

Actuation

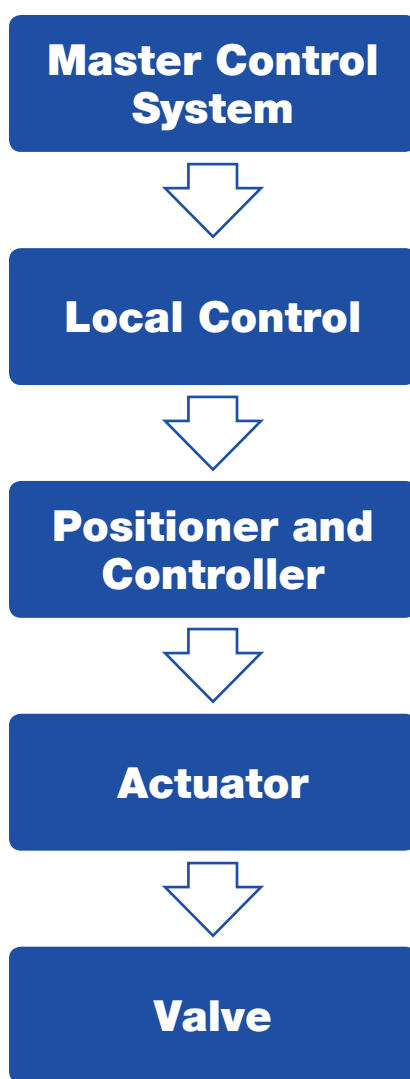
W&O's Engineered Products – Automation Services (EP/A) Division provides specialized marine industry products such as valves, valve actuators, actuator controls, overrides, certified valve performance packages plus network interface devices and field service to the sixteen W&O Branches and their customers.

EP/A has the unique ability to serve as a “single source” provider of automated valve solutions enabling the W&O Supply Branches to offer a complete package to the marine industry meeting all Society requirements.





Actuation provides operators the ability to control valve movement for many vessel processes. This control can be for both open and closed operation as well as modulating (throttling) operation for all types of valves. We offer many different actuators with performance parameters and designs to meet marine industry's service requirements and challenges.

In addition to automated packages W&O also offers design, assembly, testing, start up and repair as part of our value added services. From a single valve in a remote difficult location to a complete cargo or ballast transfer system, W&O Supply can fulfill all your actuation needs.

We are a stocking distributor for electric, pneumatic, hydraulic, and manual valve actuators. Our facility in Houston, TX includes a fully staffed automation shop and overhead crane capabilities. Our inventory size allows sales of all popular actuator types and sizes, as well as most optional accessories and control kits. We currently operate in 15 branches in the U.S. and 2 in Europe. From this central location we are able to service your automation needs with our facility which encompasses over 25,000 square feet and employs more than 17 people.



