

New & Exciting Capabilities of Modern Control Valves



Types of Automatic Control Valves

- Hydraulic



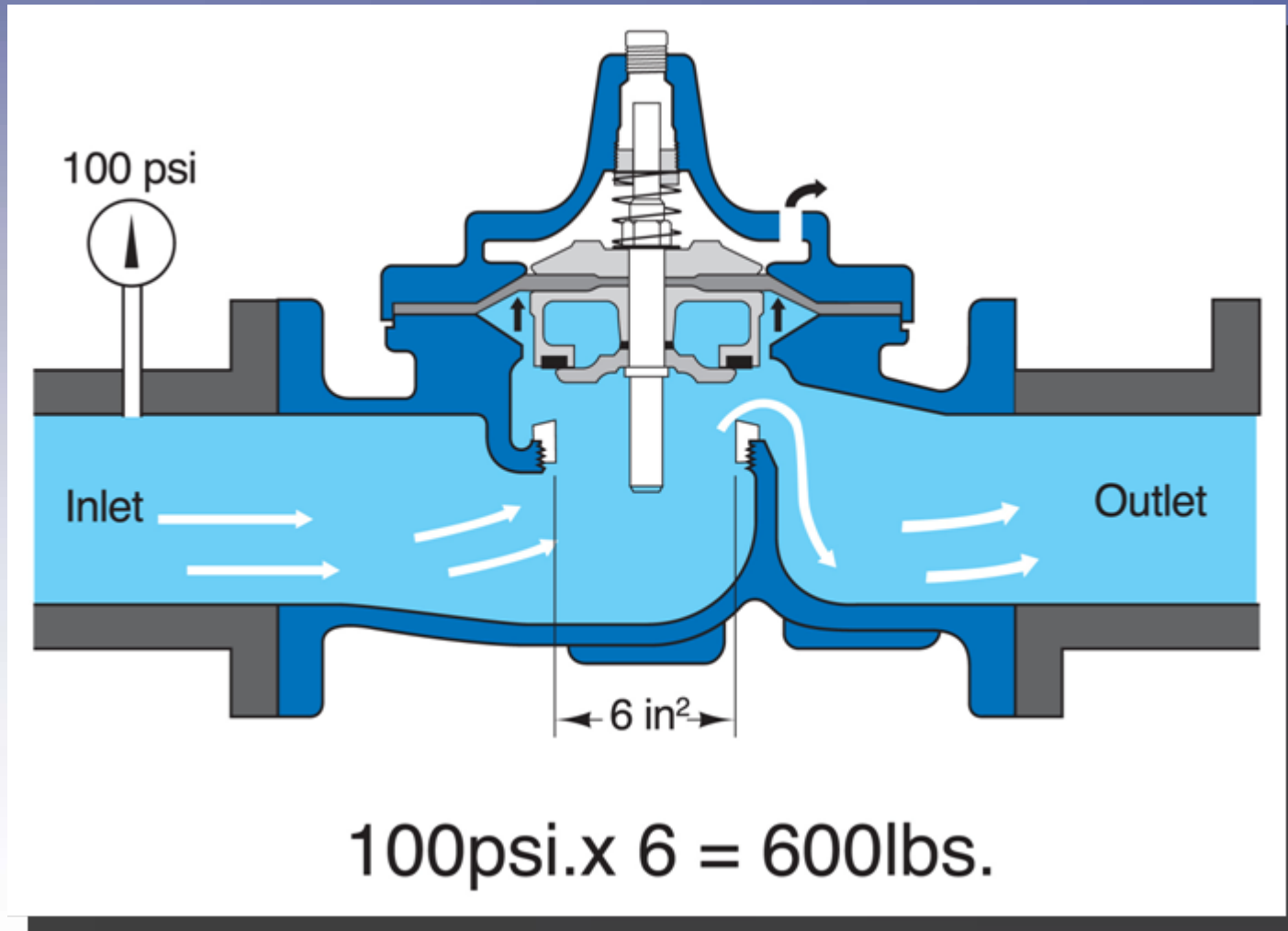
- Electronic



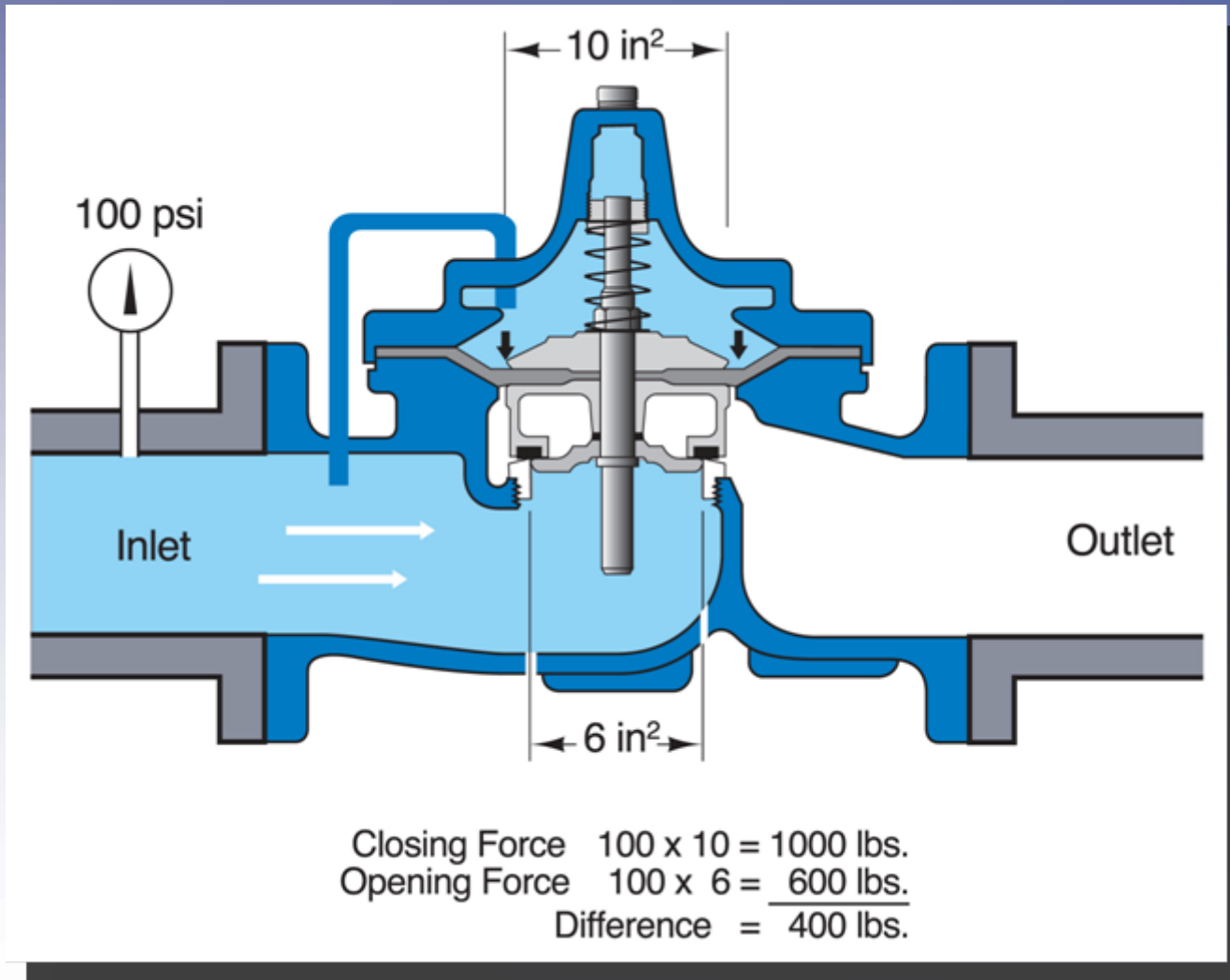
- Electronic with Hydraulic Back-Up



Line Pressure to Open



Line Pressure to Close



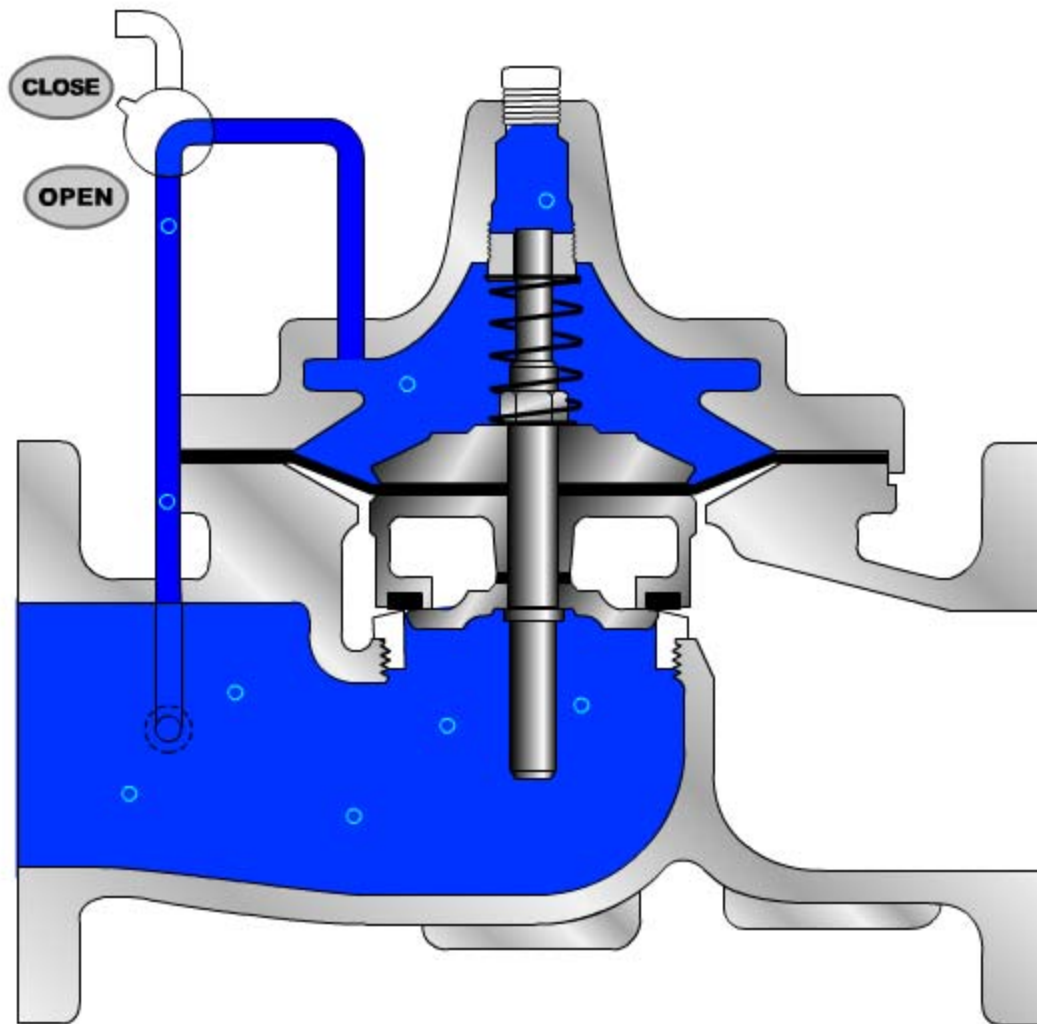
EXIT

Valve Opening/Closing Operation

PLAY

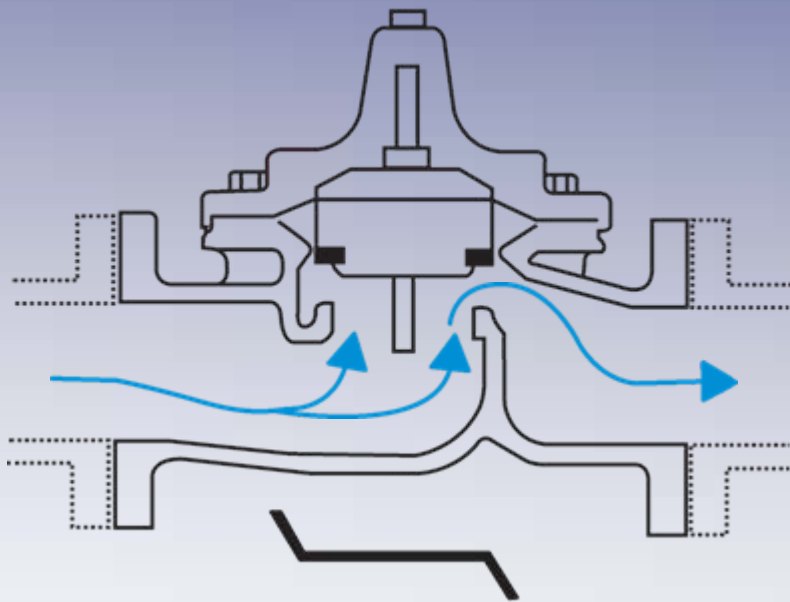
PAUSE

RESTART



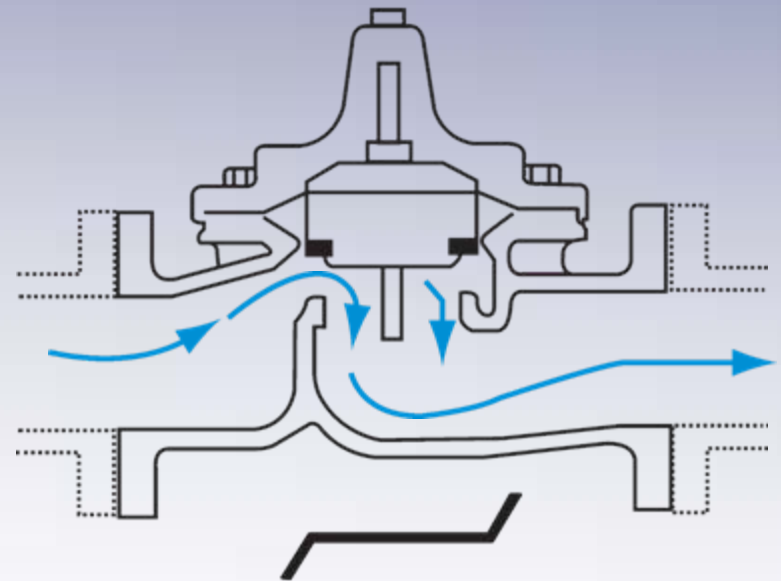
Flow Direction

Normal Flow



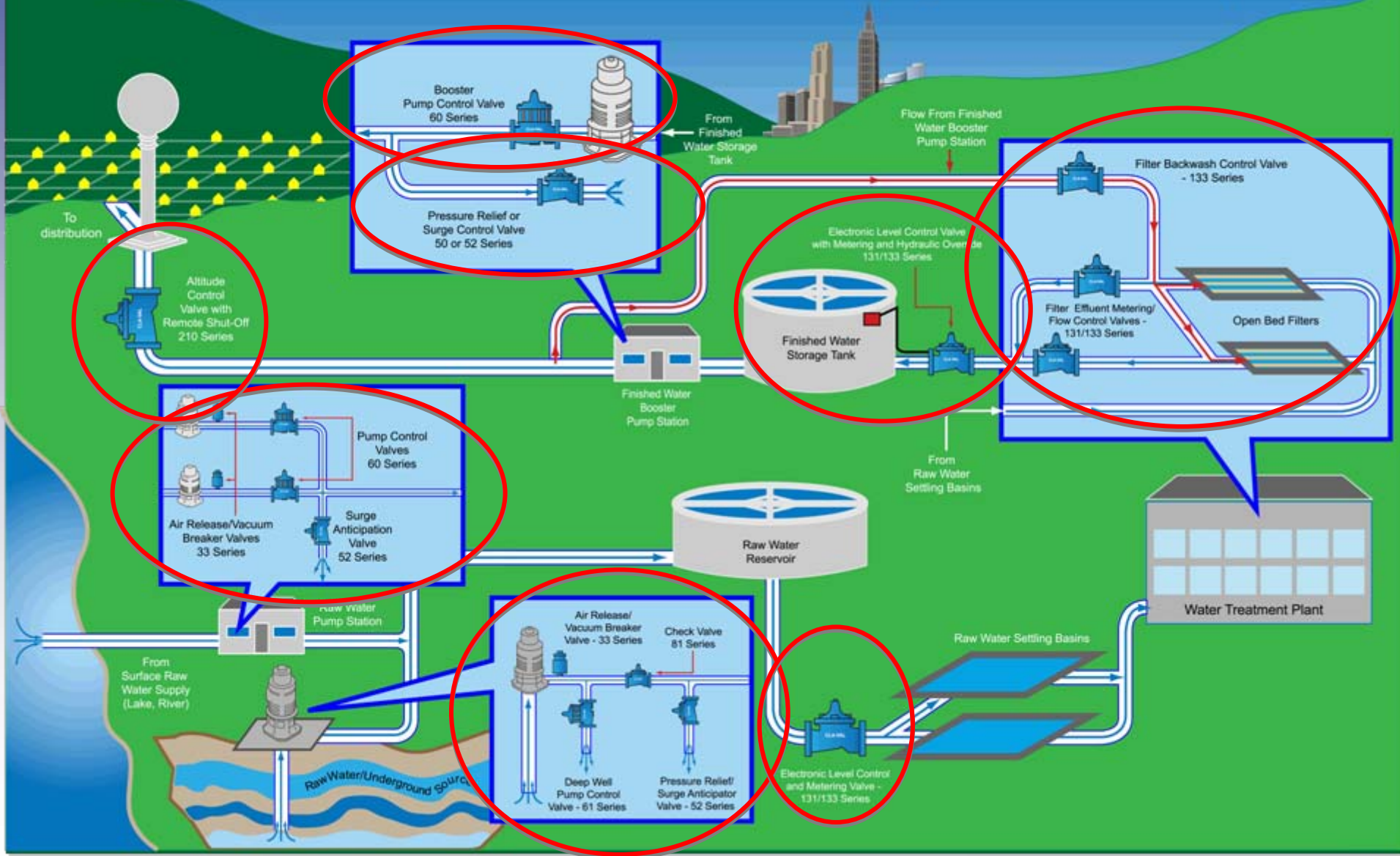
Up and Over Seat

Reverse Flow



Over Seat and Down

Typical Water Treatment System



Control Valve Applications

- Pressure Reducing
- Pressure Relief/Sustaining
- Pump Control
- Rate-of-Flow Control
- Level Control
- Cavitation Control
- Surge Anticipation
- Electronic Control
- Metering
- Valve-Based Power Generation



