

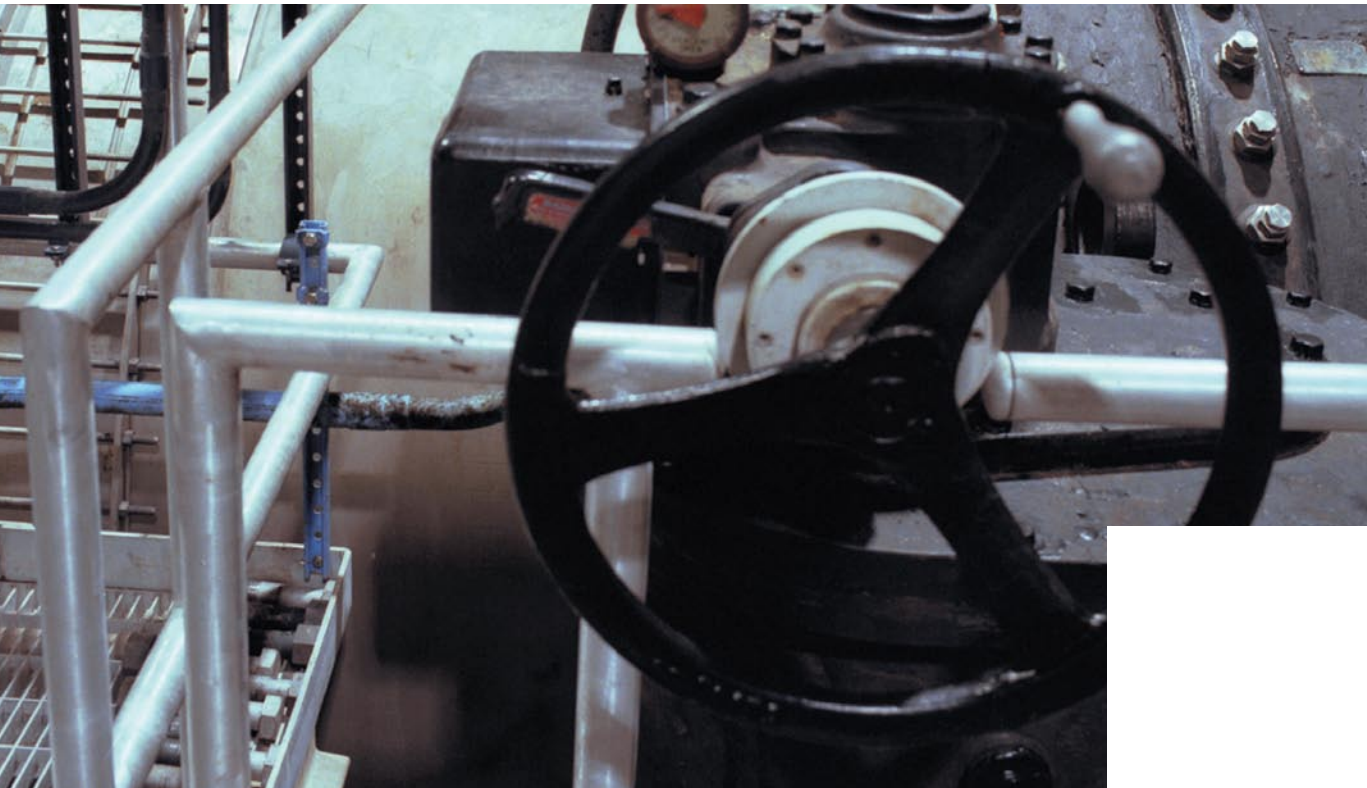


## *Flow Control*



*Experience In Motion*

## Flow control solutions for the world at work



Flowserve Flow Control is the foremost specialist valve and controls manufacturing organization in the world. Flowserve supplies contractors, OEMs, distributors and end users with a product range of unparalleled breadth to meet modern industry's flow control needs in markets including:

