CASE STUDY | COMMERCIAL
CATEGORY | LEISURE

British Airways i360 Tower

Vital role for Daikin VRV IV at high-flying new tourist attraction

At one of their most iconic locations yet, air conditioning systems from Daikin UK are helping to maximise green energy standards for Brighton's high-flying new tourist attraction, British Airways i360.

Opened in August 2016, British Airways i360 is the world's tallest moving observation tower. Its futuristic enclosed glass viewing pod rises 450 feet above the seafront to give panoramic views in all directions.

Each round trip for up to 200 visitors takes 25 minutes, with the 94-ton pod travelling at 0.4 metres per second up and down the 3.9 metre diameter steel tower – the world's most slender. On each descent, the pod generates almost half the electricity needed for an ascent.

From the same design team as the London Eye, British Airways i360 stands at what used to be the landward end of the old West Pier, overlooking its skeletal remains beyond the shoreline. It was conceived as a vertical pier, and a high-tech 21st century replacement for the Eugenius Birch structure of 1866 destroyed by fire in 2003.

Surrounding the base of the new tower is the publicly accessible beach building that includes a restaurant, shop and flexible events spaces for conferences, exhibitions, weddings and other social events. The flat roof of the building, level with Kings Road, serves as the pod boarding area.

The public areas of the beach building are air conditioned by Daikin VRV IV systems, making efficient use of renewable energy for heating.

> The 'east' system is a 20hp heat pump with continuous heating to deliver 27.7kW of cooling or 36.0kW of heating to the restaurant and the retail area.

> The 'west' system consists of two heat recovery units totalling 34hp, delivering 47.7kW of cooling and 61.3kW of heating to the events, exhibition and conference spaces, and the main office.

Year of installation

› 2016

Project requirements

- [x] Air conditioning
- [ ] Air curtain
- [ ] Air purification
- [x] Control
- [x] Heating
- [ ] Hot water
- [ ] Refrigeration
- [x] Ventilation

Installed systems

› VRV Heat Recovery
› VRV Heat Pump
› Slim ducted units
› Concealed ceiling unit
› VAM Heat Recovery
› ITM
› Split outdoor unit
› Wall & Ceiling mounted units

"A British Airways i360 spokesperson said: "We have a prominent year-round attraction, so we needed high efficiency heat pumps to deliver comfortable indoor temperatures for visitors and staff in all seasons. These systems have the added benefits of heating with renewable energy."

Dominic Shortland of Seraphic Consulting, one of the British Airways i360 project's building services consultants, says mostly the air conditioning is delivered via ducted fan coil units concealed in tight bulkhead locations. The installation consists of 26 slim ducted fan coil units (low external static pressure) and seven concealed ceiling units (medium external static pressure).

The beach building also has a number of Daikin VAM heat recovery ventilation units to provide a constant supply of fresh air. The heat recovery facility minimises additional demand on the air conditioning systems when there is a significant difference between outdoor and indoor temperatures. In a further efficiency boost, carbon dioxide sensors ensure the VAM units deliver only as much fresh air as necessary to maintain air quality standards.

Because of the location – literally on the beach – air conditioning design had to allow for two important variables: visibility and corrosion.

Dominic Shortland says: "The VRV IV outdoor units are positioned out of sight in the building's central well."

And to avoid corrosion from the salt-laden sea air, the units' heat exchangers have been treated with Blygold resistant coatings. This specialist factory-applied treatment – which Daikin UK recommends for systems installed anywhere within five miles of the coast and any other particularly corrosive environments – significantly extends the life expectancy of heat exchangers without compromising their thermal efficiency.

Sixteen wired remote controllers allow local control of air conditioning, within parameters for the Daikin VRV IV and VAM systems managed via a Daikin i-Touch Controller. In the absence of a full building management system, the Daikin I-Touch Controller has also been programmed to manage various third-party ventilation and extraction systems for the kitchens and other service areas.

The Daikin installation includes six Daikin Sky Air single split systems which provide cooling for key facilities – including the motor room housing the viewing pod's lifting mechanism and the two reproduction Victorian tollbooths which serve as ticket office and tea room.

Kit List

Code	Description	No of units
REYQ-T	VRV IV Heat Recovery condensing unit	2
RYYQ-T	VRV IV Heat Pump with continuous heating	1
FXDQ-A	Slim ducted fan coil unit	26
FXSQ-A	Concealed ceiling unit (medium ESP)	7
VAM	Heat Recovery ventilation unit	11
DCS601C51	Intelligent Touch Controller	1
BRC1E52A	Remote controller	9
BRC2E52C	Simplified remote controller	7
BRYMA100	Carbon dioxide sensor	11