

Application Guide



A FlowCon Guide - most common applications

Table of Contents

Application Guide

Description	Type of Application	Page
Valve Spotter	Heating Systems	5
	Cooling Systems	7
Application Systems	Air Curtains	8
	Air Handling Units	11
	Calorifiers	14
	Chilled Beams/Ceilings	17
	Chillers	20
	Convectors	24
	Cooling Towers	28
	CRAC Units	30
	Domestic Hot Water	32
	Fan Coil Units	33
	Heat Exchanger	39
	Hot Water Tank	43
	Radiators	44
	Solar Panels	47
	Stand-Alone Units	48
	System Zone Protection	51
	System By-Pass	52
	Trench Heaters/Coolers	54
	Underfloor Heating	58

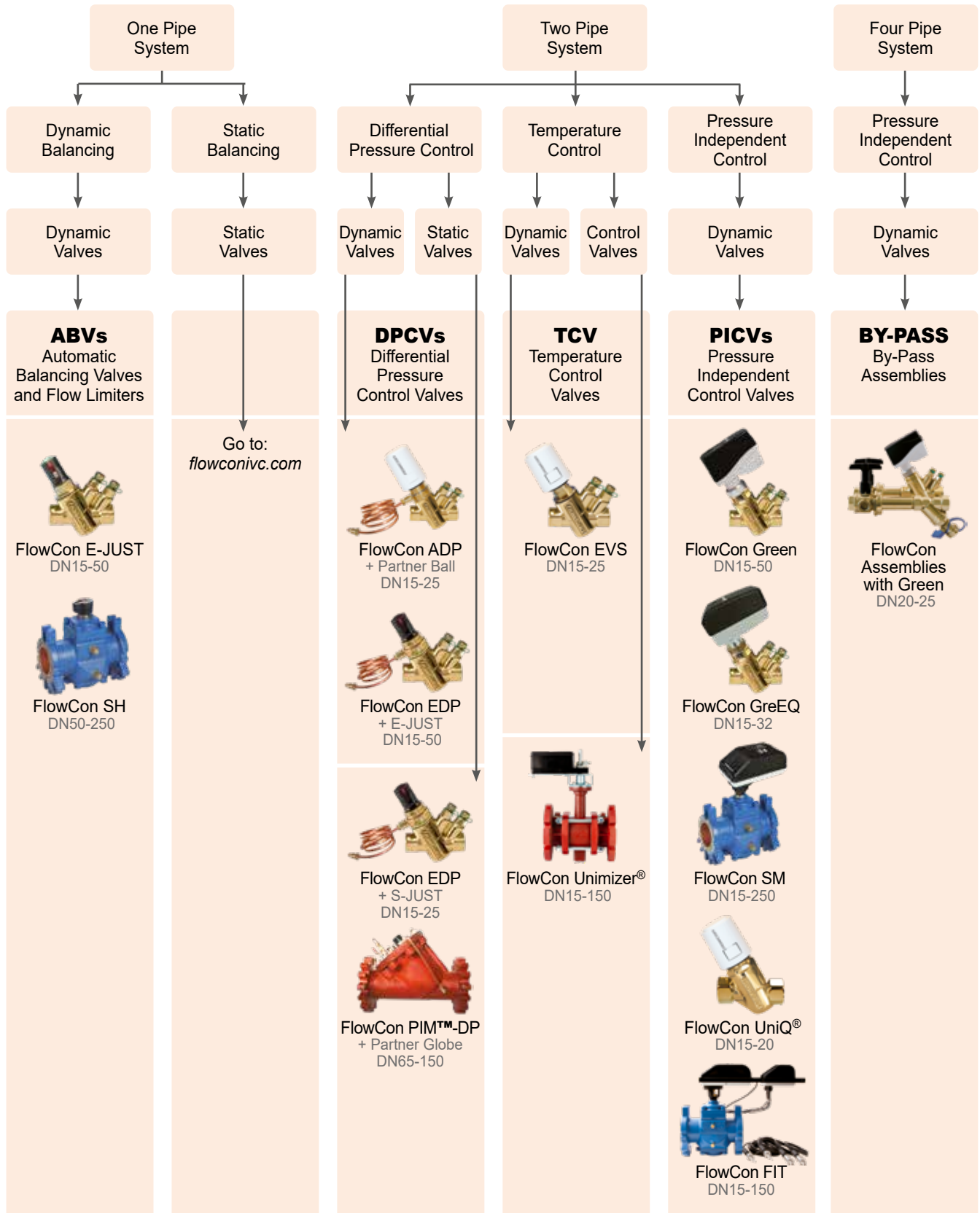
Application Guide

Heating Systems - Valve Spotter



Heating Systems

Valve Spotter



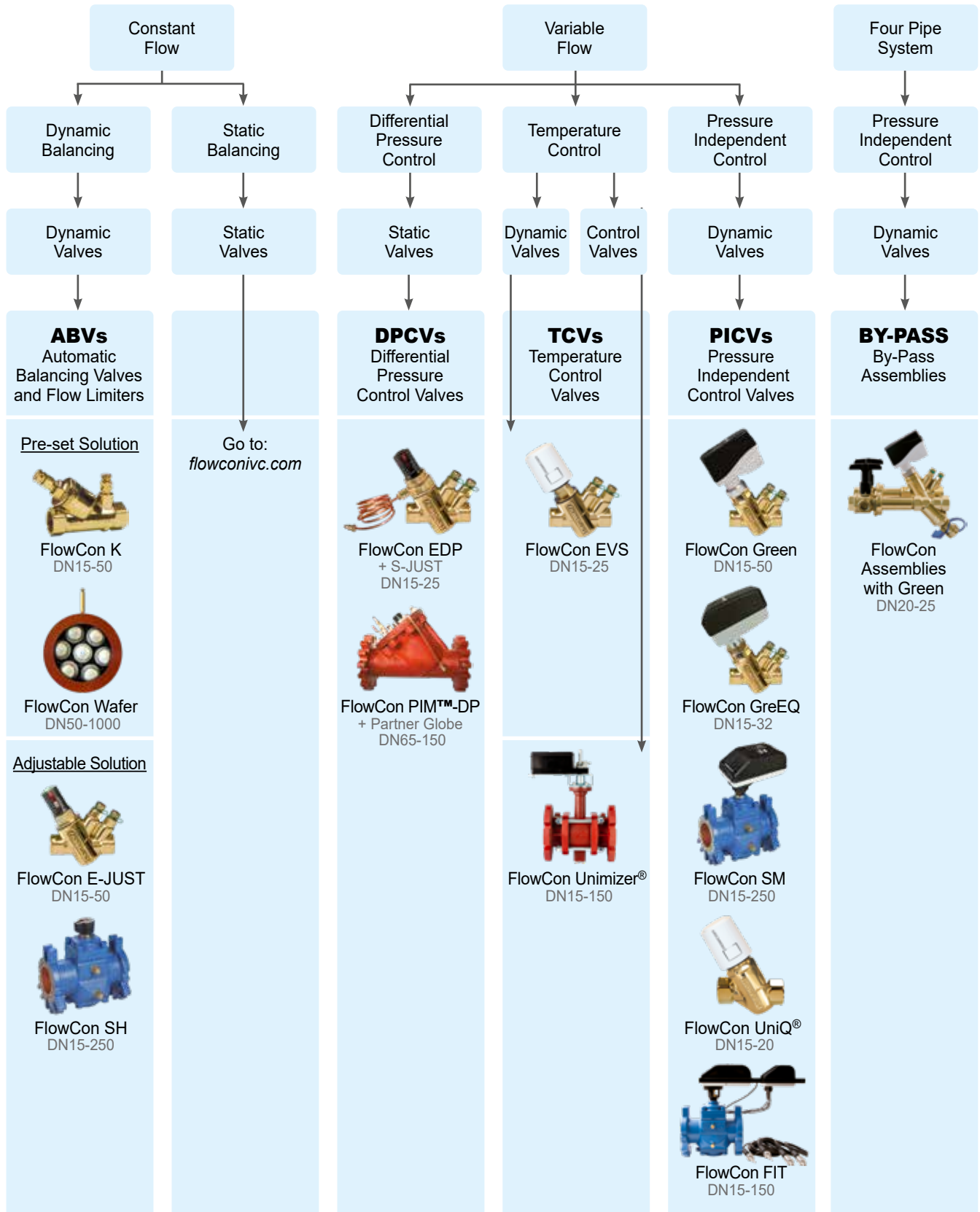
Application Guide

Cooling Systems - Valve Spotter



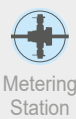
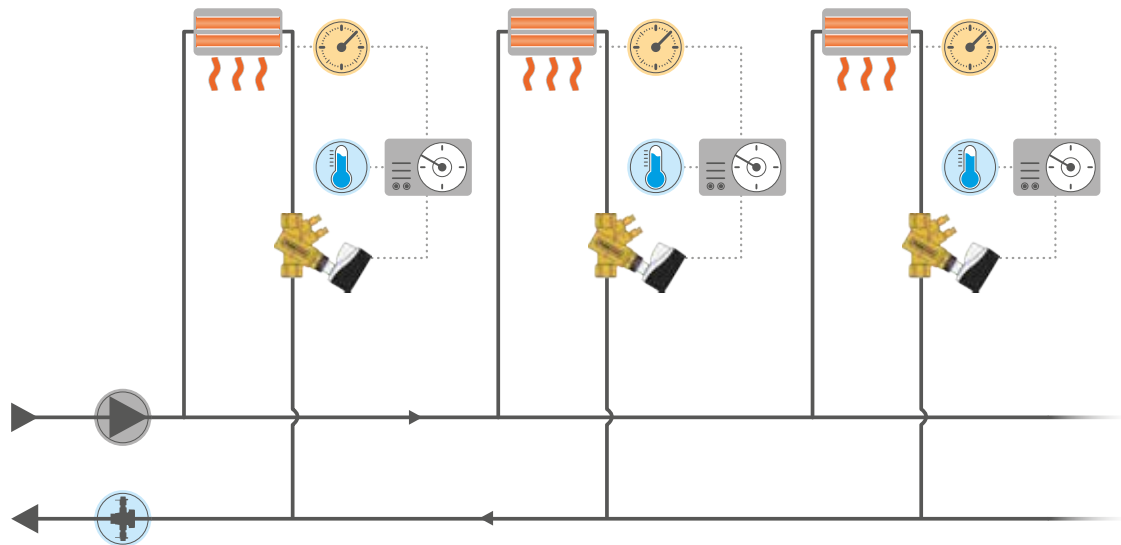
Cooling Systems

Valve Spotter



Air Curtains

with Pressure Independent Control (PICV)



System Functionality:

An air curtain is a fan-powered device which creates an invisible air barrier over the doorway to efficiently separate two different environments, without limiting the access. It helps keeping shop- and restaurant entrances free from draughts and unwanted outdoor temperatures. The air temperature is controlled by circulated water temperature and with proper balancing, an air curtain may reduce heating and cooling costs by up to 80% while protecting the indoor climate and increasing people comfort. Balancing can be obtained by installing a PICV on each unit securing no over-flow, full control and authority even at partial loads.

Requirements:

The PICV will react to system pressure changes and regulate the flow of hot or cold water to required flow by adjusting the actuator position. This helps the system to be accurately controlled even with pressure changes and reduced loads.

Solutions:

The solution is to mount a PICV on every unit and FlowCon offers:

- FlowCon UniQ® (built-in regulation unit) with ON/OFF control or
- FlowCon Green / GreEQ (adjustable insert) with modulating control.

Benefits:

- Assures correct flow for each unit automatically - also at partial loads - securing people comfort
- Serviceable insert-design solution (Green / GreEQ)
- Energy efficiency with regulation starting at only 10 kPaD (UniQ®) or 16 kPaD (Green / GreEQ)
- Flexible solution with 41 different stepless max. flow settings
- Accurate setting as done over multiple rotations
- Cost savings due to reduced commissioning time
- True PICVs - real pressure independency at all flow rates and all actuator positions.

FlowCon PICVs



UniQ®



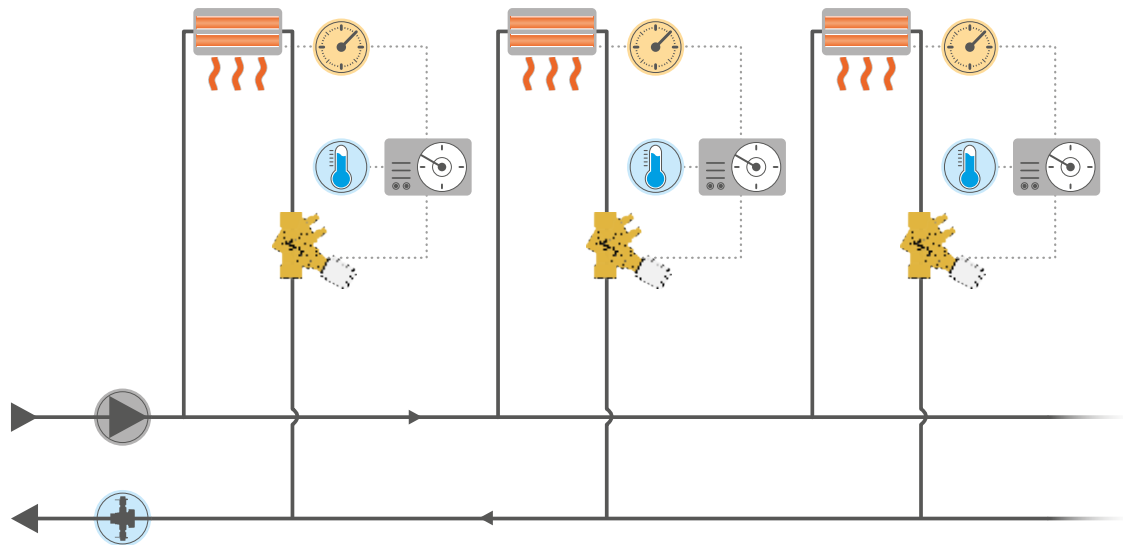
Green



GreEQ

Air Curtains

with Temperature Control



System Functionality:

An air curtain is a fan-powered device which creates an invisible air barrier over the doorway to efficiently separate two different environments, without limiting the access. It helps keeping shop- and restaurant entrances free from draughts and unwanted outdoor temperatures. The air temperature is controlled by circulated water temperature and with proper balancing, an air curtain may reduce heating and cooling costs by up to 80% while protecting the indoor climate and increasing people comfort. Balancing can be obtained by installing a Temperature Control Valve (TCV) on each unit securing actuated control and optimized flow balance.

Requirements:

The TCV incl. balancing will react to system pressure changes and automatically provide the selected max. flow independent of pressure changes. In addition, the actuator will provide ON/OFF control, securing proper thermal performance at all times, even at partial loads.

Solutions:

The solution is to mount a TCV on every unit and FlowCon offers:

- FlowCon EVS with balancing (pre-set stainless steel insert) and ON/OFF control.

Benefits:

- Assures correct flow for each unit automatically - also at partial loads - securing people comfort
- A serviceable solution due to insert-design
- Energy efficiency with regulation starting at only 10 kPaD
- Cost savings due to reduced commissioning time
- Tamper-proof
- A proven technology - long life expectancy.

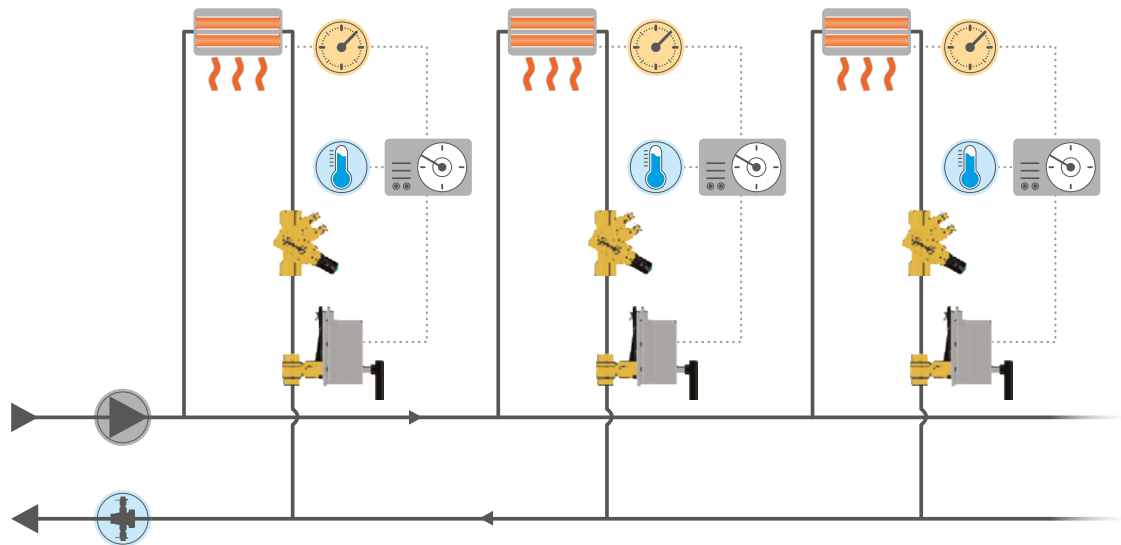
—FlowCon TCV—



EVS

Air Curtains

with Automatic Balancing



Air Curtain



Controller



Pump



Timer



Indoor Temp.



Metering Station



2-Way Control Valve



ABV

System Functionality:

An air curtain is a fan-powered device which creates an invisible air barrier over the doorway to efficiently separate two different environments, without limiting the access. It helps keeping shop- and restaurant entrances free from draughts and unwanted outdoor temperatures. The air temperature is controlled by circulated water temperature and with proper balancing, an air curtain may reduce heating and cooling costs by up to 80% while protecting the indoor climate and increasing people comfort. Balancing can be obtained by installing an Automatic Balancing Valve (ABV) on each unit securing no overflow.

Requirements:

The ABV will react to system pressure changes and limit the flow of hot or cold water to required max. flow helping the system to be accurately controlled even with pressure changes.

Solutions:

The solution is to mount an ABV on every unit and FlowCon offers:

- FlowCon E-JUST or
- FlowCon Composite.

Benefits:

- Assures no overflow in the system
- An easy-to-use and compact solution
- Adjustable insert solution providing high flexibility and easy maintenance
- Energy efficiency with regulation starting at only 15 kPaD
- Cost savings due to reduced time to balance and commission
- A proven technology - long life expectancy.

FlowCon ABVs

FlowCon Control



AB Composite



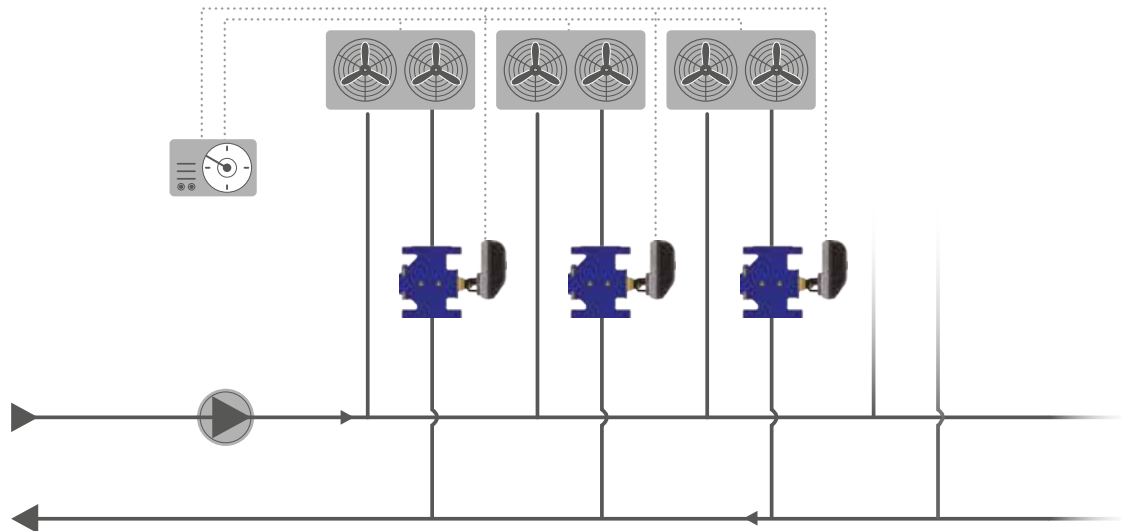
AB E-JUST



Unimizer® 2-Way

Air Handling Units

with Pressure Independent Control (PICV), Direct Control



Air Handling Unit



Controller



Pump



PICV

System Functionality:

Air handling units or AHUs are either designed for in- or outdoor location, and the function of an AHU is to regulate and circulate air for proper room temperature independent of the outdoor temperature. Central elements in an AHU are the fan, the heating and/or cooling coil. AHUs are generally servicing larger areas and thereby larger flow rates. Without proper balance and control, energy consumption and operating costs will run wild. This can be prevented by installing a PICV on every AHU. PICVs will help significantly to reduce energy consumption and operating costs and increase the building's overall energy performance and anticipate in the task of energy certification.

Requirements:

The PICV will react to system pressure changes and regulated the flow of hot or cold water to required flow by adjusting the actuator position. This helps the AHU to be accurately controlled even with pressure changes and at reduced loads.

Solutions:

The solution is to mount a PICV on every unit and FlowCon offers:

- FlowCon Green (adjustable insert)
- FlowCon SM (built-in regulation unit).

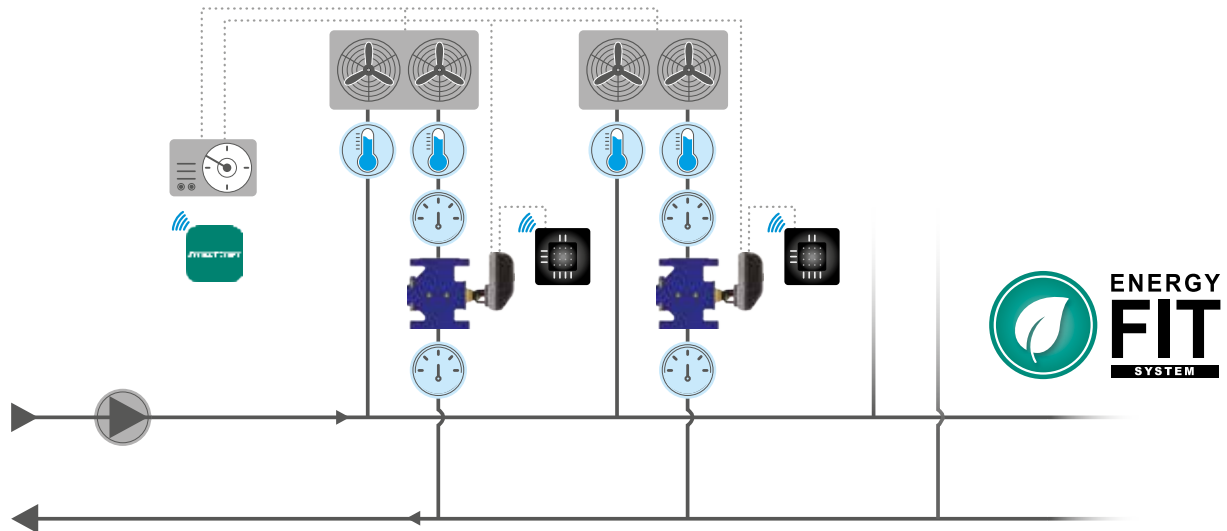
Benefits:

- Assures correct flow for each unit automatically - also at partial loads - securing optimal comfort
- A serviceable solution due to insert-design (Green)
- Energy efficiency with regulation starting at only 16 kPaD (Green)
- Flexible solution with minimum 41 different max. flow settings
- Electrical actuators with selectable control mode, linear or equal%
- Cost savings due to reduced commissioning time
- True PICVs - 100% authority and pressure independency at all flow rates with accurate actuator control.



