

Courtyard Hotel, Paris



VRV heat recovery system provides energy-efficient comfort for guests

The flexibility of the Daikin VRV air conditioning system has enabled the prestigious Marriott chain of hotels to rejuvenate an aging commercial building in the heart of Paris. Located opposite the Gare de Lyon Station, the new Courtyard Hotel by Marriott conversion is a first for the international group and for the city itself. Stripped back to the framework, with only the floors retained, the renovation process has seen the former 1970's IGH tower emerge as a modern hotel that fits perfectly into the stylish and busy mixed neighbourhood that surrounds it.

The culmination of a two-year construction process, the new hotel is spread across 19 floors covering 11,500 square metres and contains 249 rooms. A separate building located on the ground and first floors houses the kitchen, a bar-restaurant and a conference centre, providing innovative workspaces with shared access to technology and a common room with catering facilities, plus seminar rooms accommodating up to 100 people.

Designed by Studios Architecture and realised by Bouyges Construction as the main contractor, the layout and interior of the 60-metre high tower presents a modern and sophisticated look and feel.

Daikin's innovative VRV IV technology provides a total climate control solution that reflects the hotel's forward-thinking design, minimising the building's carbon footprint using renewable energy and providing the flexibility to cater to individual needs and preferences.

Highly flexible configuration options including a scalable design and easy installation made Daikin's VRV IV technology the preferred choice for this large and complex building conversion project.

The installation was carried out by Tempeol for Bouyges Energie. A total of 28 VRVIV heat recovery outdoor units were installed, comprising of 24 three-pipe systems serving the guest rooms and an additional four two-pipe systems to provide heating and air conditioning in common areas on the ground floor, including the conference rooms, co-working areas and the bar-restaurant.

To comply with city centre planning regulations, the outdoor VRV IV units were sited in a machine room at the top of the hotel. This offers complete concealment, providing a solution that is invisible from the building exterior.



The Courtyard conversion marks a successful collaboration between forward-looking urban regeneration and Daikin's flexible, future-proof VRV heat recovery technology.

Project Requirements

- ☒ Air conditioning
- ☐ Air curtain
- ☐ Air purification
- ☒ Control
- ☒ Heat Recovery
- ☐ Heating
- ☐ Hot water
- ☐ Refrigeration
- ☐ Ventilation

Year of installation
2018

Installed Systems

- > VRV-IV heat recovery outdoor units (two- and three-pipe)
- > Concealed ducted and exposed ceiling units
- > Slimline wall units

The versatility of the VRVIV system design enables connection with a wide range of indoor units. At the Marriott hotel, the indoor units serving the bedrooms encompass a mix of slimline wall units, slim concealed ducted units and exposed ceiling units, plus medium-pressure ducted units. Branch selector boxes placed in false ceilings in the corridors leading to the bedrooms provide energy-saving heat recovery, which allows simultaneous heating and cooling, so hotel guests can control their own comfort levels in their rooms.

The heat recovery aspect of the VRV system reuses heat from bedrooms for energy efficient hot water production and to heat other areas of the building. The unique three-pipe technology of the Daikin IV heat recovery system increases energy efficiency during heat recovery. Dedicated pipes enable the system to recover heat at lower condensing temperatures than other solutions available. The heat exchanger is optimised for mixed mode operation and is engineered to provide the highest seasonal efficiency.

The VRV units are integrated within a central Building Energy Management System (BEMS), via a BACnet

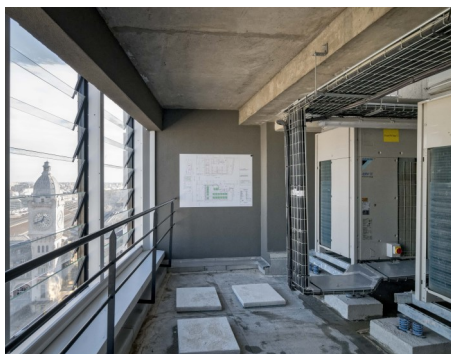
A fixed setpoint temperature of 23°C saves energy, adjustable by +/- 3°C to allow guests to control comfort levels in their rooms.

protocol. To save energy, room temperatures operate to a fixed 23°C, variable by +/- 3°C to suit occupant preferences. The ducted units continue operating, even when the bedroom is unoccupied. The entrance to each room is fitted with a contact system, activated via the room keycard, which together with a room presence sensor helps regulate unit setpoints.

An integrated tele-controller allows system technicians to manage the systems from their smartphones or tablets. In the event of a malfunction in a heating/cooling unit, the BEMS issues an alert in the form of a fault code. A VRV control panel in the machine room provides access to more detailed information on the nature and cause of the identified fault, enabling issues to be resolved quickly and efficiently.



Each room is fitted with a keycard activated contact system which, together with a room presence sensor, helps regulate unit setpoints.



The outdoor VRV IV units are located in a machine room at the top of the hotel, offering a visually discreet solution.



Four 2-pipe VRV systems provide local climate control within the common areas on the first floor, such as the hotel's bar-restaurant.