Types of Actuation

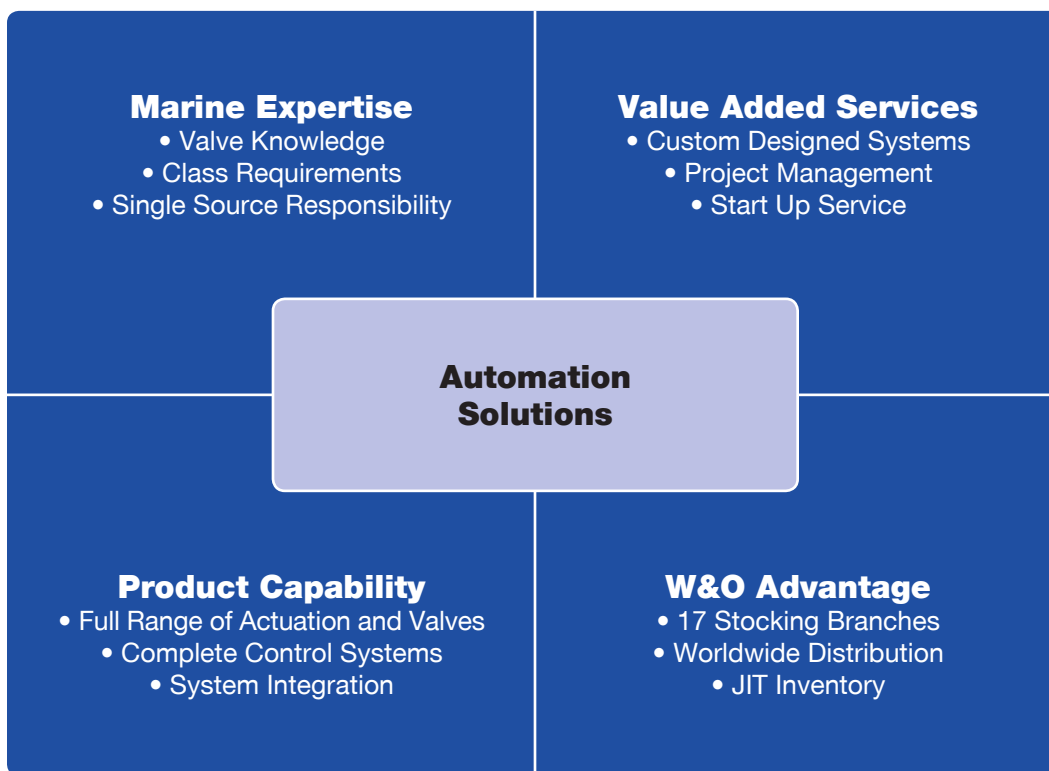
<p><u>Auma Electric Mounted on Space Gate</u></p> 	<p><u>Rotary - Pneumatic</u></p> 	<p><u>Self-Contained Hydraulic</u></p> 	<p><u>Emergency Shutdown Spring Return Pneumatic</u></p> 
--	---	--	---

Actuation

Advantages of Popular Actuation Types

Actuation Type	Advantage
Double Acting Pneumatic	• Inexpensive application solution for a variety of quarter turn valves
Spring Return Pneumatic	• Provide failsafe operation in case of loss of air, power or both
Rotary Electric	• Advanced control capabilities and single power requirement
Linear (Hydraulic or Pneumatic)	• Economical actuation for rising stem valves
Self Contained Hydraulic	• Actuating high torque applications with no additional piping component

Benefit Focus: Why choose W&O for your automation needs?



W&O has the capability to design and provide custom solutions for our clients. We design solutions for virtually any automated valve assembly or application, and are capable of completing the conversion of manual valves into automated valve system per customer specifications.

We offer analog or digital two-wire controls that interface with most major SCADA or DCS systems. We are your most knowledgeable source for Mil Spec and DOD actuators. Our Automation division provides instrumentation products and control valves to meet your needs.

Type Approval by Agency

System					Note
Our custom actuation solution can be catered per your class society requirements.					

Actuation

Technical Information

Electric Actuation Capabilities:

- Linear or Rotary Applications
- 110/220vAC-1Ph, 220/380/440/460/480vAC, 3-Ph, 50/60Hz, $\pm 10\%$
- 24vDC, 24vAC
- 4-20mA, 0-10vDC, 1-5vDC, 0-135 Ω Command Signal
- 4-20mA Position Feedback Transmitter
- Local Control Unit
 - Remote / Local Switch
 - Open / Stop / Close
- Weatherproof Enclosures & Explosionproof Enclosures
 - NEMA 4, 4X, 6, 7; IP 67, IP 68
- Fail in Place, Spring Return, & Battery Backup Units
- Network based automation solutions
 - AS-i
 - ModBus
 - DeviceNet
 - FieldBus



Pneumatic Actuation Capabilities:

- Linear or Rotary Applications
- Rack & Pinion, Scotch Yoke, & Piston Type
- Double acting & Spring return Units
- Accessories
 - Solenoid valves
 - Limit switches
 - Positioners
 - Declutchable gear override
- Network based automation solutions
 - AS-i
 - ModBus
 - DeviceNet
 - FieldBus



Hydraulic Actuation Capabilities:

- Linear or Rotary Applications
- Helical, Scotch Yoke, Rack & Pinion, & Piston Type
- Double acting & Spring return Units
- Direct / Indirect position indication
- Solenoid Cabinet, Hand Pump, Declutchable manual gear
- HPU - Hydraulic Power Unit

