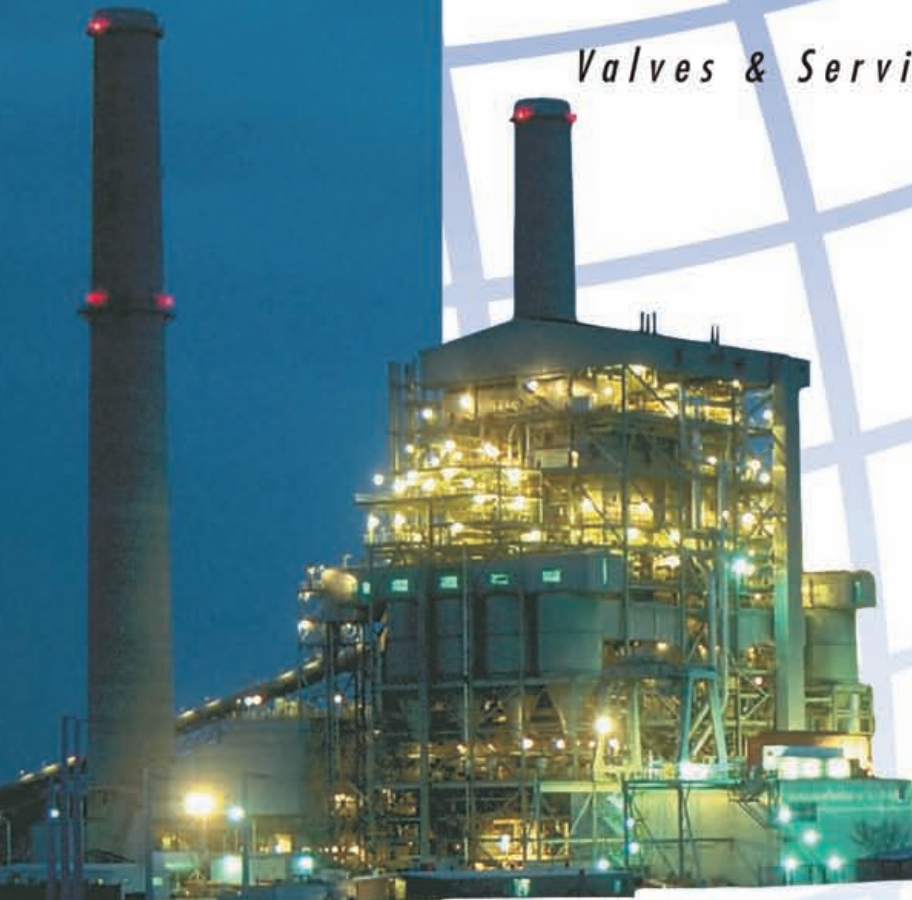


Valves & Services for the Power Industry



SOLUTIONS



At Valvtechnologies, our product is only a part of who we are.

Our approach at Valvtechnologies is to utilize our technology, world-wide service and support, product management, inventory control and asset management to help solve process problems in your plant. By equipping the most knowledgeable people with the latest technology, we have created a solution where quality and dependability are built into our products and services from start to finish. By focusing on this principle, we become an integral part of our customers' asset management strategy.



Industry Knowledge

Valvtechnologies is committed to staying ahead of the power industry. As a global leader in the design and manufacturing of flow control devices, our industry experts have the knowledge and skill to provide solutions to manage your process.

Product Management

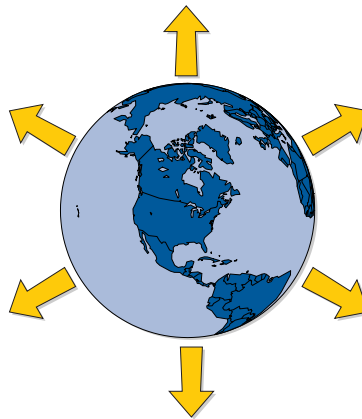
Valvtechnologies valves meet the standards of ASME codes B31.1 Power Piping Code, ASME Section 1 Boiler and Pressure Vessel Code, B16.34 Valve-Standard, ASME TDP-1 1998 Prevention of Water Damage to Steam Turbines-Part 1.

Service/Support

With over twenty-five world-wide service centers and a global distributor network of ninety-six locations, Valvtechnologies offers superior support to plants 24 hours a day, 7 days a week.

