

Pressure Independent Valves for Terminal Unit Applications



> www.piccv.com

Cost Effective Solution with Maximum Energy Savings.

With Belimo Pressure Independent Characterized Control Valve (PICCV), every system lives up to its full potential – saving time, money, and other precious resources.

It's a fact. Efficient operation of a flow system cannot occur without effective flow balancing and control. System instability and even minor performance anomalies will rob owners of comfort and efficiency throughout the life of the system.

There is a better way. Belimo pressure independent technology helps owners maximize the energy savings of variable flow pumping systems while addressing their unique control challenges.

PICCVs directly control the water flow required by the coil and is not affected by pressure fluctuations in the system. The valves are selected based on the GPM requirements of the coil without the need for Cv calculations. By precisely controlling the flow, pressure independent valves eliminate the need for balancing valves, thus reducing the installation and balancing cost. The biggest benefit for the owner comes in the form of energy savings by eliminating overflow thru the coil.

Belimo pressure independent valves stabilize variable flow systems for a lifetime of efficiency and worry-free, automatic balancing.

EXPERIENCE
EFFICIENCY

BELIMO[®]

Saving Time, Energy, and Cost.

Everyone agrees that variable flow pumping systems have the potential to save facilities significant pump energy cost. But all too often these savings quickly disappear due to complex flow issues.

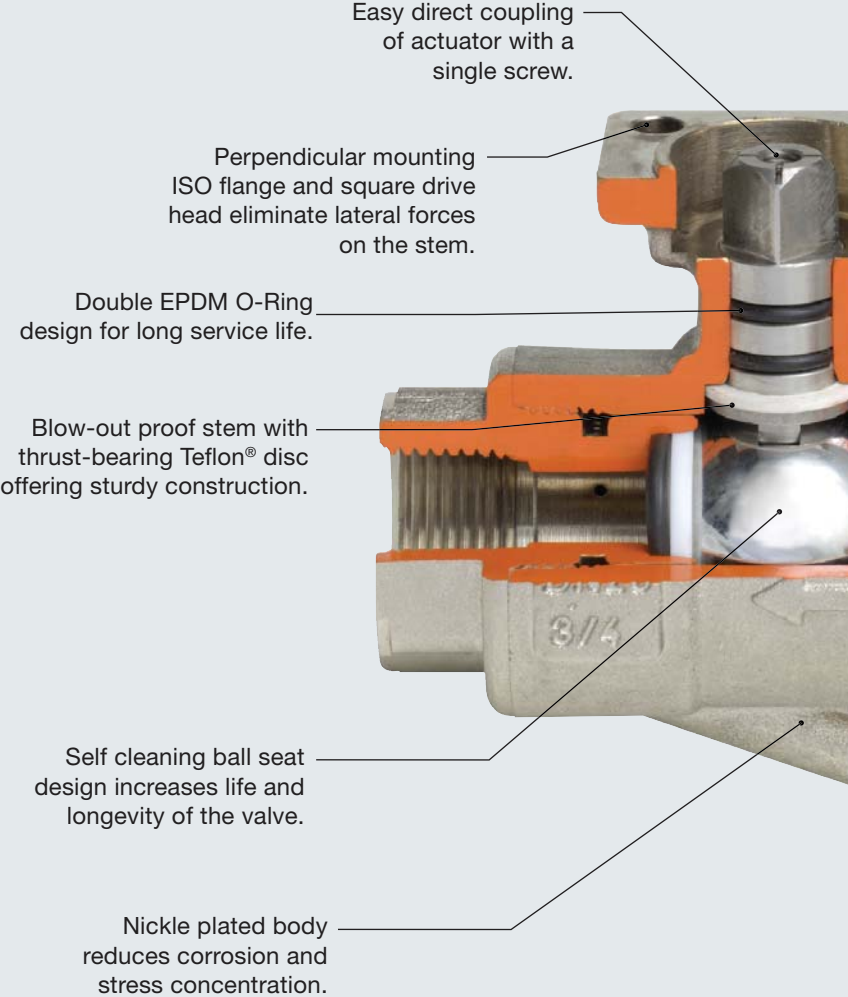
With Belimo Pressure Independent Control technology only a single valve is required to maintain proper flow through each circuit. Each valve can be shipped from the factory pre-set for each circuit, so there is no additional balancing required. The system performs perfectly from start-up. And if a facility adds new circuits as a result of expansion, the flow control of existing circuits remains intact – so no rebalancing is required.

