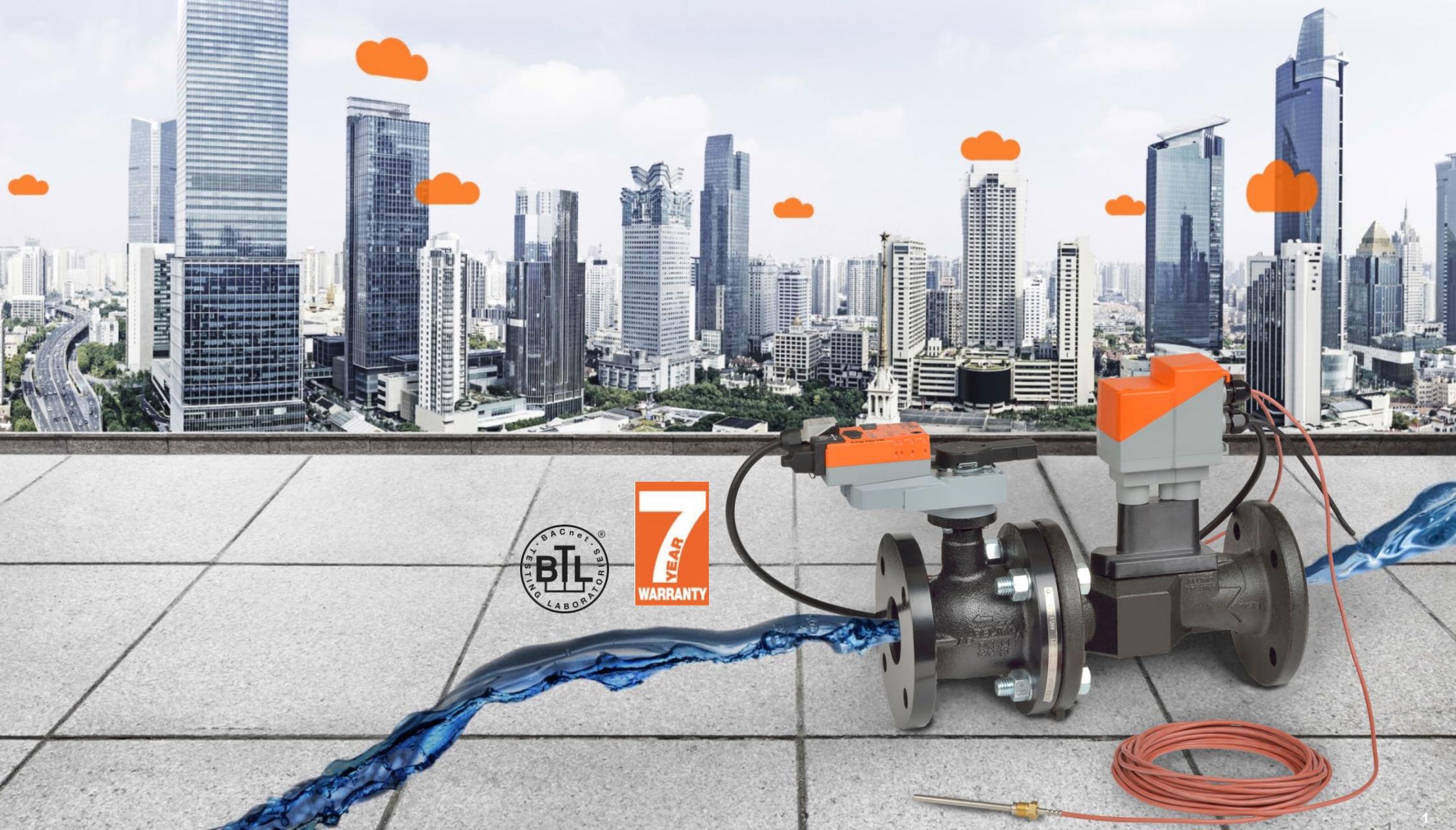


ENERGY VALVE 3.0

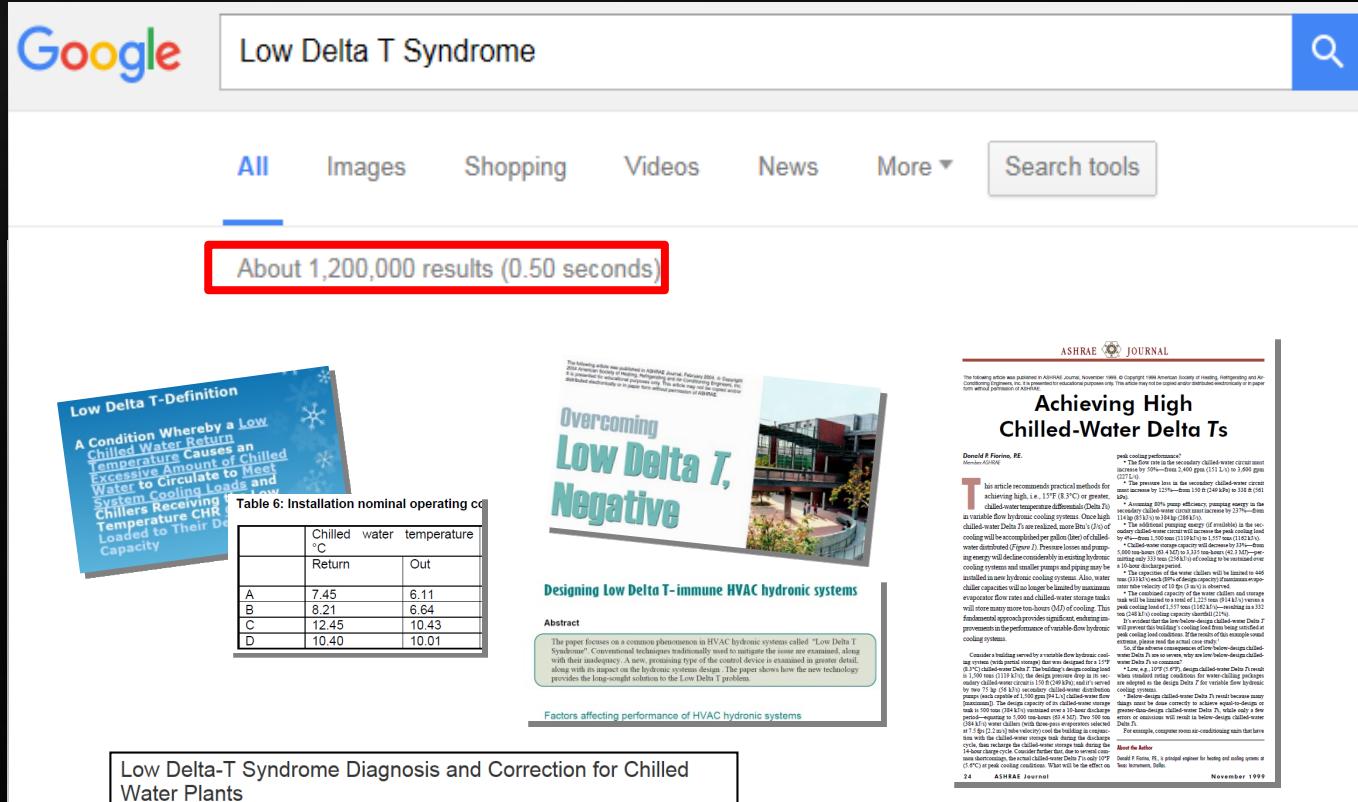
Solving Low Delta T Leveraging IoT



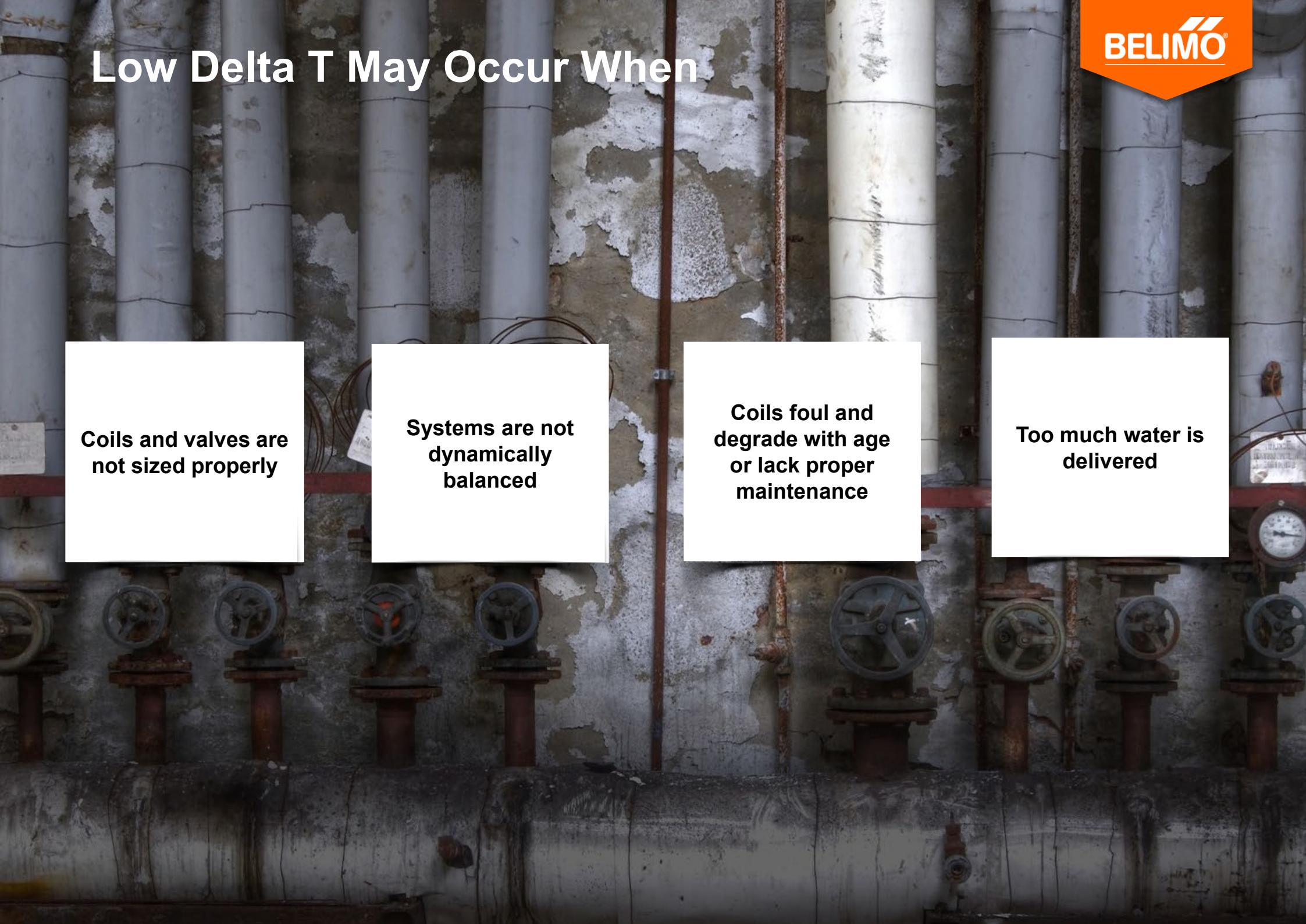
Agenda

- Low Delta T
- Features and Benefits
- Success Stories
- Product Range Overview
- Industry Recognition

Low Delta T Syndrome is Industry Wide



Low Delta T May Occur When

A photograph of a complex industrial piping system. The pipes are made of metal and are heavily insulated with white, textured insulation. Several large, circular valves with blue handles are mounted on the pipes. In the foreground, there are also some smaller valves and a few pressure gauges. The background shows more of the same piping system extending into the distance.

