Applications
Heat Generation

Edition 2024-03/B

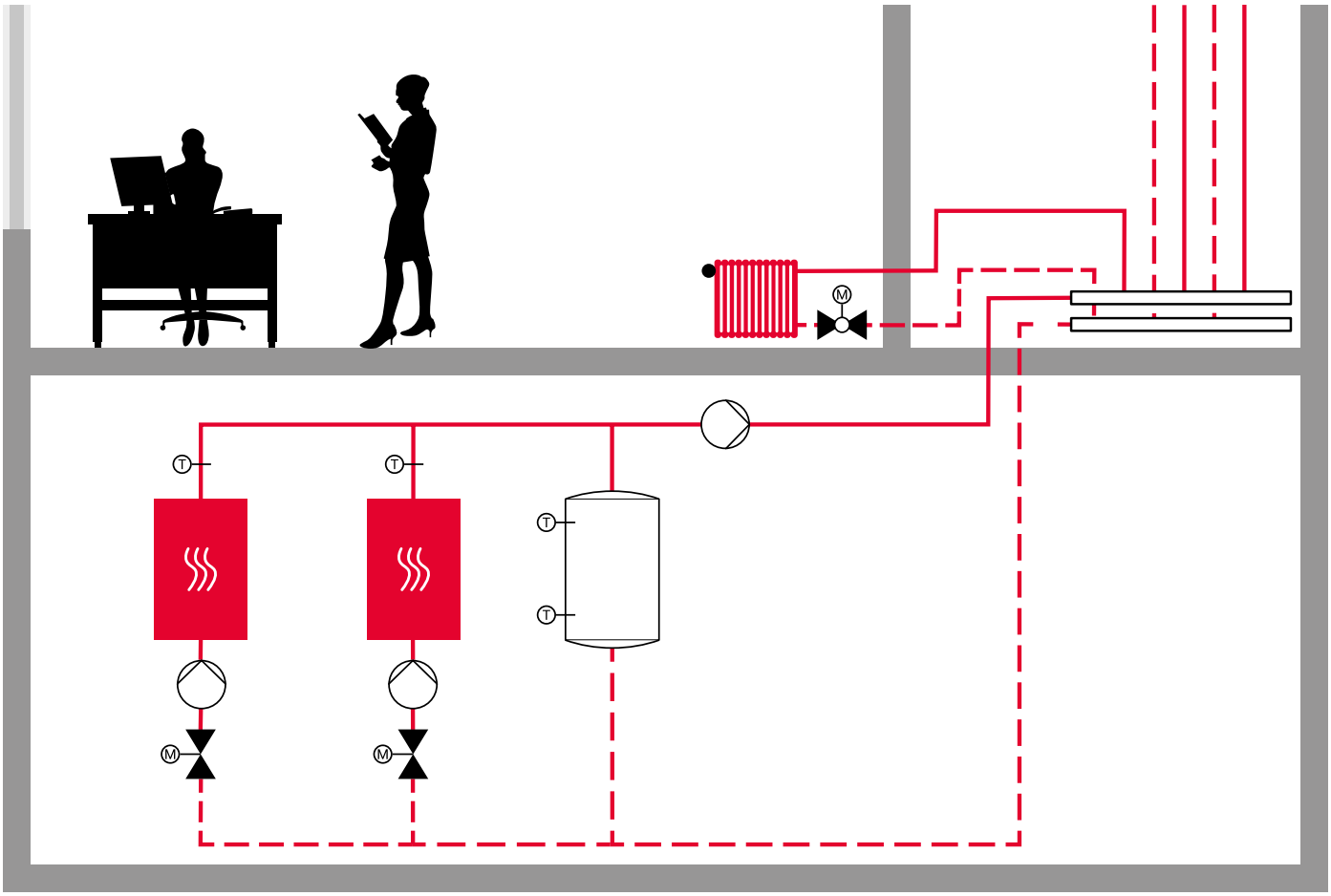
BELIMO

Preface

Thank you for your interest in our products. In this brochure, you will find information about different heat generation systems planning. Our recommendations and useful notes are, of course, not a substitute for the planning and design of individual hydronic component systems. As a general rule, planning an application should always be done in consultation with the manufacturers of boilers, heat pumps and pumps.

All chapters are structured as follows:
– Hydronic diagram
– Application description
– Bill of material
– Belimo – features and advantages

You can find summarised tender texts starting from page 48.



The diagram shows an example of a heat generation system in a building.

Product overview

Characterised control valve proven millions of times over

Proven millions of times over, the ball valve's spherical design makes it air-bubble tight, helping to prevent energy loss. The characterised disc also ensures excellent control stability over the entire flow range.

Globe valve actuators revolutionary and versatile

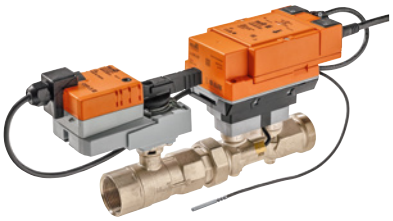
Globe valves are the proven and trusted solution for heat generation applications. The globe valve actuators from Belimo with their universal actuator concept ensure optimum and robust motorisation. They are the ideal complement to our characterised control valves, even when it comes to high temperatures, pressure classes, flow rates, and linear control characteristics.

Butterfly valves and actuators efficient and also reliable

Butterfly valves play a crucial role in controlling, tightly closing and changing over high energy flows. They are used in combination with expensive equipment such as refrigeration systems, cooling towers, or heat generation plants. Despite their, compared to the complete system, small size, they have a significant impact on the smooth and energy-efficient operation of these systems. Our butterfly valves have been specifically developed for heating, ventilation, and air-conditioning applications, meeting all the requirements.

Belimo Energy Valve™ – powerful and available in the IoT

The Belimo Energy Valve™ offers certified energy metering (MID) and pressure-independent control, and delta T management in one device. Monitor and control energy consumption directly for optimal system performance.



Sensors precise and easy to operate

The sensors from Belimo meet the highest quality and reliability requirements. Innovative technology ensures easy installation and seamless compatibility with all major building automation systems. Thanks to the clever design, installation and commissioning take just a few steps.

Product comparison between Belimo characterised control valves, globe valves and butterfly valves

2-way product comparison

	2-way open/close ball valves and characterised control valves	2-way globe valve	2-way open/close and control butterfly valve
Solutions	DN 15...50 [1] DN 15...150 [2]	Equal-percentage characteristic curve: DN 15...150 Linear characteristic curve: DN 200...250 Fail-safe: DN 15...100	Equal-percentage characteristic curve: DN 25...700 Linear characteristic curve: DN 100...300 [3] Fail-safe: DN 25...300
	For open and closed water circuits	For open and closed water circuits	For open and closed water circuits
Flexibility	– Extensive selection of actuators – Running time adjustable – Control: 0.5...10 V, 2...10 V, 4...20 mA, communicative – Degree of protection IP66/67	– Extensive selection of actuators – Temperature range of 5...200°C – Adjustable running time, 35...150 s – Control: 0.5...10 V, 2...10 V, 4...20 mA, communicative – Degree of protection IP54	– Universal power supply 24...230 V [3] – Running time adjustable (JR: 20...120 s, PR: 30...120 s) [3] – Control: 0.5...10 V, 2...10 V, 4...20 mA, communicative [3] – Degree of protection IP66/67
Installation	Take note of the direction of flow when installing in the pipeline	Take note of the direction of flow when installing in the pipeline	Any direction of flow and any installation in the pipeline
Commission	With position indicator	With position indicator	Clearly visible position indication Fast and simple commissioning with the Belimo Assistant App [3]
Communication	Belimo-MP-Bus DN 15...150 [2] BACnet MS/TP DN 15...150 [2] Modbus RTU DN 15...150 [2] KNX DN 15...50	Belimo-MP-Bus DN 15...150 BACnet MS/TP DN 15...100 Modbus RTU DN 15...100	Belimo-MP-Bus DN 25...300 BACnet MS/TP DN 25...300 Modbus RTU DN 25...300
Energy efficiency	Leakage: leakage rate A, air-bubble tight (EN 12266-1)	Leakage: 0.05 % of k_{VS}	Leakage: leakage rate A, tight (EN 12266-1)

[1] Open/close ball valves
[2] Characterised control valves
[3] For motorisation with JR/PR actuator

3-way product comparison

	3-way changeover and characterised control valves	3-way globe valve	3-way changeover and control butterfly valve
Solutions	DN 15...50	Equal-percentage characteristic curve: DN 15...150 Linear characteristic curve: DN 200/250 Fail-safe: DN 15...100	DN 100...300
	For open and closed water circuits	For open and closed water circuits	For open and closed water circuits
Flexibility	– Extensive selection of actuators – Compact solutions – Adjustable running time, 2.5...150 s – Control: 0.5...10 V, 2...10 V, 4...20 mA, communicative – Degree of protection IP40...IP67	– Extensive selection of actuators – Compact solutions – Temperature range of 5...200°C – Adjustable running time, 35...150 s – Control: 0.5...10 V, 2...10 V, 4...20 mA, communicative – Degree of protection IP54	– Universal power supply 24...230 V [3)] – Running time adjustable (JR: 20...120 s, PR: 30...120 s) – Control: 0.5...10 V, 2...10 V, 4...20 mA, communicative – Degree of protection – IP54...IP66/67
Installation	Take note of the direction of flow when installing in the pipeline	Take note of the direction of flow when installing in the pipeline	Any direction of flow and any installation in the pipeline
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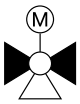
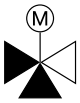
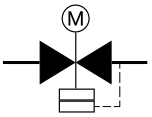
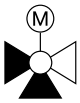
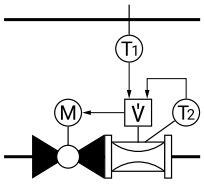
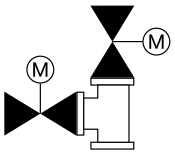
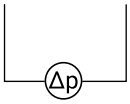
Communication	Belimo-MP-Bus DN 15...50 BACnet MS/TP DN 15...50 Modbus RTU DN 15...50 KNX DN 15...50	Belimo-MP-Bus DN 15...150 BACnet MS/TP DN 15...100 Modbus RTU DN 15...100	Belimo-MP-Bus DN 100...300 BACnet MS/TP DN 100...300 Modbus RTU DN 100...300
Energy efficiency	Leakage on the control path: Leakage rate A, air-bubble tight (EN 12266-1) Leakage in the bypass: Leakage class I (EN 1349 and EN 60534-4) 1...2 % of k_{VS} value in relation to the largest value within the DN	Leakage on the control path: 0.05% of K_{VS} Leakage in the bypass: 1% von K_{VS}	Leakage in control and bypass path: leakage rate A, tight (EN 12266-1)

Legend

Products

Symbol	Name	Symbol	Name
	Manual 2-way open/close valve		Changeover ball valve with L-bore
	Open/close valve / control butterfly valve		3-way changeover valve / control butterfly valve / 3-way globe valve
	2-way ball valve with rotary actuator		Pressure Independent Valve
	3-way characterised control valve/ changeover ball valve with T-bore		Belimo Energy Valve™
	3-way control butterfly valve / changeover butterfly valve		

Sensors

Symbol	Name	Symbol	Name
	Temperature sensor		Pressure sensor
	Differential pressure sensor		

Legend

Components

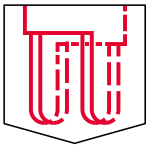
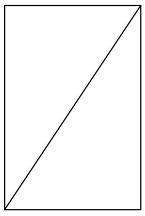
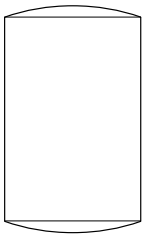
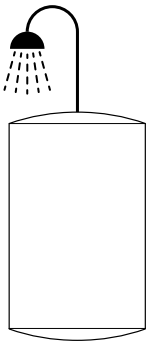
Symbol	Name	Symbol	Name
	Pump		Heat consumer
	Strainer		Sonnenkollektoren
	Hydraulic switch		Earth probe field
	Heat generator		Heat exchanger
	Reversivble heat pump		Buffer storage tank
			Water heater

Table of contents

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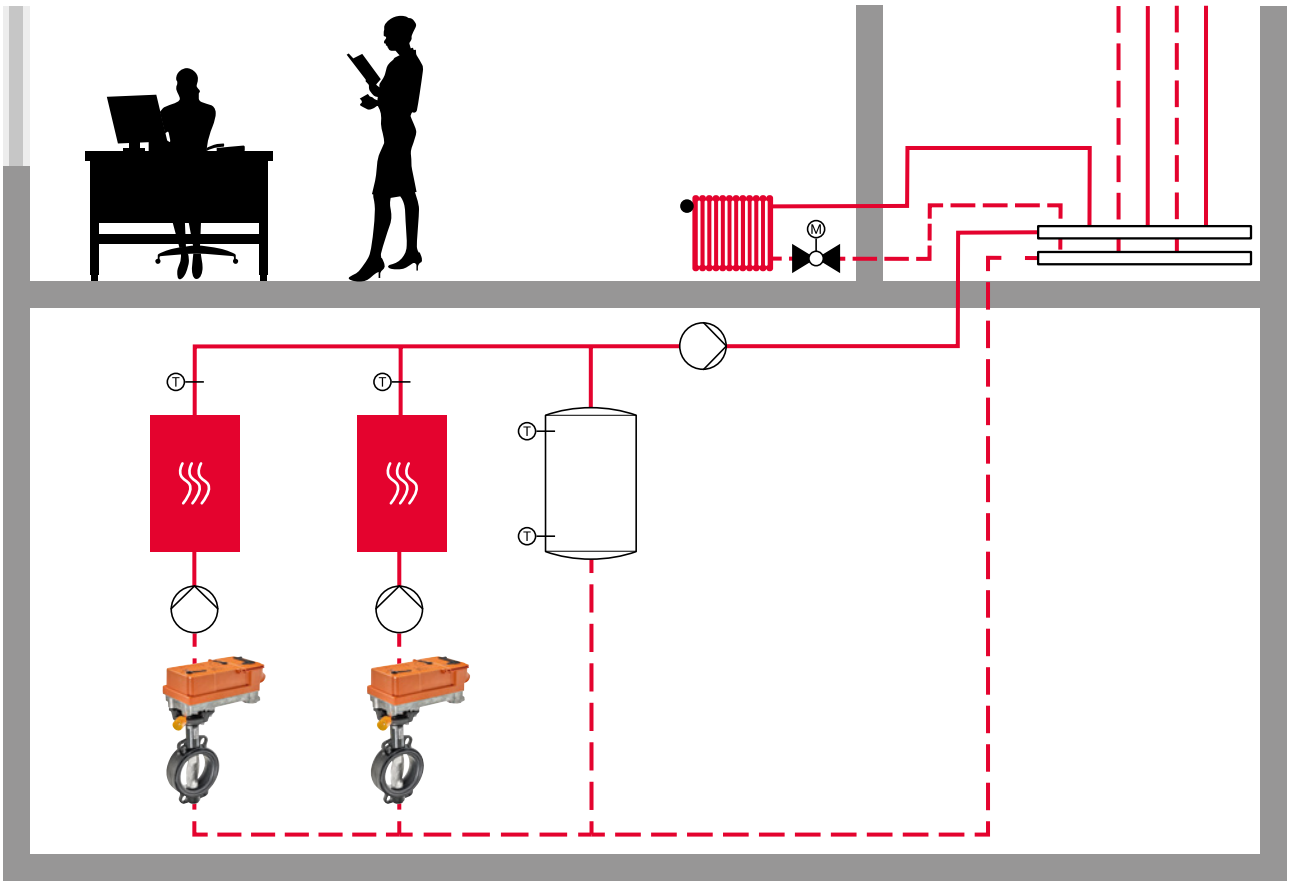
1