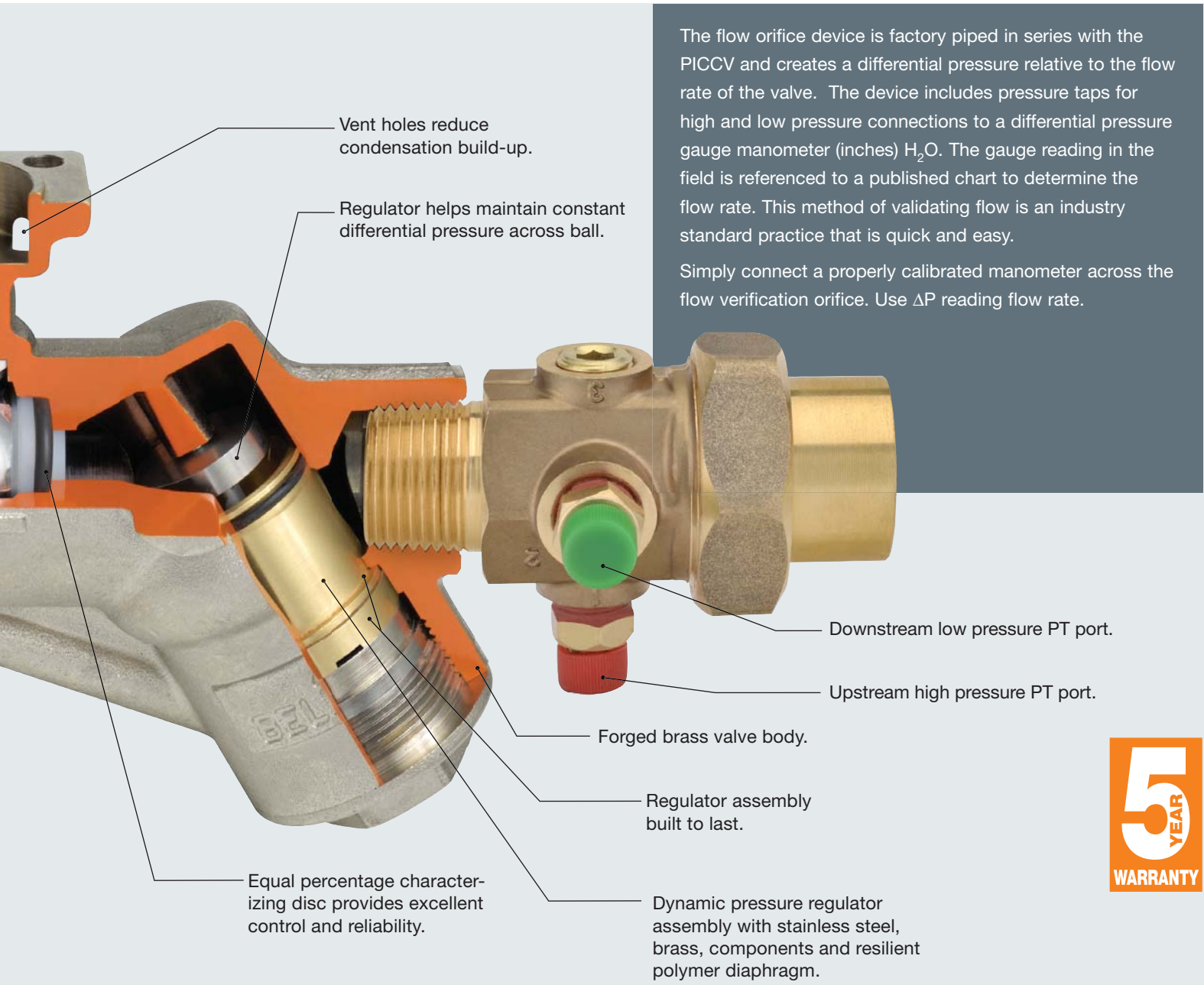
Pressure independent valves can be used to regulate flow through air handlers, heating and cooling heat exchangers, fan coil units, unit ventilators and VAV re-heat coils.