- Chemical
- Power Generation/Nuclear Service
- Oil & Gas
- Petrochemical & Refining
- Pulp & Paper
- Process Industries including Food and Pharmaceuticals
- Additional markets including HVAC, Mining, and Water
- Special applications including Cryogenic, Acid/Sour Service, Erosive and Corrosive Service, and Zero Emission



With manufacturing sites and service facilities around the globe and professional partnerships with leading distributors, Flowserve customers have on-the-spot availability, experienced technical support and unmatched service wherever flow control is required. Rugged and reliable products ensure extended service life, with on-site and off-site service and rebuild options providing some of the lowest life cycle costs in the industry.

**Brands**

|                    |
|--------------------|
| Accord             |
| Anchor/Darling     |
| Argus              |
| Atomac             |
| Automax            |
| Durco              |
| Edward             |
| Gestra             |
| Kämmer             |
| Limitorque         |
| Logix              |
| McCANNA/MARPAC     |
| NAF                |
| Naval              |
| Noble Alloy        |
| Norbro             |
| Nordstrom          |
| PMV                |
| Schmidt Armaturen  |
| Serck Audco        |
| Valtek             |
| Vogt               |
| Worcester Controls |

|                    | Control Valves |           |           |       |        |      |             |
|--------------------|----------------|-----------|-----------|-------|--------|------|-------------|
|                    | Ball           | Butterfly | Diaphragm | Globe | Rotary | Plug | Lined Globe |
| Accord             |                |           |           |       |        |      |             |
| Anchor/Darling     |                |           |           | ■     |        |      |             |
| Argus              |                |           |           |       |        |      |             |
| Atomac             | ■              |           |           | ■     |        |      |             |
| Automax            |                |           |           |       |        |      |             |
| Durco              | ■              | ■         |           |       |        | ■    |             |
| Edward             |                |           |           |       |        |      |             |
| Gestra             |                |           |           |       |        |      |             |
| Kämmer             |                |           | ■         | ■     |        |      | ■           |
| Limitorque         |                |           |           |       |        |      |             |
| Logix              |                |           |           |       |        |      |             |
| McCANNA/MARPAC     | ■              |           | ■         |       |        |      |             |
| NAF                | ■              | ■         |           |       | ■      |      |             |
| Naval              |                |           |           |       |        |      |             |
| Noble Alloy        | ■              |           |           |       |        |      |             |
| Norbro             |                |           |           |       |        |      |             |
| Nordstrom          |                |           |           |       |        |      |             |
| PMV                |                |           |           |       |        |      |             |
| Schmidt Armaturen  |                |           |           | ■     |        |      |             |
| Serck Audco        |                |           |           |       |        |      |             |
| Valtek             | ■              | ■         | ■         | ■     | ■      |      |             |
| Vogt               |                |           |           |       |        |      |             |
| Worcester Controls | ■              |           |           |       |        |      |             |

