



Headquarters becomes a centre of excellence with water-based air conditioning

When Working Environments was looking to bring together three different company locations on the south coast into one, the decision was taken to develop and modernise their existing headquarters at Monza House in Southampton to accommodate the integration.

The building now uses the pioneering H-VRF system which has water replacing the majority of the internal refrigerant, removing the need for any leak detection equipment.



Air Conditioning | Heating
Ventilation | Controls

Case Study

Working Environments, Southampton

Making a
World of
Difference



Staff have noticed how fresher and more balanced the internal temperatures have been and have also noticed fewer draughts from the new system.

Working Environments is the largest privately owned building services provider in the Home Counties and has built up a proud, solid reputation for a comprehensive range of mechanical and electrical services since its formation in 1974.

As a BSP (Business Solutions Provider) for Mitsubishi Electric, Working Environments has a very close relationship with the manufacturer and when their in-house design team first heard of the innovative new air conditioning system that Mitsubishi Electric had developed, they wanted to be one of the first to check out its capabilities.

The company's executive management objective was to provide a modern, comfortable environment for staff and customers and turn the interior of the building into a 'Centre of Excellence' that could act as a showcase for Working Environment's expertise and services.

The H-VRF (Hybrid VRF) system operates without using refrigerant in occupied spaces.

At the heart of the new system is an HBC (Hybrid Branch Controller) box, which is connected to the outdoor unit via traditional refrigerant piping.

The use of water in the majority of piping removes the need for leak detection equipment and allows more properties to benefit from the flexibility of both design and operation that traditional VRF (Variable Refrigerant Flow) air conditioning can bring.

The system is still able to deliver simultaneous heating and cooling in a simplified two-pipe design.

Air Conditioning



The refurbishment included an 80-seater auditorium and the completed Monza House now serves as a 'Centre of Excellence' for Working Environments

The benefits of H-VRF

H-VRF provides the function of a four-pipe fan coil system with the efficiency of modern VRF in one system.

It is ideal for situations restricted by BSEN378, which is intended to minimise possible hazards to persons, property and the environment from refrigerating systems and refrigerants.

This legislation is particularly applicable for hotels. Generally, this limits systems to about 20Kg of R410a or forces the addition of leak detection systems.

The only other option is to break larger systems down into smaller ones. Either way, an increase in cost and complexity cannot be avoided...until now.

Full flexibility

The option for phased installation of H-VRF reduces building down-time whilst still providing a high end heating and cooling system.

All the advanced VRF controls can be used and combined with the flexibility of design and installation that VRF offers and high levels of efficiency.

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Between the HBC box and the indoor fan coils, the air conditioning uses water piping and still offers high sensible cooling and stable room temperatures for maximum comfort.

Work on installing the H-VRF system into Monza House was split into several phases with the first step being the complete redevelopment of an existing warehouse.

This was developed into a new office area, seating 58 engineering and surveying staff, eight meeting rooms, an IT training suite and a staff breakout area. A new plant room, print room and 80-seat auditorium were also created.

The facility is served by a single air handling unit (AHU) providing fresh air, with two traditional City Multi VRF systems with both ducted and ceiling cassettes, along with state of the art flat panel LED lighting with new power and data infrastructure.

Phase two saw the modifying of the existing ground floor offices and corridors to provide access to the new office area and completely modernise the space with new air conditioning, lighting, power and data.

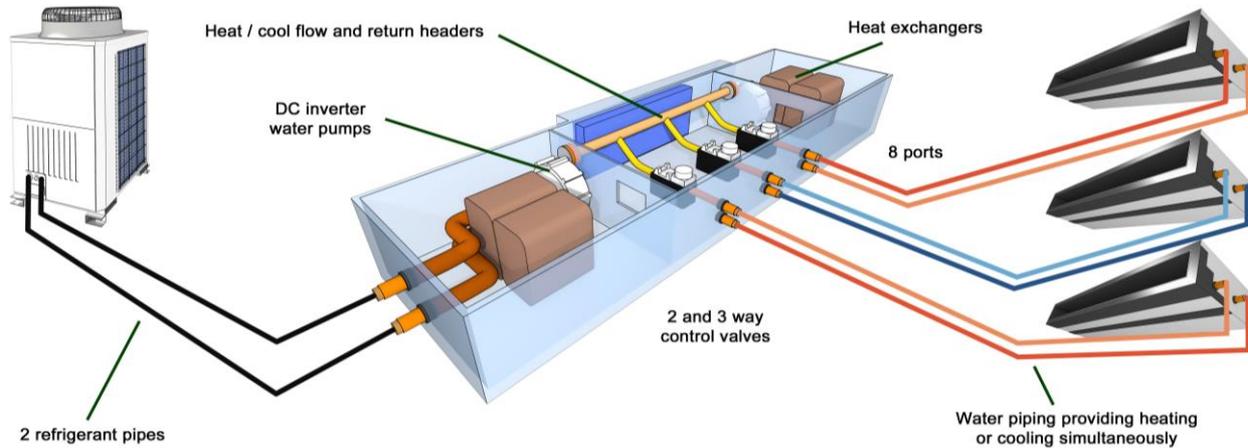
Following the completion of these two phases the existing first floor offices were modernised and this is where the H-VRF air conditioning was installed, along with new lighting, power and data infrastructure.

Overall the refurbishment and fit out took a total of 15 weeks and also incorporated a redesigning of the remaining ground floor offices to provide a new central accounts office and an office for the newly created Maintaining Environments – an integrated facilities management business.

HVRF heat recovery outdoor unit

Hybrid Branch Controller (HBC)

Water-based fan coils



ABOVE: The pioneering H-VRF system offers the complete flexibility of 2-pipe VRF air conditioning but no refrigerant in occupied spaces.

Installation Summary

Installation date: September 2013

By combining the benefits of a water based system with the efficiency and flexibility of a heat recovery VRF system, H-VRF is proving to be the ideal integrated solution.

Off coil temperatures are dependent on on-coil temperatures which results in high sensible cooling and efficient heating.

Load capacity control is achieved through the use of inverter driven pumps and flow control valves which are all built into the HBC.

A new mezzanine floor was also built within the adjacent unit to allow for an archive and new welfare facilities, whilst providing additional car parking spaces below.

“We have now installed monitoring equipment to allow us to see how well the system is working for us and the feedback from staff has been fantastic,” explained the in-house design team for Working Environments.

“Everyone has noticed how fresher and more balanced the internal temperatures have been and we’ve also noticed fewer draughts.”

“Working Environments company vision is ‘to create a better environment...’ and by undertaking this exciting development, this has truly been achieved.”



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