Boiler sequential control

Typical shut-off application with several boilers



Boiler sequential control

Hydronic diagram

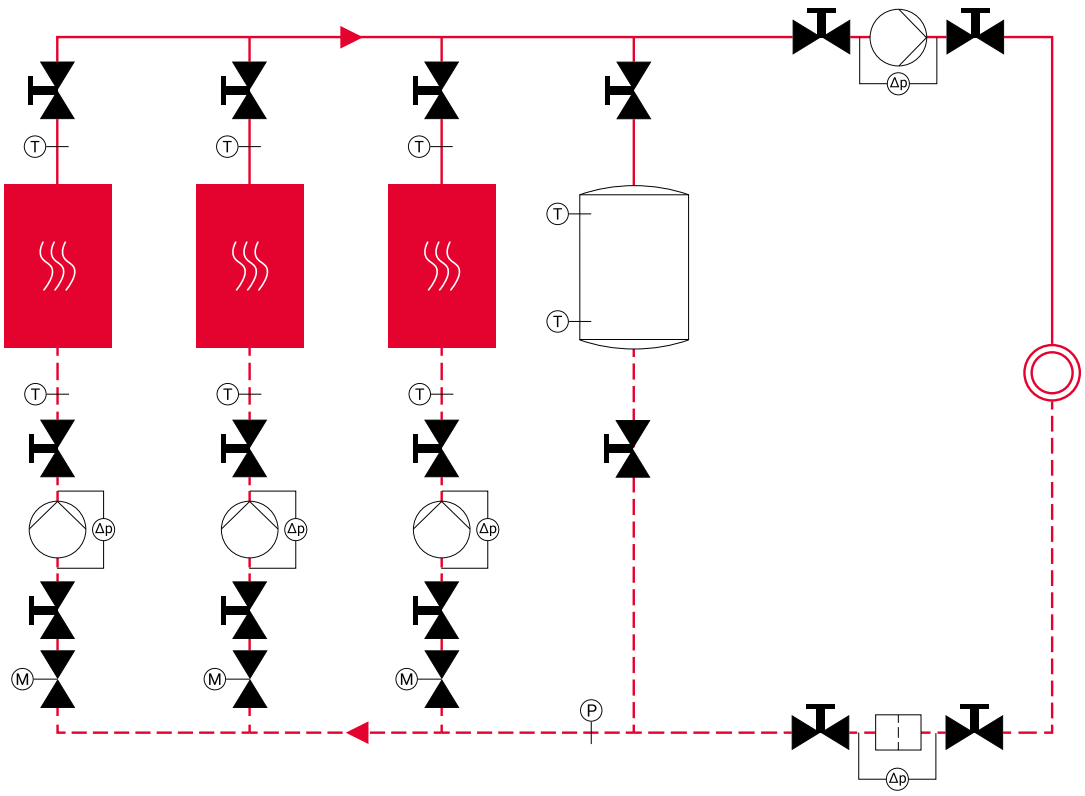
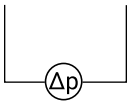


Illustration example
Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

- One, two or three boilers are on, depending on heat requirements
- Boiler shut-off is mandatory for multi-boiler systems in many countries
- Manual open/close butterfly valves with worm gears, shut off pumps, buffer storage tank, heat generators and strainer during commissioning or maintenance
- Temperature sensors signal the supply and return temperatures
- Differential pressure sensors monitor the pump function
- A differential pressure sensor allows a statement to be made on the pollution of the strainer
- A static pressure sensor registers the system pressure and detects a leakage in the system
- In most cases, the volumetric flows of the generator (boiler) and consumer (usually in partial-load range) will vary, meaning that a buffer storage tank or hydronic switch is used for the required load equalisation.

Bill of material

	Belimo type	Description	Quantity	Costs
Alternative 1				
	**D6..N(L) + SR..A-5 GR..A-5 or D6..W(L) + JR.. PR..**	Open/close butterfly valve, wafer or lug type, DN 25...700 with open/close rotary actuator 20...160 Nm	3	
Alternative 2				
	**R2../ R4../ R6.. + LR..A NR..A SR..A**	Open/close ball valve, internal thread, external thread, flange, DN 15...50 with open/close rotary actuator 5...20 Nm	3	
Same in alternative 1 and 2				
	**D6..W(L) D6..N(L) + ZD6N-S..**	Manual open/close butterfly valve, wafer or lug type with worm gear, DN 25...700	15	
	**01DT-.. or 22DT-..**	Temperature sensor	8	
	**22WDP-..**	Differential pressure sensor	5	
	**22WP-..**	Static pressure sensor	1	

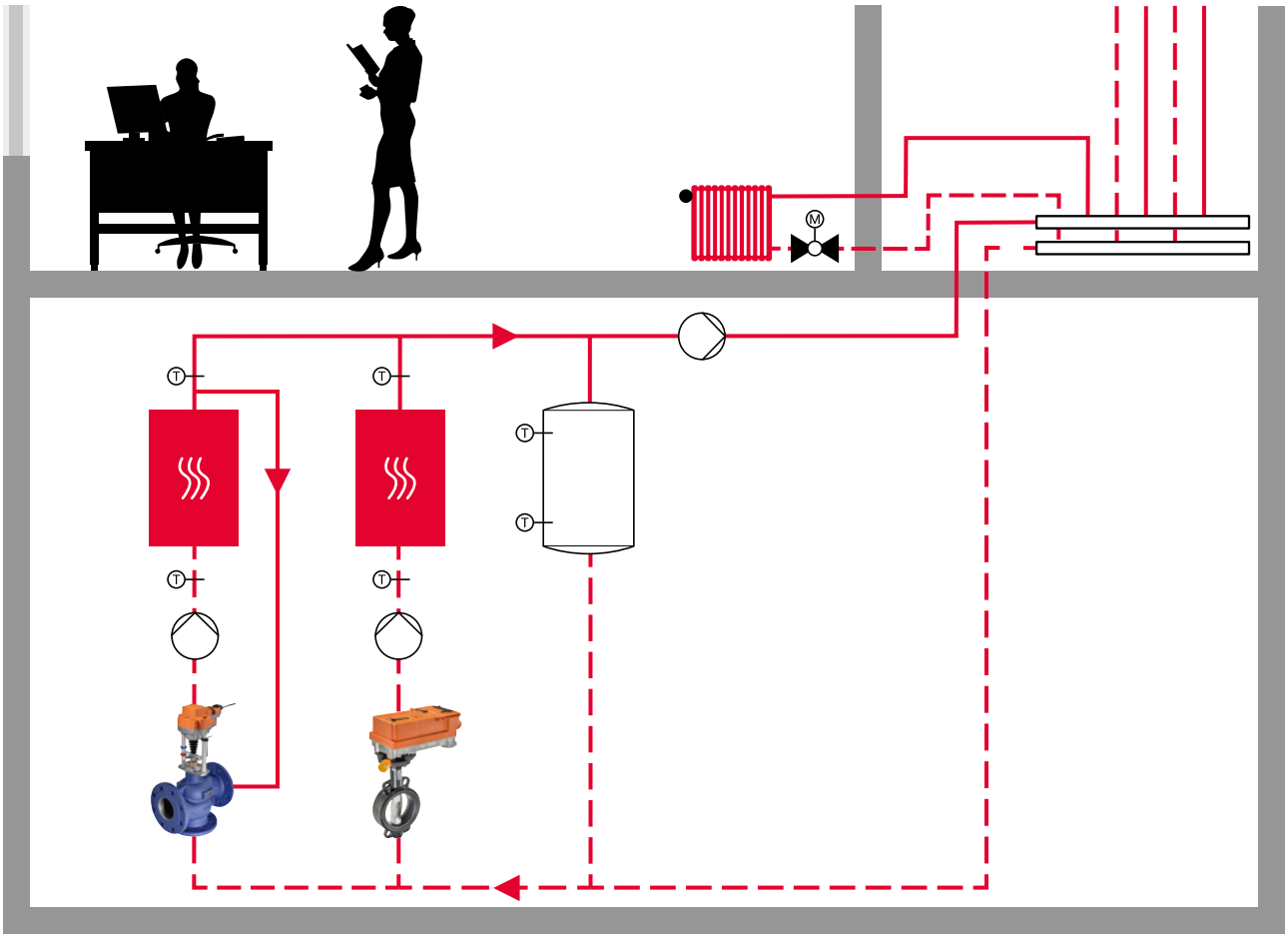
Belimo – features and advantages

Properties	Benefits
Valves and actuators	
Tight-closing valve with leakage rate A, tight (EN 12266-1) for characterised control valves and butterfly valves	No activation with zero load No energy loss with zero load
Low height and weight of actuator	Quick and easy installation
Actuators with 24 V or 230 V power supply, different running times, as well as actuators with IP54 and IP66 degree of protection	Simple and wide selection of actuators
Equal-percentage characteristic curve without input step	Can be controlled perfectly, even in the lowest partial load range
Self-cleaning ball valve	Outstanding resistance to contamination
Maintenance-free and 5-year warranty	Reliable product with full Belimo support
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

2

Return temperature control

Typical control application with a 3-way control valve



Return temperature control

Hydronic diagram

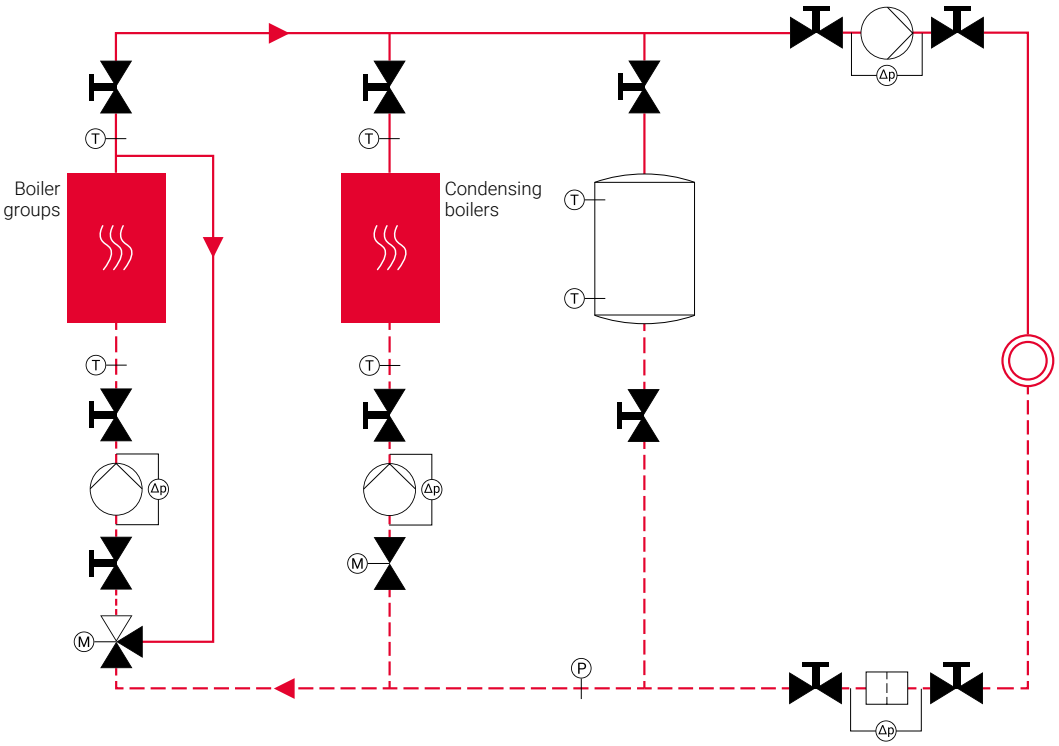


Illustration example
Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

This application is frequently used when existing systems are retrofitted or upgraded with a boiler (e.g. biomass boiler).

