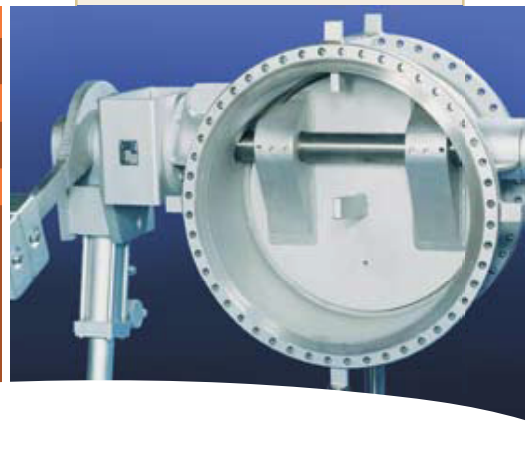
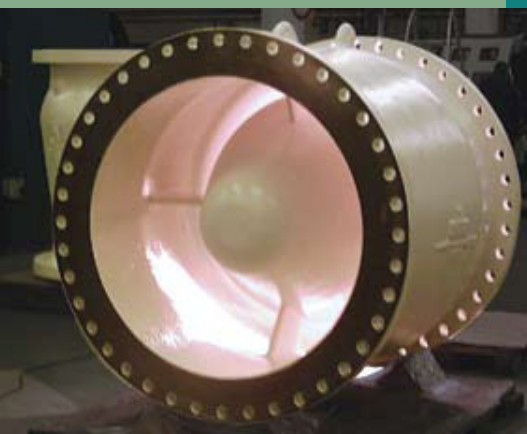


**CRANE**<sup>®</sup>

**brands you trust.**



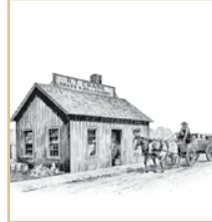
**CRANE Energy Flow Solutions<sup>®</sup> - Overview**

[www.craneenergy.com](http://www.craneenergy.com)

## Welcome to CRANE Energy Flow Solutions

### Strength Through Integrity

This is not a new idea for CRANE. We have been committed to the highest standards of business conduct since our founding in 1855. Our founder, R.T. Crane, wrote and spoke extensively about the importance of business ethics and values, about the confidence and goodwill among employees and customers, and how this can be a competitive advantage. Today, his words continue to drive our business philosophy and serve as a benchmark by which we measure our success.



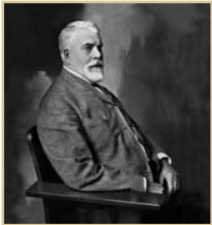
Thank you for your interest in our products. We are pleased to be able to present you with this overview of the outstanding portfolio of products and services we offer. Inside these pages you will find valves that solve your problems, provoke ideas, or raise your awareness of the broad range of valves we have available to meet a myriad of applications and service conditions.

When you look inside our products you will find more than just iron or steel. There you will find the latest technology in design, metallurgy, casting and machining all founded on our Operational Excellence principles that drive out waste and increase repeatability. In the long run, we strive for competitive products that meet or exceed your specifications, and are delivered to you on-time. Every product also contains a promise that has been built in since the very first valve CRANE made over 150 years ago. The promise allows customers to be assured of quality, engineering excellence and a legacy of performance that has been a formula of success throughout our history.

CRANE today is not only a single brand, but rather a collection of some of the best known brands in flow control history—Flowseal, Krombach, Duo-Chek, Pacific, Stockham, Center Line, Noz-Chek and Aloyco to name a few. Each of these brands have their own highly engineered product legacy and are brought together to serve the global energy infrastructure markets including Power Generation, Oil & Gas, and Petroleum Refining among others. There truly is no other portfolio like it today.

The 2,000 people who make up CRANE Energy Flow Solutions are also a big component of the products and services presented here. The people who design, manufacture, purchase, build, ship, quote, sell and support the products are dedicated to providing you with the best products at the lowest total cost of ownership. We work hard, because we know your processes demand it. From the simplest service to the most critical process in your facility, CRANE Energy Flow Solutions stands ready to deliver brands you know, technology you want and solutions you need.

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**Performance Culture Based on Trust and Respect**

To R.T. Crane, this meant being both hard headed and open minded. It's not as easy as it sounds. We question our assumptions; we listen carefully to coworkers' ideas, then add our own thoughts to see if we can build that idea into a more valuable contribution; and we trust that our suggestions will receive the same respectful treatment. At CRANE, new ideas are welcome, along with equal doses of trust and respect.