Coils and valves are not sized properly

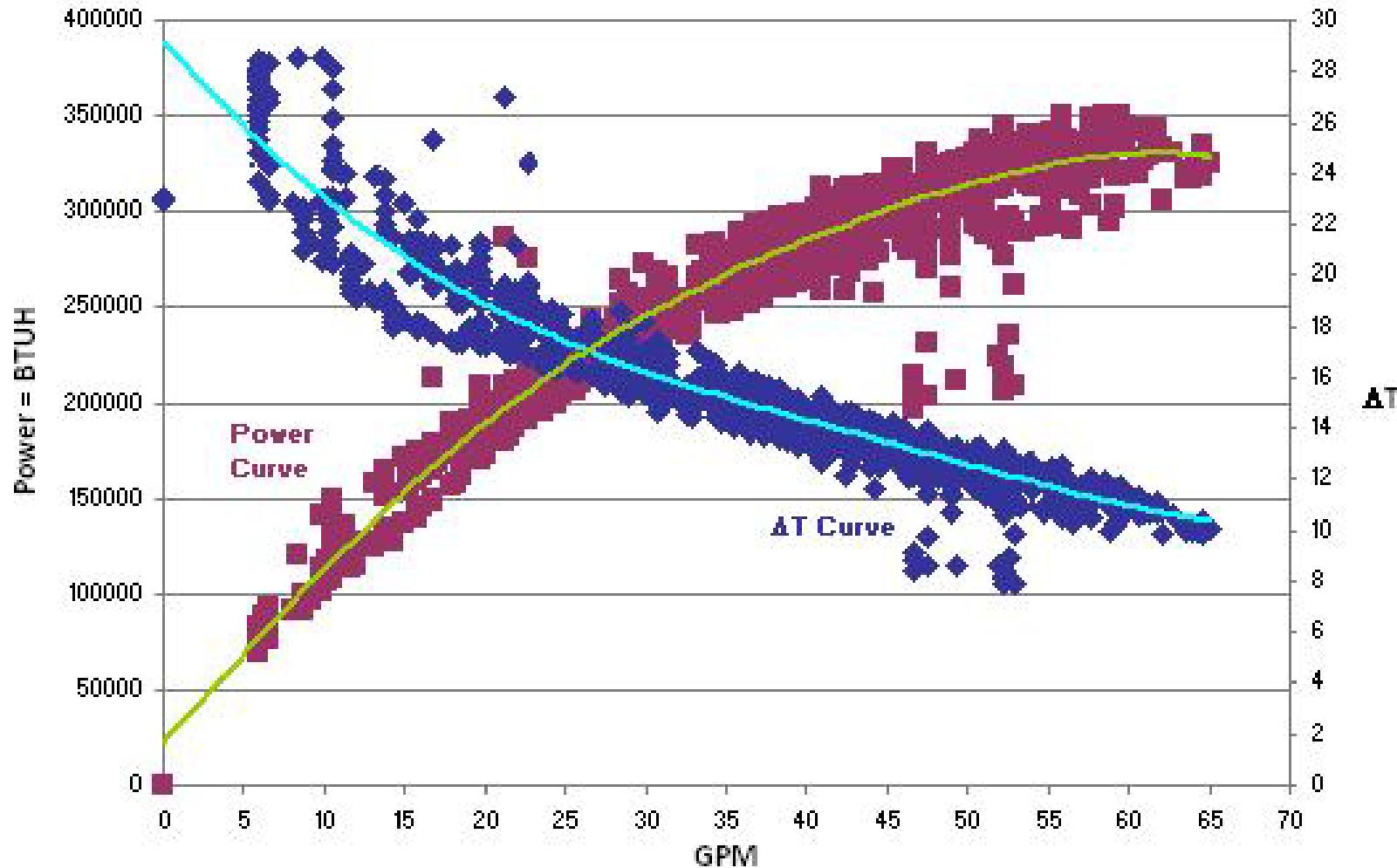
Systems are not dynamically balanced

Coils foul and degrade with age or lack proper maintenance

Too much water is delivered

Low ΔT Reduces Heat Transfer at the Coil

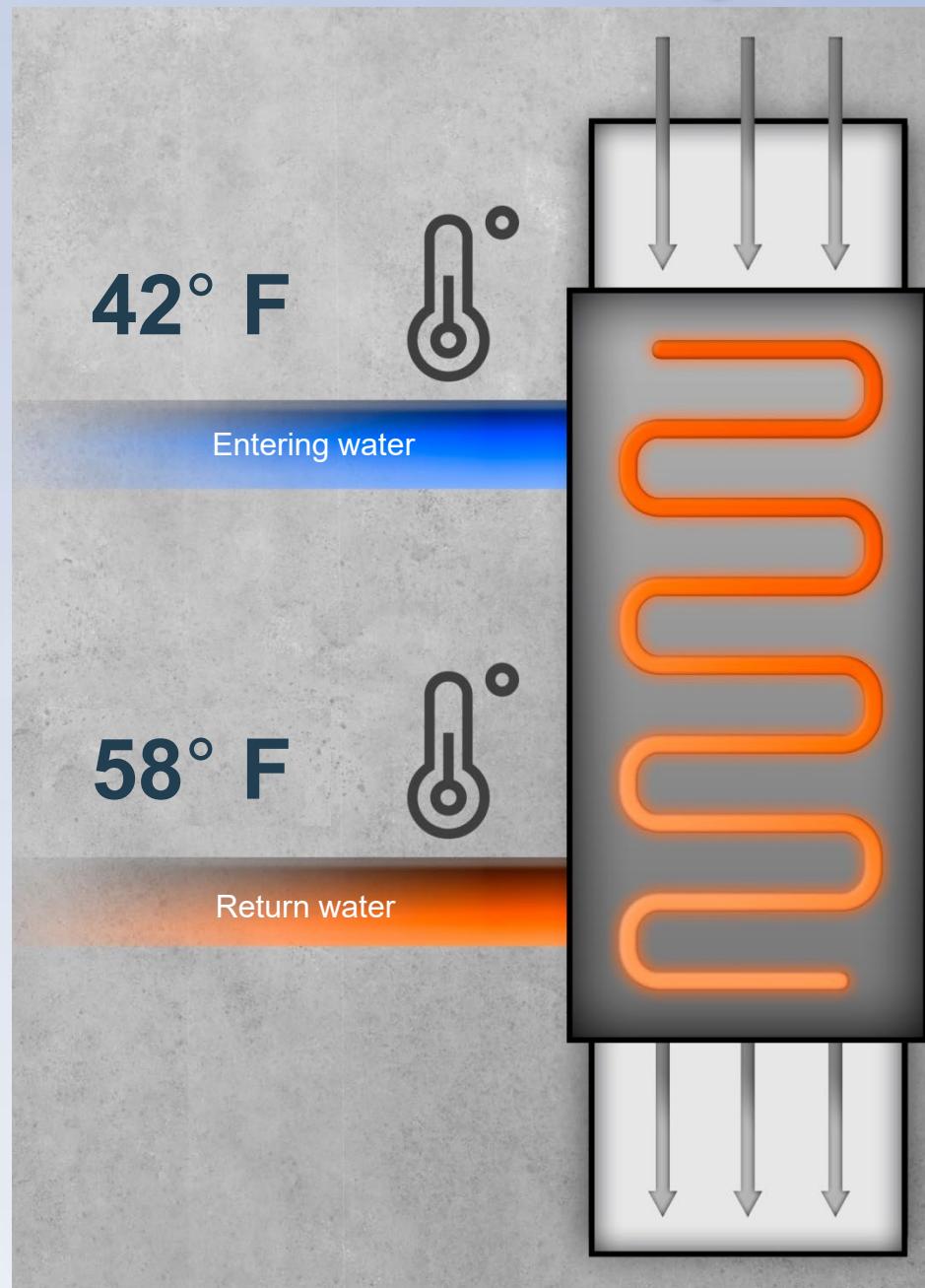
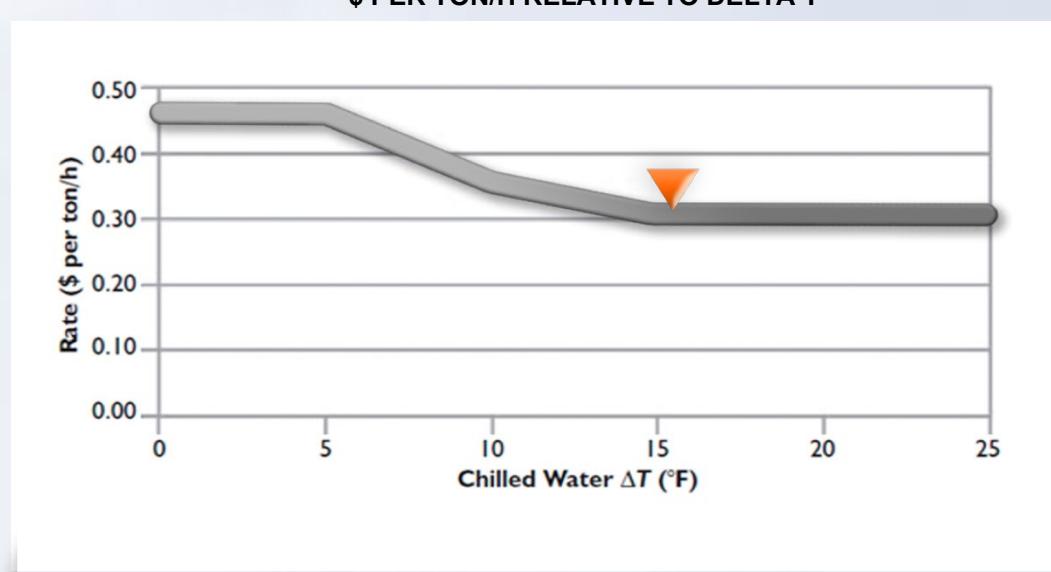
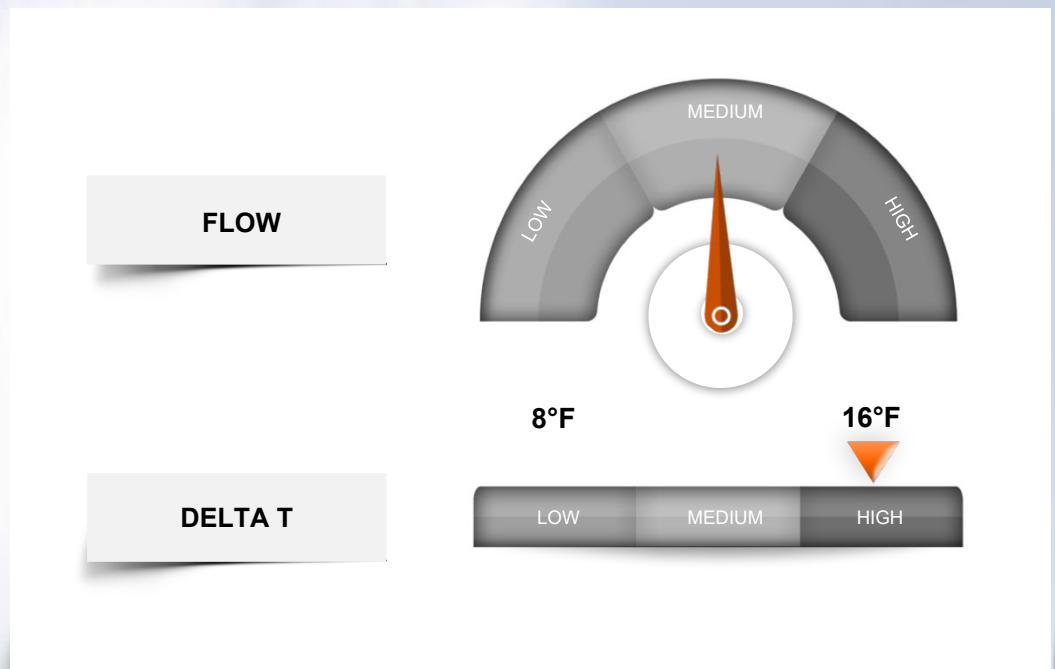
BELIMO



Increased flow does not always produce more power instead it saturates the coil.