Boiler with return temperature control

- 3-way control valve mixes the (colder) return medium with part of the (hotter) supply medium
- The minimum temperature required for operating the heating system can thereby be quickly attained
- Return temperature control prevents corrosive pitting and stress cracks in the boiler due to condensation

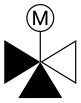
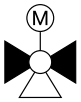
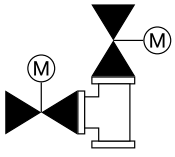
Condensing boiler without return temperature control

- Condensing boilers in corrosion-resistant material utilise condensation heat
- The lower the return temperature, the more humidity condenses in the boiler and the greater the additional heat gain
- Return temperature control would be counterproductive in this scenario

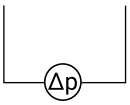
General

- Manual open/close butterfly valves with worm gears, shut off pumps, buffer storage tank, heat generators and strainer during commissioning or maintenance
- Temperature sensors measure the supply and return temperatures
- Differential pressure sensors monitor the pump function
- A differential pressure sensor allows a statement to be made on the pollution of the strainer
- A static pressure sensor registers the system pressure and detects a leakage in the system
- In most cases, the volumetric flows of the generator and consumer will vary, meaning that a buffer storage tank or hydronic switch is used for the required load equalisation

Bill of material

	Belimo type	Description	Quantity	Costs
Isolation valve alternative 1				
	D6..N(L) + SR..A-5 GR..A-5 DR.. or D6..W(L) + JR.. PR..	Open/close butterfly valve, wafer or lug type, DN 25...700 with open/close rotary actuator 20...160 Nm	1	
Isolation valve alternative 2				
	R2../ R4../ R6.. + LR..A NR..A SR..A	Open/close ball valve, internal thread, external thread, flange, DN 15...50 with open/close rotary actuator 5...20 Nm	1	
3-way control valve alternative 1				
	H5../ H7.. + LV.. NV.. EV..	3-way globe valve, external thread, DN 15...50, flange, DN 15...150 with globe valve actuators 500...2500 N	1	
3-way control valve alternative 2				
	R3../ R5../ R7.. + LR..A NR..A SR..A	3-way characterised control valve, internal thread, external thread, flange, DN 15...50 with rotary actuator 5...20 Nm	1	
3-way control butterfly valve Alternative 3				
	D7..L/BAC	3-way changeover valve or control butterfly valve with Belimo lug types, DN 100...300	1	
	ZD7..	T-piece for 3-way control butterfly valve, DN 100...300	1	

Bill of material

	Belimo type	Description	Quantity	Costs
Same with alternatives 1 to 3				
	**D6..W(L) D6..N(L) + ZD6N-S..**	Manual open/close butterfly valve, wafer or lug-types with worm gear, DN 25...700	12	
	**01DT-.. or 22DT-..**	Temperature sensor	6	
	**22WDP-..**	Differential pressure sensor	4	
	**22WP-..**	Static pressure sensor	1	

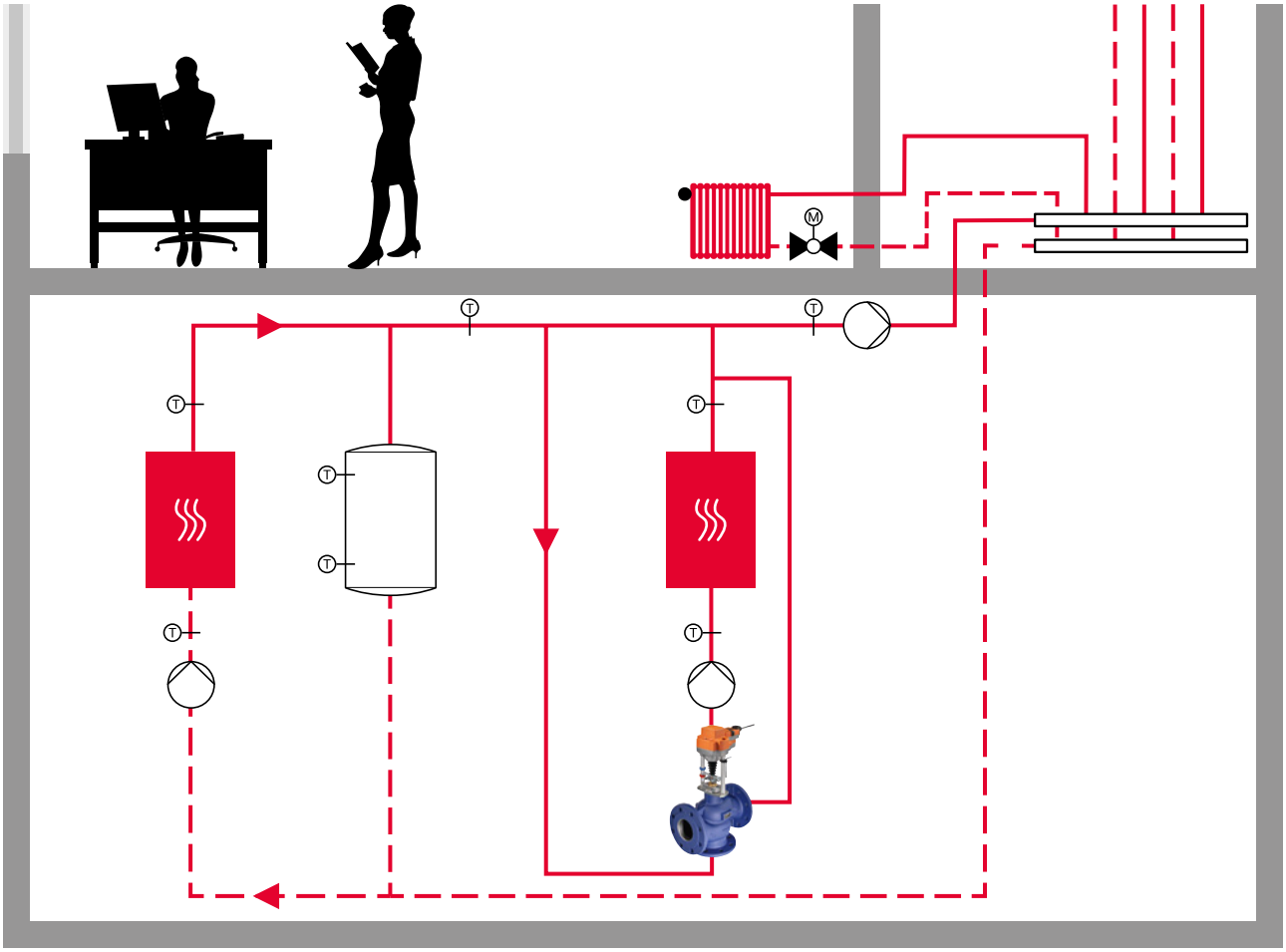
Belimo – features and advantages

Properties	Benefits
Valves and actuators	
Tight-closing valve with leakage rate A, tight (EN 12266-1) for characterised control valves and butterfly valves	No activation with zero load No energy loss with zero load
Low height and weight of actuator	Quick and easy installation
Actuators with 24 V or 230 V power supply, different running times, as well as actuators with IP54 and IP66 degree of protection	Simple and wide selection of actuators
Equal-percentage characteristic curve without input step	Can be controlled perfectly, even in the lowest partial load range
Self-cleaning ball valve	Outstanding resistance to contamination
Maintenance-free and 5-year warranty	Reliable product with full Belimo support
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

3

Heat pump with additional boiler for peak loads

Combined shut-off and control application with several heat generators



Heat pump with additional boiler for peak loads

Hydronic diagram

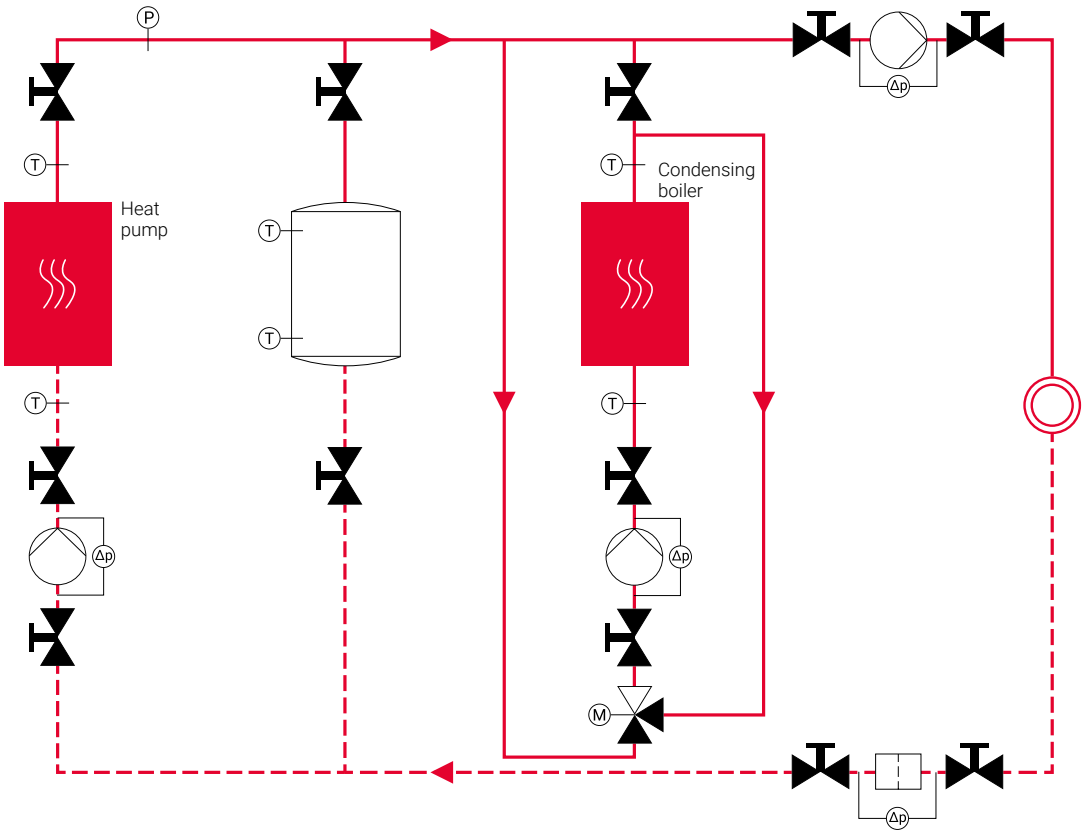


Illustration example
Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

This application is used when specific situations (e.g. an extremely cold winter day) there is a higher heat demand than can be provided by a heat pump.

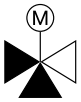
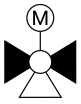
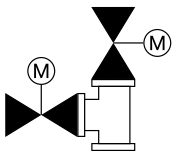
Heat pump

- A heat pump assumes the base load of the heat output and is supplemented by a boiler to cover peak loads
- In partial-load operation, the heat pump frequently provides a heat output that exceeds actual demand
- Instead of continually switching the heat pump on and off, a buffer storage tank is filled during the operating time
- A buffer storage tank also facilitates hydronic decoupling of components

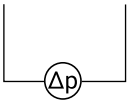
Boiler with return temperature control
- A 3-way control valve mixes part of the (hotter) supply medium with the (colder) return medium
- The minimum temperature required for operating the heating system can thereby be quickly attained
- Return temperature control prevents corrosive pitting and stress cracks in the boiler due to condensation

General
- Manual open/close butterfly valves with worm gears, shut off pumps, buffer storage tank, heat generators and strainer during commissioning or maintenance
- Temperature sensors measure the supply and return temperatures
- Differential pressure sensors monitor the pump function
- A differential pressure sensor allows a statement to be made on the pollution of the strainer
- A static pressure sensor registers the system pressure and detects a leakage in the system

Bill of material

	Belimo type	Description	Quantity	Costs
3-way control valve alternative 1				
	H5../ H7.. + LV.. NV.. EV..	3-way globe valve, external thread, DN 15...50, flange, DN 15...150 with globe valve actuators 500...2500 N	1	
3-way control valve alternative 2				
	R2../ R4../ R6.. + LR..A NR..A SR..A	3-way characterised control valve, internal thread, external thread, flange, DN 15...50 with rotary actuator 5...20 Nm	1	
3-way control butterfly valve Alternative 3				
	D7..L/BAC	3-way changeover valve or control butterfly valve with Belimo lug types, DN 100...300	1	
	ZD7..	T-piece for 3-way control butterfly valve, DN 100...300	1	

Bill of material

	Belimo type	Description	Quantity	Costs
Same with alternatives 1 to 3				
	**D6..N(L) + SR..A-5 GR..A-5 oder D6..W(L) + JR.. PR..**	Open/close butterfly valve, wafer or lug type, DN 25...700 with open/close rotary actuator 20...160 Nm	1	
	**D6..W(L) D6..N(L) + ZD6N-S..**	Manual open/close butterfly valve, wafer or lug type with worm gear, DN 25...700	12	
	**01DT-.. or 22DT-..**	Temperature sensor	6	
	**22WDP-..**	Differential pressure sensor	4	
	**22WP-..**	Static pressure sensor	1	

Belimo – features and advantages

Properties	Benefits
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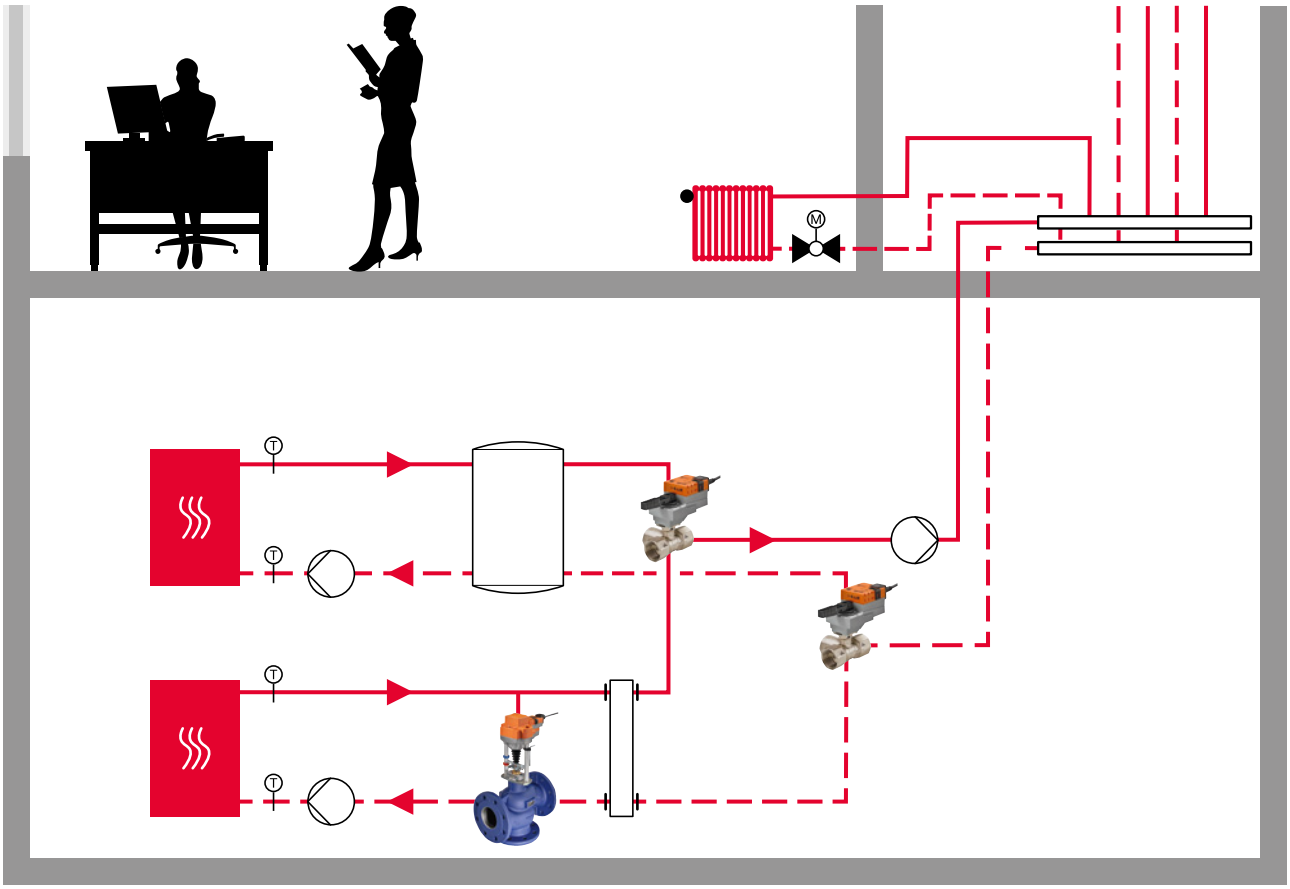
Tight-closing valve with leakage rate A, tight (EN 12266-1) for characterised control valves and butterfly valves	No activation with zero load No energy loss with zero load
Low height and weight of actuator	Quick and easy installation
Actuators with 24 V or 230 V power supply, different running times, as well as actuators with IP54 and IP66 degree of protection	Simple and wide selection of actuators
Equal-percentage characteristic curve without input step	Can be controlled perfectly, even in the lowest partial load range
Self-cleaning ball valve	Outstanding resistance to contamination
Maintenance-free and 5-year warranty	Reliable product with full Belimo support
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