|                    | Isolation Valves |           |       |      |       |             |                  |                |              |
|--------------------|------------------|-----------|-------|------|-------|-------------|------------------|----------------|--------------|
|                    | Ball             | Butterfly | Check | Gate | Globe | Plug, Lined | Plug, Lubricated | Pipeline Valve | Polyethylene |
| Accord             |                  |           |       |      |       |             |                  |                |              |
| Anchor/Darling     | ■                | ■         | ■     | ■    | ■     |             |                  |                |              |
| Argus              | ■                |           |       |      |       |             |                  |                |              |
| Atomac             | ■                |           | ■     |      |       |             |                  |                |              |
| Automax            |                  |           |       |      |       |             |                  |                |              |
| Durco              | ■                | ■         |       |      |       | ■           |                  |                |              |
| Edward             |                  |           | ■     | ■    | ■     |             |                  |                |              |
| Gestra             |                  |           |       |      |       |             |                  |                |              |
| Kämmer             |                  |           |       |      |       |             |                  |                |              |
| Limitorque         |                  |           |       |      |       |             |                  |                |              |
| Logix              |                  |           |       |      |       |             |                  |                |              |
| McCANNA/MARPAC     | ■                |           |       |      |       |             |                  |                |              |
| NAF                | ■                | ■         | ■     | ■    |       |             |                  |                |              |
| Naval              | ■                | ■         |       |      |       |             |                  |                |              |
| Noble Alloy        | ■                |           | ■     |      |       |             |                  |                |              |
| Norbro             |                  |           |       |      |       |             |                  |                |              |
| Nordstrom          | ■                |           |       |      |       |             | ■                | ■              | ■            |
| PMV                |                  |           |       |      |       |             |                  |                |              |
| Schmidt Armaturen  |                  |           |       |      | ■     |             |                  |                |              |
| Serck Audco        |                  | ■         |       |      |       |             | ■                |                |              |
| Valtek             | ■                | ■         | ■     |      | ■     |             |                  |                |              |
| Vogt               |                  |           | ■     | ■    | ■     |             |                  |                |              |
| Worcester Controls | ■                |           |       |      |       |             |                  |                |              |

|                    | Actuators  |                     |           |           |           |          |
|--------------------|------------|---------------------|-----------|-----------|-----------|----------|
|                    | Mechanical | Electric/Electronic | Pneumatic | Hydraulic | Diaphragm | Cylinder |
| Accord             |            | ■                   | ■         | ■         |           | ■        |
| Anchor/Darling     |            |                     |           |           |           |          |
| Argus              |            |                     |           |           |           |          |
| Atomac             |            |                     |           |           |           |          |
| Automax            |            | ■                   | ■         | ■         |           | ■        |
| Durco              |            |                     |           |           |           |          |
| Edward             | ■          |                     |           | ■         |           |          |
| Gestra             |            |                     |           |           |           |          |
| Kämmer             | ■          | ■                   | ■         |           | ■         |          |
| Limitorque         | ■          | ■                   |           |           |           |          |
| Logix              |            |                     |           |           |           |          |
| McCANNA/MARPAC     |            |                     |           |           | ■         |          |
| NAF                |            |                     | ■         |           |           | ■        |
| Naval              |            |                     |           |           |           |          |
| Noble Alloy        |            |                     |           |           |           |          |
| Norbro             |            | ■                   | ■         | ■         |           |          |
| Nordstrom          |            |                     |           |           |           |          |
| PMV                |            |                     |           |           |           |          |
| Schmidt Armaturen  |            |                     | ■         |           | ■         |          |
| Serck Audco        |            |                     |           |           |           |          |
| Valtek             | ■          |                     | ■         | ■         | ■         | ■        |
| Vogt               |            |                     |           |           |           |          |
| Worcester Controls |            | ■                   | ■         | ■         |           | ■        |

|                    | Positioners       |         |             |           |
|--------------------|-------------------|---------|-------------|-----------|
|                    | Electro-pneumatic | Digital | Intelligent | Pneumatic |
| Accord             | ■                 | ■       | ■           | ■         |
| Anchor/Darling     |                   |         |             |           |
| Argus              |                   |         |             |           |
| Atomac             |                   |         |             |           |
| Automax            | ■                 | ■       | ■           | ■         |
| Durco              |                   |         |             |           |
| Edward             |                   |         |             |           |
| Gestra             |                   |         |             |           |
| Kämmer             | ■                 | ■       | ■           | ■         |
| Limitorque         |                   |         |             |           |
| Logix              | ■                 | ■       |             |           |
| McCANNA/MARPAC     |                   |         |             |           |
| NAF                | ■                 | ■       | ■           |           |
| Naval              |                   |         |             |           |
| Noble Alloy        |                   |         |             |           |
| Norbro             |                   |         | ■           |           |
| Nordstrom          |                   |         |             |           |
| PMV                | ■                 | ■       | ■           | ■         |
| Schmidt Armaturen  |                   |         |             |           |
| Serck Audco        |                   |         |             |           |
| Valtek             | ■                 | ■       | ■           | ■         |
| Vogt               |                   |         |             |           |
| Worcester Controls | ■                 | ■       | ■           |           |