Central Plants Increase Rate for Low Delta T

BELIMO



Energy Valve 3.0

BELIMO



The world's most
advanced pressure-
independent valve

Energy Valve Overview



- 1 Actuator**
Webserver, data logger, BACnet, Modbus, MP-Bus, Cloud capability
- 2 Electronic Flow Meter**
True Flow, Wet calibrated
- 3 Temperature Sensors**
Platinum based RTD for supply and return, allowing BTU measurement
- 4 Logic**
Delta T Management, Cloud Optimization, Power Control algorithm

Measure, Observe, Record and Trend Performance Data



New Features

BELIMO



DELTA T

Enhanced Delta T Management



Ultra Sonic Flowmeter



GLYCOL

Glycol Monitoring



Enhanced User Interface



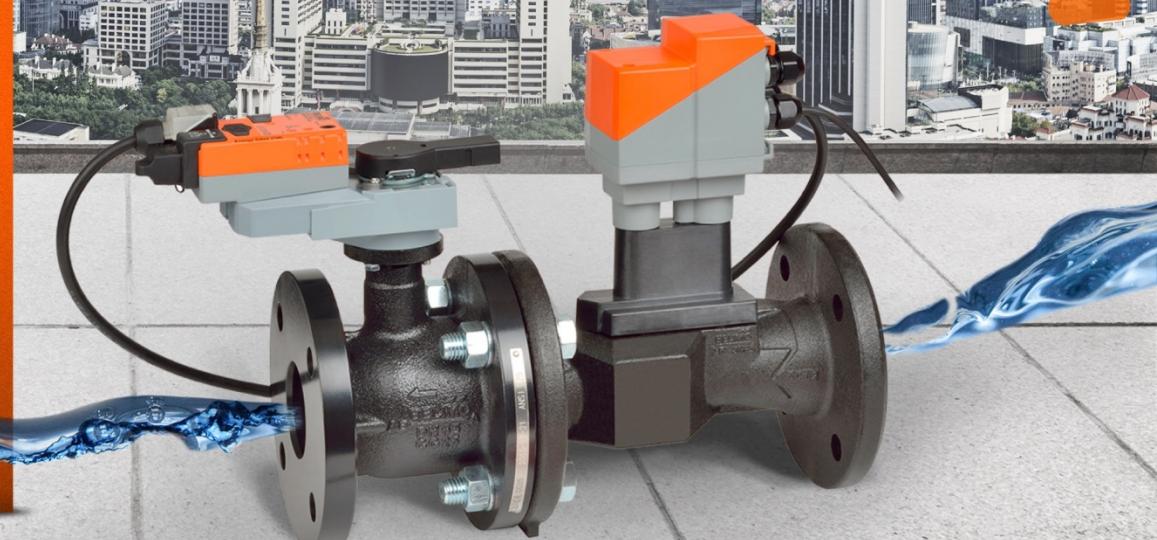
Cloud-Based Services



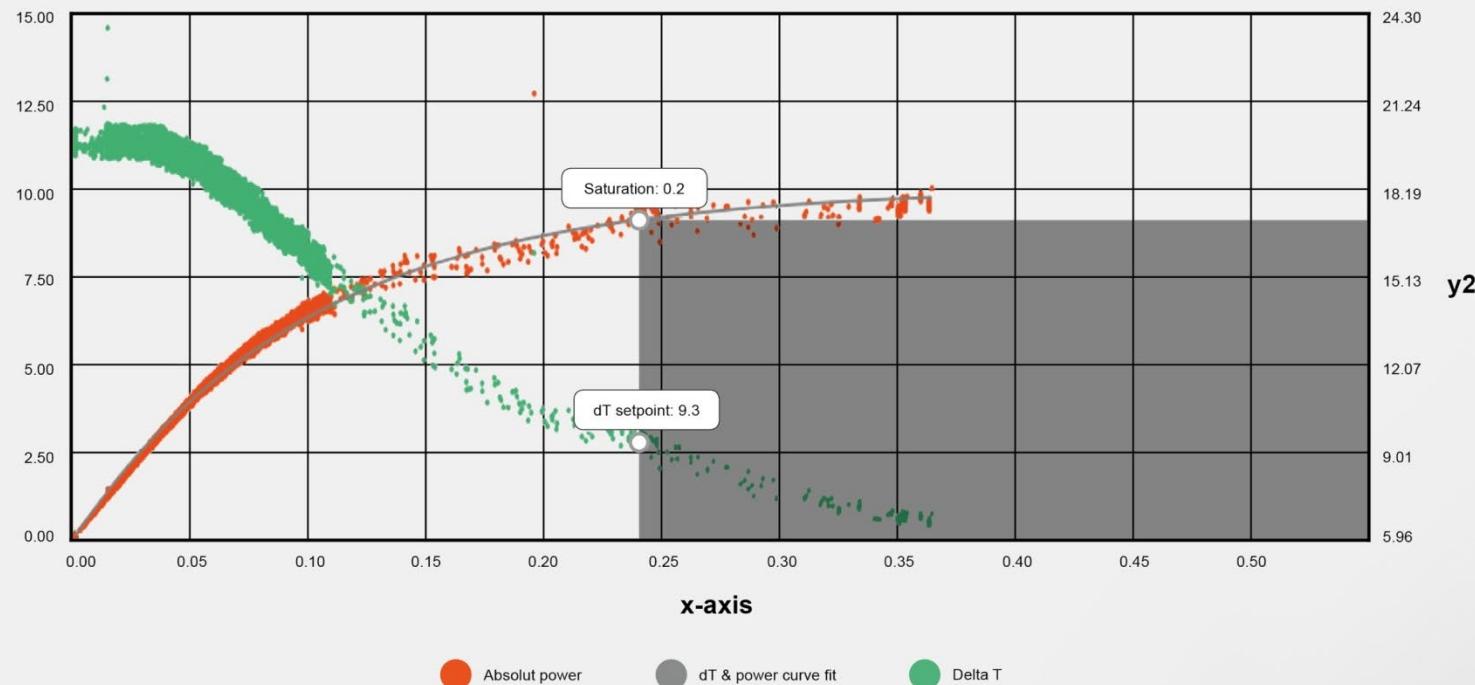


DELTA T

Enhanced Delta T
Management



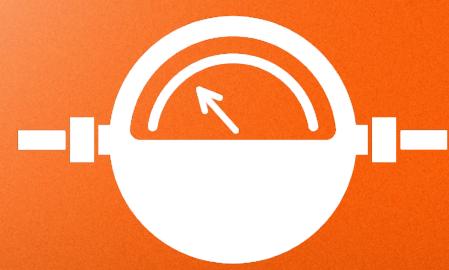
Coil Optimization



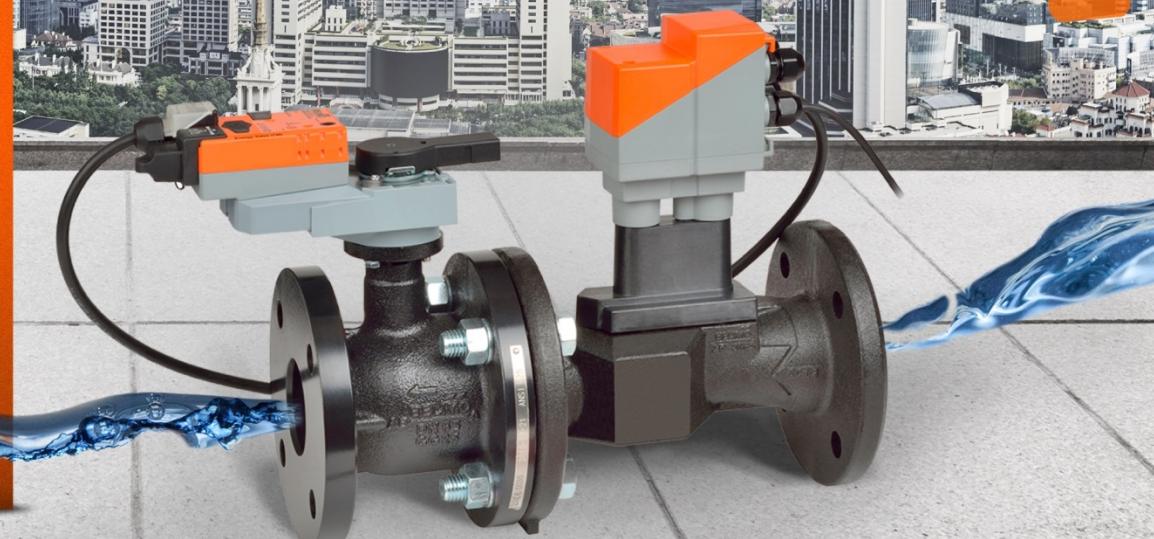
Expanded Delta T range
2°F to 100°F
[1.1°C to 55.5°C]

Dynamic coil
performance provides
transparency of
changes in load and
usage patterns

Integrated Delta T
setpoint



Ultrasonic Flow Meter



Advanced Ultrasonic Sensor Technology

1 True Flow

Actual flow measurement as opposed to calculation like mechanical PI valve

2 Wet Calibrated

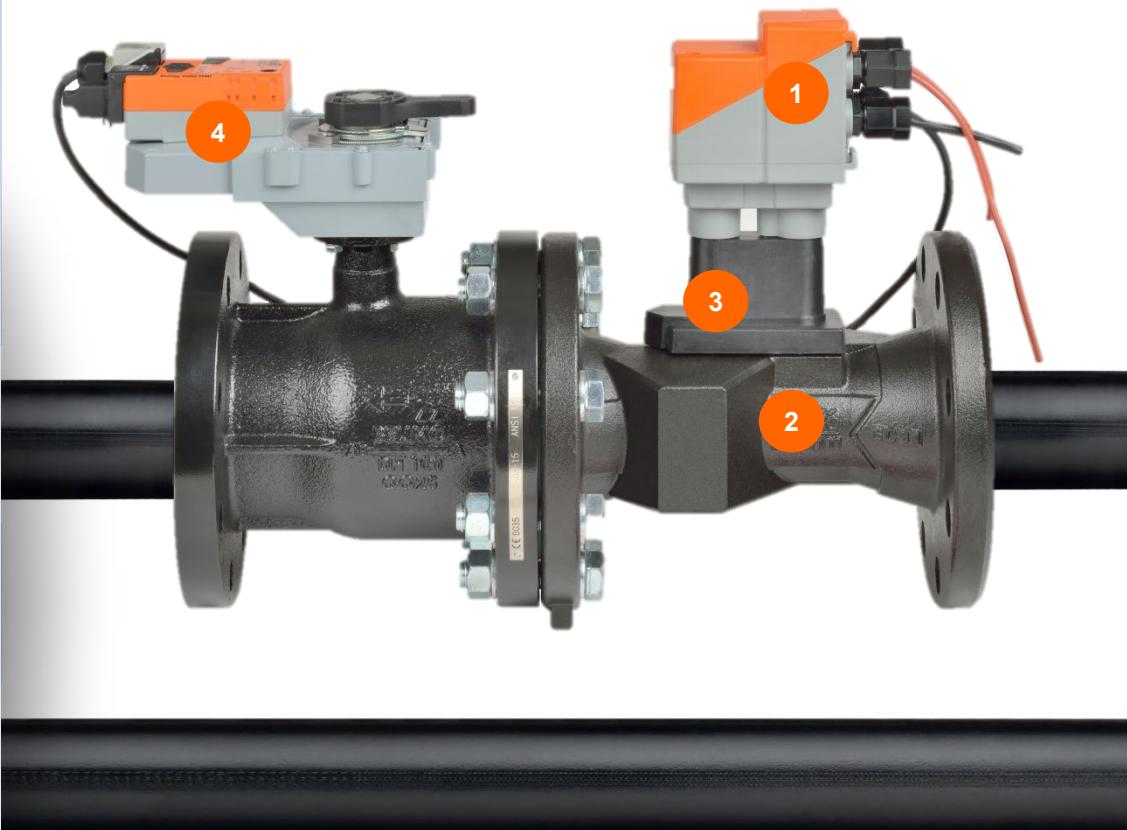
Individually calibrated to ensure accuracy and repeatability