4

Changeover switch between different heat generators

Changeover application between a heat pump and an alternative boiler



Changeover switch between different heat generators

Hydronic diagram

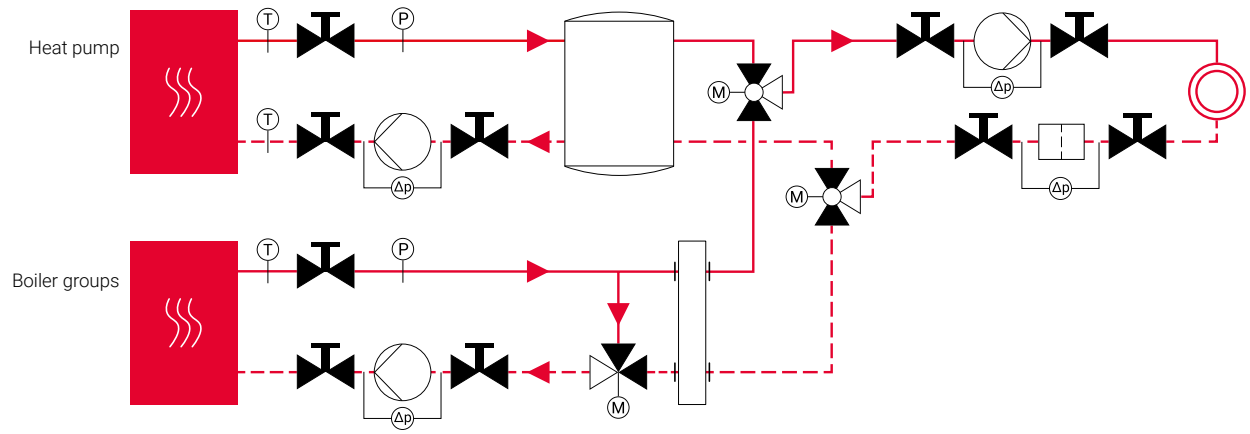


Illustration example
Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

Primary heat generator is safeguarded by the heat pump. If the heat output of the heat pump is insufficient or a malfunction occurs, the system changes over to the boiler as the heat generator.

Heat pump

- The 3-way changeover ball valve with L-bore changes over to the boiler if required
- A buffer storage tank is filled with excess heat output while at the same time it facilitates the hydronic decoupling of the components

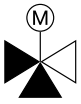
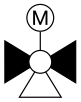
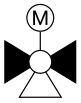
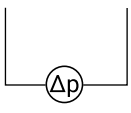
Boiler with return temperature control

- A 3-way control valve mixes part of the (hotter) supply medium with the (colder) return medium
- The minimum temperature required for operating the heating system can thereby be quickly attained
- Return temperature control prevents corrosive pitting and stress cracks in the boiler due to condensation
- Boiler with hydraulic switch

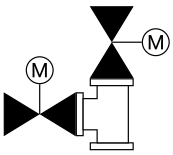
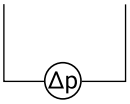
General

- Manual open/close butterfly valves with worm gears, shut off pumps, buffer storage tank, heat generators and strainer during commissioning or maintenance
- Temperature sensors measure the supply and return temperatures
- Differential pressure sensors monitor the pump function
- A differential pressure sensor allows a statement to be made on the pollution of the strainer
- A static pressure sensor registers the system pressure and detects a leakage in the system

Bill of material

	Belimo type	Description	Quantity	Costs
3-way control valve alternative 1				
	**H5../ H7.. + LV.. NV.. EV..**	3-way globe valve, external thread, DN 15...50, flange, DN 15...150 with globe valve actuators 500...2500 N	1	
3-way control valve alternative 2				
	**R3../ R5../ R7.. + LR..A NR..A SR..A**	3-way characterised control valve, internal thread, external thread, flange, DN 15...50 with rotary actuator 5...20 Nm	1	
Same in alternative 1 and 2				
	**R3..BL.. + LR..A NR..A SR..A**	Changeover ball valve with L-bore, internal thread, DN 15...50 with rotary actuator 5...20 Nm	2	
	**D6..W(L) D6..N(L) + ZD6N-S..**	Manual open/close butterfly valve, wafer or Lug-types with worm gear, DN ..	10	
	**01DT-.. or 22DT-..**	Temperature sensor	4	
	**22WDP-..**	Differential pressure sensor	4	
	**22WP-..**	Static pressure sensor	1	

Bill of material

	Belimo type	Description	Quantity	Costs
3-way control butterfly valve alternative 3				
	D7..L/BAC	3-way changeover valve or control butterfly valve with Belimo lug types, DN 100...300	3	
	ZD7..	T-piece for 3-way control butterfly valve, DN 100...300	1	
	D6..W(L) D6..N(L) + ZD6N-S..	Manual open/close butterfly valve, wafer or lug-types with worm gear, DN 25...700	10	
	01DT-.. oder 22DT-..	Temperature sensor	4	
	22WDP-..	Differential pressure sensor	4	
	22WP-..	Static pressure sensor	1	

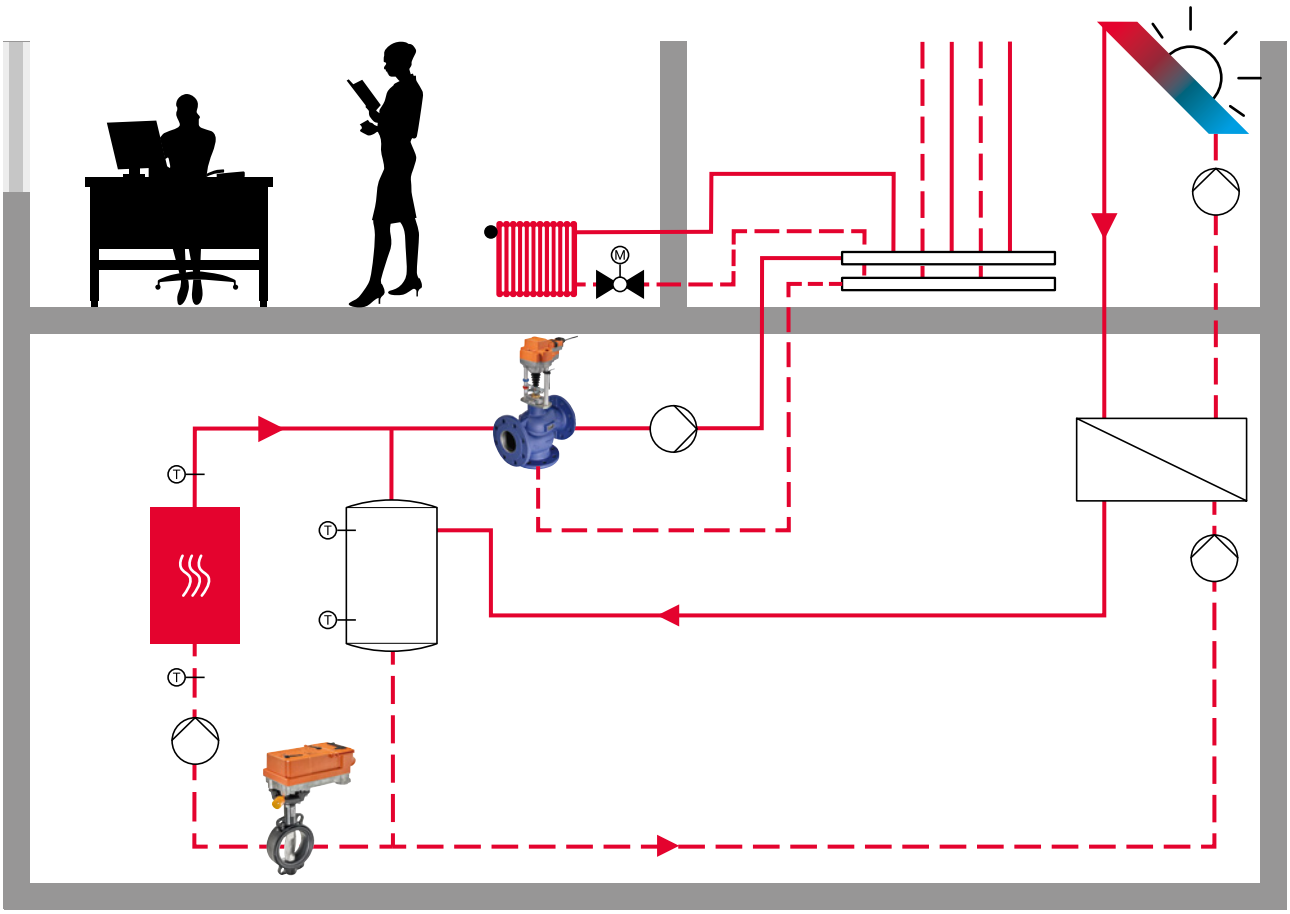
Belimo – features and advantages

Properties	Benefits
Valves and actuators	
Tight-closing valve with leakage rate A, tight (EN 12266-1) for characterised control valves and butterfly valves	No activation with zero load No energy loss with zero load
Low height and weight of actuator	Quick and easy installation
Actuators with 24 V or 230 V power supply, different running times, as well as actuators with IP54 and IP66 degree of protection	Simple and wide selection of actuators
Equal-percentage characteristic curve without input step	Can be controlled perfectly, even in the lowest partial load range
Self-cleaning ball valve	Outstanding resistance to contamination
Maintenance-free and 5-year warranty	Reliable product with full Belimo support
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

5

Condensing boiler in combination with a thermal solar energy system

Changeover application with a solar system



Condensing boiler in combination with a thermal solar energy system

Hydronic diagram

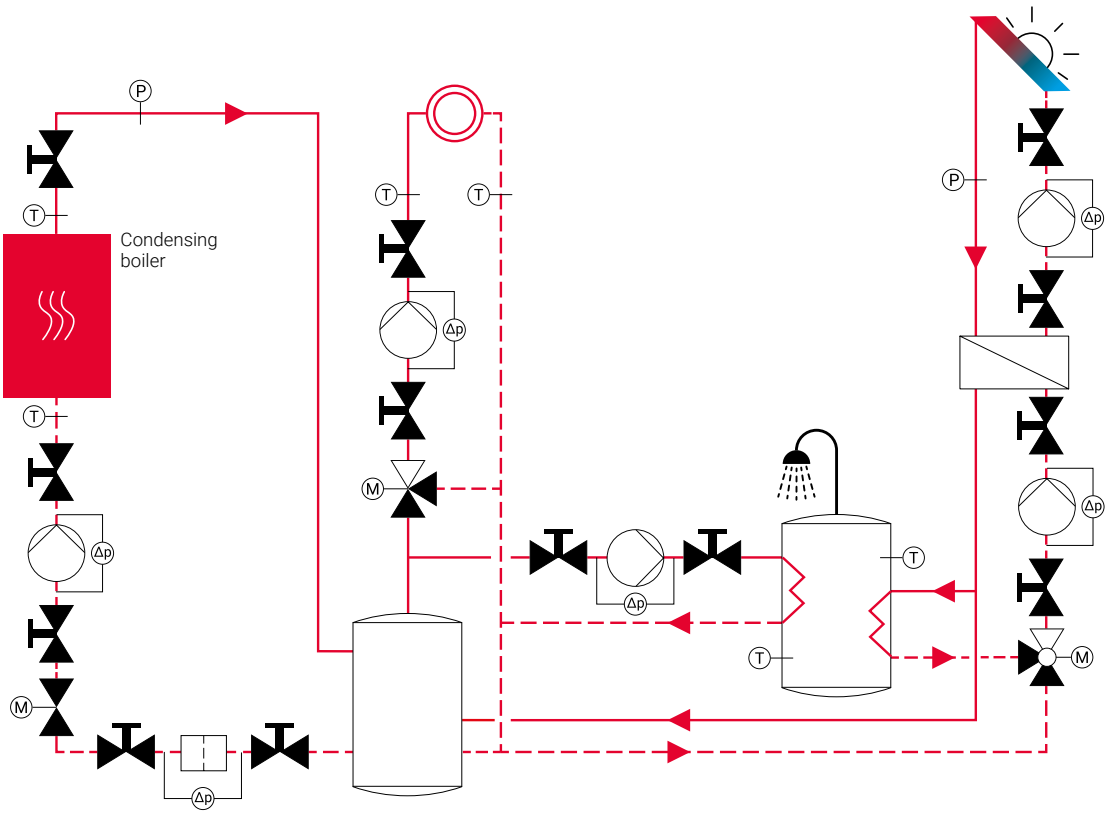


Illustration example
Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

This application combines a thermal solar energy system with a condensing boiler. In the summer, for example, only the thermal solar energy system is in operation to provide heating for the hot water. In the winter, the condensing boiler is operated to provide the thermal energy required for heating and hot water.

