



Data Center Cooling Solutions

**Experience Maximum Uptime
and Optimal Performance**

BELIMO[®]

Belimo solutions for data centers



In today's high-performance data centers, thermal management is critical to ensuring uptime, efficiency, and scalability. Belimo delivers intelligent control solutions—actuators, valves, and sensors—that seamlessly integrate into mission-critical cooling systems. Our technology optimizes heat transfer efficiency, reduces energy use, and supports real-time responsiveness for long-term operational stability.

Reliable flow, scalable cooling, smarter operation



Reliable

Consistent Cooling Performance: Belimo solutions maintain stable temperatures and flow conditions across dynamic server loads and maintenance cycles.

Intelligent System Response: Built-in sensors and control algorithms respond to shifting demands in real time, ensuring uninterrupted cooling and protecting sensitive equipment.

Proven Quality and Longevity: Each Belimo component is built for resilience, longevity, and ease of integration within mission-critical environments.



Scalable

Flexible Configuration: Belimo products support modular system designs that adapt to growth, allowing systems to expand smoothly without disruption.

Seamless Integration: Every solution is designed to interface effortlessly with major building automation systems, simplifying multi-site management and upgrades.



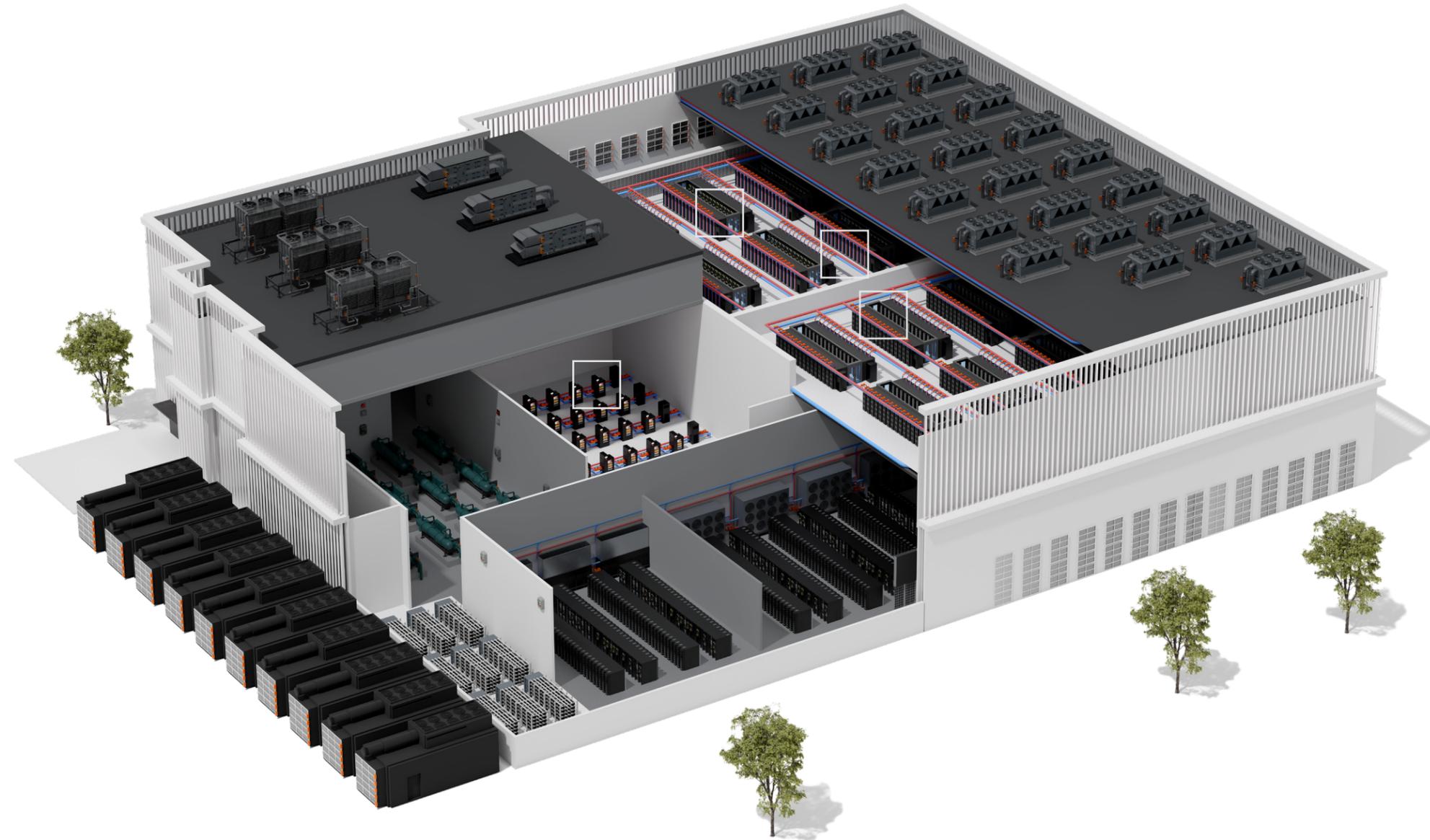
Efficient

Data-Driven Decisions: Real-time data on flow rates, temperature, differential pressure, and glycol concentration supports proactive system management and informed decision-making.

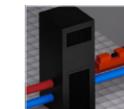
Streamlined Maintenance: Self-diagnostic features and remote monitoring capabilities simplify upkeep—minimizing unplanned downtime and technician hours.



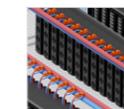
Liquid-cooled solutions



Direct-to-Chip Cooling
