

SECTION A-A

# Valves for the Process Industries

Critical Service Solutions

# Critical Service Valve Applications

ValvTechnologies' valves are built to withstand the most severe applications. High-temperature, high-pressure, high-cycling, abrasive, corrosive and caustic media have all been considered in the design of our product line.



## Refining

### Delayed coking

- Drum isolation
- Heater isolation
- Cutting water isolation

### Reforming

- Catalyst handling (lockhopper service)
- Hydrogen isolation

### Hydrocracking (fixed and ebulating bed)

- Catalyst handling
- Pump isolation
- Filter isolation
- Hydrogen isolation
- "Chopper" valves
- Reactor vent and "blow-off" valves

### FCCU

- Catalyst withdrawal
- Slurry loop isolation
- Fractionator bottom emergency isolation

### Upgrading

- Heavy oil (coking service)
- Solids slurry
- Rhinoite® lined valves for erosive service

## Petrochemical and chemical processing

### Polyethylene and polypropylene

- Reactor withdrawal and isolation valves
- Gas isolation (zero-leakage)
- Pump isolation

### Ethylene production

- Furnace isolation and de-coke valves
- Start-up vents (zero-leakage)
- High-temperature instrument isolation and sampling valves

### Polysilicone

- Reactor isolation
- Solids handling
- Gas isolation (zero-leakage)
- Chlorosilane service

### Specialty chemicals

- Hydrogen and gas isolation (zero-leakage, bi-directional)
- Corrosive service (special alloys)
- High-temperature isolation
- High-speed, high-cycle services

## Coal and petcoke gasification

### Slurry handling

- Powder and slurry feed
- Reactor "dump" valves
- Lockhopper services
- Black water and ash water isolation

### Gas isolation

- High-temperature syngas isolation
- Hydrogen isolation
- Oxygen isolation
- SIL rated ESD packages
- High-speed, high-cycle pulse valves

## Steam applications

### Steam generators

- Zero-leakage steam isolation
- High-pressure heater water side drain to condenser isolation
- Auxiliary steam isolation
- Turbine extraction isolation

### Combined cycle HRSG

- Intermediate and reheat pressure ERV
- Intermediate and reheat pressure drains and drain header isolation
- Plant natural gas isolation
- Dew point fuel gas heaters
- Performance fuel gas heaters

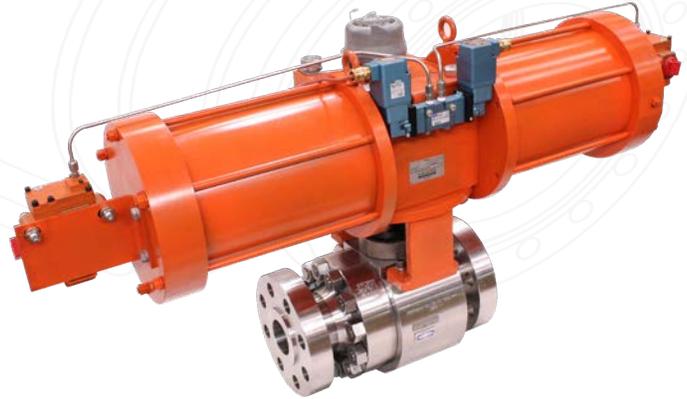
**ValvTechnologies provides field-proven solutions for severe service applications.**

# Low Emission, Metal Seated Ball Valves

The next generation in emission reduction technology™

## PulseJet with EcoPack® Fugitive Emissions Packing

ValTechnologies is leading the charge in the reduction of fugitive emissions with the development of the pulsejet valve with EcoPack®: a fast-acting, high-cycle fugitive emissions valve designed to send a pulse of gas through a pipeline system. A trunnion-mounted ball valve, capable of 90° or 180° rotation in speeds as low as 0.5 seconds or faster, this fast actuation speed is what creates the gas “pulse” through the pipeline system. Pulsejet systems can be used to clean system filters, spray chemicals in an injection type system or pulse debris/media through a pipeline to prevent clogging.



These systems cycle many thousands of times per day. Conventional packing systems cannot handle the abuse of the fast cycle speed, combined with the high-cycle count. ValTechnologies’ EcoPack® solution was designed to address this challenge. The EcoPack® seal has been lab-tested at high-pressure and line temperature to 450°F for over 500,000 cycles, requiring zero adjustments or maintenance. This equals longer plant operation between maintenance intervals, improved site safety and less emissions from the stem packing.