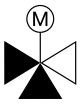
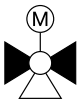
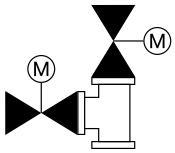
Condensing boiler

– Condensing boilers in corrosion-resistant material utilise condensation heat
– The lower the return temperature, the more humidity condenses in the boiler and the greater the additional heat gain

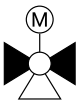
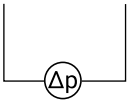
Thermal solar energy system
- The 3-way changeover ball valve with L-bore ensures that the water heated by the thermal solar energy system is channeled into the hot water supply or the buffer storage tank
- The buffer storage tank also facilitates hydronic decoupling of components
- The thermal solar energy system uses glycol to prevent freezing
- A heat exchanger separates the part of the thermal solar energy system that contains glycol from the hot water tank or buffer storage tank

General
- Manual open/close butterfly valves with worm gears, shut off pumps, buffer storage tank, heat generators and strainer during commissioning or maintenance
- Temperature sensors measure the supply and return temperatures
- Differential pressure sensors monitor the pump function
- A differential pressure sensor allows a statement to be made on the pollution of the strainer
- A static pressure sensor registers the system pressure and detects a leakage in the system

Bill of material

	Belimo type	Description	Quantity	Costs
3-way control valve alternative 1				
	H5../ H7.. + LV.. NV.. EV..	3-way globe valve, external thread, DN 15...50, flange, DN 15...150 with globe valve actuators 500...2500 N	1	
3-way control valve alternative 2				
	R3../ R5../ R7.. + LR..A NR..A SR..A	3-way characterised control valve with T-bore, internal thread, external thread, flange, DN 15...50 with rotary actuator 5...20 Nm	1	
3-way control butterfly valve alternative 3				
	D7..L/BAC	3-way changeover valve or control butterfly valve with Belimo lug types, DN 100...300	1	
	ZD7..	T-piece for 3-way control butterfly valve, DN 100...300	1	

Bill of material

	Belimo type	Description	Quantity	Costs
Same with alternatives 1 to 3				
	R3../ R5../ R7.. + LR..A NR..A SR..A	Changeover ball valve, internal thread, external thread, flange, DN 15...50 with rotary actuator 5...20 Nm	1	
	D6..W(L) D6..N(L) + ZD6N-S..	Manual open/close butterfly valve, wafer or lug-types with worm gear, DN 25...700	13	
	01DT-.. or 22DT-..	Temperature sensor	6	
	22WDP-..	Differential pressure sensor	6	
	22WP-..	Static pressure sensor	2	

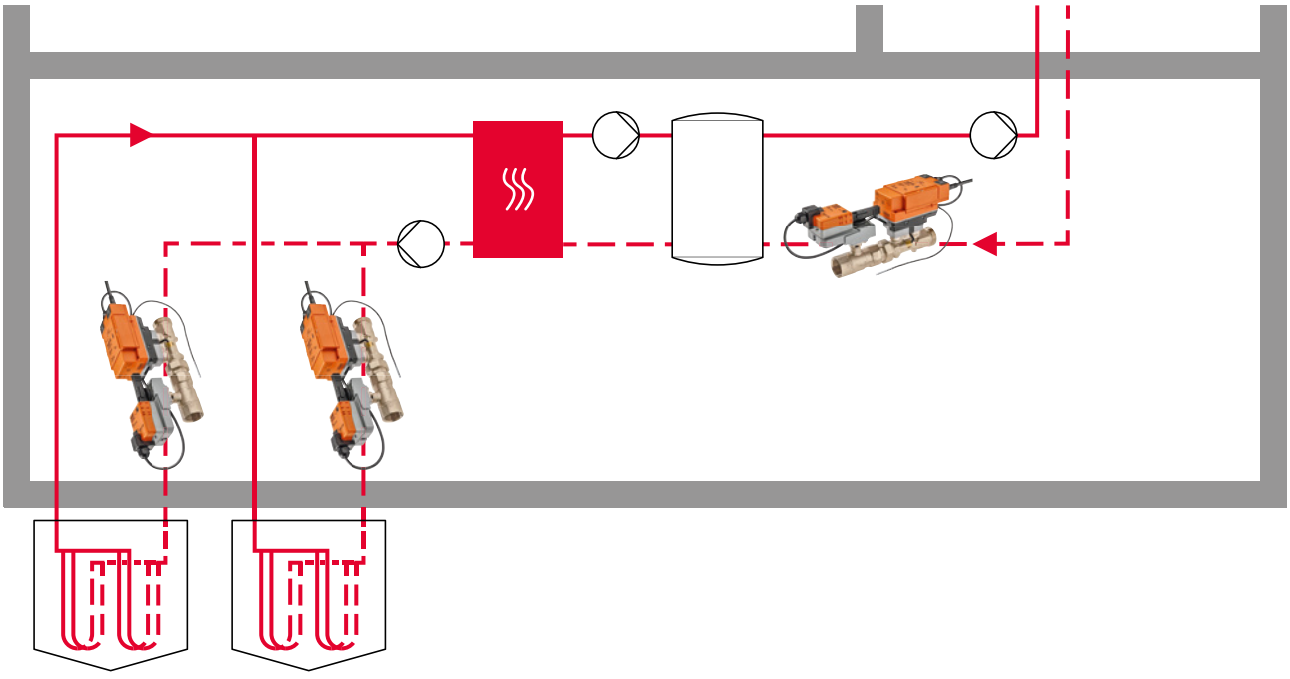
Belimo – features and advantages

Properties	Benefits
Valves and actuators	
Tight-closing valve with leakage rate A, tight (EN 12266-1) for characterised control valves and butterfly valves	No activation with zero load No energy loss with zero load
Low height and weight of actuator	Quick and easy installation
Actuators with 24 V or 230 V power supply, different running times, as well as actuators with IP54 and IP66 degree of protection	Simple and wide selection of actuators
Equal-percentage characteristic curve without input step	Can be controlled perfectly, even in the lowest partial load range
Self-cleaning ball valve	Outstanding resistance to contamination
Maintenance-free and 5-year warranty	Reliable product with full Belimo support
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

6

Hydronic balancing and monitoring of earth probes

Control application with monitoring function



Hydronic balancing and monitoring of earth probes

Hydronic diagram

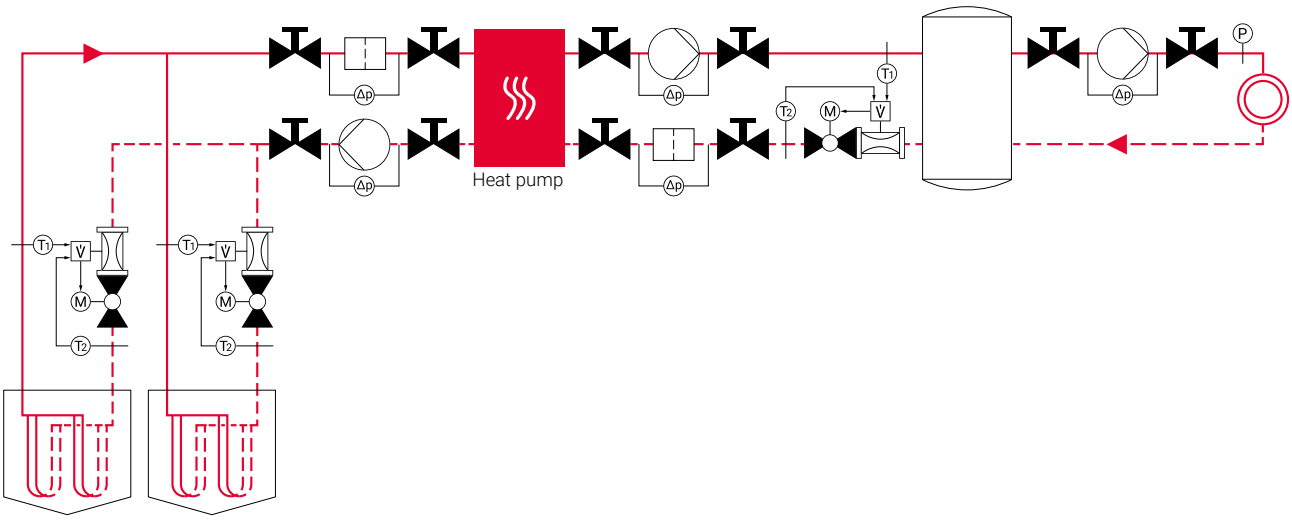
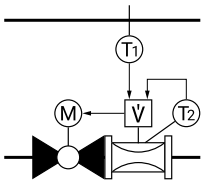
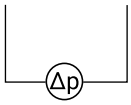


Illustration example
Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

- Thanks to dynamic balancing, the Belimo Energy Valve™ safeguards the correct quantity of water and energy on the heat-generation side at all times
- By leveraging the data supplied by the Belimo Energy Valve™, it is possible to determine at an early stage whether an earth probe field is no longer providing the required power (monitoring)
- Heat pumps that use the ground as a source of energy must have a refrigerant in their lines to prevent the heat transfer medium from freezing
- The Belimo Energy Valve™ can perform glycol monitoring (optional)
- Manual open/close butterfly valves with worm gears shut off the pumps, strainers and heat generators during commissioning or maintenance
- Temperature sensors measure the supply and return temperatures
- A differential pressure sensor allows a statement to be made on the pollution of the strainer
- A static pressure sensor registers the system pressure and detects a leakage in the system

Bill of material

	Belimo type	Description	Quantity	Costs
	EV..R2+(K)BAC EV..F+(K)BAC	Electronic pressure-independent characterised control valve with energy monitoring (Belimo Energy Valve™), internal thread DN 15...50, flange DN 65...150	3	
	D6..W(L) D6..N(L) + ZD6N-S..	Manual open/close butterfly valve, wafer or lug type with worm gear, DN 25...700	10	
	22WDP-..	Differential pressure sensor	5	
	22WP-..	Static pressure sensor	1	

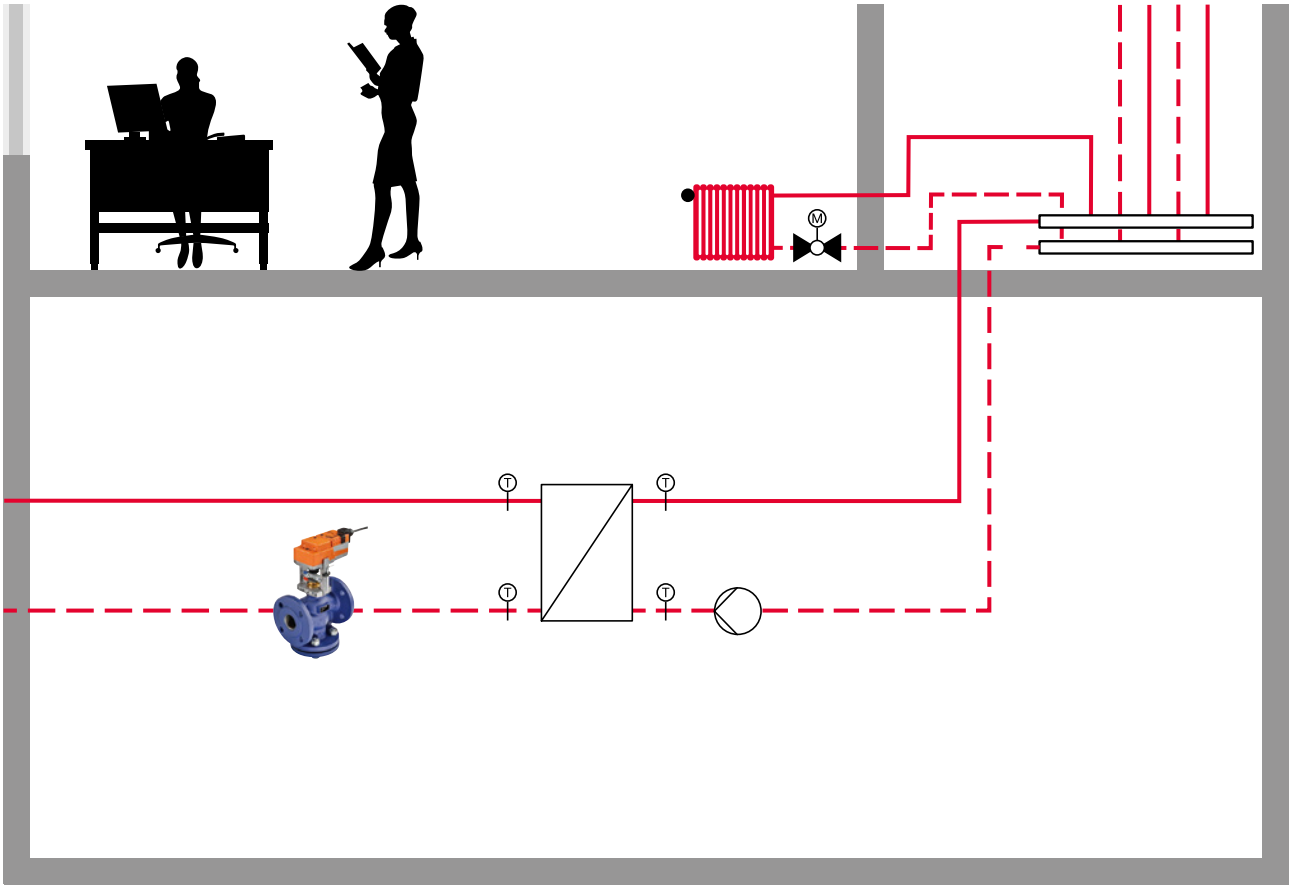
Belimo – features and advantages

Properties	Benefits
Valves and actuators	
Tightly sealed valve with leakage rate A, tight (EN 12266-1)	No activation with zero load No energy loss with zero load
Simple design for maximum volumetric flow	Time-saving and safe valve design
All-in-one solution	5 Functions: Measuring, controlling, dynamic balancing, isolating and monitoring
Pressure-independent flow rate due to dynamic balancing	Extremely simplified design and commissioning Securing the correct quantity of water with differential pressure changes and with partial-load operation Excellent control stability across the entire flow range
Flow measurement	Real-time information quantity of water
Power control	Operation independent of temperature and differential pressure
Self-cleaning ball valve	Outstanding resistance to contamination
Maintenance-free and 5-year warranty	Reliable product with full Belimo support
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

