BELIMO RetroFIT+

Belimo Energy Valve™ Helps New York City Property Manager Cut Carbon Emissions by 40%

NYC Building Owner Reduces Energy Costs with Belimo RetroFIT+

In response to New York City's Local Law 97, which mandates improved energy efficiency and reduced carbon emissions for large buildings starting in 2024, property owner Paramount Group undertook a significant retrofit of three key properties in New York City: 1301 6th Avenue, 1633 Broadway, and 31 West 52nd Street. This law aims for a 40% reduction in carbon emissions by 2030 and becomes progressively more stringent through 2050. The retrofit project utilized the Belimo Energy Valve™, a pioneering, IoT-enabled device designed to optimize energy use and maintain design Delta T in HVAC systems.

TYPE OF BUILDING
Office Buildings

PROJECT
Retrofit

SECTOR
Commercial

PRODUCTS
Energy Valve

Learn more
www.belimo.com

BELIMO

Belimo pressure independent solutions make existing buildings more efficient

Project Overview and Motivation

Ian Morrell, Director of Engineering at Paramount Group, highlighted the challenges they faced with the legacy systems. "We were either overheating or overcooling the offices and there was no real way to control tenant comfort, which is not great being a landlord in New York City. The legacy pressure-dependent valves that were in place were two-way pneumatic valves. Really not much controllability on the valves. They were tying into an old MSTP Apogee BMS system," he explained. The retrofit involved creating a pressure-independent system by integrating the Belimo Energy Valve™. "Today we're seeing the true design 18-degree delta at those coils, and in some cases above 20-degree Delta T," he added, demonstrating the effectiveness of the Energy Valve in optimizing coil performance and energy consumption.

Anthony Marinelli, Chief Engineer at 1301 6th Avenue, noted, "The EV's flow control has been a huge help with our fan coil units." The Energy Valve utilizes an integrated ultrasonic flow meter and control logic that throttles its characterized control valve (CCV) to maintain the flow set point. "We were operating at low Delta T's using maximum GPMs. We are now at 18° Delta T's making supply air set points at 150 GPMs on 500 GPM FCUs. It is a significant amount of energy savings in our pumping system and our chillers. It has been a complete difference from what this building was used to all the years prior."

The Energy Valve provides advanced cloud monitoring and analytics, offering recommended Delta T and flow setpoints that can be updated remotely. "The Belimo cloud is a great tool," Anthony said. "I personally use it daily. I take a look at all my fan coils, make sure the numbers look right, and if there's any variance in the operating numbers, it allows me to look deeper into the coil and its operation. That's how we stay efficient, and we provide maximum tenant comfort."

Anthony also recounted an instance where the Energy Valve's reporting capabilities identified a reversed flow issue in a fan coil unit. "We had one FCU where we found that about 50 years ago the supply and return lines were actually backwards. Once the Energy Valve was installed, we had constant reverse flow alarms, which actually led us to find this."

"There was a 5-degree Delta T on the chilled water coils. They're 18-degree coils, so something was wrong. We undertook a massive retrofit using the Energy Valves, creating a pressure independent system. Today we're seeing the true design 18-degree delta at those coils, and in some cases above 20-degree Delta T."

Ian Morrell, Director of Engineering, Paramount Group

Solution

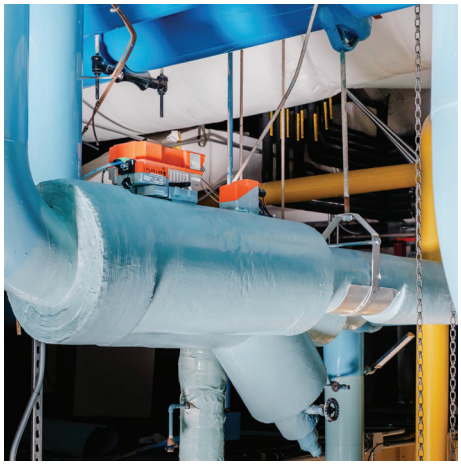
The measurable outcomes of the retrofit are impressive. From 2022 to 2023, energy consumption at 1301 6th Avenue was reduced by over 1.9 million kilowatt-hours, 1633 Broadway saw a reduction of 2 million kilowatt-hours, and 31 West 52nd Street reduced its consumption by 188,000 kilowatt-hours. Combined, these reductions translated to over $1 million in utility savings in 2023. These achievements have aligned the buildings with the 2030 requirements of Local Law 97.

Paramount also leveraged the Energy Valve's data reporting to secure substantial rebates from local utility provider, Con Edison. "Belimo's cloud reporting made it much easier for us to prove the measurement and verification process to Con Edison because all the data was easily exportable, and you can see in real-time all the kWh and the reduction in BTUs that you're actually achieving with the valves in place," Ian said. This data was crucial in securing a $2.1 million rebate incentive, highlighting the EV's ability to improve efficiency and prove that it's doing the job it's supposed to be doing.

In addition to improving efficiency, the EV's ability to maintain precise temperature control has reduced occupant complaints in the buildings. "We've had a huge improvement in occupant comfort since the Energy Valves were installed," Anthony said. "They allow us to have a more consistent temperature throughout the space where we're not seeing as many hot and cold complaints throughout the summer months."

"The Energy Valve was a way for us to defer capital," Ian explained. "It was an easy retrofit. The valves drop right into place. They're compatible with the new BMS system, which is BACnet/IP. It allowed us to create a far more efficient, pressure-independent system in an existing 1960s commercial office building."

Michael Jackson, Belimo District Sales Manager for New York City, noted, "I'm very excited about our partnership with the Paramount Group and I love to see these results where we're reducing their kilowatt hours and their carbon footprint."



BELIMO ENERGY VALVE™

The Belimo Energy Valve™ is an IoT cloud connected pressure independent valve that monitors coil performance and energy consumption while maintaining Delta T.

- Patented Power Control and Delta T Manager logic monitors coil performance and optimizes the available energy of the coil by maintaining the Delta T.
- Glycol monitoring ensures glycol content meets design needs to provide optimum efficiency and safe operation.
- Cloud analytics provide recommended Delta T and flow setpoints with the ability to update remotely.
- Dynamic coil performance illustrates the operation of the coil in real-time, accurately providing transparency of power degradation and other operational issues.
- Expansive communication platform includes Cloud, BACnet MSTP and BACnet IP, Modbus, RTU and TCP/IP, Belimo MP-Bus, and one analog feedback signal for valve flow, power, temperature, or position.

Customer Satisfaction

This retrofit has positioned Paramount Group's assets for compliance with Local Law 97, demonstrated substantial energy and cost savings, improved tenant comfort, and enhanced operational efficiency. This retrofit highlights the transformative potential of integrating advanced HVAC technology into legacy buildings, setting a benchmark for future sustainability efforts in New York's commercial real estate sector. The project underscores Paramount Group's dedication to sustainability and demonstrates the effectiveness of the Belimo Energy Valve™ in achieving substantial energy efficiency improvements.

CS_33 – 07.2024 – Subject to technical modifications

Belimo Americas
USA, Canada, Brazil, Latin America, and the Caribbean
www.belimo.com