Inventory Control

Do you have your inventory under control? Valvtechnologies took a major utility and reduced their corporate inventory of forged steel valve products from over \$3 million to less than \$100,000.



Asset Management

With Valvtechnologies total valve management program and heat rate surveys, we can quantify your inefficiencies and determine all of your potential cost savings.

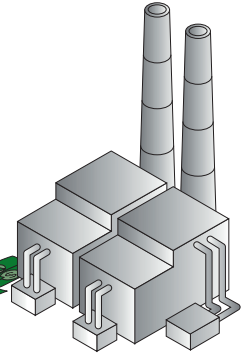
Valvtechnologies, Inc. provides solutions to keep up with the demands of the power industry.

Valvtechnologies metal-seated valves are designed to meet virtually any process condition. Our standard class valves are available from 1/2" to 36" sizes, up to ANSI 4500 (special class valves available in all ANSI ratings) and are manufactured in a variety of forged materials and end connections to meet the plants specifications. With our **4-YEAR ABSOLUTE ZERO LEAKAGE GUARANTEE**, Valvtechnologies valves will decrease heat loss in power plants, reduce maintenance costs and downtime and increase plant availability.

ZERO LEAKAGE

Would you specify a valve that will have a significant leak after one year in service?

If not, then what specifications do you use? A typical valve standard of FCI 70-2 Class V for a 4", 1500# valves allows a valve to leak 608 gallons per year. If most valves are allowed to leak that much when new, then imagine how much a typical valve leaks after one year! All of Valvtechnologies, Inc. valves are **GUARANTEED ABSOLUTE ZERO LEAKAGE** for four years. All other valves in the industry have a defined leakage rate. Valvtechnologies tests every valve made according to ANSI procedures. However, we toughen the standard to zero leakage on both water and gas. Our standard is zero drops and zero bubbles guaranteed.



Q) What happens to the leakage rate in a high pressure, steam or water system of a valve that has an initial small leak?

A) The leakage increases significantly which increases maintenance costs and decreases efficiency.

While other valves offer 4 years of inefficiency & leakage...

Valvtechnologies GUARANTEES ABSOLUTE ZERO LEAKAGE for 4 Years.



0.0000



370 Gal



0.0000



2,434 Gal

MSSP-61 / 4" 1500# Reduced Port
Allowable leakage = 0.010565 gallon per hr.
Allowable leakage per year = 92.5 gallons
Leakage over 4 years assuming leak path does not get worse = 370 gal.

FCI 70 -2 Class V / 4" 1500# Reduced Port
Allowable leakage 4.38 ml min = 263 ml hr = 0.069465 gal./hour
Allowable leakage per year = 608.5 gallons
Leakage over 4 years assuming leak path does not get worse 2,434 gal.

DESIGN



Our valves are designed to be stress relieved in the field

The Valvtechnologies design features are the implementation of extensive industry knowledge engineered to perform flawlessly.

Zero leakage - Each valve is tested with both gas and water. On all seat testing, no leakage is allowed. Conventional valves allow for leakage during testing that is compounded once the valve is in service.

Features:

Integral Seat

- RAM® hard coated with chrome carbide or tungsten carbide
- No body-to-seat joints
- Eliminates any potential of leakage between a loose seat and the valve body
- Eliminates thermal problems for dissimilar seat and body materials common in loose seated designs