Air Handling Units

with Pressure Independent Temperature Control, Direct Control



System Functionality:

Air handling units or AHUs are either designed for in- or outdoor location, and the function of an AHU is to regulate and circulate air for proper room temperature independent of the outdoor temperature. Central elements in an AHU are the fan, the heating and/or cooling coil. AHUs are generally servicing larger areas and thereby larger flow rates. Without proper balance and control, energy consumption and operating costs will run wild. This can be prevented by installing a true pressure independent temperature control valve (PITCV) on every AHU. The PITCV will, by controlling based on ΔT alone, help significantly to reduce energy consumption and operating costs and increase the building's overall energy performance and anticipate in the task of energy certification.

Requirements:

A PITCV will only react to ΔT changes and consequently adjust the flow by altering actuator position. System pressure fluctuations are mechanically absorbed by the included PICV. By controlling AHU performance on ΔT , flow requirements may be reduced, resulting in significant energy savings and optimized comfort at all times.

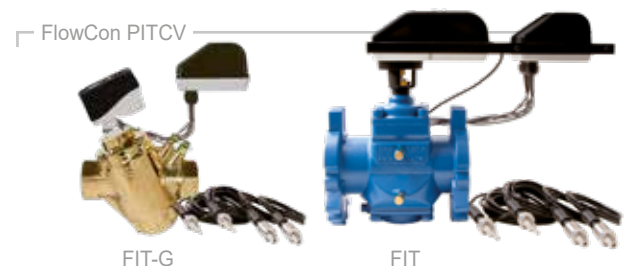
Solutions:

The solution is to mount a PITCV on every unit and FlowCon offers:

- FlowCon Energy FIT System.

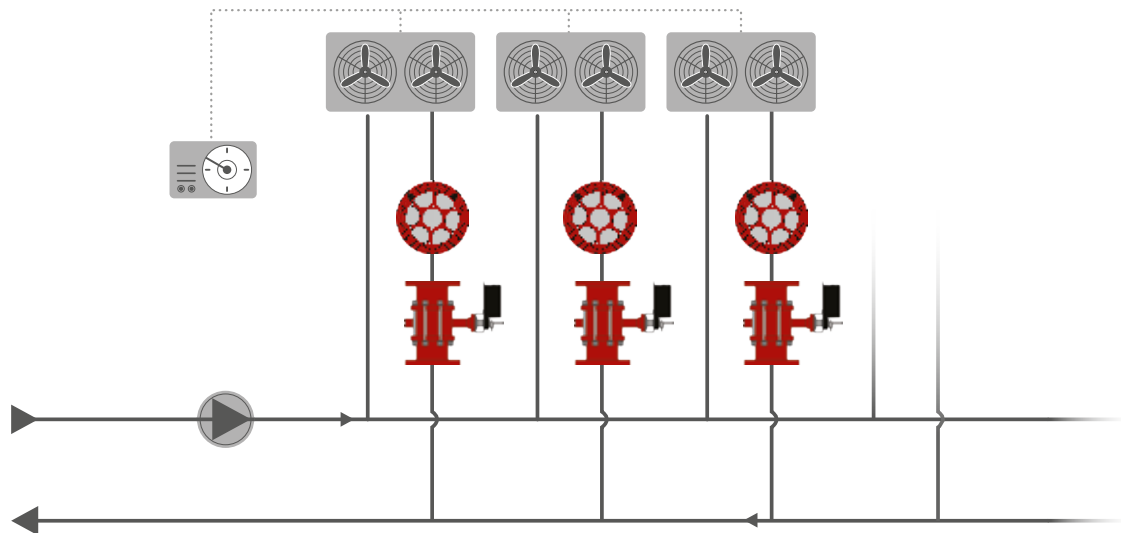
Benefits:

- All-in-1 solution incl. PICV, temperature and pressure sensors, flow and BTU metering.
- User friendly w/ easy direct setting on display actuator (FIT) or direct flow setting on insert or valve (FIT-G)
- Complete overview of energy and flow with simple monitoring via Bluetooth® to FlowCon App or via BACnet to BMS
- No piping restrictions - the most compact system on the market
- Cost savings due to optimized energy consumption and improved efficiency
- True PITCVs with full pressure and temperature independency and ΔT control.



Air Handling Units

with Automatic Balancing



System Functionality:

Air handling units or AHUs are either designed for in- or outdoor location, and the function of an AHU is to regulate and circulate air for proper room temperature independent of the outdoor temperature. Central elements in an AHU are the fan, the heating and/or cooling coil. AHUs are generally servicing larger areas and thereby larger flow rates. Without proper balance and control, energy consumption and operating costs will run wild. This can be prevented by installing an Automatic Balancing Valve (ABV) on every AHU securing no overflow.

Requirements:

An ABV will react to system pressure changes and limit the flow of hot or cold water to required max. flow helping the system to be accurately controlled even with pressure changes.

Solutions:

The solution is to mount an ABV on every unit and FlowCon offers:

- FlowCon E-JUST (adjustable insert)
- FlowCon Wafer (pre-set multiple inserts).

Benefits:

- Assures no overflow in the system
- An easy-to-use solution
- Adjustable insert solution providing high flexibility and easy maintenance (E-JUST)
- Energy efficiency with regulation starting at only 10 kPaD
- Cost savings due to reduced time to balance and commission
- A proven technology - long life expectancy.

FlowCon ABVs



E-JUST.3



Wafer

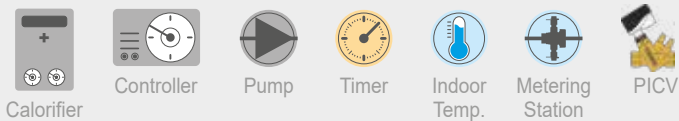
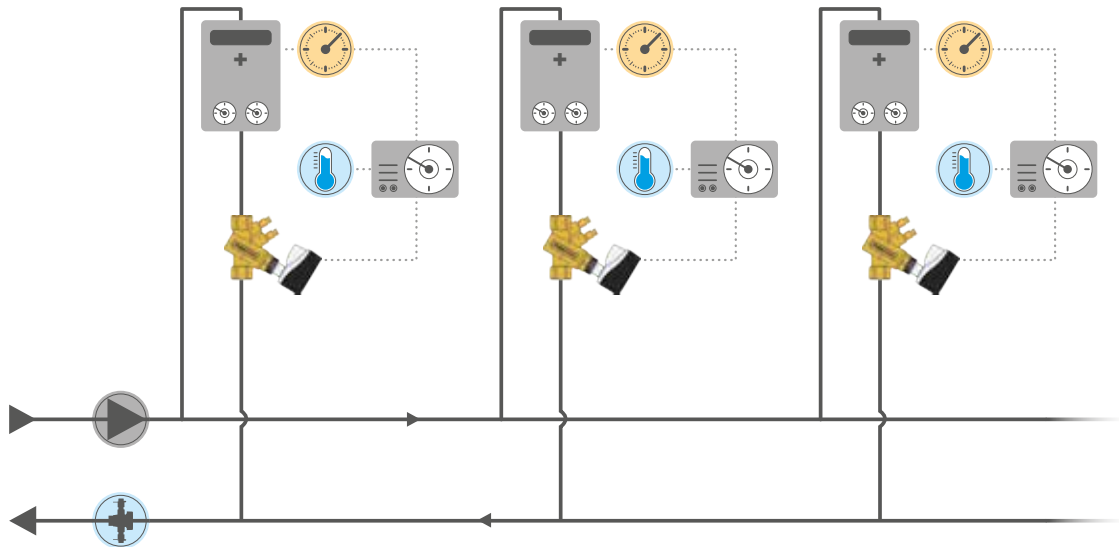
FlowCon Control



Unimizer® 2-Way

Calorifiers

with Pressure Independent Control (PICV)



System Functionality:

A calorifier is basically a heating fan with a built-in coil. In this simple construction, air is heated indirectly by blowing over the heating coil and heat is thermally transferred. The heated air will heat the room and can be adjusted in temperature, blow direction and air velocity. Without proper balance and control, flow rates will fluctuate as pressure fluctuates with the result of increased energy consumption. This can be prevented by installing a PICV on every calorifier. PICVs will help maintain correct flow rate at any time of operation and significantly reduce energy consumption.

Requirements:

The PICV will react to system pressure changes and regulated the flow of hot water to required flow by adjusting the actuator position. This helps the calorifier to be accurately controlled even with pressure changes and at reduced loads.

Solutions:

The solution is to mount a PICV on every single unit and FlowCon offers:

- FlowCon Green / GreEQ (adjustable insert)
- FlowCon UniQ® (built-in regulation unit).

Benefits:

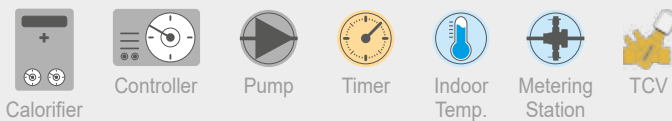
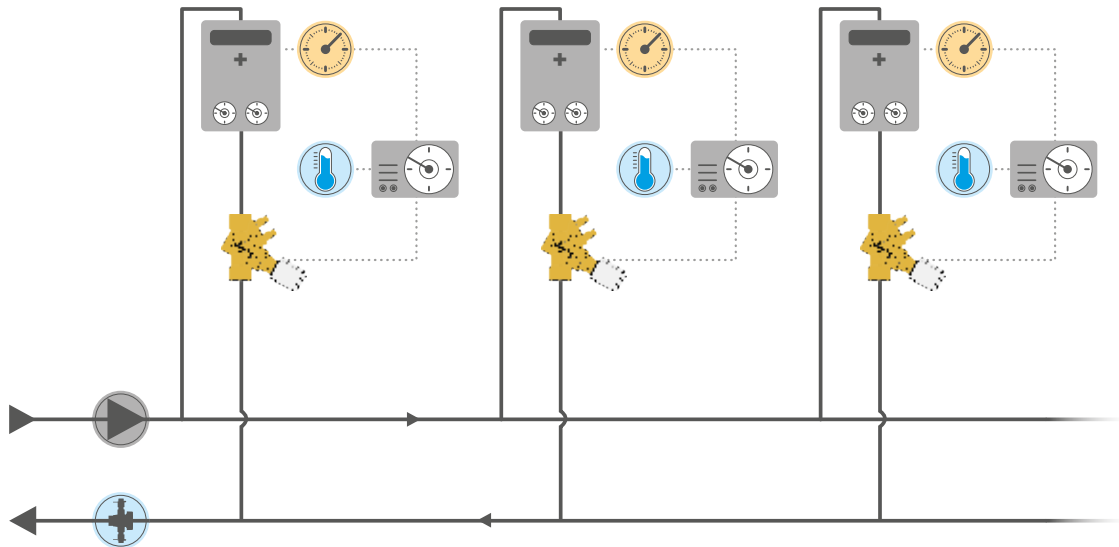
- Assures correct flow for each unit automatically - also at partial loads - securing optimal comfort
- Serviceable insert-design solution (Green / GreEQ)
- Energy efficiency with regulation starting at only 10 kPaD (UniQ®)
- Flexible solution with min. 41 different max. flow settings
- Electrical actuators with selectable control mode, linear or equal% or alternatively thermal ON/OFF actuators
- Cost savings due to reduced commissioning time
- True PICVs - 100% authority and pressure independency at all flow rates with accurate actuator control.

FlowCon PICVs



Calorifiers

with Temperature Control



System Functionality:

A calorifier is basically a heating fan with a built-in coil. In this simple construction, air is heated indirectly by blowing over the heating coil and heat is thermally transferred. The heated air will heat the room and can be adjusted in temperature, blow direction and air velocity. Without proper balance and control, flow rates will fluctuate as pressure fluctuates with the result of increased energy consumption. This can be prevented by installing a Temperature Control Valve (TCV) on every calorifier. TCVs will help secure no overflow and help reduce energy consumption.

Requirements:

The TCV will react to system pressure changes and regulated the flow of hot water to required flow by adjusting the actuator position. This helps the calorifier to be accurately controlled even at reduced loads.

Solutions:

The solution is to mount a TCV on every single unit and FlowCon offers:

- FlowCon EVS with balancing (pre-set stainless steel insert) and ON/OFF control.

Benefits:

- Assures correct flow for each unit automatically - also at partial loads - securing people comfort
- A serviceable solution due to insert-design
- Energy efficiency with regulation starting at only 10 kPaD
- Cost savings due to reduced commissioning time
- Tamper-proof
- A proven technology - long life expectancy.

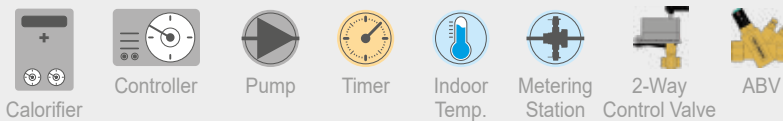
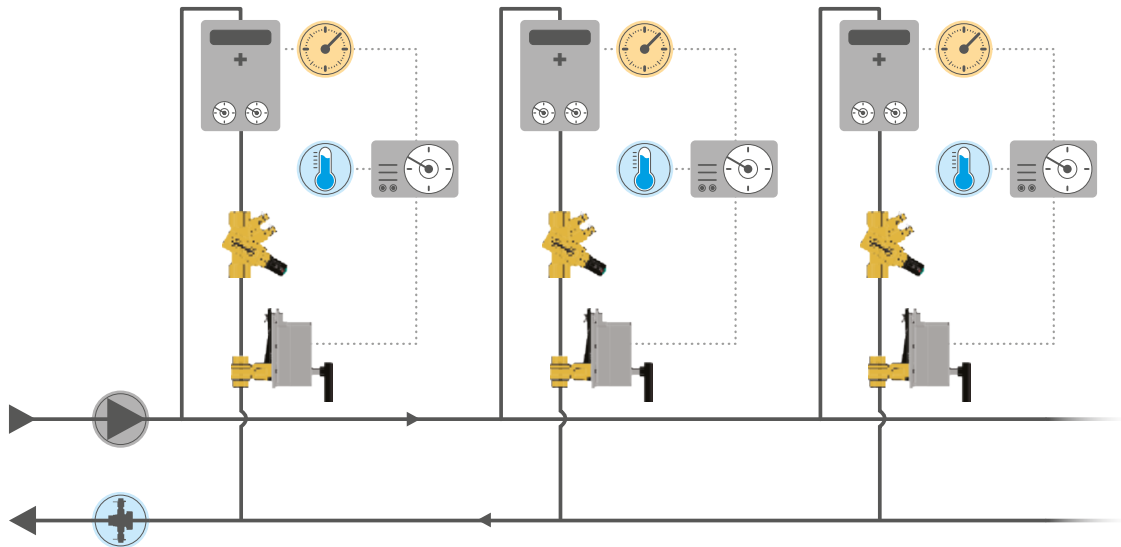
FlowCon TCV



EVS

Calorifiers

with Automatic Balancing



System Functionality:

A calorifier is basically a heating fan with a built-in coil. In this simple construction, air is heated indirectly by blowing over the heating coil and heat is thermally transferred. The heated air will heat the room and can be adjusted in temperature, blow direction and air velocity. Without proper balance and control, flow rates will fluctuate as pressure fluctuates with the result of increased energy consumption. This can be prevented by installing an Automatic Balancing Valve (ABV) on every calorifier. ABVs will help secure no overflow and guarantee design flow.

Requirements:

An ABV will react to system pressure changes and limit the flow of hot water to required max. flow helping the system to be accurately controlled even with pressure changes.

Solutions:

The solution is to mount an ABV on every single unit and FlowCon offers:

- FlowCon E-JUST (adjustable insert).

Benefits:

- Assures no overflow in the system
- An easy-to-use solution
- Adjustable insert solution providing high flexibility and easy maintenance
- Energy efficiency with regulation starting at only 17 kPaD
- Cost savings due to reduced time to balance and commission
- A proven technology - long life expectancy.

FlowCon ABVs ————— FlowCon Control ———



AB Composite



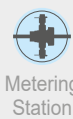
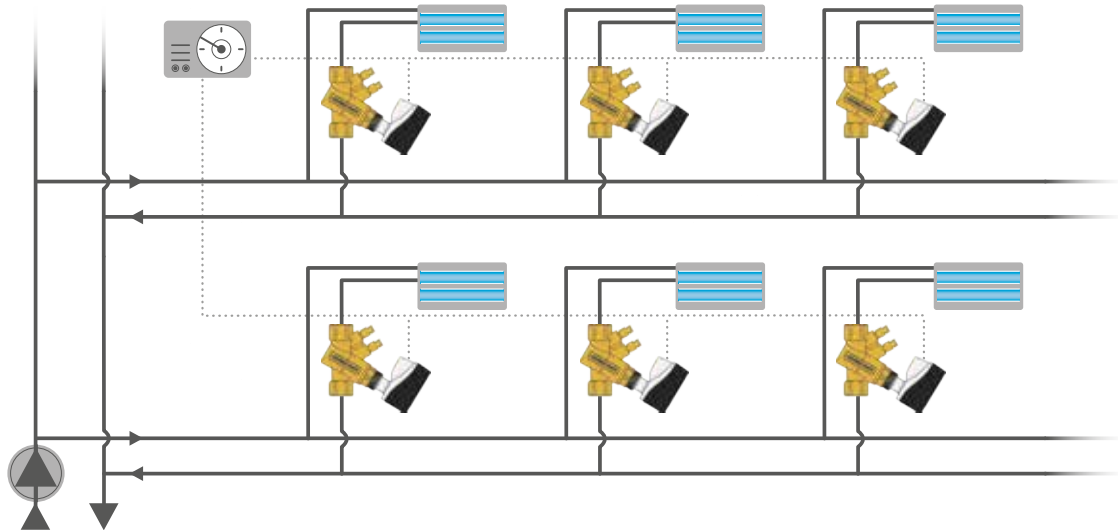
AB E-JUST



Unimizer® 2-Way

Chilled Beams/Ceilings

with Pressure Independent Control (PICV)



System Functionality:

Chilled beams and chilled ceilings are both ceiling-based cooling devices and alternatives to FCUs. Chilled water is piped to the unit and provides convective cooling. As warm air rises it is cooled by the chilled beam/ceiling; once it is cooled, the air falls back to the floor and the cycle starts over. Without proper balance and control, flow rates will fluctuate as pressure fluctuates due to varying system load resulting in inaccurate room temperature, dissatisfied users and increased energy consumption. This can be prevented by installing a PICV on every chilled beam or chilled ceiling. PICVs will help maintain correct flow rate at any time of operation and significantly reduce energy consumption.

Requirements:

The PICV will react to system pressure changes and regulated the chilled water flow to required flow by adjusting the actuator position. This helps the unit to be accurately controlled even with pressure changes and at reduced loads.

Solutions:

The solution is to mount a PICV on every single unit and FlowCon offers:

- FlowCon Green / GreEQ (adjustable insert)
- FlowCon UniQ® (built-in regulation unit).

Benefits:

- Assures correct flow for each unit automatically - also at partial loads - securing optimal comfort
- Serviceable insert-design solution (Green / GreEQ)
- Energy efficiency with regulation starting at only 10 kPaD (UniQ®)
- Flexible solution with minimum 41 different max. flow settings
- Electrical actuators with selectable control mode, linear or equal% or alternatively thermal ON/OFF actuators
- Cost savings due to reduced commissioning time
- True PICVs - 100% authority and pressure independency at all flow rates with accurate actuator control.

FlowCon PICVs



UniQ®



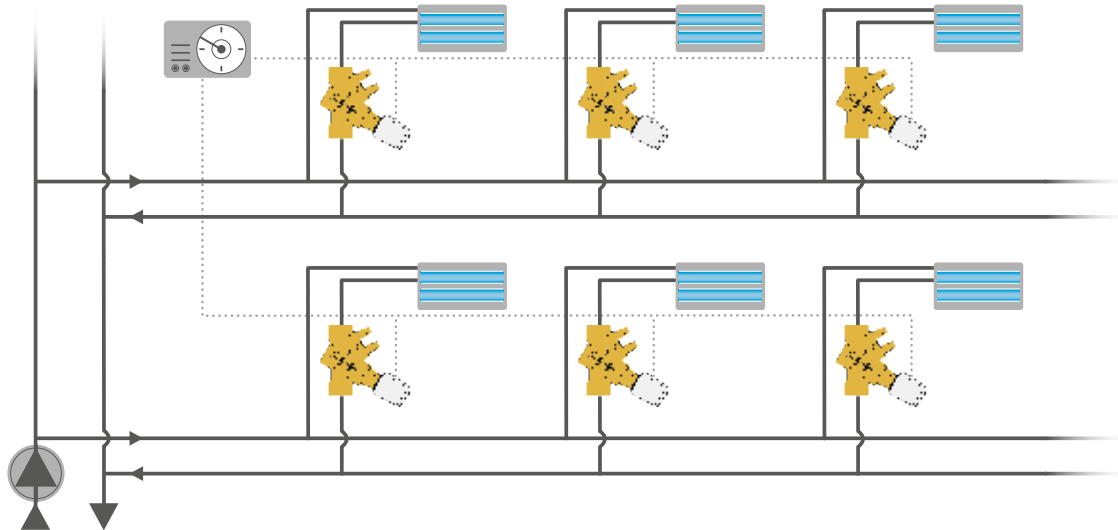
Green



GreEQ

Chilled Beams/Ceilings

with Temperature Control



Chilled Beam/Ceiling



Controller



Pump



TCV

System Functionality:

Chilled beams and chilled ceilings are both ceiling-based cooling devices and alternatives to FCUs. Chilled water is piped to the unit and provides convective cooling. As warm air rises it is cooled by the chilled beam/ceiling; once it is cooled, the air falls back to the floor and the cycle starts over. Without proper balance and control, flow rates will fluctuate as pressure fluctuates due to varying system load resulting in inaccurate room temperature, dissatisfied users and increased energy consumption. This can be prevented by installing a Temperature Control Valve (TCV) on every chilled beam or ceiling. TCVs will help secure no overflow and help reduce energy consumption.

Requirements:

The TCV will react to system pressure changes and regulated the chilled water flow to required flow by adjusting the actuator position. This helps the unit to be accurately controlled even at reduced loads.

Solutions:

The solution is to mount a TCV on every single unit and FlowCon offers:

- FlowCon EVS with balancing (pre-set stainless steel insert) and ON/OFF control.

Benefits:

- Assures correct flow for each unit automatically - also at partial loads - securing occupant comfort
- A serviceable solution due to insert-design
- Energy efficiency with regulation starting at only 10 kPaD
- Cost savings due to reduced commissioning time
- Tamper-proof
- A proven technology - long life expectancy.

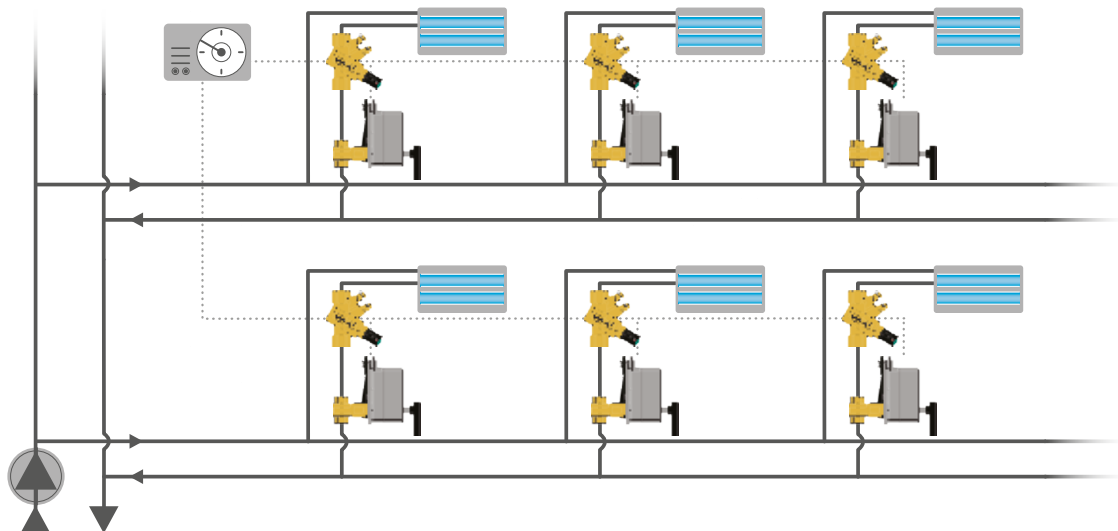
—FlowCon TCV—



EVS

Chilled Beams/Ceilings

with Automatic Balancing (ABV)



Chilled Beam/Ceiling



Controller



Pump



2-Way Control Valve



ABV

System Functionality:

Chilled beams and chilled ceilings are both ceiling-based cooling devices and alternatives to FCUs. Chilled water is piped to the unit and provides convective cooling. As warm air rises it is cooled by the chilled beam/ceiling; once it is cooled, the air falls back to the floor and the cycle starts over. Without proper balance and control, flow rates will fluctuate as pressure fluctuates due to varying system load resulting in inaccurate room temperature, dissatisfied users and increased energy consumption. This can be prevented by installing an Automatic Balancing Valve (ABV) on every chilled beam or ceiling. ABVs will help secure no overflow and Guarantee design flow.