| Other           |                 |                   |               |             |          |                           |
|-----------------|-----------------|-------------------|---------------|-------------|----------|---------------------------|
| Blowdown Valves | Boiler Controls | Fittings / Unions | Safety Valves | Steam Traps | Switches | Valve Sealant & Equipment |
|                 |                 |                   |               |             | ■        |                           |
|                 |                 |                   |               |             |          |                           |
|                 |                 |                   |               |             | ■        |                           |
| ■               |                 |                   |               |             |          |                           |
| ■               | ■               |                   |               | ■           |          |                           |
|                 |                 |                   |               |             |          |                           |
|                 |                 |                   |               |             |          | ■                         |
| ■               |                 | ■                 |               |             |          |                           |
|                 |                 |                   | ■             |             |          |                           |
|                 |                 |                   |               |             |          |                           |
| ■               |                 |                   |               |             |          | ■                         |
|                 |                 |                   |               |             |          |                           |
|                 |                 |                   |               |             |          | ■                         |
|                 |                 | ■                 |               |             |          |                           |
|                 |                 |                   |               |             |          | ■                         |



## Flow Control Division

### Whatever the flow control requirement

Flowserve Flow Control has the systems, the products and the experience to help your processes run smarter, safer and more efficiently. The industry's most complete range of valves, actuators, positioners, controls and switches—complemented by our comprehensive R&D, engineering and global support services—provide every Flowserve customer with a one-stop solution to their flow control needs.

### Flowserve can meet the biggest flow control challenges

Flowserve specializes in problem solving. From sanitary to tough to dirty to dangerous, Flowserve Flow Control solutions are relied upon for continuous service in critical applications.

- Corrosive
- Erosive
- Cryogenic
- Sour service
- Lethal service
- Nuclear
- Sanitary
- Non-fugitive emission
- Smart controls/protocols
- Noise abatement
- Cavitation control

### Service and Support

Flowserve is dedicated to helping our customers maximize the return on their flow control investments, helping you reach and maintain your production goals by providing all of the services needed to keep your facilities up and running at peak efficiency. We have extensive maintenance experience in chemical, power, petrochemical, nuclear, refining, pulp and paper, municipal water systems and other process industries.

Flowserve will assist you with asset management by documenting your installed base, tracking and archiving performance metrics, and creating solutions that eliminate weak links and failure points. From new products to maintaining existing product to replacing expired product Flowserve is ready to meet your needs.



**Flow control  
solutions  
for the world  
at work**



**Flow Control Division**



# A family of flow control solutions

## Flow Control Division

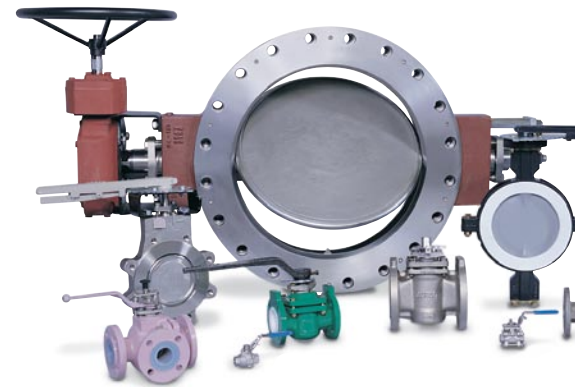
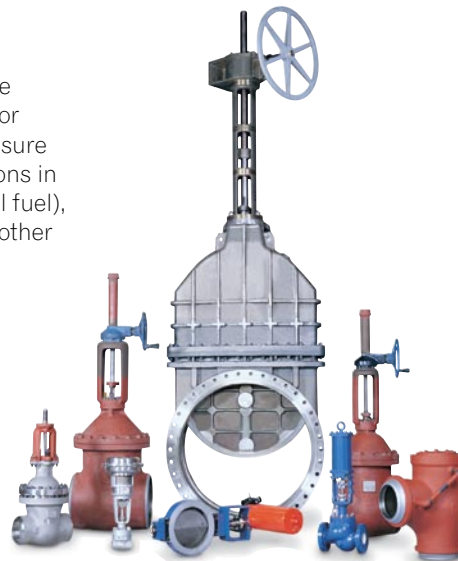


