Case Study

Chiller Upgrade for London Law Firm

Carrier

Service Technicians conducted a thorough energy-saving analysis, return on investment (ROI) assessments, and performance forecasting.

The Client

The client is one of the world's leading pre-eminent law firms, with a significant global presence. London is home to the law firm's largest office, which has an "Excellent" BREEAM rating, and is central to its global operations by providing a full range of legal services.

During the construction, the Carrier Commercial HVAC team secured the contract and installed six 19XR Centrifugal chillers to cool and dehumidify air in the commercial office spaces.

The Carrier 19XR centrifugal chillers utilise centrifugal force generated by a rotating impeller to compress the refrigerant and offer nominal cooling capacities from 1,000 to 5,300 kW. The chillers achieve energy efficiency levels as high as 6.8 (COPr). For every one unit of energy consumed by the system, it produces an average of 6.8 units of cooling output, but capable of exceeding this with the addition of intelligent condenser water control.

The Challenge

In June 2020, the Carrier Service team identified an opportunity to optimise and enhance the performance of the chillers through an upgrade and redesign project. The team conducted a thorough energy-saving analysis, return on investment (ROI) assessments, and performance forecasting to provide comprehensive insights before recommending Variable Frequency Drives (VFDs) and undertaking full compressor refurbishment on the six chillers.

A Variable Frequency Drive is an electrical motor controller used to control the rotation speed of an alternating current (AC) electric motor by adjusting the frequency of the electrical power supplied to the motor. This results in a corresponding frequency and voltage change in the motor's speed and torque output. By managing the magnetic flux of a motor, it enables improved speed control for ramping up a motor for a smooth startup and prevents a heavy load from straining the motor on startup with a lower inrush current.

The Solution

Carrier Service optimised and enhanced the performance of six 19XR Centrifugal chillers by installing VFDs and undertaking full compressor refurbishments on the six chillers.

The VFDs allowed for precise adjustment of compressor speed to match the cooling demand. These drives, known for their high capacity and efficiency, played a crucial role in optimising the operation of the system, ensuring optimal comfort levels and meeting the requirements of the building.

The Service team carefully planned and coordinated the upgrade to minimise disruption and meet the tight deadlines set by the client. The project was completed in phases and Carrier managed logistics for the delivery and storage of parts. Carrier then scheduled work times during 2023 to ensure uninterrupted functionality of the building.

The Result

This initiative aimed to not only improve energy efficiency but also extend the lifespan of the chillers and provide the customer with a more cost-effective solution than replacing all six chillers with new equipment.

With over two decades of experience as a trusted advisor, Carrier's approach and longstanding relationship with the facility management company further facilitated the success of the project.

To find out more about Variable Frequency Drives, visit our website.

You can also write to us at: uk.info@carrier.com to elevate your business now.

About Carrier
Founded by the inventor of modern air conditioning, Carrier is a world leader in high-technology heating, air-conditioning and refrigeration solutions. Carrier experts provide sustainable solutions, integrating energy-efficient products, building controls and energy services for residential, commercial, retail, transport and food service customers. Carrier is a part of Carrier Global Corporation, global leader in intelligent climate and energy solutions that matter for people and our planet for generations to come. For more information, visit www.carrier.com or follow @Carrier HVAC Europe on LinkedIn.