Pressure Reducing Valves

- Reduces a higher inlet pressure to a constant downstream pressure regardless of demand and supply pressure fluctuations
- Enables delivery of water at safe pressures and adequate levels for customer needs
- Installations:
 - Main line feeds
 - Distribution zones
 - Fire systems
 - Irrigation systems



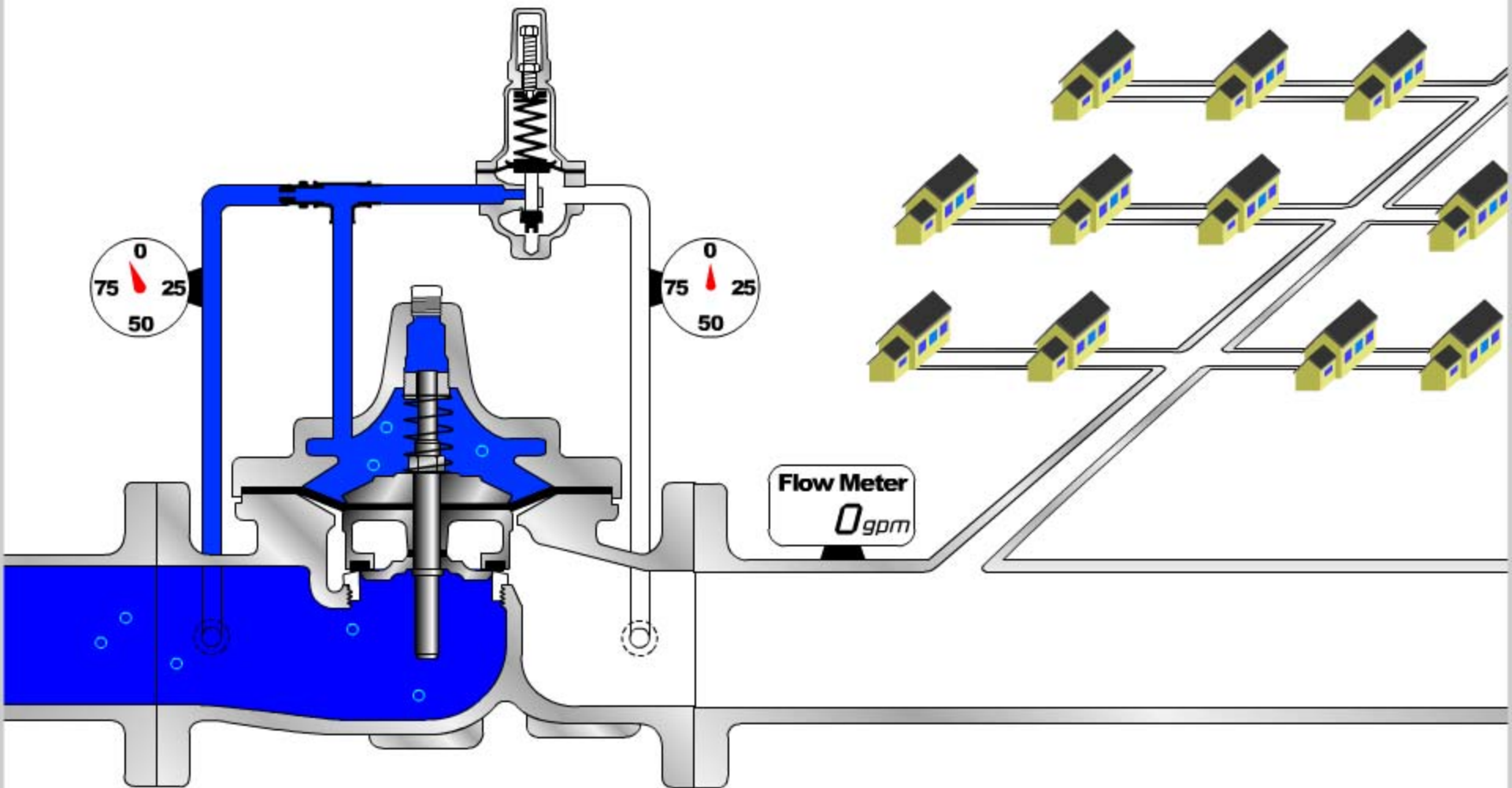
EXIT

90-01 Pressure Regulation Valve

PLAY

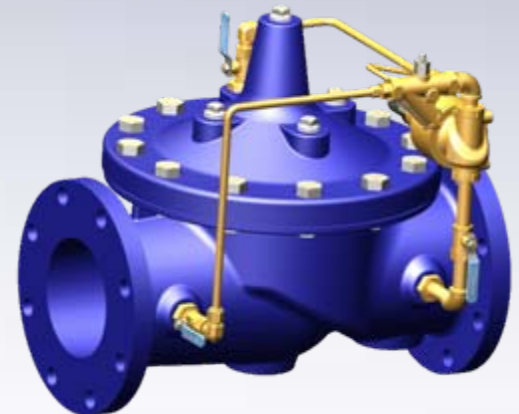
PAUSE

RESTART



Pressure Relief/Pressure Sustaining Valves

- Relieves excess pressure while maintaining a minimum upstream pressure
- Prevents downstream demand from sacrificing supply of an upstream zone
- Installations:
 - In-line distribution piping
 - At booster pump stations



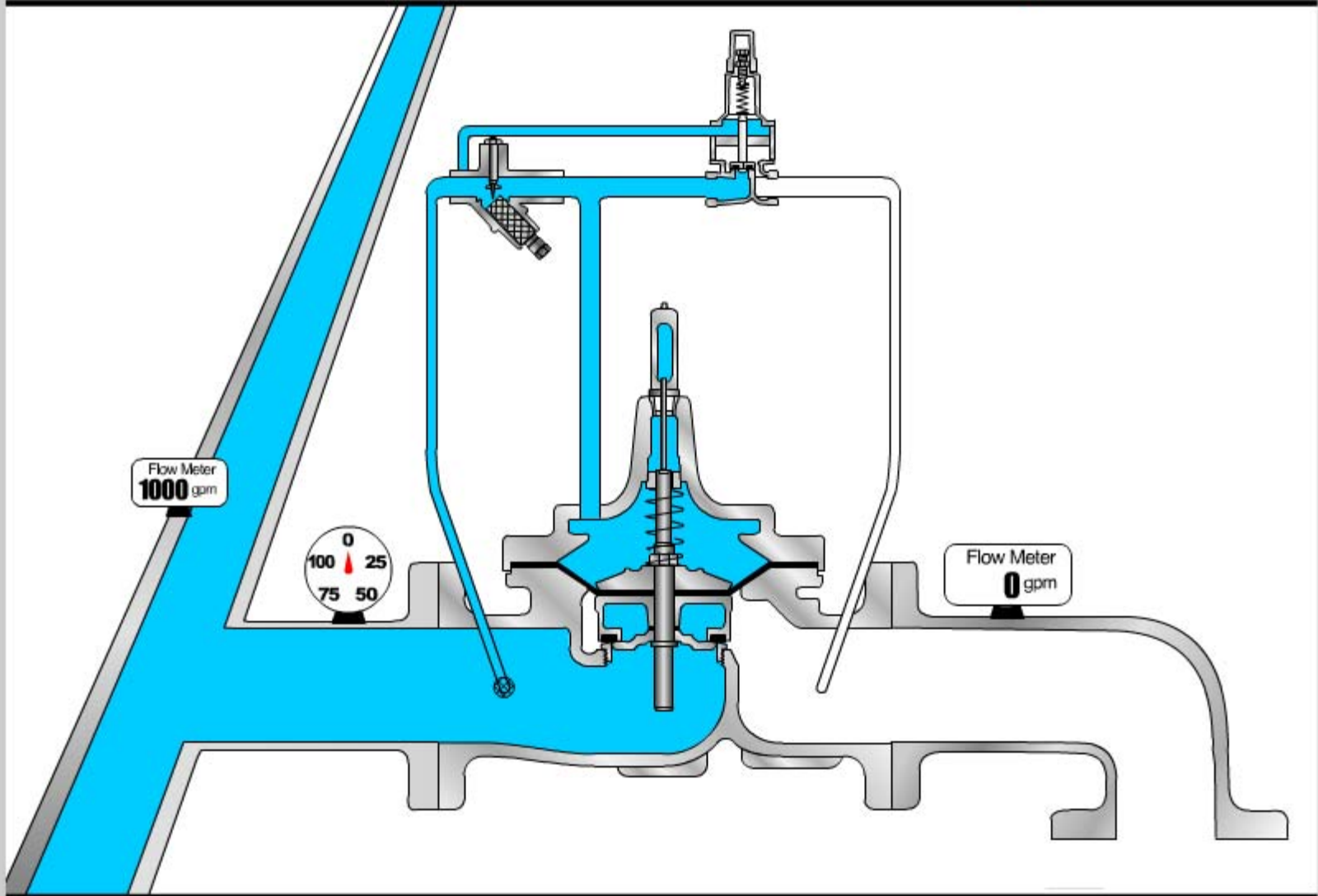
EXIT

50-01 Pressure Relief Pressure Sustaining Valve

PLAY

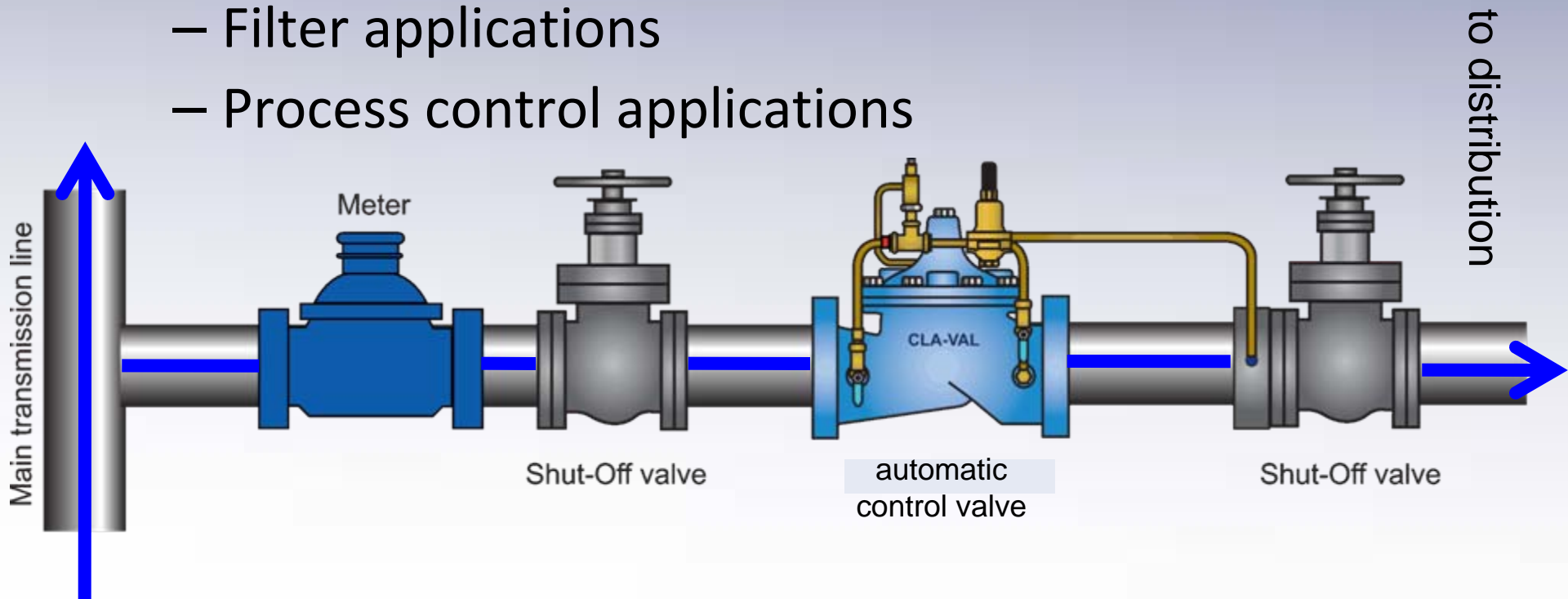
PAUSE

RESTART



Rate of Flow Control Valves

- Maintains a maximum flow rate setting downstream regardless of pressure changes
- Installations:
 - Within distribution systems
 - Filter applications
 - Process control applications



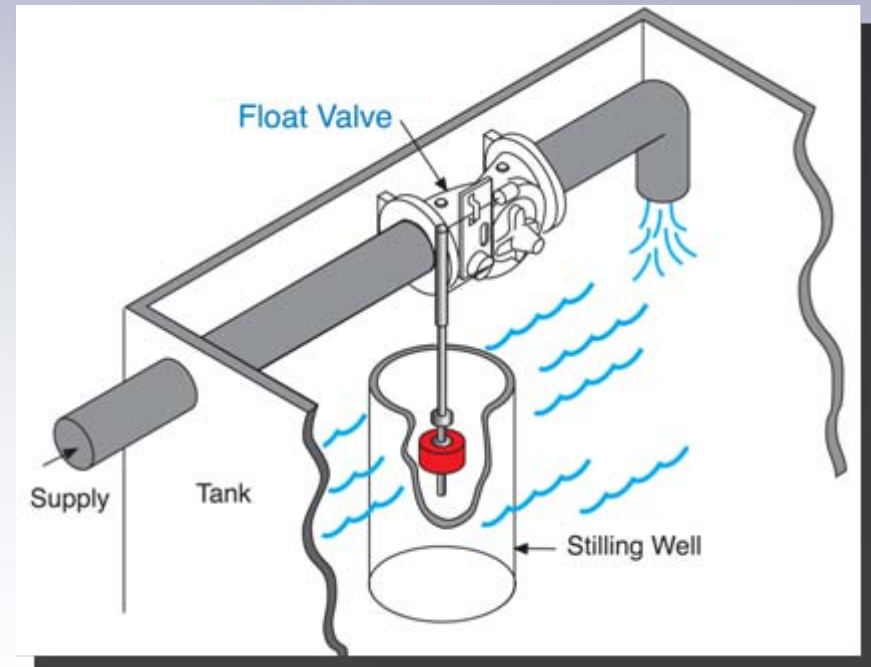
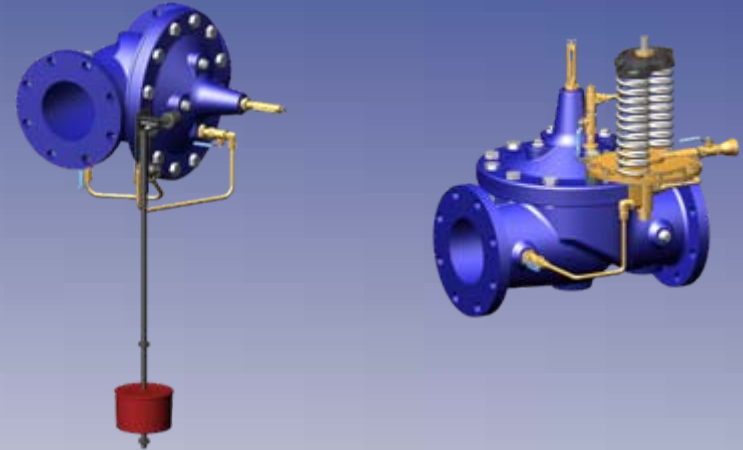
Example: Electronic Pressure Reducing



- Application:
Electronic Pressure Reducing/Pressure Sustaining Valve in packaged vault
- Equipped with electronic actuator
- Feeds community and elevated tank located 2+ miles from vault

Hydraulic Level Control Valves

- Designed to shut-off when the reservoir reaches a high level setting
- Float or floatless configurations
- Installations:
 - Elevated tanks
 - Above and underground storage tanks and reservoirs



