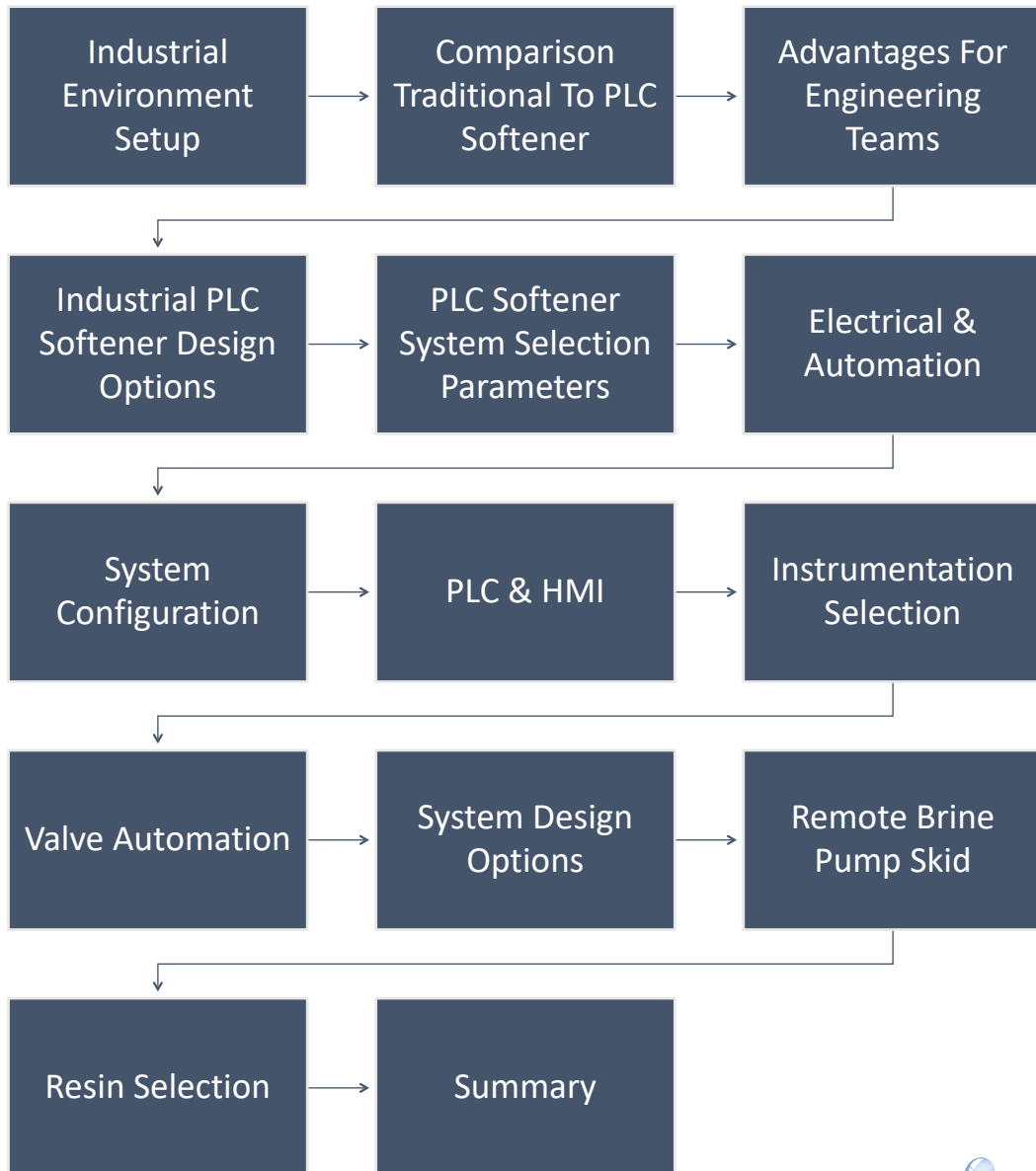




# INDUSTRIAL WATER SOFTENING

Quality through innovation

# TOPICS FOR DISCUSSION



# INDUSTRIAL ENVIRONMENT SETUP

Custom designed projects

Complex control philosophies

Access level for people based on roles

Flexibility to expand and setup modifications

Robust and reliable equipment

Fast communication over multiple protocols

Superior accuracy, repeatability and simple calibration procedures for consistent performance

