



Portcullis House

Daikin VRV delivers a healthy extra benefit – more lettable space

Switching to Daikin VRV IV heat recovery air conditioning as part of a major refurbishment project has given the owners of a 3,600m² Cardiff office building an additional benefit: a healthy extra 350m² of space, which is being let to a new tenant, the NHS.

Portcullis House, previously occupied by HMRC, is near the Millennium Stadium and the city centre. It occupies a prominent corner site and consists of three storeys of open plan offices fronting Cowbridge Road East, with seven storeys of smaller offices and meeting rooms in a taller wing behind. The complex also includes 12 flats on two floors above the lower wing. The residential component is known as Belgrave Court, and is not included in the air conditioning system.

The old four-pipe air conditioning system, with floor-mounted fan coil units (FCUs), piping and associated trunking on perimeter walls, has been removed, yielding the 10% increase in lettable space.

Heating and cooling for the old system was provided by boilers and chillers – all of which were in a poor condition.

Daikin's brand new VRV IV heat recovery air conditioning was specified for its cutting edge technology and high efficiency. As an added benefit, its refrigerant piping, branch selector boxes and round flow cassettes could all be accommodated within the existing ceiling voids.

Portcullis House has 38 Roundflow cassettes from 1.8kW to 7.2kW in the open plan offices and other large spaces. There are 21 wall-mounted FCUs from 1.2kW to 2.9kW for smaller offices and meeting rooms.

The indoor units are served by three VRV IV heat recovery condensing systems – one 22hp and two 26hp – mounted on the roof of the seven storey wing. Each of the systems serves one of the three open plan areas and a range of offices, meeting rooms and other facilities. Connection ratios of 110%-120% have been allowed, to make efficient use of the VRV IV units' capacity.

The building has a fairly high degree of solar gain, which means that it often requires simultaneous cooling and heating. The VRV IV heat recovery facility means rejected thermal energy from the 'hot' side can be used efficiently to warm the colder parts of the building.

Matthew Williams, director of Daikin D1 installer Cool Solution, who worked under main contractor Beacons Business Interiors, says the design flexibility of Daikin BS boxes simplified the piping requirements for serving large and small rooms on different floors.

He says: "We considered an alternative system, but if we'd used it we would have been in danger of exceeding maximum piping lengths. We would have had to pipe down to a box on the lowest level, then up again to reach the fan coils on the higher floors. With the new design BS boxes included within the Daikin VRV IV solution, we simply branched off on the way down. The Daikin design was perfect for this application."

Ventilation for the offices is provided by an existing air handling unit, which has been extensively refurbished.



KIT LIST

Code	Description	No of units
REYQ T	VRV Heat Recovery Condenser unit	3
FXAQ P	Wall counted fan coil unit	21
FXFQ A	Round flow cassette	38
DCS601C51	I-touch controller	1