## Corporate Overview

### CRANE Co Significant Events 1855 - Present.

1855

Founding of R.T. Crane Brass & Bell Foundry in Chicago. CRANE produces valves, fittings, and specialty castings for a growing industrial America.

1860s

As Northwest Manufacturing Co., CRANE supplies essential steam components to the railroads and enters the steam heating business. CRANE Elevator Company begins making hoists, elevators and steam engines, becoming one of the major names in the field for 30 years.

1870s

CRANE pioneers improvements in manufacturing, including the use of multiple purpose machines invented by R.T. Crane and a conveyor system of moving molds and pouring metal - the beginning of line production in foundries.

1880s

CRANE's business is booming. The company operates four manufacturing facilities and employs over 1500 people. Branch houses extend the company's business to the Western U.S.

1885

CRANE Co. is adopted as the Company name.

1890s

R.T. Crane establishes a metallurgical laboratory, probably the first in the Midwest.

CRANE products have the strength and quality to meet the challenges of ever higher fluid pressures and temperatures.

1900

CRANE produces steel valves and fittings in its own steel foundries.

CRANE's rigorous approaches to metallurgical science and material testing become the model for the valve and fitting industry.

1912

Founder R.T. Crane dies. CRANE Co. is the leader in the valve and fitting business. R.T. Crane, Jr. assumes the Company's presidency.

The company builds the first truly modern factory, switching wholly to electricity for power. In Chicago, "The Great Works" built on 160 acres is the most modern factory of its time.

1920s

CRANE Co. conceives the idea of the modern bathroom, creating the first practical decorative bathroom ensembles. The American bathroom becomes a sign of affluence and social pride. CRANE plumbing fixtures, many designed by noted industrial designer Henry Dreyfuss, are celebrated for their styling, color and innovation.

1930

Company-owned branch distribution operations grow to 190 from only 86 in 1920. The highlight is the lavish \$1 million showroom on the Atlantic City Boardwalk.

1936

CR listed on the New York Stock Exchange.

1937

The Golden Gate Bridge opens with its railing material supplied by CRANE Co.

CRANE Co. is a diversified manufacturer of highly engineered industrial products with a substantial presence in a number of focused niche markets. With approximately 10,000 employees working together in five business segments across 25 countries, CRANE generated 2009 net sales of \$2.2 billion.

### Over 150 Years of Making History

CRANE's founder, R.T. Crane, was ahead of his time. Founding the business in 1855 he wrote and spoke extensively about the importance of business ethics and values, the confidence and goodwill among employees and customers, and the competitive advantage that can be obtained by taking the high road. Today, his words continue to drive CRANE's business philosophy and serves as a benchmark by which performance is measured.

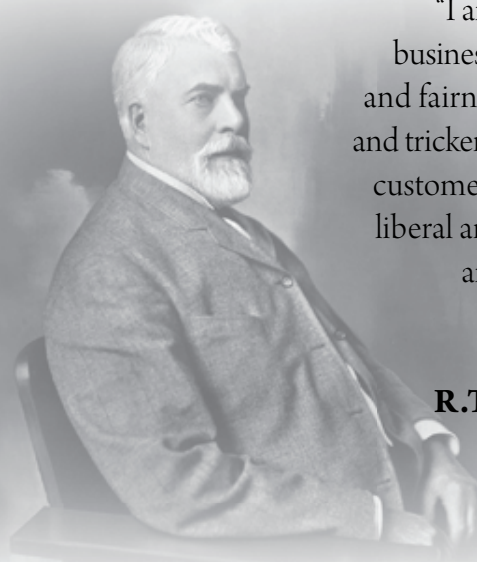
### CRANE Innovation

CRANE innovation can be found behind the scenes virtually everywhere, helping everyday life run efficiently. CRANE has five strong business segments, each strategically positioned to produce excellent returns and high cash flow over the business cycle. By growing these segments and transitioning to a more integrated operating company with a common business system and a common intellectual capital process, CRANE continues to create value for its shareholders and important returns for other stakeholders in the Company—employees, customers and suppliers.

### CRANE's Business Segments

- Fluid Handling: 48%**
- Aerospace & Electronics: 27%**
- Merchandising Systems: 13%**
- Engineered Materials: 18%**
- Controls: 4%**

For more information on CRANE Co., please visit our website at:  
[www.craneco.com](http://www.craneco.com).



"I am resolved to conduct my business in the strictest honesty and fairness; to avoid all deception and trickery; to deal fairly with both customers and competitors; to be liberal and just toward employees and to put my whole mind upon the business."