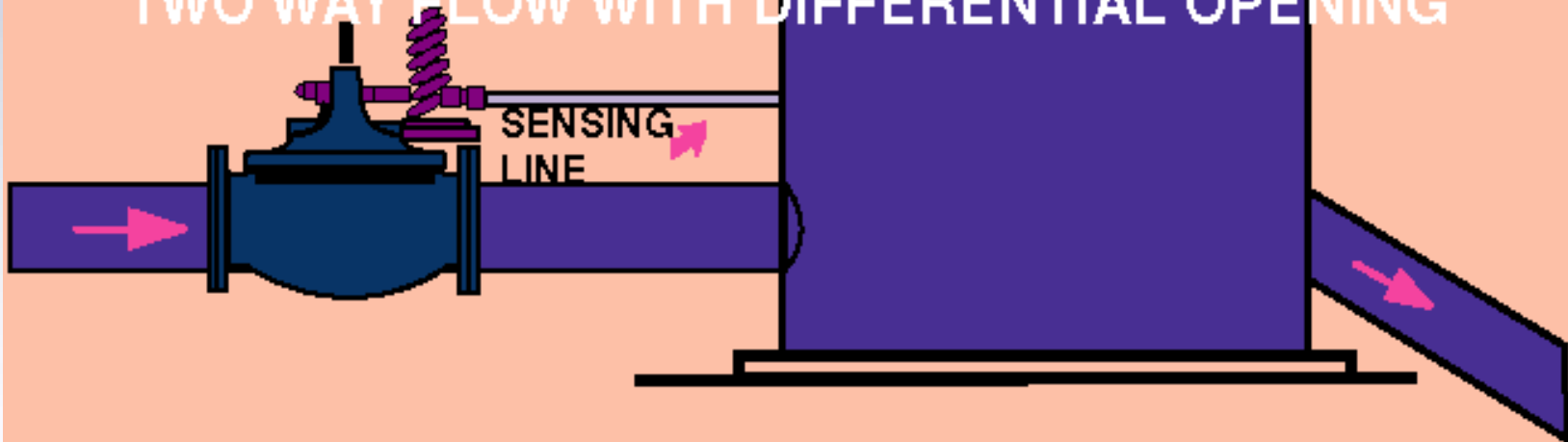
Altitude Valve Variations

ONE WAY FLOW

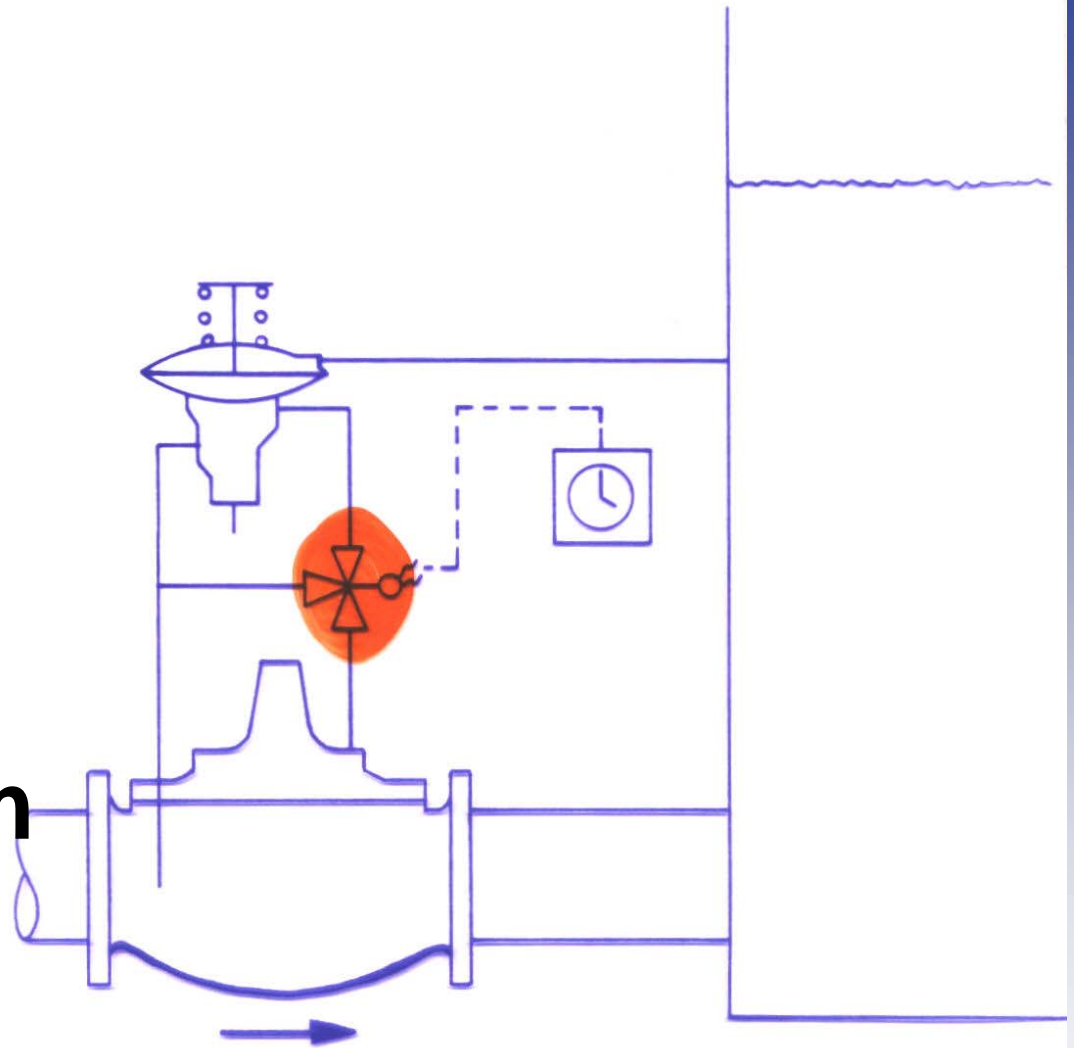
ONE WAY FLOW WITH DIFFERENTIAL OPENING

TWO WAY FLOW

TWO WAY FLOW WITH DIFFERENTIAL OPENING



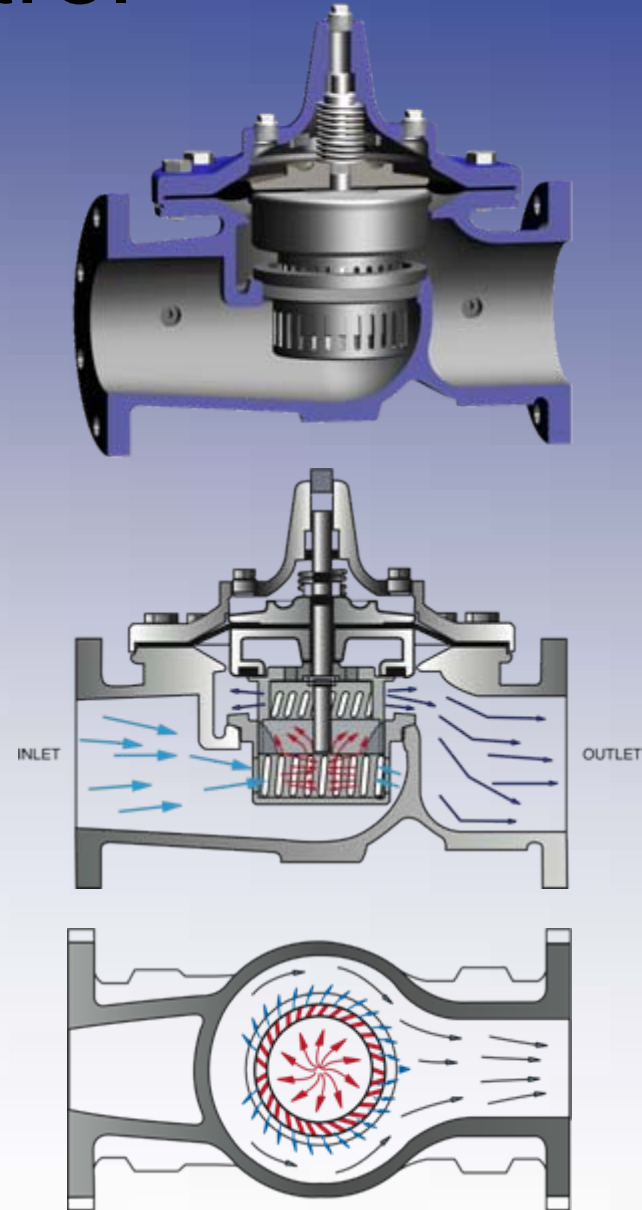
This insures that water fills the tank, only when desired-time clock, or command from SCADA.



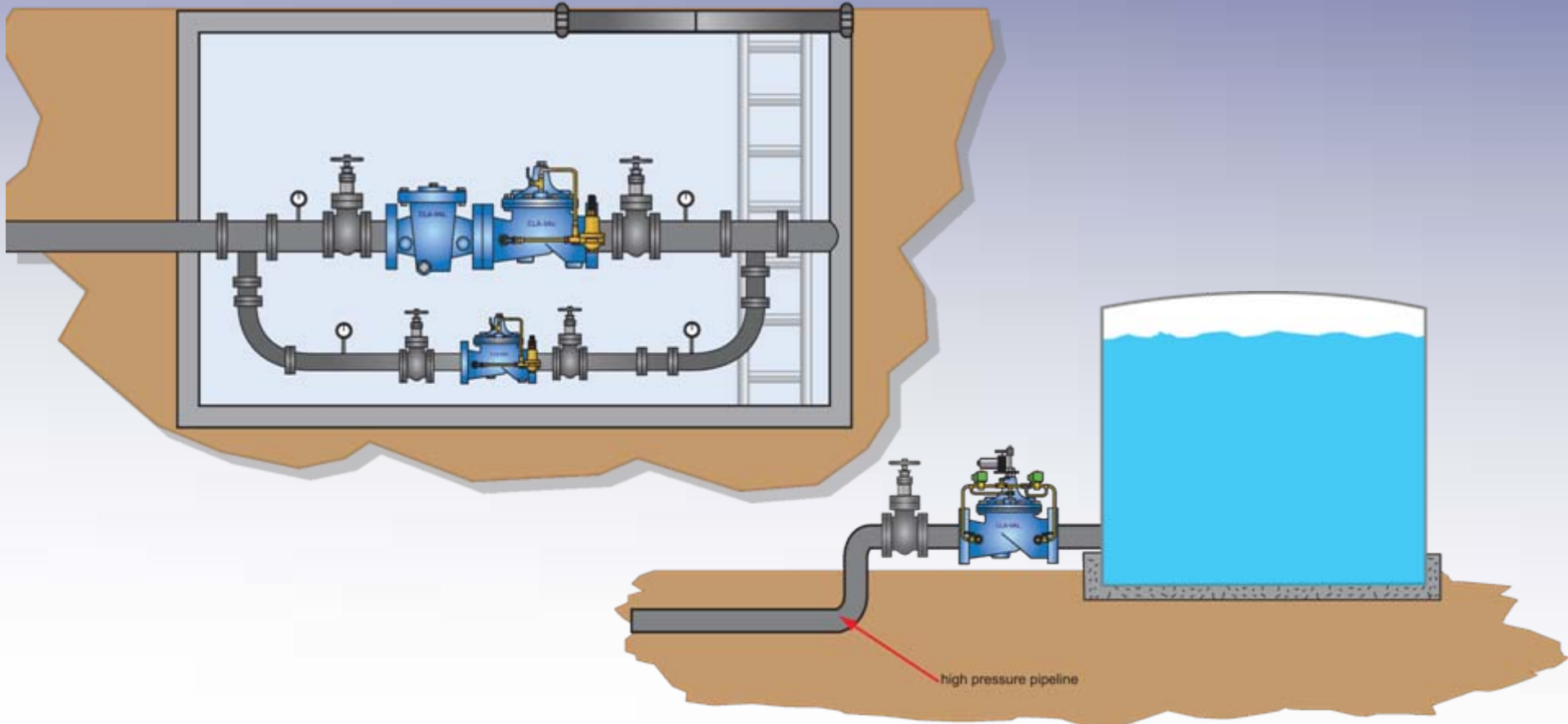
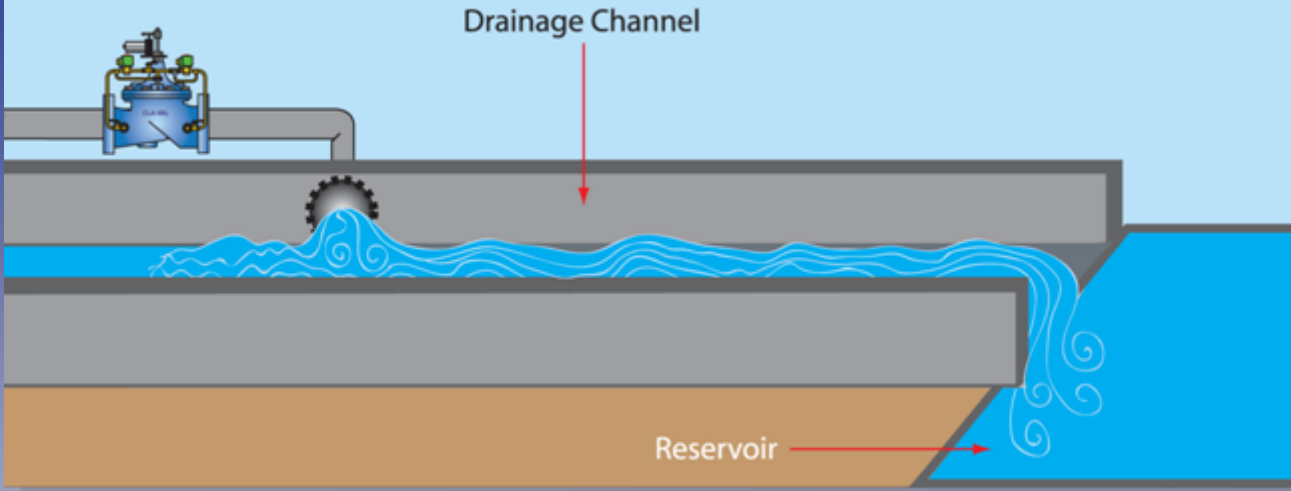
ALTITUDE AND SOLENOID SHUTOFF VALVE

Cavitation Control

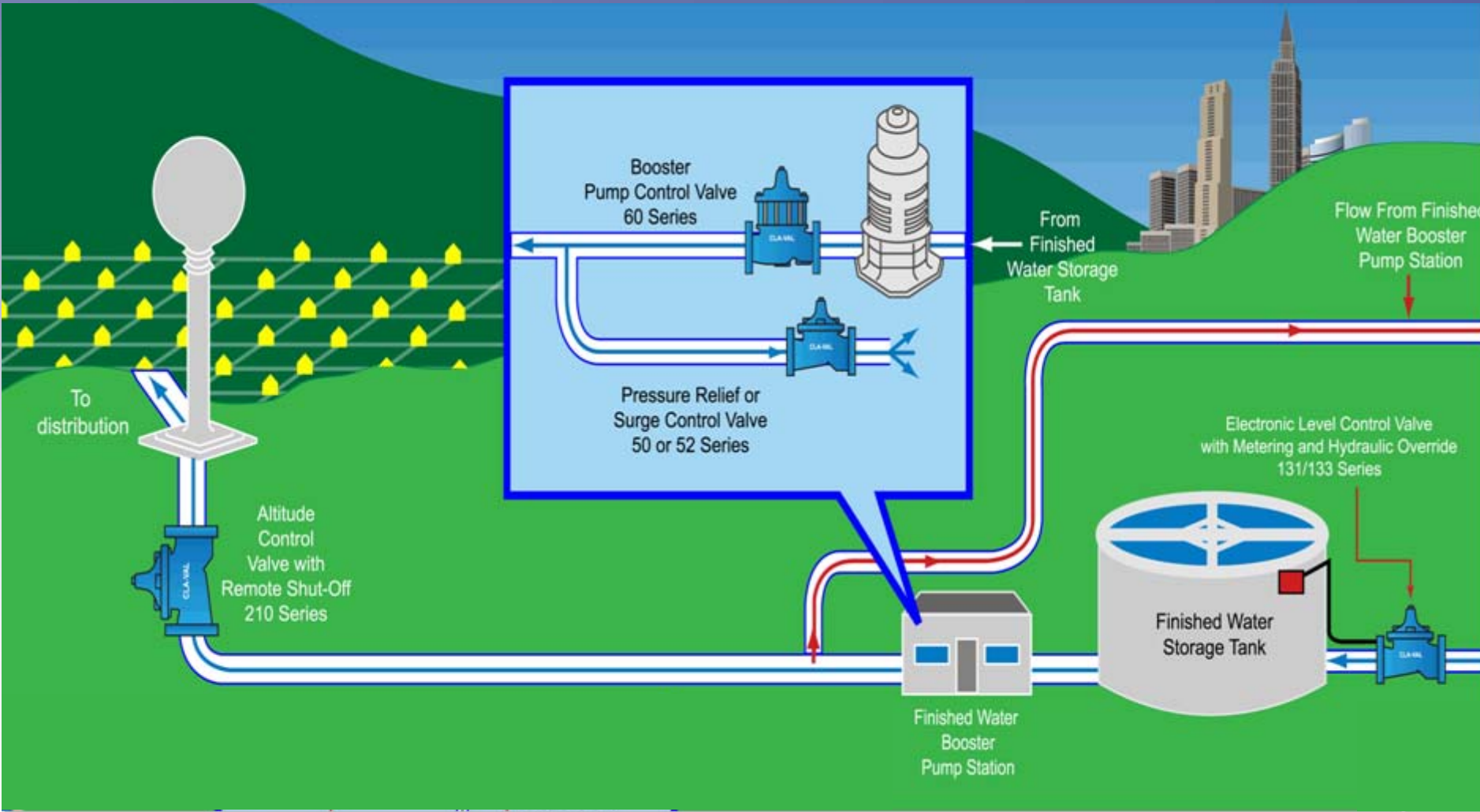
- Cavitation is common in applications with high pressure differentials or high flow rates
- Cavitation damage can be catastrophic
- Automatic Control valves can be equipped with special trim to prevent cavitation, without removal of the valve from the pipeline
- Integral cavitation protection is one of the easiest and most effective ways to prolong valve life