7

Local heat

Control application for local heat generation



Local heat

Hydronic diagram

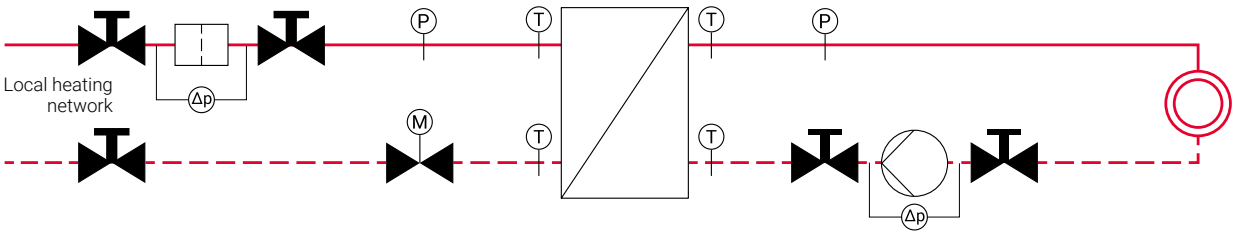
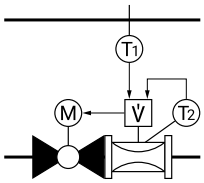
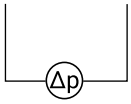


Illustration example
Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

- A local heating network is a central system that generates heat energy and distributes it to various buildings via a distribution network
- The local heating network is shorter than 1 kilometre
- The differential pressures lie within a range of 1...4 bar
- Valves of PN 16 pressure class are usually used
- The fluid temperatures are below 120°C (hot water)
- The control valve on the primary side controls the desired temperature, depending on the heat demand of the heat consumers on the secondary side
- The control valve can be designed as a Belimo Energy Valve™, which ensures pressure-independent operation of the primary circuit and additionally enables energy monitoring
- The control valve can be optionally designed with a fail-safe to implement protection against scalding on the consumer side
- Manual open/close butterfly valves with worm gears shut off the pumps and strainers during commissioning or maintenance
- Temperature sensors measure the supply and return temperatures
- Differential pressure sensors monitor the pump function
- A differential pressure sensor allows a statement to be made on the pollution of the strainer
- Static pressure sensors register the system pressure and detect a leakage in the system

Bill of material

	Belimo type	Description	Quantity	Costs
2-way control valve alternative 1				
	H4../ H6.. + LV.. NV.. EV..	2-way globe valve, external thread, DN 15...50, flange, DN 15...150 with globe valve actuators 500...2500 N for use with hot water up to 120°C	1	
2-way control valve alternative 2				
	R2../ R4../ R6.. + LR..A NR..A SR..A GR..A	2-way characterised control valve, internal thread, external thread, flange, DN 15...150 with rotary actuator 5...40 Nm for use with hot water up to 120°C / R4.. and R6.. up to 100°C	1	
2-way control valve alternative 3				
	EV..R2+(K)BAC EV..F+(K)BAC	Electronic pressure-independent characterised control valve with energy monitoring (Belimo Energy Valve™), internal thread DN 15...50, flange DN 65...150 Optionally available with fail-safe	1	
2-way control butterfly valve alternative 4				
	D6..N(L) + SR..A-5 GR..A-5 or D6..W(L) + JR.. PR..	Control butterfly valve, wafer or lug type, DN 25...300 with rotary actuator 20...160 Nm	8	
Same with alternatives 1 to 4				
	D6..W(L) D6..N(L) + ZD6N-S..	Manual open/close butterfly valve, wafer or lug types with worm gear, DN 25...700	5	
	01DT-.. or 22DT-..	Temperature sensor	4	
	22WDP-..	Differential pressure sensor	2	
	22WP-..	Static pressure sensor	2	

7

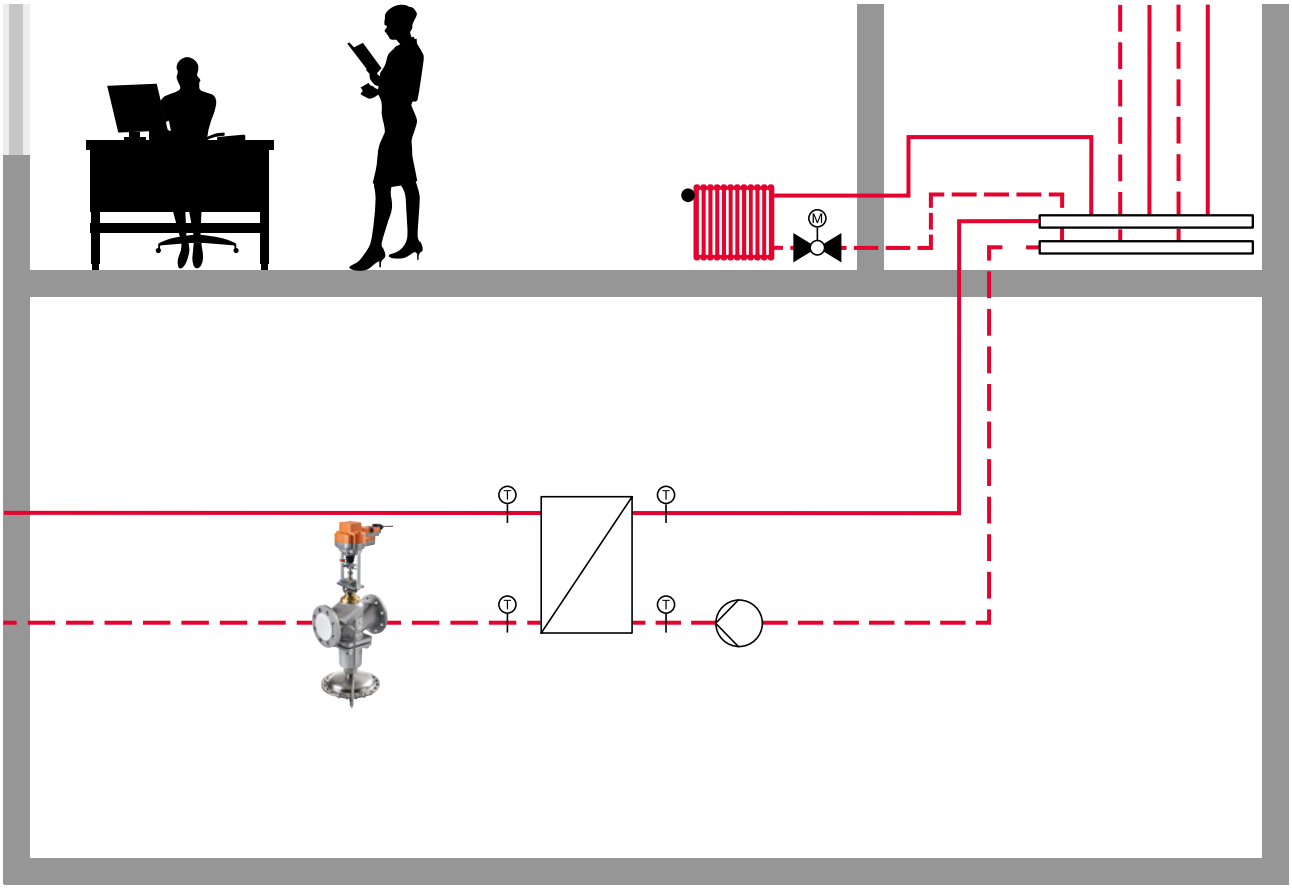
Belimo – features and advantages

Properties	Benefits
Valves and actuators	
High fluid temperatures for globe valves	Can be used with hot water
Actuators with 24 V or 230 V power supply, different running times, as well as actuators with IP54 and IP65 degree of protection	Simple and wide selection of actuators
Maintenance-free and 5-year warranty	Reliable product with full Belimo support
Belimo Energy Valve™	
All-in-one solution	5 Functions: Measuring, controlling, dynamic balancing, isolating and monitoring
Pressure-independent flow rate due to dynamic balancing	Extremely simplified commissioning Securing the correct quantity of water with differential pressure changes and with partial-load operation Excellent control stability across the entire flow range
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

8

District heating

Control application for district heat generation



District heating

Hydronic diagram

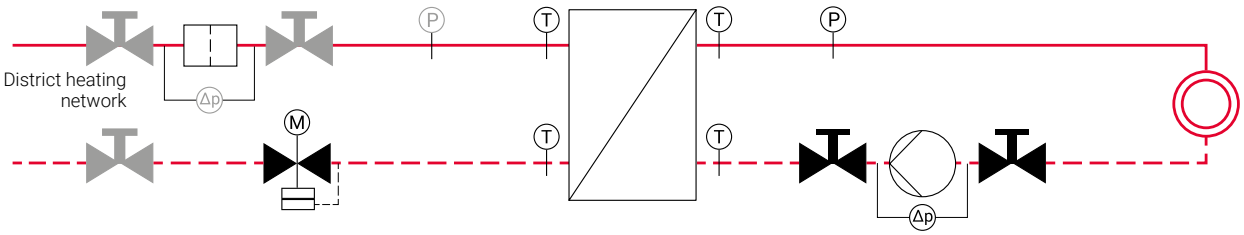
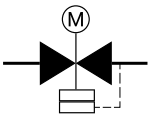
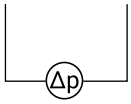


Illustration example
Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

- A district heating network is a central system that generates heat energy and distributes it to various buildings via a distribution network
- The district heating network is between 1 and 10 kilometres long
- The differential pressures may be up to 15 bar
- Valves of PN 16 or PN 25 pressure class are usually used
- Fluid temperatures above 120°C are possible (hot water)
- A differential pressure controller reduces the high differential pressure on the primary side (district heating network)
- The control valve on the primary side controls the desired temperature, depending on the heat demand of the heat consumer on the secondary side
- The control valve can be optionally designed as a control valve with a fail-safe to implement protection against scalding on the consumer side
- Manual open/close butterfly valves with worm gears shut off the pumps and strainers during commissioning or maintenance
- Temperature sensors measure the supply and return temperatures
- Differential pressure sensors monitor the pump function
- A differential pressure sensor allows a statement to be made on the pollution of the strainer
- A static pressure sensor registers the system pressure and detects a leakage in the system

Bill of material

	Belimo type	Description	Quantity	Costs
	EXT-H6..P-.. + LV.. NV.. EV..	2-way pressure-independent globe valve, flange, DN 15...125 with globe valve actuators 500...2500 N for use with hot water up to 150°C	1	
	D6..W(L) D6..N(L) + ZD6N-S..	Manual open/close butterfly valve, wafer or lug types with worm gear, DN 25...700 (max.fluid temperature 120°C)	5	
	01DT-.. or 22DT-..	Temperature sensor (max.fluid temperature 160°C)	4	
	22WDP-..	Differential pressure sensor (max.fluid temperature 80°C)	2	
	22WP-..	Static pressure sensor (max.fluid temperature 125°C)	2	

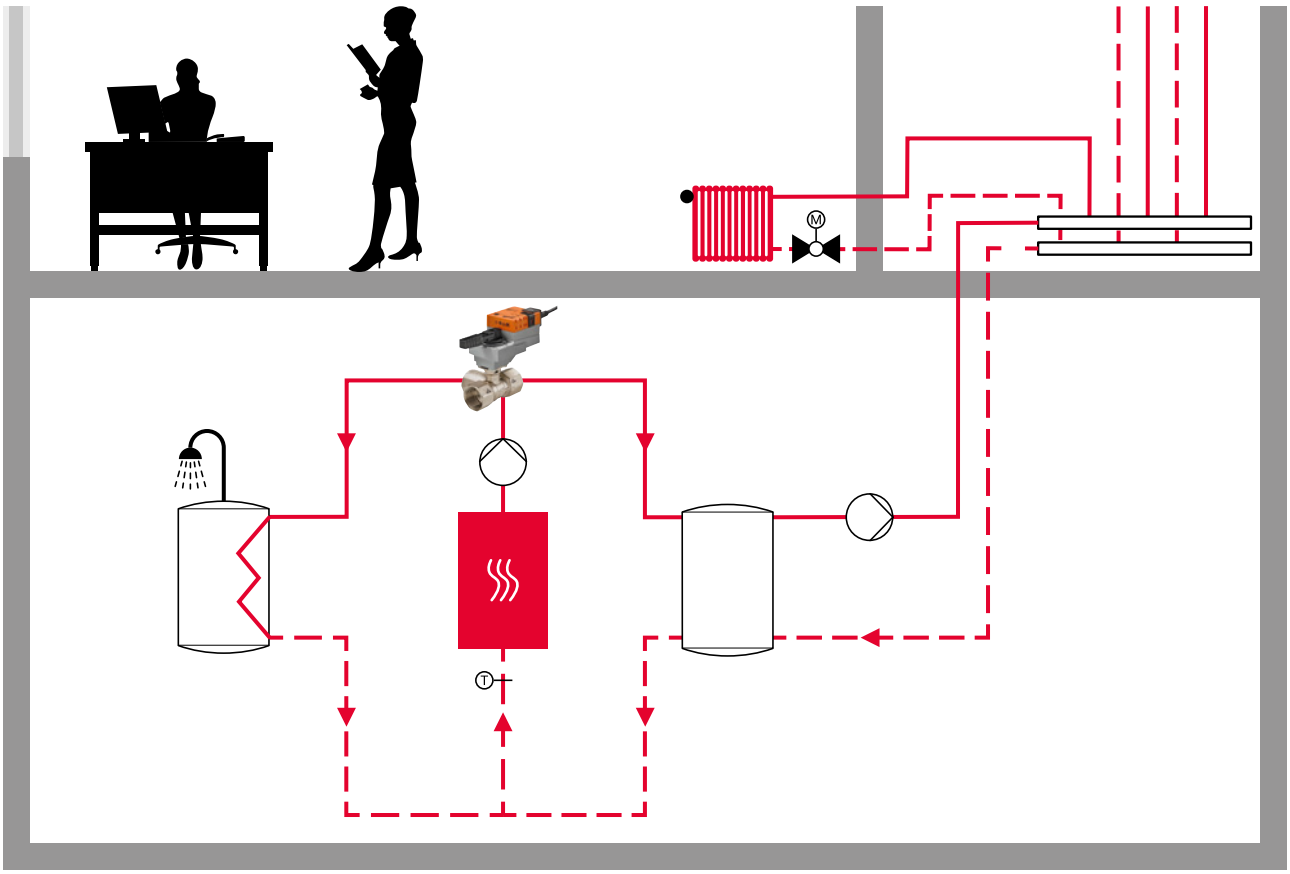
Belimo – features and advantages

Properties	Benefits
Valves and actuators	
High fluid temperatures for globe valves	Can be used with hot water
Actuators with 24 V or 230 V power supply, different running times, as well as actuators with IP54 and IP65 degree of protection	Simple and wide selection of actuators
Maintenance-free and 5-year warranty	Reliable product with full Belimo support
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