Requirements:

An ABV will react to system pressure changes and limit the chilled water flow to required max. flow helping the system to be accurately controlled even with pressure changes.

Solutions:

The solution is to mount an ABV on every single unit and FlowCon offers:

- FlowCon E-JUST (adjustable insert).

Benefits:

- Assures no overflow in the system
- An easy-to-use solution
- Adjustable insert solution providing high flexibility and easy maintenance
- Energy efficiency with regulation starting at only 17 kPaD
- Cost savings due to reduced time to balance and commission
- A proven technology - long life expectancy.

FlowCon ABVs

FlowCon Control



AB Composite



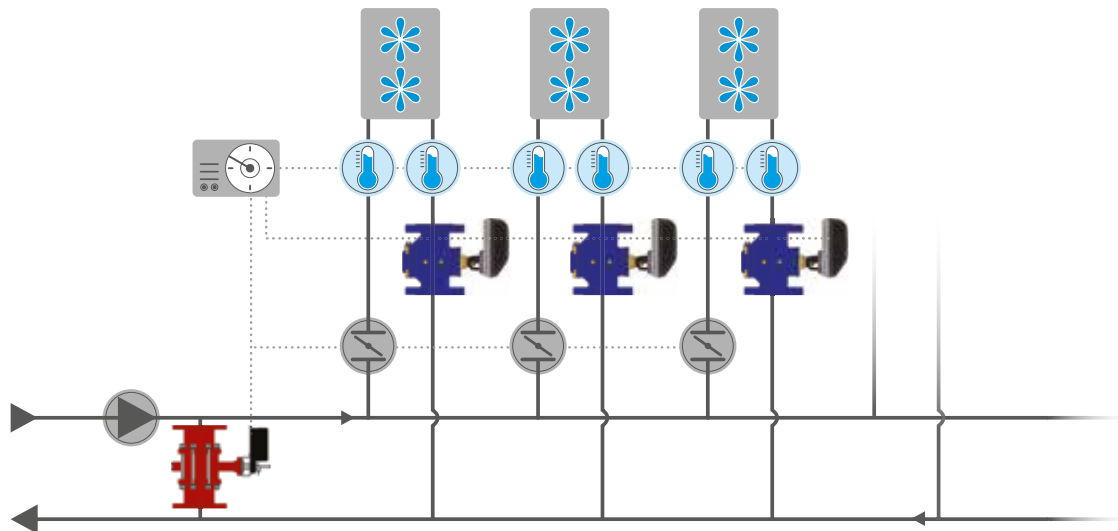
AB E-JUST



Unimizer® 2-Way

Chillers - Variable Speed

with Pressure Independent Control (PICV)



Chiller



Controller



Pump



Temp. Sensor



Butterfly



2-Way Control Valve



PICV

System Functionality:

Chillers are either designed for in- or outdoor location, and the function of a chiller is to provide the correct amount of chilled water to a building's A/C system. Chillers are normally seen in large-size buildings and thereby handling larger flow rates. Without proper balance and control, energy consumption, ΔT and hence operating costs will run wild. This can be prevented by installing a PICV on every chiller. PICVs will help significantly to reduce energy consumption and operating costs and increase the building's overall energy performance and anticipate in the task of energy certification.

Requirements:

The PICV will react to system pressure changes and regulated the flow of chilled water to required flow by adjusting the actuator position. This helps chillers during ramp on or ramp off to maintain being accurately controlled even with pressure changes and at reduced loads.

Solutions:

The solution is to mount a PICV on every single unit and FlowCon offers:

- FlowCon SM.

Benefits:

- Assures correct flow for each unit automatically - also at partial loads
- Flexible solution with minimum 51 different max. flow settings
- Electrical actuators with selectable control mode, linear or equal%
- Energy efficient due to optimized control
- Cost savings due to reduced commissioning time
- True PICVs - 100% authority and pressure independency at all flow rates with accurate actuator control.



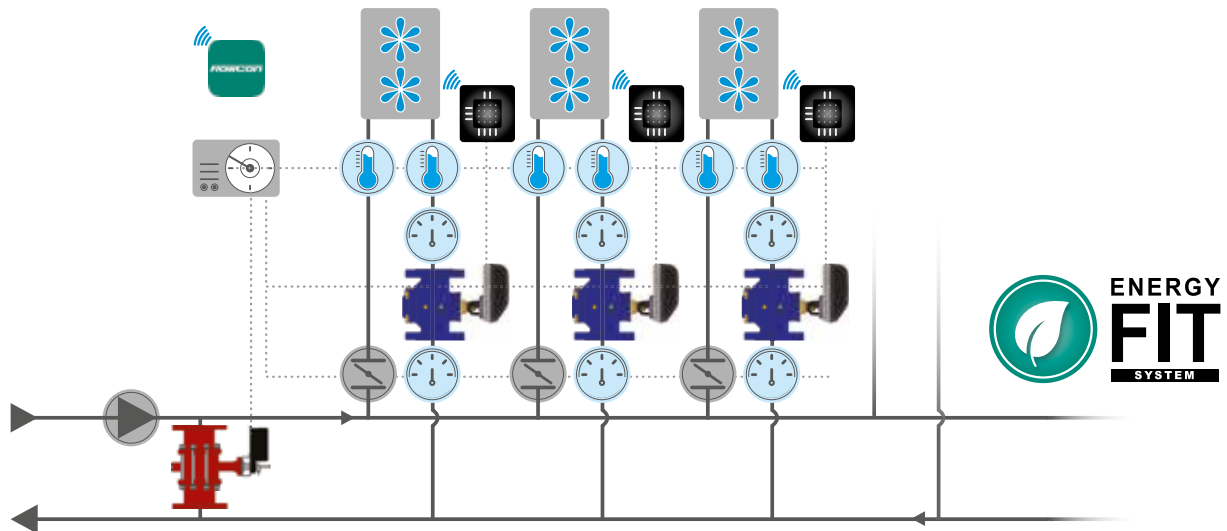
SM



Unimizer® 2-Way

Chillers - Variable Speed

with Pressure Independent Temperature Control



System Functionality:

Chillers are either designed for in- or outdoor location, and the function of a chiller is to provide the correct amount of chilled water to a building's A/C system. Chillers are normally seen in large-size buildings and thereby handling larger flow rates. Without proper balance and control, energy consumption, ΔT and hence operating costs will run wild. This can be prevented by installing a true pressure independent temperature control valve (PITCV) on every chiller. The PITCV will, by controlling on ΔT alone, help significantly to reduce energy consumption and operating costs and increase the building's overall energy performance and anticipate in the task of energy certification.

Requirements:

A PITCV will only react to ΔT changes and consequently adjust the flow by altering actuator position. System pressure fluctuations are mechanically absorbed by the included PICV. By controlling chiller performance on ΔT , flow requirements may be reduced, resulting in significant energy savings and optimized comfort at all times.

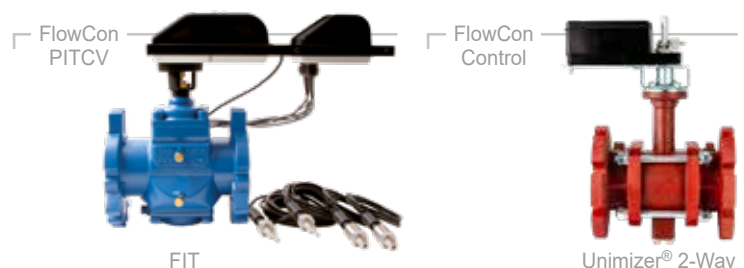
Solutions:

The solution is to mount a PITCV on every unit and FlowCon offers:

- FlowCon Energy FIT System

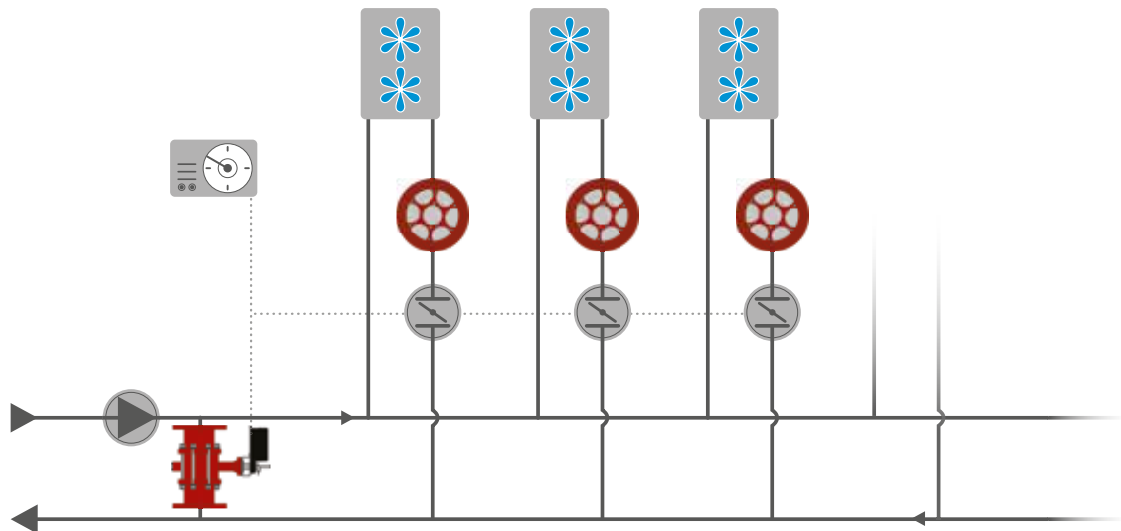
Benefits:

- All-in-1 solution incl. PICV, temperature and pressure sensors, flow and BTU metering.
- User friendly w/ easy direct setting on display actuator
- Complete overview of energy and flow with simple monitoring via Bluetooth® to FlowCon App or via BACnet to BMS
- No piping restrictions - the most compact system on the market
- Cost savings due to optimized energy consumption and improved efficiency
- True PITCVs with full pressure independent ΔT control.



Chillers - Fixed Speed

with Automatic Balancing



Chiller



Controller



Pump



Butterfly



2-Way
Control Valve



ABV

System Functionality:

Chillers are either designed for in- or outdoor location, and the function of a chiller is to provide the correct amount of chilled water to a building's A/C system. Chillers are normally seen in large-size buildings and thereby handling larger flow rates. Without proper balance and control, energy consumption, ΔT and hence operating costs will run wild. On a fixed speed chiller, this can be prevented by installing an Automatic Balancing Valve (ABV) and an ON/OFF butterfly valve on every chiller securing no overflow.

Requirements:

An ABV will react to system pressure changes and limit the flow of chilled water to required max. flow helping the system to be accurately controlled even with pressure changes for instance when chillers in the same system are ramped off.

Solutions:

The solution is to mount an ABV on every single unit and FlowCon offers:

- FlowCon Wafer (pre-set multiple inserts).

Benefits:

- Assures no overflow in the system
- An easy-to-use solution
- Energy efficiency with regulation starting at only 10 kPaD
- Cost savings due to reduced time to balance and commission
- A proven technology - long life expectancy.

FlowCon ABV



Wafer

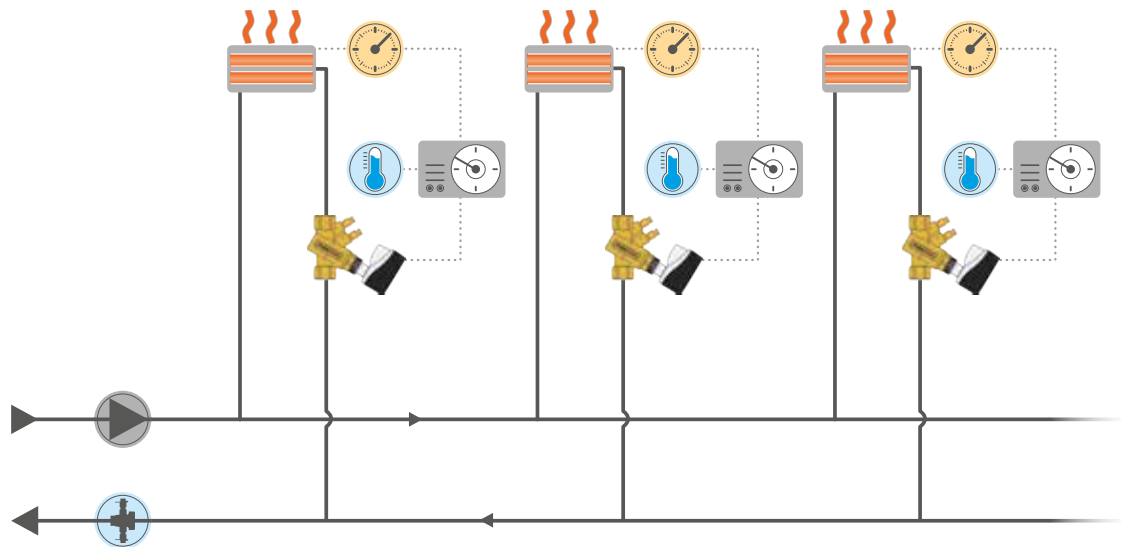
FlowCon Control



Unimizer® 2-Way

Convectors

with Pressure Independent Control (PICV)



System Functionality:

Convectors generate heat by drawing cold air in at the bottom and letting it pass the inner hot pipe with fins in order to heat up the air before it leaves from the top. Without proper balance, convectors will either experience overflow or underflow and consequently not deliver the right temperature resulting in human discomfort. Balance can be achieved by installing a Pressure Independent Control Valve (PICV) on each convector. PICVs will help maintain correct flow rate, eliminating noise at any time of operation and significantly reduce energy consumption.

Requirements:

The PICV will react to system pressure changes and regulated the flow of hot water to required flow by adjusting the actuator position. This helps at all times to secure a steady flow and consequently better indoor temperature control.

Solutions:

The solution is to mount a PICV on every convector and FlowCon offers:

- FlowCon Green / GreEQ (adjustable insert)
- FlowCon UniQ® (built-in regulation unit).

Benefits:

- Assures correct flow for each unit automatically - also at partial loads - securing optimal comfort
- Serviceable insert-design solution (Green / GreEQ)
- Energy efficiency with regulation starting at only 10 kPaD (UniQ®)
- Flexible solution with stepless setting to minimum 41 defined max. flows
- Electrical actuators with selectable control mode, linear or equal% or alternatively thermal ON/OFF actuators
- Cost savings due to reduced commissioning time
- True PICVs - 100% authority and pressure independency at all flow rates with accurate actuator control.

FlowCon PICVs



UniQ®



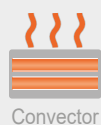
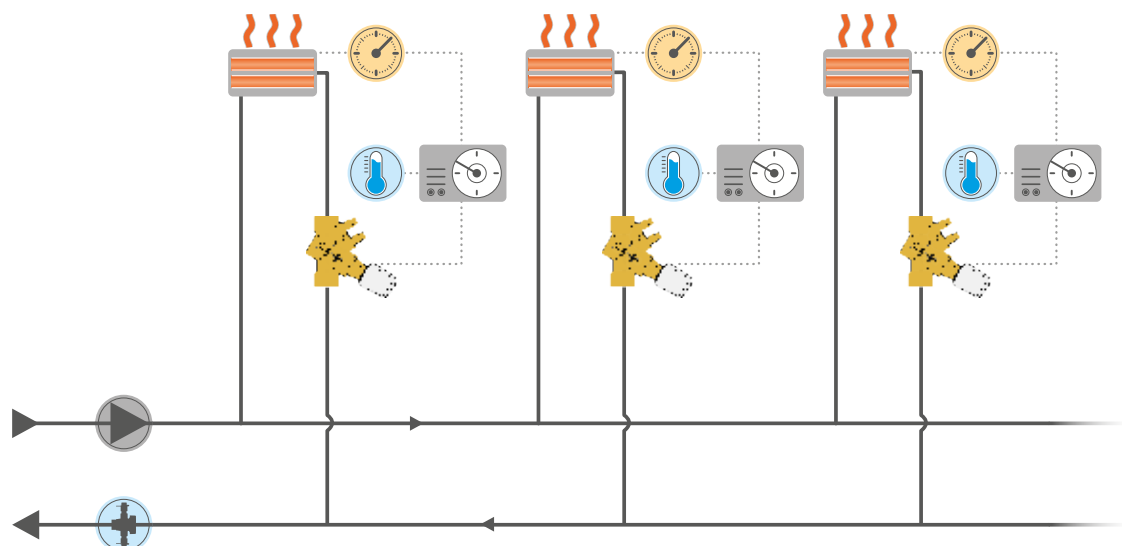
Green



GreEQ

Convectors

with Temperature Control



System Functionality:

Convectors generate heat by drawing cold air in at the bottom and letting it pass the inner hot pipe with fins in order to heat up the air before it leaves from the top. Without proper balance, convectors will either experience overflow or underflow and consequently not deliver the right temperature resulting in human discomfort. Flow control can be achieved in ON/OFF applications by installing a Temperature Control Valve (TCV) on every convector. TCVs will help secure no overflow and help reduce energy consumption.

Requirements:

The TCV will react to system pressure changes and regulated the flow of hot water to required flow by adjusting the actuator position. This helps the unit to be accurately controlled even at reduced system loads.

Solutions:

The solution is to mount a TCV on every convector and FlowCon offers:

- FlowCon EVS with balancing (pre-set stainless steel insert) and ON/OFF control.

Benefits:

- Assures correct flow for each unit automatically - also at partial loads - securing occupant comfort
- A serviceable solution due to insert-design
- Energy efficiency with regulation starting at only 10 kPaD
- Cost savings due to reduced commissioning time
- Tamper-proof model
- A proven technology - long life expectancy.

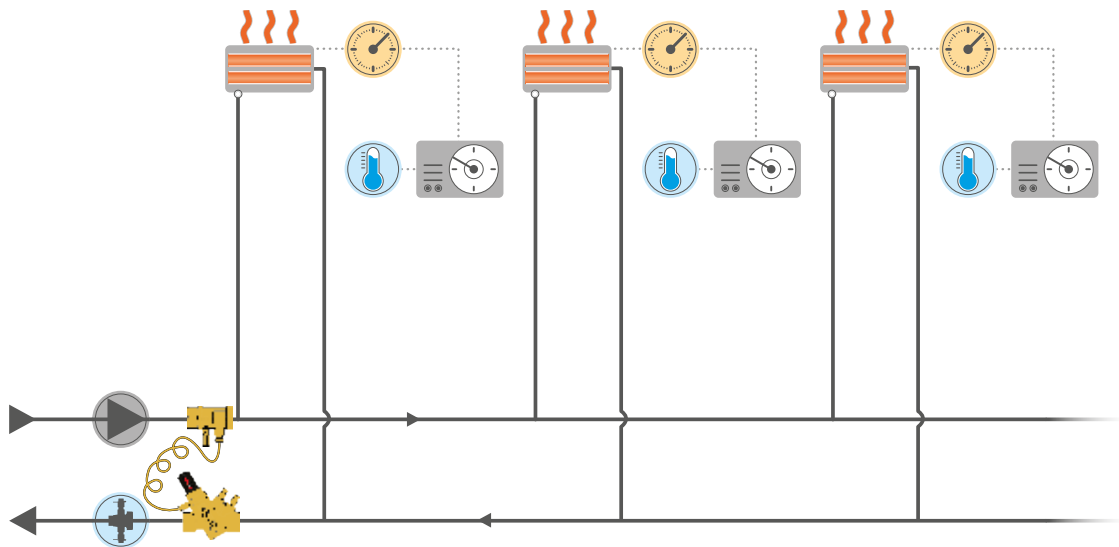
FlowCon TCV



EVS

Convectors

with Differential Pressure Control (DPCV)



System Functionality:

Convectors generate heat by drawing cold air in at the bottom and letting it pass the inner hot pipe with fins in order to heat up the air before it leaves from the top. Without proper balance, convectors will either experience overflow or underflow and consequently not deliver the right temperature resulting in human discomfort. Pressure control can be achieved by installing a Differential Pressure Control Valve (DPCV) as zone on every convector zone. It will also help eliminating noise through the thermostat.

Requirements:

The DPCV will absorb system pressure changes and maintain a constant pressure, Δp_C , in the zone helping the system to balance, be accurately controlled and protected against noise.

Solutions:

The solution is to mount a DPCV and a Partner valve on every zone and FlowCon offers:

- FlowCon SDP (pre-set 10, 20 or 30 kPaD) or
- FlowCon EDP (adjustable 5-50 kPaD)
- FlowCon QuickDisc® (Partner Valve with manual flow balancing).

Benefits:

- Prevention of noise in the system
- Security of a defined ΔP available for all branches - also at partial loads
- An easy-to-use and compact construct
- A serviceable solution due to insert-design
- Energy efficiency with regulation starting at only 3 kPaD
- Cost savings due to reduced time to balance and commission
- A proven technology.

FlowCon Partner Valves

FlowCon DPCVs



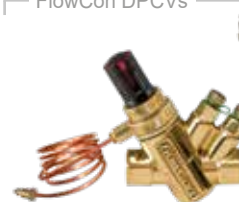
AB Composite



AB E-JUST



QuickDisc®



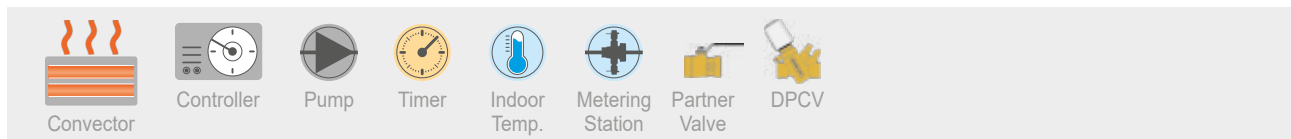
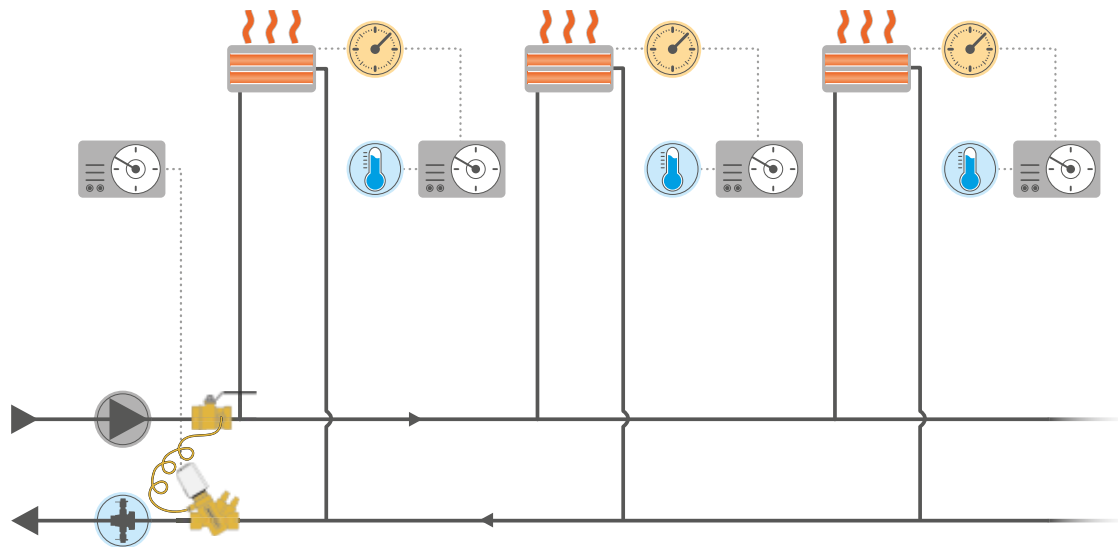
EDP



SDP

Convectors

with Differential Pressure Control (DPCV) - Timer Controlled



System Functionality:

Convectors generate heat by drawing cold air in at the bottom and letting it pass the inner hot pipe with fins in order to heat up the air before it leaves from the top. Without proper balance, convectors will either experience overflow or underflow and consequently not deliver the right temperature resulting in human discomfort. Pressure control can be achieved by installing a flow limiting Differential Pressure Control Valve (DPCV) as zone valve on every convector zone, which will reduce noise and allow energy saving night reduction.

