SUCCESS STORY CENTRE FOR LABORATORY MEDICINE LEEDS (UK)

Supporting sustainability with energy-efficient solutions.

Heralding the future of healthcare

The history of St. James's University Hospital in Leeds (United Kingdom) dates back to the 19th century. In 1970, the healthcare facility was transformed into a university hospital and expanded over the decades, becoming reputedly the largest teaching hospital in Europe.

In 2023, the Centre for Laboratory Medicine (CfLM), a state-of-the-art pathology facility, was added to the hospital. Equipped with cutting-edge technology, the new laboratory is designed to provide faster, more routine, and specialist testing.

Various field devices from Belimo ensure the energy-efficient operation of the building's heating, ventilation, and air conditioning systems, as well as optimal indoor air quality—particularly important in healthcare and research facilities. Together with Westminster Controls, a smooth and efficient system integration was ensured.

TYPE OF BUILDING
Laboratory for medicine

PROJECT
New building

SECTOR
Heating, cooling and ventilation

PRODUCTS
VAV Compact, fail-safe air actuators, globe valves and actuators, diverse sensors (e.g. room operating units, supply and return immersion sensors, air differential pressure sensors)

BELIMO®

Maximum quality and reliability in timely manner

The new building is flexible, digital by design, and supports the delivery of net-zero carbon. It is mechanically ventilated with heat recovery and systems to minimise power consumption and reuse heat. Intelligent and energy-efficient components from Belimo, which equip the building's HVAC systems, support the sustainability efforts of the CfLM.

As part of the HVAC project at the CfLM, seven air handling units (AHUs) were equipped with advanced control and monitoring devices to ensure efficient operation, optimal indoor air quality, and long-term system reliability.

Damper actuators from Belimo regulate airflow, improving ventilation control and energy efficiency. Differential pressure sensors from Belimo monitor supply and extract fan performance, panel and bag filter conditions, and airflow volume for both supply and extract systems. This ensures consistent air quality while reducing maintenance costs.

To maintain precise temperature control, four duct temperature sensors from Belimo were installed at key locations, including the inlet, off the fog/frost coil, supply air, and extract/exhaust air. Additionally, a combined duct sensor measuring temperature, CO_2 levels, and humidity was installed in the extract duct to optimise indoor air quality.

Two immersion temperature sensors monitor the supply and return temperatures of the frost coil, while a frost protection thermostat was installed to prevent freezing, ensuring uninterrupted system operation.

Liquid system performance was optimised with four liquid differential pressure sensors monitoring the pumps, while two liquid active pressure sensors were integrated into the pressurisation unit to maintain stable pressure levels and prevent system failures.

Furthermore, air source heat pumps (ASHPs) were integrated to provide efficient heating, cooling, and hot water generation. To ensure precise thermal control and system reliability, multiple supply and return immersion sensors were installed across the heating, hot water, and chilled beam circuits.

Three air source heat pumps dedicated to heating, along with three units supplying hot water, were equipped with supply and return immersion temperature sensors from Belimo. Additionally, supply and return immersion sensors were installed on the chilled beam circuit to enhance cooling performance and maintain stable indoor conditions.

General AHU Arrangement

CLF Control Panel

General AHU arrangement with local BMS panel

By incorporating these advanced monitoring solutions, the heating, cooling, and hot water systems at CfLM are optimised for efficiency, stability, and long-term operational success.

A comprehensive room temperature and humidity monitoring system was implemented. This system plays a crucial role in regulating chilled beams and optimising the operation of AHUs for supply air management.

A total of 64 room operating units from Belimo were installed to continuously measure temperature, humidity, dew point, enthalpy, and CO_2 levels. These real-time readings allow for precise adjustments, ensuring a stable and comfortable indoor environment while maximising energy efficiency. The devices allow the facility to dynamically adapt airflow and cooling output to maintain optimal conditions for both occupants and sensitive laboratory operations.

To optimise airflow regulation and energy efficiency at the CfLM, a variable air volume (VAV) control system was implemented using Trox VAV units in combination with Belimo NMV actuators. This system ensures precise air distribution, adapting ventilation rates based on demand to enhance both comfort and efficiency.

A total of 120 Belimo NMV actuators were installed across the VAV system, enabling responsive and reliable control of airflow. By dynamically adjusting ventilation levels, the system maintains optimal indoor conditions while reducing unnecessary energy consumption.

The selection of the components was driven by a focus on reliability, quality, and cost-effectiveness, ensuring long-term operational stability. The use of standardised, high-quality components also enhances supply chain reliability, reducing potential delays in maintenance and replacement. Additionally, the system was designed for ease of installation and commissioning, minimising downtime and ensuring a seamless integration into the hospital's infrastructure.

A trusted partner

Michael Lee, Project Manager at Westminster Controls, looks back favourably on the collaboration within the project. "Belimo field devices were the clear choice for our project due to their outstanding quality and cost efficiency. Their proven performance, combined with a dependable supply chain ensured a seamless system integration. Belimo's reliability helped us deliver the project on time without any manufacturer issues, making them a trusted partner for long-term efficiency and operational stability."

Chilled water supply and return sensors

Louvre roof control

CLF fume extract

All inclusive

Belimo is the global market leader in the development, production, and sales of field devices for the energy-efficient control of heating, ventilation and air conditioning systems. The focus of our core business is on damper actuators, control valves, sensors and meters.

Always focusing on customer value, we deliver more than only products. We offer you the complete product range for the regulation and control of HVAC systems from a single source. At the same time, we rely on tested Swiss quality with a five-year warranty. Our worldwide representatives in over 80 countries guarantee short delivery times and comprehensive support through the entire product life. Belimo does indeed include everything.

The “small” Belimo devices have a big impact on comfort, energy efficiency, safety, installation, and maintenance.

In short: Small devices, big impact.

- 5-year guarantee
- On site around the globe
- Complete product range
- Tested quality
- Short delivery times
- Comprehensive support

EN – 08.2025 – Subject to technical modifications

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