Blow-Out Proof Stem

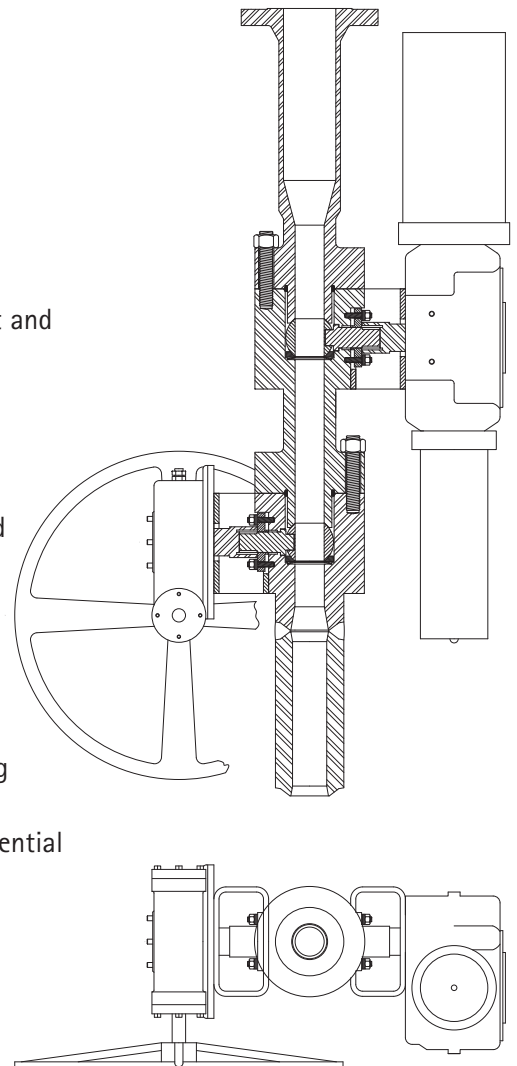
- Non-pinned
- Inserted internally when the valve is assembled
- Complies with ASME B31.1

High Seat Loads - Belleville Springs

- High strength
- Spring makes the valve inherently self-relieving
- Provides anti-static protection
- Provides high seat load regardless of the differential across the valve and whether the valve is in an open or closed position

Live-Loaded Gland Packing

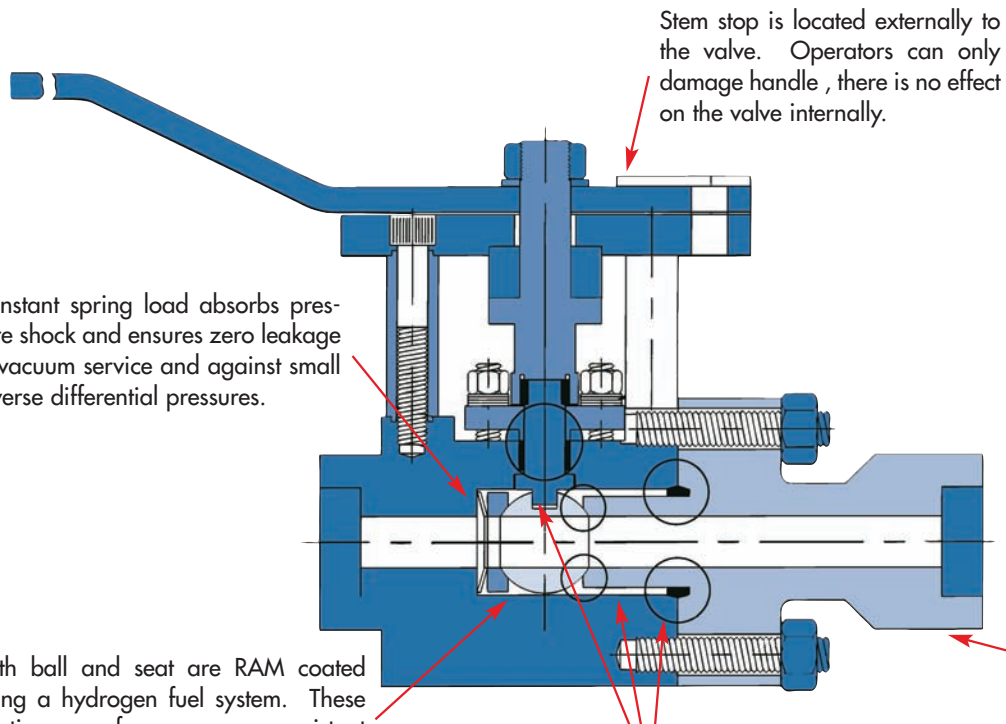
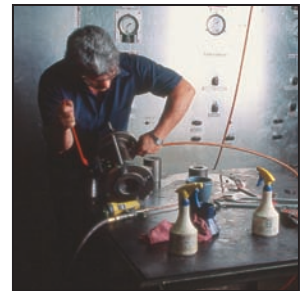
- Stainless steel or grafoil
- Guarantees zero stem emissions
- Reduces maintenance
- Eliminates routine gland adjustments