Requirements:

The DPCV will absorb system pressure changes and maintain a constant pressure, Δp_C , in the zone helping the system to balance, be accurately controlled and protected against noise.

Solutions:

The solution is to mount a DPCV and a partner Valve on every zone and FlowCon offers:

- FlowCon ADP (adjustable insert)
- FlowCon Partner Ball (Partner Valve).

Benefits:

- Combined ΔP and max flow limiter in one unit - incl. ON/OFF control
- Flexible solution with minimum 41 different flow/pressure settings
- An easy-to-use solution and compact design
- A serviceable solution due to insert-model
- Energy efficiency with regulation starting at only 3 kPaD
- Cost savings - reduced time to balance and commission
- A proven technology
- Possible automatic night reduction.

└─ FlowCon Partner Valve ─

└─ FlowCon DPCV ─



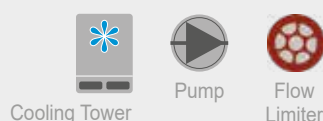
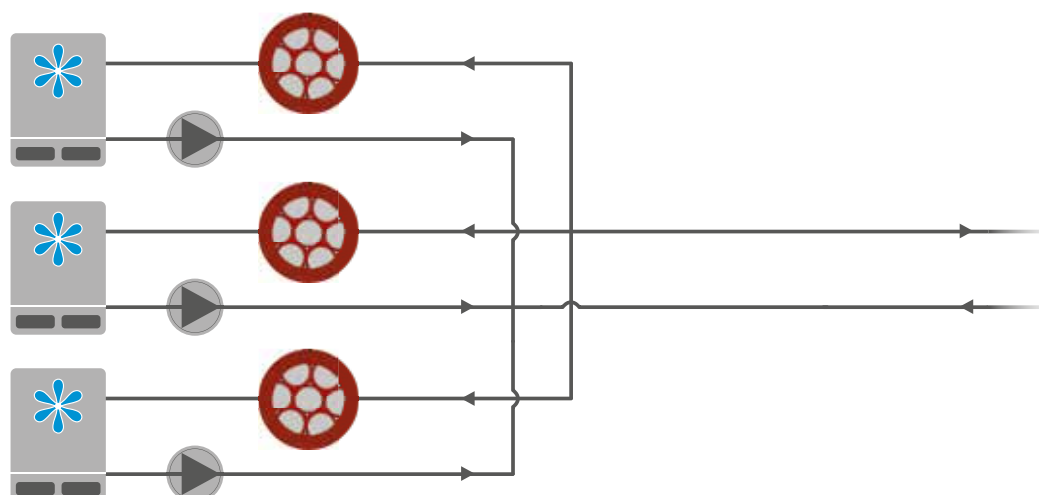
Partner Ball



ADP

Cooling Towers - Primary Side

with Automatic Balancing



System Functionality:

A cooling tower is a big vessel which contains a large fan blowing air through the unit. Water including excess heat from the HVAC system is entered at the top of the cooling tower. As the water passes to the bottom, heat is withdrawn through evaporation. Cooling towers normally involves larger flow rates. Without proper balance, energy consumption and operating costs will run wild. This can be prevented by installing an Automatic Balancing Valve (ABV) on every cooling tower securing no overflow.

Requirements:

An ABV will react to system pressure changes and limit the flow of cold water to required max. flow helping the system to be accurately controlled even with pressure changes.

Solutions:

The solution is to mount an ABV on every unit and FlowCon offers:

- FlowCon Wafer (pre-set multiple inserts).

Benefits:

- Assures no overflow in the system
- An easy-to-use tamper-proof solution
- Energy efficiency with regulation starting at only 10 kPaD
- Cost savings due to reduced time to balance and commission
- A proven technology - long life expectancy

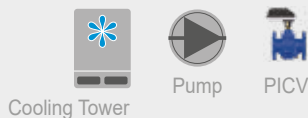
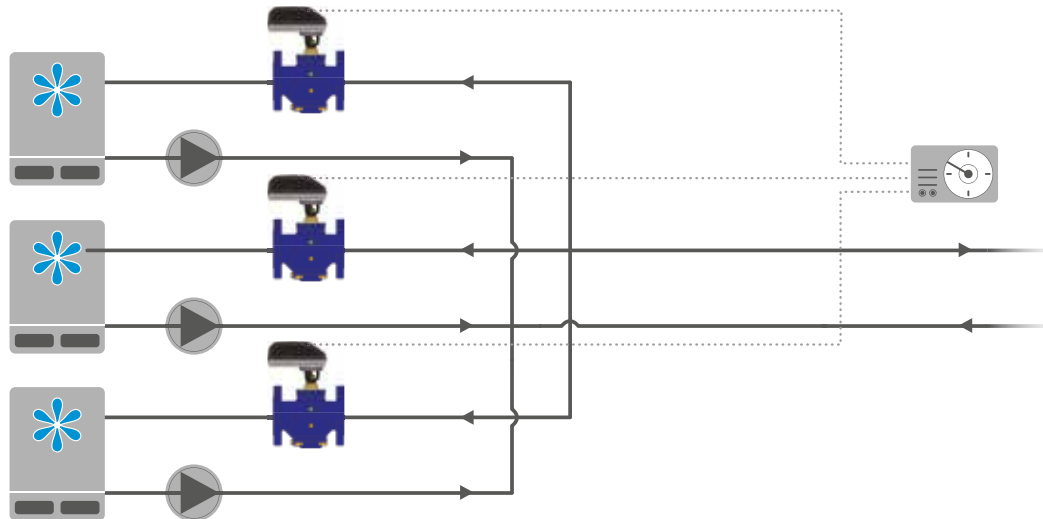
FlowCon ABV



Wafer

Cooling Towers - Primary Side

with Pressure Independent Control (PICV)



System Functionality:

A cooling tower is a big vessel which contains a large fan blowing air through the unit. Water including excess heat from the HVAC system is entered at the top of the cooling tower. As the water passes to the bottom, heat is withdrawn through evaporation. Cooling towers normally involves larger flow rates. Without proper balance and control, energy consumption and operating costs will run wild. This can be prevented by installing a PICV on every cooling tower. PICVs will help significantly to reduce energy consumption and operating costs and still provide required cooling to the building's HVAC system.

Requirements:

The PICV will react to system pressure changes and regulated the flow of cold water to required flow by adjusting the actuator position. This helps the cooling tower to be accurately controlled even with pressure changes and at reduced loads allowing reduced fan speed and thereby enhancing cooling tower efficiency.

Solutions:

The solution is to mount a PICV on every unit and FlowCon offers:

- FlowCon SM (built-in regulation unit)

Benefits:

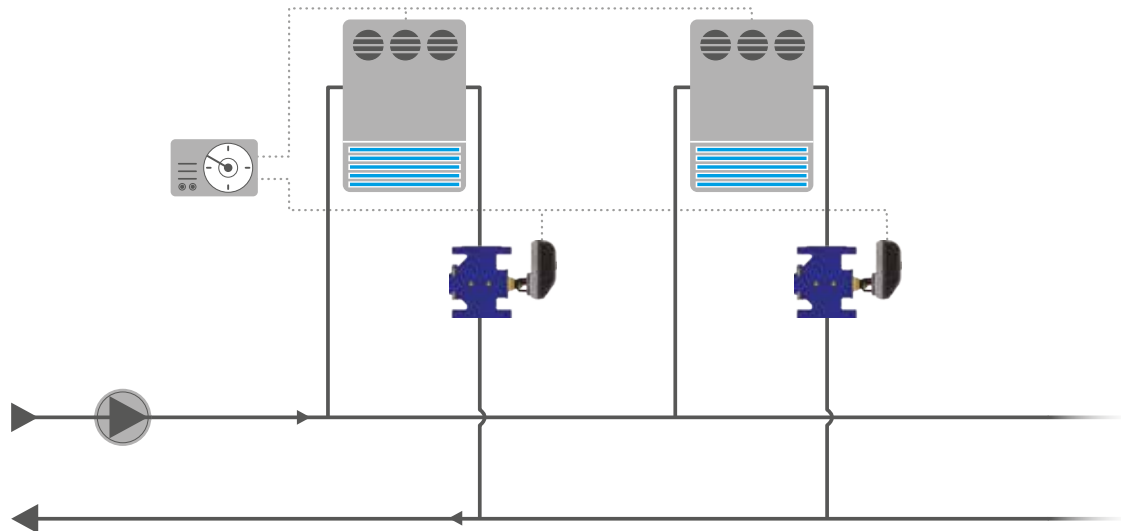
- Assures correct flow for each unit automatically - also at partial loads - securing optimal comfort
- Flexible solution with minimum 51 different max. flow settings
- Electrical actuators with selectable control mode, linear or equal%
- Cost savings due to reduced commissioning time
- True PICVs - 100% authority and pressure independency at all flow rates with accurate actuator control.



SM

CRAC Units

Computer Room Air Condition with Pressure Independent Control (PICV)



System Functionality:

CRAC units are commonly used in data centers and other critical installations like clean rooms requiring high precision air conditioning. It consists of a direct expansion refrigeration cycle, and air is blown over a cold coil in order to achieve cooling. Without proper balance and control, energy consumption and operating costs will run wild or even worse, damaging the installed equipment. This can be avoided by installing a PICV on every CRAC unit. PICVs will help significantly to reduce energy consumption and operating costs and secure the essential high precision air conditioning.

Requirements:

The PICV will react to system pressure changes and regulated the flow of chilled water to required flow by adjusting the actuator position. This helps the CRAC unit to maintain correct flow providing the proper room temperature at all times.

Solutions:

The solution is to mount a PICV on every single unit and FlowCon offers:

- FlowCon Green.3
- FlowCon SM.

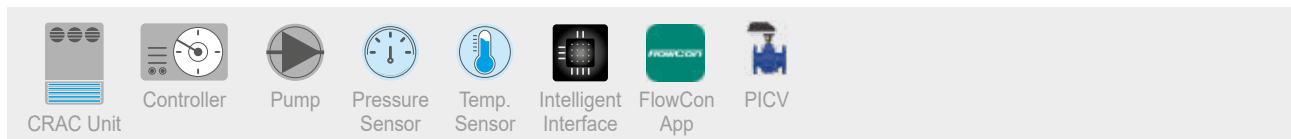
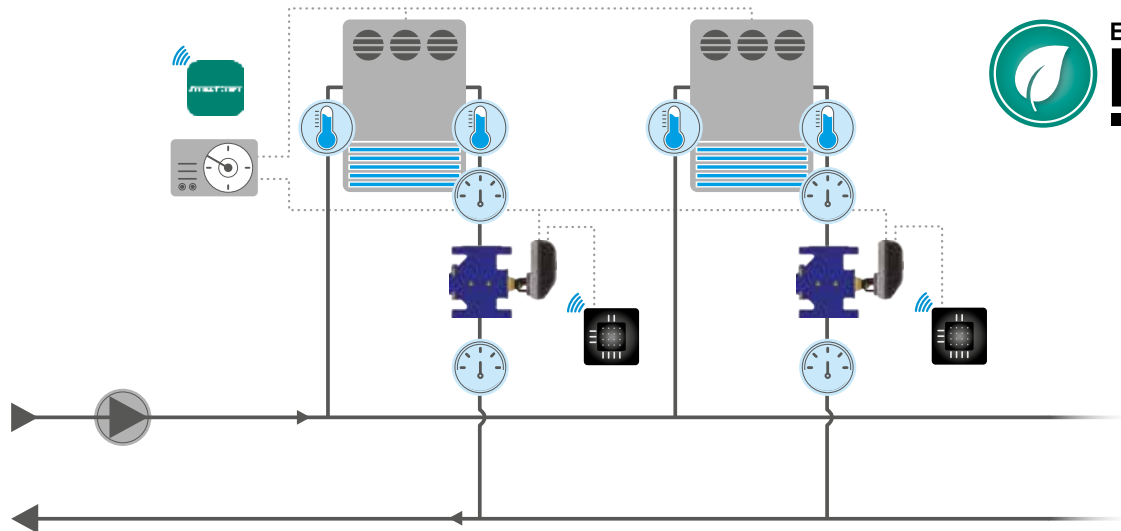
Benefits:

- Assures correct flow for each unit automatically - also at partial loads
- Flexible solution with minimum 41 different max. flow settings
- Electrical actuators with selectable control mode, linear or equal%
- Energy efficient due to optimized control
- Cost savings due to reduced commissioning time
- True PICVs - 100% authority and pressure independency at all flow rates with accurate actuator control.



CRAC Units

Computer Room Air Condition with Pressure Independent Temp. Control



System Functionality:

CRAC units are commonly used in data centers and other critical installations like clean rooms requiring high precision air conditioning. It consists of a direct expansion refrigeration cycle, and air is blown over a cold coil in order to achieve cooling. Without proper balance and control, necessary A/C is far from achieved. This can be prevented by installing a true pressure independent temperature control valve (PITCV) on every CRAC unit. The PITCV will, by controlling based on ΔT alone, help significantly to reduce energy consumption and operating costs, secure the essential high precision air conditioning and provide monitoring benefits (BTU etc).

Requirements:

A PITCV will only react to ΔT changes and consequently adjust the flow by altering actuator position. System pressure fluctuations are mechanically absorbed by the included PICV. By controlling CRAC unit performance on ΔT , flow requirements may be reduced, resulting in significant energy savings and still maintaining the proper room temperature at all times.

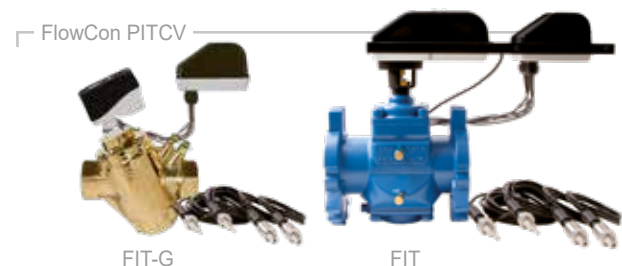
Solutions:

The solution is to mount a PITCV on every unit and FlowCon offers:

- FlowCon Energy FIT System.

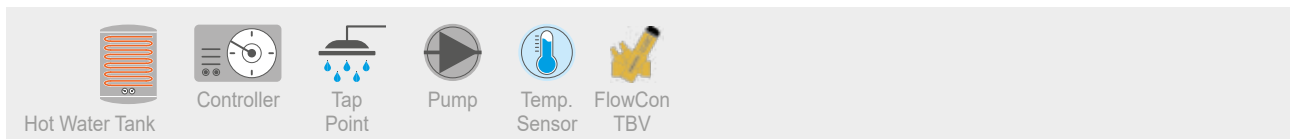
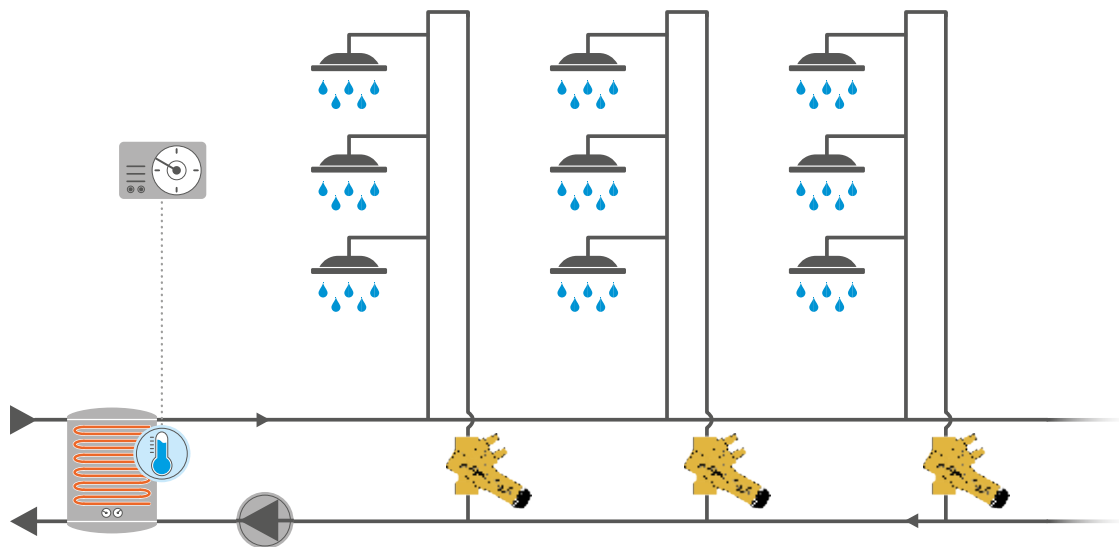
Benefits:

- All-in-1 solution incl. PITCV, temperature and pressure sensors, flow and BTU metering.
- User friendly w/ easy direct setting on display actuator (FIT) or direct flow setting on insert or valve (FIT-G)
- Complete overview of energy and flow with simple monitoring via Bluetooth® to FlowCon App or via BACnet to BMS
- No piping restrictions - the most compact system on the market
- Cost savings due to optimized energy consumption and improved efficiency
- True PITCVs with full pressure independent ΔT control.



Domestic Hot Water

with Thermal Balancing



System Functionality:

Domestic hot water system is found in every household, office block, hotel and hospital - basically in any building. Domestic water is used for showers/baths, washing etc. With proper thermal balance the entire system will work efficiently, and the right water temperature will immediately be available at all tap points ensuring optimal comfort and no water waste waiting for hot water. The solution is to install a Thermal Balancing Valve (TBV) on each riser.

Requirements:

The TBV will react to system temperature changes. If the water temperature passing through the TBV is above the required set water temperature, the TBV closes. And vice versa if water temperature of the circulating water is below, the TBV will open, allowing water to flow through 'asking' for more hot water. An additional benefit is the built-in bypass possibility which allows for either manual or BMS-controlled water pasteurization through thermal disinfection.

Solutions:

The solution is to mount a TBV on each single riser and FlowCon offers:

FlowCon T-JUST (adjustable insert).

Benefits:

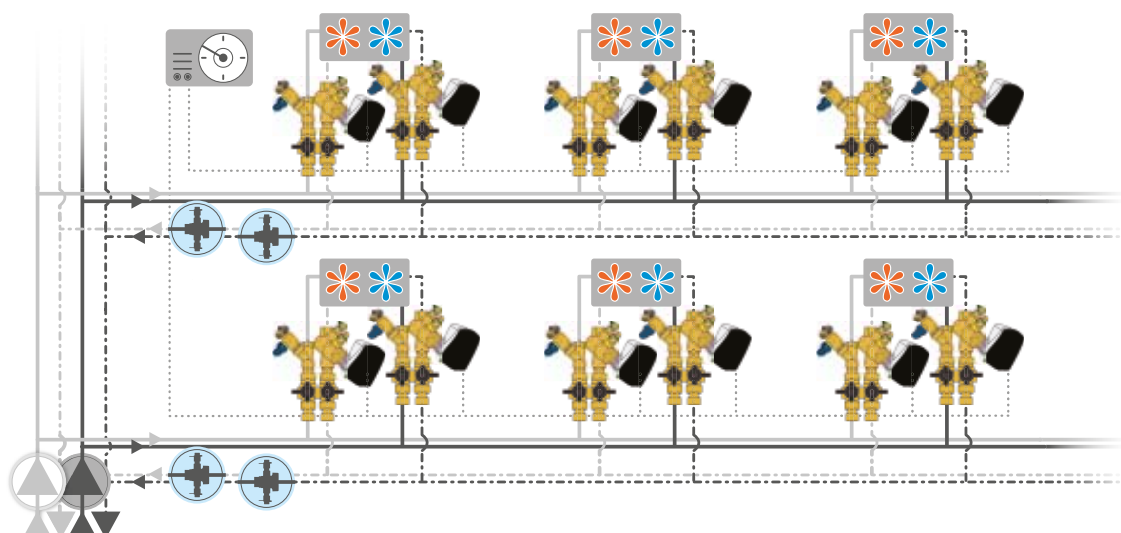
- Occupant satisfaction due to immediate hot water at every tap point
- Serviceable solution due to insert-design
- Simple field adjustable temperature setting
- Energy saving as water is only circulated at a minimum as long as water temperature is at or above setpoint
- Cost saving due to reduced water waste
- Proven technology - long life expectancy
- Water pasteurization with standard built-in bypass - manual or automatic.

FlowCon TBVs



Fan Coil Units

with By-Pass Modules



Fan Coil Unit



Controller



Pump



Metering Station



By-Pass Assembly

System Functionality:

A FCU is a simple water-based coil/fan device which conditions room temperature by flowing air by the coil and through heat transfer provide the right temperature. FCUs are generally servicing small to medium sized areas and consequently they run with lower flow rates. Without proper balance and control, energy consumption and human comfort is unmanageable. This can be prevented by installing a By-Pass Module incl. Pressure Independent Control (PICV), Temperature Control (TCV) or Automatic Balancing (ABV) on every FCU.

Requirements:

A By-Pass Module will include either a PICV, TCV or ABV, which will react to system pressure changes and limit the flow of hot or cold water to required flow providing dynamic balancing and control as well as easy FCU maintenance during service.

Solutions:

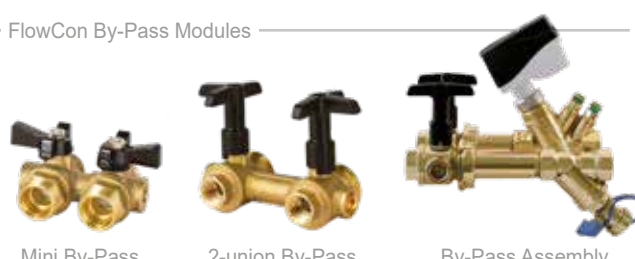
The solution is to mount a By-Pass Module on every FCU and FlowCon offers:

- FlowCon Assembly incl. 2-union By-Pass
- FlowCon Mini By-Pass

Benefits:

- Easy selection, installation, commissioning, control and maintenance of the FCU
- Two standard sizes; 40mm or 80mm center distance
- Insert solution providing high flexibility and a wide range of options
- Cost savings due to prefab models which allows fast installation and easy balance and virtually no commissioning.
- Insulation pack available.