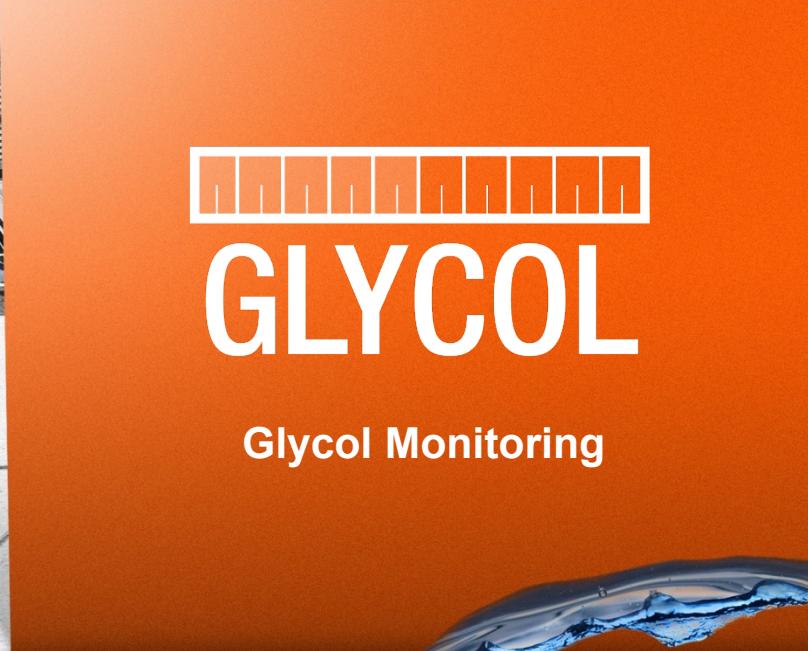
3 Temperature and Glycol Compensation

Ensures accuracy over entire temperature range and varying glycol concentration

4 Glycol Monitoring

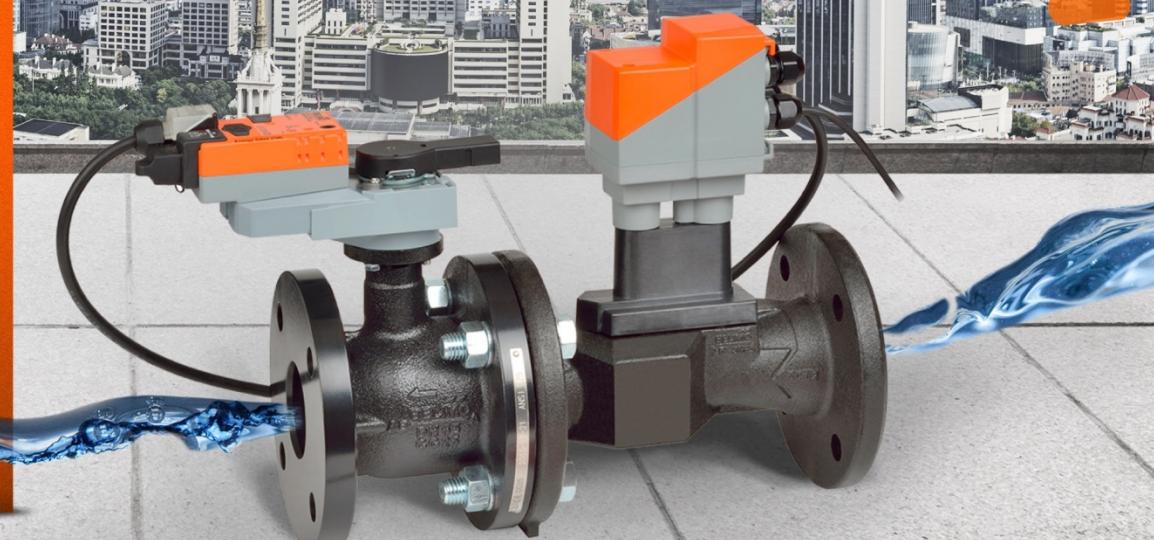
Provides actual glycol % for safe operation and optimized heat exchange





GLYCOL

Glycol Monitoring



Glycol Monitoring

Ensures concentrations meets design needs

BELIMO



Glycol content above the design concentration:

- Increases fluid viscosity which reduces pumping efficiency
- Heat transfer effectiveness of the coil degrades
- Critical zones may be starved
- Results in loss of comfort

Glycol content at ideal level:

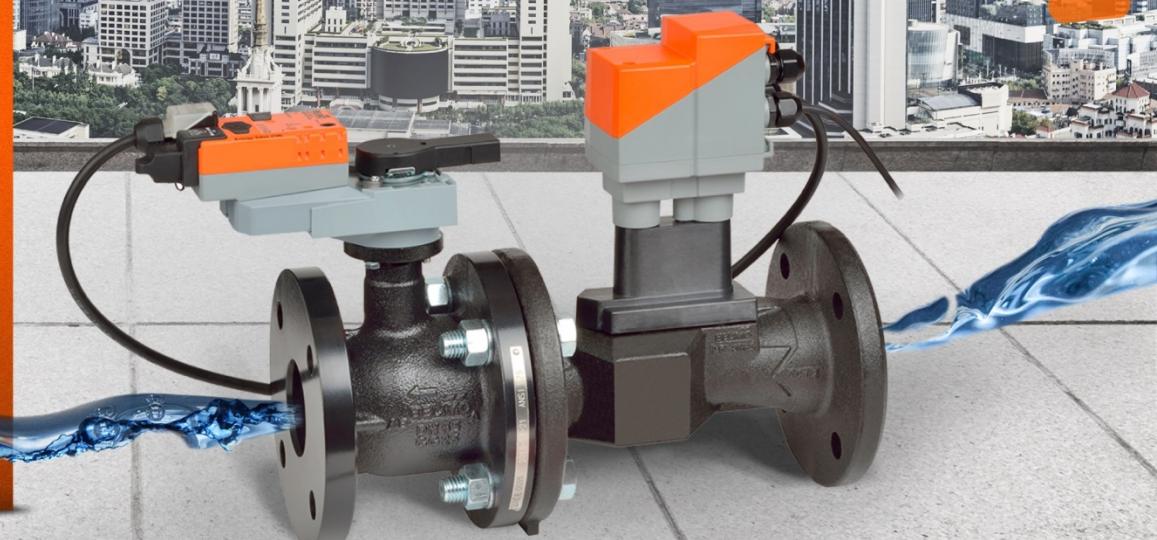
- Increases overall heat transfer
- Increases pumping efficiency
- Reduces operating costs

Glycol content below the design concentration:

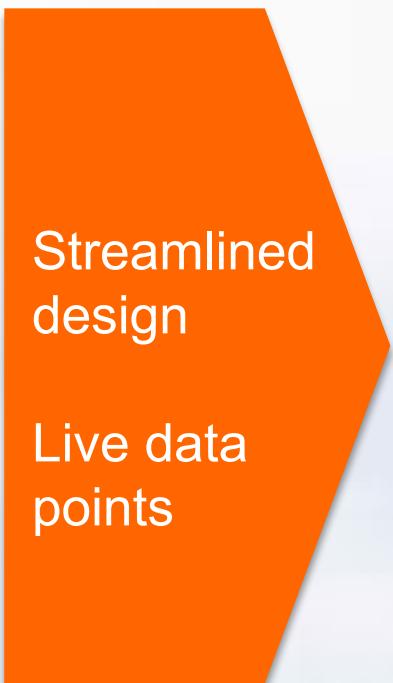
- System at risk of freezing
- Imposing costly repairs
- Risk of damaging the building



Enhanced User Interface



Enhanced User Interface

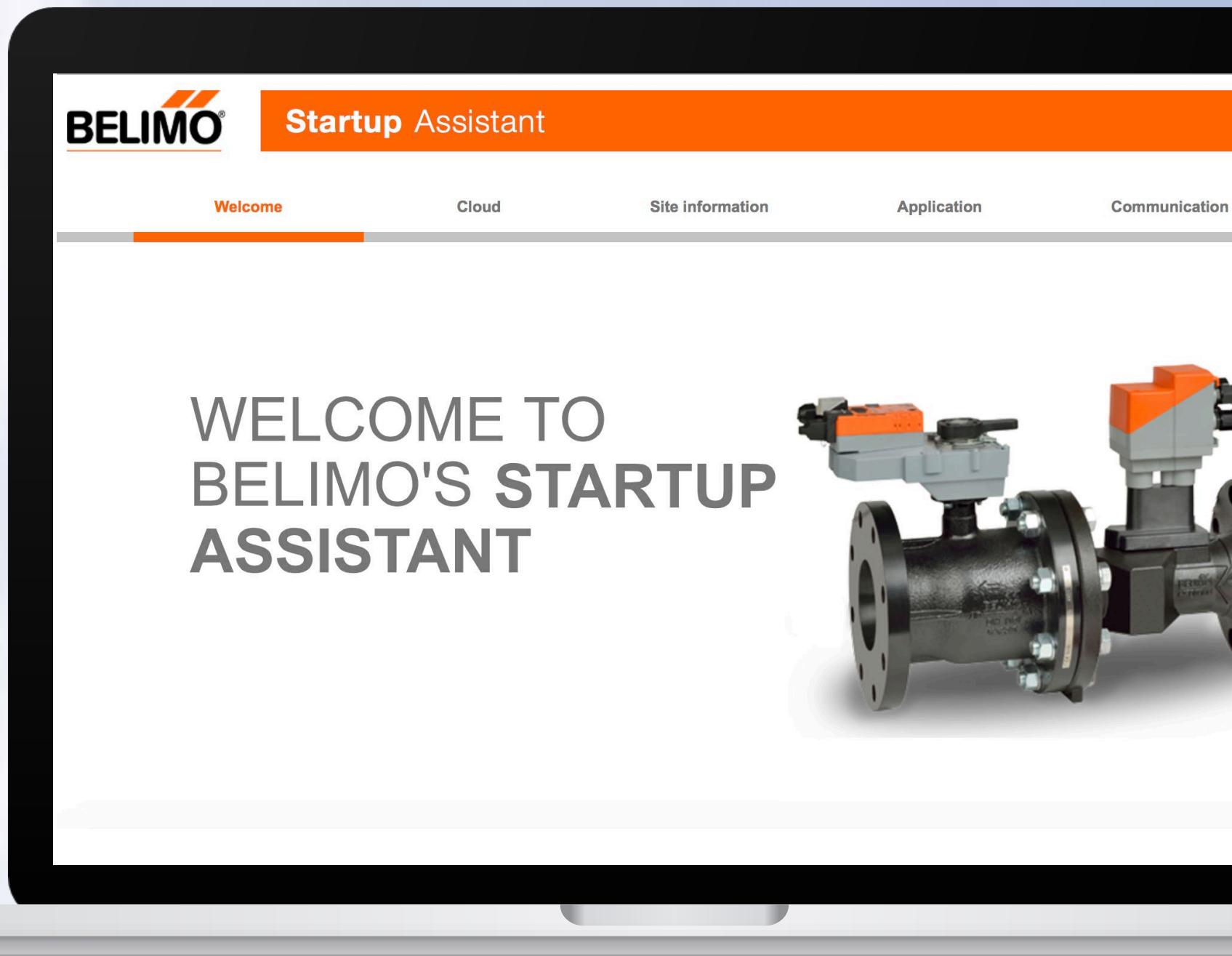


Belimo-ZWT Demo EV55

Language English Logout

Status	Control function	Setpoint DDC	Delta temperature	Delta T limiting status
OK	Simulated operation	35.3 % 35.3 % position *Simulated input	11.7 F	dT Manager standby dT Setpoint 2.8 F