**R.T. Crane, July 4, 1855**

# Company Overview

CRANE Energy Flow Solutions® is headquartered in The Woodlands, Texas, and is part of CRANE Co.'s Fluid Handling Business Segment. With 14 manufacturing facilities worldwide, CRANE Energy has a staff of approximately 2,000 employees.

## CRANE Energy Flow Solutions' History

Although diverse, CRANE Energy's products all meet high standards for product quality. However, one element remains at the center of everything we do: Integrity. This began with the founder who, in 1855, resolved "to conduct my business in the strictest honesty and fairness." At 23 years old, Richard Teller Crane started business in a one-room foundry with the premise not to make his products better than anyone else, but to "be fair to both customers and competitors." So, while his name is on the outside of our products and our buildings, his ideals are at the heart of everything our company has accomplished.

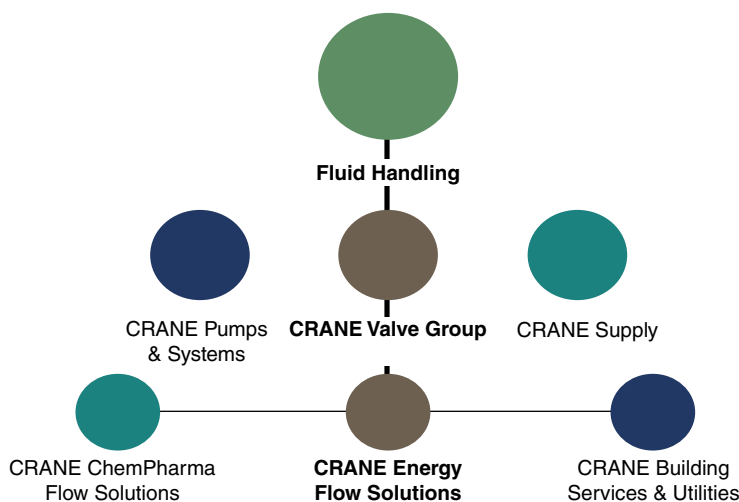
Today's challenges could not have been imagined in that foundry so long ago. But through the years, CRANE's revolutionary leadership, innovation, customer focus, and relentless pursuit of excellence have built our legacy and they are the roadmap for our future.

## Our Markets

Focused on the oil, gas, refining and power markets, the Energy product portfolio brings well-known brands together to provide specifying engineers, process designers and end users with flow control solutions.

- General Industrial
- Oil & Gas/Refining
- Power
- Other

For more information on CRANE Energy Flow Solutions, please visit our website at: [www.craneenergy.com](http://www.craneenergy.com).



**1942**  
To meet wartime demand, CRANE increases steel valve output capacity four-fold to 25,000 tons annually. The U.S. Navy requires from 1,500 to 15,000 valves per ship.

**1951**  
After the war, CRANE supplies flow control products for aircraft. Hydro-Aire, a manufacturer of highly developed precision aircraft products is acquired.

**1957**  
CRANE introduces "Technical Paper 410", building on the classic "Flow of Fluids" of 1942. Today, this quintessential guide to understanding the flow of fluids through valves, pipes and fittings is available as software.

**1959**  
T.M. Evans is elected Chairman and CEO. A new management philosophy moves CRANE to streamline the distribution network and concentrate on industrial manufacturing.

**1960s**  
Industrial expansion is furthered through domestic and international acquisitions such as Chapman Valve, Cochrane Corporation, Deming Company and Chempump.

**1969**  
CRANE pumps are on the moon. Hydro-Aire and Chempump pumps are used in the Gemini and Apollo Space programs.

**1970s**  
CRANE is well-positioned in four major areas of concentration: fluid and pollution control, steel, building products and aircraft/aerospace.

**1980s**  
CRANE exits the plumbing and plumbing distribution businesses in the U.S.

**1981**  
CRANE provides braking system for the first NASA space shuttle.

**1984**  
R.S. Evans elected Chairman and CEO.

**1990s**  
Evans leads CRANE as a growth company with strong acquisition program in areas of fluid handling, engineered materials, merchandising systems, aerospace and controls.

**2001**  
Eric C. Fast elected President and CEO. He continues strategic leadership of a collection of linked businesses to move CRANE from a holding company to an operating company.

**Early 2000s**  
Foundation for future profitable growth is laid with the implementation of new Operational Excellence tools, greater development of intellectual capital, strategic linkages and strong customer focus.