DESIGN

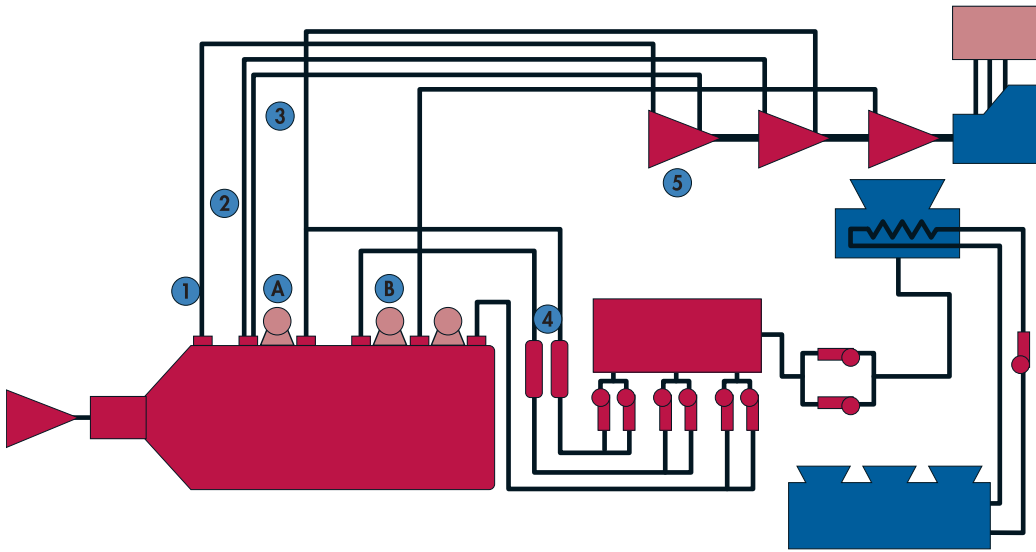
The Valvtechnologies design integrates proprietary design features that make our products superior to any valves on the market.

Valvtechnologies' valves have an integral, metal downstream seat that result in tight shut-off every time that performs well in high pressure, high temperature process conditions. With our patented Ceramet and Rocket Applied Metallic (RAM®) coatings, the integral seat in Valvtechnologies valves is resistant from the attack of abrasive magnetite or ferrous oxides in the steam flow. The live-loaded grafoil and stainless steel packing on the valves results in the reduced need for maintenance, cuts inspection costs and meets today's stringent fugitive emission standards.



APPLICATIONS

Combined Cycle Power Plant



A HP Drum

- Blowdown Valves
- Drain Valves
- Isolation Valves
- Vent Valves
- Blowoff Valves

B IP Drum

- Blowdown Valves
- Drain Valves
- Isolation Valves
- Vent Valves
- Blowoff Valves

1 HP Superheater

- Sliding Control Vent
- Electronic Relief Valves
- HP Bypass
- Vent Valves
- Modulation Vents
- Main Steam Stop Valve

2 Hot Reheater

- Attemperator Spray Valves
- Drain Valves
- Electronic Relief Valves
- HRH By-Pass
- Isolation Valves
- Vent Valves

3 Cold Reheater

- Attemperator Spray Valves
- Drain Valves
- Electronic Relief Valves
- HRH By-Pass
- Isolation Valves
- Vent Valves

