

PATENTED SOLUTION TO ENSURE COMPLETE INDEPENDENCE WITHIN ALL THE CIRCUITS

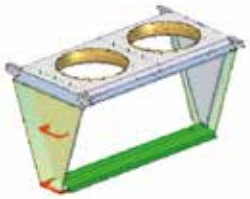
The patented ventilation solution for complete independence of circuits sharing the same V module.

Generally, the ventilation modules consist of single row of 800mm-diameter fans. With NX2-N-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:

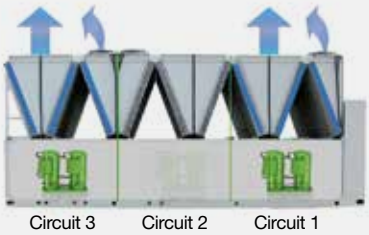
2 coils and 2 axial fans (800mm-diameter)

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.



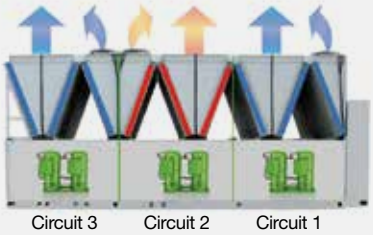
In the figure shown:

- 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**



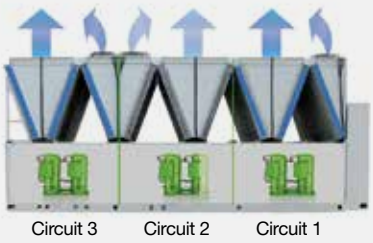
In the figure shown:

- 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-N-G06 - Technical insight

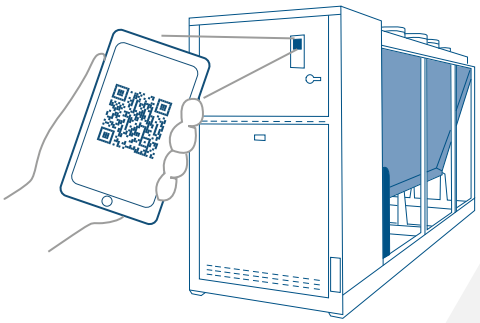
The patented solution optimizes the number of coils for each circuit. Consequently, the total footprint of the unit is reduced.

ACCESSORIES AND SERVICES

KIPLink INTERFACE

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

Based on Wi-Fi technology, KIPlink is an option that allows one to operate 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 easy to 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, the buffer tank, 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

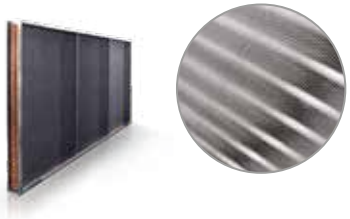
- External inverter to adjust the waterflow
- Reduced energy consumption through speed regulation
- Available flow control logics: Constant flow paramenter-set, variable flow with VPF and VPF.D systems

Pumps + Buffer tank

- Up to 1000 liter buffer tank
- 20mm insulation lining
- Including: expansion vessel, safety valve, manometer.

TUBE & FINS COILS

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



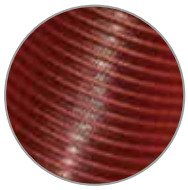
Cu/Al - Pre-painted fins

- 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. Sound power reduction (with factory settings): -3 dB(A).

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

M-Net interface kit: Interface module to allow the integration of the unit with Mitsubishi Electric proprietary communication protocol M-Net.

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.

FACTORY ACCEPTANCE TEST EXPERIENCE

TEST YOUR HEAT PUMP 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)

CALIMALA HOTEL

2018 - 2019 Florence - Italy

Application:
Hotel and resorts

Plant type:
Hydronic System

Cooling capacity:
504 kW

Heating capacity:
505 kW

Installed machines:
4x air source scroll compressor heat pumps, 1x ClimaPRO chiller plant optimization control system