**2005**  
CRANE celebrates its 150th anniversary.

**Post-2005**  
The strong foundation laid in the early part of the decade enables CRANE to make significant acquisitions in the Merchandising Systems, Engineered Materials and Controls segments. At the same time, the Company implements a disciplined, Company-wide business system and realigns businesses in all segments to focus on customer solutions that create value and deliver results.

## Why Buy from CRANE Energy

### Our Customers:

Engineering & Construction Companies (E&C)

Engineering Procurement Companies (EPC)

Architect & Engineering Companies

Global Integrated Oil Companies

Mechanical Contractors

Maintenance & Reliability Departments

Governments

Gas Distributors

Power Plants

Oil Refineries

Sugar Refineries

Industrial OEMs

BioFuel Producers

### Our Operational Excellence Journey

What is Operational Excellence? At CRANE, we call this OpEx. It is our driving philosophy. What does it mean? CRANE Energy designs products to meet customer specifications, manufactures them in our own factories, distributes standard product from strategically located inventories and services valves at customer locations. Globally, our focus is to flow value to our customers, through world-class operation.

Change for the better—that's the literal meaning of the Japanese word kaizen, formed from the word kai (change) and zen (to become good). CRANE, with its culture of continuous improvement, stages almost 1000 kaizen events throughout the company annually, each aimed at solving a particular problem or improving the way in which we perform some aspect of our business. Employees from all levels of our business separate themselves from their jobs to come together for an entire week to participate in an intensive kaizen where they focus on a problem and implement a solution.

Kaizens are just one part of the CRANE Business System, a comprehensive set of business processes and Operational Excellence tools that we use to drive continuous improvement throughout our businesses. Beginning with a core value of integrity, the CRANE Business System incorporates the voice of the customer, value stream analysis (linking customers and suppliers with our production cells), prescriptive and uniform visual management techniques, and a broad range of Operational Excellence tools into a disciplined strategy deployment process to drive superior financial results by focusing on continuously improving safety, quality, delivery and cost.

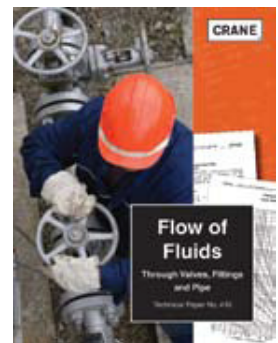
### Flow Expertise

CRANE Technical Paper No. 410 (TP-410) is the quintessential guide to understanding the flow of fluid through valves, pipes and fittings, enabling you to select the correct equipment for your piping system.

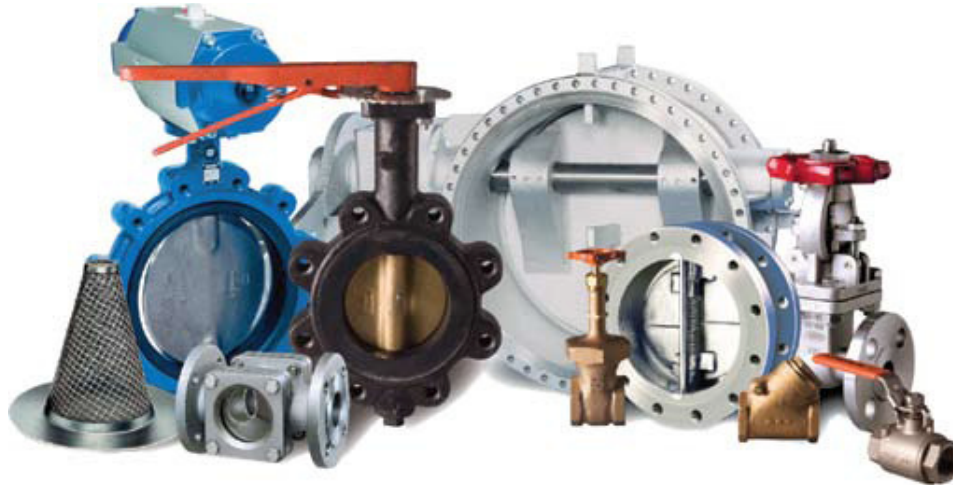
Originally developed in 1942, the latest edition of CRANE TP-410 serves as an indispensable technical resource for specifying engineers, designers and engineering students.

TP-410 is published by the CRANE Valve Group, one of the world's leading suppliers of valve products and services.

For more information about CRANE Technical Paper No. 410 (TP-410) or to purchase a copy please visit: [www.tp410.com](http://www.tp410.com).



## Why Buy from CRANE Energy



### Faster, Better and Easier

The world is moving ever more quickly. Customers have new demands and competition is keen. Success depends on our ability to become faster, better and easier to do business with tomorrow, next month, and next year, which means moving our comfort zone from the old way to the best way.