Enhanced User Interface



Guides through valve set up

BELIMO® Startup Assistant

Welcome Cloud Site information Application Communication

WELCOME TO
BELIMO'S STARTUP
ASSISTANT



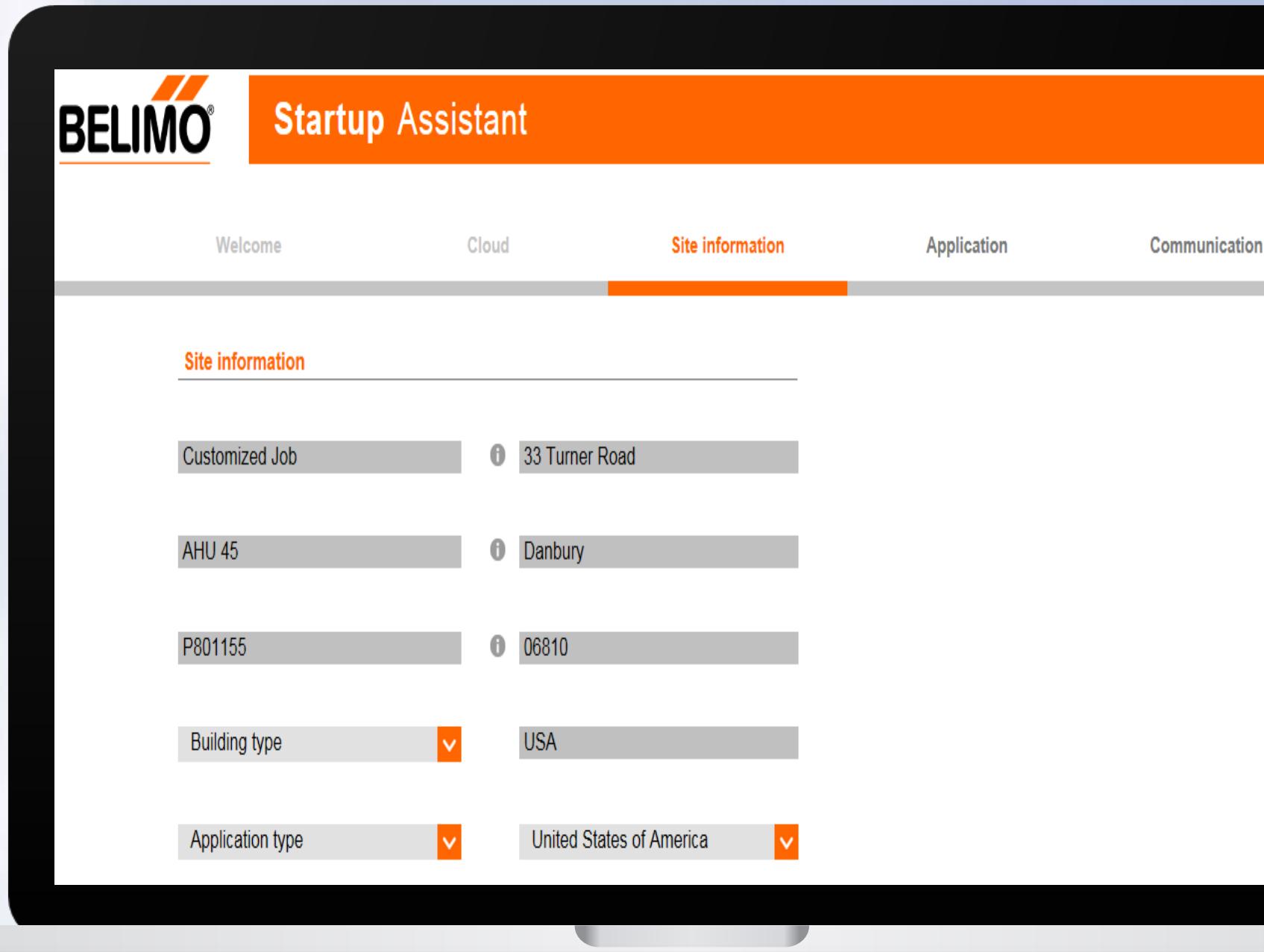
Enhanced User Interface



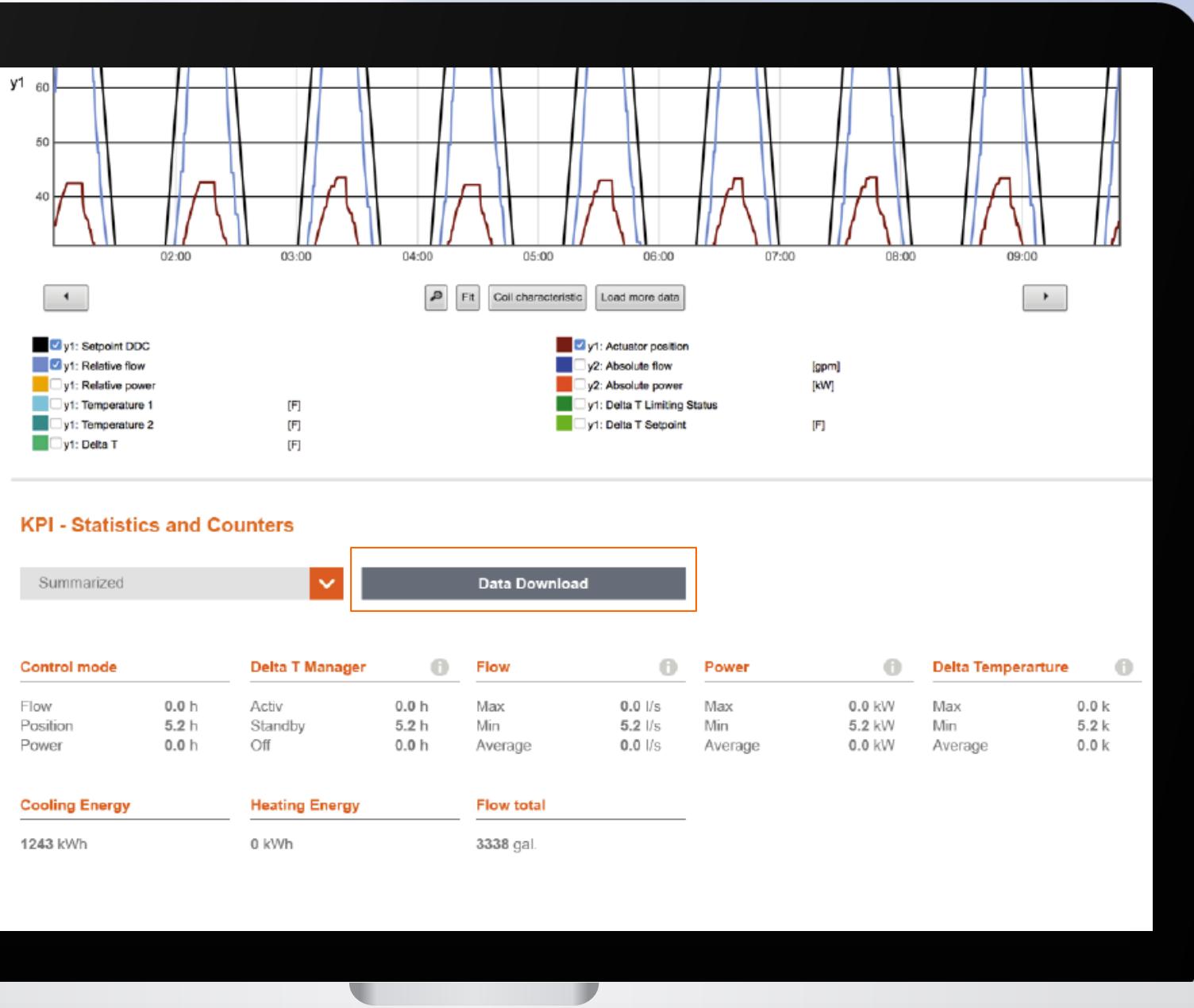
A screenshot of a software application window titled "BELIMO Startup Assistant". The window has a dark header bar with the BELIMO logo and the title. Below the header is a navigation bar with tabs: "Welcome", "Cloud" (which is highlighted in orange), "Site information", "Application", and "Communication". The main content area is titled "Cloud account email" and contains a blurred email address. Below that is a URL "https://cloud.belimo.com". A list of checkboxes follows, with the first one, "Automatic updates", being checked and highlighted with an orange border. The other two checkboxes are "Cloud services" and "Terms & conditions". Each checkbox has an information icon (i) to its right. At the bottom of the content area, there is a small note: "By using our Belimo Energy Valve Cloud Services, you agree to our terms and conditions on www.belimo.com/privacy and confirm that you have read, understood and accepted them." The entire application window is set against a dark background.

Enhanced User Interface

Customize job specific information



Enhanced User Interface



KPI's &
multiple
data file
downloads

Enhanced User Interface



AHU 45 Webinar Demo

Current status

Media	Flow sensor	Power	Sensor	Actuator
OK	OK	OK	not OK T2 error	OK

Health state

Version information

Settings

History

Counter	Last occurrence	Count

Media

	0	i
Too many airbubbles	0	i
Freeze warning	0	i

Flow

	0	i
Reverse Flow	0	i
Flow not reached	0	i
Flow with closed valve	0	i

Power

	6	1 d 9 h	i
Power not realized	6	1 d 9 h	i

Actuator

	1	0
Actuator cannot move	1	0
Gear disengaged	0	1

Sensor

	8	8	8
T1 error	8	8	8
T2 error	8	8	8
Flow sensor error	8	8	8

Enhanced User Interface



AHU 45 Webinar Demo Language Eng

Belimo Energy Valve **1/2" | DN 15**

V_{nom} 5.5 gpm P_{nom} 80 kW **Override** None i None ▼

Commissioning report (highlighted with an orange box)

Start assistant **Settings import** **Settings export**

Configuration

Units

Temperature	F	▼
Flow	gpm	▼
Power	kW	▼
Energy	kWh	▼

Control settings

Control mode	Flow control	▼
Signal characteristic	equal percentage	▼
Setpoint source	Analog	▼
Control signal range	2 - 10 V	▼
Invert signal	not inverted	▼