 Direct-to-chip liquid cooling is one of the most widely used methods for cooling servers with high thermal output, such as those used for HPC (high performance computing), AI (artificial intelligence), and ML (machine learning) applications. The Belimo Energy Valve, along with differential pressure sensors, is an ideal solution for this application because it can maintain constant differential pressure across the rack. This ensures precise flow to each cold plate, even if a server is removed for maintenance.



Coolant Distribution Units (CDUs)
 CDUs provide water-glycol mixes to cool heat-generating components such as servers. Belimo offers a comprehensive range of characterized control valves (CCVs), Energy Valves, and electronic pressure independent valves (EPIVs) that are ideally suited for CDUs. These valves ensure precise flow control and can be easily adjusted as cooling demand grows.



Rear Door Heat Exchanger (RDHx)
 Precise flow control is crucial for the efficient operation of RDHx. Belimo's EPIV and CCV provide reliable and precise flow control, ensuring optimal performance of your RDHx system.



Immersion Cooling
 Two-phase immersion cooling units require precise water flow to ensure the effective condensation of dielectric fluid. Belimo's EPIVs maintain consistent flow to the coil, even in the presence of system pressure fluctuations. The Belimo Energy Valve continuously monitors supply and return water temperatures, calculates thermal energy, and delivers valuable insights to help track cooling performance and detect inefficiencies.

As rack densities rise and computing power increases, liquid cooling technologies are becoming essential for next-generation data centers. Belimo supports direct-to-chip cooling, rear door heat exchangers (RDHx), two-phase immersion systems, and coolant distribution units (CDUs) with advanced control solutions that deliver accuracy, responsiveness, and system transparency. Our components enable scalable, high-efficiency cooling with the responsiveness and transparency needed for next-generation IT infrastructure.



