

Differential pressure independent control valves

# Improved temperature control and hydronic balance **for your benefit**

The optimum choice for district heating and cooling substations: AHQM, AVQM and AFQM.

**>100,000**  
substations operate  
with AVQM

Since the first combi valve was developed by Danfoss 30 years ago thousands of heating systems get the benefit of improved operation performance.



# Differential pressure, temperature and flow control, all in one

District heating networks are highly dynamic systems. Supply needs to instantly meet changing demands influenced by weather conditions, morning start ups, user patterns and more. Changing flow in one part of the system directly influences flow and differential pressure in other parts. The consequence is unwanted temperature fluctuation on the secondary side of the heat exchanger, leading to excess energy use and poor temperature control.

The purpose of integrating a self-acting differential pressure (dP) controller into the control valve is to establish conditions where control valve operation solely depends on the signal from the electronic controller; regardless of any disturbance resulting from changing flow and differential pressure within the system.

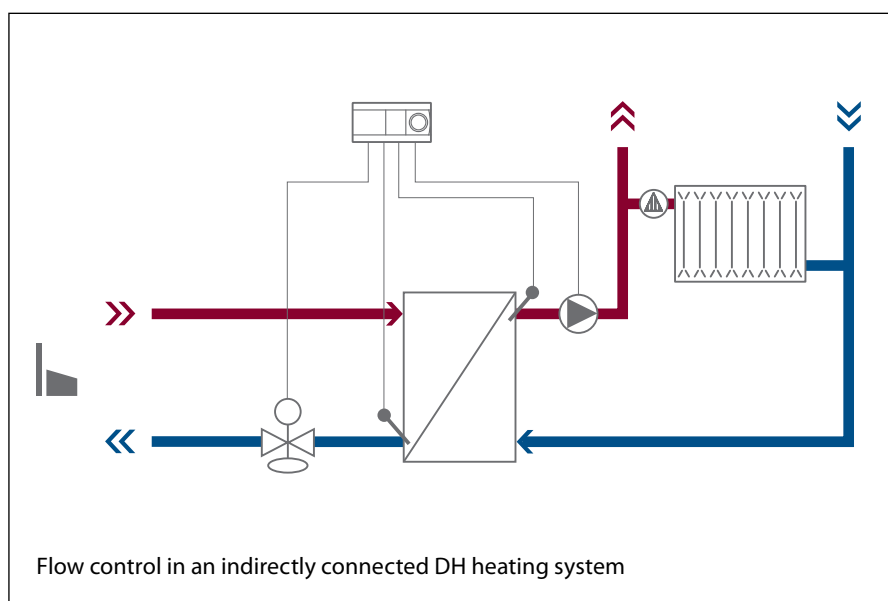
The result is excellent temperature control and automatic hydronic balancing of the network. Correct hydronic balance ensures that every consumer enjoys precisely the flow needed according to specification, with no overflow. Overflow (more flow than needed) increases costs for pumping, escalates peak loads, increases return temperature and makes zero contribution to end-user comfort.



## Benefits for the district heating network



- Easy selection and sizing of the valve
- Precise temperature control with 100% valve authority
- Automatic flow balancing of the network
- Improved peak load management and reduced energy consumption for primary pumps thanks to elimination of overflow
- Automatic balancing if the network expands or shrinks, thanks to differential pressure independent design
- Fulfills demands from a tariff system with max. flow rate limitation on every user