How It Works

Pressure Independent Characterized Control Valves (PICCV) combine a differential pressure regulator with a 2-way characterized control valve to supply a specific flow for each set degree of ball opening – regardless of system pressure fluctuations. The valve performs the function of a balancing valve and control valve in one unit. Therefore, the flow characteristic and operation of the valve is not distorted when system variables change.

As flow passes through the valve, a uniquely designed differential pressure regulator moves according to the change in pressure above and below it. The regulator assembly adjusts to the differential pressure increasing and decreasing the orifice opening so the differential pressure across the characterized control valve stays constant. The valve maintains a constant exiting flow despite any and all changes in system activity that results in pressure variation (i.e. system expansion and or redesign).





The flow orifice device is factory piped in series with the PICCV and creates a differential pressure relative to the flow rate of the valve. The device includes pressure taps for high and low pressure connections to a differential pressure gauge manometer (inches) H₂O. The gauge reading in the field is referenced to a published chart to determine the flow rate. This method of validating flow is an industry standard practice that is quick and easy.

Simply connect a properly calibrated manometer across the flow verification orifice. Use ΔP reading flow rate.



PT Ports

PT ports are available on PICCV -P models. The PT ports provide additional functionality allowing Test and Balance (TAB) professionals to verify that the PICCV media differential pressure and the temperature are within the specified parameters. The PT ports are integrated on the 1/2" to 3/4" models. On the 1" and 2" models, the PT ports are located on external unions installed upstream and downstream of the valve. All models are leak tested in the factory.

New Offerings with Exceptional Value

The PICCV with the LRB24-SA actuator provides you a complete package; a modulating balancing valve, flow verification orifice and pressure independent control valve in an economic package. Flow orifice (-F models) allow independent differential pressure gauge verification of flow.

The proportional control LRB24-SA actuator features a simple push button flow setter to field set required flow. When the coil design flow is less than the factory default setting adjustments are made instantly without tools. A perfect solution for custom flow needs.

Factory set to max flow position – must be field adjusted to achieve required flow.

- Factory default flow setting is equal to the maximum GPM rating of the valve body.
- Push button flow setter illuminates when max flow is achieved providing visual feedback to operators.
- Industry standard flow orifice option regulates flow setpoint regardless of ΔP changes.



The flow measuring and setting is ideal for controlling flow rates in heating and cooling coils, fan coil units, unit ventilators and VAV re-heat coils. The easy one button flow limiting mechanism enables quick commissioning with easy flow adjustments. Designed for commercial and public building applications, the LRB flow setter with a visual position indicator allows accurate and fast balancing without diagrams, tables or the need for costly measuring devices.

Field Set

Product Range / Technical Data		PICCV Model #		PICCV Orifice Model #	Flow Rate		Valve Nominal Size		Close-Off
Non-Spring Return Actuator: LRB24-SA					GPM	Liters /Sec	Inches	DN [mm]	PSI
		P2050B010	P2050B010-P	P2050B010-F	1	0.06	1/2	15	200
		P2050B025	P2050B025-P	P2050B025-F	2.5	0.16	1/2	15	200
		P2050B055	P2050B055-P	P2050B055-F	5.5	0.35	1/2	15	200
Control Type	Proportional	P2075B100	P2075B100-P	P2075B100-F	10	0.63	3/4	20	200
Running Time	90 seconds (varies with flow setting)	PICCV-25-016	PICCV-25-016-P	PICCV-25-016-F	16	1.01	1	25	200
Noise Level	<35 dB(A)	PICCV-25-021	PICCV-25-021-P	PICCV-25-021-F	19	1.2	1	25	200
Electrical Connection	3 ft. cable, 1/2" conduit fitting								

-P: ΔP verification across valve using P/T ports.
 -F: Flow verification using ΔP across orifice.

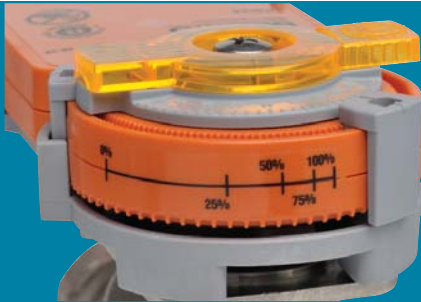
- Quick field set balancing modulating pressure independent valve (LRB24-SA+ PICCV with orifice disc).
- Easy commissioning – Set and measure the flow.
- Comfort and efficiency – PI valve regulates to maintain constant flow regardless of ΔP changes

Perfect for a Wide Range of Applications.