9

Heat pumps for heating, cooling and water heating

Changeover application between heating and cooling



Heat pumps for heating, cooling and water heating

Hydronic diagram

Application 1 – Winter operation – Heating and hot water:

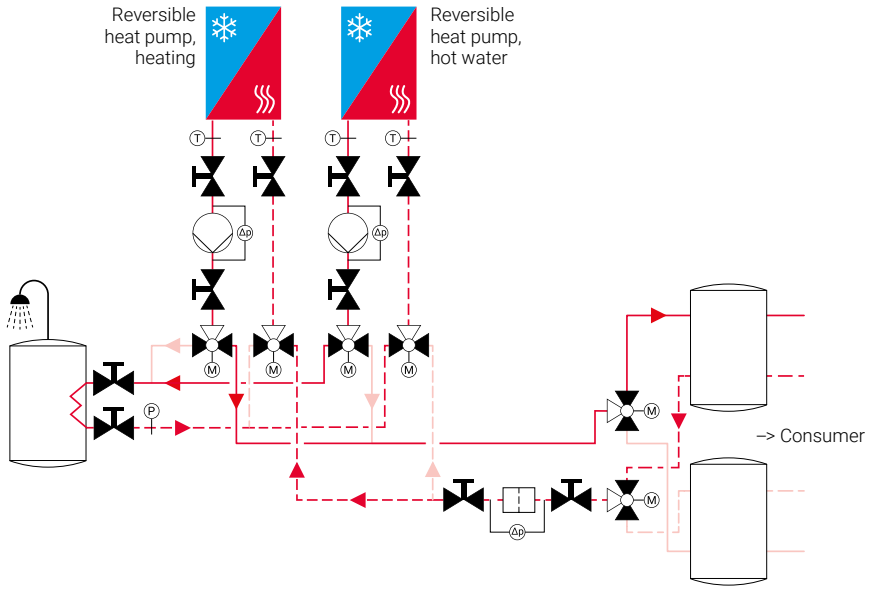


Illustration example
Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Hydronic diagram

Application 2 – Summer operation – Cooling and hot water:

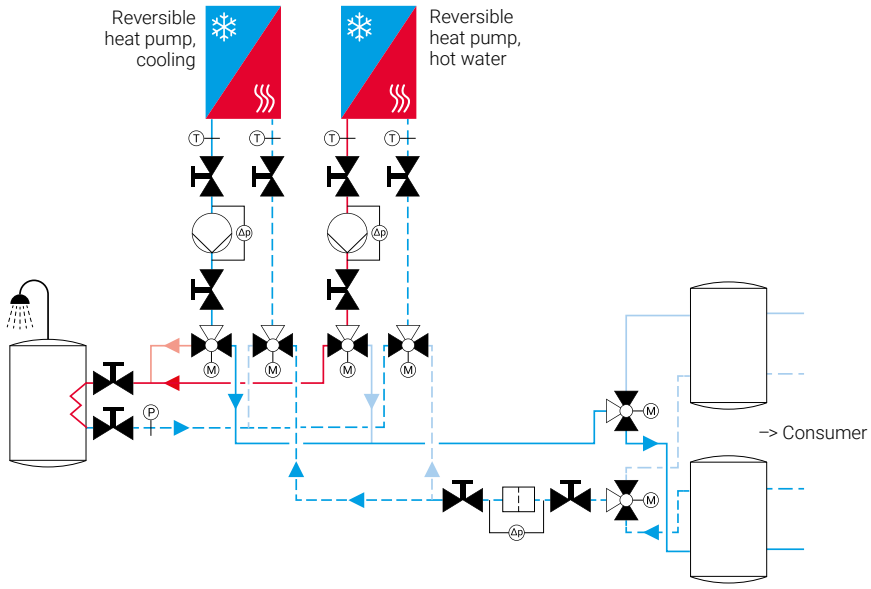


Illustration example
Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

This application is versatile and uses two heat pumps for heating, cooling and providing water heating. This installation generally favours smaller nominal diameters which is why the changeover ball valve with L-bore is the ideal product for this application.

Application 1 – Winter operation – Heating and hot water

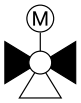
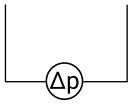
– The left reversible heat pump acts as a heat generator for heating purposes
– The right reversible heat pump is used to provide water heating
– The 3-way changeover ball valves with L-bore carry out changeover operations when the heat pumps are used for a different application (e.g. changeover between heating and cooling or between providing water heating and providing heating)

Application 2 – Summer operation – Cooling and hot water

– The left reversible heat pump is used as a chiller
– The right reversible heat pump is used to provide water heating
– The 3-way changeover ball valves with L-bore assume the same operative function as in application 1

Other applications are also possible with this installation. For example, both heat pumps could be used for dedicated cooling in the summer and dedicated heating in the winter.

Bill of material

	Belimo type	Description	Quantity	Costs
	R3..BL.. + LR..A NR..A SR..A	Changeover ball valve with L-bore, internal thread, DN 15...50 with rotary actuator 5...20 Nm	6	
	D6..W(L) D6..N(L) + ZD6N-S..	Manual open/close butterfly valve, wafer or lug type with worm gear, DN 25...700	5	
	01DT-.. or 22DT-..	Temperature sensor	4	
	22WDP-..	Differential pressure sensor	3	
	22WP-..	Static pressure sensor	1	

Belimo – features and advantages

Properties	Benefits
Valves and actuators	
Tight-closing valve with leakage rate A, tight (EN 12266-1) for characterised control valves and butterfly valves	No activation with zero load No energy loss with zero load
Low height and weight of actuator	Quick and easy installation
Actuators with 24 V or 230 V power supply, different running times, as well as actuators with IP54 and IP66 degree of protection	Simple and wide selection of actuators
Self-cleaning ball valve	Outstanding resistance to contamination
Maintenance-free and 5-year warranty	Reliable product with full Belimo support
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

Further documentations

- Applications chillers and cooling towers
- Notes for project planning: Butterfly valves for control, shut-off, and change-over applications
- Notes for project planning: 2-way and 3-way globe valves
- Notes for project planning: 2-way and 3-way characterised control valves
- Notes for project planning: Electronic pressure-independent valve with energy monitoring Belimo Energy Valve™ 4

Tender texts

Note: You will find the latest tender texts on our website.

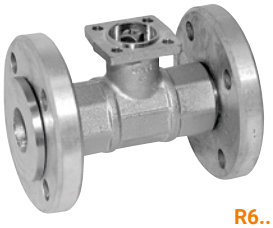
R2../ R4../ R6..

2-way open/close ball valve, 2-way characterised control valve

Fluid:	Water with max. 50% volume of glycol
Connection:	Internal thread, external thread, flange
Nominal diameter:	DN 15...50
K_{VS} values:	0.25...49 m^3/h
Fluid temperature:	−10...120°C
Permissible operating pressure p_S:	600 kPa / 1600 kPa
Leakage rate:	A, air-bubble tight (EN 12266-1)
Valve:	Nickel-plated brass
Closing element:	Stainless steel chrome plated brass
Seal:	PTFE
Spindle:	Stainless steel, nickel-plated brass
Spindle seal:	EPDM
Characterised disc:	TEFZEL
Make:	Belimo
Type:	R2../ R4../ R6..

R2..

R4..



R6..

R6..W..

2-way characterised control valve

Fluid:	Water with max. 50% volume of glycol
Connection:	Flange
Nominal diameter:	DN 65...150
K_{VS} values:	63...320 m^3/h
Fluid temperature:	−10...120°C
Permissible operating pressure p_S:	1600 kPa
Leakage rate:	A, air-bubble tight (EN 12266-1)
Valve:	EN-GJL-250 (GG25)
Closing element:	Stainless steel
Seal:	PTFE
Spindle:	Stainless steel
Spindle seal:	EPDM
Characterised disc:	Stainless steel
Make:	Belimo
Type:	R6..W..

R6..W..

R3../ R5../ R7..

3-way characterised control valve with integrated characterised disc for modulating control of cold and hot water, 3-way changeover ball valve with T-bore.

Fluid:	Water with max. 50% volume of glycol
Connection:	Internal thread, external thread, flange
Nominal diameter:	DN 15...50
K_{VS} values:	0.25...75 m^3/h
Fluid temperature:	−10...120°C
Permissible operating pressure p_S:	600 kPa / 1600 kPa
Characteristic curve A – AB:	Equal percentage according to VDI/VDE 2173
Bypass B – AB:	Linear
Leakage rate of control path A – AB:	A, air-bubble tight (EN 12266-1)
Bypass B – AB:	Approx. 1...2% of the K_{VS} value
Valve:	Nickel-plated brass
Closing element:	Stainless steel, chrome plated brass
Seal:	PTFE
Spindle:	Stainless steel, Nickel-plated brass
Spindle seal:	EPDM
Characterised disc:	TEFZEL
Make:	Belimo
Type:	R3../ R5../ R7..

R3..

R5..

R7..

R3..BL..

3-way changeover ball valve with L-bore for cold and hot water changeover functions.

Fluid:	Water with max. 50% volume of glycol
Connection:	Internal thread
Nominal diameter:	DN 15…50
K_{VS} values:	5.5...75 m^3/h
Fluid temperature:	−10...100°C
Permissible operating pressure p_S:	1600 kPa
Direction of flow:	A – B, AB – B or B – A, B – AB
Leakage rate:	A, air-bubble tight (EN 12266-1)
Valve:	Nickel-plated brass
Closing element:	chrome plated brass
Seal:	PTFE
Spindle:	chrome plated brass
Spindle seal:	EPDM
Make:	Belimo
Type:	R3..BL..

R3..BL..

LR..A

Rotary actuator for use up to nominal diameter DN 25. Direct mounting on the ball valve with one central screw. The assembly tool is integrated in the add-on position indication. Installation orientation in relation to the ball valve can be selected in 90 steps. Overload protected and without end switch, current reduction in rest position.

Torque:	5 Nm
Nominal voltage:	AC/DC 24 V, AC 230 V
Control:	Open/close, 3-point, modulating, MP-Bus, Modbus, BACnet, KNX
Power consumption:	
– Operation:	1.5...2.5 W
– Rest position:	0.2...1.3 W
Connection:	Cable or terminals
Manual override:	with push-button
Running time:	2.5...150 s
Degree of protection	IP54
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	LR..A

LR..A

NR..A

Rotary actuator for use up to nominal diameter DN 40. Direct mounting on the ball valve with one central screw. The assembly tool is integrated in the add-on position indication. Installation orientation in relation to the ball valve can be selected in 90 steps. Overload protected and without end switch, current reduction in rest position.

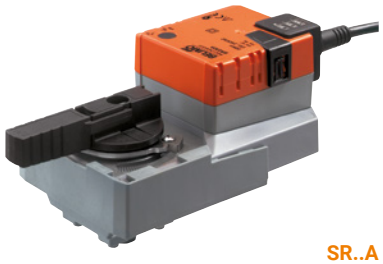
Torque:	10 Nm
Nominal voltage:	AC/DC 24 V, AC 230 V
Control:	Open/close, 3-point, modulating, MP-Bus, Modbus, BACnet, KNX
Power consumption:	
– Operation:	2...3.5 W
– Rest position:	0.2...1.5 W
Connection:	Cable or terminals
Manual override:	with push-button
Running time:	4...150 s
Degree of protection	IP54
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	NR..A

NR..A

SR..A

Rotary actuator for use up to nominal diameter DN 50. Direct mounting on the ball valve with one central screw. The assembly tool is integrated in the add-on position indication. Installation orientation in relation to the ball valve can be selected in 90 steps. Overload protected and without end switch, current reduction in rest position.

Torque:	20 Nm
Nominal voltage:	AC/DC 24 V, AC 230 V
Control:	Open/close, 3-point, modulating, MP-Bus, Modbus, BACnet, KNX
Power consumption:	
– Operation:	2.5...3.5 W
– Rest position:	0.2...1.25 W
Connection:	Cable or terminals
Manual override:	with push-button
Running time:	7...150 s
Degree of protection	IP54
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	SR..A



SR..A

D6..W(L)/D6..N(L)

2-way butterfly valves with wafer type or lug type for shut-off or control applications. For open and closed cold and hot water systems.

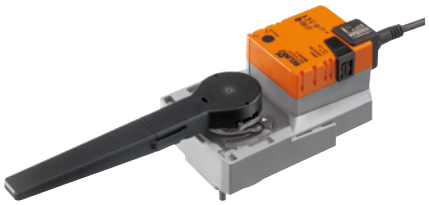
Fluid:	Water with max. 50% volume of glycol
Nominal diameter:	DN 25…700
K_{vmax}:	50…42800 m^3/h (for open/close applications)
K_{vs}:	24...11760 m^3/h (for control applications)
Fluid temperature	−10...120°C
Permissible operating pressure p_S:	1600 kPa
Direction of flow:	Equal-percentage or linear characteristic curve (parametrisable on the JR/PR actuator by means of Belimo Assistant App)
Leakage rate:	A, tight (EN 12266-1)
Angle of rotation:	90°
Valve:	DN 25...80 EN-JS1030 (GGG 40) DN 100...150 EN-JS1025 (GGG 40.3) DN 200...700 EN-JS1030 (GGG 40) Epoxy-Pulverbeschichtung
Closing element:	DIN/EN 1.4301 (stainless steel)
Seat:	EPDM
Spindle:	DIN/EN 1.4005 (stainless steel)
Spindle seal:	EPDM O-ring
Spindle bearing:	RPTFE
Make:	Belimo
Type:	D6..W(L); D6..N(L)

D6..W

SR..A-5

Rotary actuator for adjusting 2-way characterised control valves DN 65...80 and butterfly valves DN 25…65. Overload-protected and without limit switch, current reduction in rest position.