### CRANE Energy's Product Portfolio

Whether you need a simple on-off valve for an air line, or a highly-engineered, high-pressure extraction check valve for a critical application in a power generation facility, CRANE Energy Flow Solutions offers a variety of solutions. We know that your needs might require nothing more than a simple cast iron or bronze metal alloy. However, CRANE has helped to pioneer the use of stronger steels, corrosion resistant metals, and exotic alloys to meet or exceed your specifications.

So whether you want the time-tested reliability of multi-turn gate or globe valves, the actuation-ready quarter-turn ball, butterfly, or plug valves, or the flow reversal protection of our check valves CRANE Energy stands ready. We don't stop there either. We offer an experienced staff of Valve Services personnel who can manage to get the valve out of service, repair, refurbish or rebuild anyone's valve in-house, or at your plant location.

# Isolation and Flow Regulation Valves

## Common Applications

### Power Generation

HP & LP Steam Systems  
 HP & LP Feed Water & Condensate Systems  
 Make-up Water, Chemical, & Water Treatment  
 Circulating Water  
 Flue Gas Desulphurization  
 Extraction Steam & Cold Reheat Lines

### Petroleum Refining

General On/Off Isolation  
 Reactor Isolation  
 Coker Isolation  
 HF Alkylation Isolation  
 Hydrocrackers  
 Ethylene Plants  
 Emergency Shut-down  
 Steam Regulation  
 Heat Exchanger Balancing  
 Pump Isolation (Tight Shut-Off)  
 FCCU Catalyst Handling  
 Catalyst Feed Systems  
 Compressed Air & Water  
 Cooling Tower Systems  
 Crude/Product Storage

### BioFuels

Process Shutoff  
 Caustic Lines  
 Truck Unloading Shutoff  
 Utility Line Shutoff

### General Utilities

Major Equipment Isolation  
 System Shut-down  
 Boiler Stop Check  
 Flow Regulation

Our engineering, quotations, and sales departments work tirelessly with you to determine the best flow control solutions for difficult applications. Because we have such a long history and vast installed base of products, there are many standard valve

## Gate



### Pressure Seal

**Brand:** Pacific  
**ASME Class:** 600 - 4500  
**Sizes:** 2½" - 36"  
**DN:** 65 - 900  
**Materials:** Carbon Steel, Alloy  
**Connections:** Butt Weld, Flanged

## Plug



### Metal-Seated

**Brand:** Pacific Wedgeplug  
**ASME Class:** 150 - 1500  
**Sizes:** ½" - 36"  
**DN:** 15 - 900  
**Materials:** Carbon Steel, Stainless Steel, Alloy Steel, Special Alloys  
**Connections:** Butt Weld, Flanged, Threaded  
**Body Style:** Special Configurations Available

## Ball



### Metal-Seated

**Brand:** Krombach  
**ASME Class:** 150 - 4500  
**PN:** 10 - 600  
**Sizes:** ½" - 16"  
**DN:** 15 - 400  
**Materials:** Carbon Steel, Stainless Steel, Special Materials  
**Connections:** Flanged, Welded, Threaded  
**Body Style:** Two-Piece

## HF Acid



### Sleeved Plug

**Brand:** XOMOX  
**ASME Class:** 150 - 600  
**Sizes:** ½" - 24"  
**DN:** 15 - 600  
**Material:** Monel®  
**Connection:** Flanged, Socket Weld, Threaded

## Butterfly



### Triple Offset Metal-Seated

**Brands:** Flowseal MS, Krombach  
**ASME Class:** 150 - 600  
**PN:** 10 - 100  
**Sizes:** 3" - 96"  
**DN:** 80 - 2400  
**Materials:** Carbon Steel, Stainless Steel, Special Materials  
**Body Styles:** Lugged, Butt Weld Ends, Double Flanged Short or Long Pattern

## Butterfly



### Double Eccentric

**Brand:** Krombach  
**PN:** 10 - 40  
**Sizes:** 4" - 136"  
**DN:** 100 - 3400  
**Materials:** Carbon Steel Welded Body, Resilient Seated  
**Body Styles:** Double Flanged Short or Long Pattern, Custom Ends



### Gate, Globe

**Brand:** Pacific  
**ASME Class:** 150 - 600  
**Sizes:** 1½" - 36"  
**DN:** 40 - 900  
**Materials:** Carbon Steel or Monel®  
**Trim:** Monel® or Hastelloy C®  
**Connection:** Flanged, Socket Weld, Threaded

## Isolation and Flow Regulation Valves

configurations that are prebuilt and inventoried for your short lead time requirements. We also have the ability and resources to make minor modifications to our standard products quickly to meet your unique requirements.