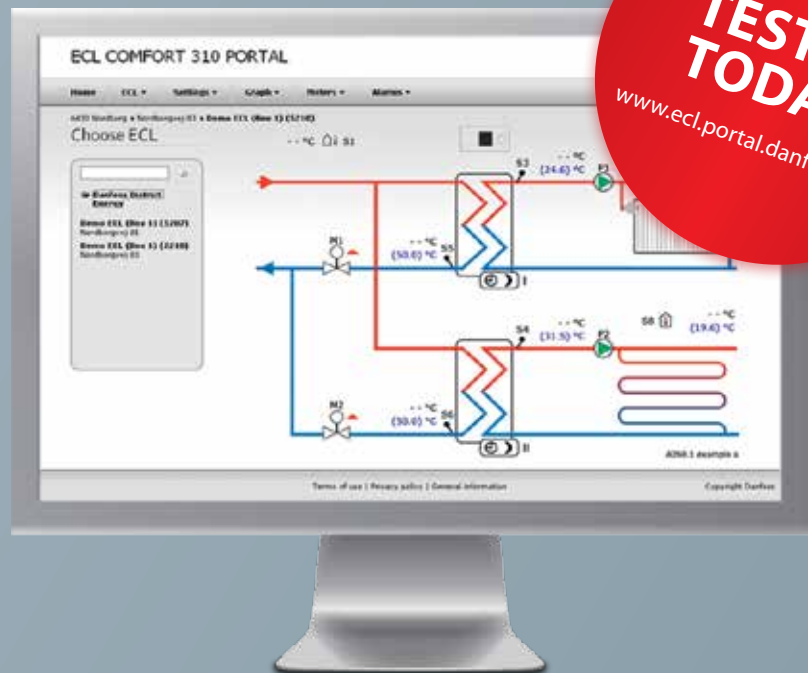


# Monitor substation operation from your office

We supply solutions and products that give you and your customers advanced, user-friendly technology, minimum maintenance and environmental and financial benefits. All backed by our extensive support and service offering.

Danfoss recently designed a plug-and-play web-based SCADA solution called ECL portal. This gives you the ideal opportunity to see the advantages of AVQM valves for yourself. In addition, the portal enables remote monitoring and control of the substation.

All you need is a Danfoss electronic controller, ECL Comfort 310, and an internet connection. A few clicks is all it takes to connect to the ECL portal.

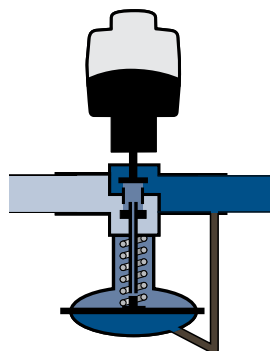


## Benefits for the building owner



The AVQM controls the temperature at low loads and remains stable across the entire flow range. All changes in the available differential pressure are automatically corrected, resulting in reduced temperature control disturbance and up to 50% longer actuator life. Because the AVQM valve covers three functions in one product, installation costs are more than 50% lower.

- Stable differential pressure levels for precise temperature control
- Simple commissioning of the substation
- Accurate temperature control, significantly better compared to classic control valves
- Lower noise level in the system
- Prolonged lifespan of the control equipment
- Minimized risk of cavitation due to special design of the differential pressure controller



## Light-duty range – AHQM (PN 16) $t_{max}$ 120°C

Control valve	AHQM (PN 16)													
DN [mm]	15	20	25	32	40	50	65	80	100					
Qmax [m³/h]	1	1.2	2.2	3.4	7.5	12.5	20	28	38					
$\Delta p$ max	4 bar													
Actuator	AMV(E) 10 / 13 / 130 / 140					AMV(E) 435 / 438 SU / 25 SD*								

\* adapter 065Z0311 needed

## Medium-duty range – AVQM (PN 16/25), AFQM (PN 16) – $t_{max}$ 150°C

Control valve	AVQM (PN 16)				AVQM (PN 25)		AFQM (PN 16)							
DN [mm]	15	20	25	32	40	50	65	80	100	125	150	200	250	
Qmax [m³/h]	2.2	3	3.5	5.5	10	12	40	58	76	91	220	285	420	
$\Delta p$ max	12 bar				16 bar		12 bar							
Actuator	AMV(E) 10 / 13 / 150	AMV(E) 20(SL) / 23(SL) / 30(SL) / 33						AMV(E) 55 / 56 / 655 / 658 / 659				AMV(E) 85 / 86		

## Heavy-duty range – AVQM (PN 25), AFQM (PN 25/40) – $t_{max}$ 150°C

Control valve	AVQM (PN 25)				AFQM 6 (PN 25)		AFQM (PN 25 / 40)				
DN [mm]	15	20	25	32	40	50	65	80	100	125	
Qmax [m³/h]	2.2	3	3.5	8	11	16	40	58	76	91	
$\Delta p$ max	20 bar				20 bar		20 bar		15 bar		
Actuator	AMV(E) 10 / 13 / 150	AMV(E) 20(SL) / 23(SL) / 30(SL) / 33						AMV(E) 655 / 658 / 659			

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