**PulseJet Key Performance Features and Benefits**

Features	Benefits
Guaranteed tight shut-off	Enhanced process safety and repeatable sealing allows operation under process excursions
True metal-to-metal sealing without using secondary elastomeric seals	Inherent fire safety
Two piece, split-body design	Increased safety and ease of maintenance
HVOF RiTech® coating technology	Extended life even in the most severe conditions, reduced maintenance costs, process reliability, enhanced process safety
Grafoil® seals	Reduced maintenance costs
Double block-and-bleed capability	Enhanced process safety
High-cycling capability	Process reliability
Bi-directional sealing by design	Enhanced process safety, lower maintenance, less downtime
Single-piece anti blow-out stem design	Enhanced process safety
Impervious to high thermal cycling	Enhanced process safety
Live-load stem packing (four-bolt design)	Lower emissions
Stem fugitive emissions per ISO 15848-1 Class B	Lower emissions and enhanced process safety
Fire safe certification: API-607	Enhanced process safety

# NexTech® Trunnion Metal Seated Ball Valves

## The next generation in trunnion technology™

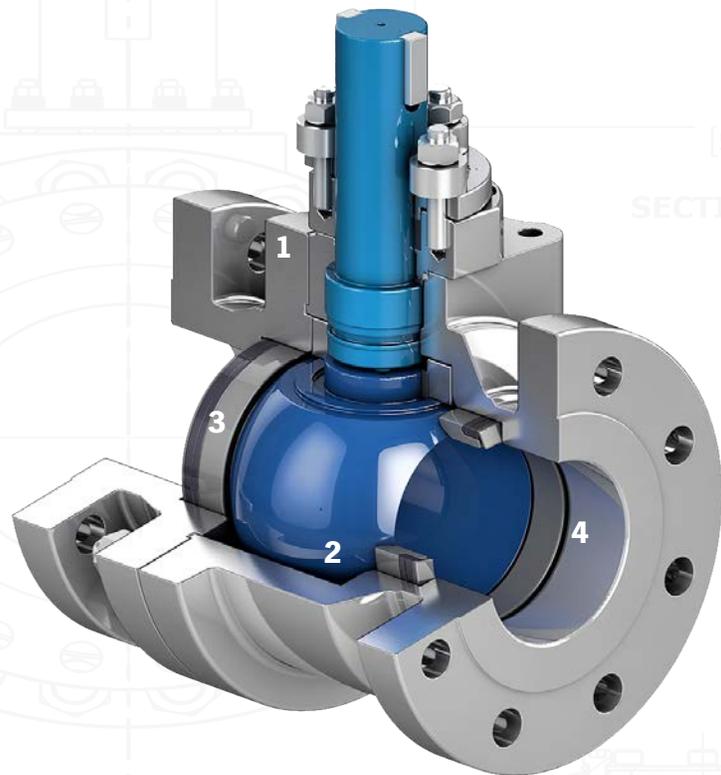
### 1. Live-loaded Gland Area

The NexTech® gland packing design features a four-stud, live-loaded assembly designed for heavy industrial applications. The packing material is high-purity Grafoil® surrounded by carbon fiber/Inconel anti-extrusion rings. The six Belleville® springs (per stud) provide constant load pressure through extreme thermal shocks and prevent wear leaks in high cycle service. This state-of-the-art system allows the NexTech® to achieve a class “B” designation in ISO 15848 testing, a distinction usually reserved for low-temperature elastomer sealing systems.

### 2. Carbide Sealing Surfaces

The sealing surfaces are coated with tungsten carbide using the HVOF RiTech® process. These surfaces have a hardness of 70-72Rc to allow long periods of operation in the most severe conditions. Other cermet coatings are available depending on application. The ball and seats are mated lapped using diamond compound to achieve tight shut-off.

***The standard seat design for all NexTech® valves is a single piston effect (SPE), or “self-relieving seat.” When pressure builds up inside the body cavity and  $\Delta P$  between the body cavity and valve downstream is approximately 50-100 psi, the seat moves away from the ball, relieving the pressure.***

