



Case Study **CULTURAL HERITAGE**



Priceless Book Collection in New Lambeth Palace Library Protected by Carrier

Precious books and manuscripts dating back nearly 1,000 years will be protected in controlled environmental conditions courtesy of high efficiency Carrier AquaSnap® chillers and heat pumps in a new world-class library at Lambeth Palace, home of the Archbishop of Canterbury.

The current storage conditions for the archive are less than ideal, and the new purpose-built library has been designed to the highest architectural and environmental standards to ensure the fragile collection is conserved for future generations.

The building and its services are designed to protect the archives from changes in humidity, temperature, air pollution and flood risk. The environmental control solution was produced by Max Fordham.

Conditions for archive storage

Conditions for archive storage areas follow the recommendations of PD 5454, Guide for the Storage and Exhibition of Archival Materials, which requires a temperature of 8 degrees C during winter and 18 degrees in summer, with a Relative Humidity (RH) of 45%. These conditions will be maintained as far as possible using a passive approach; if they begin to drift outside pre-set limits, the HVAC equipment will be used to maintain temperatures and humidity levels.

The highly efficient heating and cooling solution, installed by East West Connect, includes four Carrier chillers, two of which are cooling-only units and the others heat pump-based chillers. The heat pumps provide heating by default, but can also be operated in reverse cycle mode to augment cooling when summer conditions require additional capacity.

"It is a highly efficient solution, and instead of requiring six chillers with four on cooling duties and two on heating, the heat pumps enable just four chillers to cover all requirements," said Max Fordham's Lidia Guerra, who led the environmental control design team.

"The Carrier plant provides this through intelligent communication between the cooling and heating sides of the system. If the cooling system is unable to deliver the required capacity – due to either extreme weather conditions or in the unlikely event of mechanical breakdown – the heat pump units can be operated in reverse to provide additional cooling to bridge the gap."



EQUIPMENT

- 2 x Carrier AquaSnap cooling-only chillers
- 2 x Carrier AquaSnap heat pump chillers