



London Bank



Bank's chilling 'green' solution accounts for big cost savings

A clever application of Daikin Hydrocube chillers has enabled a major bank to achieve significant heating cost savings and a reduced carbon footprint for its central London head office and data centre.

As part of a company-wide project to cut energy costs and increase environment-friendliness, the bank targeted the gas boilers supplying 666kW of hot water to coils in the three air handling units that ventilate its six-storey building.

The hot water coils in the AHUs provide primary space heating for more than 2,500 staff by tempering incoming fresh air when the ambient temperature falls below 16°C.

In the search for alternatives, the bank called in Portsmouth-based DCI Refrigeration, which had previously installed four new chillers to cool the data centre via two separate water circuits.

DCI Operations Director Brady Drain says: "To reduce or eliminate the need for the gas boilers, some method of heat recovery was the obvious choice. "We looked first at possible recovery of heat rejected at the chillers, but decided this was not an option as it was low-grade heat, and alterations necessary to harness it could have led to warranty issues."

There is a constant minimum requirement for 450kW of cooling on each circuit. Under full load, each pair of chillers delivers 725kW of cooling, to reduce the flow temperature of the water in the system from 12°C to 6°C.

Brady Drain says: "The solution we proposed, and subsequently installed, involved using two groups of six Daikin heat pump chillers to provide primary cooling, reducing the return flow temperature in the existing circuits from 12°C to 9.5°C. The heat pumps then enhance the rejected heat through their refrigerant circuits before transferring it to the AHUs via secondary water circuits.

Year of installation

› 2016

Project requirements

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

Installed systems

› Water cooled small scroll heat pump



“This meant the main chillers could operate more economically at a part load of 503kW per pair – needing only to reduce the flow temperature from 9.5°C to 6°C – with the associated six Daikin units providing up to 222kW of cooling.”

Some clever plumbing was needed to enable the groups of Daikin units to tap into the existing water circuits, and to serve the three AHUs.

As a result of the solution:

- The AHUs are no longer served by gas boilers, saving about £290 per 14-hour day on gas, and eliminating the CO₂ emissions it produced.
- The 666kW heating requirement is met by the Daikin units and is effectively free heat.
- There is a daily saving of about £31 (9%) on electricity for the data centre chillers and the AHUs.
- Annual running costs, based on 14 hour days, five day weeks and 30 weeks' heating per year, are estimated at £137,550, against £184,917 previously.
- Minimal amounts of heat are wasted to atmosphere.
- Primary cooling for the data centre is now provided by the Daikin units.
- The original main chillers now provide secondary cooling for the data centre circuits.

The Daikin units installed in the bank's plant room are EWWP045KB Hydrocube water-cooled heat pump chillers, with a heating capacity of 54.8kW.

The EWWP-KBW1N range includes single, double and triple modules, to provide cooling capacities from 13kW to 195kW or heating capacity from 16.6kW to 248kW. The modular concept provides installation flexibility and additional redundancy. The unit is capable of chilled water temperatures down to -10°C and hot water temperatures up to 55°C.

Every unit in the range has stainless steel plate heat exchangers and a hermetically sealed Daikin scroll compressor. The units offer compact dimensions, low refrigerant volumes, easy installation and maintenance, low energy consumption and low noise levels.

Code	Description	No of units
EWWP-KB-W1N	Water cooled small scroll heat pump	12