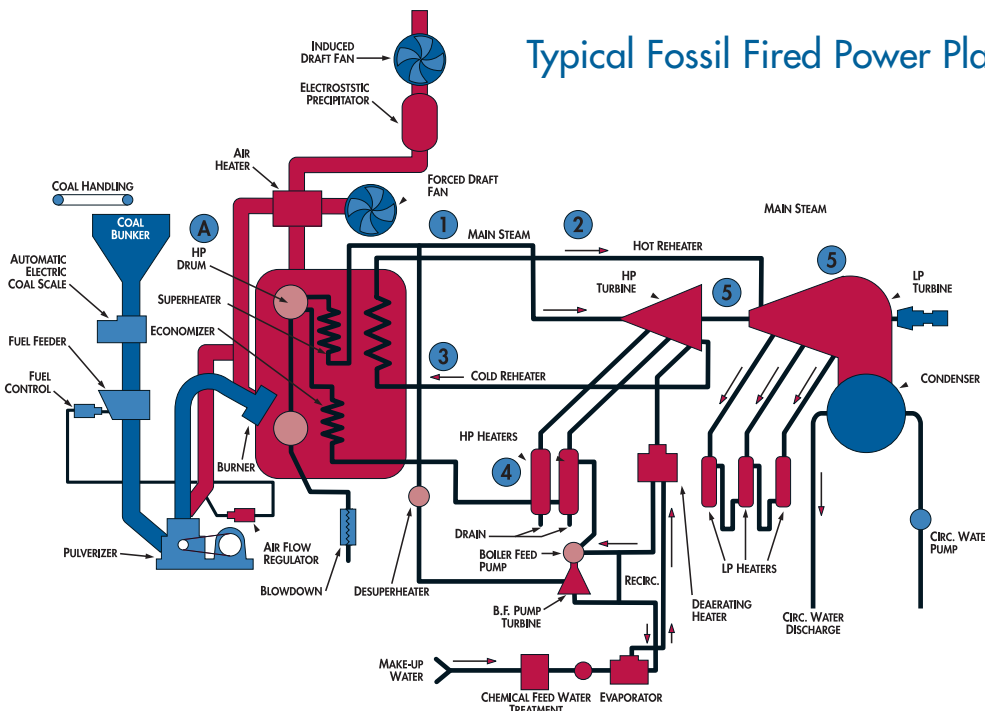
4 HP Feedheater

- Boiler Feed Pump Recirc.
- Feedheater Isolation Valves
- Drain Valves

5 Steam Turbine

- Main Steam Stop
- Start Up Vent
- Drain Valves
- Vent Valves

Typical Fossil Fired Power Plant



APPLICATIONS

Valvetechnologies designs valve specifically for the unique demands of power processing applications.

Application Specifications

- Main Steam Drains - (BOL1-SW-FP-LV-1.5)(min 3/4" port)(Meets ASME TDP-1, ASME I, B31.1 & B16.34)
- Cold Reheat Drains - (B6C4-SW-FP-LV-2)(Port 2.125)(Meets ASME TDP-1, ASME I, B31.1 & B16.34)
- Hot Reheat Drains - (B7C1-SW-FP-LV-1.5)(Port 1.5)(Meets ASME TDP-1, ASME I, B31.1 & B16.34)

Power Applications

Boiler-Typical Applications

- Sootblower Steam Supply Isolation
- Steam Supply to Vacuum (Air Ejector)
- Feed Heater Gauge Glass Isolation Valve
- Feed Heater Gauge Glass Drain Valve
- Continuous Blowdown Valve
- Economizer Downcomer Drain
- Lower Furnace Drains
- Secondary Superheater Drain
- 1 St Stage Reheat Outlet Header
- 2nd State Reheat Inlet Header
- 2nd Stage Reheat Outlet Header
- Economizer Inlet Steam Sampling Valve
- Economizer Downcomer Steam Sampling Valve
- Attemperator Piping Steam Sampling Valve
- Economizer Vent Valve
- Economizer Inlet Manifold Pressure Connection (Root) Valve
- Economizer Downcomer Manifold Pressure Connection (Root) Valve
- Inlet 1 Mixing Header Pressure Connection Valve
- Outlet 1 Mixing Header Pressure Connection Valve
- Inlet 2 Mixing Header Pressure Connection Valve
- Outlet 2 Mixing Header Pressure Connection Valve
- Screen Downcomer Pressure Connection Valve
- Attemperator Piping Pressure Connection Valve
- Boiler Feed Pump Warming Valve
- Boiler Feed Pump Drain Valve
- Turbine Intercept Before Seat Drain
- Turbine Intercept After Seat Drain
- Primary Superheater Header Inlet Leader Drain (Primary)
- Secondary Superheater Inlet Header Drain
- Drum Drain
- Mud Drum Drains
- Boiler Blowdown
- Bypass Valves

- Superheater Bypass Systems
- Boiler Vents
- Superheater Vents
- Main Steam Start-Up
- Boiler Indicator Isolation Valves
- Instrumentation Take Off Valves
- Steam Trap Bypass
- Steam Trap Isolation
- Cold Reheat Drain
- Hot Reheat Drain
- Boiler Feed Pump Recirculating Bypass Valve
- Superheater Power Operated Safety Relief Valve
- Loop Vent
- Feedwater Sample Stop Valve
- Cyclone Drain Stop Valve
- Secondary Superheater Sampling Isolation Valve
- Secondary Superheater Hydro-Air Test Isolation Valve
- Main Steam Stop Valve

Turbine-Typical Applications

- Above and Below Seat Drains
- Instrumentation Take Off Valves
- Turbine Drains
- Turbine Vents