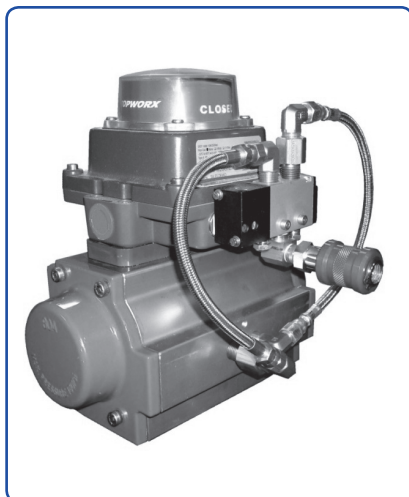


Actuation

Technical Information

Secure Plus: Emergency Pneumatic Automated Valve Solution:

- Pneumatic Configurations
 - Incorporating the optimum in positive shutoff valves, low profile actuators, emergency position command override, manual override, and fail in place technology.
- Emergency Position Command
 - In an event of an emergency, a separate air supply overrides normal operation and automatically drives the valve to a user defined position (either open or closed)
- Fail in Place – Hold in Place
 - In the event of a loss of either normal or emergency command operating pressure the valve is locked in its last position eliminating potential sealing element movement.
- Local Manual Operation
 - Declutchable Manual Override
- Thermal Protection
 - Protection from fire utilizing either a fire blanket or a spray on insulating coating.



AS.iSmart 24: Emergency Electrical Automated Valve Solution:

- Emergency Position Command (EPC)
 - In an emergency valve is driven to a user defined position (either Open or Closed)
- Signal Sentinel
 - Continuously monitors the EPC system offering additional failsafe backup in the event of an unacceptable local event.
- Power, AS-i, & EPC Connectors
 - 2 multi pin connectors serve as the power supply, EPC plus Signal Sentinel Connections



Actuation

Technical Information

Network Driven Solution:

W&O is able to design and implement different control systems on board vessels and platforms for the marine and oil & gas industry.

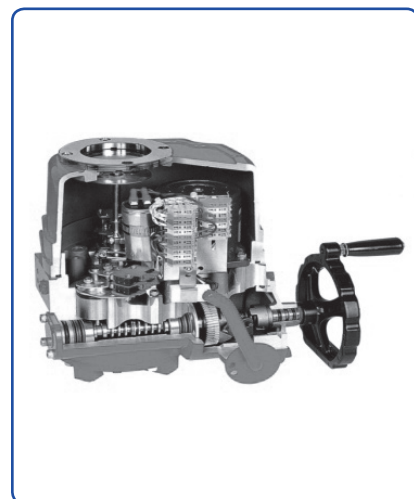
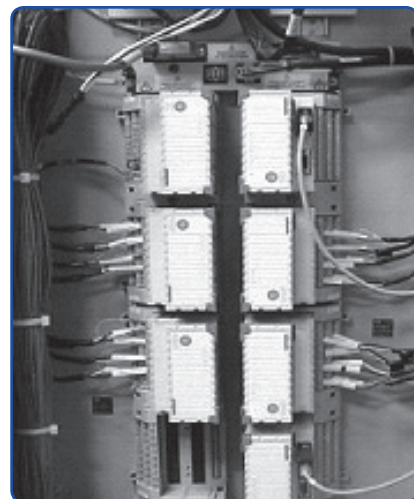
- Example: W&O can provide automated valves that transmit a position signal to a control device, which then relays the information to an HMI (Human Machine Interface) in the location on board previously specified. The control signal drives the operation.
- We do everything from initial system design, to quotation, to installation, to commissioning, to servicing after install.
- W&O Supply provides total integrated solutions.

W&O is project oriented and customer driven in Automation projects. This gives us the ability to provide the best service and price.

- Because of our extensive industry relations, we can provide the best service, at the lowest cost.
- W&O Supply has in house engineers which can handle projects as they come in on an ongoing basis.

W&O is also capable of building custom cabinets and control boxes for PLC based applications with HMI controls.