◀ **ACCORD:** positioners and limit switches provide complete valve automation control, and are available in a wide range including explosion-proof and sanitary applications.



▲ **Argus:** split-body soft-seated ball valves for the natural gas industry. 1/2"-20" (15-500 mm), ANSI 150-1500 (PN 20-260)

▶ **Anchor Darling:** gate, globe and check valves designed for high-temperature, high-pressure and severe service applications in the power (nuclear and fossil fuel), refinery, petrochemical and other process industries. 1/2"-72" (15-1800 mm), ANSI 150-4500 (PN 16-700)



◀ **Atomac:** lined equipment including ball valves, tank drain valves, sight glasses, check valves, strainers, and a combination check valve/sight glass. 1/2"-12" (15-300 mm), ANSI 150 (PN 16)



▶ **Automax:** valve automation systems including rack & pinion, scotch-yoke and electric actuators, switches, positioners and automation packages. Torque to 2.2M in-lbs (248,566 Nm)



◀ **Ge**  
co  
ce  
450



◀ **Edward:** gate, globe and check valves for use in critical service applications in the power, refining, petrochemical, nuclear and other process industries. 1/2" - 32" (15-800 mm), ANSI 300-4500 (PN 50-760)



◀ **Kämmer:** Complete line of flow control valves and actuators including: low flow, high pressure, plastic, cryogenic, tank bottom, sanitary, bellows sealed, and general service valves. 1/8" - 8" (3-200 mm) with pressures from ANSI 150 to 60,000 psig



◀ **Limitorque:** multi-turn and quarter-turn electric actuators and valve control networks, automating valves in some of the harshest environments imaginable. Up to 120,000 ft-lb of torque or 500,000 lb. of thrust.



◀ **Durco:** quarter-turn (metallic and lined) plug, ball and butterfly valves widely used in the chemical industry, pharmaceuticals and petroleum refining. 1/2" - 36" (15-900 mm), ANSI 150-600 (PN 16-110)



◀ **Logix:** digital positioners designed for fast, accurate control using various fieldbus protocols. Easily calibrated and commissioned without the need of a configurator or other software.



▶ **McCanna/MARPAC:** ball and diaphragm valves for severe service applications. 1/2" - 20" (15-500 mm), ANSI 150-1500 (PN 20-260)



◀ **Maestra:** valves, steam traps and control systems for steam and process fluid control, ANSI 150-600 (PN 16-760)



◀ **NAF:** wide range of valves for process applications. Specialists in control valve packages for the pulp & paper industry. 1/2" - 40" (10-1000 mm), ANSI 150-300 (PN 10-40)



◀ **Naval:** ball valves mainly in district applications. 1" - 48" (25-900 mm), ANSI 150-600 (PN 20-50)





◀ **PMV:** pneumatic, electro-pneumatic and digital valve positioners with certification for hazardous use.