Feed Water Pump and Heater Systems

- Heater High Level Dump
- High Pressure Feed Pump Bypass Valve
- Feed Pump Discharge Return to De-Aerator
- Feed Booster Pump Re-Circulation Valve
- Heater Drains
- De-Aerator Drain
- Condenser Drain
- Feedheater Isolation



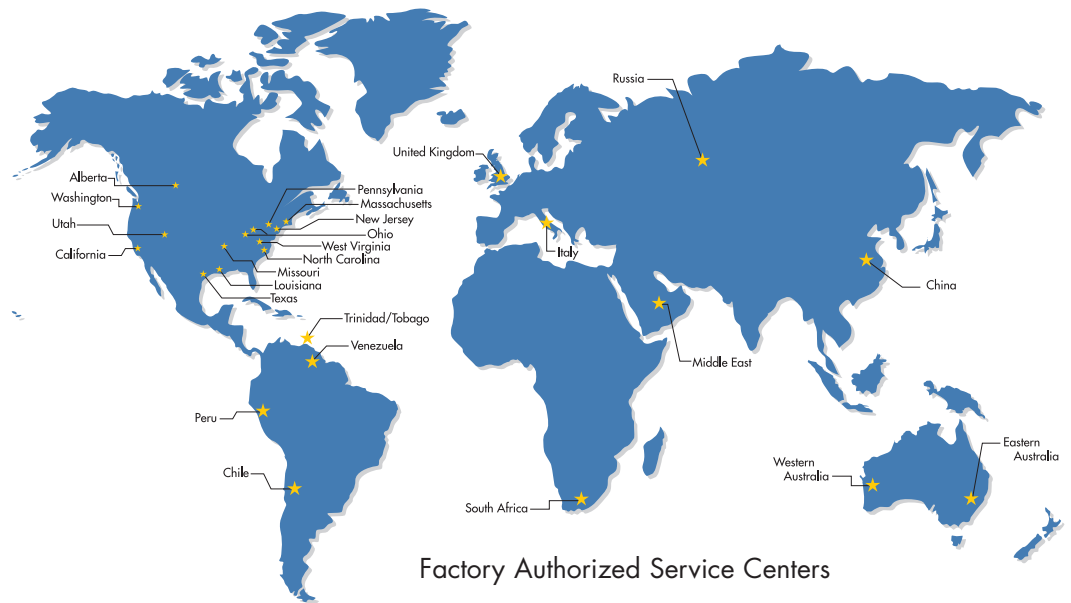
Blow Off Valve

SERVICE



Service

Valvtechnologies is committed to helping our global network of customers maintain peak valve performance. Twenty-five factory authorized service centers are available 24 hours a day, 7 days a week to assist with valve installation, commissioning, troubleshooting and actuator maintenance.

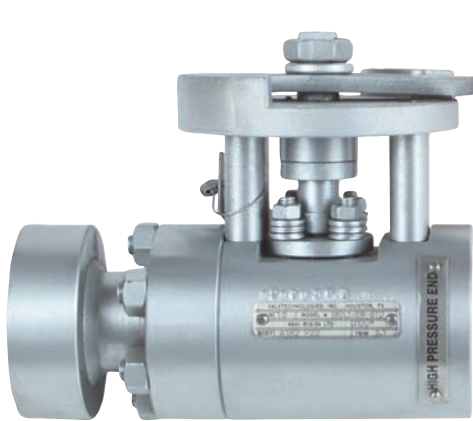


TVM™ Total Valve Management

Valvtechnologies encourages end users to apply the principles of Asset Management to their installed valve population. The Valvtechnologies Total Valve Management (TVM™) program utilizes next-generation thermal and acoustic monitoring instruments, as well as a database of performance tables to help customers monitor valve performance. These tools allow predictive and preventative maintenance programs to be fine-tuned for very large or very small valve populations. TVM™ can be as simple as a valve survey, or as comprehensive as the management of all valve work during your next outage—from erecting scaffolds to repairing, installing, welding and stress relieving. If you are signed up with our Total Valve Management (TVM™) Program, we guarantee a four hour shipment.