Anti-Cavitation Valve Applications



Pump Control Applications

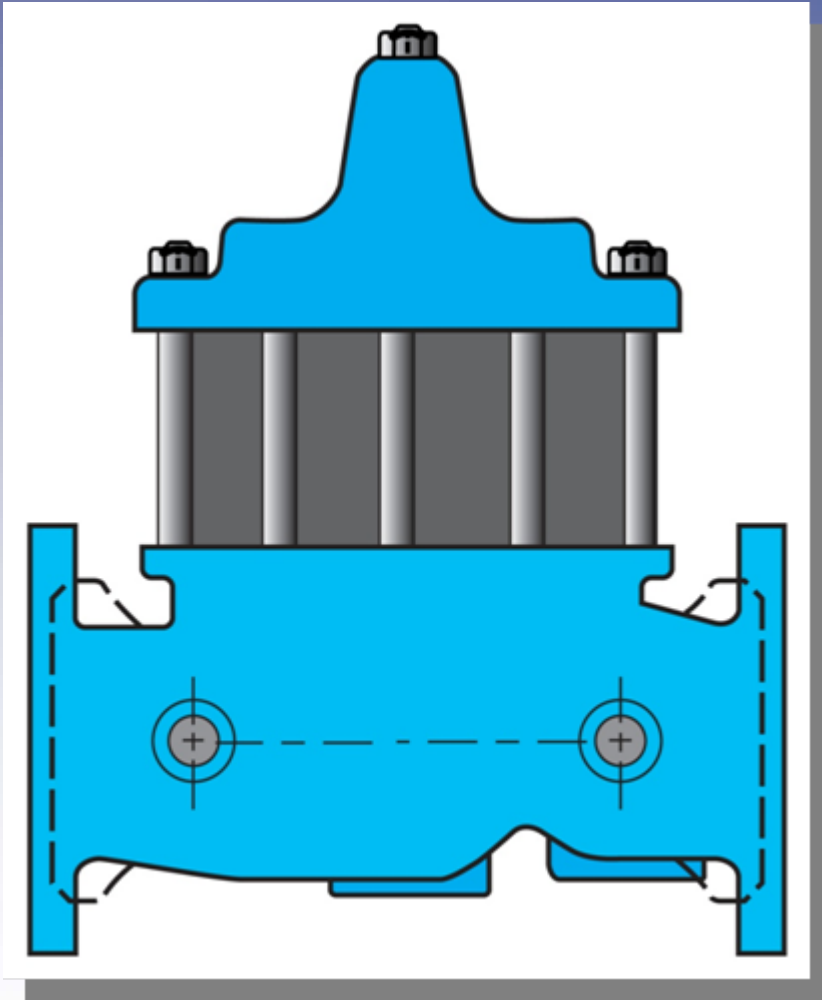


Pump Control Valves

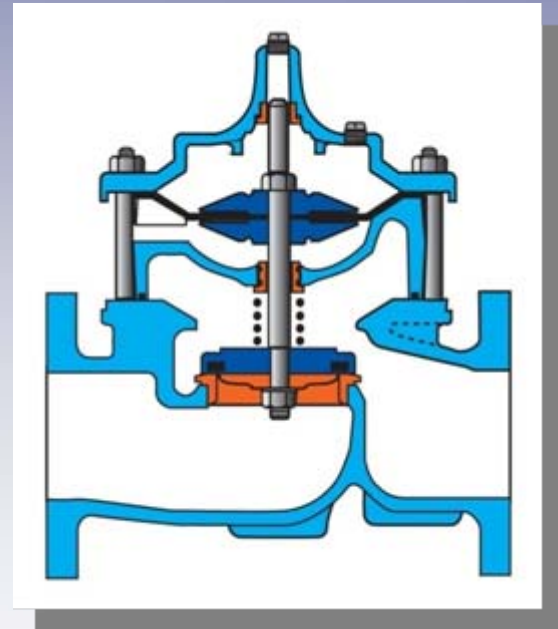
- Booster Pump Control Valve:
 - Pump starts against a closed valve
 - Valve opens slowly as pump starts, gradually increasing line pressure to full pump head
 - Valve closes gradually when pump is signaled to shut-off
 - Prevents reverse flow and water hammer



Powercheck Main Valve



Model 100-03
Built-In lift type
check valve



Spring in cover 10" and smaller

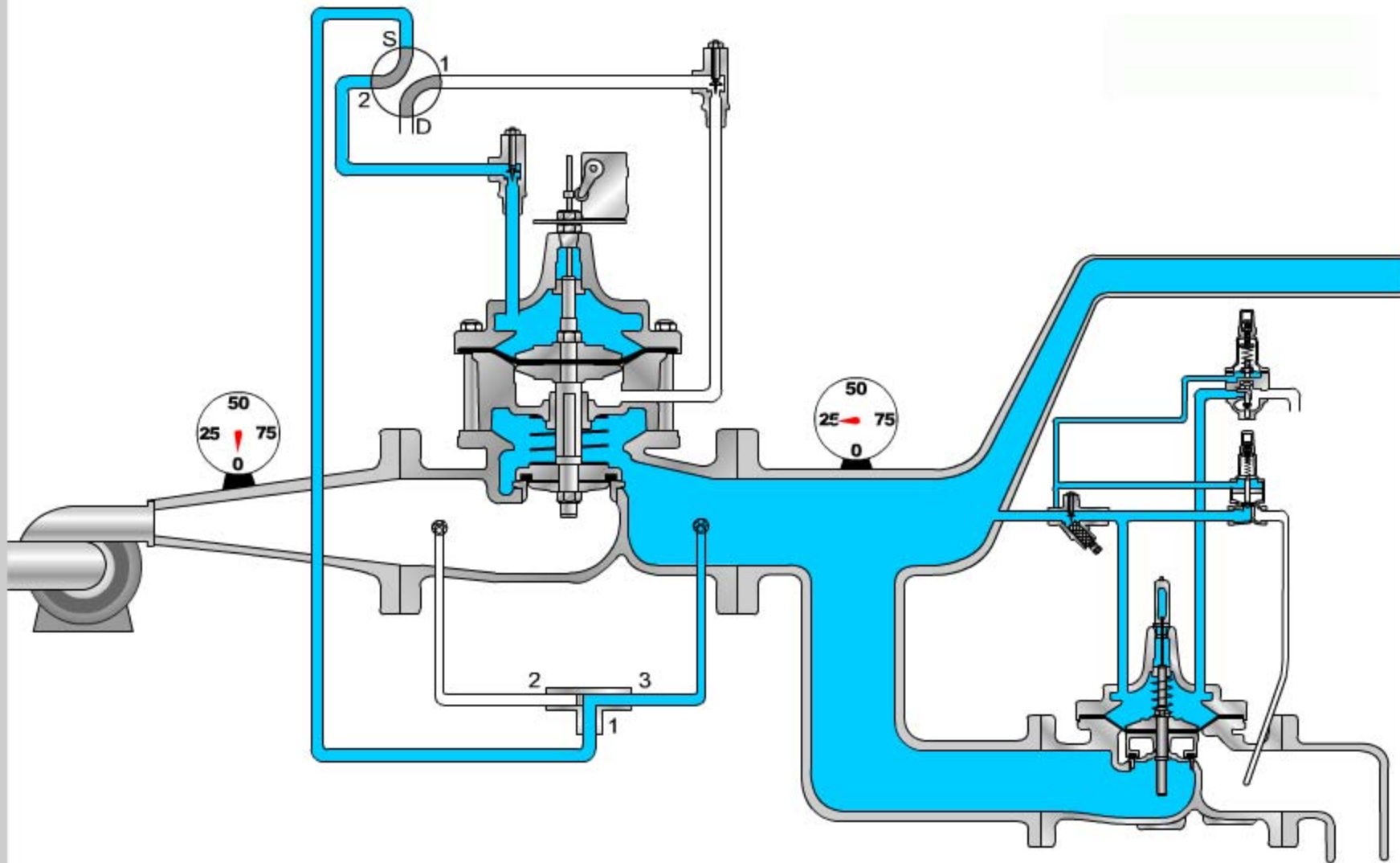
EXIT

60-11 Booster Pump Control Valve

PLAY

PAUSE

RESTART

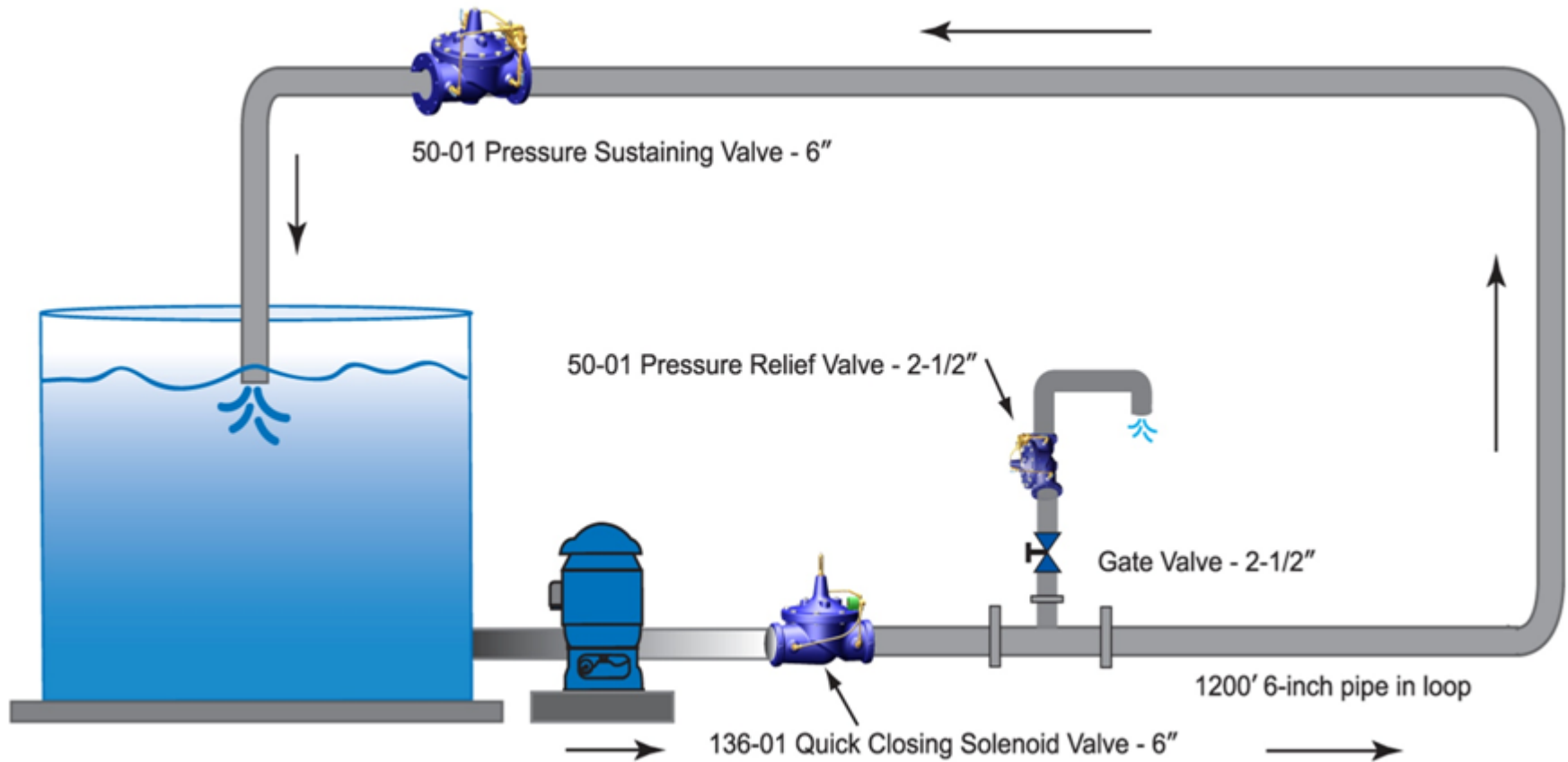


Installation: Rialto, CA



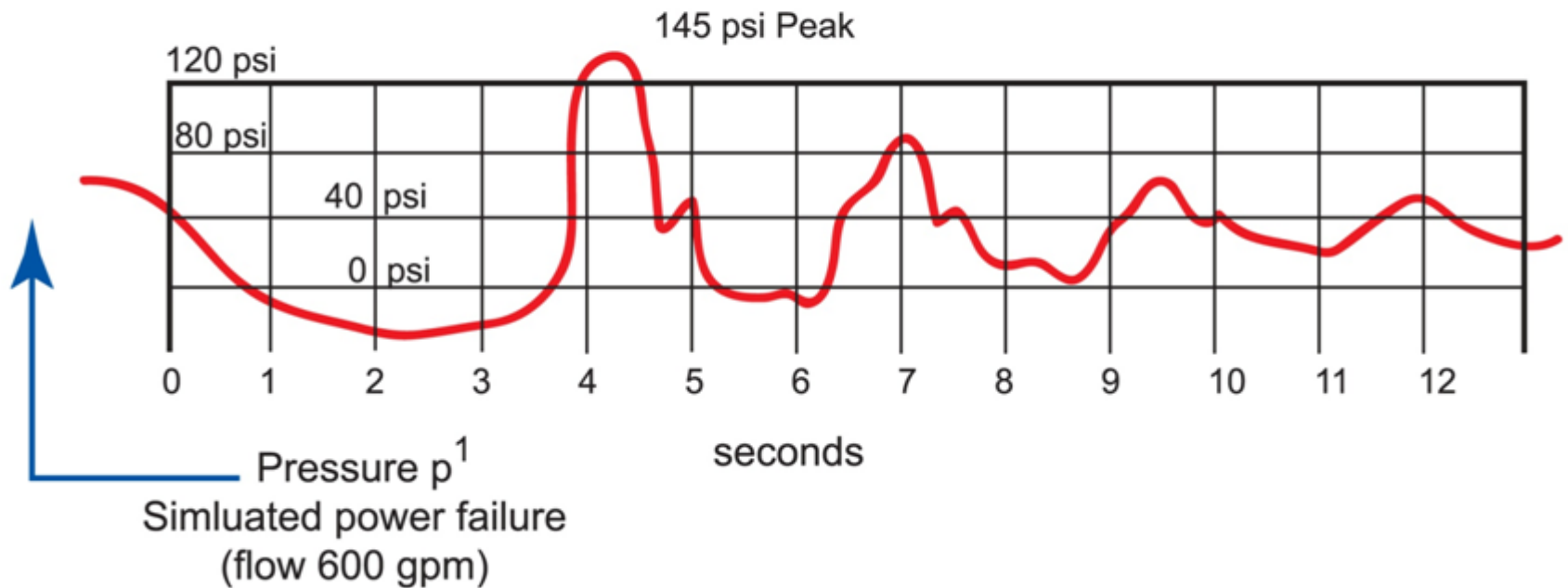
What is Surge?