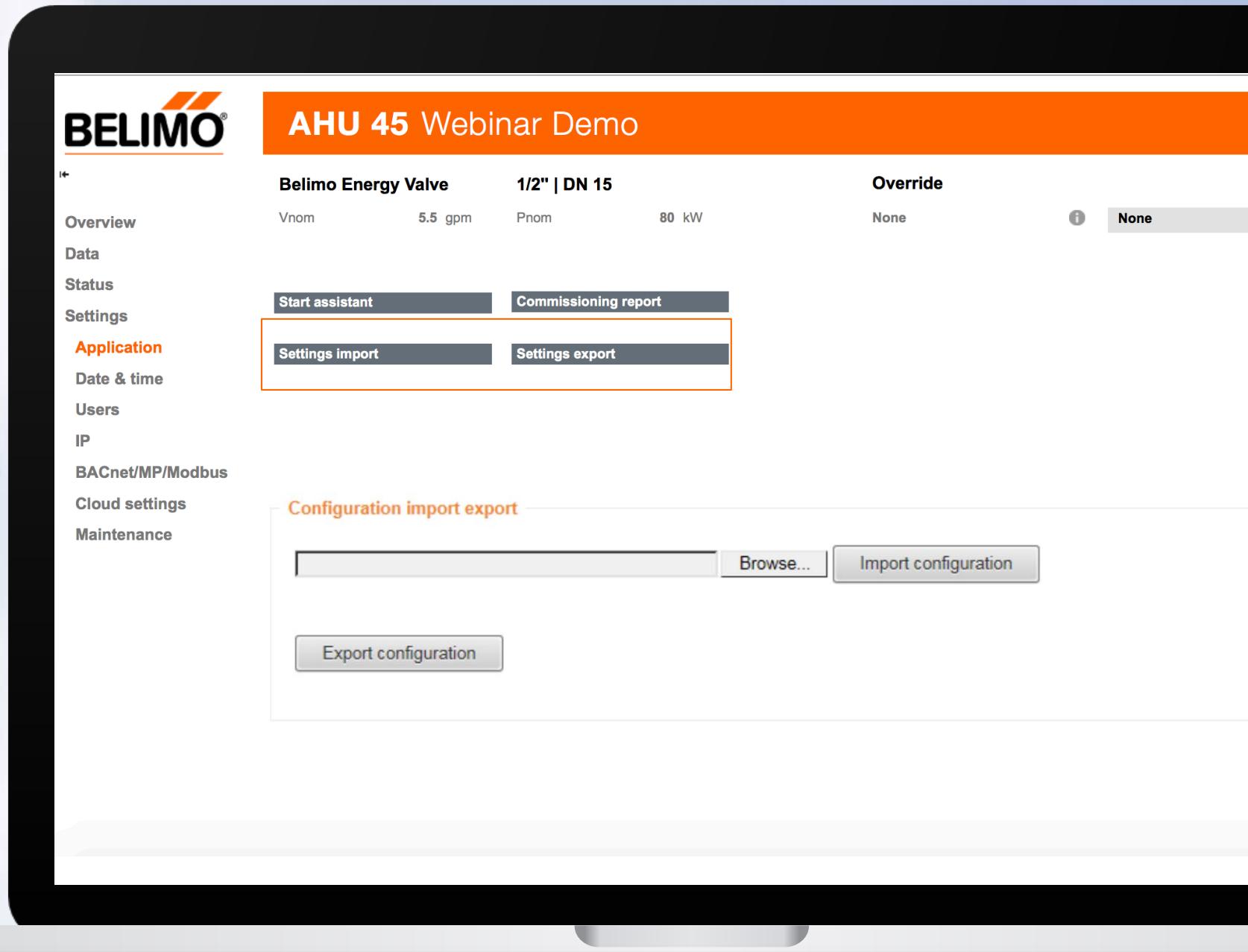
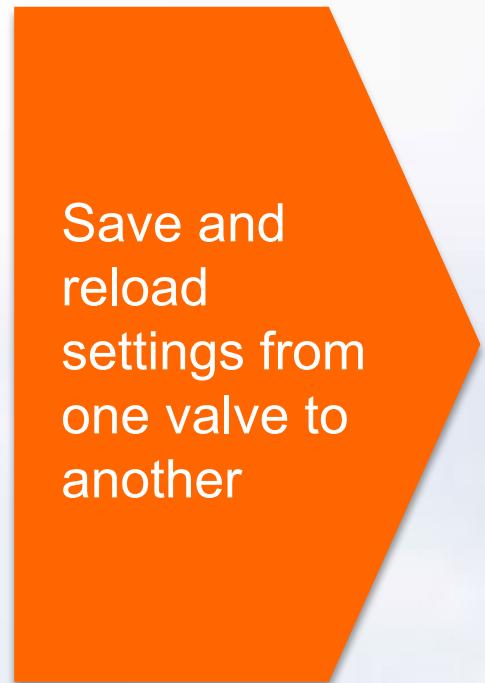
Application

Installation position	Valve in return pipe	▼
Remote sensor cable length	5m	▼
Media	Monoethylen	▼
Glycol override	10 %	▼

Maximum and limitation

V _{max}	5.5 gpm
Range	1.7 - 5.5
V _{min}	<input type="checkbox"/> i

Enhanced User Interface



Enhanced User Interface



The image shows a smartphone displaying the BELIMO AHU 45 Webinar Demo user interface. The screen is divided into two main sections: a sidebar on the left and a main content area on the right.

Sidebar (Left):

- Overview
- Data
- Status
- Settings
- Application
- Date & time
- Users** (highlighted in orange)
- IP
- BACnet/MP/Modbus
- Cloud settings
- Maintenance

Main Content Area (Right):

AHU 45 Webinar Demo

Web users

User name	User group
admin	adminGroup
admin2	guestGroup
guest	guestGroup
maintenance	maintenanceGroup

Show 10 entries Search:

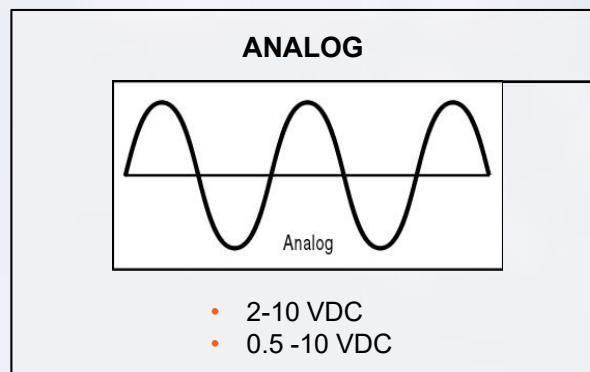
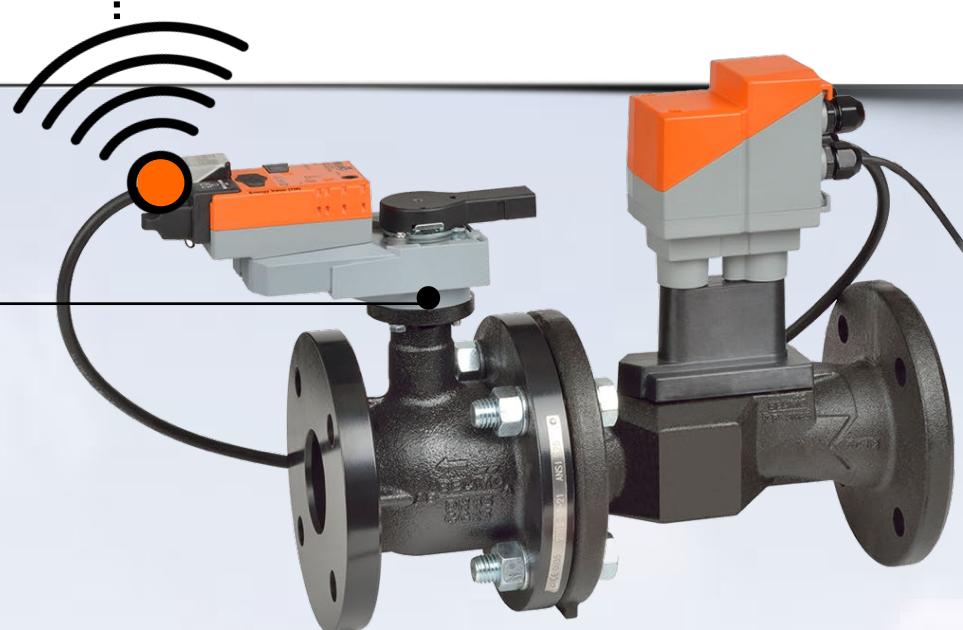
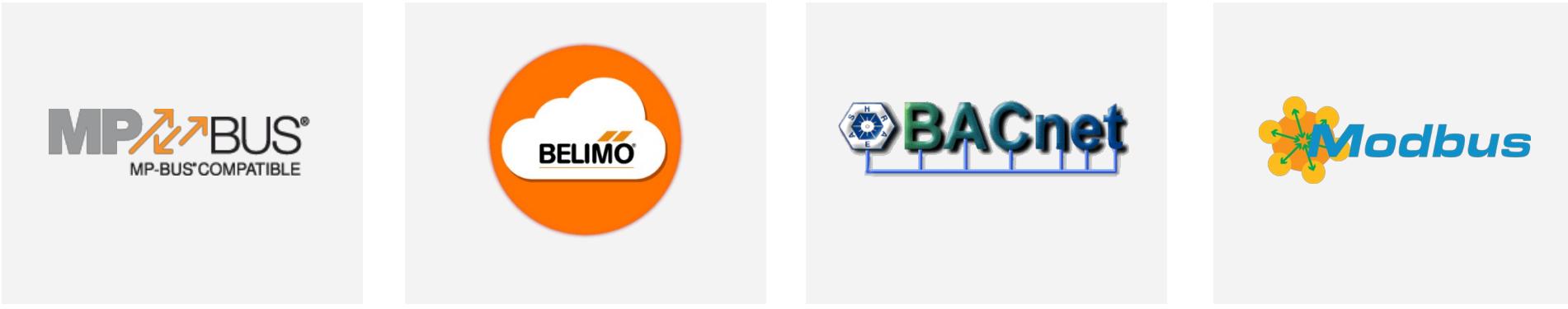
Showing 1 to 4 of 4 entries Previous **1** Next

[Delete selected web user](#) [Edit selected web user](#) [Insert web user](#) [Reset](#)