Events highlighted as alarms and faults

Data trending on screens for troubleshooting

Graphical representation of the system status

# TRADITIONAL TO PLC SOFTENER COMPARISON

TRADITIONAL SOFTENER	EXCALIBUR CUSTOM DESIGNED PLC SOFTENER
7 segment display	Touchscreen colour display with multiple screen sizes
Configuration max up to 3" line size	Line size depends on the system design
Modbus-TCP connectivity for data points	Multiple protocols and data exchange points
Integration with hardness analyzers not available	Initiates multiple alarms with troubleshooting instructions
Modbus control option for regeneration only	Maintenance regen, tank service, manual mode, etc.
Paddle Wheel flowmeter accuracy of $\pm 5\%$	Magnetic flowmeters accuracy of $\pm 0.2\%$
NSF FRP Fiberglass certification LLDPE liner	ASME or CRN carbon steel/ stainless tank certifications
Sophisticated internal valve function components	Robust industrial components for engineer operation

# ADVANTAGES FOR ENGINEERING TEAMS

## Minimum Site Trips

System alarms and events indications are displayed on the HMI screen including steps to troubleshoot the system, locally.

## Easy Integration

PLC's and the DCS's have many protocols to exchange data and custom select points for system monitoring and controls. End-user obtaining data from a remote location into their local control room.

## Remote Support

System can be remotely accessed to verify the status and system control and moderation can be implemented.

## Custom Designs

Selection of components is based on the site conditions and personal preference. Ex: One could prefer Rockwell control system and use ABB, E&H or IFM instrumentation. Similar for the tanks, media, instrumentation and control valves on the system.



# INDUSTRIAL PLC SOFTENER DESIGN OPTIONS

Screen sizes available  
from 4 to 15 inches

Tank material, finish  
and certifications to  
choose from

Industry renowned  
selected level of valve  
automation

Hardness and brine  
concentration  
analyzers options

Pressure, flow  
instrumentation  
integration

IO-link, Ethernet,  
BACnet, Modbus-TCP  
etc. protocol  
capabilities

Optional Brine  
Automated system  
can be included in the  
scope

Events highlighted as  
alarms, faults with  
troubleshooting  
instructions

Data trending on  
screens for  
troubleshooting

Graphical  
representation of the  
system configuration  
and status

Diagnostic and  
historical data record  
screens provided

Electrical components  
CSA or UL listed/  
certified with NEMA 4  
enclosure

Options include  
industry 4.0 smart  
equipment's rated for  
IP67



# PLC SOFTENER SYSTEM SELECTION PARAMETERS

## ELECTRICAL & AUTOMATION

Selection electrical power equipment, control system configuration, communication protocol and enclosure

## PIPING & TANKS

Piping material size and type, tank certification, polish type, inside liner, pressure and temperature ratings

## INTRUMENTATION

Hardness analyzer, pressure transmitter, flowmeter type, brine concentration analyzer to select from

## SYSTEM DESIGN

Supply material components with the option of skid mount pre-piped automated manual brine making options