Research Test Set-Up

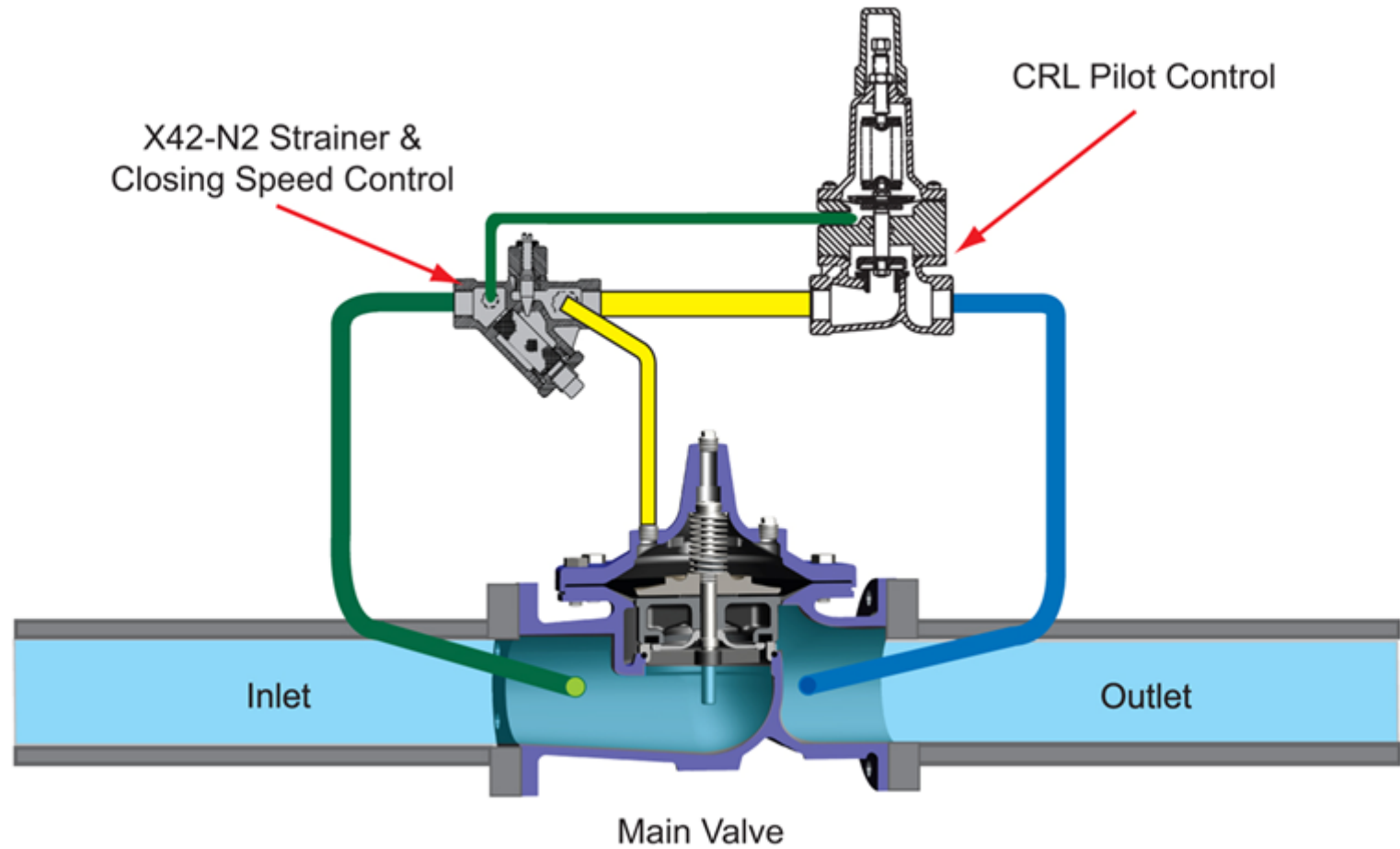


Test Curve With No Relief Valve

Simulated Power Failure With No Surge Protection

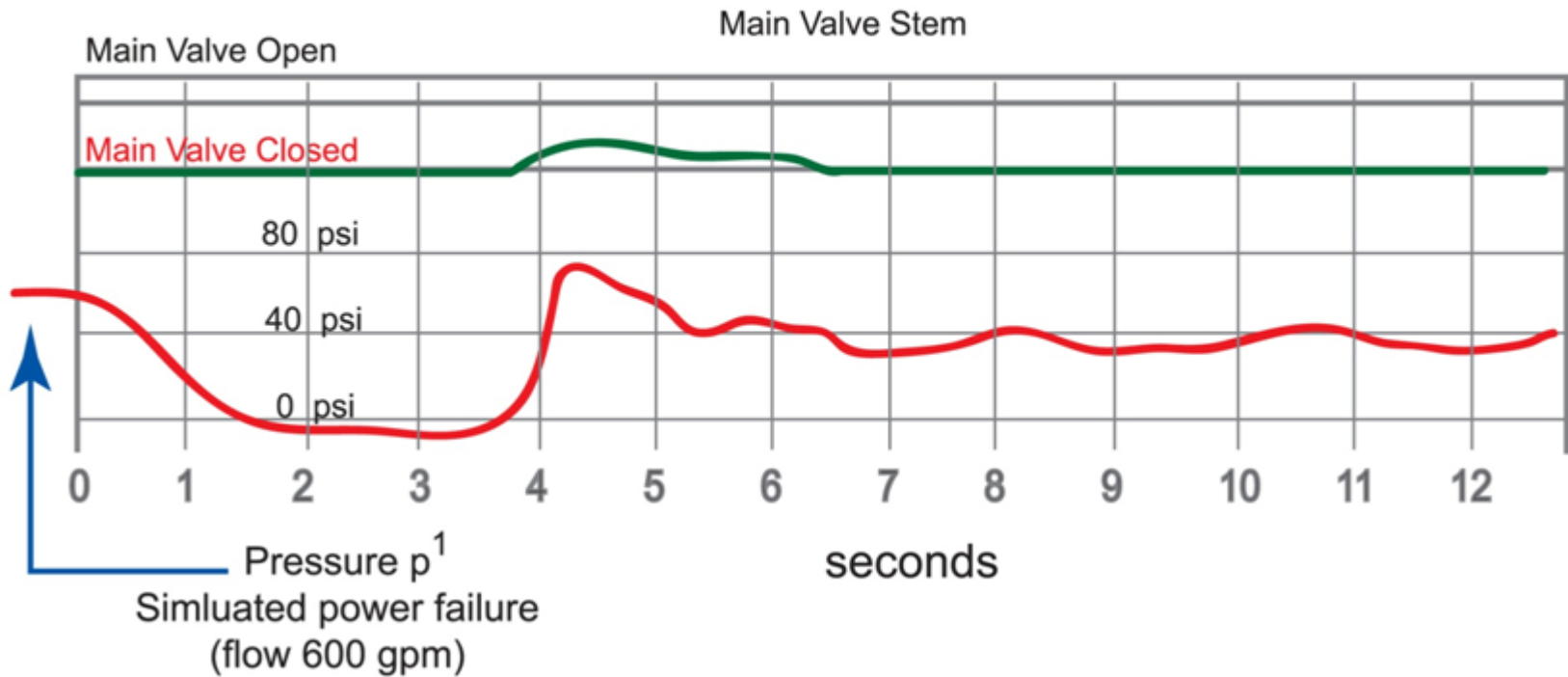


50 Series Pilot System unmodified

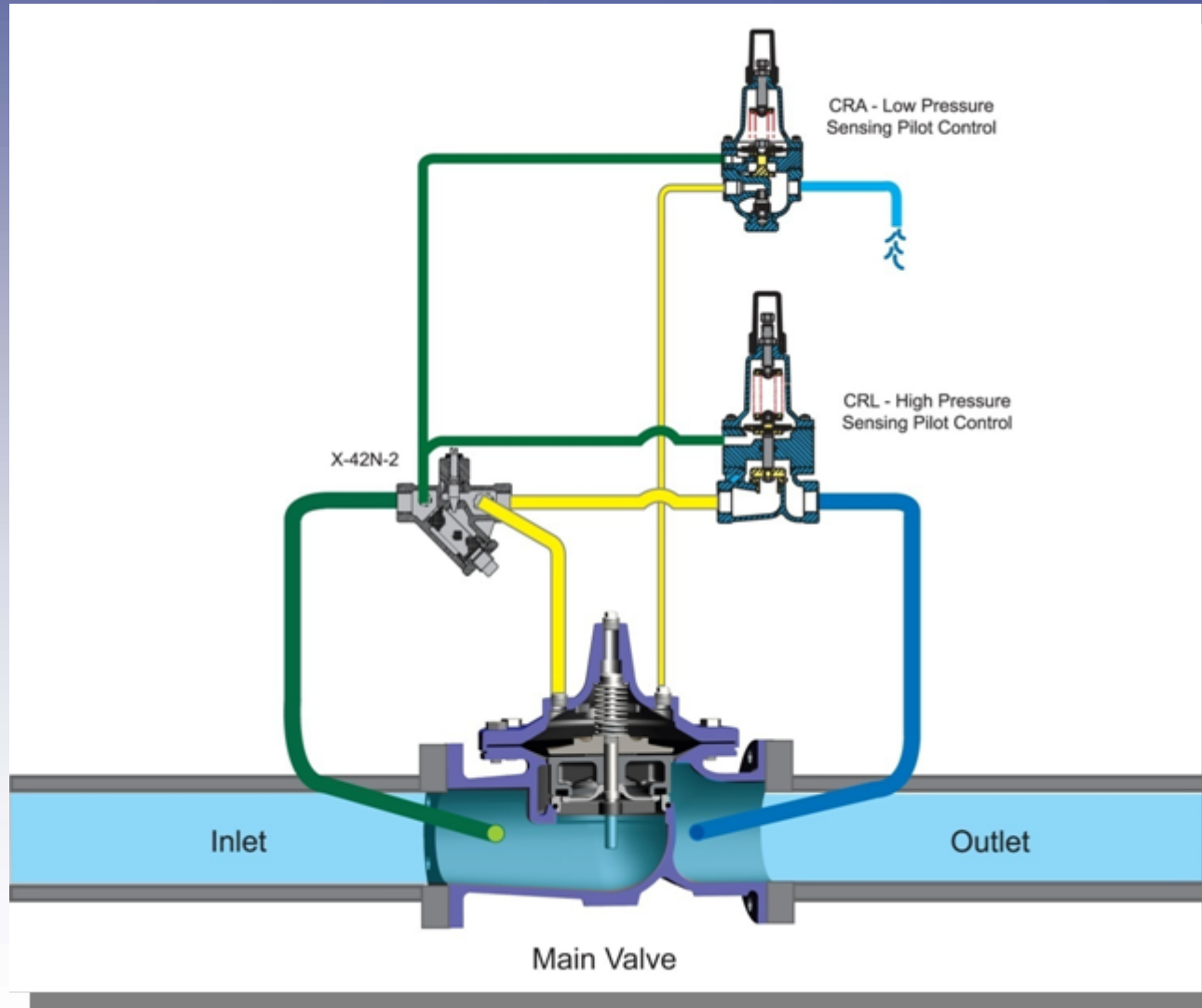


Test Curve With 50 Series Relief Valve

Simulated Power Failure with 2-1/2" 50 Series Pressure Relief Valve

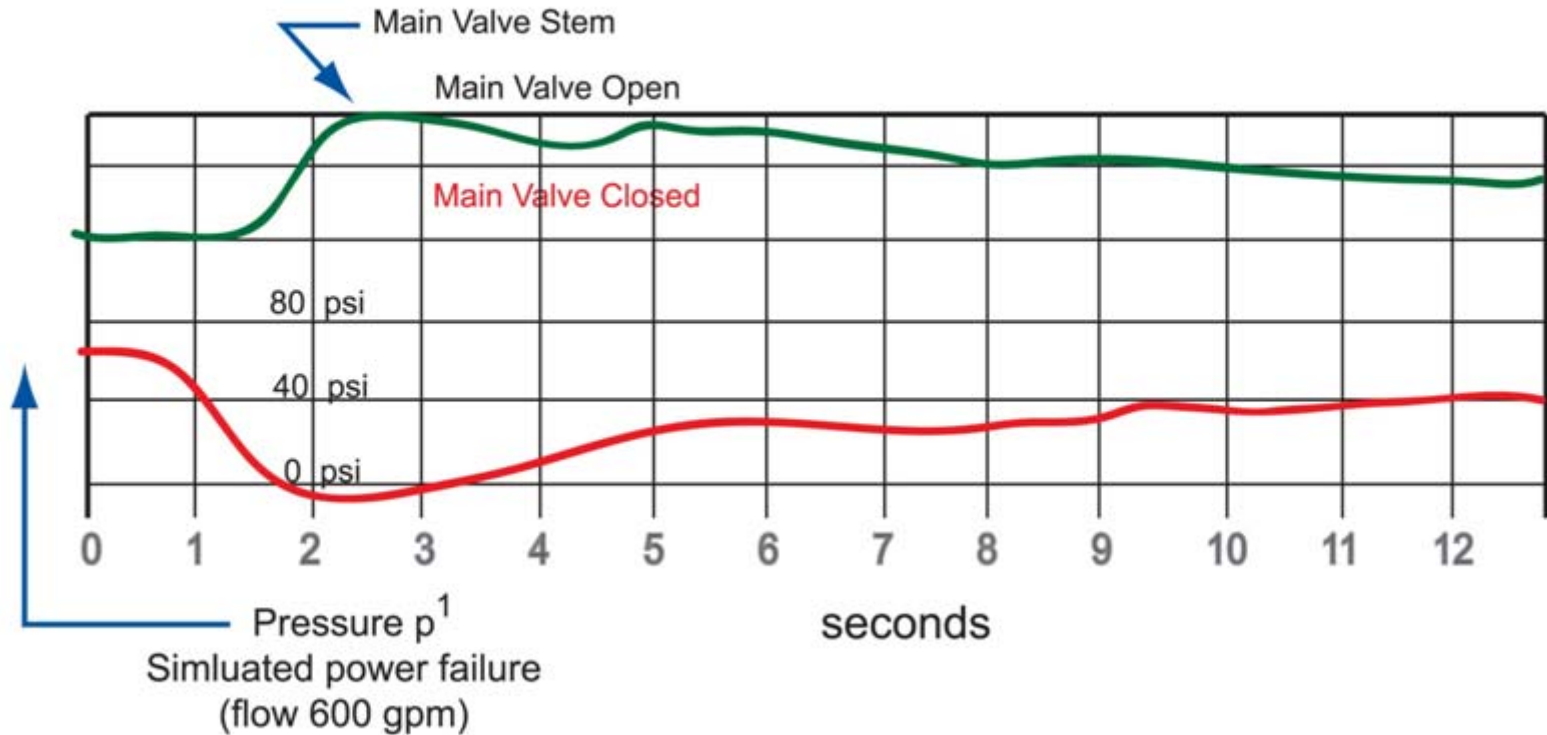


50 Series Pilot System with Modification

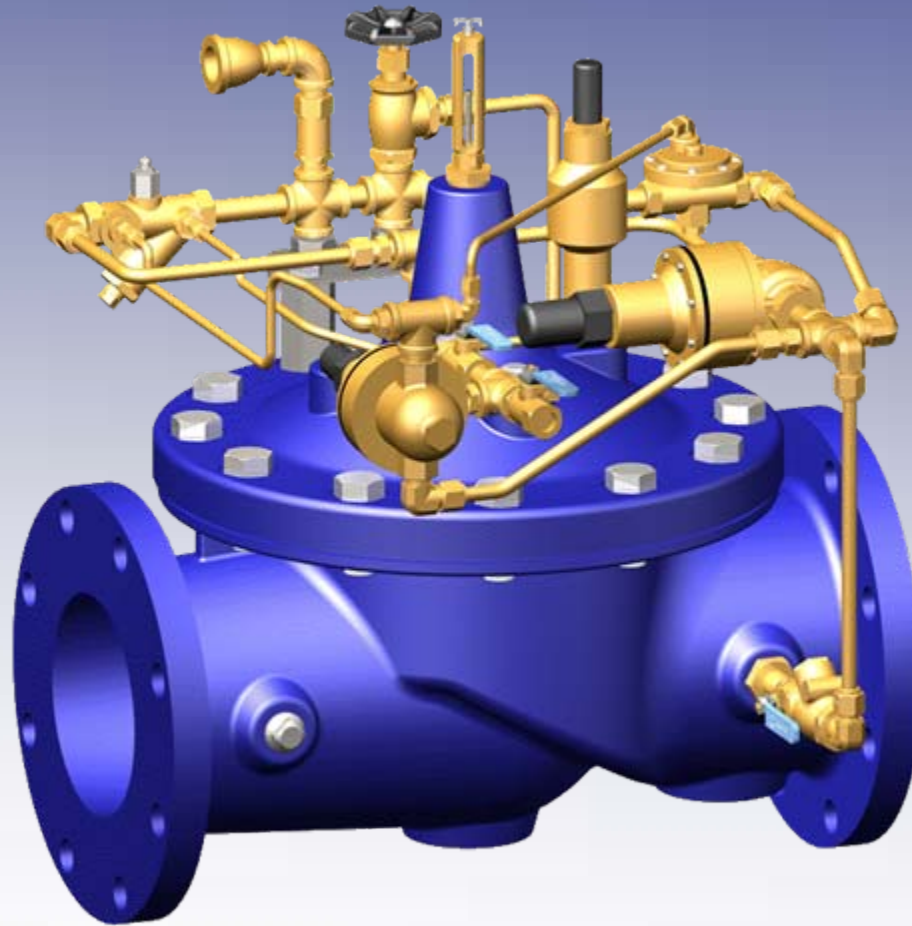


Test Curve With Modified 50 Series Relief Valve

Simulated Power Failure with 2-1/2" 52 Series Surge Control Valve



52-03 Surge Anticipator Control Valve

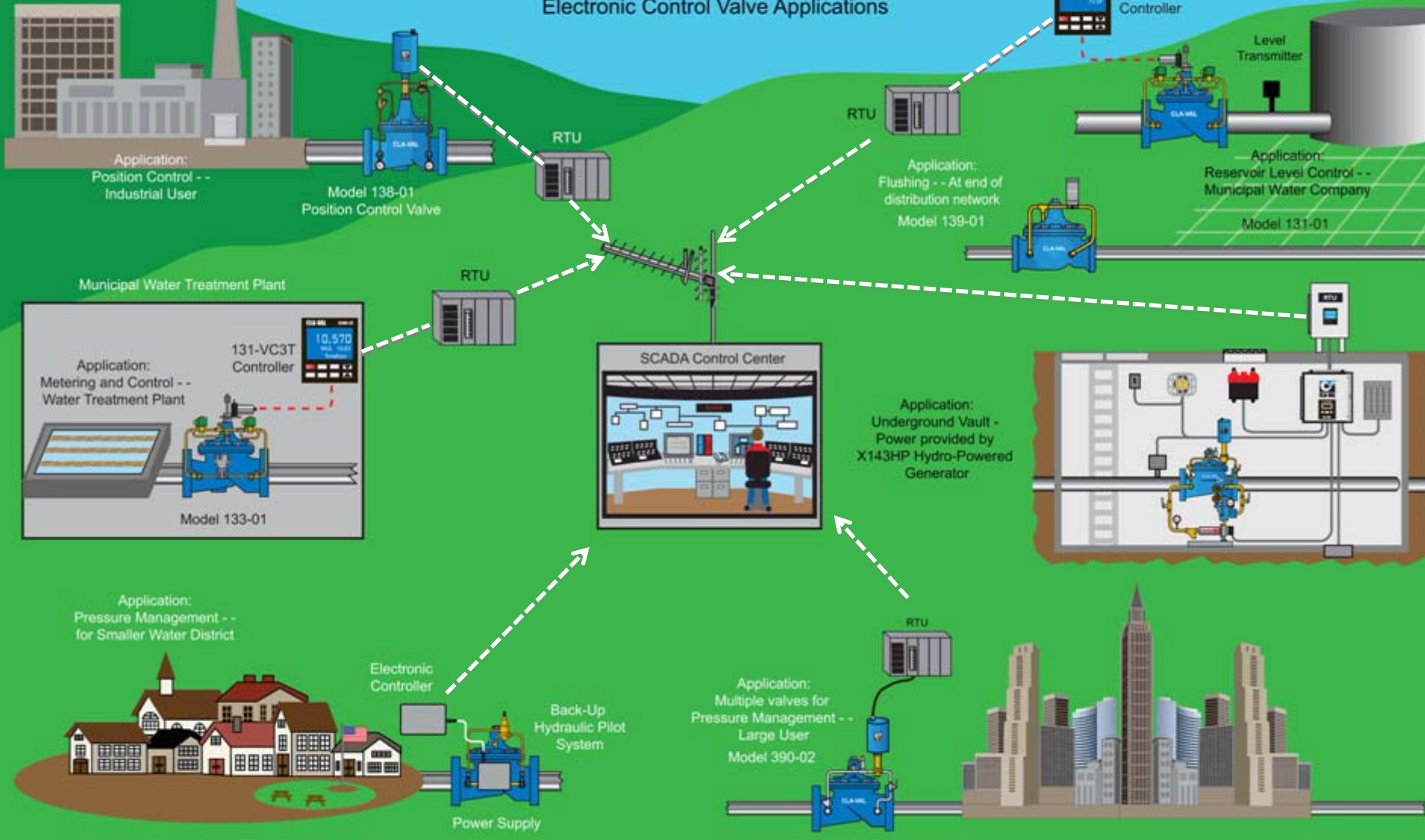


Surge Anticipator Control Valve

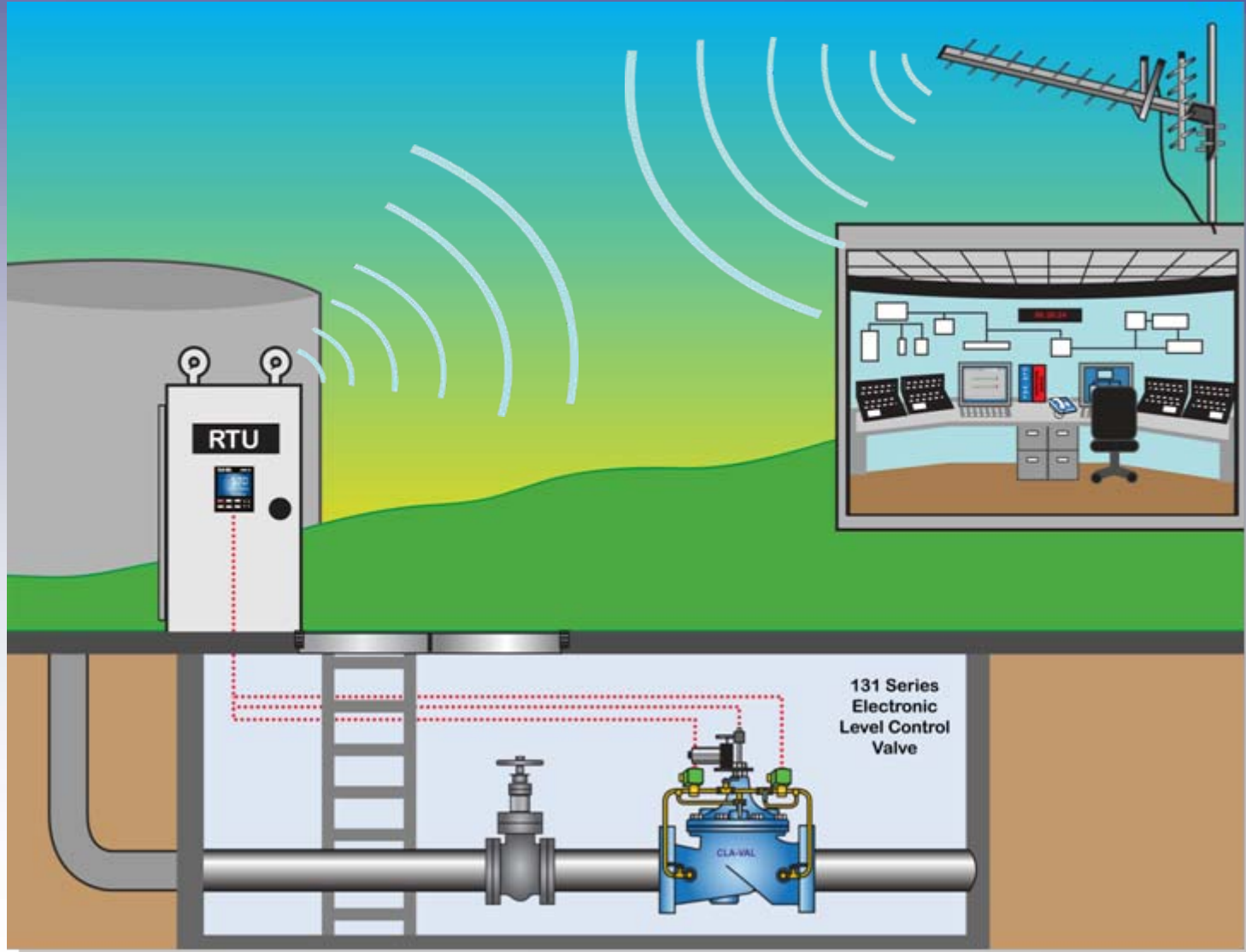


Cla-Val

Electronic Control Valve Applications



SCADA Interface



Electronic Control Valves can do it all

On / Off Control

Pressure Control

Flow Control

Level Control

Blending Control



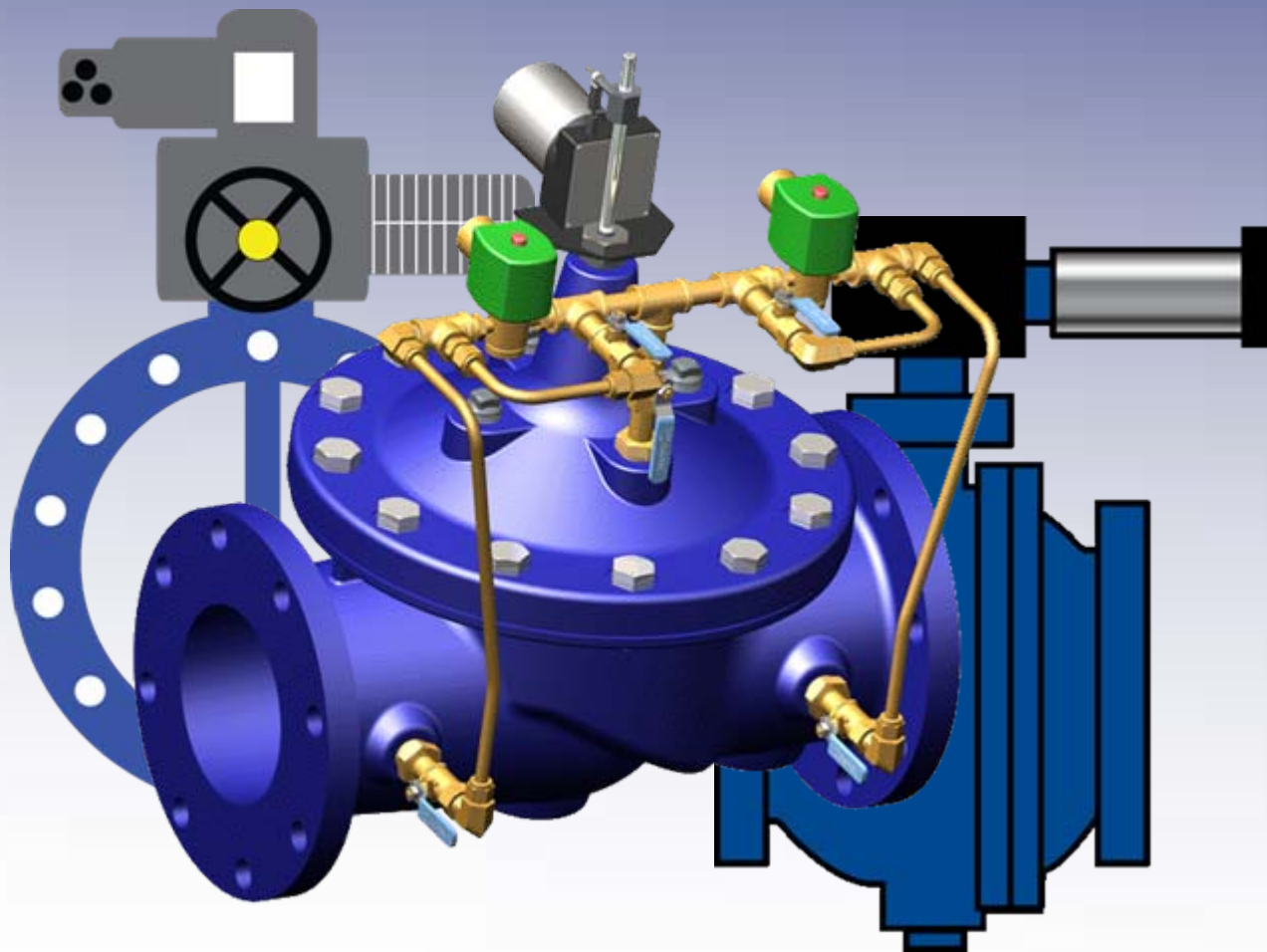
Valve
Position Control

Combinations

System Status

Automatic Control

Enhancing Control Capabilities

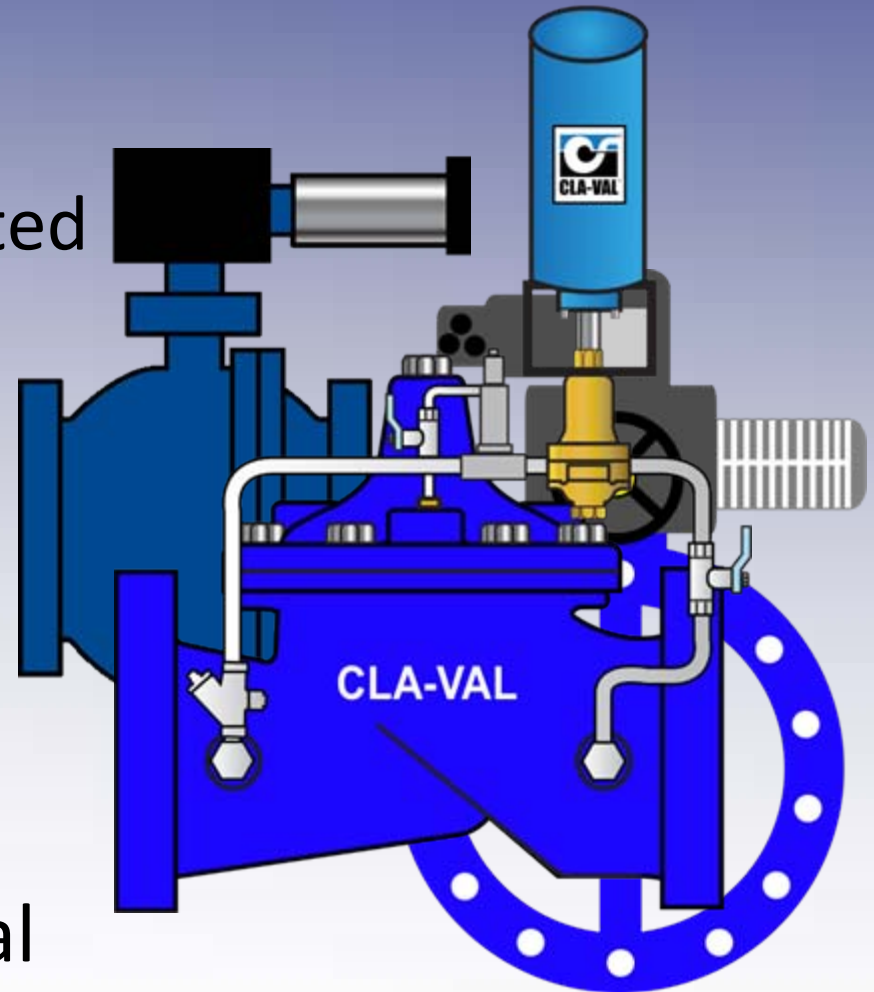


You can get the control you need

Ball and Butterfly valves ...

- ...have limited range, limited capabilities
- ...are less durable
- ...are more expensive to maintain

The best solution is Cla-Val



Advantages of Cla-Val Automatic Control Valves over actuated ball valves and butterfly valves

1. Greater range of control in modulating applications
2. Infinite positioning capabilities
3. Less susceptible to cavitation
4. Field retrofittable anti-cavitation trim for existing valves

Advantages of Cla-Val Automatic Control Valves over actuated ball valves and butterfly valves