Torque:	20 Nm
Nominal voltage:	AC/DC 24 V, AC 230 V
Control:	Open/close, 3-point, modulating
Power consumption:	
– Operation:	2.5 W
– Rest position:	0.4 W
Connection:	Cable 1 m, 3 x 0.75 mm^2
Manual override:	with push-button
Running time:	90 s
Degree of protection	IP54
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	SR..A-5



SR..A-5

GR..A-5

Rotary actuator for adjusting 2-way characterised control valves DN 100...150 or butterfly valves DN 80. Overload-protected and without limit switch, current reduction in rest position.

Torque:	40 Nm
Nominal voltage:	AC/DC 24 V, AC 230 V
Control:	Open/close or 3-point
Power consumption:	
– Operation:	2.5 W
– Rest position:	0.4 W
Connection:	Cable 1 m, 3 x 0.75 mm^2
Manual override:	with push-button
Running time:	150 s
Degree of protection	IP54
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	GR..A-5

GR..A-5

JR..

Rotary actuator 90 Nm for butterfly valves up to DN 150, overload protected, current reduction in rest position and intelligent heating. The JR actuator with NFC (Near Field Communication) allows easy commissioning, parameterisation and maintenance directly using a smartphone.

Torque:	90 Nm
Nominal voltage:	AC 24...240 V, DC 24...125 V
Control:	Open/close, 3-point, MP-Bus, BACnet MS/TP, Modbus RTU
Power consumption:	
– Operation:	20 W
– Rest position:	7 W
Connection:	Terminal 2.5 mm^2
Auxiliary switch:	2 x SPDT, 1 x 10° fixed / 1 x 85° (0...90° adjustable)
Manual override:	With hand crank, can be fixed in any position
Running time:	35 s (20...120 s adjustable)
Degree of protection:	IP66/67
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	JR..

JR..

PR..

Rotary actuator 160 Nm for butterfly valves up to DN 3000, overload protected, current reduction in rest position and intelligent heating. The JR actuator with NFC (Near Field Communication) allows easy commissioning, parameterisation and maintenance directly using a smartphone.

Torque:	160 Nm
Nominal voltage:	AC/DC 24 V, DC 24...125 V
Control:	Open/close, 3-point, MP-Bus, BACnet MS/TP, Modbus, RTU
Power consumption:	
– Operation:	20 W
– Rest position:	7 W
Connection:	Terminals 2.5 mm^2
Auxiliary switch:	2 x SPDT, 1 x 10° fixed / 1 x 85° (0...90° adjustable)
Manual override:	With hand crank, can be fixed in any position
Running time:	35 s (30...120 s adjustable)
Degree of protection:	IP66/67
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	PR..

PR..

H4..

2-way globe valve for modulating control of cold and hot water.

Fluid:	Water with max. 50% volume of glycol
Connection:	External thread
Nominal diameter:	DN 15...50
K_{VS} values:	0.63...40 m^3/h
Construction:	Control Valve
Fluid temperature:	5...120°C (–10°C with spindle heater)
Permissible operating pressure p_S:	1600 kPa
Leakage rate A – AB:	max. 0.05% of the K_{VS} value
Characteristic curve A – AB:	equal percentage
Closing point valve:	top
Rangeability:	Sv >50
Stroke:	15 mm
Valve:	Red cast bronze Rg5
Closing element:	Stainless steel
Seat:	Red cast bronze Rg5
Spindle:	Stainless steel
Seal:	EPDM O-ring
Make:	Belimo
Type:	H4..

H4..

H6..N

2-way globe valve for modulating control of cold and hot water.

Fluid:	Water with max. 50% volume of glycol
Connection:	Flange
Nominal diameter:	DN 15...100
K_{VS} values:	0.63...145 m^3/h
Construction:	Control Valve
Fluid temperature:	5...120°C (–10°C with spindle heater)
Permissible operating pressure p_S:	1600 kPa
Leakage rate A – AB:	max. 0.05% of the K_{VS} value
Characteristic curve A – AB:	equal percentage
Closing point valve:	top
Rangeability:	Sv >50
Valve:	GG25
Closing element:	Stainless steel
Seat:	GG25
Spindle:	Stainless steel
Seal:	EPDM O-ring
Make:	Belimo
Type:	H6..N

H6..N

H7..R

2-way globe valve for modulating control of cold and hot water.

Fluid:	Water with max. 50% volume of glycol
Connection:	External thread
Nominal diameter:	DN 15...50
K_{VS} values:	0.63...40 m^3/h
Construction:	Control Valve
Fluid temperature:	5...120°C (–10°C with spindle heater)
Permissible operating pressure p_S:	600 kPa
Leakage rate A – AB:	max. 0.05% of the K_{VS} value
Characteristic curve A – AB:	equal percentage
Closing point valve:	top
Rangeability:	Sv >50
Stroke:	15 mm
Valve:	GG25
Closing element:	Stainless steel
Seat:	GG25
Spindle:	Stainless steel
Seal:	EPDM O-ring
Make:	Belimo
Type:	H7..R

H7..R

EXT-H6..P-..

Pressure-independent 2-way globe valve for modulating control of hot water and steam.

Fluid:	Water with max. 50% volume of glycol
Connection:	Flange
Nominal diameter:	DN 15...125
K_{VS} values:	1.6...180 m^3/h
Construction:	Pressure-independent control valve
Fluid temperature:	5...140°C
Permissible operating pressure p_S:	1600 kPa / 2500 kPa
Leakage rate A – AB:	max. 0.07% of the K_{VS} value
Characteristic curve A – AB:	equal percentage
Closing point valve:	top
Rangeability:	Sv >100
Valve:	Grey cast iron
Closing element:	Stainless steel
Seat:	Stainless steel
Spindle:	Stainless steel
Seal:	EPDM O-ring
Make:	Belimo
Type:	EXT-H6..P-..

EXT-H6..P-..

H5..

3-way globe valve for modulating control of cold and hot water.

Fluid:	Water with max. 50% volume of glycol
Connection:	External thread
Nominal diameter:	DN 15...50
K_{VS} values:	0.63...40 m^3/h
Construction:	Mixing valve
Fluid temperature:	5...120°C
Permissible operating pressure p_S:	1600 kPa
Leakage rate A – AB:	max. 0.05% of the K_{VS} value
Leakage rate for bypass B – AB:	max. 1% of the K_{VS} value
Characteristic curve A – AB:	equal percentage
Characteristic curve bypass B – AB:	Linear
Closing point valve:	top
Rangeability:	Sv >50
Valve:	Red cast bronze Rg5
Closing element:	Stainless steel
Seat:	Red cast bronze Rg5
Spindle:	Stainless steel
Seal:	EPDM O-ring
Make:	Belimo
Type:	H5..

H5..

H6..R

2-way globe valve for modulating control of cold and hot water.

Fluid:	Water with max. 50% volume of glycol
Connection:	Flange
Nominal diameter:	DN 15...50
K_{VS} values:	0.63...145 m^3/h
Construction:	Control Valve
Fluid temperature:	5...120°C (–10°C with spindle heater)
Permissible operating pressure p_S:	600 kPa
Leakage rate A – AB:	max. 0.05% of the K_{VS} value
Characteristic curve A – AB:	equal percentage
Closing point valve:	top
Rangeability:	Sv >50
Valve:	GG25
Closing element:	Stainless steel
Seat:	GG25
Spindle:	Stainless steel
Seal:	EPDM O-ring
Make:	Belimo
Type:	H6..R

H6..R

H7..N

3-way globe valve for modulating control of cold and hot water.

Fluid:	Water with max. 50% volume of glycol
Connection:	Flange
Nominal diameter:	DN 15...150
K_{VS} values:	0.63...320 m^3/h
Construction:	Mixing valve
Fluid temperature:	5...120°C (−10°C with spindle heater)
Permissible operating pressure p_S:	1600 kPa
Leakage rate A – AB:	max. 0.05% of the K_{VS} value
Leakage rate for bypass B – AB:	max. 1% of the K_{VS} value
Characteristic curve A – AB:	equal percentage
Characteristic curve bypass B – AB:	Linear
Closing point valve:	top
Rangeability:	Sv >50
Valve:	GG25
Closing element:	Stainless steel
Seat:	GG25
Spindle:	Stainless steel
Seal:	EPDM O-ring
Make:	Belimo
Type:	H7..N

H7..N

LV..

Globe valve actuator for 2-way and 3-way globe valves. Direction of stroke and closing point selectable. Overload protected and maintenance-free. Mechanical position indication and manual override (temporary, permanent).

Actuating force:	500 Nm
Nominal voltage:	AC 230 V, AC/DC 24 V
Control:	Modulating, MP-Bus, BACnet MS/TP; Modbus RTU, LON
Power consumption:	
– Operation:	1 W
– Rest position:	0.2 W
Connection:	Terminals, cable, 1 m
Position indication:	Mechanical
Running time:	150 s
Degree of protection	IP54
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	LV..

LV..

NV..

Globe valve actuator for 2-way and 3-way globe valves. Direction of stroke and closing point selectable. Overload protected and maintenance-free. Mechanical position indication and manual override (temporary, permanent).

Actuating force:	1000 N
Nominal voltage:	AC 230 V, AC/DC 24 V
Control:	Modulating, MP-Bus, Modbus RTU, BACnet MS/TP
Power consumption:	
– Operation:	
– Rest position:	1.5 W
Connection:	0.5 W
Manual override:	Terminals, cable, 1 m
Running time:	mechanical
Degree of protection	150 s
EMC:	IP54
	CE according to 2014/30/EU
Make:	
Type:	Belimo
	NV..

NV..

EV..

Globe valve actuator for 2-way and 3-way globe valves. Direction of stroke and closing point selectable. Overload protected and maintenance-free. Mechanical position indication and manual override (temporary, permanent).

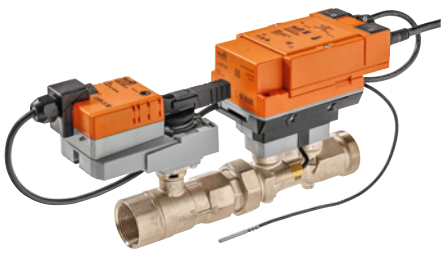
Actuating force:	2500 N
Nominal voltage:	AC 230 V, AC/DC 24 V
Control:	Modulating, MP-Bus, Modbus RTU, BACnet MS/TP
Power consumption:	
– Operation:	
– Rest position:	5.5 W
Connection:	1 W
Manual override:	Terminals, cable, 1 m
Running time:	mechanical
Degree of protection	150 s
EMC:	IP54
	CE according to 2014/30/EU
Make:	
Type:	Belimo
	EV..

EV..

EV..+(K)BAC

Characterised control valve with sensor-operated flow rate or power control, power and energy monitoring, 2-way internal thread, for modulating water-side control of ventilation and air-conditioning systems and heating systems. Consisting of characterised control valve with actuator and measuring pipe with volumetric flow sensor and temperature sensors. Ethernet 10/100 Mbit/s, TCP IP, integrated Web server, communication via Belimo-MP-Bus, Modbus TCP, Modbus RTU, BACnet IP and BACnet MS/TP or conventional control. Configuration via integrated Web server, parametrisable via ZTH-EU. Option to connect to the Belimo Cloud.

V'_{nom}:	25...2700 l/min
Flow rate V'_{max}:	6.3...2700 l/min, adjustable (25...100% of V'_{nom})
Nominal diameter:	DN 15...150
Nominal voltage:	AC/DC 24 V, 50/60 Hz
Control:	MP-Bus, Modbus TCP, Modbus RTU, BACnet IP, BACnet MS/TP, conventional, PoE (Power over Ethernet)
Tools:	Belimo Assistant App, Smartphone-App for easy commissioning, Bluetooth/NFC converter
Control signal Y:	0...10 V
Work Area	2...10 V, variable
Position feedback:	2...10 V, variable
Power consumption:	
– Operation:	4...7 W
– Rest position:	3.7...5 W
Connection supply/control:	Cable 1 m, 6x 0.75 mm²
Supply/Ethernet:	RJ45 connector socket
Manual override:	Gear train disengagement with push button
Degree of protection:	IP54
EMC:	CE according to 2014/30/EU
Media:	Water with glycol up to max. 60% vol.
Fluid temperature:	−10...120°C
Construction:	Control Valve
Flow characteristic:	Equal percentage (VDI/VDE 2173), optimised in the opening range (can be switched to linear)
Leakage rate A:	A, air-bubble tight (EN 12266-1)
Connection:	Internal thread
Permissible operating pressure p_S:	1600 kPa
Housing:	Brass body nickel-plated
Closing element:	Stainless steel
Valve seat:	PTFE, EPDM O-ring
Spindle:	Stainless steel
Seal:	EPDM O-ring
Characterised disc:	TEFZEL
Make:	Belimo
Type:	EV..+(K)BAC



EV..+(K)BAC

All inclusive.

Belimo as a global market leader develops innovative solutions for the controlling of heating, ventilation and air-conditioning systems. Damper actuators, control valves, sensors and meters represent our core business.

Always focusing on customer value, we deliver more than only products. We offer you the complete product range for the regulation and control of HVAC systems from a single source. At the same time, we rely on tested Swiss quality with a five-year warranty. Our worldwide representatives in over 80 countries guarantee short delivery times and comprehensive support through the entire product life. Belimo does indeed include everything.

The “small” Belimo devices have a big impact on comfort, energy efficiency, safety, installation and maintenance.

In short: Small devices, big impact.

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

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BELIMO Automation AG
Brunnenbachstrasse 1, 8340 Hinwil, Switzerland
+41 43 843 61 11, info@belimo.ch, www.belimo.com

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