## CONTROL VALVES

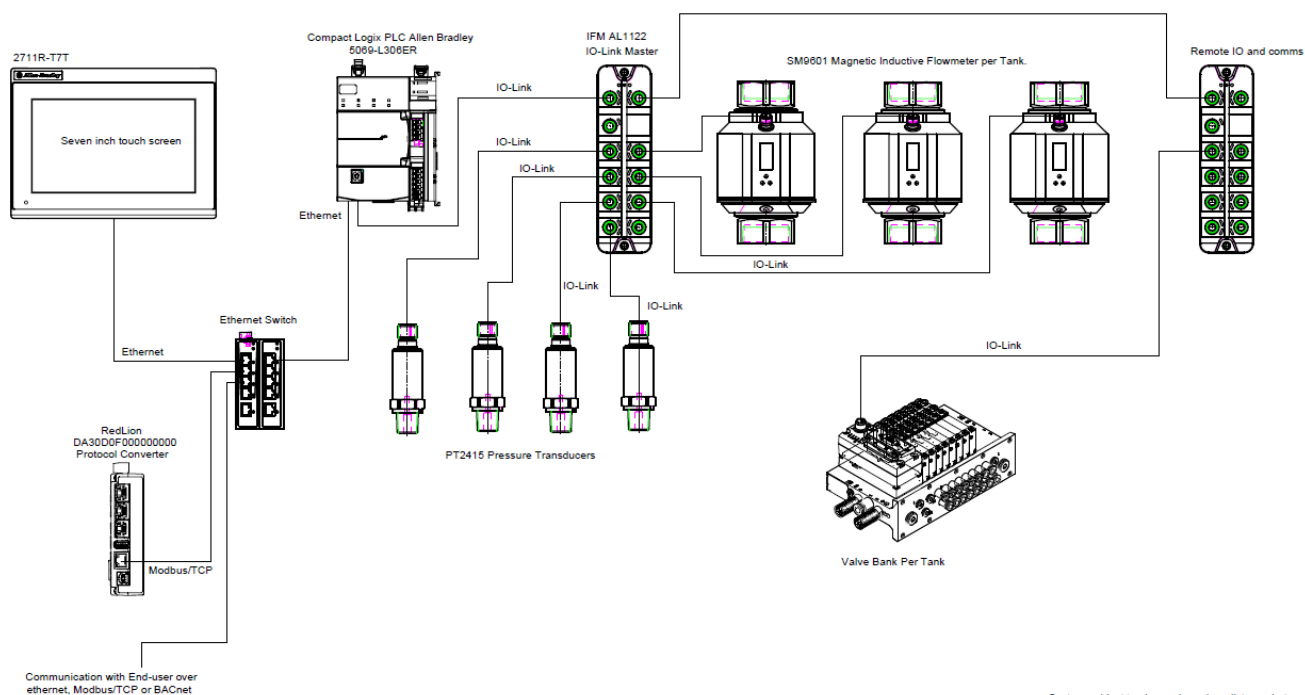
Valve type, material, connection type, actuator type, limit switch, solenoid operated or through valve bank

## RESIN

Aldex C800 Cation Exchange Softening Resin available 8%, 10%, and fine mesh for the removal of hard water (calcium and magnesium)

# SYSTEM CONFIGURATION

The System configuration drawing represents the main components of the control system that communicates with the processor. The components chosen depends on the end-user site requirements and the system design and number of tanks. A standard configuration would include PLC, HMI, Flowmeters, Pressure indicating transducer, IO link devices and may have a protocol converter if required.





# PLC & HMI

## ALLEN BRADLEY COMPACT LOGIX



- Memory up to 2Mb
- Two internet IP ports
- 24vdc power supply
- Configured on studio 5000
- External connections up to 64 devices on ethernet



### Industry 4.0 Technology



## ALLEN BRADLEY PANEL VIEW PLUS



- Quick and easy terminal copy and restore
- Embedded PDF Viewer and ethernet ports
- USB ports for printer RFID reader and web camera support
- Display size available from 4" to 15"
- Faceplates and addon instructions saves time on development

# INSTRUMENTATION SELECTION

Excalibur Water Systems Water Softening Instrumentation selection is comprised of magnetic flow meters for soft water outlet flow demand for progressive flow operation. Pressure transmitters to determine inlet/outlet system or vessel pressure drops, hardness analyzers for system softening accuracy and optional brine concentration probe.



**MAGNETIC FLOW METER**



**BRINE CONCENTRATION**



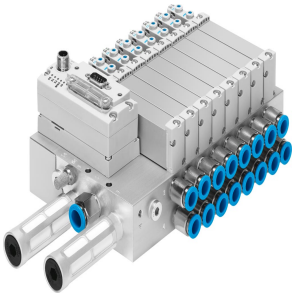
**PRESSURE TRANSMITTER**



**HARDNESS ANALYZER**

# VALVE AUTOMATION

Excalibur Water Systems Water Softening Valve Automation selection can utilize a valve bank for multiple valve control operation, pneumatic valve with limit switch for valve position feedback to PLC with spring return or double acting actuators. Selection from PVC, Stainless, or Carbon Steel material, ball / butterfly valves with pneumatic actuators.