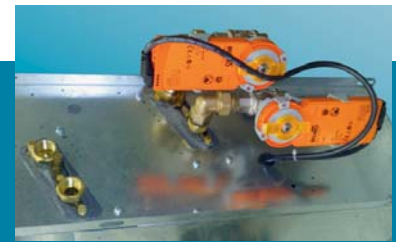
The KRB24-3 actuator technology with floating point control is an economical solution for smaller spaces without compromising functionality or efficiency. It features a fine tooth gear wheel to field set required flow.

The PICCV with the KR offers simple flow customize feature and when factory furnished with a flow orifice users have an independent device to validate flow. Once the flow is set, the PICCV takes over precisely controlling flow and eliminating coil overflow providing system efficiencies and energy savings.

- Factory default flow setting is equal to the maximum GPM rating of the valve body.
- Quick field set balancing with tab locking mechanism when coil flow is less than factory default setting.
- Position indicator provides visual feedback of flow to operators.




Unit Ventilation Devices:
Easy installation when space is limited.



Fan Coils:
Minimal space requirement and simple flow reduction.

Field Set

Product Range / Technical Data		PICCV Model #		Flow Rate		Valve Nominal Size		Close-Off	
Non-Spring Return Actuator: KRB24-3				GPM	Liter /Sec	Inches	DN [mm]	PSI	
		P2050B010	P2050B010-P	P2050B010-F	1	0.06	½	15	200
		P2050B025	P2050B025-P	P2050B025-F	2.5	0.16	½	15	200
		P2050B055	P2050B055-P	P2050B055-F	5.5	0.35	½	15	200
Control Type	Floating Point	P2075B100	P2075B100-P	P2075B100-F	10	0.63	¾	20	200
Running Time	75 seconds (varies with flow setting)	<ul style="list-style-type: none"> • Tabs allow for quick unlocking and secure locking of flow limiting mechanism. • Fine tooth gear wheel flow limiting mechanism enables quick commissioning and adjustment. • Simple flow scale provides quick and accurate adjustments. • Visual position indicator enables quick confirmation of flow. 							
Noise Level	<35 dB(A)								
Electrical Connection	3 ft. cable, (no conduit)								

-P: ΔP verification across valve using P/T ports.
-F: Flow verification using ΔP across orifice.