Belimo Energy Valve™



Differential Pressure Sensor

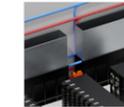
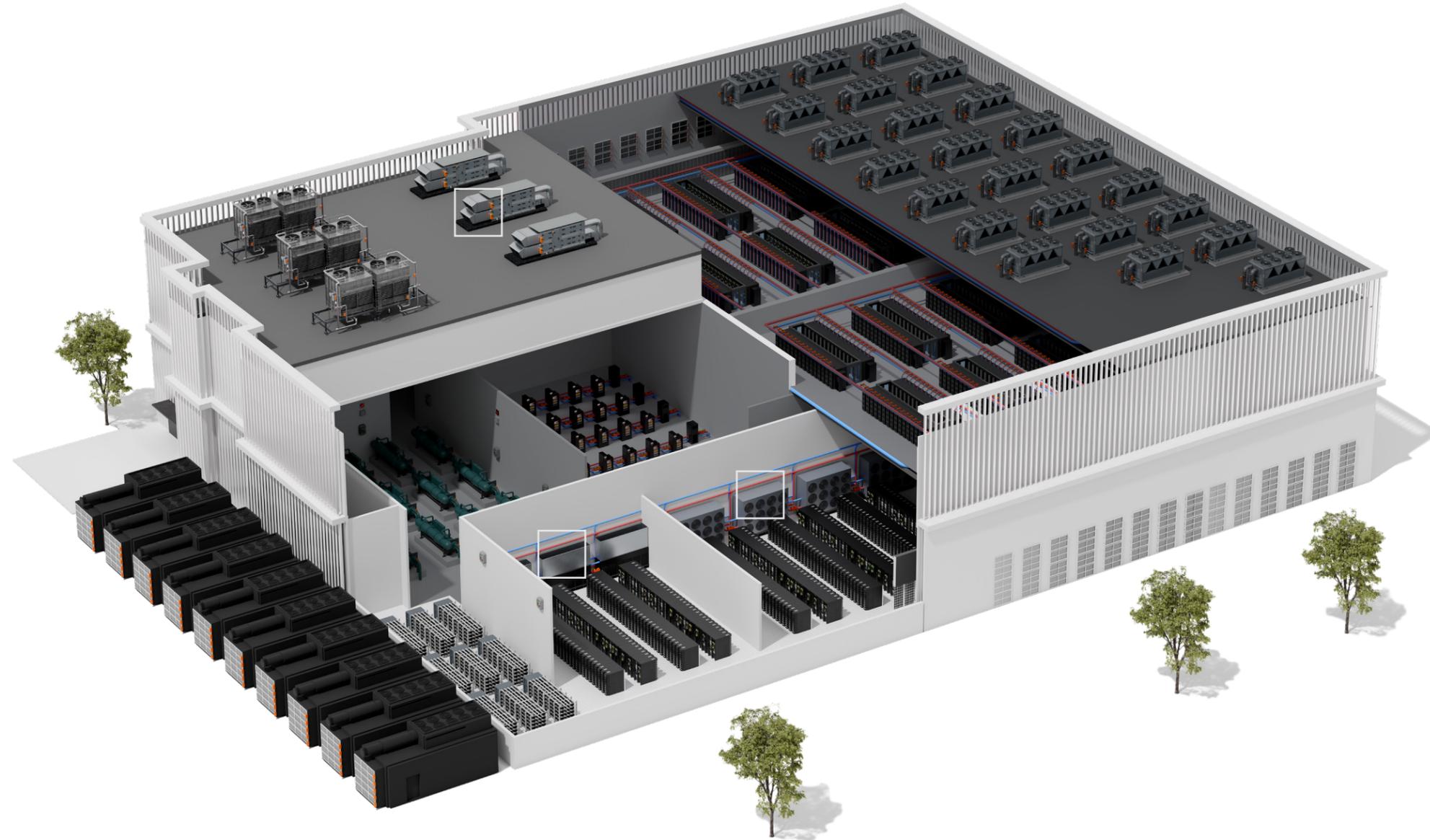


Electronic Pressure Independent Valve



Flow Meter

Air-cooled solutions



CRAH/CRAC
Computer Room Air Handling (CRAH) and Computer Room Air Conditioning (CRAC) units provide conditioned air to the white space. Belimo's EPIVs are essential components in CRAH units, delivering precise and reliable control of water flow. These valves offer significant advantages in maintaining optimal temperature and air humidity levels within mission-critical environments. Belimo sensors (temperature and humidity) are a key component in the proper control of CRAC units.



Fan Wall
Belimo damper actuators are vital components in fan walls, ensuring precise airflow control to servers located in the white space. CCVs and EPIVs manage water flow through the coils, providing adequate cooling to maintain the required supply air temperatures. In combination, these Belimo devices are essential for maintaining optimal environmental conditions for sensitive IT equipment.



Air Handling Unit (AHU)
AHUs provide conditioned air to the white, gray, and office spaces. These versatile pieces of equipment utilize a broad range of Belimo products, including EPIVs, Energy Valves, damper actuators, and sensors to ensure proper air and water flow control.

Air cooling remains a widely used method for managing heat in data centers around the world. Belimo enhances the performance of CRAH/CRAC units, fan walls, and air handling units with accurate airflow regulation and dynamic temperature control. Our solutions improve energy performance, simplify integration, and help maintain consistent environmental conditions with minimal complexity.