### Gate



**Bolted Bonnet**  
**Brands:** Aloyco, CRANE, Jenkins, Krombach, Pacific, Stockham, Triangle  
**ASME Class:** 150 - 1500  
**PN:** 10 - 100  
**Sizes:** 2" - 36"  
**DN:** 40 - 1200  
**Materials:** Iron, Bronze, Carbon Steel, Stainless Steel, Special Materials  
**Connections:** Flanged, Welded, Threaded, Soldered

### Ball



**Soft Seated**  
**Brands:** Aloyco, CRANE, Jenkins, Krombach, Stockham  
**ASME Class:** 150 - 2500  
**PN:** 10 - 420  
**Sizes:** ¼" - 24"  
**DN:** 8 - 600  
**Materials:** Bronze, Brass, Carbon Steel, Stainless  
**Connections:** Threaded, Socket Weld, Soldered, Flanged, Wafer  
**Body Styles:** One-Piece, Two-Piece, Three-Piece

### Globe



**Globe Valves**  
**Brands:** CRANE, Jenkins, Krombach, Pacific, Stockham  
**ASME Class:** 125 - 3500  
**PN:** 10 - 160  
**Sizes:** ½" - 24"  
**DN:** 15 - 600  
**Materials:** Cast Iron, Ductile Iron, Bronze, Carbon Steel, Stainless Steel, Forged Steel  
**Connections:** Flanged, Welded, Threaded, Soldered

### Butterfly



**High Performance**  
**Brands:** Flowseal, Stockham  
**ASME Class:** 150 - 600  
**Sizes:** 2" - 48"  
**DN:** 50 - 1200  
**Materials:** Aluminum Bronze, WCB, CF8M  
**Body Styles:** Wafer, Lugged (Double Dead End)

### Butterfly



**Resilient-Seated Concentric**  
**Brands:** Center Line, CRANE, Jenkins, Stockham  
**ASME Class:** 150 CWP  
**Sizes:** 1½" - 54"  
**DN:** 40 - 1350  
**Materials:** Cast Iron, Ductile Iron, WCB, CF8M  
**Body Styles:** Wafer, Lugged, Double Flanged

## Manufacturing Locations

Conroe, Texas  
 Düsseldorf, Germany  
 Kreuztal, Germany  
 Long Beach, California  
 Muta, Slovenia  
 Ningjin, China  
 Ravne, Slovenia  
 Satara, India  
 Suzhou, China  
 Sydney, Australia  
 Viralimalai, India  
 Yancheng City, China

# Flow Reversal Protection Valves

## Common Applications

### Power Generation

HP & LP Steam Systems  
 HP & LP Feed Water & Condensate Systems  
 Make-up Water, Chemical, & Water Treatment  
 Circulating Water  
 Flue Gas Desulphurization  
 Extraction Steam & Cold Reheat Lines  
 Pump Discharge Checks  
 Main Steam Checks

### Petroleum Refining

Pipeline Reversal Protection  
 Feed Pump Protection  
 Transfer Pump Protection  
 Gas Compressor Protection  
 Hydrogen Compressor Protection  
 HP & LP Steam Systems  
 Heat Transfer Pump Protection

### Gas Treatment & Transmission

Liquefaction System Protection  
 Transfer Pump Protection  
 Transmission Compressor Protection  
 Pipeline Compressor Station Protection  
 Gas Separation Units  
 Sulphur Conversion  
 Liquefaction & Regasification Units  
 Gas Metering & Compressor Stations  
 Gas Terminals (Import/Export)

### General Utilities

Rotating Equipment Protection  
 Boiler Protection

Highly engineered valves that are sized and built to your requirements and specifications in order to assure the protection of your valuable rotating equipment.