5. Do not rely on external device to operate
6. Back-up hydraulic functionality
7. Less costly to maintain
8. Can perform multiple functions, such as pressure reducing and metering in a single valve

Example:

Electronic Pressure Reducing with Metering

- Application: PRV station with two valves feeding drinking water system and filling two elevated tanks downstream of station
- Electronic pressure reducing valves provide a wider range of pressure control as compared to actuated ball valves
- Electronic control valves were equipped with integral metering capability



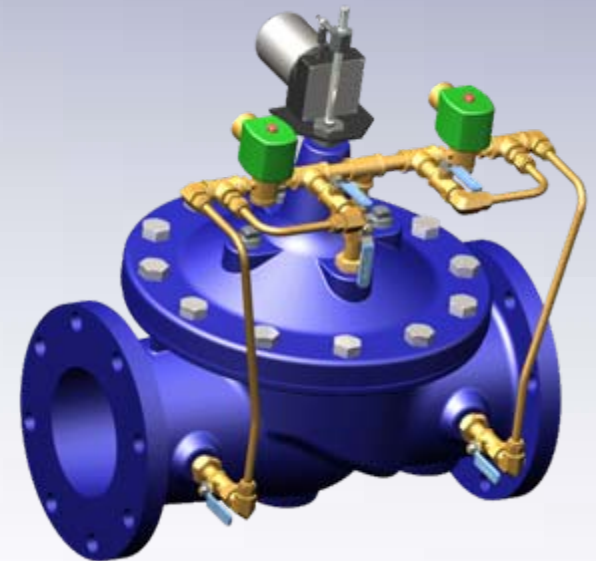
Electronic Control Valve Capabilities

- Automatic and Electronic Control Valves are smarter than ever
- They can be configured to perform multiple functions with one valve
- They become the “brains of the operation” when it comes to equipment
- Control valve manufacturers have the capability of creating custom solutions to meet unique requirements



Electronic Control Valves

- Designed for applications where remote control is desired
- Can be set-up to perform one or multiple functions
- Can be combined with hydraulic control for fail-safe operation
- Easy interface with SCADA



EXIT

131VC Electronic Control Systems Flow Control Application

PLAY

PAUSE

RESTART

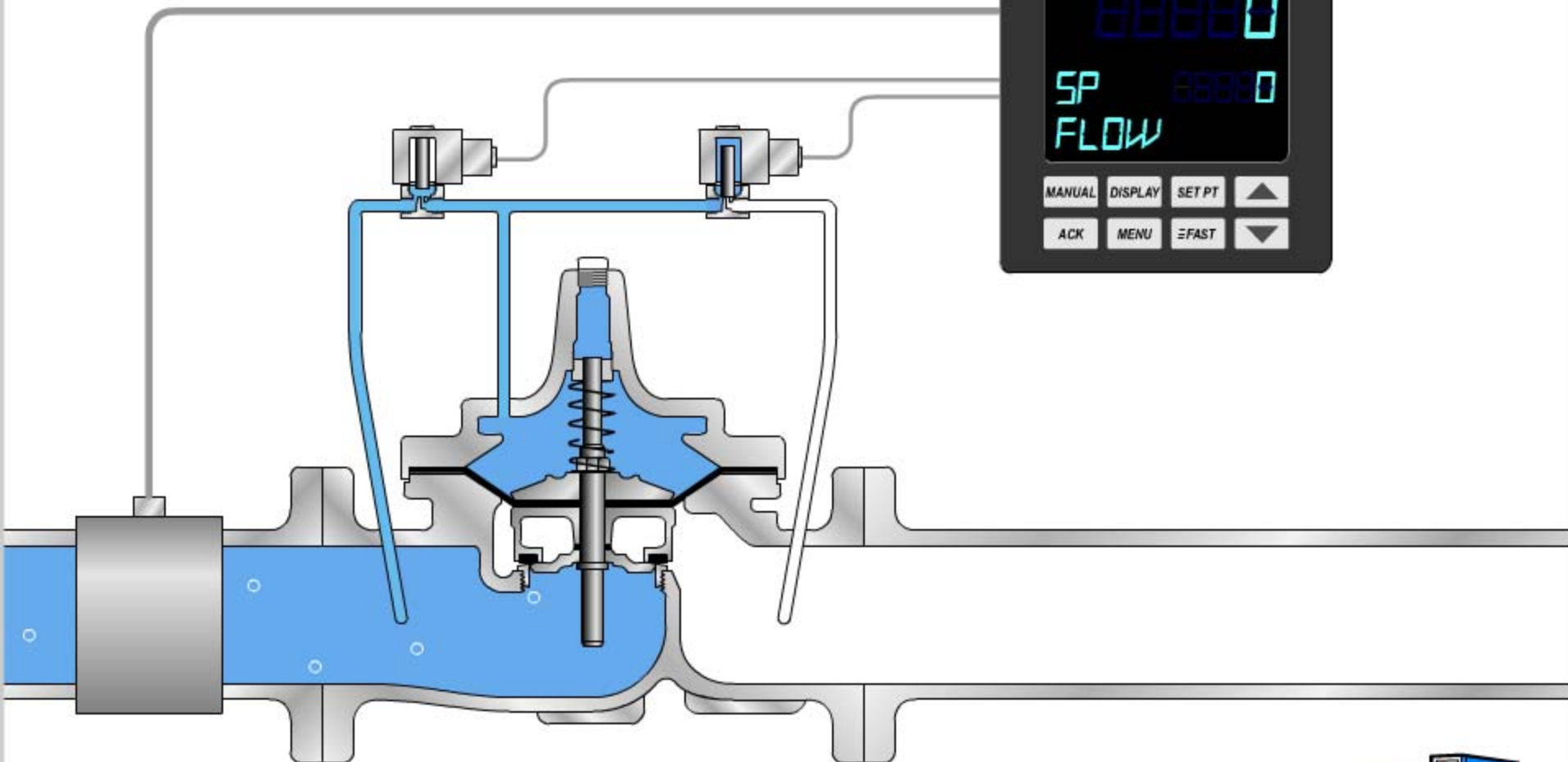
CLA-VAL CO. 131VC-1

OUT 88880

SP 88880

FLOW

| | | | |
|--------|---------|--------|---|
| MANUAL | DISPLAY | SET PT | ▲ |
| ACK | MENU | ≡FAST | ▼ |





133-01 Flow Metering Kit

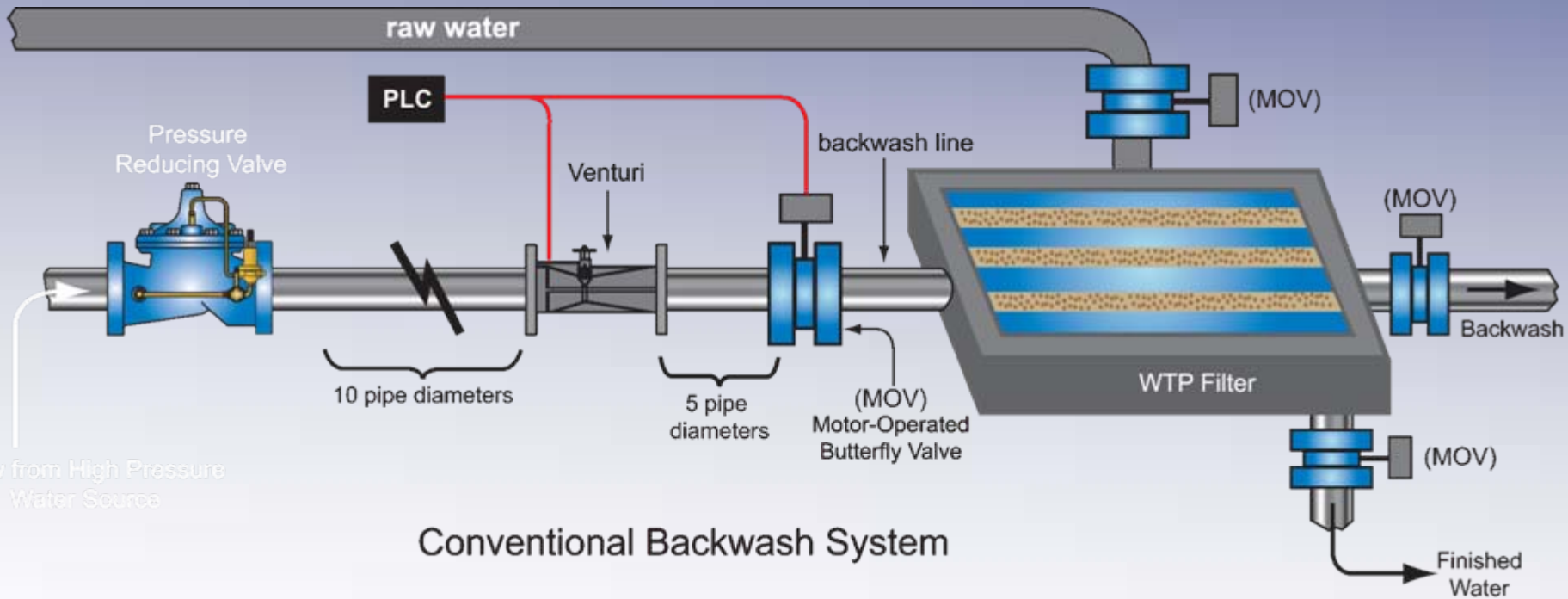


- ▶ Add to any NEW or existing Cla-Val control valve
- ▶ 131VC-3T Programmed for all Cla-Val valves
- ▶ Built-in local display and retransmission to SCADA
- ▶ Custom-made and easy to install

