Basildon Hospital

Opts for Energy saving climate control for healthy environments

Background

The Jubilee Wing at Basildon Hospital is a three storey extension which was formally opened by HRH Princess Anne in 2003 and named to commemorate the Queen's 50 year reign. It has 12 wards with over 300 beds.

Situation

Basildon Hospital has an ongoing programme for maintenance and refurbishment to upgrade and reduce the hospital's environmental impact and to keep running costs as low as possible.

Eight kitchens throughout the Jubilee Wing were in need of temperature regulation to ensure a comfortable working environment as well as to prevent the spread of bacterial infection. As with the majority of kitchens temperatures tended to increase dramatically when they were in use.

This was particularly problematic in a hospital environment as many people use the kitchens for hot drinks and snacks, and patients who are already ill, or recovering, tend to be more susceptible to further illness than the majority of the population.

The Solution

Basildon Hospital is constantly looking to achieve the highest levels of energy efficiency to reduce energy costs. The Daikin VRV IV Heat Pump suited the hospital's requirements for cooling and provision of a precise level of climate control together with energy efficiency and versatility of operation.

JC Watson Refrigeration Ltd, a Daikin D1 Plus contractor, selected and specified the use of the revolutionary Daikin VRV IV for use at Basildon. This was to become the first installation of the new series IV in the country.

JC Watson had previously been the first company in the country to install Daikins VRV "Q" series replacement technology VRV and is at the forefront of the selection and installation of Daikin products.

Ajeet Gangadharan, Project Manager for the Basildon and Thurrock University Hospital Trust explains: "We needed to find a system to cool our kitchens, which are spread across the hospital campus, as energy efficiently as possible. The VRV IV Heat Pump solution from Daikin fitted all our requirements

"As well as the energy efficiency capabilities, we required a system which was discreet, had a small footprint, had operational flexibility and could fit into our building's existing infrastructure. This system did just that."

VRV systems match refrigerant volume to the heating and cooling requirements for optimum energy efficiency, varying this to match differing climatic control settings of different areas of a building.

New features of the latest heat pump system

The main technology behind the latest VRV IV Heat Pump system is variable refrigerant temperature (VRT) which allows the system to adapt to Basildon Hospital's exacting requirements for temperature control enabling higher system efficiencies leading to lower running costs. The refrigerant temperature continuously adjusts depending on the outside temperature, actual temperature and capacity needed, thus providing optimal seasonal efficiency at all times and reduced operational running costs.

The default mode is set for UK conditions for maximum efficiency and comfort. The variable refrigerant temperature preset modes mean that the balance between comfort and efficiency can be customised in order to optimise the system depending on the application requirements, delivering annual cost savings of up to 25% and increasing seasonal efficiency by up to 28%.

The new heat pump has a continuous defrost cycle which can operate alongside the heating system if required, although use of the system for heating is not normally needed due to the kitchens' natural heat gain.

The VRV IV Heat Pump has a configuration tool which makes installation and initial set up on single and multiple sites much quicker and easier. The new process also reduced errors and as a consequence reduces costly follow up visits.

The installation

J C Watson Refrigeration Ltd, of South Ockendon in Essex carried out the first VRV IV Heat Pump installation. They worked with the hospital to make sure minimal disruption was made to staff and patients. A programme was agreed to carry out installations to one kitchen at a time with two wards sharing one kitchen while the project progressed.

Jamie Stern of J C Watson said: "We were very pleased to be part of the first VRV IV installation in the country. This is the latest technology available which is at the forefront of heat pump technology and ahead of other suppliers. After sales service is vital so extended warranties have been issued."

Two VRV IV Heat Pumps with 22.4 kW cooling capacity were installed externally with the help of a crane. Both heat pumps were connected with piping to six Daikin FXAQ wall mounted units which have five different air discharge angles. These units have flat, stylish front panels which blend with the existing décor and are easy to clean.

Maintenance can be carried out from the front of the unit, so access is easy and causes little disruption to the busy kitchens.

Each of the heat pump systems is controlled using a wired remote control. Both heat pumps are also centrally controlled through an integrated control system connected to the hospital's building management system. The system has been pre-programmed to operate at specific times when the kitchens are in use to save energy.

Standards

Daikin's VRV IV Heat Pump is at the forefront of technology with energy saving potential over earlier models. This is important to conform to the EU's 20/20/20 policies and to meet the ERP directive for seasonal efficiency regulations for systems over 12kW.

In the healthcare sector existing buildings must meet a BREEAM Very Good rating. Daikin's VRV IV Heat Pump technology can assist project managers to conform to these requirements.

Conclusion

The Daikin VRV IV Heat Pump system has been installed to provide cool air, creating a healthy environment for patients, staff and visitors in the Jubilee Ward kitchens at Basildon Hospital.

The system could easily be expanded or replicated across other areas of the hospital when refurbishment or maintenance programmes allow.

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