Enhanced Communication

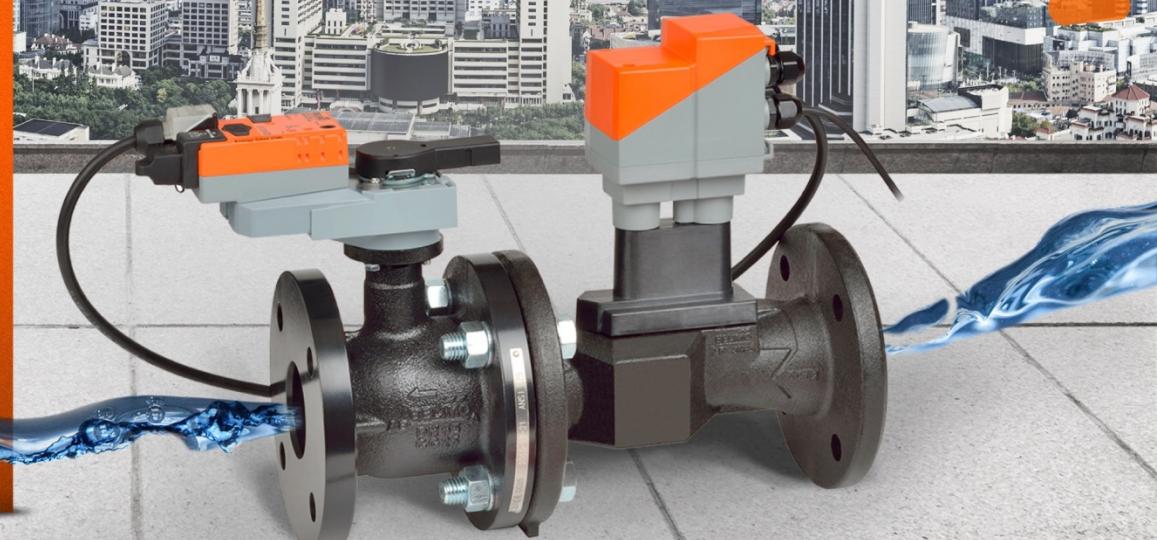
Unlike any actuator on the market

BELIMO





Cloud-Based
Services



Leveraging the Belimo Cloud

BELIMO

Cloud-Based Services

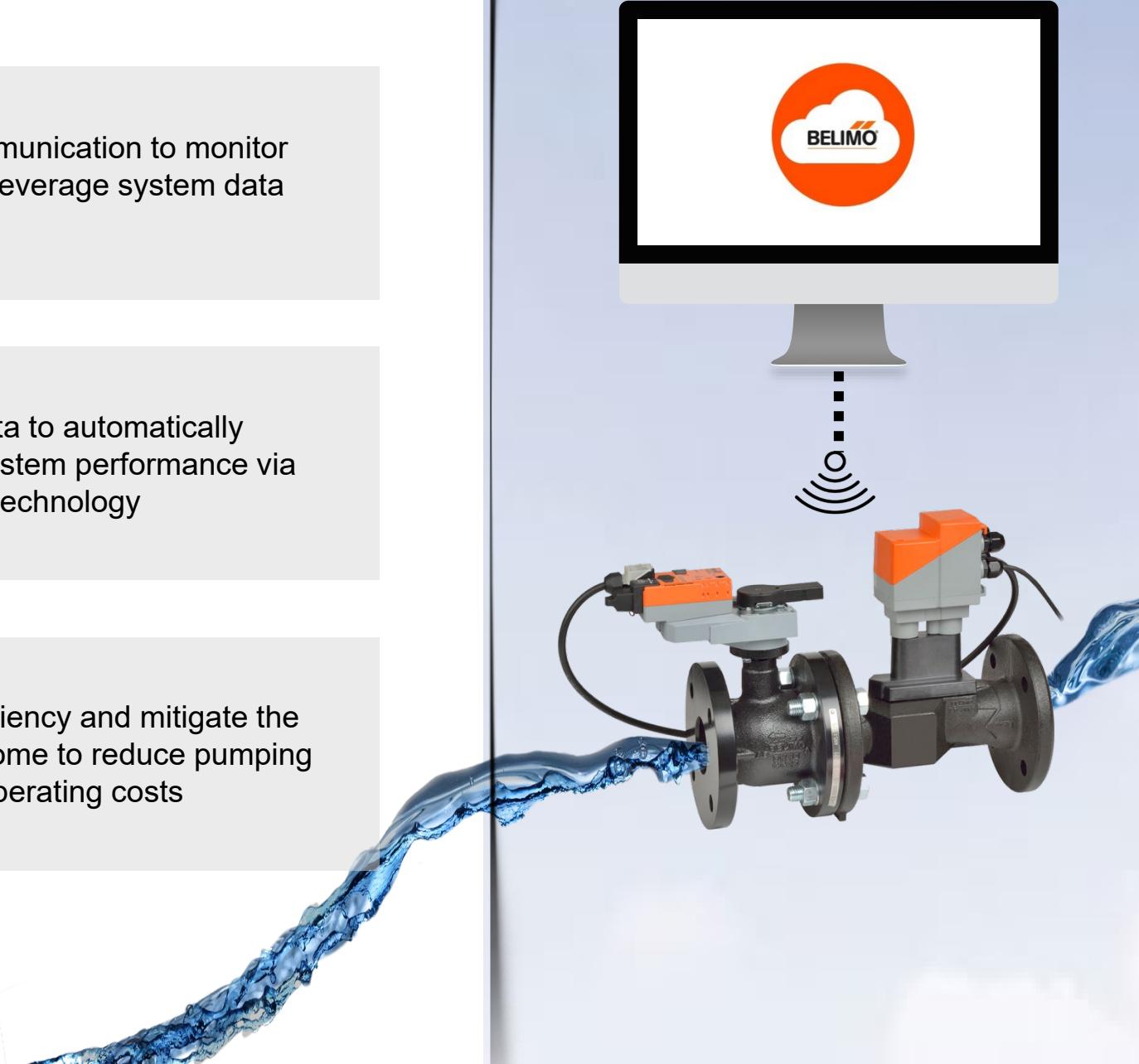
Remote cloud communication to monitor energy usage and leverage system data

Automatic Optimization

Capture system data to automatically improve coil and system performance via advanced analytic technology

Advanced Efficiency

Increase plant efficiency and mitigate the Low Delta T syndrome to reduce pumping and chiller/boiler operating costs



Energy Valve 3.0 Cloud Services

Advanced optimization with multiple benefits





OPTIMIZATION OF DELTA T AND FLOW SETTINGS



Better performance and system stability

Ensures effective use of the Delta T Manager

Cost savings through efficient operation

Notifications of any system changes

BELIMO Overview Device Management Settings Support

Support > Delta T Optimize Request

Delta T Optimize Request

Delta T Optimize Request

Subject: Delta T Optimize Request

Device: **Select Energy Valve**

Usage: This device is used for both cooling and heating.

Updating: Manual Automatic

I'm not a robot  reCAPTCHA
Privacy - Terms

Send Request

Information:
Request a device specific optimization for your Delta T settings. With the data of your device we will run an analysis and advise recommendations. Please select whether you'd like to set new Delta T values yourself manually or whether you would prefer to have them set automatically. Either way you will receive a notification by email after the data analysis is complete.

Please note that your device should report operational data for at least two months for a successful optimization.



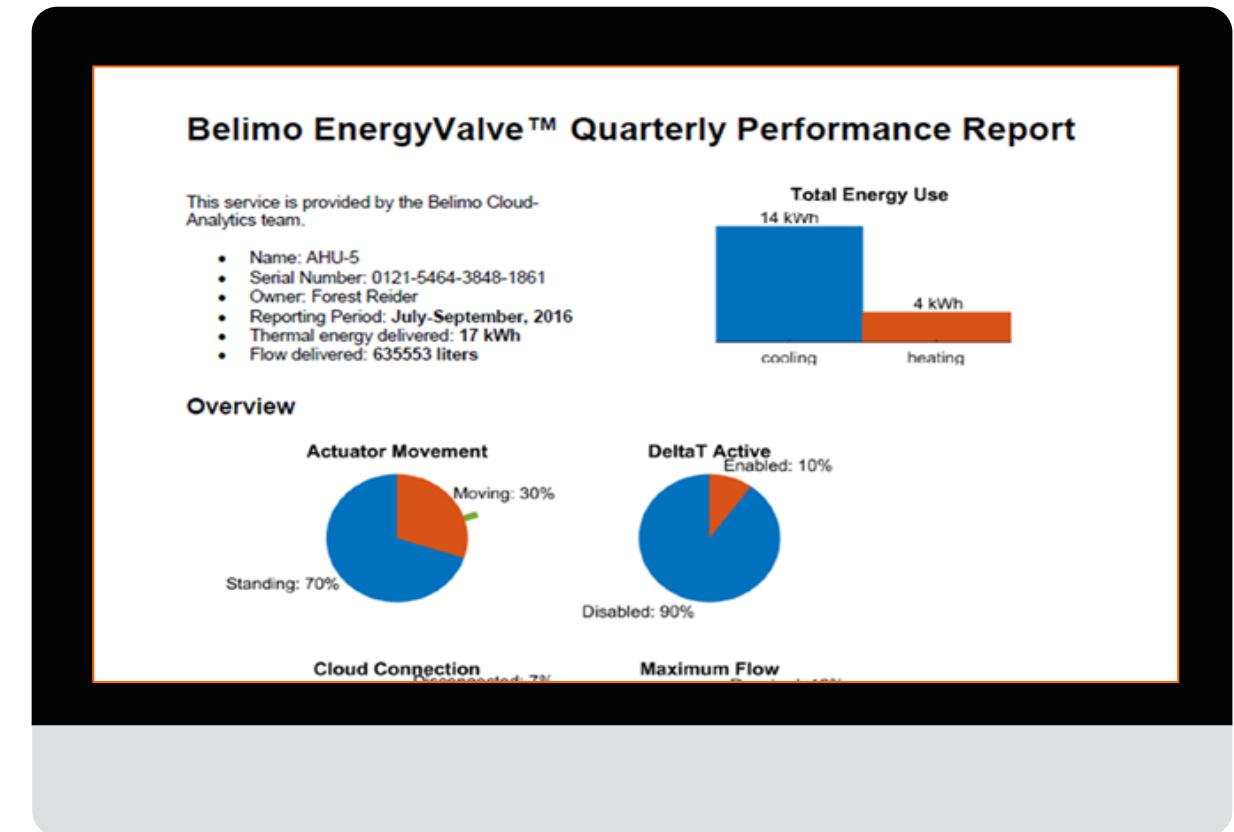
PERFORMANCE REPORTING



Automatically generated performance report with key insights

Eliminates need to analyze data

Allow for predictive maintenance of coil performance and easy ROI analysis





BELIMO ONLINE SUPPORT



Real time troubleshooting reduces downtime

Fast response

Direct connection to Belimo experts

The screenshot shows the Belimo Online Support software interface. At the top, there is a navigation bar with the Belimo logo and links for Overview, Device Management, Settings, and Support. The main content area is titled 'Overview' and 'Status of Devices'. It displays the following statistics:

24 devices	20 devices online	4 devices offline
Total number of devices managed in this account.	Number of devices currently online.	Number of devices currently offline.

Below this, there is a section for '0 problems' (Problems or errors that require user action). At the bottom, there is a 'Devices' section with a button to 'Show 10 Devices'.



SOFTWARE UPDATES



Latest software and security updates automatically provided for maximum productivity and reliability

Uninterrupted service

Direct notification via email

Actions

Transfer Device Update Software Remove Device

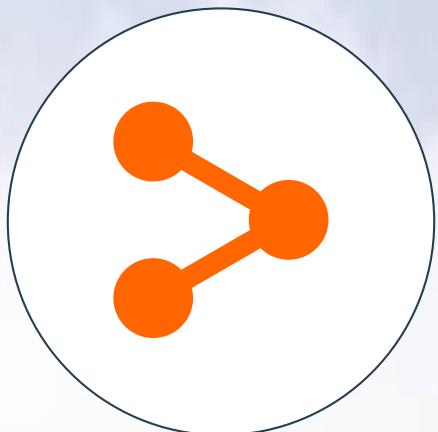
Data Points Dashboard Event Timeline

Data Points: EV3 Training EV55

Data Point	Value on Device	Action

Search

« < Page(s): > »



LIFETIME DATA ACCESS



Secure data and password management

Lifetime access for future optimization

Easy-to-use interface

Single, secure repository

Simplified overview of KPIs





EXTENDED WARRANTY



Peace of mind

Reduce maintenance budget

Reminder of warranty status

Statement of Belimo quality



One Valve So Many Benefits

BELIMO[®]