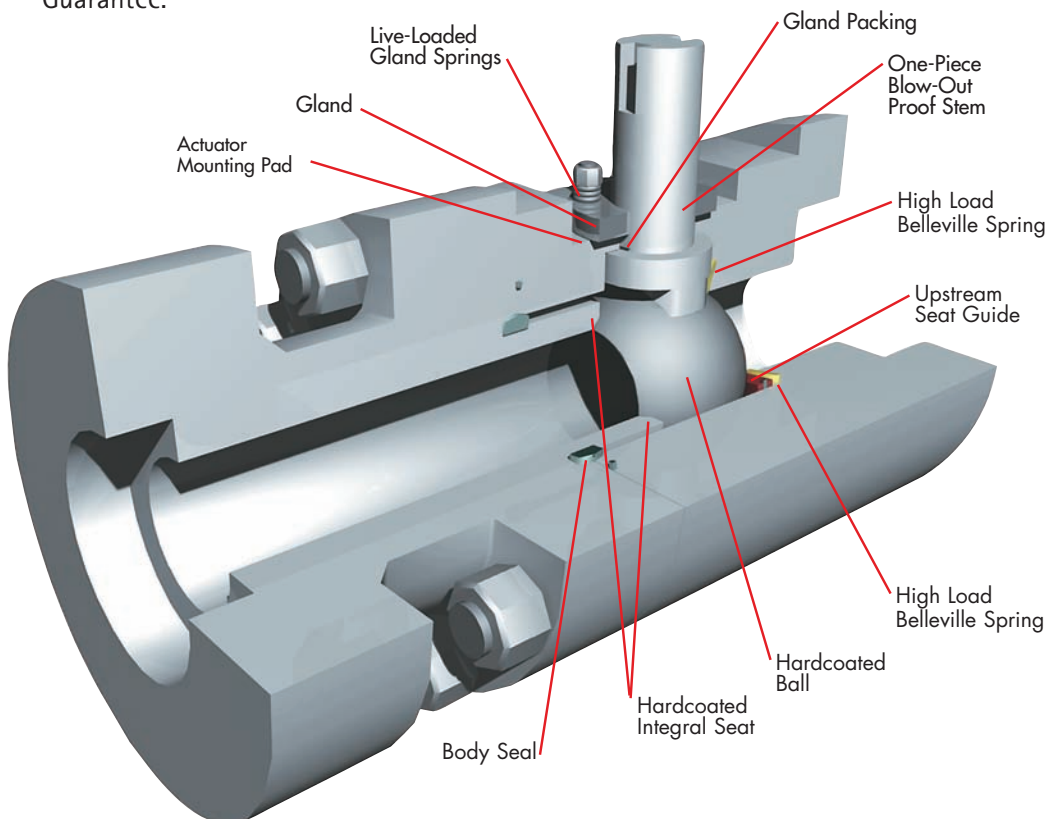
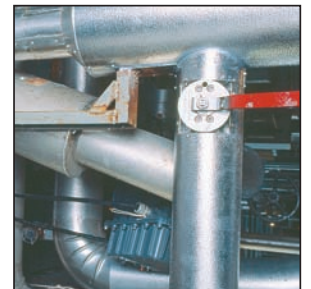
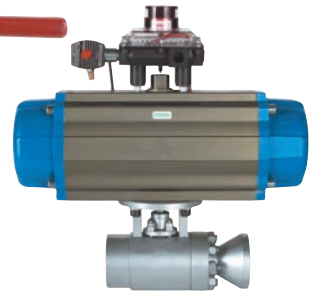
TVM™ provides predictive and preventative maintenance programs

V1-1



Forged, High Pressure Valves ANSI 900-4500

The flagship of the Valvtechnologies' product line, the V1-1, is the valve by which all other metal-seated ball valves are measured. The V1-1 design includes integral seats, RAM™ hard coatings, blowout proof stem and live-loaded packing. Primarily used in high-energy applications in the Power Industry, the V1-1 is available in sizes from 1/4" to 4", and ANSI pressure classes 900 to 4500, including interpolated and special ratings. V1-1 valves are manufactured in a variety of forged materials and end connections to meet our customers' specifications. Most importantly, every V1-1 valve for Power Industry applications is backed by our Four-Year Zero Leakage Guarantee.



PRODUCTS



V1-2 Low Pressure, Flanged Valves - ANSI 150-600

The V1-2 valve applies our core design concepts to power applications where lower pressure classes are more common. The V1-2 is available in pressure classes 150 to 600, sizes 1/2" to 36". As with all of the Valvtechnologies product line, the V1-3 features RAM® hardcoatings, a blow-out proof stem, live-loaded packing and absolute zero leakage.