PICCV with Ports Product Offering

Factory Set

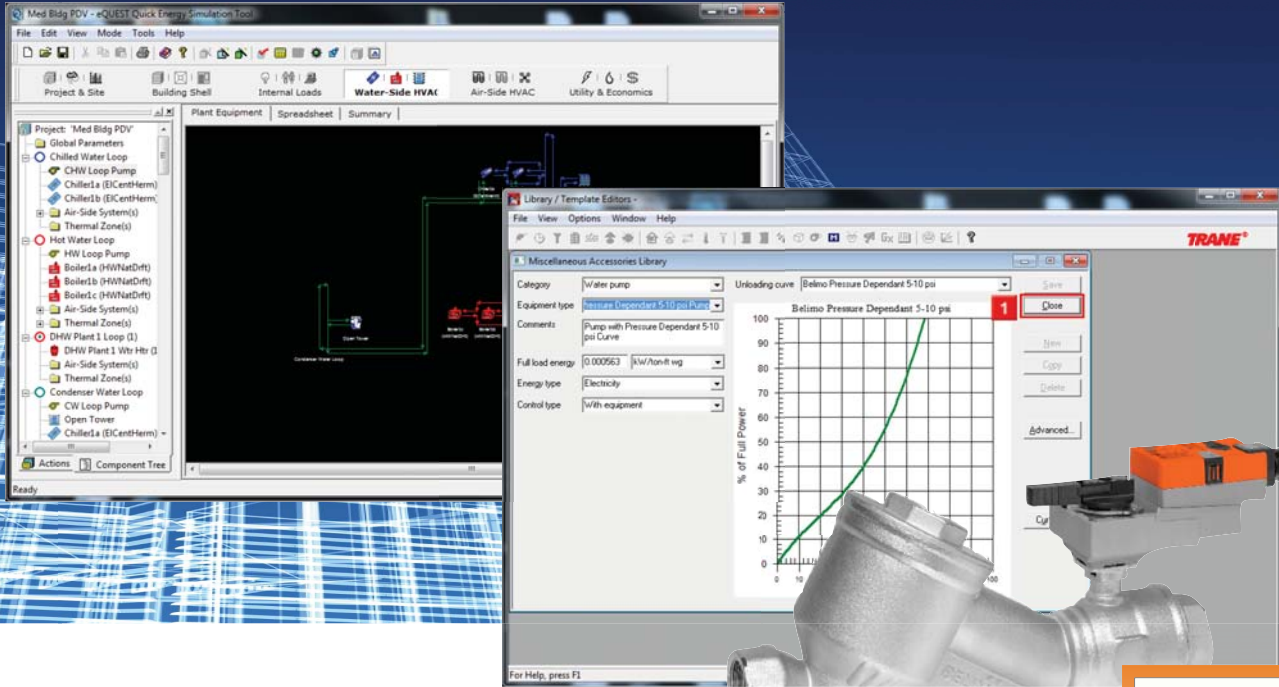


TFRX Now Available on 3/4" PICCVs

The TFRX24-MFT spring return actuator is now available on all 3/4" [DN20] PICCV models. Multiple factory set flows are available.

	Valve Nominal Size			Type		Actuator Type			
	GPM	Inches	DN [mm]	2-way NPT	P/T Ports	Non-Spring Return		Spring Return	
Integral PT Port Option (-P) Forged Body	0.5	1/2	15	P2050B005	P2050B005-P	LRB24-3	LRX24-MFT	TFRX24-MFT	LF24-MFT US
	1.5	1/2	15	P2050B015	P2050B015-P				
	2	1/2	15	P2050B020	P2050B020-P				
	3	1/2	15	P2050B030	P2050B030-P				
	3.5	1/2	15	P2050B035	P2050B035-P				
	4	1/2	15	P2050B040	P2050B040-P				
	4.5	1/2	15	P2050B045	P2050B045-P				
	5	1/2	15	P2050B050	P2050B050-P				
	6	3/4	20	P2075B060	P2075B060-P				
	6.5	3/4	20	P2075B065	P2075B065-P				
	7	3/4	20	P2075B070	P2075B070-P				
	7.5	3/4	20	P2075B075	P2075B075-P				
	8	3/4	20	P2075B080	P2075B080-P				
	8.5	3/4	20	P2075B085	P2075B085-P				
	9	3/4	20	P2075B090	P2075B090-P				
9.5	3/4	20	P2075B095	P2075B095-P					
External PT Port Option (-P) Cast Body	11	1	25	PICCV-25-011	PICCV-25-011-P	ARX24-MFT	AFRX24-MFT		
	12	1	25	PICCV-25-012	PICCV-25-012-P				
	13	1	25	PICCV-25-013	PICCV-25-013-P				
	14	1	25	PICCV-25-014	PICCV-25-014-P				
	15	1	25	PICCV-25-015	PICCV-25-015-P				
	17	1	25	PICCV-25-017	PICCV-25-017-P				
	18	1	25	PICCV-25-018	PICCV-25-018-P				
	19	1	25	PICCV-25-019	PICCV-25-019-P				
	18	1 1/4	32	PICCV-32-018	PICCV-32-018-P				
	19	1 1/4	32	PICCV-32-019	PICCV-32-019-P				
	20	1 1/4	32	PICCV-32-020	PICCV-32-020-P				
	21	1 1/4	32	PICCV-32-021	PICCV-32-021-P				
	22	1 1/4	32	PICCV-32-022	PICCV-32-022-P				
	23	1 1/4	32	PICCV-32-023	PICCV-32-023-P				
	24	1 1/4	32	PICCV-32-024	PICCV-32-024-P				
	25	1 1/4	32	PICCV-32-025	PICCV-32-025-P				
	26	1 1/4	32	PICCV-32-026	PICCV-32-026-P				
	26	1 1/2	40	PICCV-40-026	PICCV-40-026-P				
	27	1 1/2	40	PICCV-40-027	PICCV-40-027-P				
	28	1 1/2	40	PICCV-40-028	PICCV-40-028-P				
	29	1 1/2	40	PICCV-40-029	PICCV-40-029-P				
	30	1 1/2	40	PICCV-40-030	PICCV-40-030-P				
	31	1 1/2	40	PICCV-40-031	PICCV-40-031-P				
	32	1 1/2	40	PICCV-40-032	PICCV-40-032-P				
	33	1 1/2	40	PICCV-40-033	PICCV-40-033-P				
	33	2	50	PICCV-50-033	PICCV-50-033-P				
	34	2	50	PICCV-50-034	PICCV-50-034-P				
	35	2	50	PICCV-50-035	PICCV-50-035-P				
	36	2	50	PICCV-50-036	PICCV-50-036-P				
	37	2	50	PICCV-40-037	PICCV-40-037-P				
	38	2	50	PICCV-40-038	PICCV-40-038-P				
	39	2	50	PICCV-40-039	PICCV-40-039-P				
	40	2	50	PICCV-50-040	PICCV-50-040-P				
	44	2	50	PICCV-50-044	PICCV-50-044-P				
48	2	50	PICCV-50-048	PICCV-50-048-P					
52	2	50	PICCV-50-052	PICCV-50-052-P					
56	2	50	PICCV-50-056	PICCV-50-056-P					
60	2	50	PICCV-50-060	PICCV-50-060-P					
65	2	50	PICCV-50-065	PICCV-50-065-P					
70	2	50	PICCV-50-070	PICCV-50-070-P					
75	2	50	PICCV-50-075	PICCV-50-075-P					
80	2	50	PICCV-50-080	PICCV-50-080-P					
90	2	50	PICCV-50-090	PICCV-50-090-P					
100	2	50	PICCV-50-100	PICCV-50-100-P					