◀ **Schmidt Armaturen:** globe valves designed for liquid, gas and vapor applications. 1/2"-12" (15-300 mm), ANSI 150-600 (PN 16-160)



◀ **Noble Alloy:** high performance ball and check valves designed for high-pressure severe service in chemical and process industries featuring the unique Nobelizing surface hardening treatment. ANSI 150-1500 (PN 20-260)



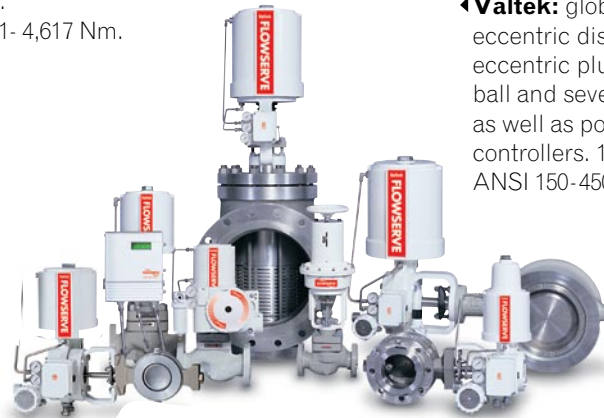
◀ **Serck Audco:** pressure balanced plug valves for various services in oil and gas production processes, 1/2"-30" (15-750mm), ANSI 125-2500. Butterfly valves for process applications, 2" - 48" (50-1200 mm), 10-25 Bar



◀ **Norbro:** industry standard pneumatic actuators. Torque range from 11- 4,617 Nm.



◀ **Nordstrom:** iron and steel lubricated, tapered plug valves and polyethylene ball valves widely used in oil and gas production wellheads right through to gas distribution to domestic customers in their homes. 1/2"-36" (15-900 mm), ANSI 150-2500 (PN 20-420) and 120-800 CWP (8.3-55.2 bar).



◀ **Valtek:** globe, rotary eccentric disc, rotary eccentric plug, segmented ball and severe service valves as well as positioners and controllers. 1/2"-42" (15-1000 mm), ANSI 150-4500 (PN 15-700)

es,  
t heating  
36"  
SI 150-300



◀ **Vogt:** gate, globe and check valves and fittings for use in critical service applications in refining, petrochemical and other process industries. 1/2"- 4" (15-100 mm), ANSI 150-2680 (PN 20-460)

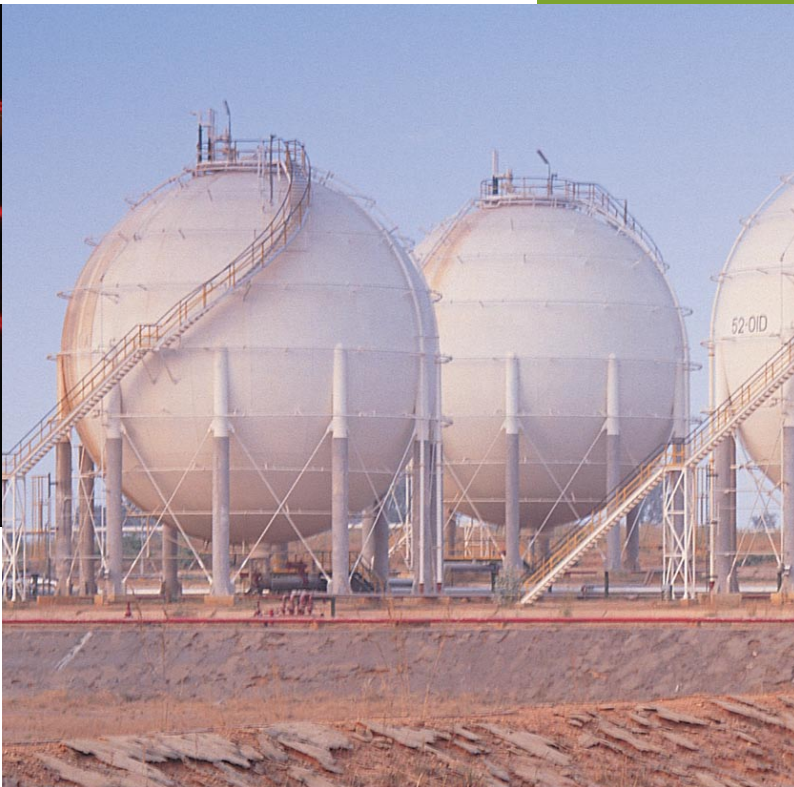


◀ **Worcester Controls:** range of ball valves, rotary control valves, pneumatic and electric actuators for on/off and control application in both three-piece and flanged designs. 1/2"-10" (15-250 mm), ANSI 150 & 300 (PN 16 & 40)