FlowCon By-Pass Modules



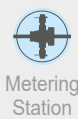
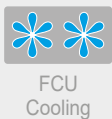
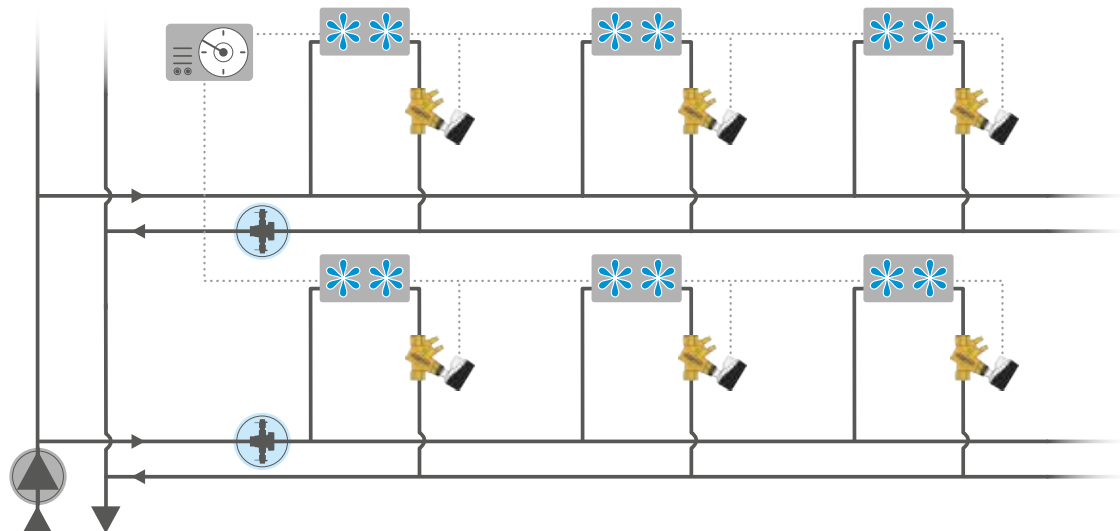
Mini By-Pass

2-union By-Pass

By-Pass Assembly

Fan Coil Units

with Pressure Independent Control (PICV)



System Functionality:

The water-based FCU is a simple coil/fan device. The coil airflow is normally constant or limited to 3 different speeds controlled by the user. Hence, the return water temperature often fluctuates depending on season and corresponding cooling or heating requirements. In case of modulating control, it is recommended to install a Pressure Independent Control Valve (PICV) on each FCU to ensure optimal ΔT , system energy efficiency and room comfort. The PICV will ensure that any pressure fluctuation in the system will not affect flow regulation and overflow, underflow and starvation are eliminated.

Requirements:

The PICV will provide 100% authority and flow regulation regardless of system pressure changes and automatically provide the required flow to the FCU and the actuator will provide modulating control securing proper flow balance and consequently also thermal performance at all times, even at partial load.

Solutions:

The solution is to mount a PICV on every FCU and FlowCon offers:

- FlowCon Green / GreEQ (adjustable composite insert) with modulating control, linear or equal% control mode
- FlowCon UniQ® (built-in regulation unit) with ON/OFF control.

Benefits:

- Assures correct flow for each FCU automatically - also at partial loads - securing occupant comfort
- Serviceable insert-design solution (Green / GreEQ)
- Energy efficiency with regulation starting at only 10 kPaD (UniQ®) or 16 kPaD (Green / GreEQ)
- Flexible solution with minimum 41 different stepless max. flow settings
- Accurate setting over multiple rotations - full stroke
- Cost savings due to reduced commissioning time
- True PICVs - real pressure independency at all flow rates and all actuator positions.

FlowCon PICVs



UniQ®



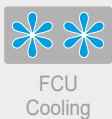
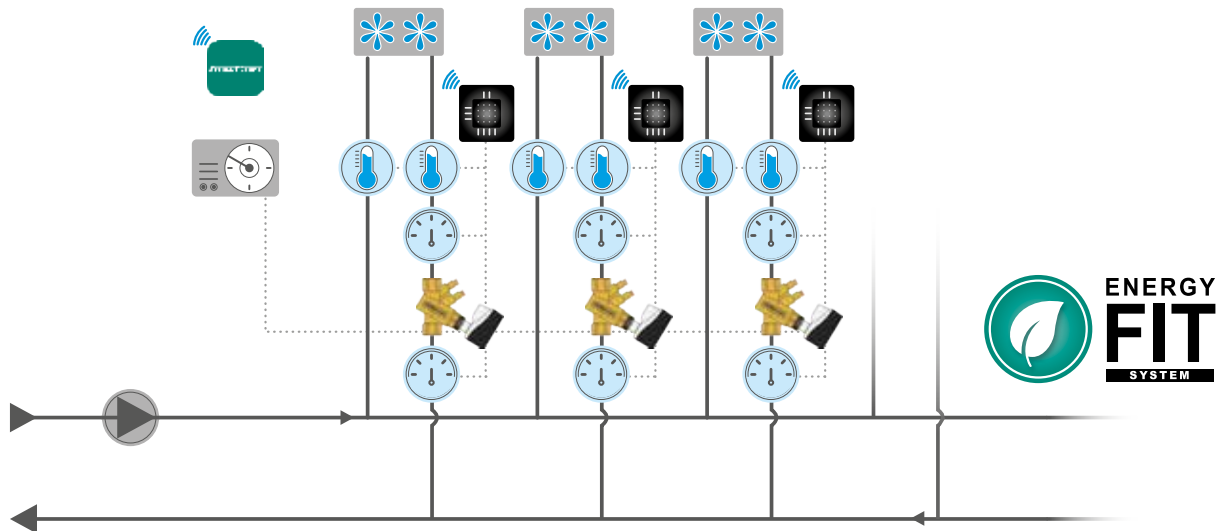
Green



GreEQ

Fan Coil Units

with Pressure Independent Temperature Control



System Functionality:

The water-based FCU is a simple coil/fan device. The coil airflow is normally constant or limited to 3 different speeds controlled by the user. Hence, the return water temperature often fluctuates depending on season and corresponding cooling or heating requirements.

Without proper balance and control, energy consumption and operating costs will run wild. This can be prevented by installing a true pressure independent temperature control valve (PITCV) on every FCU. The PITCV can, by controlling based on ΔT alone, help significantly to reduce energy consumption and operating costs and increase the building's overall energy performance and anticipate in the task of energy certification.

Requirements:

A PITCV will only react to ΔT changes and consequently adjust the flow by altering actuator position. System pressure fluctuations are mechanically absorbed by the included PICV. By controlling FCU performance on ΔT , flow requirements may be reduced, resulting in significant energy savings and optimized comfort at all times.

Solutions:

The solution is to mount a PITCV on every FCU and FlowCon offers:

- FlowCon Energy FIT System.

Benefits:

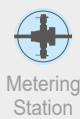
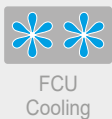
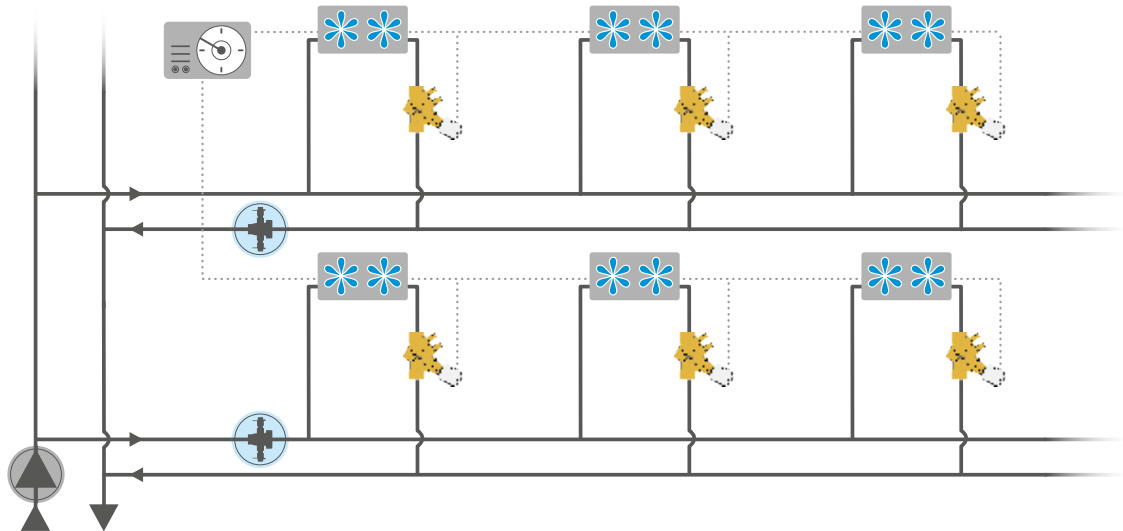
- All-in-1 solution incl. PICV and temperature sensors for flow and BTU metering. Optional pressure sensors available.
- User friendly w/ easy direct setting on display actuator (FIT) or direct flow setting on insert or valve (FIT-G)
- Complete overview of energy, supply/return temperature and flow with simple monitoring via Bluetooth® to FlowCon App or via BACnet to BMS
- No piping restrictions - the most compact system on the market
- Cost savings due to optimized energy consumption and improved efficiency
- True PITCVs with full pressure independency and ΔT control.

FlowCon PITCV



Fan Coil Units

with Temperature Control



System Functionality:

The water-based FCU is a simple coil/fan device. The coil airflow is normally constant or limited to 3 different speeds controlled by the user. Hence, the return water temperature often fluctuates depending on season and corresponding cooling or heating requirements. In order to obtain room comfort, it is recommended to install a constant flow balancing device on each coil. This Automatic Balancing Temperature Control valve (TCV) will ensure that any pressure fluctuations in the system caused by demand fluctuation will not affect the flow regulation. Overflow, underflow and starvation are in other words solved by installing a TCV on each FCU.

Requirements:

The TCV will provide pressure independent maximum flow regulation as well as being capable of closing drop tight for ON/OFF applications securing proper thermal performance at all times.

Solutions:

The solution is to mount an TCV on every FCU and FlowCon offers:

- FlowCon EVS (pre-set stainless steel insert) with ON/OFF control.

Benefits:

- Pressure independent max. flow control
- Assures correct flow for each FCU automatically - also at partial loads
- A serviceable solution due to insert-design
- Energy efficiency with regulation starting at only 10 kPaD
- Cost savings due to reduced commissioning time
- A proven technology - long life expectancy
- Tamper-proof design.

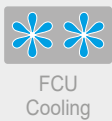
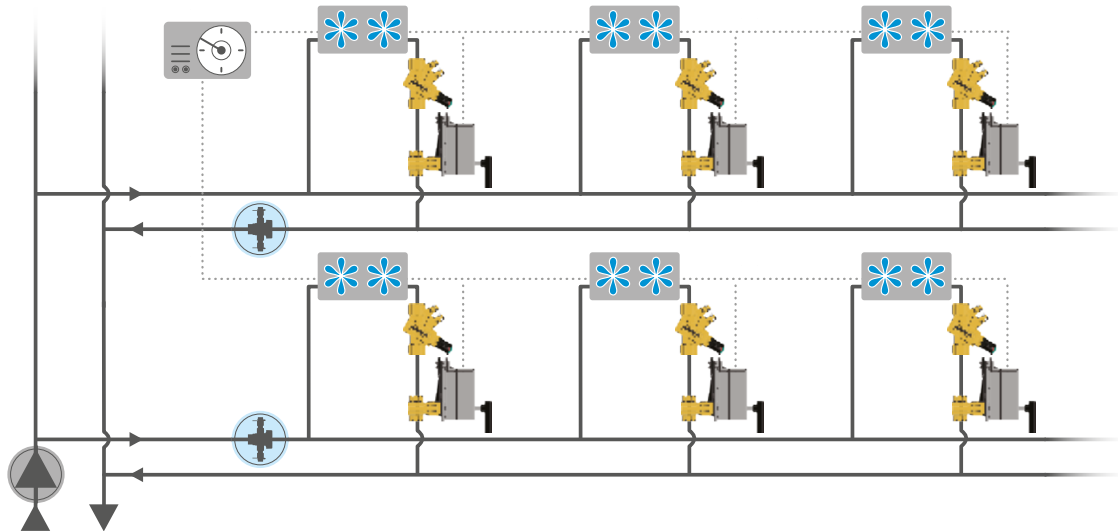
FlowCon TCV



EVS

Fan Coil Units

with Automatic Balancing



System Functionality:

The water-based FCU is a simple coil/fan device. The coil airflow is normally constant or limited to 3 different speeds controlled by the user. Hence, the return water temperature often fluctuates depending on season and corresponding cooling or heating requirements. In order to obtain room comfort, an Automatic Balancing Valve (ABV) can be installed along with a separate control valve on each coil securing no overflow.

Requirements:

The ABV will react to system pressure changes and limit the flow of hot or chilled water to required max. flow helping the system to be accurately controlled even with system pressure changes and individual user-controlled temperature requirements.

Solutions:

The solution is to mount an ABV on every unit and FlowCon offers:

- FlowCon E-JUST or
- FlowCon Composite.

Benefits:

- Assures no overflow in the system
- An easy-to-use and compact solution
- Adjustable insert solution providing high flexibility and easy maintenance
- Energy efficiency with regulation starting at only 15 kPaD
- Cost savings due to reduced time to balance and commission
- A proven technology - long life expectancy.

FlowCon ABVs

FlowCon Control



AB Composite



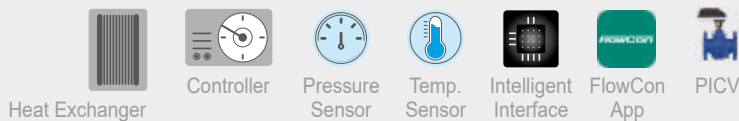
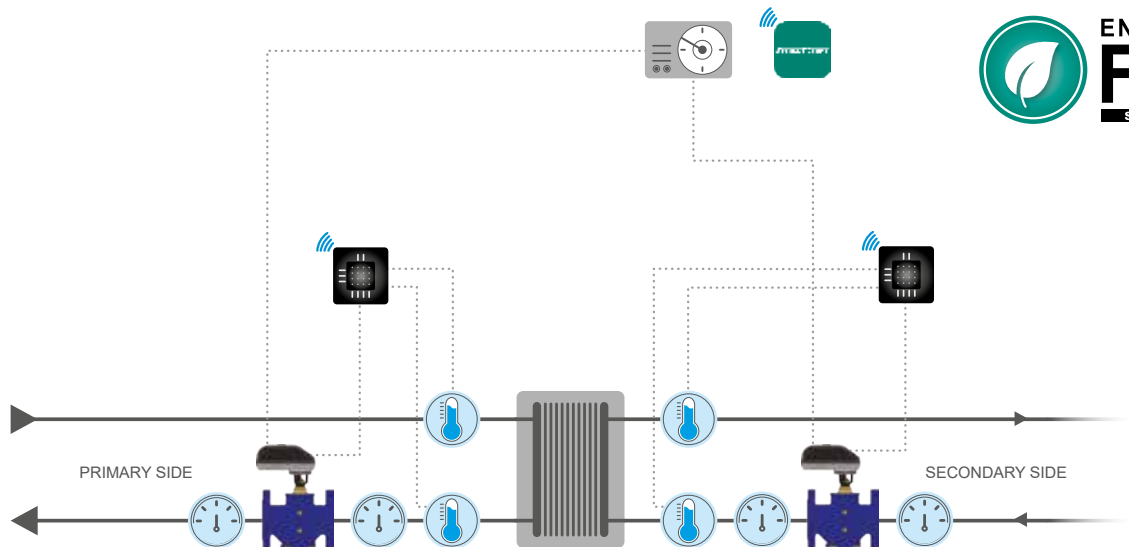
AB E-JUST



Unimizer® 2-Way

Heat Exchanger - Variable flow

with Pressure Independent Temperature Control



System Functionality:

A heat exchanger is a device that transfers heat from one fluid to another without mixing the two. The main function of a heat exchanger is to increase the energy efficiency of a heating or cooling system by transferring heat and thereby reducing energy costs. Proper balancing and full temperature control can assist in exactly this and by installing a true Pressure Independent Temperature Control Valve (PITCV) on each heat exchanger. The PITCV will, by controlling based on ΔT alone, help significantly increasing the heat exchanger efficiency and thereby reducing energy consumption and operating costs. This will increase the building's overall energy performance and anticipate in the task of energy certification.

Requirements:

A PITCV will only react to ΔT changes and consequently adjust the flow by altering actuator position. System pressure fluctuations are mechanically absorbed by the included PICV. By controlling Heat Exchanger performance on ΔT , flow requirements may be reduced, resulting in significant energy savings and still maintaining the proper room temperature at all times.

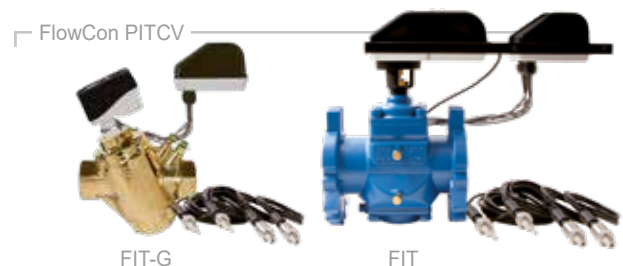
Solutions:

The solution is to mount a PITCV on every unit and FlowCon offers:

- FlowCon Energy FIT System.

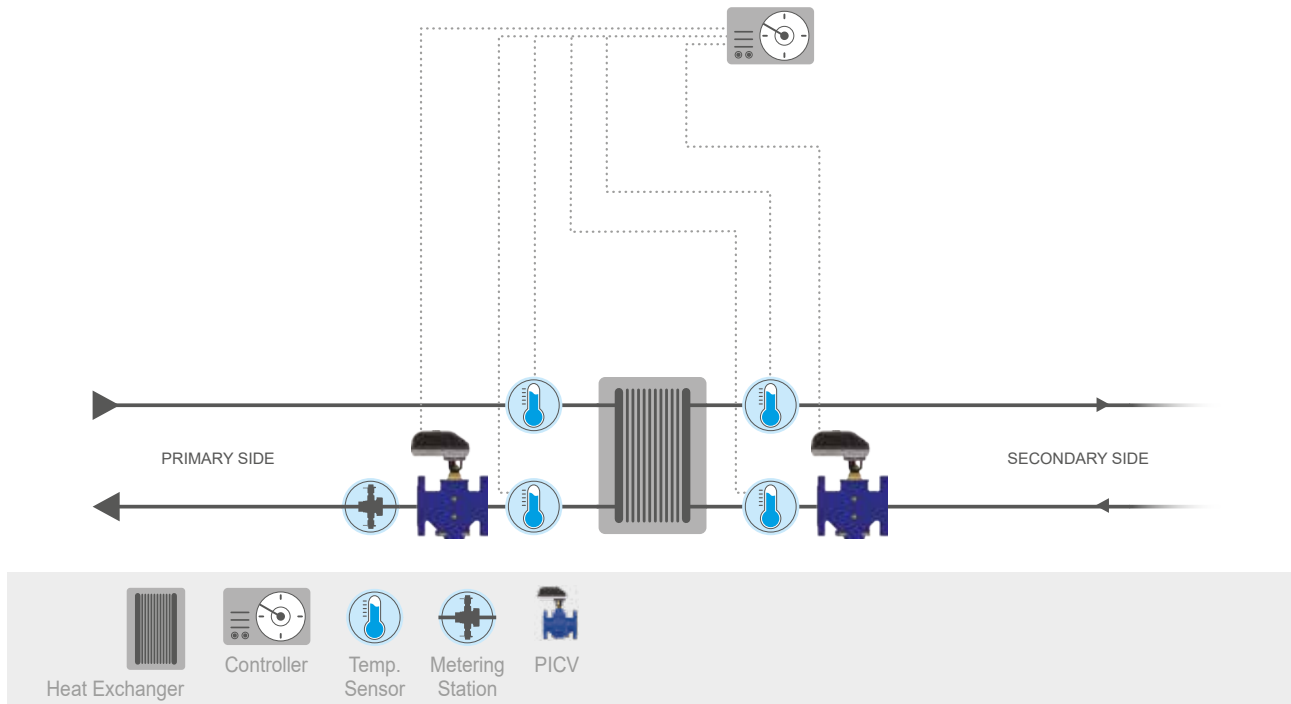
Benefits:

- All-in-1 solution incl. PICV, temperature and pressure sensors, flow and BTU metering.
- User friendly w/ easy direct setting on display actuator (FIT) or direct flow setting on insert or valve (FIT-G)
- Complete overview of energy and flow with simple monitoring via Bluetooth® to FlowCon App or via BACnet to BMS
- No piping restrictions - the most compact system on the market
- Cost savings due to optimized energy consumption and improved efficiency
- True PITCVs with full pressure independent ΔT control.



Heat Exchanger - Variable flow

with Pressure Independent Control (PICV)



System Functionality:

A heat exchanger is a device that transfers heat from one fluid to another without mixing the two. The main function of a heat exchanger is to increase the energy efficiency of a heating or cooling system by transferring heat and thereby reducing energy costs. Proper balancing and flow control can assist in exactly this and by installing a Pressure Independent Control Valve (PICV) on each heat exchanger, correct flow rate at any time of operation is maintained resulting in significantly reduced energy consumption.

Requirements:

The PICV will react to system pressure changes and regulated the flow of hot or chilled water to required flow by adjusting the actuator position. This helps the Heat Exchanger to maintain correct flow providing proper system control at all times.

Solutions:

The solution is to mount a PICV on every unit and FlowCon offers:

- FlowCon Green.3
- FlowCon SM.

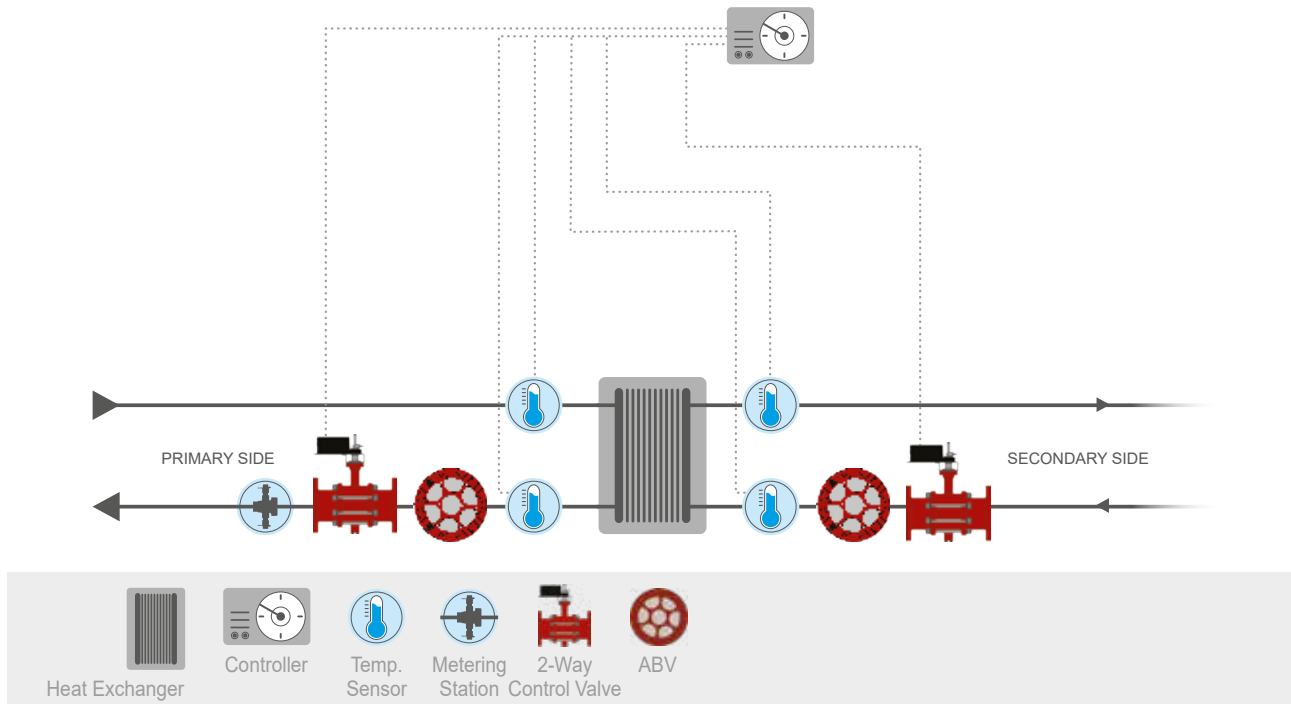
Benefits:

- Assures correct flow for each unit automatically - also at partial loads
- Flexible solution with minimum 41 different max. flow settings
- Electrical actuators with selectable control mode, linear or equal%
- Energy efficient due to optimized control
- Cost savings due to reduced commissioning time
- True PICVs - 100% authority and pressure independency at all flow rates with accurate actuator control.