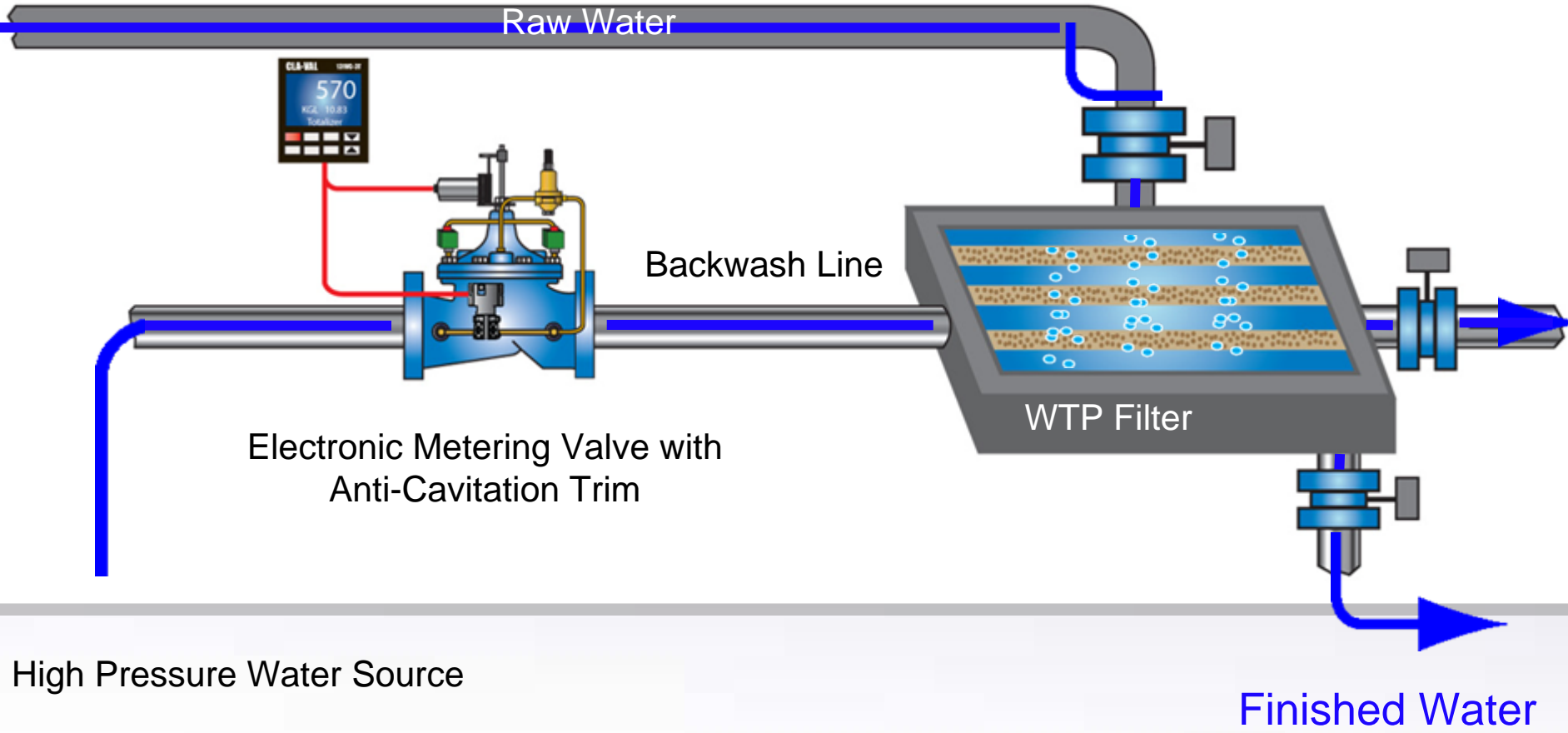
133-01 Metering & Control Valve



Filter Backwashing



Improved Filter Backwashing



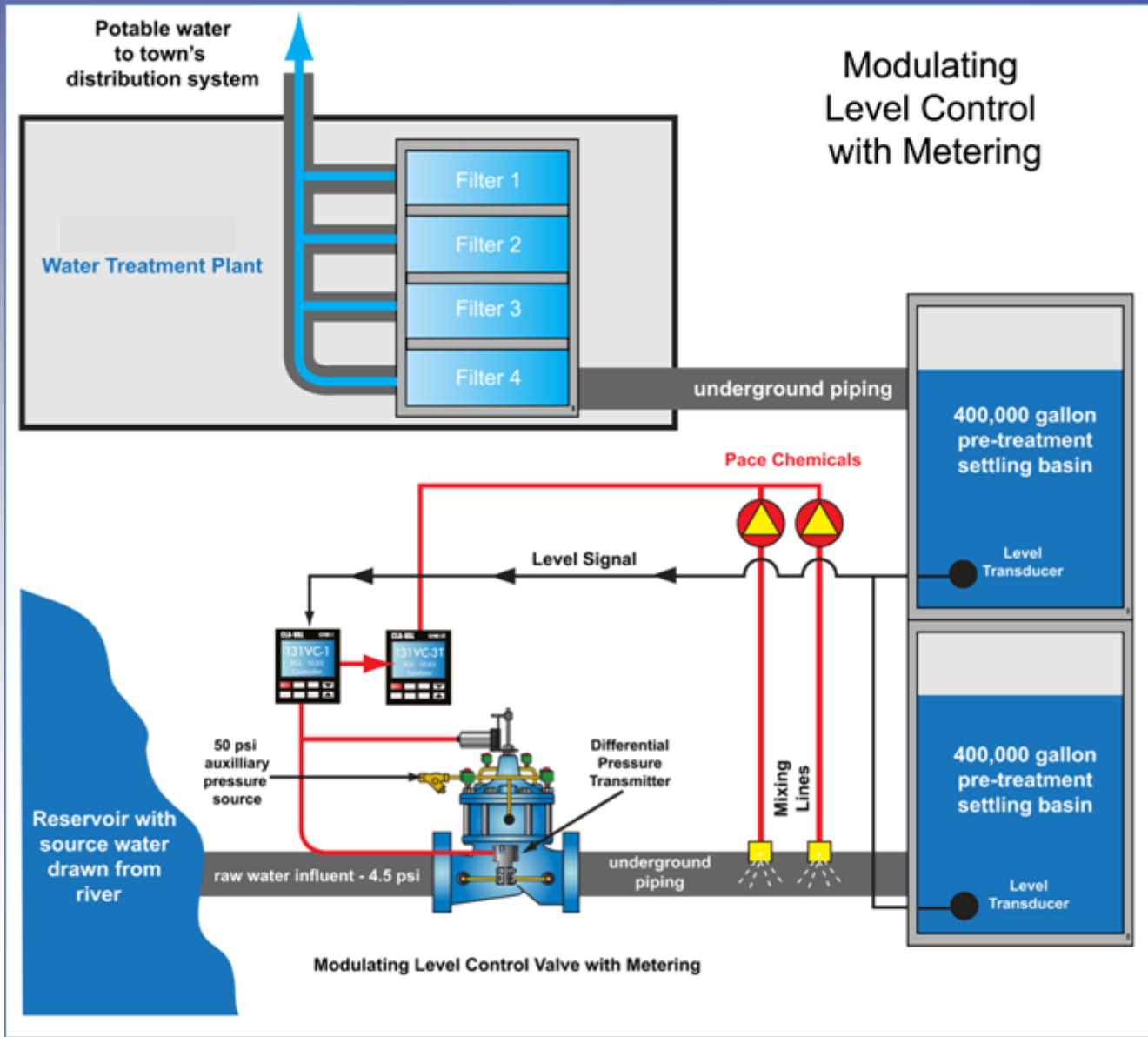
Example: Electronic Modulating Level Control

- Application: Single valve controls flow and performs metering
- Interfaces with plant's control system
- Alleviates the need for separate metering devices
- Maintains a constant level in tanks & reservoirs
- Helps meet regulatory requirements



- Takes less space than other options

Example: Electronic Modulating Level Control



Example: Electronic Reservoir Fill Valves



- Application: Filling of multiple above ground reservoirs
- Equipped with electronic pilot system for sustaining control
- Completely self-sufficient solution for reservoir filling

Example: Electronic Reservoir Fill Valves

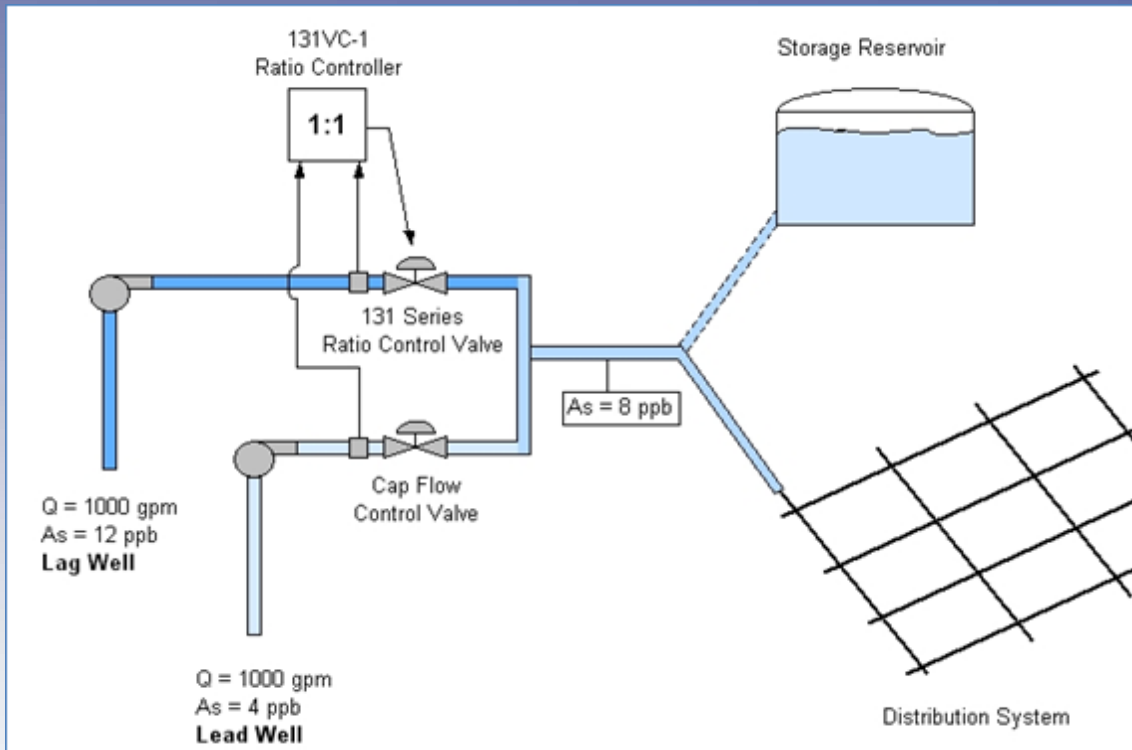


- Application: Filling of underground reservoir
- Electronic communication from level transmitters to valve controllers to open and close valve in accordance with filling requirements
- Provides completely remote filling with or without SCADA

Example: Electronic Flow Control



Example: Electronic Source Blending with Metering



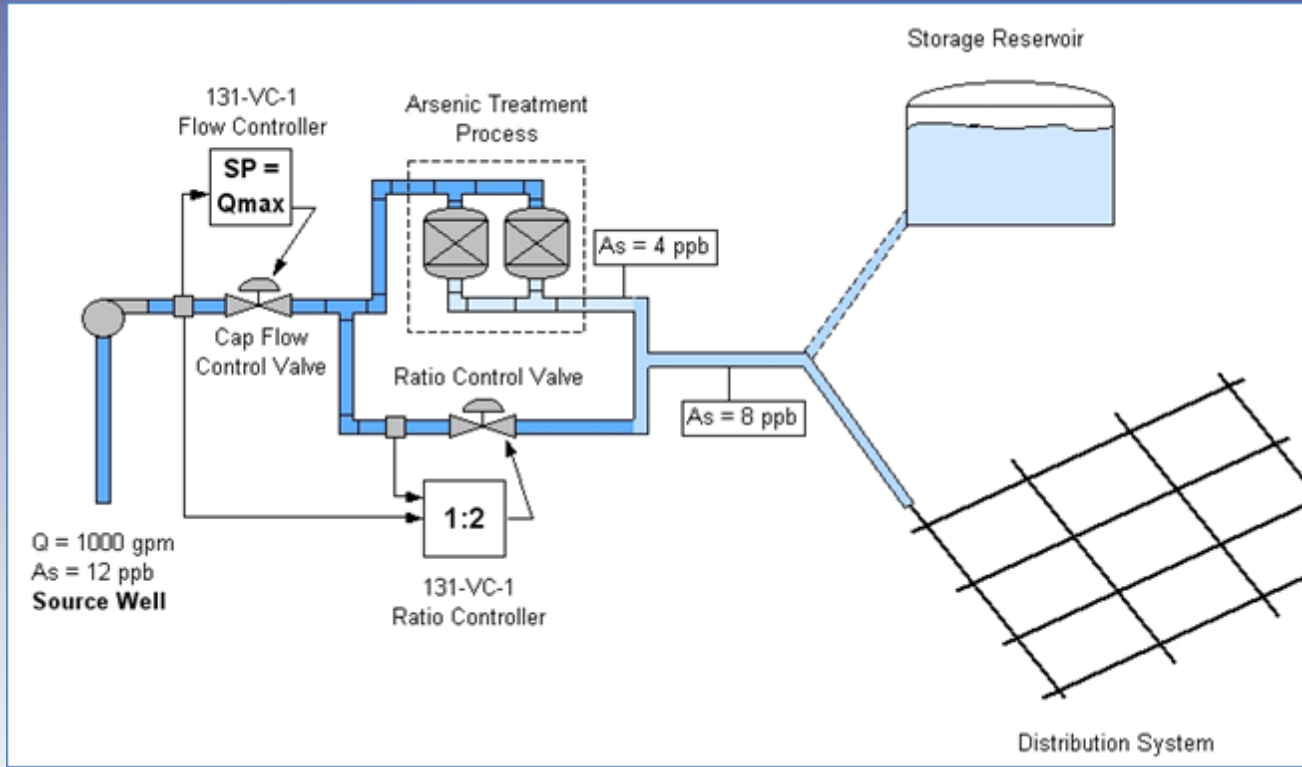
Application:

A combination of automatic control valves are used to control a blend ratio from two water sources:

- One treated
- One raw

- Flow meters on each line provide feedback to an electronic valve controller, which modulates the ratio control valve
- A cap flow control valve serves to limit the well maximum output and control startup surges

