



CASE STUDY

Sector:
Property
Contract:
Refurbishment

Airmaster have completed major chiller refurbishment for a British multinational based in York.

Airmaster were presented with a unique challenge in refrigeration when tasked with the refurbishment of two chiller's in one of York's most stunning buildings. The chiller systems which run throughout the 6-storey building were circa 27 years old and required a number of significant repairs for future system resilience and life span longevity. With such old systems in place, parts were now obsolete and more importantly inefficient. The core focus of this project was to modernise the existing chiller systems making them more durable and efficient to compete with modern day chiller technology, all while offering a great value engineering solution beneficial to the end users budgets.

The heart of this chiller refurbishment lies in the basement where the compressors, evaporators and control panels are situated. The basement plant room is a congested area filled with mechanical equipment and associated electrical equipment. All twelve compressors had to be manoeuvred carefully out of the space safely and taken away for full refurbishment. All the refrigerant pipework, NRV's, mufflers, vibration eliminators, ball valves, pipe insulation and pipe clamps were replaced for new in the plant room and roof top condenser area.

New Carel ExV electronic expansion valves replaced the existing dated originals. These new valves specifically focus on energy efficiency, in addition they produce high levels of precise refrigerant control passing through the evaporator.



New Airedale control panels also replaced the existing panels. The new control panels utilise a microprocessor controller taking full advantage of the latest state of the art technology.

The control system comprises of three main parts, the controller with built-in user interface, electronic expansion valve drivers and head pressure control. The display keypad is used for viewing the unit operating status and making adjustments to control parameters by allowing the operator access to a series of display pages. Visual alarm and the facility to adjust and display control settings are available at the display keypad for local operator information and control.

The chillers initially used refrigerant R22 but this was eventually phased out, MO29 (R422D) was chosen as the replacement around 10 years ago but ultimately this wasn't a success. After diligent research, a reasonably new refrigerant to the UK market was chosen, RS70 (R453A). The focus was energy efficiency and compatibility with the systems as a whole. RS70 has a cooling capacity within 3% of R22 and has the highest efficiency rating plus the lowest GWP (1765) of all the R22 replacements currently on the market. In total, both chillers used 2,400kg of RS70.



Both chillers housed four Searle GEA condensers in total, consisting of 48 Ziehl Abegg fan motor assemblies. Twelve of the original motors were found to be faulty and were replaced with the new type Ziehl Abegg FN091. Once again, energy efficiency took president, the FN091 use EC fans and motors with maximum efficiency. The motors are controlled via pressure transmitters to the exact speed required, which in turn provide pin point operating pressures of the new refrigerant.

This was a delicate project handled with great care by the engineering team at Airmaster, who continue to grow as rising stars in the refrigeration sector. The refurbishment saved hundreds of thousands of pounds for the builder owners and provides the onsite PPM

team a much more proactive way of controlling the buildings comfort conditions without the reactive issues presented by the chillers previous condition. supply the correct AC equipment in the right areas, this was carried out by our in-house design team at Airmaster.

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