



Daikin solution increases energy efficiency at historic hotel

An innovative approach to air conditioning system replacement has delivered dramatic energy savings at the Grade II listed Bloomsbury Hotel in central London, owned by The Doyle Collection.

The €1,389,242 (£1 million) project replaced an ageing system using R22 refrigerant with a state-of-the-art Daikin VRV replacement air conditioning system. With a complete ban on the use of R22 refrigerant from 2015, building owners need to consider upgrading their climate control systems without delay.

Daikin VRV -Q or replacement system is a 'whole building solution', allowing control of multiple cooling, heating and hot water systems. It is an innovative alternative to complete R22 system replacement, as it allows existing pipework to be retained. This lowers cost, speeds up installation and ensures business continuity.

Designed in the 1930s by renowned British Architect, Sir Edwin Lutyens, The Bloomsbury Hotel had already undergone a sensitive restoration, to create the chic heritage hotel that can be seen today. The Grade 2 listed building retains many of its original architectural features including the magnificent stone entrance steps and doorway, double height lobby and the book lined Seamus Heaney Library, named after the late Nobel Laureate, who was a regular guest. The iconic hotel houses 153 bedrooms and communal guest areas, located over eight floors.

As part of an on-going upgrade programme, The Doyle Collection wanted to reduce energy usage and CO₂ emissions by 30%, whilst improving comfort levels for guests by optimising climate control in all the bedrooms, meeting spaces, public spaces, bar and restaurant.

The building also needed to comply with UK legislation on the use of refrigerant gases: topping up systems with new R22 was banned in 2010, with the use of recycled and reclaimed R22 also being banned from 31st December 2014.

Specification

The new system comprises 56 outdoor units linked to 209 indoor ducted and wall mounted concealed chassis units in the bedrooms. In communal areas a combination of VRV, splits, wall and floor mounted units were used.



Keeping to a nine month programme was also essential, to ensure revenue losses were minimised. As a result, work was phased and planned on an hour-by-hour basis. The programme was managed between the client and the installer Temperature Control, with technical and logistical support provided by Daikin UK.

The biggest challenge was working in an operational hotel. The phased programme meant sections of the hotel were closed off, enabling the team to remain “invisible”, working safely and seamlessly in the background, without disturbing guests.

Andy Grundy, Project Engineer at Temperature Control said: “Having project managed the original installation, I was fully aware of the complexities and challenges presented by the hotel. We worked closely with staff at the Bloomsbury so were able to overcome them easily.

“Along with Daikin UK, this was a great team effort – showing the benefit of a strong and lasting working relationship between client and contractor.”

Solution

VRV systems are modular, which means they are flexible in their application and installation can be phased, further minimising disruption. On this project, the compact and lightweight units could also be installed without using cranes, reducing costs further and avoiding road closures.

VRV -Q uses R410A gas, which can work at the lower pressures used by R22 systems whilst delivering much higher efficiencies - thus allowing existing pipework to be retained. The system is 40% more efficient in heating and 25% higher in cooling than R22 refrigerant systems.

Although all the outdoor and indoor units were replaced, along with branch selector boxes, installation costs were half of the expected cost of complete system replacement. Existing pipework could also be retained, saving time and money. The phased approach meant occupancy rates could be maintained, minimising the effect on revenue.

Conclusion

The Bloomsbury hotel R22 replacement and upgrade project was a complete success. The use of Daikin’s VRV -Q system delivered an innovative alternative to a complete replacement of the existing air conditioning system, delivering dramatic energy savings and



maintaining the building's historic features, with minimal disruption to the hotel and its guests.

The system, installed in September 2013, saw energy use fall by more than 15,000kW/h by January 2014, compared with the previous year.

The hotel manager estimates that the VRV system uses 55% of the hotel's entire energy, so savings over the previous system are between 27% to 42% and an average of 32%, exceeding his original 30% energy savings target.

An independent report from Clifford Talbot Partnership supports these energy saving estimates and concluded that overall energy use was reduced by 23.5% year-on-year and by up to 26% in some months.

Since commissioning and handover, the Hotel has experienced a dramatic improvement in customer satisfaction as the sound level of the new equipment has been much quieter. Both service and maintenance costs have fallen due to a reduction in energy use without compromising the comfort of the guests.

The project was completed on time and within budget, which also took any loss of guest revenue into account. The complexities and sensitivities of this challenging project were overcome by both the innovative technical solution but also a great team effort between manufacturer, client and contractor.

The success of the project in reducing energy use and CO₂ emissions has meant hotel owner, The Doyle Collection, is planning to repeat the project in its eight other hotels, with work already underway at the Kensington Hotel.

Michael Neve, General Manager of The Bloomsbury Hotel said: "The Daikin system is more efficient and certainly quieter than the old one. Our energy bills are between 23% and 26% lower than the same period last year, before the system was changed."

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About Daikin Europe N.V.



Daikin Europe N.V. is a wholly-owned subsidiary of Daikin Industries Limited and a major European producer of air conditioners, heating systems and refrigeration equipment, with approximately 5,500 employees throughout Europe and major manufacturing facilities based in Belgium, the Czech Republic, Germany, Italy, Turkey and the UK.

Globally, Daikin is renowned for its pioneering approach to product development and the unrivalled quality and versatility of its integrated solutions. With more than 90 years' experience in the design and manufacture of heating and cooling technologies, Daikin is a market leader in heat pump technology.

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