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FlowCon Topic Letter Best Practice – Data Centers and System Flexibility

In modern HVAC and cooling system design, especially in mission-critical applications like data centers, flexibility is not a luxury – it is a necessity. Whether it is adapting to shifting operational loads, overcoming on-site installation constraints, or meeting long-term efficiency targets, system design must allow for change. At FlowCon, flexibility is not just a feature – it is our foundation.

This FlowCon Topic Letter will give you insights that will help you through data center design challenges by being aware of **flexibility** and **compactness**. Targeting sustainable compliance, reaching the most effectful design and the possibility of customization are also important and will be targeted in other FlowCon Topic Letters.

Tip: Think ahead and design your cooling system with flexibility in mind, so future modifications and expansions do not require costly over-hauls or cause bottlenecks

No More Pipework Rules

Traditional valves often require a specific upstream and downstream pipe length to avoid turbulence and to deliver the required laminar flow to achieve stable control and correct flow. Such a requirement of a strict installation distance is far from compact.

FlowCon's use of the innovative rolling diaphragm technology in all valve designs is different and makes FlowCon PICVs operate independently of pipe layout constraints. This diaphragm design ensures stable operation, accurate flow control, and pressure independence - all without requiring long pipe runs or special straight lengths. Besides consistent performance, this unique design unlocks two important installation advantages:

- Installation freedom making it ideal also for tight plant rooms and retrofit projects.
- o Shorter pipe runs, saving space and materials.

And most of FlowCon's actuators also allow for 360° installation offering full installation flexibility.





Whether these valves are placed close to elbows, tees, or pumps, their behavior remains unaffected - eliminating the typical *dos and don'ts* of traditional valve placement.



Dynamic Pressure Independency

When moving away from conventional static balancing and into dynamic balancing, there is no need for additional balancing valves on branches, rises or main. This will in fact eliminate extra components and simplify the system design and at the same time allow commissioning to be more straightforward and efficient. And with PICVs authority conflicts are also avoided, conflicts that may compromise conventional valve performance. The integrated approach with a 3-in-1 solution, which the PICV offers, not only reduces component count and potential failure points in the pipework but also ensures optimal system performance, energy savings, and long-term operational reliability.

Design with Confidence, Not Compromise

FlowCon offers a unique insert-based valve concept, which allows flexible sizing, simplified logistics, and helps your project to be future-proof. This empowers consultant engineers to design for performance - not for pipe layout constraints.

The valve body and insert are decoupled, meaning you can match the body to your pipework and choose flow independently. In addition, you may be able to adjust flow capacity at any time - without needing to alter the valve body. This makes commissioning, future changes, and ongoing system optimization easier to achieve throughout the building's lifecycle. During service and maintenance, the insert may be removed from the valve body for cleaning or replacement - without needing to replace the valve body.

So, whether you are scaling a new data center or retrofitting an old system, the insert-based valve concept is a design built to evolve with your needs. When downtime is not an option and every degree counts, do not let your valve be the weak link. FlowCon empowers you to design systems that are:

- o Compact, efficient, and scalable
- Ready for unpredictable loads
- Easier and faster to install and with basically no commissioning
- o Serviceable

Looking for Expert Support?

At FlowCon, we believe great engineering is about more than just products - it is about partnership and possibilities. Every data center project is unique, and so are the project challenges you face. That is why we do not offer one-size-fits-all answers. Instead, we work alongside you to tailor the perfect solution, ensuring that your design is as futureproof, efficient, and flexible as possible.

Whether you are facing strict installation limits, aiming for maximum energy performance, or designing for evolving cooling loads, our team is ready to help you succeed. We bring decades of experience, deep technical expertise, and a commitment to co-creating value with every client. Let us turn your ideas into reality. Contact Nickolei Kroman, OEM Business Development Manager, and tap into FlowCon's industry-leading knowledge and innovation. Together, we will unlock new potential for your data center - today, tomorrow, and into the future: https://flowcon.com/about-flowcon/contact-us