## Nozzle Check



### Full Body

**Brand:** Noz-Chek  
**ASME Class:** 150 - 4500  
**Sizes:** 2" - 84"  
**DN:** 50 - 2100  
**Materials:** Iron, Steel, Stainless  
**Connections:** Flanged, Hub-End, Weld-End  
**Standards:** ASME, DIN, JIS

## Swing Check



### Engineered

**Brand:** Krombach  
**ASME Class:** per request  
**PN:** per request  
**Size:** per request  
**DN:** per request  
**Material:** Welded Design  
**Connection:** Double Flanged Welded

## Tilting Disc Check



### Engineered

**Brands:** CRANE, Krombach, Pacific  
**ASME Class:** 125 - 3500  
**Sizes:** 2" - 36"  
**DN:** 50 - 900  
**Materials:** Iron, Carbon Steel, Stainless  
**Connections:** Flanged, Weld-End

## Nozzle Check



### Compact Body

**Brand:** Compac-Noz  
**ASME Class:** 150 - 4500  
**Sizes:** 12" - 60"  
**DN:** 50 - 1200  
**Materials:** Iron, Steel, Stainless  
**Connections:** Flanged, Hub-End, Weld-End  
**Standards:** ASME, DIN, JIS

## Dual Plate Check



### Dual Plate

**Brand:** Duo-Chek  
**ASME Class:** 125 - 4500  
**Sizes:** 2" - 84"  
**DN:** 50 - 2100  
**Materials:** Steel, Stainless, Exotic Metals  
**Connections:** Wafer, Lugged, Flanged  
**Standards:** ASME, DIN, JIS, AS

## HF Acid



### Swing Check

**Brand:** Pacific  
**ASME Class:** 150 - 600  
**Sizes:** 1½" - 36"  
**DN:** 40 - 900  
**Material:** Carbon Steel or Monel®  
**Trim:** Monel® or Hastelloy C®  
**Connection:** Flanged, Socket Weld, Threaded



# Automated Valve Packages

## Common Applications

**Power Generation**

- HP & LP Steam Systems
- HP & LP Feed Water & Condensate Systems
- Make-up Water, Chemical, & Water Treatment
- Circulating Water
- Flue Gas Desulphurization
- Extraction Steam & Cold Reheat Lines

**Petroleum Refining**

- Process Isolation
- Process Automation
- Remote Operation
- System Balancing
- Product Mixing

**BioFuels**

- Molecular Sieve

**Gas Treatment & Transmission**

- Gas Separation Units
- Sulphur Conversion
- Liquefaction & Regasification Units
- Gas Metering & Compressor Stations
- Gas Terminals (Import/Export)

**General Utilities**

- Process Automation
- System Monitoring
- System Balancing
- Product Mixing

We have many years of experience providing multiple variations of automated valve packages. From simple on-off actuation to complex modulating systems, we can provide customized solutions. We have expertise in all actuator types, including

### Rack & Pinion Pneumatic



#### Direct or Bracket Mount

**Types:** Double Acting, Spring Return  
**Brand:** Revo  
**Sizes:** 1/4" - 48"  
**DN:** 8 - 1200  
**Torque Range:**  
 lbf-in: 30 - 107,531  
 Nm: 12 - 4,000

### Rack & Pinion Pneumatic



#### Direct or Bracket Mount

**Types:** Double Acting, Spring Return  
**Brand:** CRANE Air  
**Sizes:** 2" - 14"  
**DN:** 50 - 350  
**Torque Range:**  
 lbf-in: 30 - 107,531  
 Nm: 12 - 4,000

### Scotch Yoke Pneumatic



#### Bracket Mount

**Types:** Double Acting, Spring Return  
**Brand:** CRANE  
**Sizes:** 6" - 48"  
**DN:** 150 - 1200  
**Torque Range:**  
 lbf-in: 12,581 - 6,000,000  
 Nm: 1421 - 677,908

### Electric



#### Direct or Bracket Mount

**Brand:** CRANE  
**Sizes:** 1/4" - 16"  
**DN:** 8 - 400  
**Torque Range:**  
 lbf-in: 347 - 17,359  
 Nm: 39 - 1,960

### Notes

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## Automated Valve Packages

pneumatic and electric, as well as experience with positioners, limit switches, solenoids, etc. We can size and build systems to your exact requirements.



Resilient seated butterfly valve with direct mount electric actuator.



High performance carbon steel butterfly valve with single acting pneumatic actuator and positioner.



Resilient seated butterfly valve with direct mount rack and pinion pneumatic actuator.



Triple-offset metal-seated rotary process valves with quick-closing hydraulic actuation package for the turbine trip valve, and a modulating hydraulic actuation package for the turbine throttle valve.



3-piece stainless ball valve pneumatic actuator with positioner and limit switches.



Tandem metal seated ball valves with emission leak test ports and electric motor operated. The actuation can be set-up with sequential operation lock-out.

