



**Experience  
uninterrupted  
performance.**

### **Correct flow rate for cold plates with the Belimo Energy Valve™**

In the fast-paced world of data centres, reliability, scalability, and efficiency are paramount. The Belimo Energy Valve™ rises to the challenge, offering a comprehensive solution designed to ensure optimal flow rate across cold plates, safeguarding your critical infrastructure from potential damage and downtime.



# Experience uninterrupted performance.



## Reliable

**Flow rate assurance:** By maintaining the required differential pressure across the rack, the Belimo Energy Valve™ ensures the necessary flow rate across each cold plate at all times – even during server maintenance.

**Regulated quantity of water:** The Energy Valve limits the maximum flow rate and thus prevents the erosion of the cold plate channels, caused by excessive flow velocities. This ensures uninterrupted operation.

**Stand-alone system:** With differential pressure setpoint configuration directly on the device, the Energy Valve can operate independently. This means that no external control signals are required.

**Efficient cabling:** The Energy Valve can be powered via Ethernet (PoE). You do not need an additional power supply; the installation process is considerably easier.



## Scalable

**Future-proof:** The Energy Valve can be adjusted for changing cooling requirements without resulting in losses of performance for existing consumers. This ensures scalability as server capacity requirements increase.

**Digital management:** When servers are upgraded and require more cooling, the Energy Valve can be reconfigured via the building management system (BMS). This offers a new level of flexibility and adaptability options.



## Efficient

**Comprehensive data:** Flow rate, differential pressure, cooling capacity, temperatures and much more are continuously monitored by the Energy Valve. Leverage this information to make proactive, informed decisions instead of merely reacting to problems as they arise.

**Glycol monitoring:** By monitoring glycol concentration in the system, the Energy Valve ensures optimal usage to maintain constant heat transfer characteristics. This promotes efficient and sustainable operation.



# The correct flow rate at the cold plates at all times.

Maintaining the proper flow rate across cold plates is essential for ensuring efficient cooling, system reliability, and the longevity of both the cold plates and the components they cool.

## Effects of proper flow rate across cold plates

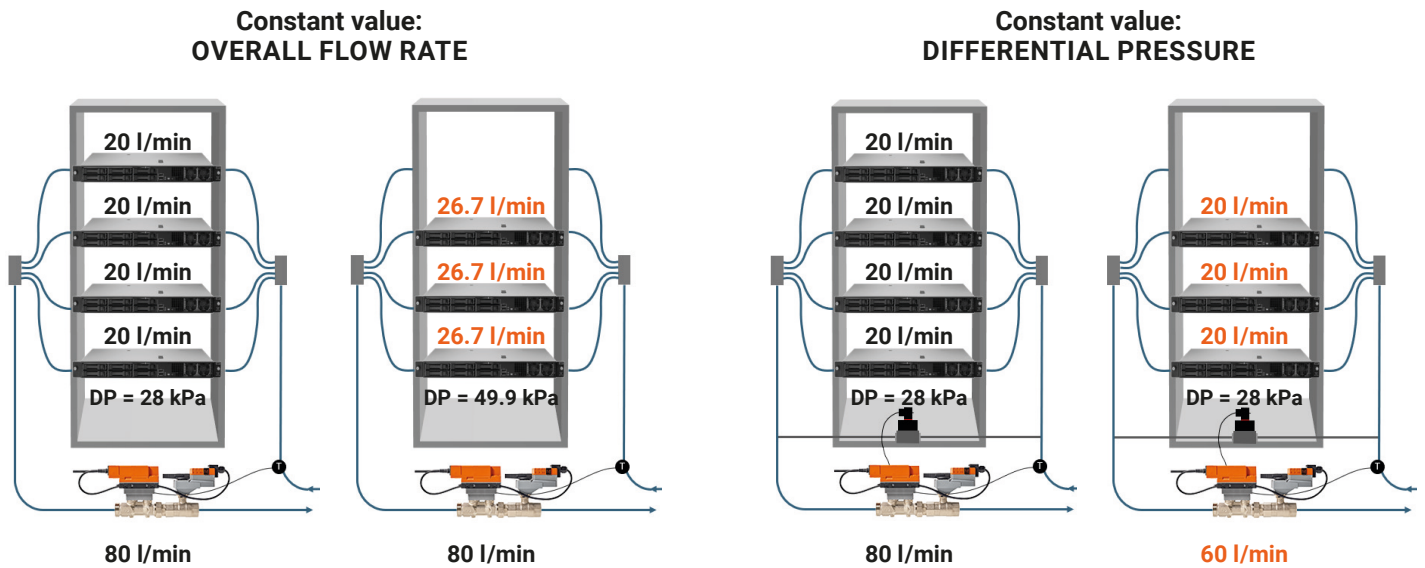
- **Server damage:** If the flow rate is too low, the server may not be sufficiently chilled, and damage may result. In severe cases, the server must be replaced in its entirety. This can result in costs amounting to EUR 100,000, or even up to EUR 250,000 for high-performance models.
- **Unplanned downtime:** Server freezes due to overheating can result in significant financial losses. According to Uptime Institute's 2022 survey, 70% of all outages cost USD 100,000 or more. In 25% of these cases, the costs even exceeded USD 1 million\*.
- **Excessive flow rate risks:** Excessive flow rates can erode cold plates, thereby changing heat transfer properties and necessitating replacement. Additionally, excessive flow rates increase pumping energy consumption.

## Challenges of providing constant flow rates across cold plates

- **Dynamic environment:** Regular server removals for maintenance purposes change the total flow rate requirement for the rack. Excessively high flow rates for the remaining servers may arise as a result.
- **Flow rate distribution:** Uniform cooling distribution to the individual cold plates is of central importance. The solutions from Belimo ensure that the energy data are not only monitored but also actively controlled.
- **Variable server replacements:** Server upgrades or replacements may alter flow rate requirements. While conventional systems need to be adjusted manually in the event of changing server environments, the Energy Valve takes over this task autonomously.



# Using differential pressure to maintain constant flow.



## Practical example







The flow rates of the individual cold plates must be added together to determine the required overall flow rate for the cooling of the entire rack.

### Situation 1: Constant flow rate

If a server is removed for maintenance purposes while controlling the overall flow rate, an excessively high flow rate will arise for the remaining cold plates.

### Situation 2: Constant differential pressure

In contrast, maintaining a constant differential pressure across the rack ensures a uniform flow rate to each cold plate, even if a server is removed.

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