Heat Exchanger - Variable flow

with Automatic Balancing



System Functionality:

A heat exchanger is a device that transfers heat from one fluid to another without mixing the two. The main function of a heat exchanger is to increase the energy efficiency of a heating or cooling system by transferring heat and thereby reducing energy costs. Proper balancing and flow control can assist in exactly this and by installing an Automatic Balancing Valve (ABV) on each heat exchanger, overflow is eliminated and design flow is guaranteed.

Requirements:

An ABV will react to system pressure changes and limit the flow of hot or cold water to required max. flow helping the system to be accurately controlled even with pressure changes.

Solutions:

The solution is to mount an ABV on every unit and FlowCon offers:

- FlowCon E-JUST (adjustable insert)
- FlowCon Wafer (pre-set multiple inserts).

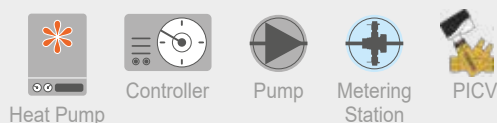
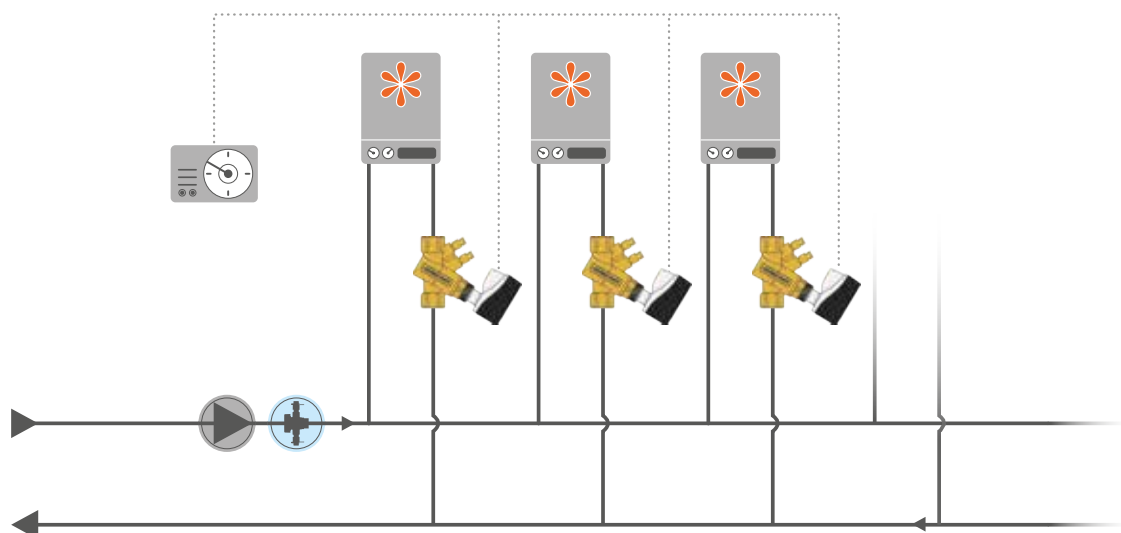
Benefits:

- Assures no overflow in the system
- An easy-to-use solution
- Adjustable insert solution providing high flexibility and easy maintenance (E-JUST)
- Energy efficiency with regulation starting at only 10 kPaD (wafer)
- Cost savings due to reduced time to balance and commission
- A proven technology - long life expectancy.



Heat Pumps

with Pressure Independent Control (PICV)



System Functionality:

A heat pump pulls warm air through a built-in heat exchanger, which absorbs the heat, pumps it up via compression to higher temperature and heats the waterside of the heat exchanger. The hot water is then used for room heat or passed to the building's hot water tank for domestic use. This way it keeps indoor temperature warm in the winter and cold during summer. Without proper balance and control, flow rates will fluctuate as pressure fluctuates with the result of inaccurate room temperature, dissatisfied users and increased energy consumption. This can be prevented by installing a PICV on every heat pump. PICVs will help maintain correct flow rate at any time of operation and assist in minimum energy consumption.

Requirements:

The PICV will react to system pressure changes and regulated the water flow to required flow by adjusting the actuator position. This helps the heat pump to be accurately controlled even with pressure changes and at reduced loads.

Solutions:

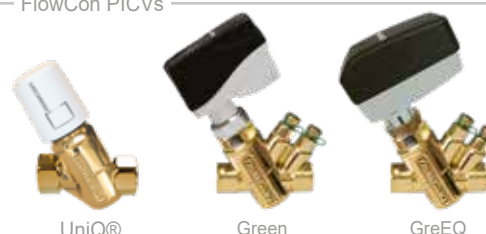
The solution is to mount a PICV on every heat pump and FlowCon offers:

- FlowCon Green / GreEQ (adjustable insert)
- FlowCon UniQ® (built-in regulation unit).

Benefits:

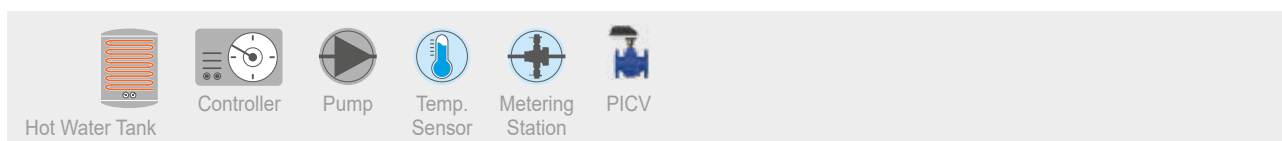
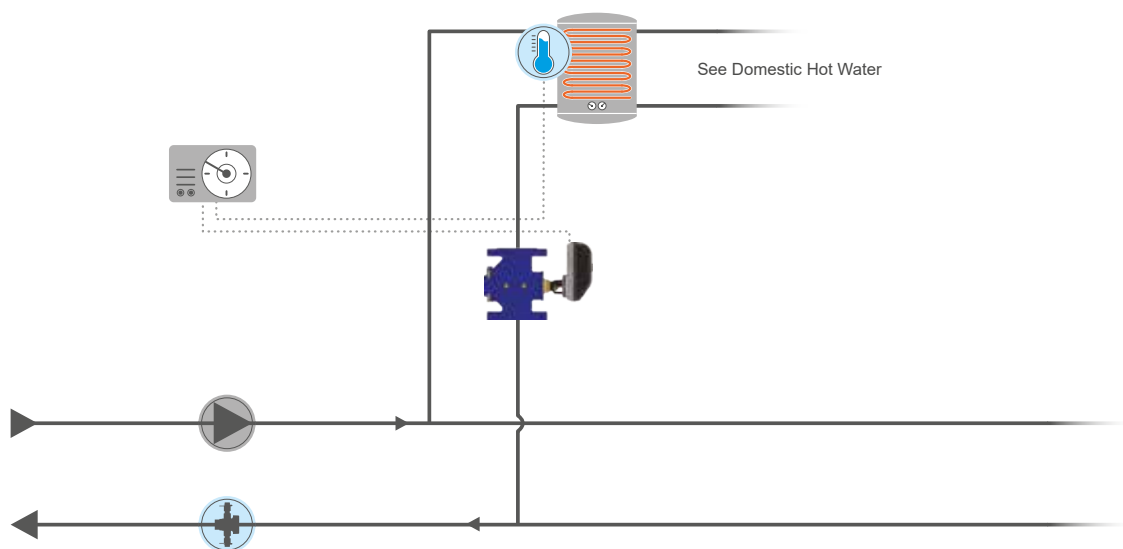
- Assures correct flow for each unit automatically - also at partial loads - securing optimal comfort
- Serviceable insert-design solution (Green / GreEQ)
- Energy efficiency with regulation starting at only 10 kPaD (UniQ®)
- Flexible solution with minimum 41 different max. flow settings
- Electrical actuators with selectable control mode, linear or equal% or alternatively thermal ON/OFF actuators
- Cost savings due to reduced commissioning time
- True PICVs - 100% authority and pressure independency at all flow rates with accurate actuator control.

FlowCon PICVs



Hot Water Tank

with Pressure Independent Control (PICV)



System Functionality:

The hot water tank is still the most used solution for storing hot water for domestic use. The simple function is that cold water enters at the tank bottom and is then heated. When hot water is needed, it leaves the tank from the top. As the water level in the tank drops, it fills with more cold water and the process repeats itself. Proper balancing and flow control can assist in achieving best possible efficiency and by installing a PICV on the tank, correct flow rate at any time of operation is maintained resulting in reduced energy consumption.

Requirements:

The PICV's full authority and ability to accurately control actuator position to required flow or even close completely is important. This helps to secure a steady temperature in the system.

Solutions:

The solution is to mount a PICV on the hot water tank and FlowCon offers:

- FlowCon SM.

Benefits:

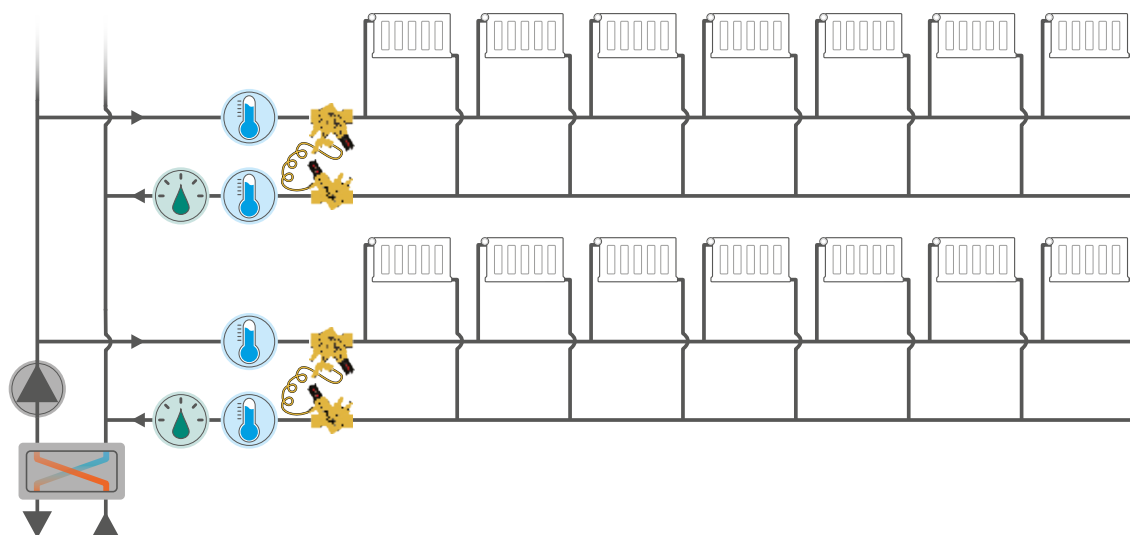
- Assures correct flow for each unit automatically - also at partial loads
- Flexible solution with minimum 51 different max. flow settings
- Electrical actuators with selectable control mode, linear or equal%
- Energy efficient due to optimized control
- Cost savings due to reduced commissioning time
- True PICVs - 100% authority and pressure independency at all flow rates with accurate actuator control.



SM

Radiators - horizontal system

with Differential Pressure Control (DPCV)



Radiator with
Thermostat



Heat
Exchanger



Pump



Temp.
Sensor



BTU
Meter



Partner
Valve



DPCV

System Functionality:

The function of a radiator system is to maintain room temperature at an acceptable level at each location no matter the outdoor temperature. Room temperature is controlled by radiator thermostats, but without further system balancing, poor control and noise may most likely be problem issues. This can be solved by installing a Differential Pressure Control Valve (DPCV) on every branch and with an orifice valve as partner valve flow limitation is also obtained.

Requirements:

The DPCV will react to system pressure changes and still keep a constant pressure, Δp_C , in the sub-circuit helping the system to balance and be accurately controlled. With controlled flow and pressure to the radiators, the radiator thermostats will assure set temperature and void the risk of too high differential pressure causing noise.

Solutions:

The solution is to mount a DPCV and a Partner Valve on every branch and FlowCon offers:

- FlowCon SDP (pre-set 10, 20 or 30 kPaD) or
- FlowCon EDP (adjustable 5-50 kPaD)
- FlowCon Composite, E-JUST, QuickDisc®, S-JUST and Partner Ball (partner valves).

Benefits:

- Prevention of noise in the system
- Security of a defined ΔP available for all branches as well as flow limitation - also at partial loads
- An easy-to-use and compact solution
- A serviceable solution due to insert-design
- Energy efficiency with regulation starting at only 3 kPaD
- Cost savings due to reduced time to balance and commission
- A proven technology.

FlowCon Partner Valves



AB Composite



AB E-JUST



QuickDisc®



S-JUST



Partner Ball

FlowCon DPCVs



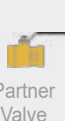
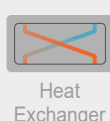
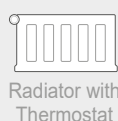
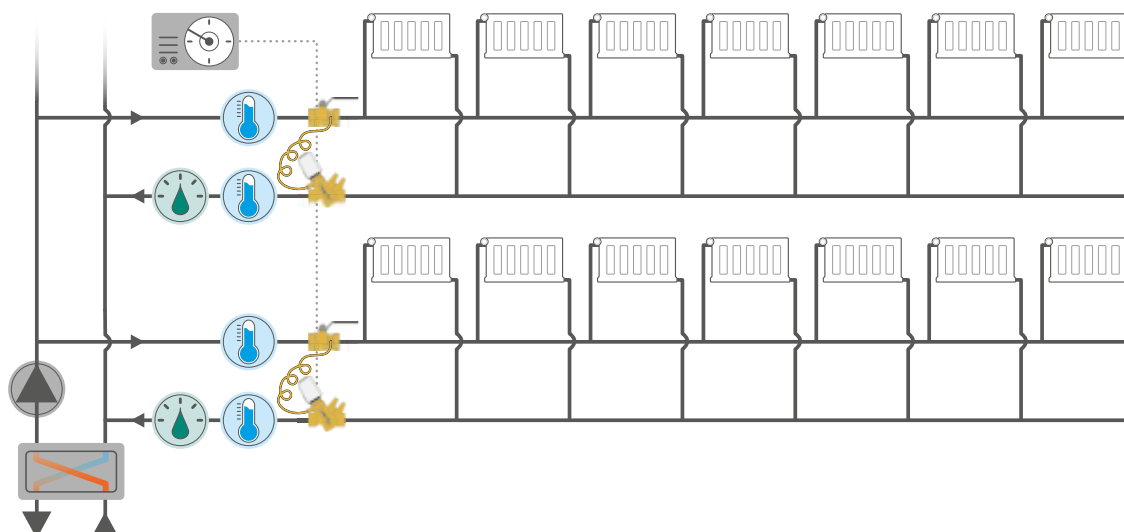
EDP



SDP

Radiators - horizontal system

with Differential Pressure Control (DPCV) - Timer Controlled



System Functionality:

The function of a radiator system is to maintain room temperature at an acceptable level at each location no matter the outdoor temperature. Room temperature is controlled by radiator thermostats, but without further system balancing, poor control and noise may most likely be problem issues. This can be prevented by installing a combi Differential Pressure Control Valve (DPCV) and Automatic Balancing Valve (ABV) on every branch. This will provide noise and flow balance and will also allow energy saving night reduction if required.

Requirements:

The DPCV will react to system pressure changes and keep a constant pressure, Δp_C , in the sub-circuit helping the system to balance and prevent noise in radiator thermostats. With controlled flow and pressure to the radiators, the radiator thermostats will assure set temperature and void the risk of too high differential pressure causing noise.

Solutions:

The solution is to mount a DPCV and a Partner Valve on every branch and FlowCon offers:

- FlowCon ADP (adjustable insert)
- FlowCon Partner Ball (partner valve).

Benefits:

- Combined Δp and max flow limiter in one unit - incl. ON/OFF control
- Flexible solution with minimum 41 different flow/pressure settings
- An easy-to-use solution and compact design
- A serviceable solution due to insert-model
- Energy efficiency with regulation starting at only 3 kPaD
- Cost savings - reduced time to balance and commission
- A proven technology
- Possible automatic night reduction.

— FlowCon Partner Valve —

— FlowCon DPCV —



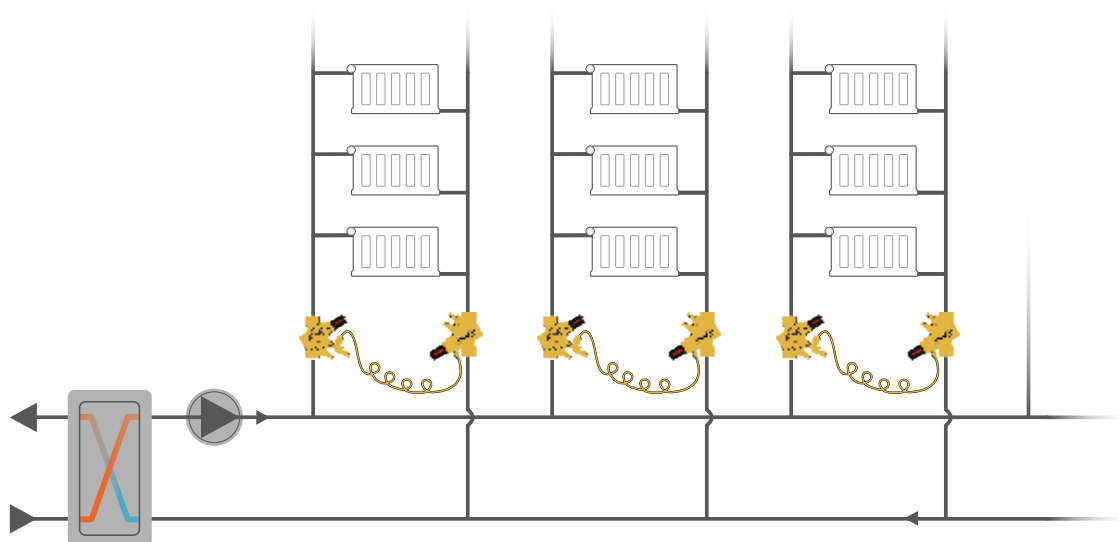
Partner Ball



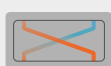
ADP

Radiators - vertical system

with Differential Pressure Control (DPCV)



Radiator with
Thermostat



Heat
Exchanger



Pump



Partner
Valve



DPCV

System Functionality:

The function of a radiator system is to maintain room temperature at an acceptable level at each location no matter the outdoor temperature. Room temperature is controlled by radiator thermostats, but without further system balancing, poor control and noise may most likely be problem issues. This can be solved by installing a Differential Pressure Control Valve (DPCV) on every riser and with an orifice valve as partner valve flow limitation is also obtained.

Requirements:

The DPCV will react to system pressure changes and still keep a constant pressure, Δp_C , in the sub-circuit helping the system to balance and be accurately controlled. With controlled flow and pressure to the radiators, the radiator thermostats will assure set temperature and void the risk of too high differential pressure causing noise.

Solutions:

The solution is to mount a DPCV and a Partner Valve on every riser and FlowCon offers:

- FlowCon EDP (adjustable 5-50 kPaD)
- FlowCon Composite, E-JUST and Partner Ball (partner valves).

Benefits:

- Prevention of noise in the system
- Security of a defined ΔP available for all risers as well as flow limitation - also at partial loads
- An easy-to-use and compact solution
- A serviceable solution due to insert-design
- Energy efficiency with regulation starting at only 3 kPaD
- Cost savings due to reduced time to balance and commission
- A proven technology.

FlowCon Partner Valves

FlowCon DPCVs



AB Composite



AB E-JUST



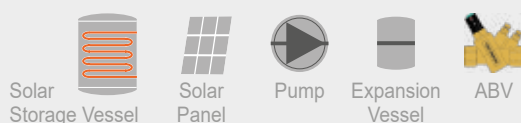
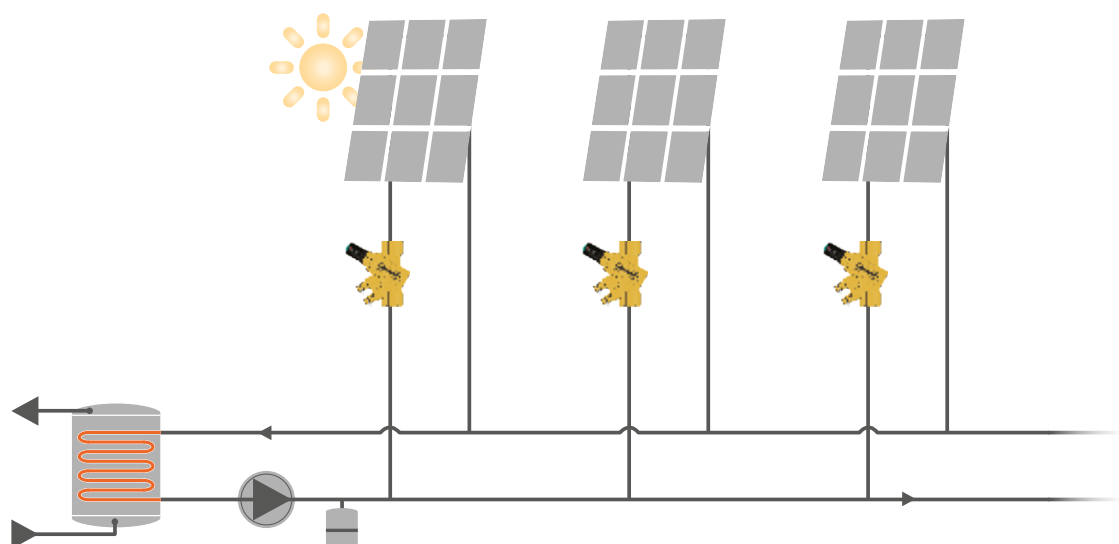
Partner Ball



EDP

Solar Panels

with Automatic Balancing



System Functionality:

Solar panels can be used to convert sunlight into hot water for building heating or domestic use. The solar panels collect thermal energy from the sun and convert it into heat and circulate it through a storage vessel (which also works as system heat exchanger) and back to the solar panels for re-heating. By installing an Automatic Balancing Valve (ABV) on each solar panel, proper flow balance and elimination of overflow is guaranteed resulting in an even better energy efficiency.

Requirements:

An ABV will react to system pressure changes and limit the water flow to required max. flow helping the system to be accurately balanced and ΔT design to be maintained.

Solutions:

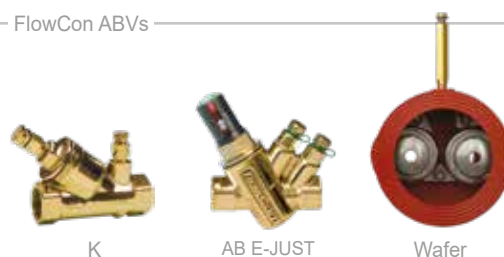
The solution is to mount an ABV on every unit and FlowCon offers:

- FlowCon E-JUST (adjustable insert)
- FlowCon K (pre-set insert)
- FlowCon Wafer (pre-set multiple inserts).

Benefits:

- Assures no overflow in the system
- An easy-to-use solution
- Adjustable insert solution providing high flexibility and easy maintenance (E-JUST and K)
- Energy efficiency with regulation starting at only 10 kPaD
- Cost savings due to reduced time to balance and commission
- A proven technology - long life expectancy.