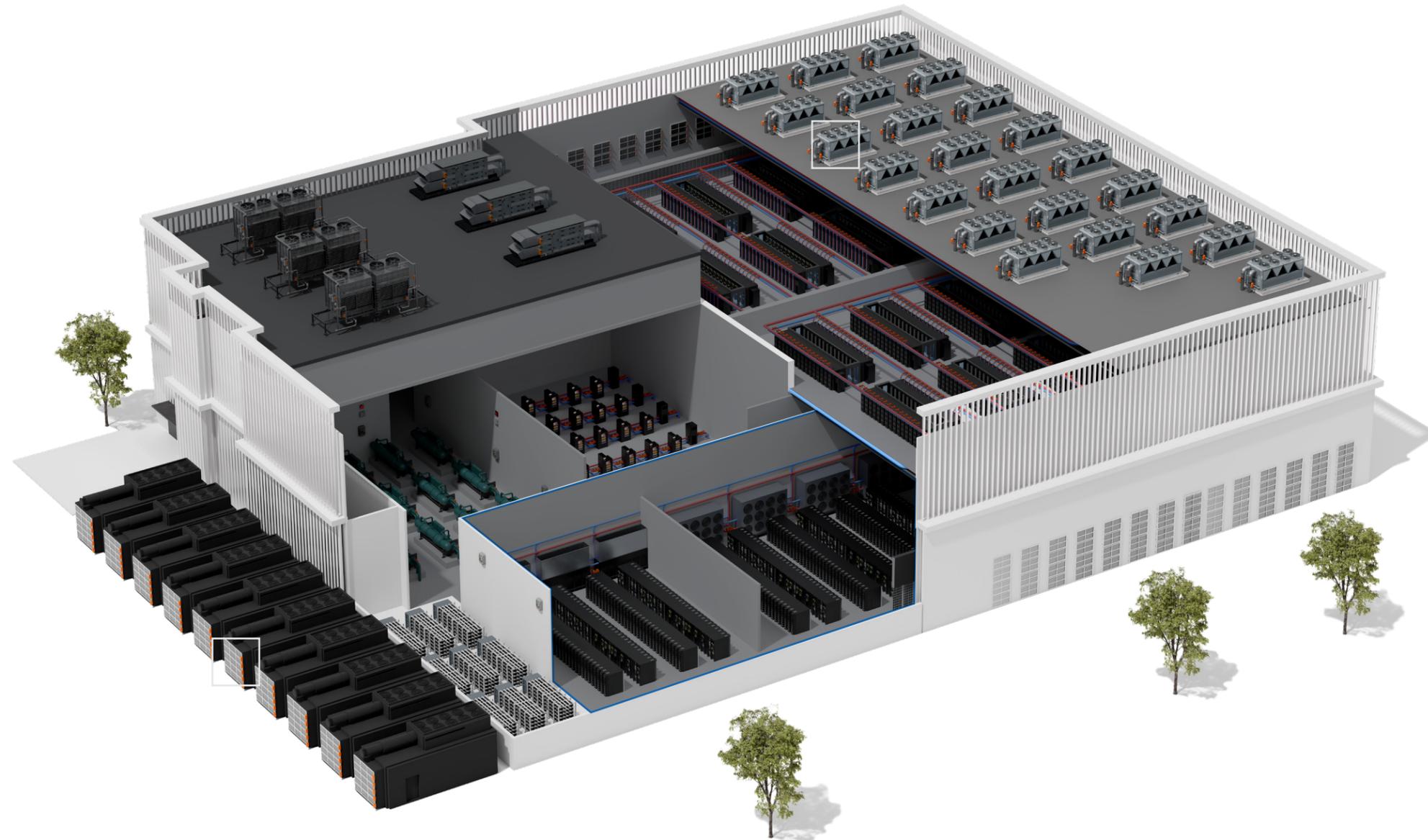


Air Quality Sensor

Electronic Pressure Independent Valve

Damper Actuator

Facility solutions and central plant



Beyond IT equipment, data center reliability depends on robust facility systems. Belimo's intelligent controls optimize central plants, chillers, heat rejection systems, generators, and fire/smoke safety. With real-time data and seamless integration, our devices help facility managers boost performance, minimize downtime, and meet sustainability targets.



Chiller and Heat Rejection

Central plants supply chilled water to the entire data center. Given the significant cooling demands of data centers, this can only be accomplished with large flow rates and, consequently, large valves. Belimo butterfly valves, equipped with high-performance actuators, are ideally suited for this application due to their high close-off pressure, low leakage rates, and NEMA 4 enclosures.



