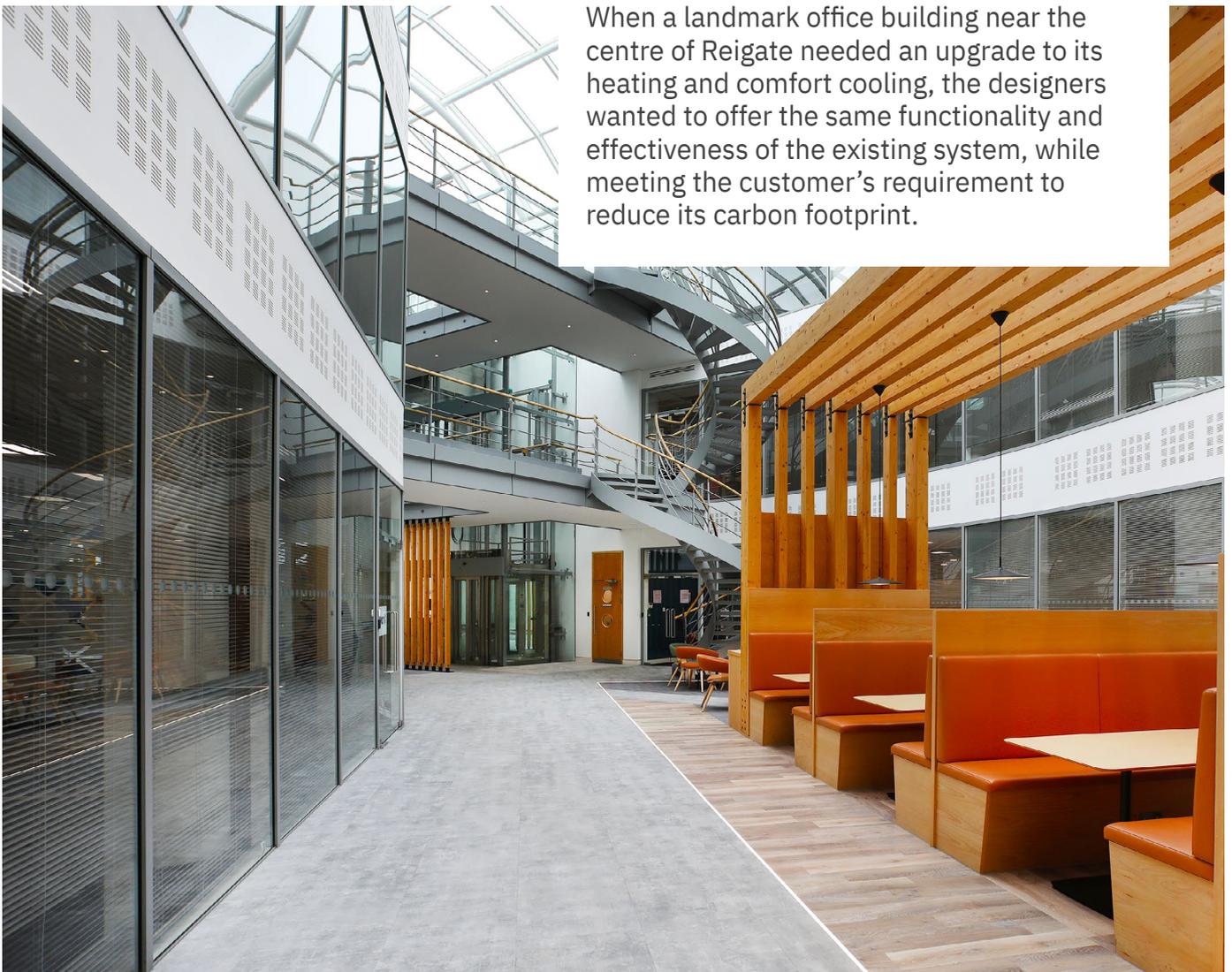


Case Study

An office fit for the future

Omnibus Reigate demonstrates sustainable retrofit

When a landmark office building near the centre of Reigate needed an upgrade to its heating and comfort cooling, the designers wanted to offer the same functionality and effectiveness of the existing system, while meeting the customer's requirement to reduce its carbon footprint.



Omnibus Reigate is a landmark 70,000 sq ft, Grade A building near the town centre in Surrey, that was redeveloped in 2001, from a Grade II listed former bus depot. The owners worked closely with English Heritage to ensure the retention and preservation of the 1930's Arts and Crafts style rear elevation. The building has striking curtain wall glazing and a double height atrium and tenant breakout space.



The previous heating and cooling system was installed during the redevelopment and, as was common at the time, featured gas-fired boilers in a ground floor plant room and air-to-water chillers on the roof. Together, they provided a 4-pipe system that feeds heating and cooling to fan coil units in the ceiling around the three-storey office building plus underfloor heating to the atrium.