- Easy termination inside box of all applicable equipment, and devices.
- Turnkey control boxes. Only requirement is power hookup.



Actuation

One of the nation's largest inland barge operators presented W&O with a stiff challenge recently: how to fit three new 220-foot state-of-the-art pressure barges with multiple automated valve packages that would withstand the harsh chemical butadiene—safely, effectively and economically to meet U.S. Coast Guard standards.

Known for its aggressive effects on fiberglass-reinforced Teflon® (RTFE), which is typically used as seat material on ball valves, butadiene posed unique challenges. The Engineered Products and Automation Services Division of W&O set to work, in close partnership with our customer.

After surveying the valve market, W&O engineers soon realized that a customized design was needed. So we partnered with a leading manufacturer to create an entirely new kind of ball valve.

Finding a suitable material to manufacture the valve seats was the first task. The solution was TFM™ 1600, a modified PTFE. While both seat materials are a Fluoropolymer, which has a high resistance to solvents, acids, and bases, TFM™ 1600 is a full melt material as compared to the RTFE process, which bonds particles and thus allows pores to form. The full melt eliminates any pores, making the seats impervious to butadiene penetration and preventing the tendency of typical RTFE to bubble or “popcorn,” which renders the valve inoperable.

It also became clear that conventional pneumatic automation for the valves would not be acceptable in this demanding application. Instead, W&O designed a hybrid spring-return, pneumatic actuator complete with a self-locking manual

override. This design incorporates a coil spring for failsafe operation. In the event that air pressure is lost during the critical loading or un-loading process, the stored energy of the spring closes the valve within ten seconds, as required by the U.S. Coast Guard.

Yet the most difficult challenge lay ahead. W&O's customer required an uncomplicated means of adjusting and, when needed, replacing the valve's limited life stem packing while underway and without disassembling the automation package. For any industry, fugitive emissions are a large concern, as they may result in health hazards, potentially large fines and/or loss of operational income while equipment is taken out of service for repair. The barge industry is no different, requiring frequent inspection and adjustment of a valve's stem packing. Working with the customer, W&O developed a truly unique design that allows unencumbered access to the packing bolts and includes a removable lower section. Upon removal, the packing gland can be separated from the stem to allow the packing to be removed and replaced — all without any need to disconnect air lines, control lines, the actuator, or take the valve (and therefore the barge) out of service.

In the end, W&O did more than meet the original challenge. Working hand-in-hand with our customer, we were able to deliver a solution that was completely unique, low in maintenance, long lasting — and less expensive than any other alternative. We are proud to say that W&O is now the exclusive provider of automated valves to this customer.

Automation Services

W&O Automation is pleased to offer a full range of automation products to suit your MOV needs now and into the future.

Quarter Turn Valve Automation (Ball, Butterfly)

- Electric
 - Voltages
 - 110 vAC, 220 vAC, 440 vAC, 12 vDC, 24 vDC
 - Communications
 - 2 wire communication, Modbus, ASi
 - Modulating or Open/Close
 - Fail in place, Spring Return
 - Enclosure Rating
 - Nema Rating,
- Pneumatic
 - Air Supply
 - Voltages
 - 110 vAC, 220 vAC, 440 vAC, 12 vDC, 24 vDC
 - Accessories/Communication
 - Limit Switches, Solenoid Valves, Filters, Positioners
 - Modulating or Open/Close
 - Manual Override
- Hydraulic
 - Fluid Pressure
 - Modulating or Open/Close
 - Communication
 - Modulating or Open/Close
 - Manual Override

Multi-turn Valve Automation (Gate, Globe)

- Rotary Electric
 - Voltages
 - 110 vAC, 220 vAC, 440 vAC, 12 vDC, 24 vDC
 - Communications
 - Modulating or Open/Close
- Linear Pneumatic
 - Air Supply
 - Voltage
 - Communication
 - Rotary or Linear
- Linear Hydraulic
 - Fluid Pressure
 - Modulating or Open/Close
 - Communication
 - Rotary or Linear

Control Valves



For more information visit,
www.wosupply.com