Generators

Generators ensure servers still have power in the event of a power failure. Belimo fail-safe actuators are the ideal solution for controlling the precise amount of combustion air required by these generators. Fail-safe functionality ensures airflow can be shut off immediately in the event of an issue. NEMA 4 options are available if the actuators are installed outside of the generator.



Fire and Smoke

Belimo fire and smoke actuators are essential safety devices designed to protect data centers from fire and smoke hazards. These damper actuators are integrated into fire and smoke detection systems and are responsible for controlling various mechanical components to mitigate the spread of fire and smoke during an emergency.



Butterfly Valve



Damper Actuator



Flow Meter



Temperature Sensor

Belimo products in data center applications

Belimo damper actuators, control valves and sensors are engineered for the demanding environments of digital infrastructure. They ensure precise control of air and water flow, enabling energy-efficient, safe, and continuous operation. Designed for scalability and durability, Belimo solutions support the evolving needs of modern data centers.

Belimo Energy Valve™

Applications: Direct-to-chip, CDU, RDHx, immersion cooling, CRAH, fan wall

The Belimo Energy Valve™ combines pressure-independent control with advanced analytics to optimize chilled water performance. It continuously monitors flow, temperature, and energy consumption—enabling real-time adjustments that reduce energy waste and ensure consistent cooling under all load conditions. Its comprehensive performance data improves system transparency, enabling informed decision-making and more efficient energy management.



Belimo Energy Valve

EPIV (Electronic Pressure Independent Valve)

Applications: CDU, RDHx, immersion cooling, CRAH, fan wall

The Belimo EPIV delivers precise flow control and automatic hydronic balancing, regardless of system pressure fluctuations. Ideal for dynamic data center environments, it ensures stable thermal performance, reduces commissioning time, and supports energy-efficient operation across all cooling loads.



Electronic Pressure Independent Valve (EPIV)

CCV (Characterized Control Valve)

Applications: CDU, RDHx, fan wall, headers, isolation valve

Compact and robust, Belimo's 2- and 3-way CCVs are designed for high-performance cooling applications. Featuring characterized discs and energy-efficient rotary actuators, they deliver accurate modulation and tight shutoff—ensuring reliable operation in high-temperature environments.



Characterized Control Valve (CCV)

Butterfly Valve

Applications: central plant, headers, isolation valve

Belimo butterfly valves offer high-capacity flow control for large-scale systems. Available in 2-way and 3-way configurations in sizes from 2" to 24", they are engineered for reliability and efficiency. Their compact design, tight sealing, and seamless actuator integration make them ideal for critical plant infrastructure.



Butterfly Valves with JR Actuators

Damper Actuators

Applications: CRAH, fan wall, outside air, generators

Belimo damper actuators provide dependable airflow control for a wide range of ventilation applications. With torque ratings from 9 to 1400 in-lbs, they support everything from small VAV boxes to large air handling units. Their low power consumption and direct shaft mounting simplify installation and reduce energy use.



Fail-Safe Actuators

Fire and Smoke Control

Applications: life safety and emergency response

Belimo fire and smoke damper actuators are critical safety components in data center design. Integrated with detection systems, they control dampers to contain fire and smoke, protecting equipment and personnel. Built for reliability and compliance, they ensure fast, fail-safe operation in emergencies.



Fire Damper Actuators

Sensors and Meters

Belimo sensors and thermal energy meters deliver accurate, real-time data for smarter system management. They are designed for seamless integration with building automation systems and support proactive maintenance and energy optimization. Belimo sensors measure temperature, humidity, pressure, CO₂, and VOCs in duct, pipe, and room environments while thermal energy meters measure flow and energy in fluid-based systems.



Sensors and Meters

All inclusive

At Belimo, we continually invest in new technologies that increase customer value by improving occupant comfort, energy efficiency, simplified installation, and maintenance-free operation. Our sales team is available to consult and provide insight and advice on how to achieve the best solution to help increase your system performance.

Belimo will continue to focus on providing you with exceptional product availability, fast delivery times, and world-class customer service and technical support. We remain dedicated to continuously improve our standards and are committed to providing you with the highest value possible.

Whatever your HVAC application, our global network of support experts are on hand and ready to assist.



5-year warranty



On site around the globe



Complete product range



Tested quality



Short delivery times



Comprehensive support

Belimo Americas

USA, Canada, Brazil, Latin America, and the Caribbean
www.belimo.com/datacenters