## Manufacturing Locations

Düsseldorf, Germany  
 Kreuztal, Germany  
 St. Louis, Missouri

# Tank Wagon System Solutions

## Common Applications

### Common Applications for Tank Wagons, Strainers & Specialty Products

Filling & Evacuation Systems for Tank Cars & Compressed Tank Cars

#### Power Generation

Circulating Water Intakes  
Cooling Water Systems  
Pump Intakes  
Steam Systems  
Spray Water Systems  
Piping Systems Flushes  
Lube Oil Systems  
Fuel Systems

#### Petroleum Refining

Cooling Water Intakes  
Pump Intakes  
Steam Systems  
Spray Water Systems  
Piping System Flushes  
Compressor Protection  
Process Vessel Drains

#### Desalination Plants

Salt Water Intakes  
Pump Intakes  
Steam Systems  
Distillate Streams

#### General Utilities

Water Systems  
Steam Systems  
Piping Systems Flushes  
Oil Systems  
Fuel Systems

Your most difficult flow problems are the source of our innovation. Hand in hand with you we develop new, customized designs and high-complexity system solutions.



**Hydraulic  
Mechanical - Filling & Evacuation Systems  
Combined**

## For Liquid & Compressed Gas Tank Cars

### System Components Include:

- Y-type and straight-through globe valves for pressurized gas
- Y-type free flow valves
- Aerating and deaerating valves
- Bottom drain valves (mechanical, pneumatic and hydraulic operators)
- Forced aerating valves
- Ball valves
- Plug valves
- Swing check valves
- Specially designed mechanical operators
- Draining assemblies
- Quick-closing pumps
- Dry quick-closing couplings
- Reducers
- Handwheel covers and locks

## Strainers & Specialty Products

From a standard Y-type to a custom basket-type, and everything in between, we have provided engineered strainer solutions to our clients around the globe in a wide range of applications.

### Y-type



**Brand:** Krombach  
**ASME Class:** 150 - 1500  
**PN:** 6 - 400  
**Sizes:** ½" - 14"  
**DN:** 15 - 350  
**Screen:** Stainless Steel  
**Materials:** Carbon Steel, Stainless Steel, Cast Iron, Ductile Iron, Special Materials  
**Body Styles:** Flanged, Welded, Threaded

### T-type/Basket



**Brand:** Krombach  
**ASME Class:** 150 - 300  
**PN:** 6 - 40  
**Sizes:** 2" - 40"+  
**DN:** 50 - 1000+  
**Screen:** Stainless Steel (flat, half round, basket)  
**Materials:** Carbon Steel, Stainless Steel, Special Materials  
**Body Styles:** Flanged, Welded

### Hat-type



**Brand:** Krombach  
**ASME Class:** 150 - 300  
**PN:** 10 - 40  
**Sizes:** 1" - 48"  
**DN:** 25 - 1200  
**Materials:** Steel, Stainless Steel, Special Materials  
**Body Style:** Fully Welded Construction

## Specialty Products

Due to many years of experience and ingenuity we are able to produce specific solutions appropriate for unique customer circumstances.

### Sight Glasses



**Brand:** Krombach  
**ASME Class:** 150 - 900  
**PN:** 10 - 160  
**Sizes:** ½" - 12"  
**DN:** 15 - 300  
**Materials:** Carbon Steel, Stainless Steel, Cast Iron, Special Materials  
**Body Styles:** Flanged, Welded, Threaded  
**Configurations:** Straight Through, Angle, 3-Way, Custom Designs Available

### Bottom Drain Valves



**Brand:** Krombach  
**ASME Class:** 150 - 300  
**PN:** 10 - 40  
**Sizes:** 1" - 12"  
**DN:** 25 - 300  
**Materials:** Carbon Steel, Stainless Steel, Cast Iron, Ductile Iron, Special Materials  
**Body Styles:** Flanged, Welded Metal, Soft Seats, Custom Designs Available

### Engineered Strainer Assemblies



**Brand:** Krombach  
**Pressure Class:** Per Customer Requirements  
**Size:** Per Customer Requirements  
**Material:** Per Customer Requirements  
**Body Style:** Per Customer Requirements  
**Special Features:** D/P Indicators, Stands, Cover Lifts, Vent/Drain Valves, Special Coatings, Heating/Cooling Jackets

## Manufacturing Locations

Kreuztal, Germany  
 Muta, Slovenia  
 Ravne, Slovenia  
 Viralimalai, India



**REGOM INSTRUMENTS s.r.o.**

**Brabcova 1159 / 2**

**147 00 Praha 4**

**CZECH REPUBLIC**

**Tel: +420 241 402 206**

**Fax: +420 241 400 290**

**Mail: [regom@regom.cz](mailto:regom@regom.cz)**

**Skype: regom-office**

**[www.regom.cz](http://www.regom.cz)**

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