FlowCon ABVs



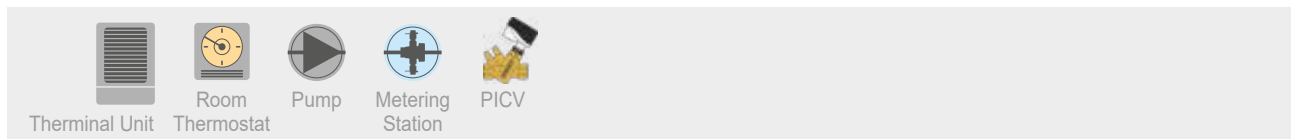
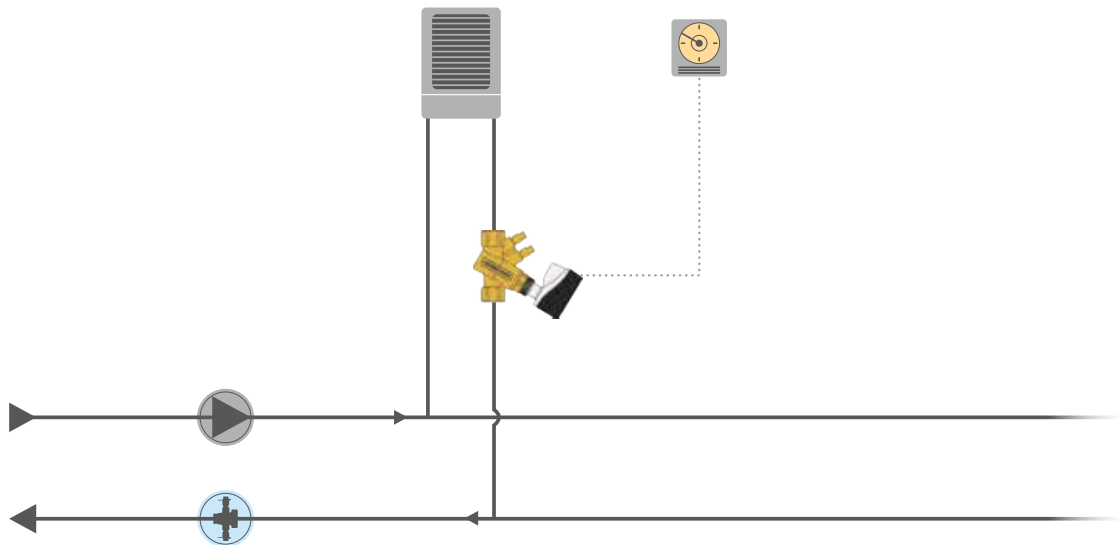
K

AB E-JUST

Wafer

Stand-Alone Units

with *Pressure Independent Control (PICV)*



System Functionality:

A stand-alone terminal unit runs like a FCU but independent of a BMS system. The stand-alone unit works together with a self-acting room thermostat which communicates directly with the Pressure Independent Control Valve's (PICV) modulating actuator. The PICV will help maintain correct flow rate at any time of operation and significantly reduce energy consumption.

Requirements:

The PICV's full authority and ability to accurately control actuator position to required flow or even close completely is important. This helps to secure a steady temperature during room occupancy.

Solutions:

The solution is to mount a PICV on the stand-alone unit and FlowCon offers:

- FlowCon Green / GreEQ (adjustable insert)
- FlowCon UniQ® (built-in regulation unit)
- FlowCon SM (built-in regulation unit)

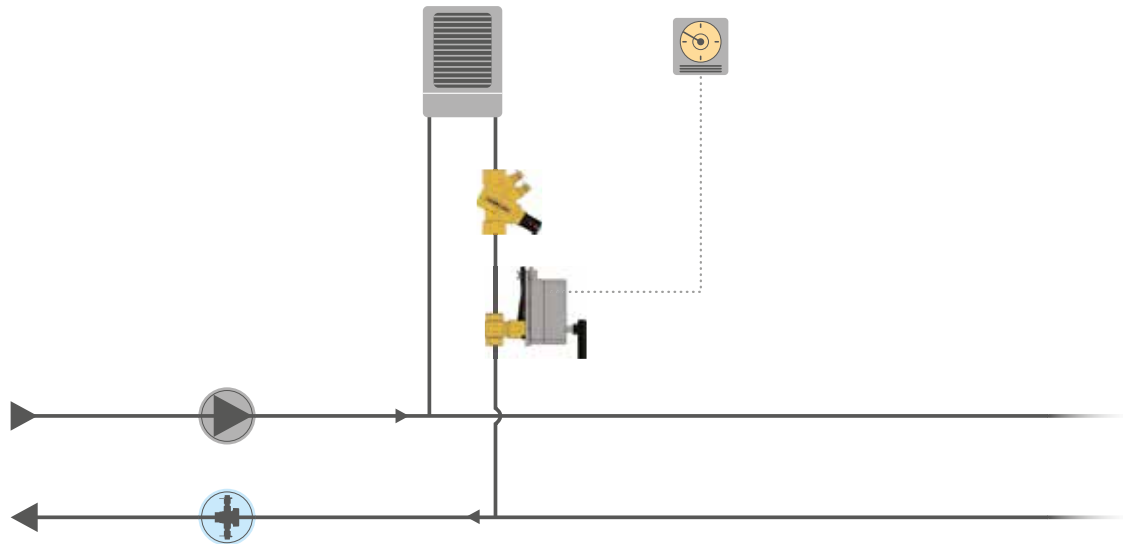
Benefits:

- Assures correct flow for each unit automatically - also at partial loads - securing optimal comfort
- Serviceable insert-design solution (Green / GreEQ)
- Energy efficiency with regulation starting at only 10 kPaD (UniQ®)
- Flexible solution with min. 41 different max. flow settings
- Electrical actuators with selectable control mode, linear or equal% or alternatively thermal ON/OFF actuators
- Cost savings due to reduced commissioning time
- True PICVs - 100% authority and pressure independency at all flow rates with accurate actuator control.

FlowCon PICV



with Automatic Balancing



Requirements:

Solutions:

- FlowCon E-JUST or
- FlowCon Composite.

Benefits:

- FlowCon ABVs FlowCon Control



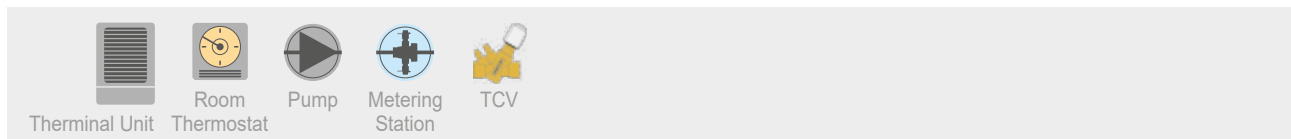
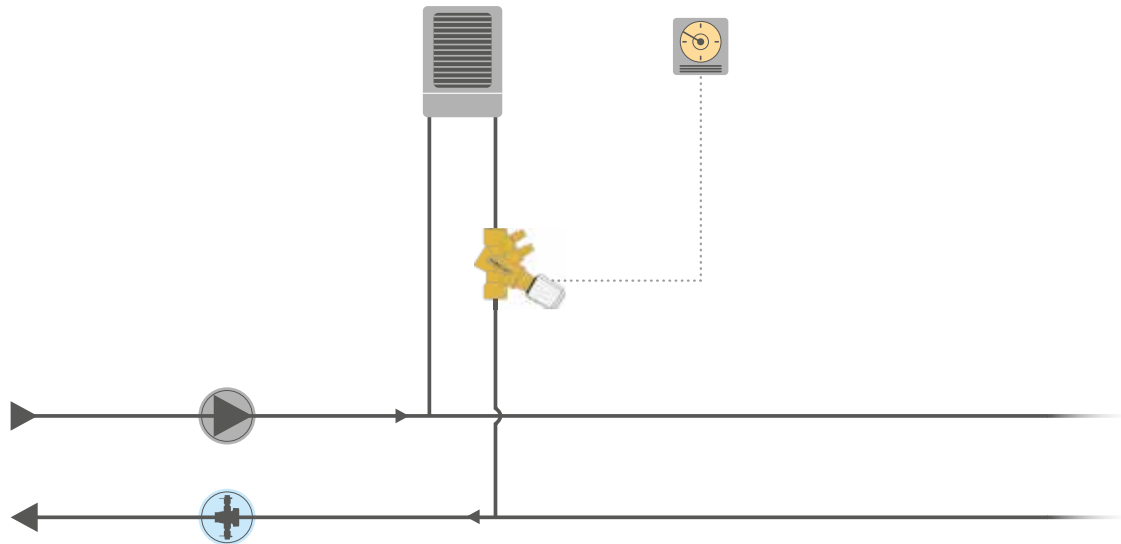
AB Composite

AB E-JUST

Unimizer[®] 2-Way

Stand-Alone Units

with Temperature Control



System Functionality:

A stand-alone terminal unit runs like a FCU but independent of a BMS system. The stand-alone unit works together with a self-acting room thermostat which communicates directly with the Temperature Control Valve's (TCV) ON/OFF actuator. The TCV will help secure no overflow and help reduce energy consumption.

Requirements:

The TCV including balancing will react to system pressure changes and automatically provide the selected max. flow independent of pressure changes. In addition, the actuator will provide ON/OFF control, securing proper thermal performance at all times, even at partial loads.

Solutions:

The solution is to mount a TCV on the stand-alone unit and FlowCon offers:

- FlowCon EVS with balancing (pre-set stainless steel insert) and ON/OFF control.

Benefits:

- Assures correct flow for each unit automatically - also at partial loads - securing occupant comfort.
- A serviceable solution due to insert-design
- Energy efficiency with regulation starting at only 10 kPaD
- Cost savings due to reduced commissioning time
- A proven technology - long life expectancy.

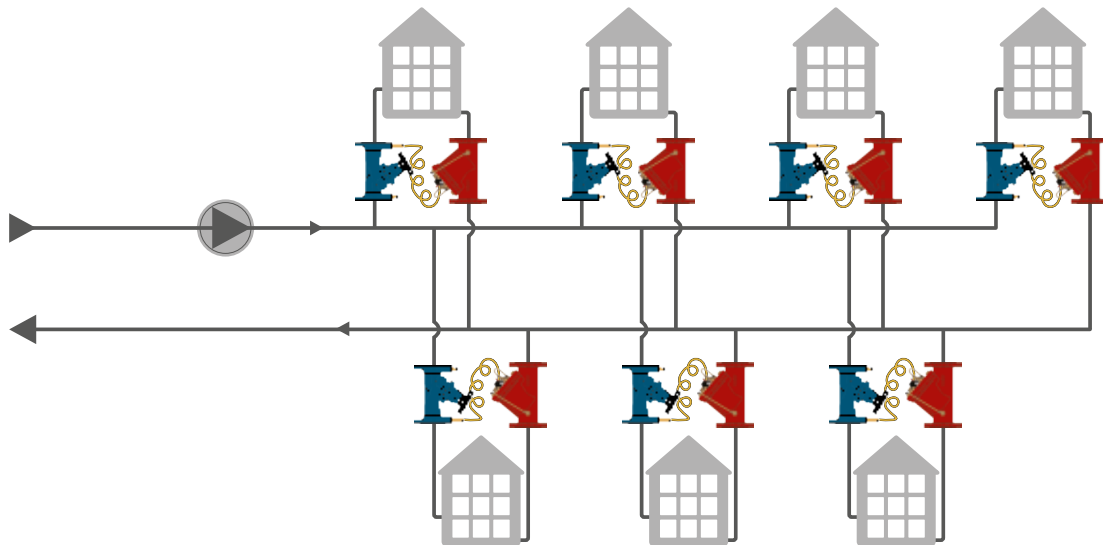
— FlowCon TCV —



EVS

System Zone Protection

with Differential Pressure Control (DPCV)



Chiller



Pump



Partner Valve



DPCV

System Functionality:

In a multiple buildings complex with one central plant-room, the load in the different buildings or zones will vary throughout the day. If the system is not balanced correctly, pressure fluctuations will cause problems like user discomfort and noise disturbance and moreover result in unnecessarily high operation costs. This can be prevented by installing a Differential Pressure Control Valve (DPCV) as zone protector for each zone.

Requirements:

The DPCV will react to system pressure changes and keep a constant pressure, Δp_C , in the zone helping the system to balance and be accurately controlled. With controlled flow and pressure to the zone, each building will not see higher pressure than design voiding the risk of too high differential pressure causing noise and other discomfort.

Solutions:

The solution is to mount a DPCV and a Partner Valve on every zone and FlowCon offers:

- FlowCon PIM™-DP (adjustable)
- FlowCon Partner Globe (partner valve).

Benefits:

- Flexible pair with adjustable pressure and flow setting
- Built-in shut off function
- Serviceable solution with filter protection
- Cost savings - properly distributed pressure throughout the complex
- A proven technology.

└─ FlowCon Partner Valve ─┘

└─ FlowCon DPCV ─┘



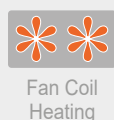
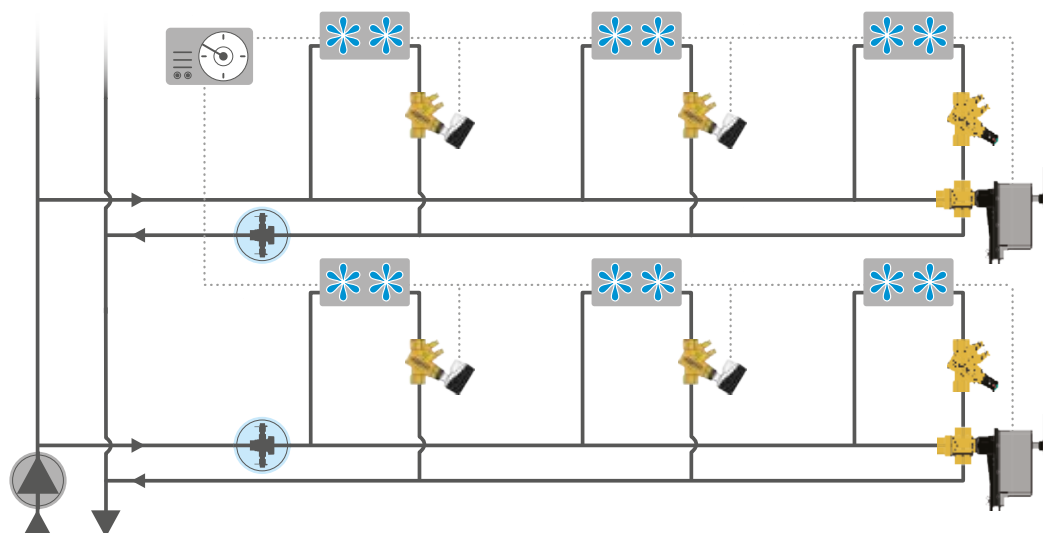
Partner Globe



PIM™-DP

System By-Pass - System End

with Automatic Balancing



Fan Coil Heating



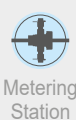
Fan Coil Cooling



Controller



Pump



Metering Station



3-Way Control Valve



ABV



PICV

System Functionality:

System end by-pass incl. a 3-way control valve and an Automatic Balancing Valve (ABV) at each end of line. During full load, the 3-way valves by-pass will be fully closed allowing all water through the last terminal unit on the branch. Once the load reduces at the last terminal unit, the control valve will divert flow from the thermal unit into the by-pass line ensuring flow in the branch, even at reduced loads. This will ultimately protect the pump and prevent local pressure build up. With flow through the terminals, Pressure Independent Control Valves (PICVs) will balance and control all terminals except the end of line terminal, which will be installed with an ABV securing against overflow at full load and the 3-way valve guaranteeing constant min. circulation.

Requirements:

An ABV will react to system pressure changes and limit the flow to required max. flow helping the system to be accurately controlled even with pressure changes.

Solutions:

The solution is to mount a 3-way control valve together with an ABV at each system end to allow system by-pass and FlowCon offers:

- FlowCon E-JUST (adjustable insert)
- FlowCon Composite (adjustable insert)
- FlowCon Unimizer®.

Benefits:

- Assures no overflow in the system
- An easy-to-use solution
- Adjustable insert solution providing high flexibility and easy maintenance
- Energy efficiency with regulation starting at only 15 kPaD
- Range of parabolic flow inserts available for each Unimizer® size - True equal% flow characteristics
- Allows high close-off pressure
- A proven technology - long life expectancy.

FlowCon PICVs



UniQ®



Green



GreEQ

FlowCon ABVs



AB Composite



AB E-JUST

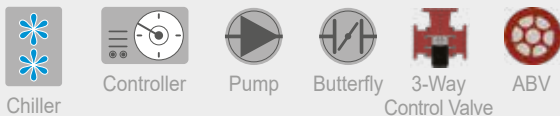
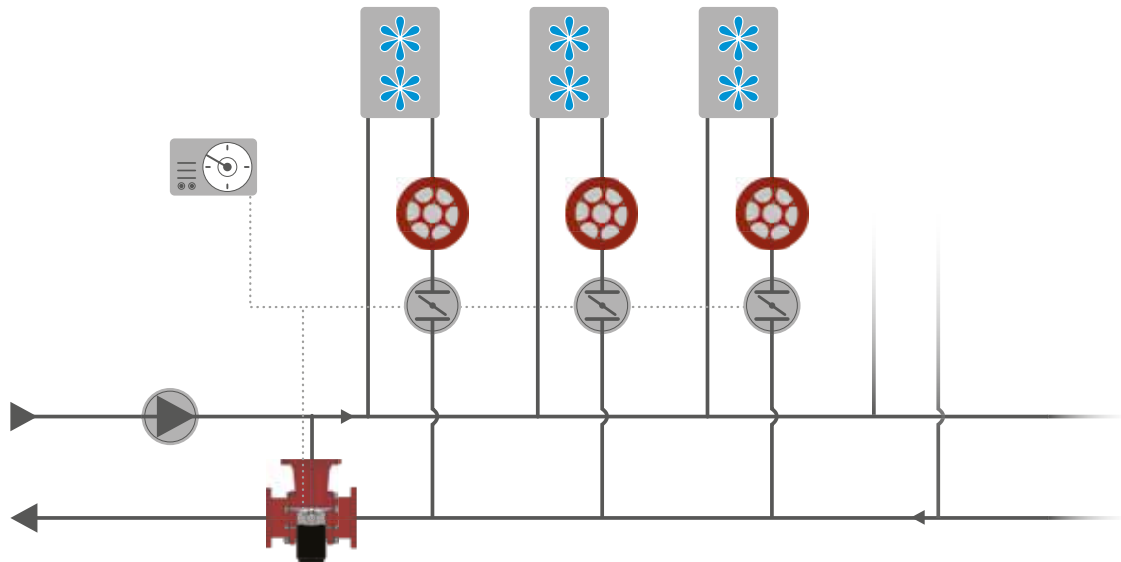
FlowCon Control -



Unimizer® 3-Way

System By-Pass - Plant Room

with Automatic Balancing



System Functionality:

Plant room system by-pass includes a 3-way control valve and Automatic Balancing Valves (ABV) on each terminal. In the starting position and with all water required through the terminals, the by-pass will be closed. At reduced loads, the terminal units are to be isolated hence reducing the flow requirements. If the flow requirement is below pump capacity - or below minimum VFD frequency - the control valve by-pass is to be opened through the BMS system to ensure minimum flow in the pump, protecting the pump and preventing system vibrations. The ABV installed on the thermal unit will ensure that the unit receives the same flow rate regardless of the number of thermal units in operation. This ensures optimal working conditions of the operational terminals thereby optimizing unit efficiency and improving energy efficiency of the system.

Requirements:

An ABV will react to system pressure changes and limit the water flow to required max. flow helping the system water balance even with pressure changes for instance when some chillers in the same system are ramped off.

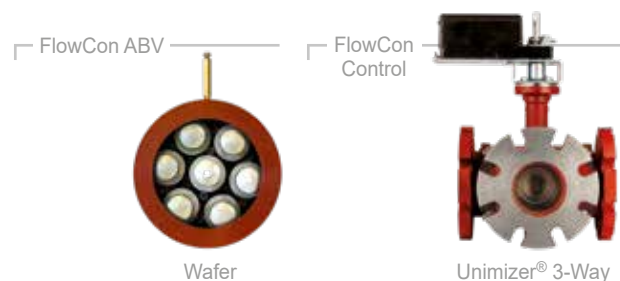
Solutions:

The solution is to mount a 3-way control valve on the plant room by-pass for flow relief and ABVs on every single unit and FlowCon offers:

- FlowCon Wafer (pre-set multiple inserts)
- FlowCon Unimizer®.

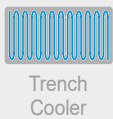
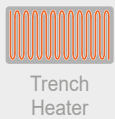
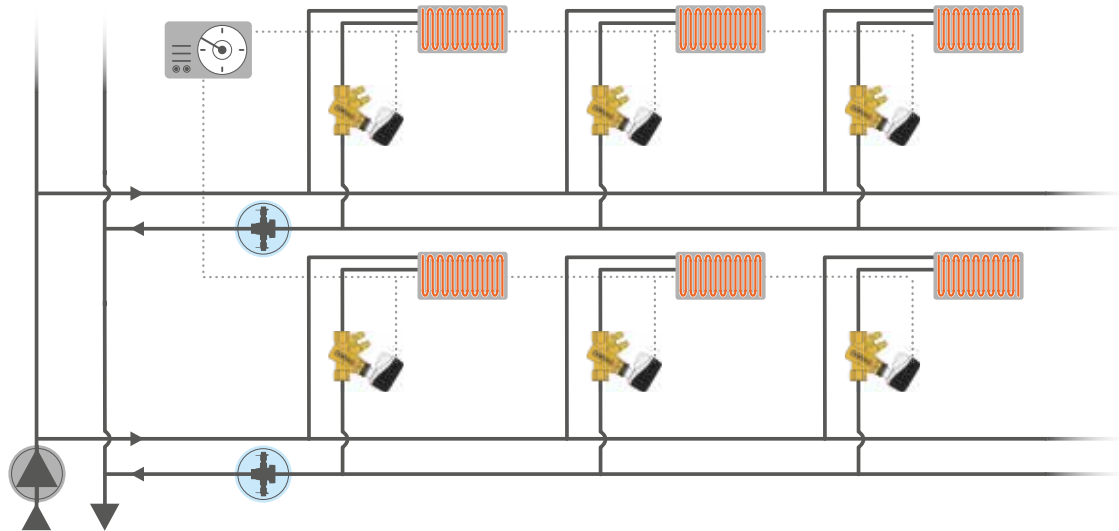
Benefits:

- Assures no overflow in the system
- An easy-to-use solution
- Energy efficiency with regulation starting at only 10 kPaD
- Range of Optimizer® parabolic flow inserts available or each Unimizer® size - True equal% flow characteristics
- Allows high close-off pressure
- Cost savings due to reduced time to install, balance and commission
- A proven technology - long life expectancy
- Assures relief at low flow.



Trench Heaters/Coolers

with Pressure Independent Control (PICV)



System Functionality:

Trench heaters are underfloor-based heating devices and a less space consuming alternative to radiators. Hot water is piped to the unit and provides convective heating. As the warm air rises it will heat the room and the cooled air will fall back down and the cycle restarts. With proper balance and control, flow rates will be maintained despite pressure fluctuations with the result of appropriate room temperature and increased energy savings. This can be obtained by installing a PICV on every trench heater.

Requirements:

Trench heaters are underfloor-based heating devices and a less space consuming alternative to radiators. Hot water is piped to the unit and provides convective heating. As the warm air rises it will heat the room and the cooled air will fall back down and the cycle restarts. With proper balance and control, flow rates will be maintained despite pressure fluctuations with the result of appropriate room temperature and increased energy savings. This can be obtained by installing a PICV on every trench heater.

Solutions:

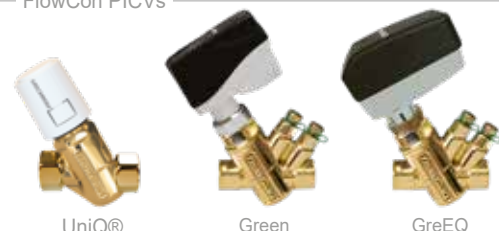
The solution is to mount a PICV on every unit and Flow-Con offers:

- FlowCon Green / GreEQ (adjustable insert)
- FlowCon UniQ® (built-in regulation unit).

