

# Why should you use a Pressure Independent Control Valve

According to [FlowCon International](#) in Denmark, a leading global PICV Valve manufacturer, the U.S. Energy Information Administration published in 2017 that 76% of the world's energy is consumed in buildings, 20% of the world's electricity is used to pump fluids around and that high-performance HVAC systems account for over 40% of the energy used in commercial buildings.

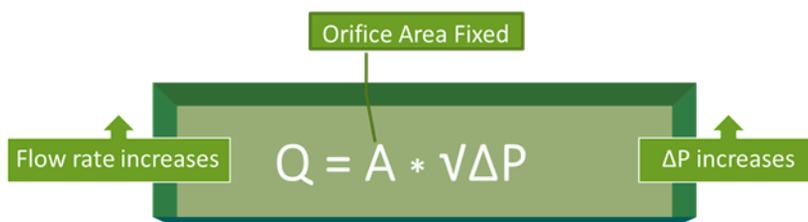
Considering that 90% of the whole life cost of a pump is energy related, reducing pump activity remains an important strategy to achieve significant energy savings.

When legislation for conservation of fuel and power called for initially 20% and now 30% reduction in CO2 emissions, research into heating and indoor climate control was aimed at identifying technologies that offer the greatest potential for improvement and savings.

Historically, actuated control valves have controlled the water flow to terminal units in the UK. In unbalanced hydronic systems, heat transfer equipment closest to the pump was potentially too hot as a result of overflows, whereas heat transfer equipment furthest away from the pump experienced underflows, which affects the ability to deliver the design temperature.

The challenge was to balance the system minimising the overflows and underflows. Traditional control valves allow for overflow and underflow to coils which means excess water is pumped to compensate for inaccuracies. As a result, actuators in these traditional valves had to cycle more often to compensate for pressure changes in the system, decreasing the actuator lifetime and increasing pump activity and energy use.

Static/Proportional Balancing Principle – flow rate is dependent on pressure change across the valve.

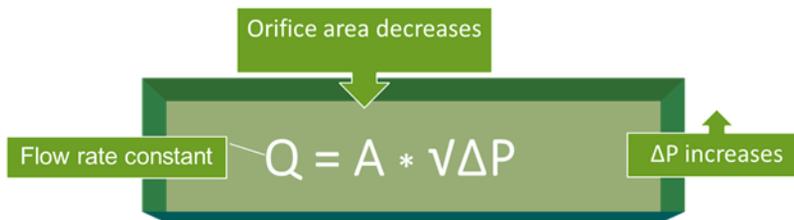


## Cost savings of 10-40%

The Pressure Independent Control Valve (PICV Valve) in variable flow systems has been widely credited for providing pump savings of up to 35% by delivering system stability. On top of that, further cost saving can be realised through a simplified system design using the PICV Valve for optimal pump control. This can result in energy, emissions and cost savings of 10-40%.

The Pressure Independent Control Valve was designed to replace the conventional 2-way control valve, balancing valve and system differential pressure control valves, so that pressure changes in system would no longer affect the flow. The PICV Valve is typically installed in buildings controlling the flow, temperature and pressure in heating and cooling systems. To achieve the most efficient and optimal results in a system, the exact required amount of chilled or heated water must be delivered to the heating and cooling terminal units.

Dynamic/Automatic Balancing Principle – Flow rate is independent of the pressure change across the valve.



## Benefits

In a nutshell, the Pressure Independent Control Valve offers many benefits compared to the traditional control valve:

1. Easy selection and automatic limitation of the flow to design set point
  - a. Free from overflow, independent of pressure changes
  - b. Energy savings
2. Fewer valves required
  - a. Reduction in system head loss – less restriction/resistance
  - b. Reduction in pump size
  - c. Energy savings
3. Lower installation cost, less installation time, simplified commissioning process
  - a. Setting and  $\Delta P$  flow verification process, no proportional balancing
  - b. Commissioning time reduced to by 75%



## Benefits

1. Retrofitting and multi-phased works without rebalancing – valves will adjust automatically to maintain the set flow rate
2. No installation restrictions – can be installed anywhere in the line without affecting its performance
3. Lower building running cost through system stability and reduced pump energy consumption
4. Precise temperature control resulting in an improved indoor climate for occupants

If you want to know more about the benefits of the **PICV Valve**, its applications and variable flow system design, please get in touch with FloControl Ltd and request a **CPD** presentation.