Example: Electronic Partial Treatment Blending with Metering

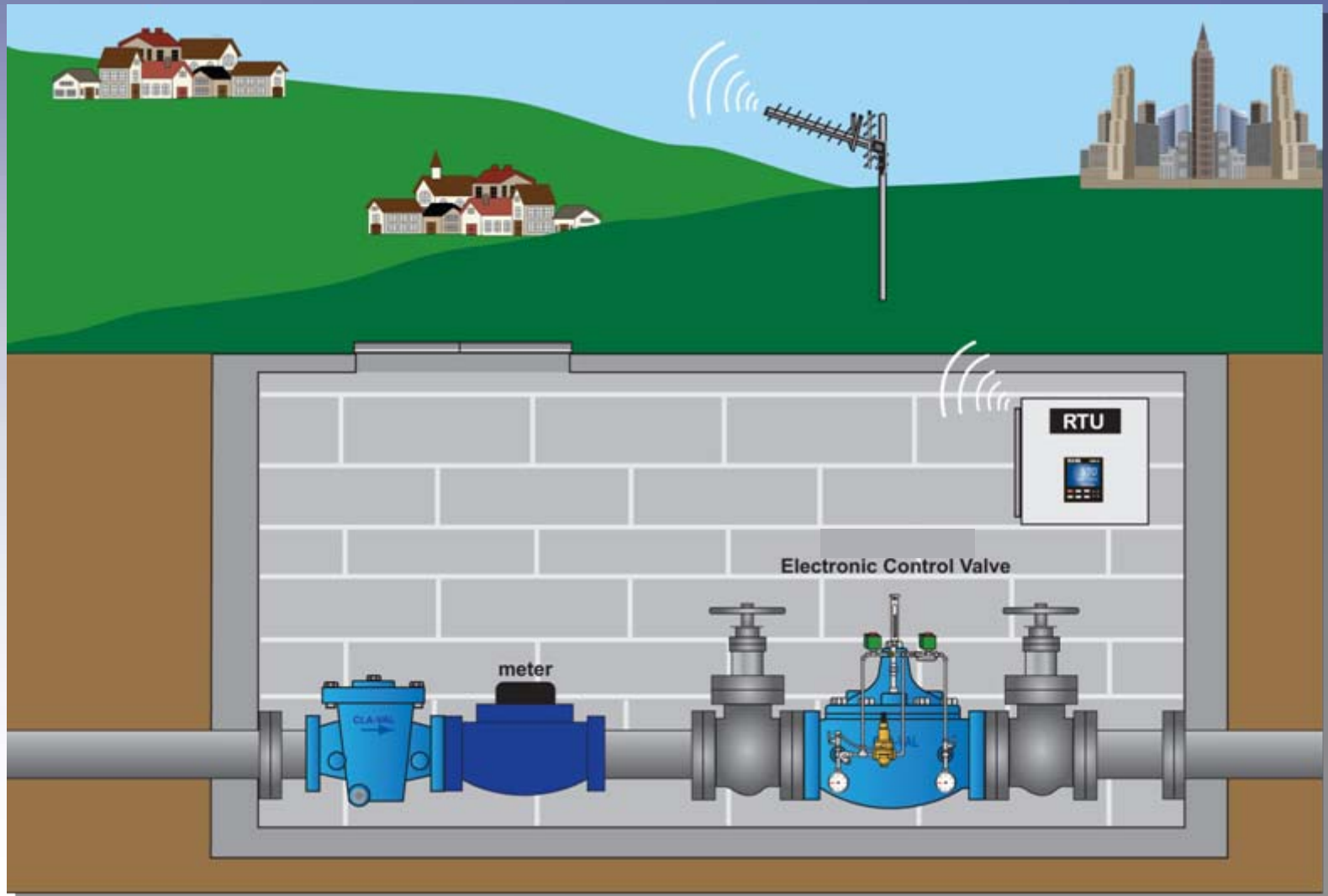


- For partial treatment blending, an electronic ratio control valve is used to proportionally split the flow so that one portion is treated to remove undesirable compound (such as arsenic) and the remaining raw water is remixed after the treatment process to provide water for the distribution system that meets regulatory requirements

Austin TX Filter Butterfly valve replacement with Cla-Val 133 Series Electronic Control Valve



The Best of Both Worlds: Electronic Control with Hydraulic Back-Up



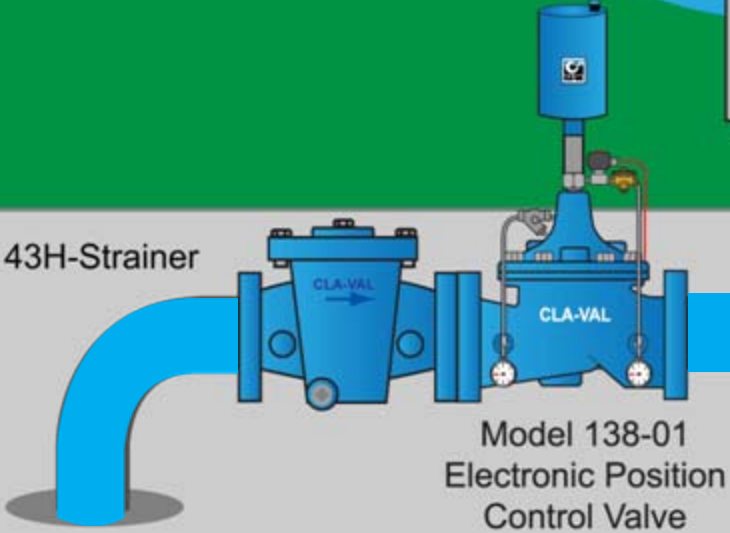
Position Control Valve



Electronic Positioning Level Control



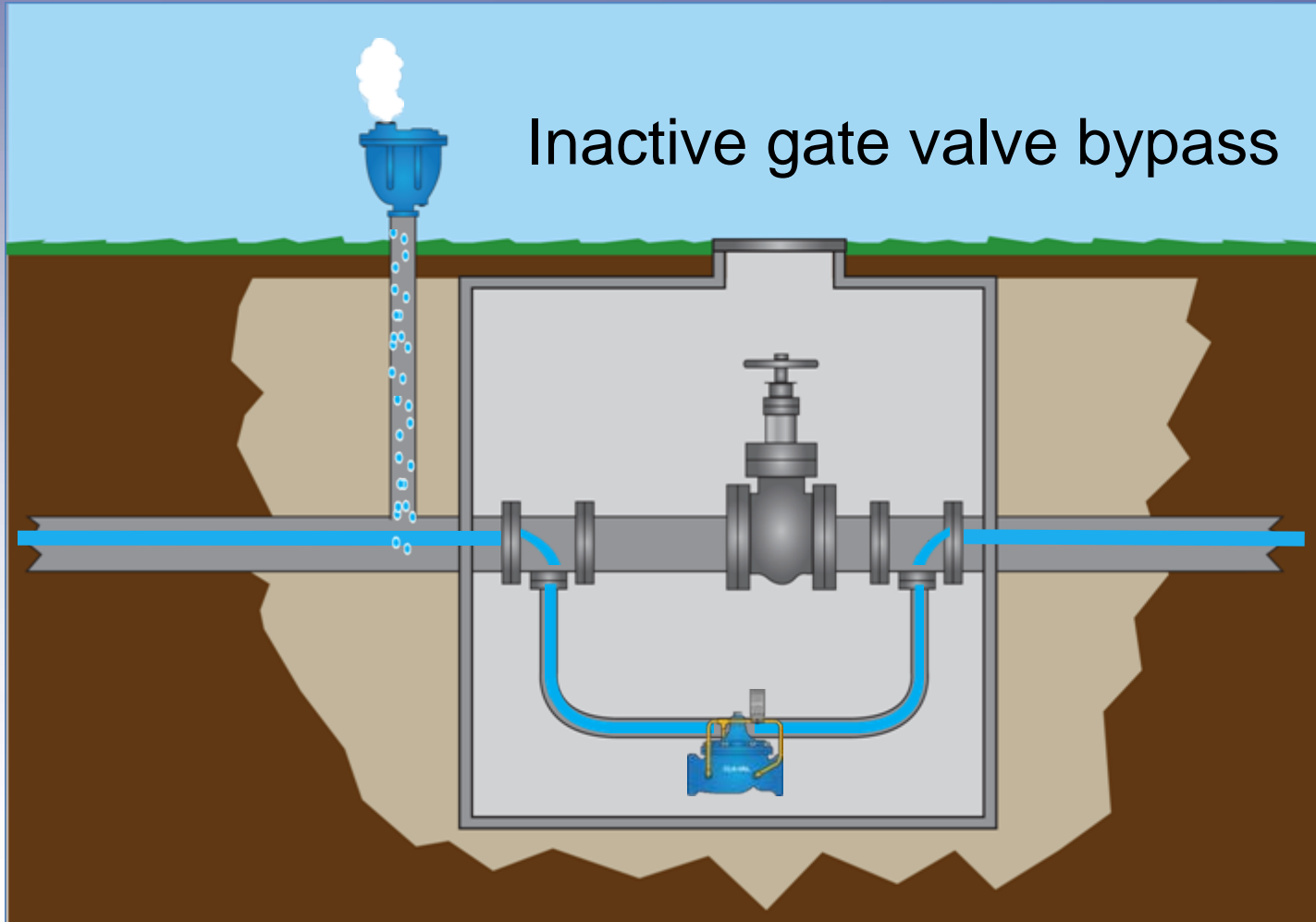
X143H-Strainer



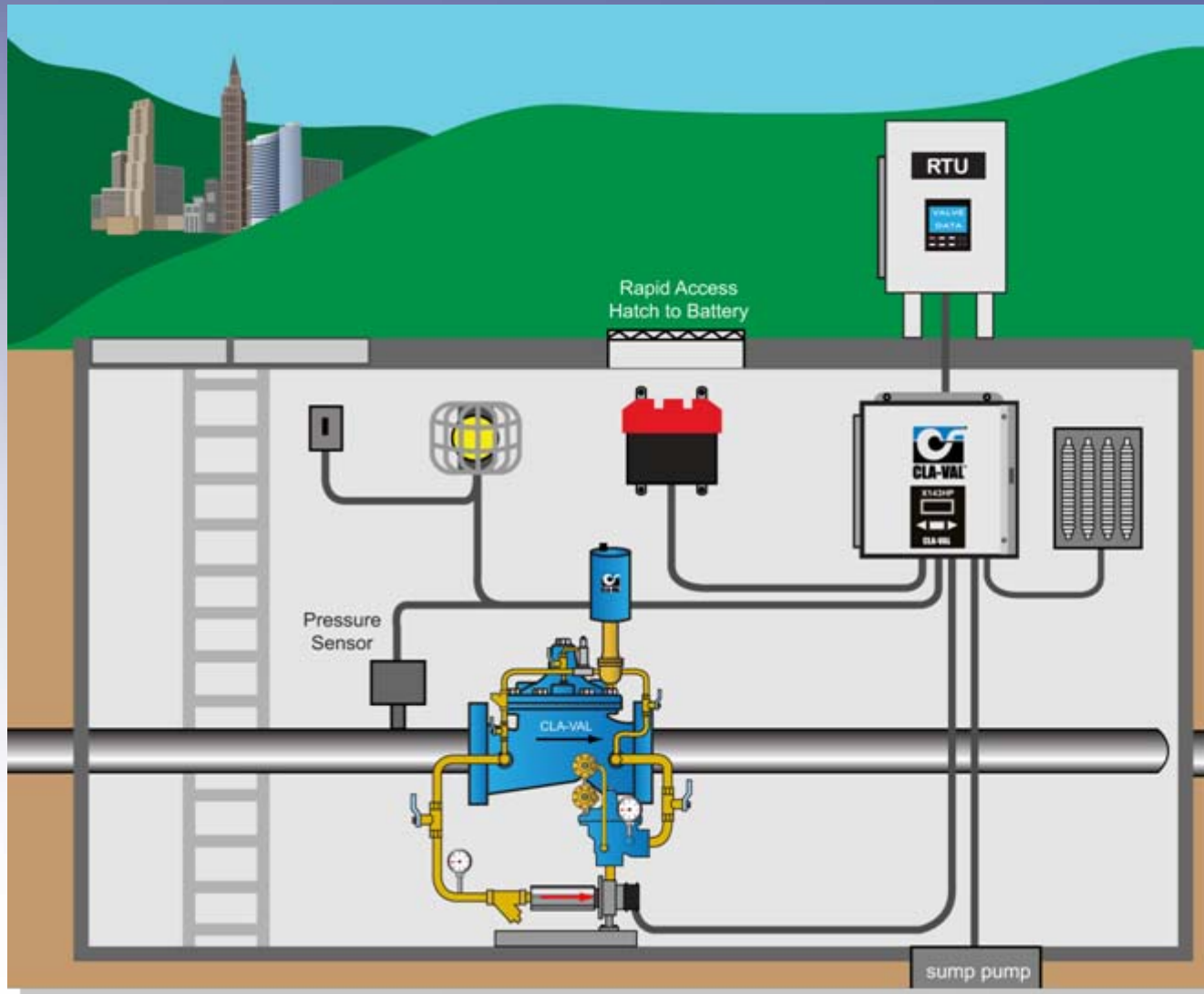
Example: Electronic Position Control

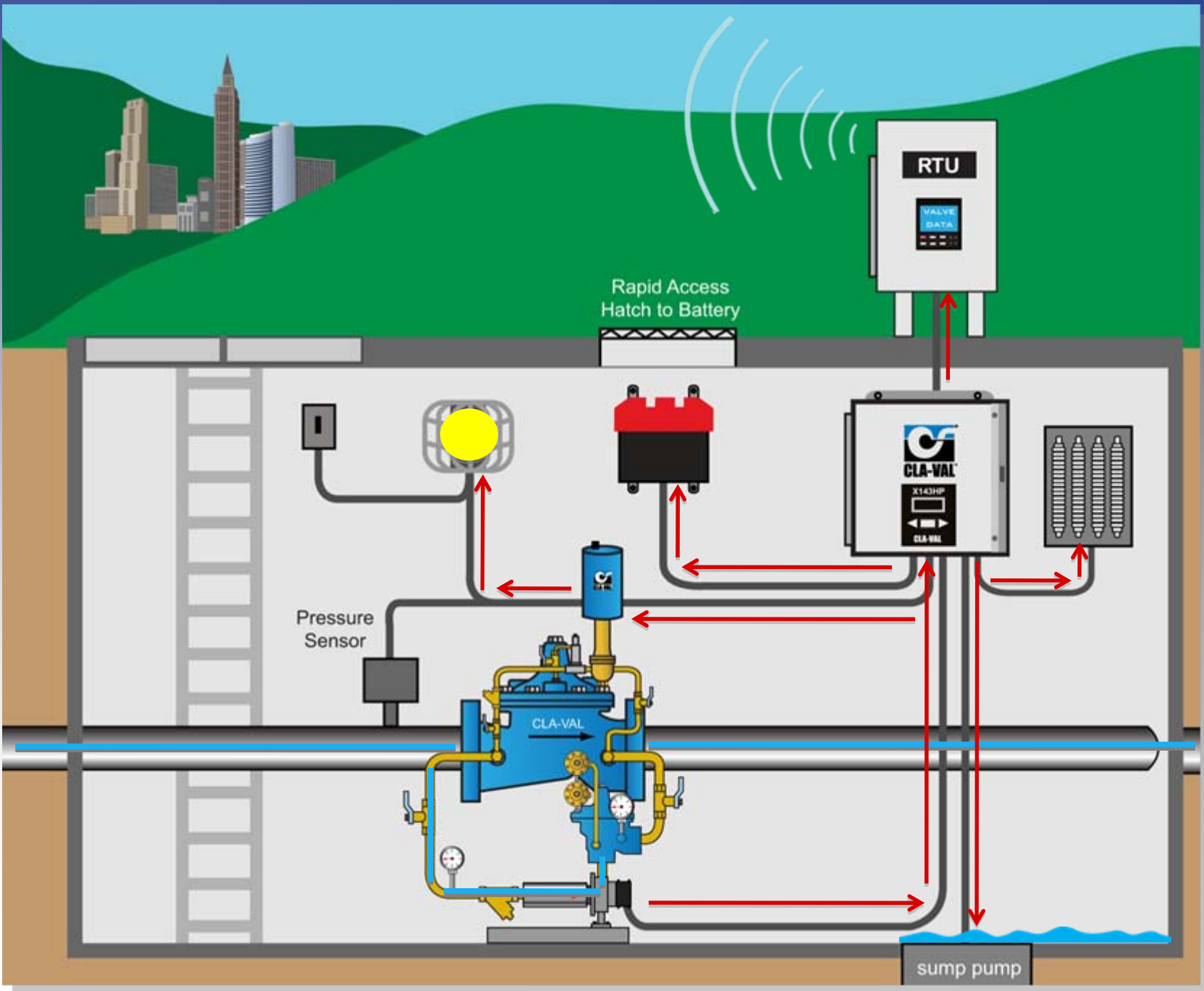


Battery-Powered Timer Controlled Bypass



Valve-Based Onsite Power Generation





Typical Application

Valve-Based Power Generation

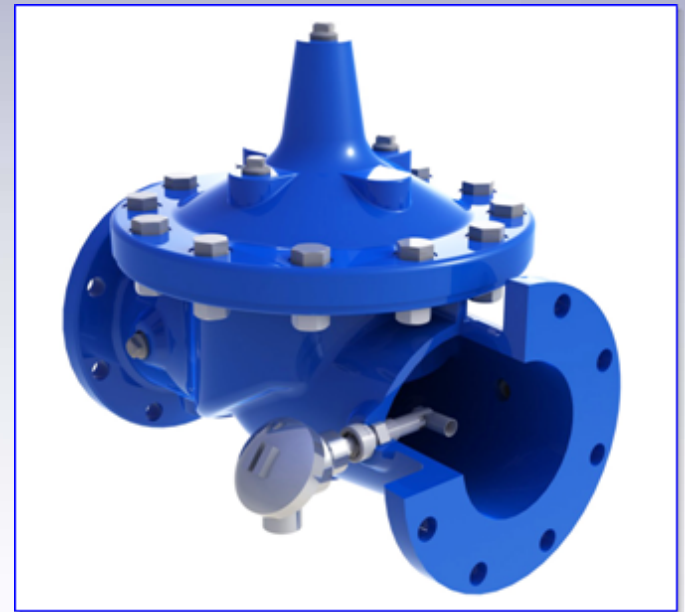
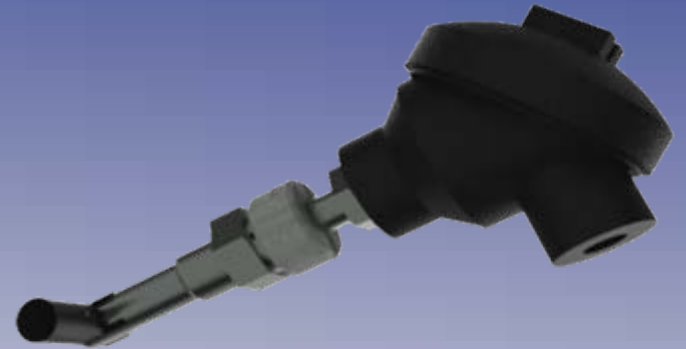
- Provides power by using the pressure drop across a PRV to run a generator
- Compact design easily adapts to small, pre-existing vaults or new installations
- No down time due to cloudy days
- Applications include powering electronic control valves, RTUs, monitoring equipment, sump pumps, lighting, and for pressure management

On the drawing board...



Flow Meter Alternative

- Alleviates the need for a separate metering device
- Can be retrofitted to existing, installed automatic control valves
- Takes less space and is less costly than other metering option



Questions?

Thank you for attending our
presentation