PIV Energy Modeling Plug-in Accurately Determines the Energy Savings.



Building owners only care about what Pressure Independent (PI) Control Valve technology saves. Now that information is available—for FREE!

With the Belimo PIV Energy Modeling Plug-in, mechanical designers can accurately determine the energy savings associated with PI control valves. And they can share this valuable information with building owners in a way that is valuable and real to them!

Modeling that Reflects Real World Scenarios

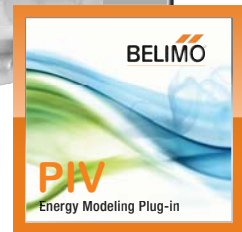
With the help of Belimo's PIV Energy Modeling Plug-in, engineers can finally model a building with and without pressure independent control valves!

This executable file installs new pump performance curves that allow owners to compare a system design with and without pressure independent control valves.

With this new modeling capability, engineers can:

- Compare the annual energy consumption of two models to estimate the savings achieved through pressure independent control valves.
- Calculate a reliable ROI for Pressure Independent Control Valves.
- Generate necessary documentation for LEED points achieved under Energy and Atmosphere Credit 1: Optimize Energy Performance.

Download the free PIV Energy Modeling Plug-in, installs in seconds, available at www.belimo.us.



With Belimo Pressure Independent Technology Everyone Wins.

OWNERS save money at the beginning of a project and throughout the life of the system. CONTRACTORS save time and labor. ENGINEERS avoid complex sizing at the design stage and gain greater peace of mind that the system will operate correctly from the beginning. Finally we all save earth's precious resources.



Department of Transportation (DOT), headquarters in Washington D.C.

"This was a great fit for the DOT project," remarked the US Government Accounts Manager for Belimo. "The PICCV is a must-have for complex variable primary systems like this. Accuracy, efficiency, and low maintenance were critical for this large facility.

The Massachusetts Institute of Technology (MIT), Massachusetts

"One thing that impressed us was having such intelligence right on the valve actuator," said Peter Cooper, Manager of Sustainable Engineering and Utility Planning at MIT. "You can characterize a coil's performance with just a couple of pieces of data and with that information you can observe the degradation of coils and refocus your maintenance efforts accordingly."

The Phoenix Companies, Inc. Hartford, Connecticut

"The feedback is phenomenal. We simply plug a laptop into the valve actuator and we can see what our control system is calling for and watch the valve correct the signal for the correct amount of flow," said Robert Marquis, HVAC Project Manager at the Phoenix building for over 20 years. "With other control valves, we could never verify what the valve was doing. Now we can."

Eglin Air Force Base, Florida

"You can do variable flow with standard 2-way valves, but it is tricky. With Belimo PICCV valves, you just need to maintain a minimum 5 psi drop across the valve and it automatically maintains proper flow to your circuits," said Spencer O'Quinn, Project Manager for the Federal Business Unit of Chevron. "Standard 2-way valves, which have many different pressure requirements, will hunt all over the place in a variable flow system."



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