Leading the industry with industry-leading brands

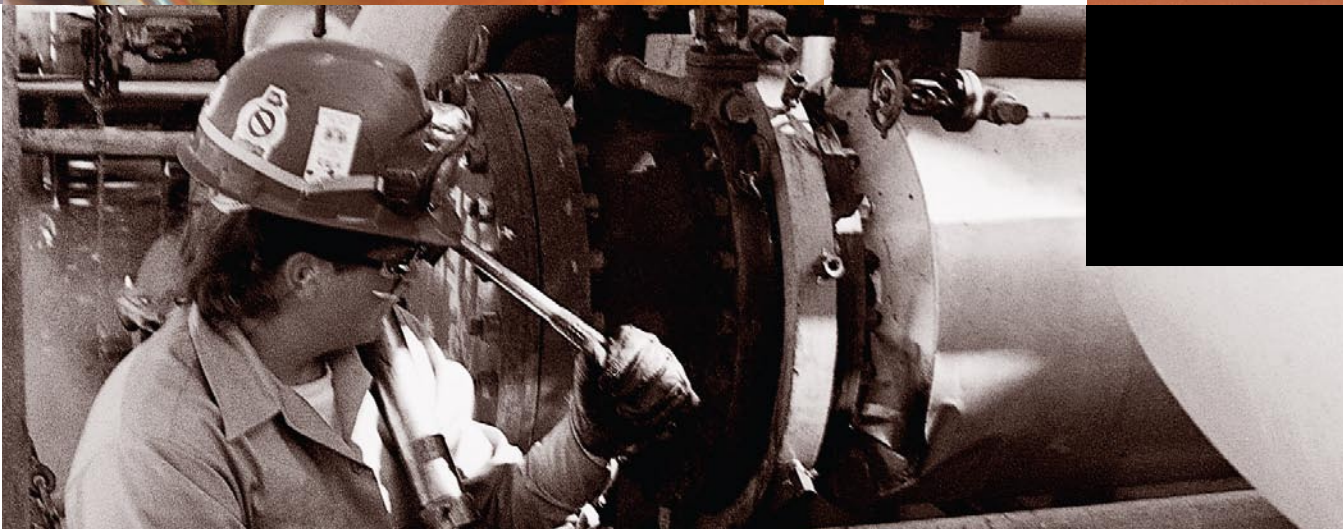




FlowsERVE brings the combined expertise of the leading names in flow control together to provide our customers with an end-to-end service that has no peer. In practically every type of service and every type of application, you will find a FlowsERVE flow control solution: industrial and specialized valves and actuation solutions including control valves, isolation valves (quarter-turn and multi-turn), actuators, positioners, switches and steam/boiler control products—all designed to meet the most demanding needs of users around the globe.



An essential element of essential service



Flowserve Flow Control products and services are found across the industries and infrastructure that keep our world working. Day and night, surface to subsurface to subsea, Flowserve flow control solutions keep the wheels of commerce turning, the halls of government ringing, city lights burning and country homes supplied with water and gas. Wherever you are, whatever you are doing, chances are that Flowserve products and services are helping you get it done.

No organization is better suited to provide total service and support for all of your maintenance needs, from valves to pipelines to controls to concrete. With asset management programs, 25 mobile machine shops, 76 Quick Response Centers in 18 countries and 36 Service Centers in North and South America, Flowserve has the tools, the experience and the attitude to keep your facility running at peak efficiency around the world, around the clock.