PROJECT

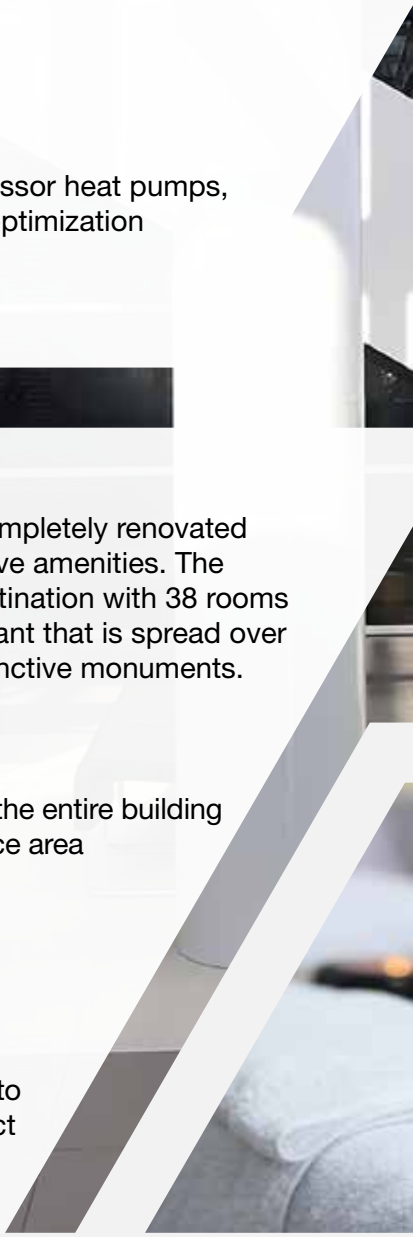
Thanks to a major refurbishment project, the historic Palace of Angels has been completely renovated and transformed into a 4-star hotel with a unique rooftop terrace and many exclusive amenities. The renovation of the property has transformed the property into a high-end tourist destination with 38 rooms with a unique and contemporary design. On the top floor there is a bar and restaurant that is spread over an exclusive terrace of 400 m² with a 360-degree view of the city and its most distinctive monuments.