V1-3 Investment Cast Valve - ANSI 150-600

The V1-3 is an investment cast valve that incorporates the Valvtechnologies core design into a smaller package. Primarily used in low-pressure drain applications, the V1-3 is available in ANSI pressure class 150 to 600, in sizes 1/2" to 2" and in both full and reduced-port configurations. End connections are typically butt weld or socket weld. As with all of the Valvtechnologies product line, the V1-3 features RAM® hardcoatings, a blow-out proof stem, live-loaded packing and absolute zero leakage.



V1-4 High Pressure Large Bore Valves - ANSI 900-4500

The V1-4 category extends our core design concepts to larger diameter and higher pressure applications. The V1-4 is available in ANSI pressure classes 900 to 4500, in sizes 4" to 36". As with all of the Valvtechnologies product line, the V1-3 features RAM® hardcoatings, a blow-out proof stem, live-loaded packing and absolute zero leakage.

XACTROL™ Severe Service Control Valve - ANSI 150-4500

The Xactrol™ product group unites Valvtechnologies' zero-leakage technology with special designs that allow rotary modulating control. From Mark I design that features a characterized upstream seat, to the Mark III's precision engineered stacked disks, the Xactrol™ allows the customer to combine precise flow control with tight shutoff. The Xactrol™ is typically used in applications where minimum flow and relatively high differential pressures are required. It is available in sizes from 1/2" to 36" and in pressure classes ANSI 150 to 4500.



PRODUCTS

EDV Electronic Dump Valve - ANSI 150-4500

The Valvtechnologies Electronic Dump Valve provides accurate relief and control. The EDV combines Valvtechnologies zero-leakage isolation valve with electronic controls to monitor and regulate steam conditions or flow rate. For steam condition maintenance, temperature and pressure inputs are compared to a steam table algorithm to ensure steam is always above saturation temperature. For low or specified flow conditions, the valve will travel to a specified position.



ERV Electronic Relief Valve - ANSI 150-4500

The Valvtechnologies Electronic Relief Valve (ERV™) is the answer to the need for a zero-leakage, pilot-operated relief valve. The ERV package combines Valvtechnologies' zero-leakage isolation valve with electronic controls to monitor and regulate system pressure. Whether in a capacity-relieving unction requiring the ASME V-stamp, or simply in an overpressure protection application, the Valvtechnologies ERV™ provides reliable protection for standard safety valves in many industries. Valvtechnologies can also provide an integral isolation valve, eliminating the need for costly field welding. Standard blowdown and set pressure is accurate to 1/10%.



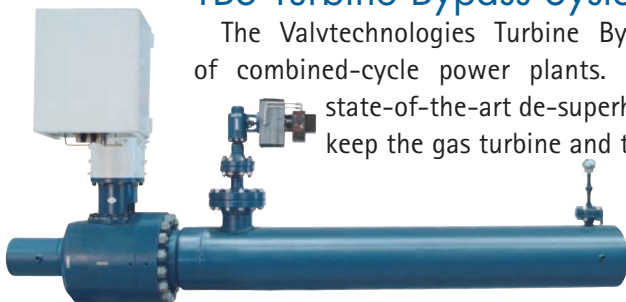
PSG Parallel Slide Gate Valve - ANSI 900-4500

The Valvtechnologies' Parallel Slide Gate Valve (PSG) addresses the need for true in-line valve reparability in large diameter, high-energy piping systems. Specifically designed for steam and feedwater applications, the PSG provides bi-directional zero-leakage using the RAM™ coating systems. It is available in sizes 6" to 36", pressure classes ANSI 900 to 4500, and can be manufactured in any material. The PSG carries the Valvtechnologies Four-Year Zero-Leakage Guarantee.



TBS Turbine Bypass System

The Valvtechnologies Turbine By-Pass System (TBS) is designed for the new generation of combined-cycle power plants. It combines the Xactrol™ control valve design with a state-of-the-art de-superheating control system. The system allows the plant operator to keep the gas turbine and the HRSG on line in the event of a steam turbine trip. The TBS also facilitates fast CT and HRSG start-ups in peaking power plants, and allows these plants to operate at turndown conditions far below the levels that can be achieved with standard governor systems.



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