**VALVE BANK  
MULTIPLE VALVE CONTROL**



**LIMIT SWITCH  
POSITION PLC INDICATOR**



**PVC BUTTERFLY  
NSF CERTIFIED**

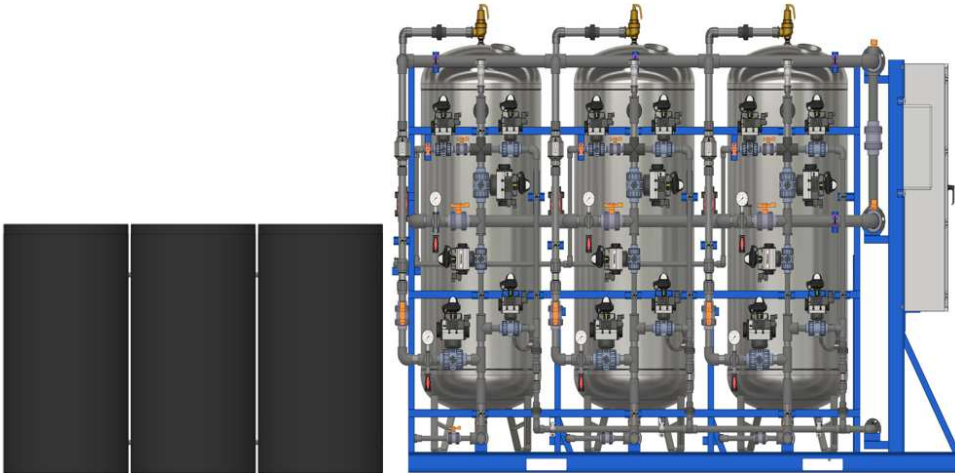


**STAINLESS STEEL BALL VALVE  
ANSI CLASS 150 CONNECTION**

# SYSTEM DESIGN OPTIONS



MATERIAL SUPPLY WITH MANUAL BRINE MAKING



SKID MOUNT PRE-PIPED WITH MANUAL BRINE MAKING

# REMOTE BRINE PUMP SKID

Remote brine pump skid simplex or duplex pump option engineered to transfer and deliver saturated brine an existing bulk brinemaker silo or brine storage tank to the Excalibur Water Systems PLC Softener System.

Custom sizing and designs available based on existing or new development site applications based on flow, distance, power requirements to assist you with your brine delivery requirements.



- Automatic on/off capability
- Panel mount with light indicators
- Inlet strainer filter
- Pressure gauges
- Enclosure NEMA-4
- Pre-wired pump motor starter
- Duplex pump 100% redundancy option

**Brine Skid Duplex Pump (2x100%)**

# RESIN SELECTION

**Aldex C-800 is unmatched for quality, consistency and its unique characteristics**

- **Zero solvent level** in C-800, C-800x10, C-800F softening resins
- Aldex C-800 / C-800F / C-800x10: ANSI/NSF 44, 61 and 372 certified under WQA Gold Seal program
- Products are taste and odor free, and free-flowing
- Produced in Canada since 1976
- 100% manufactured in North America
- Resin plant in Granby, Quebec



Aldex C-800 is a high capacity, high quality, gel-type cation resin capable of meeting the most exacting requirements for commercial, institutional and industrial water softeners.

# SUMMARY

Excalibur Water Systems Industrial Division engineers and designs water softeners for the global market for our customers water treatment requirements. System designs comprising from single to multi-tank progressive flow including material and components to skid mounted pre-piped designs based on site requirements.

Ion-Exchange Water Softening utilizing PLC controls, touch screen HMI, renowned industry brand components of instrumentation selection of magnetic flow meters, pressure transmitters, and optional hardness analyzers and brine concentration probes. Valve automation with optional valve bank for multiple valve operation control, pneumatic with limit switch spring return or double acting actuators offering many different types of material of construction and connections types.

- Robust and reliable 24hr operation
  - System expansion for future requirements
  - Compatibility with industrial networking protocols
  - Access level defined for user role access
  - Generating alarms and events for troubleshooting
- 
- Trends to track performance in production
  - Custom programmed for process and site requirements
  - Alarms and faults areas of concern with problem solution
  - Instrumentation selection of industry-renowned brands
  - Remote support for expansion and troubleshooting





**Contact Us Today**

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