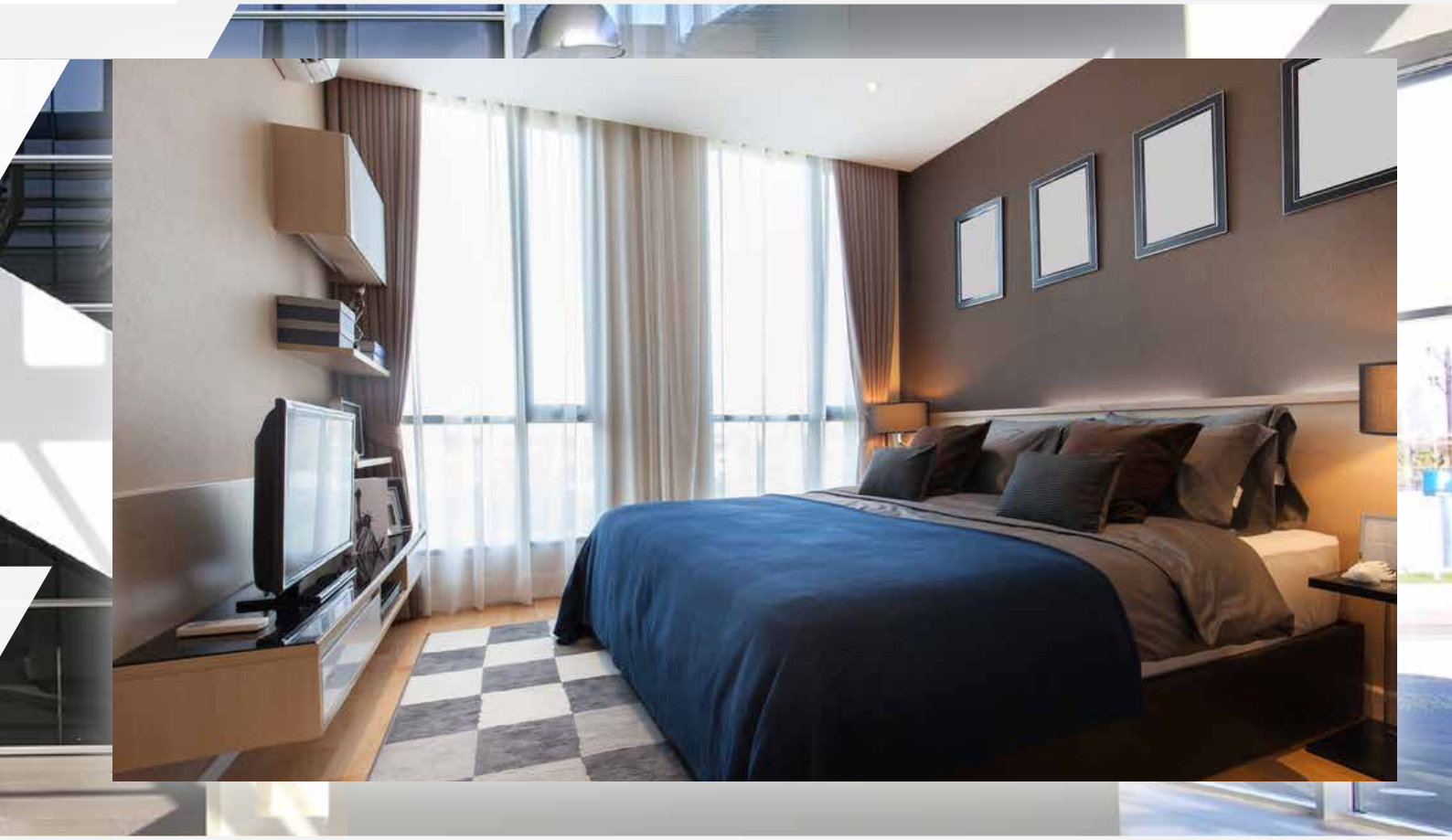
CHALLENGE

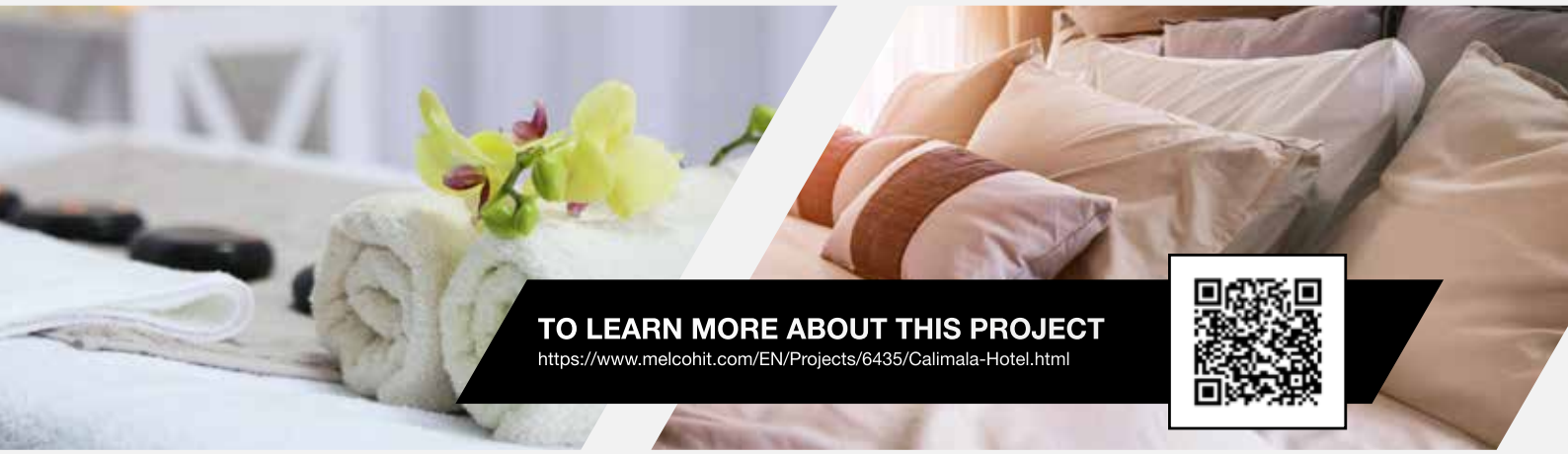
Before the restoration, the terrace housed the mechanical and electrical facilities for the entire building and therefore the biggest challenge was to relocate them thus freeing valuable surface area

SOLUTION

The air conditioning system is based on four Climaveneta reversible air/water heat pumps with remote condenser. The units were installed in a technical room in the basement, while the remote condensers were expertly hidden in special enclosure on the terrace, equipped with supply and return grids but virtually invisible to both to the eye and ear. The ClimaPRO control and optimization system ensures the perfect synergy between the heat pumps and the VRF system.







TO LEARN MORE ABOUT THIS PROJECT
https://www.melcohit.com/EN/Projects/6435/Calimala-Hotel.html

MORE THAN 1000 PROJECTS ALL OVER THE WORLD

2010 Paris - France

Axe Seine

Investor: Silic
Application: Offices
Plant type: Hydronic System
Cooling capacity: 1861 kW
Installed machines:
4x RECS/LT-SL air source heat pumps,
1x super silent NECS-N/SL heat pumps

2016 Buenos Aires - Argentina

Cultural Centre, La Plata

Application: Museum
Plant type: Hydronic System
Cooling capacity: 546 kW
Heating capacity: 602 kW
Installed machines:
2 x NX-N-K air source scroll compressor heat pumps, 14 x WIZARD air handling units

Climaveneta brand heat pumps, 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.

Talca - Chile

Hospital De Talca

Application: Healthcare / Hospitals
Plant type: Hydronic System
Cooling capacity: 5800 kW
Heating capacity: 4800 kW
Installed machines:
6x RECS-W heat pumps,
2x FOCS2-W/CA water cooled chillers,
4x NECS-N-ST air source heat pumps,
3x AW chilled water close control units,
3x AX close control units,
3x HCAT remote condensers

2017 Prague - Czech Republic

Panorama Hotel

Application: Hotel and resorts
Plant type: Hydronic System
Cooling capacity: 1669 kW
Heating capacity: 515 kW
Installed machines:
2x TECS2-W/HC water cooled oil-free compressor chillers, 3x NX-N/CA air source scroll compressor heat pumps, Manager 3000 group management system, Sequencer

CV_NX2-N-G06_EN_04-2021

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

Head Office: Via Caduti di Cefalonia 1 - 36061 Bassano del Grappa (VI) - Italy
Tel (+39) 0424 509 500 - Fax (+39) 0424 509 509
www.climaveneta.com
www.melcohit.com