Benefits:

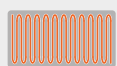
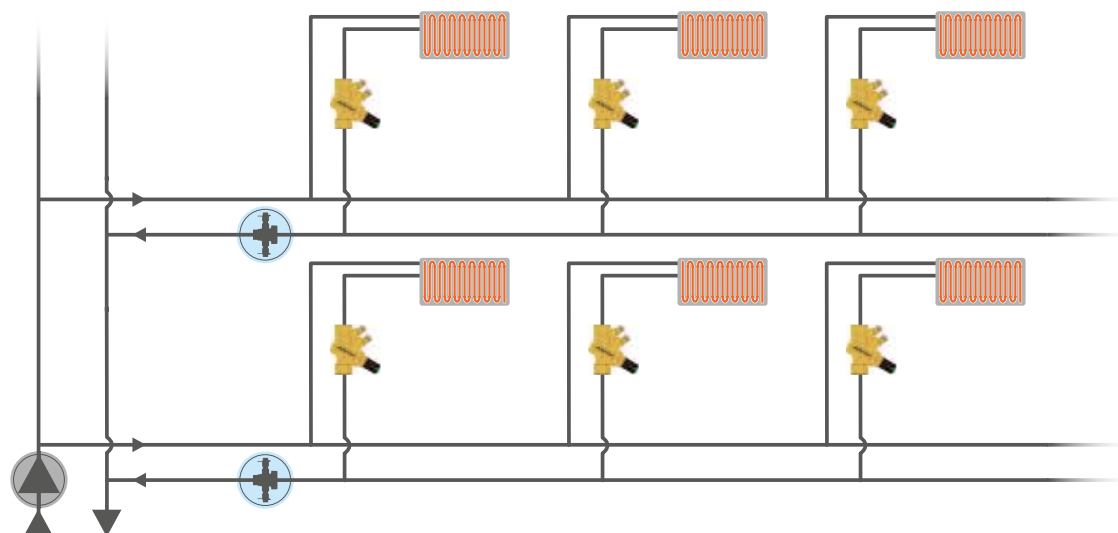
- Assures correct flow for each unit automatically - also at partial loads – securing optimal comfort
- Serviceable insert-design solution (Green / GreEQ)
- Energy efficiency with regulation starting at only 10 kPaΔ (UniQ®)
- Flexible solution with minimum 41 different max. flow settings
- Electrical actuators with selectable control mode, linear or equal% or alternatively thermal ON/OFF actuators
- Cost savings due to reduced commissioning time
- True PICVs - 100% authority and pressure independency at all flow rates with accurate actuator control.

FlowCon PICVs

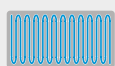


Trench Heaters/Coolers

with Automatic Balancing



Trench Heater



Trench Cooler



Pump



Metering Station



ABV

System Functionality:

Trench heaters are underfloor-based heating devices and a less space consuming alternative to radiators. Hot water is piped to the unit and provides convective heating. As the warm air rises it will heat the room and the cooled air will fall back down and the cycle restarts. With proper balance and control, flow rates will be maintained despite pressure fluctuations with the result of appropriate room temperature and increased energy savings. This can be obtained by installing an Automatic Balancing Valve (ABV) on every trench heater, which will help secure no overflow and guarantee design flow.

Requirements:

An ABV will react to system pressure changes and limit the flow of hot water to required max. flow helping the system to be accurately controlled even with pressure changes.

Solutions:

The solution is to mount an ABV on every single unit and FlowCon offers:

- FlowCon E-JUST
- FlowCon Composite

Benefits:

- Assures no overflow in the system
- An easy-to-use solution
- Adjustable insert solution providing high flexibility and easy maintenance
- Energy efficiency with regulation starting at only 15 kPaD
- Cost savings due to reduced time to balance and commission
- A proven technology - long life expectancy

FlowCon ABVs



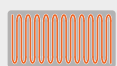
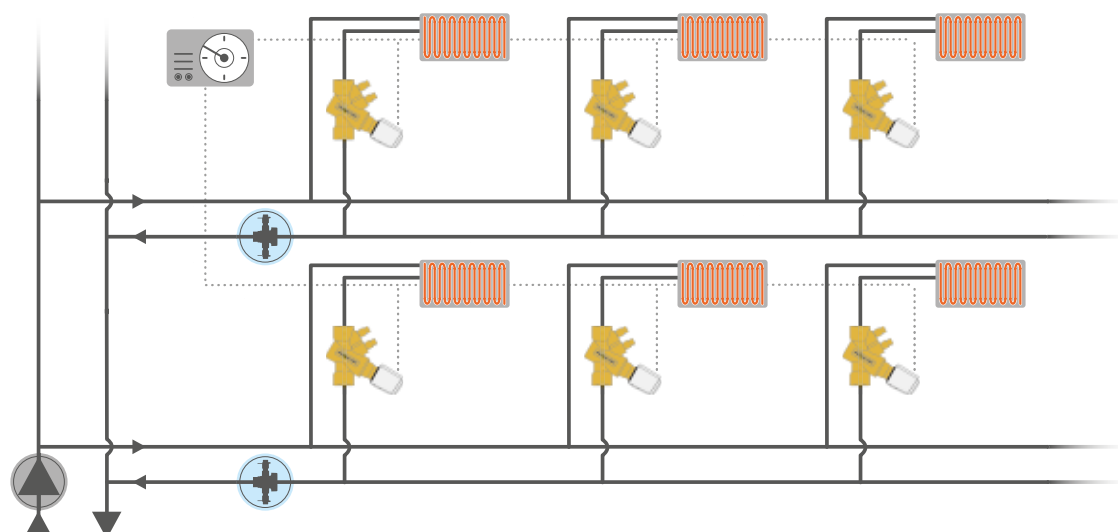
AB Composite



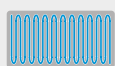
AB E-JUST

Trench Heaters/Coolers

with Temperature Control



Trench Heater



Trench Cooler



Controller



Pump



Metering Station



TCV

System Functionality:

Trench heaters are underfloor-based heating devices and a less space consuming alternative to radiators. Hot water is piped to the unit and provides convective heating. As the warm air rises it will heat the room and the cooled air will fall back down and the cycle restarts. With proper balance and control, flow rates will be maintained despite pressure fluctuations with the result of appropriate room temperature and increased energy savings. This can be obtained by installing a Temperature Control Valve (TCV) on every trench heater, which will help secure no overflow and reduce energy consumption.

Requirements:

The TCV will react to system pressure changes and regulated the flow of hot water to required flow by adjusting the actuator position. This helps the unit to be accurately controlled even at reduced loads.

Solutions:

The solution is to mount a TCV on every single unit and FlowCon offers:

- FlowCon EVS with balancing (pre-set stainless steel insert) and ON/OFF control.

Benefits:

- Assures correct flow for each unit automatically - also at partial loads - securing occupant comfort.
- A serviceable solution due to insert-design
- Energy efficiency with regulation starting at only 10 kPaD
- Cost savings due to reduced commissioning time
- A proven technology - long life expectancy.

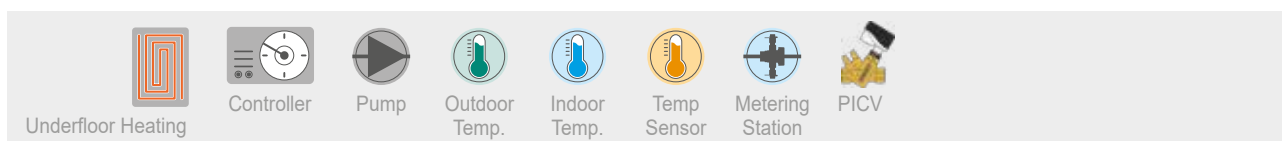
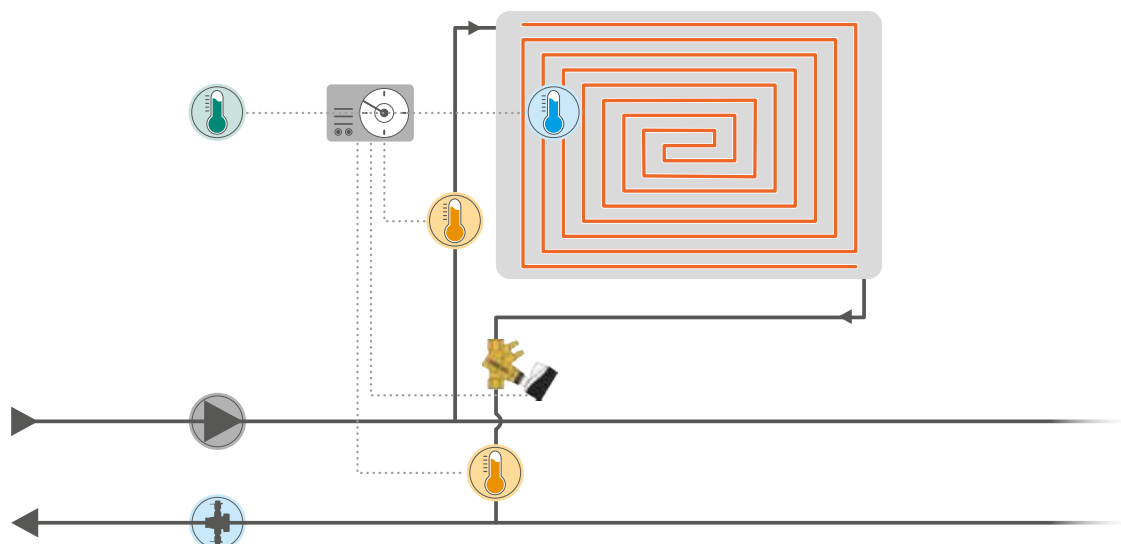
FlowCon TCV



EVS

Underfloor Heating - Single Circuit

with Pressure Independent Control (PICV)



System Functionality:

In well-insulated buildings, water-based underfloor heating provides several advantages over conventional radiators when considering acceptable room temperature. Heat is distributed more evenly, cold feet are avoided and consequently the indoor temperature may be reduced by 1° or 2°C without feeling cold, resulting in energy savings. Underfloor heating will also work at lower supply temperature and low flow rates. Room temperature is controlled by thermal actuators, but without further system balancing, poor control may become a problem. This can be solved by installing a Pressure Independent Control Valve (PICV) on the underfloor heating circuit efficiently controlling both flow and pressure.

Requirements:

The PICV's full authority and ability to accurately control actuator position to required flow of low temperature hot water or even close completely is important. This helps to secure a steady temperature in the underfloor heating circuit.

Solutions:

The solution is to mount a PICV on the underfloor heating circuit and FlowCon offers:

- FlowCon Green / GreEQ (adjustable insert)
- FlowCon UniQ® (built-in regulation unit).

Benefits:

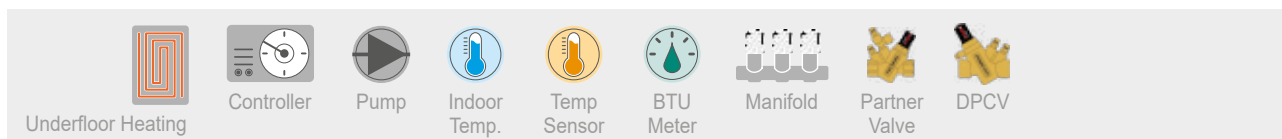
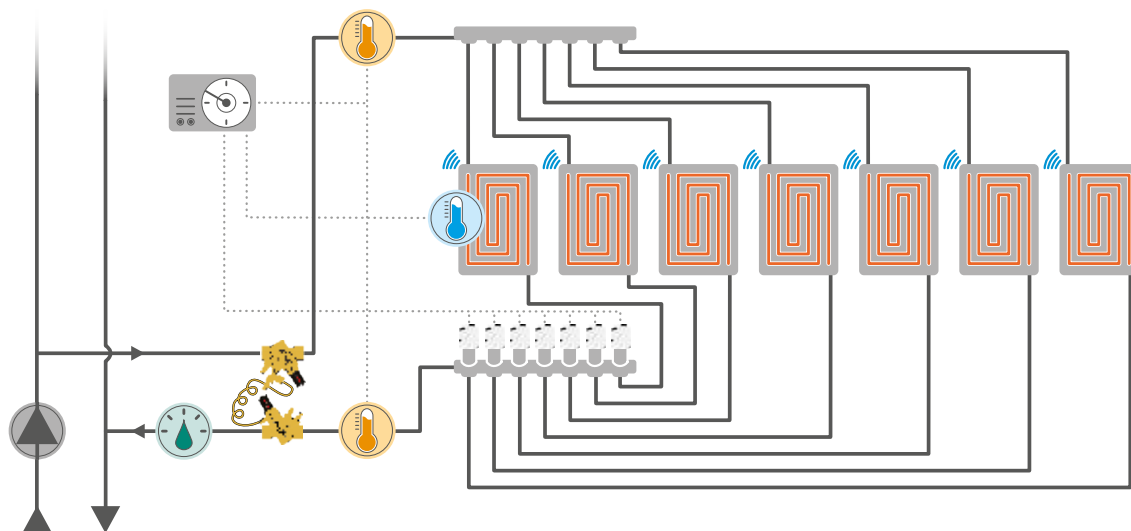
- Assures correct flow automatically - also at partial loads - securing optimal comfort
- Serviceable insert-design solution (Green / GreEQ)
- Energy efficiency with regulation starting at only 10 kPaD (UniQ®)
- Flexible solution with minimum 41 different and stepless max. flow settings
- Electrical actuators with selectable control mode, linear or equal% or alternatively thermal ON/OFF actuators
- Cost savings due to reduced commissioning time
- True PICVs - 100% authority and pressure independency at all flow rates with accurate actuator control.

FlowCon PICVs



Underfloor Heating - Manifold

with Differential Pressure Control (DPCV)



System Functionality:

In well-insulated buildings, water-based underfloor heating provides several advantages over conventional radiators when considering acceptable room temperature. Heat is distributed more evenly, cold feet are avoided and consequently the indoor temperature may be reduced by 1° or 2°C without feeling cold, resulting in energy savings. Underfloor heating will also work at lower supply temperature and low flow rates. Room temperature is controlled by thermal actuators, but without further system balancing, poor control, noise and difficulties to close may become a problem. This can be solved by installing a Differential Pressure Control Valve (DPCV) as zone valve in connection with each manifold.

Requirements:

The DPCV will absorb system pressure changes and maintain a constant pressure, Δp_C , in the zone helping the system to balance and be accurately controlled. With controlled flow to the zone the thermal actuators

will achieve controlled temperature and maintain a low fluid velocity to get full use of the water heat energy.

Solutions:

The solution is to mount a DPCV and a Partner Valve on every manifold and FlowCon offers:

- FlowCon SDP (pre-set 10, 20 or 30 kPaD) or
- FlowCon EDP (adjustable 5-50 kPaD)
- FlowCon Composite, E-JUST, QuickDisc® and S-JUST (partner valves).

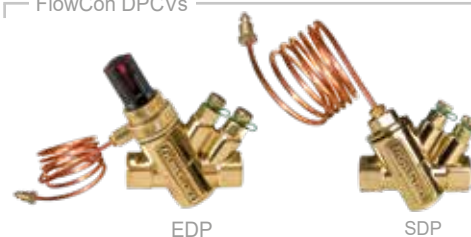
Benefits:

- Security of a defined ΔP available for each zone - also at partial loads
- Easy-to-use compact solution due to simple construction
- A serviceable solution due to insert-design
- Energy efficiency with regulation starting at only 3 kPaD
- Cost savings - reduced time to balance and commission
- A proven technology
- Noise reduction.

FlowCon Partner Valves

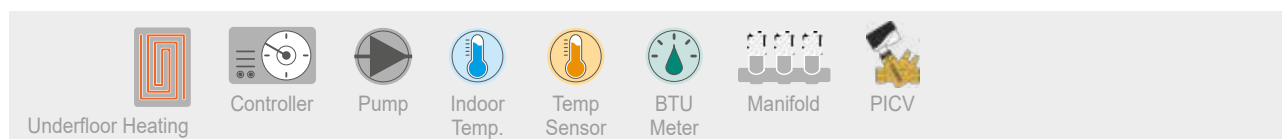
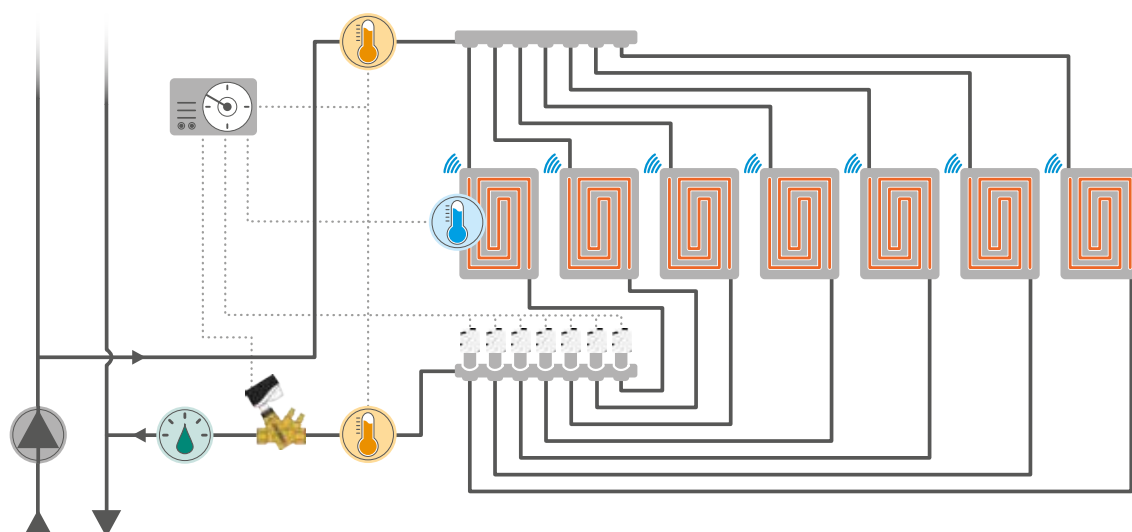


FlowCon DPCVs



Underfloor Heating - Manifold

with Pressure Independent Control (PICV)



System Functionality:

In well-insulated buildings, water-based underfloor heating provides several advantages over conventional radiators when considering acceptable room temperature. Heat is distributed more evenly, cold feet are avoided and consequently the indoor temperature may be reduced by 1° or 2°C without felling cold, resulting in energy savings. Underfloor heating will also work at lower supply temperature and low flow rates. Room temperature is controlled by thermal actuators, but without further system balancing, poor control may become a problem. This can be solved by installing a Pressure Independent Control Valve (PICV) as zone valve in connection with each manifold controlling both flow and pressure in the zone.

Requirements:

The PICV will react to system pressure changes and regulate the flow of low temperature hot water to required flow by adjusting the actuator position. This helps to secure a steady temperature in the entire underfloor heating system.

Solutions:

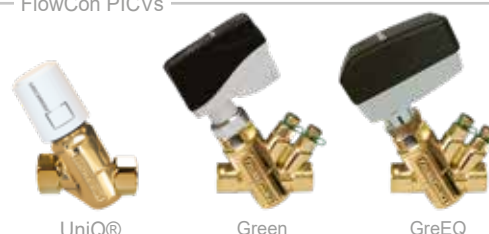
The solution is to mount a PICV on every manifold and FlowCon offers:

- FlowCon Green / GreEQ (adjustable insert)
- FlowCon UniQ® (built-in regulation unit)

Benefits:

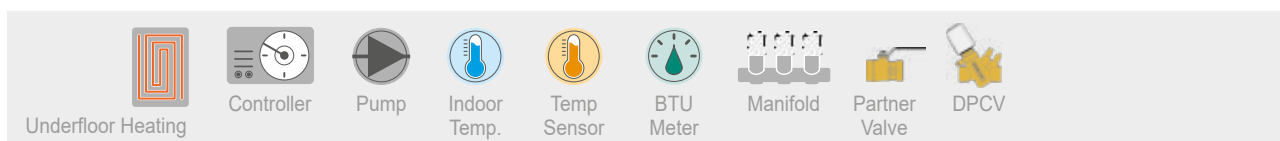
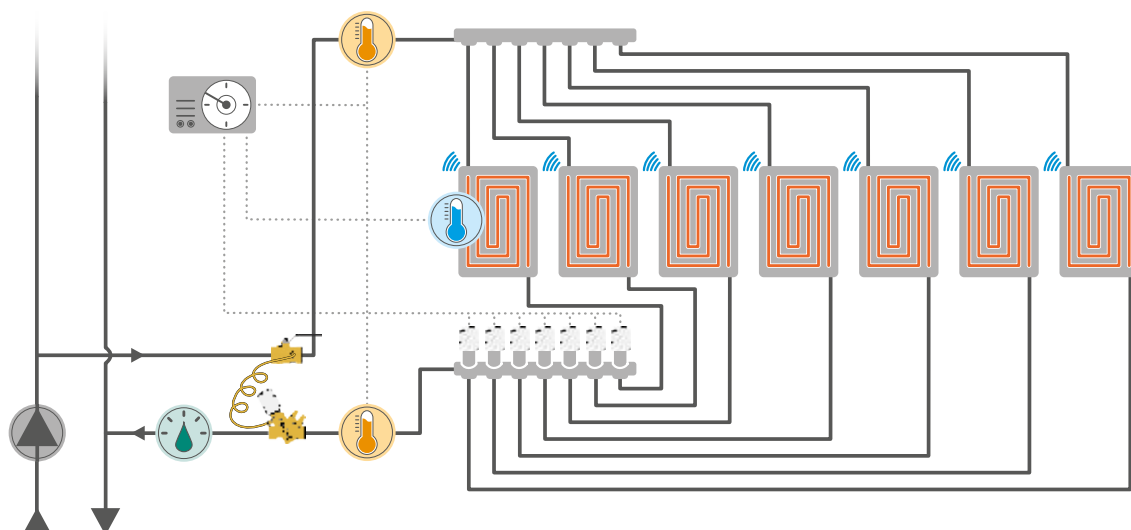
- Assures correct flow for each unit automatically - also at partial loads - securing optimal comfort
- Serviceable insert-design solution (Green / GreEQ)
- Energy efficiency with regulation starting at only 10 kPaD (UniQ®)
- Flexible solution with minimum 41 different and stepless max. flow settings
- Electrical actuators with selectable control mode, linear or equal% or alternatively thermal ON/OFF actuators
- Cost savings due to reduced commissioning time
- True PICVs - 100% authority and pressure independency at all flow rates with accurate actuator control.

FlowCon PICVs



Underfloor Heating - Manifold

with Differential Pressure Control (DPCV) - Timer Controlled



System Functionality:

In well-insulated buildings, water-based underfloor heating provides several advantages over conventional radiators when considering acceptable room temperature. Heat is distributed more evenly, cold feet are avoided and consequently the indoor temperature may be reduced by 1° or 2°C without feeling cold, resulting in energy savings. Underfloor heating will also work at lower supply temperature and low flow rates. Room temperature is controlled by thermal actuators, but without further system balancing, poor control and noise may become a problem. This can be solved by installing a Differential Pressure Control Valve (DPCV) as zone valve in connection with each manifold which also allows energy saving night reduction.

Requirements:

The DPCV will absorb system pressure changes and maintain a constant pressure, Δp_C , in the zone helping the system to balance and be accurately controlled. With controlled flow to the zone the thermal actuators will achieve controlled temperature and maintain a low fluid velocity to get full use of the water heat energy.

Solutions:

The solution is to mount a DPCV and a Partner Valve on every manifold and FlowCon offers:

- FlowCon ADP (Adjustable Insert)
- FlowCon Partner Ball (Partner Valve).

Benefits:

- Combined ΔP and max flow limiter in one unit - incl. ON/OFF control
- Flexible solution with minimum 41 different flow/pressure settings
- An easy-to-use solution and compact design
- A serviceable solution due to insert-model
- Energy efficiency with regulation starting at only 3 kPaD
- Cost savings - reduced time to balance and commission
- A proven technology
- Possible automatic night reduction.

— FlowCon Partner Valve — — FlowCon DPCV —



Partner Ball



ADP



FlowCon
international

A Griswold Controls LLC./FlowCon International Company

www.flowcon.com

DENMARK • DUBAI • USA • CHINA • SINGAPORE