Enhanced Delta T
Management



Ultra Sonic Flowmeter



Glycol Monitoring



New User
Interface



Cloud-Based
Services



Pressure
Independent Control



Hydronic
Balancing

Most Capable Valve in the HVAC Industry

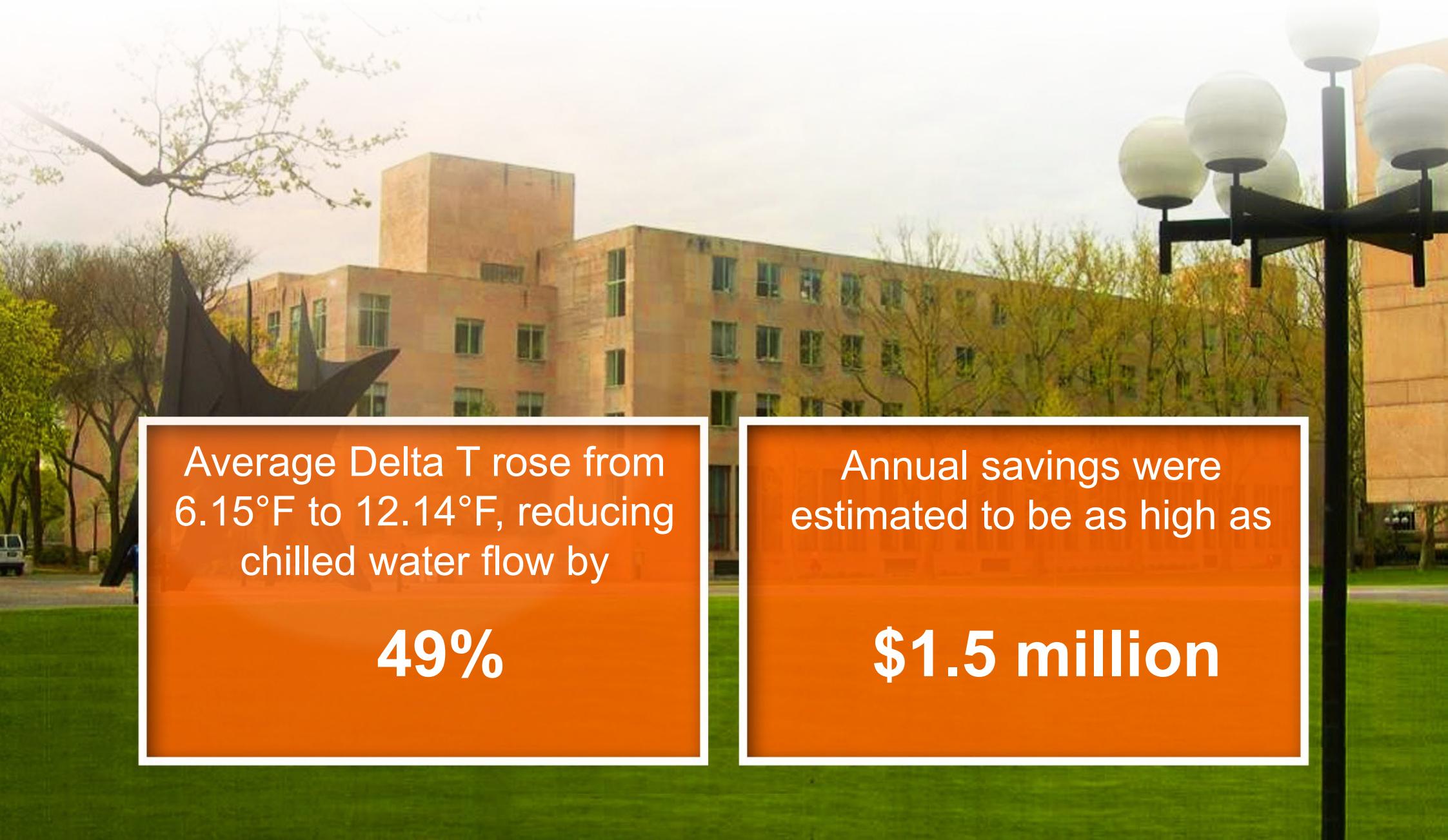


Feature	Typical PI*	Original Energy Valve	Energy Valve 3.0
IoT Device			✓
Cloud Analytics			✓
Glycol Monitoring			✓
Commissioning Report			✓
True Flow		✓	✓
Dynamic Balancing	✓	✓	✓
Energy Meter		✓	✓
Power Control		✓	✓
Delta T Manager		✓	✓
Live Data		✓	✓
Coil History		✓	✓
CCV Technology**		✓	✓
Leakage	ANSI Class IV	0%	0%
High Close-off		✓	✓
Low Minimum Pressure Drop		✓	✓
Field Configuration	✓	✓	✓
Bus Communication		BACnet MS/TP or IP and MP Bus	BACnet MS/TP or IP, Modbus RTU or TCP/IP and MP Bus
Password Configuration			✓
Set-Up Wizard			✓
5-Year Warranty	✓	✓	✓
7-Year Warranty with Cloud Access			✓

Success Story

Massachusetts Institute of Technology (MIT)

BELIMO

A photograph of a large, modern brick building with many windows, likely a dormitory or residence hall at MIT. In the foreground, there is a black metal sculpture and a street lamp with multiple spherical globes. The sky is overcast.

Average Delta T rose from 6.15°F to 12.14°F, reducing chilled water flow by

49%

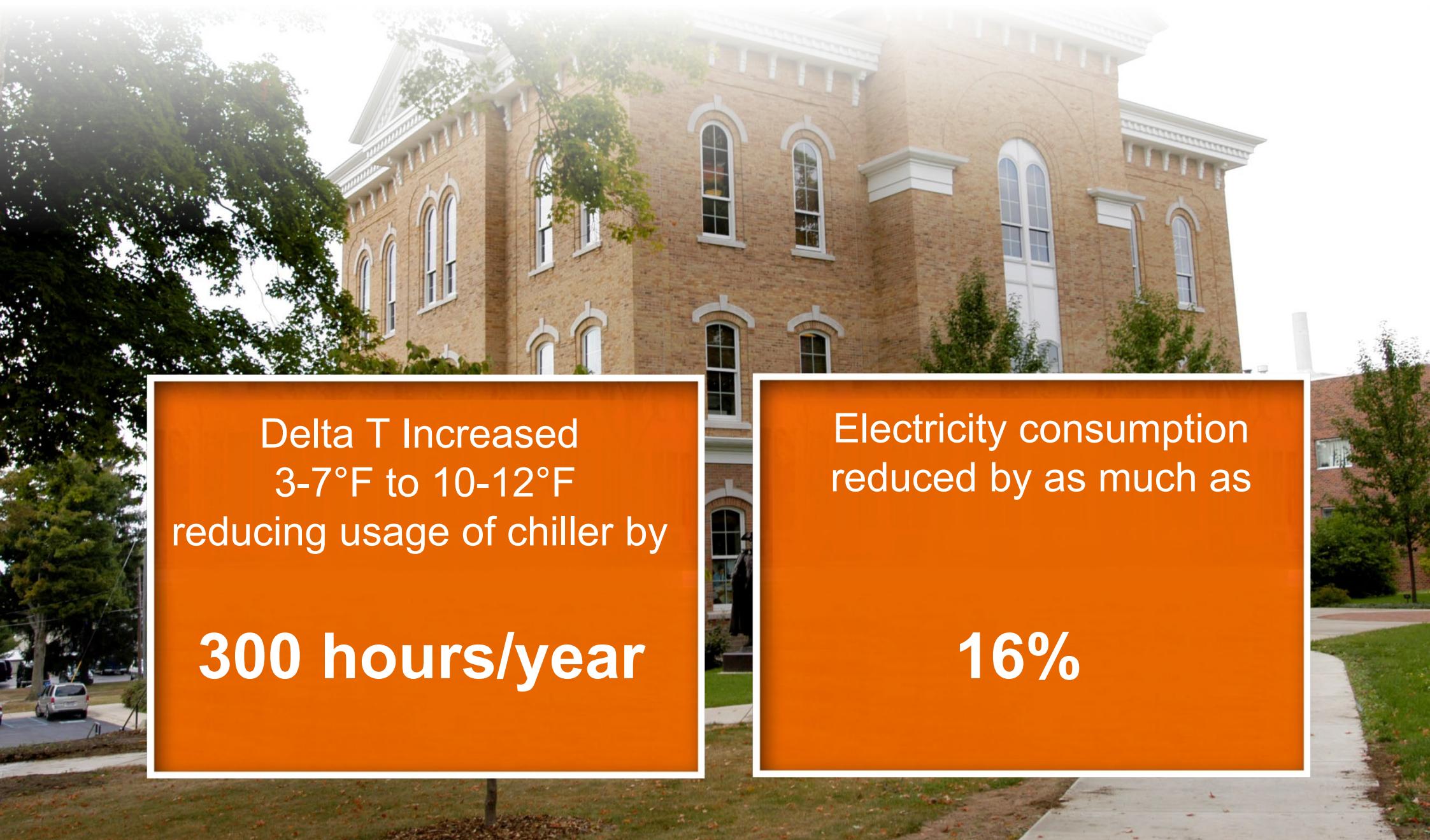
Annual savings were estimated to be as high as

\$1.5 million

Success Story

Hillsdale College Mossey Library & Delp Hall

BELIMO[®]



Delta T Increased
3-7°F to 10-12°F
reducing usage of chiller by

300 hours/year

Electricity consumption
reduced by as much as

16%

Wide Range of Flow and Pressures

BELIMO



Size: $\frac{1}{2}$ " to 2"
GPM: 1.65 to 100
Ends: NPT



Pricing NPT

BELIMO

ACTUATOR PART #			LRX 24-EV	LRX24-EV-G	NRX24-EV	NRX24-EV-G	ARX24-EV	ARX24-EV-G	AKRX24-EV	AKRX24-EV-G
GLYCOL MEASUREMENT				▪		▪		▪		▪
MODEL #	GPM	SIZE	BODY PRESSURE RATING (PSI)	CLOSE-OFF PRESSURE (PSI)						
EV050S-055	5.5	0.5" (15)	360	200	\$1,341	\$1,740				\$1,949
EV075S-103	10.3	0.75" (20)			\$1,385	\$1,784				\$2,037
EV100S-182	18.2	1" (25)			\$1,473	\$1,872				\$2,280
EV125S-285	28.5	1.25" (32)					\$1,947	\$2,346		\$2,354
EV150S-396	39.6	1.5" (40)					\$2,090	\$2,489		\$2,572
EV200S-761	76.1	2" (50)							\$2,472	\$2,887
EV200S-1000	100	2" (50)							\$2,472	\$2,887

7 Models (-G Glycol models)

Sizes: $\frac{1}{2}$ " to 2"

Flow Range: 5.5 GPM to 100 GPM



Pricing ANSI 125

BELIMO

ACTUATOR PART #					ARX24-EV	GRX24-EV	AKRX24-EV	GKRX24-EV
MODEL #	GPM	SIZE	BODY PRESSURE RATING (PSI)	CLOSE-OFF PRESSURE (PSI)				
EV250S-127	127	2.5" (65)	ANSI 125, STANDARD CLASS B	100	\$8,451		\$9,760	
EV300S-180	180	3" (80)			\$10,968		\$12,278	
EV400S-317	317	4" (100)				\$12,727		\$14,350
EV500S-495	495	5" (125)				\$15,749		\$17,372
EV600S-713	713	6" (150)				\$20,132		\$21,756

5 Models
Sizes: 2½" to 6"
Flow Range: 127 GPM to 100 GPM

Pricing ANSI 250

BELIMO

ACTUATOR PART #					EVX24-EV-L	EVX24-EV-B	AVKX24-EV-L	AVKX24-EV-B
MODEL #	GPM	SIZE	BODY PRESSURE RATING (PSI)	CLOSE-OFF PRESSURE (PSI)				
EV250S-127-250	127	2.5" (65)	ANSI 250, Standard Class B	310	\$12,210		\$13,755	
EV300S-180-250	180	3" (80)			\$14,735		\$16,280	
EV400S-317-250	317	4" (100)				\$16,964		\$18,509
EV500S-495-250	495	5" (125)				\$21,335		
EV500S-495-250	495	5" (125)						\$22,880
EV600S-713-250	713	6" (150)				\$25,133		
EV600S-713-250	713	6" (150)						\$26,678

7 Models
 Sizes: 2½" to 6"
 Flow Range: 127 GPM to 100 GPM

Industry Recognition



ACME 2016
Winner of Innovation Award



Acrex 2015
Winner of award of excellence



ControlTrends 2014
Energy Saving Product of the Year



ControlTrends 2012
Best commercial product of the year



2015 Energy Show
Best Energy Efficient Product



2017 AHR Innovation Award
Finalist in the Category of Building Automation



2014 AHR Innovation Award
Winner in the Category of Building Automation



2013 Building Efficiency Award
Best energy efficient automation product



BCIA Awards 2013
Technical Innovation of the Year



HVR Awards 2012
Air-conditioning product of the year



Shanghai Energy IAC 2014
Golden Key Award



Silver Trophy

Silver Trophy Award 2013
Winner of Energy Smart Automation Award



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