APPLICATIONS

**HVAC, Mining, Water**

- lubricated plug valves
- butterfly valves
- polyethylene ball valves
- diaphragm valves
- actuators and controls
- exotic body and trim choices
- **district heating**
- **HVAC**
- **mining**
- **mineral processing**
- **water**
- **water treatment**
- **civilian & military marine service**

APPLICATIONS

**Pulp & Paper**

- control valves
- check valves
- isolation valves
- safety valves
- actuators and positioners
- **digester**
- **pulp applications**
- **paper machine**
- **chemical recovery**
- **steam and condensate**

APPLICATIONS

**Power Generation/Nuclear Service**

- high-pressure gate, globe, and check valves
- Nuclear Main Steam Isolation Valves (MSIVs)
- electric actuators
- valve control networks
- steam process controls
- **fossil fuel and nuclear service**
- **blowdown and high-pressure drain**
- **service**
- **feedwater**
- **cooling water**
- **steam lines**
- **co-generation**

APPLICATIONS

**Oil & Gas**

- iron and steel lubricated plug valves
- polyethylene ball valves
- full and reduced bore steel ball valves
- firesafe valves
- electric actuators
- valve control networks
- **manifolds/wellheads**
- **offshore production**
- **pipeline**
- **storage**
- **distribution**

APPLICATIONS

**Chemical**

- high-pressure gate, globe & check valves
- top-entry ball valves
- cryogenic service
- sour service
- non-fugitive emission
- steam traps
- **terephthalic acid**
- **hydrochloric acid**
- **sulfuric acid**
- **plastics**

APPLICATIONS

**Petrochemical & Refining**

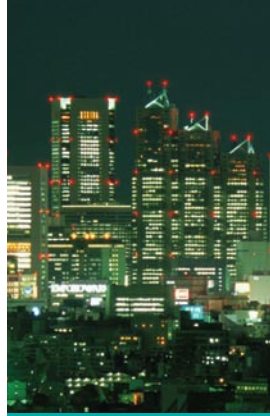
- high-pressure gate, globe & check valves
- top-entry ball valves
- cryogenic service
- sour service
- non-fugitive emission
- steam traps
- **continuous catalytic reactor**
- **terephthalic acid**
- **hydrochloric acid**
- **sulfuric acid**
- **plastics**

APPLICATIONS

**Process Industries**

- steam and gas purgable ball valves
- sterilize in-place steam traps
- clean valves
- flanged ball valves
- non-fugitive emission
- gas valves
- toxic service
- acid service
- safety valves
- control valves
- actuators and positioners
- **food and beverage**
- **sterile service**
- **acids/alkali inlets**
- **gas and air sparging**
- **pharmaceutical**
- **biotechnology**
- **fermentation**





A world of design, engineering, manufacturing and support



Whether it's help designing a custom solution, meeting a critical delivery, total project management or 24/7 support, Flowserve Flow Control is your one-stop solution.

### **Engineering Efficiency**

Flowserve engineers are ready to help you meet the most demanding design challenges and applications. From nuclear to toxic chemicals to potable water, we have the skill, the experience and the tools to assist our customers to whatever extent is needed.

- Project engineers
- Design/drafting
- CAD/CAM
- Testing
- Design analysis
- Research & development

### **High-Quality Manufacturing**

Flowserve Flow Control has manufacturing facilities around the globe, ensuring an efficient supply chain no matter where the installation.

- ISO 9000 standard
- "N" Stamp nuclear service rating
- CE mark
- Universal quality assurance standards
- International buying agreements
- Latest CNC equipment
- Lean manufacturing techniques
- Quick response capability

### **A World of Service**

Flowserve understands the critical role our flow control products serve. To meet these needs, we have established a network of Quick Response and Service Centers in countries around the world.

- Spares inventory
- Assembly capability
- Quick manufacturing
- Skilled technicians
- Mobile machine shops
- In-house repair/return/remanufacturing
- Around-the-clock on-site service



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***To find your local Flowserve representative:***

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[www.flowserve.com](http://www.flowserve.com) or call USA 1 800 225 6989

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