Although the systems performed, major components were nearing the end of their operational life. Rather than a direct like-for-like replacement, decarbonisation specialists, Internal Environments Ltd were tasked with exploring a low carbon solution that could replace the gas boilers with an electric-only system.

“The owners wanted to future-proof the building as natural gas becomes less viable but also wanted to drive energy performance and carbon reduction which has become increasingly important to tenants,” explained Chris Roy, Sales Director for Internal Environments.

“We evaluated various heat pumps and determined that a 4-pipe heat pump providing simultaneous heating and cooling would be the optimal solution achieving our clients' needs for a low carbon, low energy system.

Internal Environments



In its recent Sustainability Index 2025, global investment firm, CBRE¹ found that there is a 'green premium' for efficient, sustainable office space demonstrating evidence of an increasing appetite for energy efficient assets from both investors and tenants.

1. BRE Sustainability Index 2025



At the same time the Index also shows a 'brown discount' for buildings which do not meet modern standards. Of all building types, offices display the clearest correlation between inefficiency and value discounts, indicating weaker occupier demand for inefficient stock.

In the highly competitive office market demonstrable energy efficiency and sustainability features are not only a factor of financial value, but also of owner and tenant reputation.

“We have a mixture of local and national tenants in the building and they all expect modern levels of comfort,” explains Daniel Chapman, Managing Director of the building owners, Skelton Group Investments Ltd. “At the same time, more tenants are demanding office space that is sustainable, which is what we have achieved at Omnibus Reigate.”

The solution saw the team from Internal Environments Ltd design, install and commission two Climaveneta 4-pipe heat pump chillers to provide simultaneous cooling and heating, with three EW/HT high temperature heat pumps delivering boosted flow temperatures as required.



The building also benefits from a Mitsubishi Electric Wizard Air Handling Unit (AHU), which is fed heating or cooling from a Mr Slim air conditioning system. These warm or cool fresh air that is circulated throughout the complex. The AHUs were upsized from the equipment removed so as to meet up to date fresh air requirements and feature heat recovery technology to further improve energy efficiency.



“For the heating and cooling, we thoroughly evaluated the existing fan coil units, which were in good condition, and decided that refurbishing them would be more environmentally friendly than replacing them,” explained Chris Roy, “This minimised the work needed to modify all of the ducting and piping around the building and helped ensure the retrofit project was as low carbon as possible.”

The 4-pipe heat pump chillers now supply heated water at a 45°C flow temperature and chilled water at a 6°C flow temperature and the team from Internal Environments worked with Mitsubishi Electric, through thermal modelling to show that a temperature of 45°C will heat the offices using the existing fan coil ceiling units when the ambient temperature is around 6-7°C and above.

To supply heating on colder days, the EW/HT water-to-water heat pumps boost the water temperature from 45°C to 75°C when necessary.

Daniel Chapman says, “The refurbished heating, cooling and ventilation system strikes a brilliant balance between efficiency, capital costs, and the preservation of embodied carbon. The work was undertaken in an occupied building with minimal disruption to tenants, and delivers a fully decarbonised, future-proof system while maintaining the comfort of current and future occupants and delivering an EPC of A.

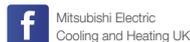
Installation Summary

Outdoor / Indoor Units:

- 2 x Climaveneta NX2-Q-G06 /A /0344 Scroll compressor air sourced heat pumps offering simultaneous heating and cooling
- 3 x Climaveneta EW-HT-G05 /0302 Scroll compressor water source heat pump
- 2 x Mitsubishi Electric WizardX-G07 E-OU 20000 AHU 5.56m³/s thermal wheel heat recovery air handling units
- 6 x Mr Slim direct expansion heating and cooling supply for the air handling units



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Note: The fuse rating is for guidance only and please refer to the relevant databook for detailed specification. It is the responsibility of a qualified electrician/electrical engineer to select the correct cable size and fuse rating based on current regulation and site specific conditions. Mitsubishi Electric's air conditioning equipment and heat pump systems contain a fluorinated greenhouse gas, R410A (GWP:2088), R32 (GWP:675), R407C (GWP:1774), R134a (GWP:1430), R513A (GWP:631), R454B (GWP:466), R515B (GWP:292), R454C (GWP:148), R1234ze (GWP:7) or R1234yf (GWP:4). *These GWP values are based on Regulation (EU) No 517/2014 from IPCC 4th edition. Mitsubishi Electric's air conditioning equipment and heat pump systems contain a hydrocarbon, R290 (GWP:0.02). *These GWP values are based on IPCC 6th edition.

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