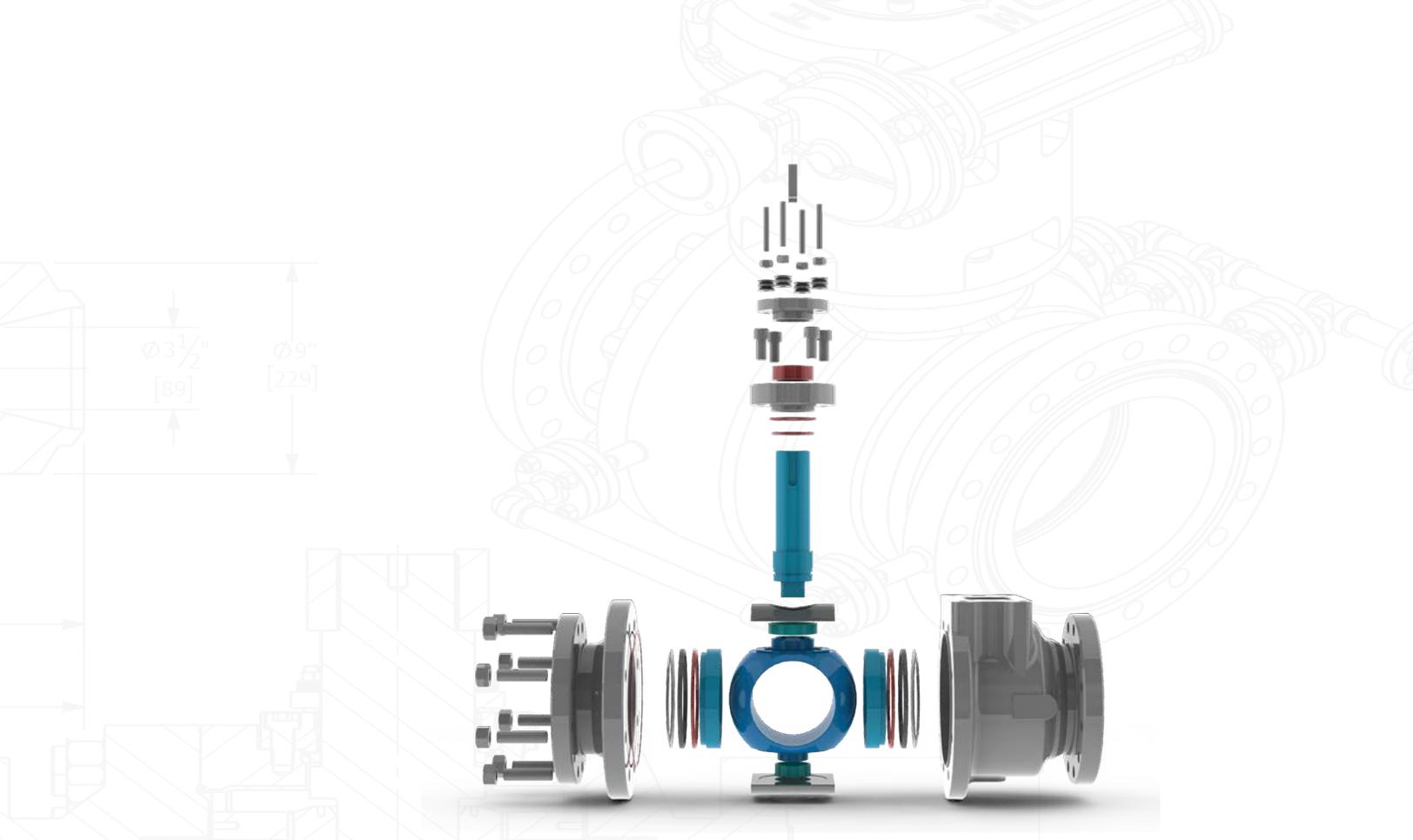


### 3. High-integrity Seat Surfaces

To prevent leaks around the seats, ValvTechnologies developed an innovative double seal design for high-temperature operation and/or high-cycling applications. In low-temperature, high-cycling service, a secondary elastomer seal is installed on the seat perimeter. The seating system along with the diamond-lapped carbide seat surface provides sealing to tight shut-off standards using ANSI/ASME B16.34, FCI 70.2 and API 598 testing procedures.

### 4. Solids Resistance

In addition to the carbide coatings which will allow the valve to function in highly abrasive applications, the individual valve parts have additional seals to prevent interference from solids in the system. This provides for outstanding performance in catalyst systems, streams with solids contamination and polymers.



**NexTech® Key Performance Features and Benefits**

Features	Benefits
Guaranteed tight shut-off	Enhanced process safety, repeatable sealing
True metal-to-metal sealing without using secondary elastomeric seals	Inherent fire safety
Solid-proofed by design	Process reliability
HVOF RiTech® coating technology	Extended life, reduced maintenance costs
High-density Grafoil® seals	Reduced maintenance costs
Double block-and-bleed capability	Enhanced process safety
High-cycling capability	Process reliability
Bi-directional sealing by design	Enhanced process safety, lower maintenance, less downtime
Single piece anti-blow-out stem design	Enhanced process safety
Impervious to high thermal cycling	Enhanced process safety
Certified to use in SIL-3 and SIL-4 loops	Enhanced process safety
Live-load gland system (four stud design)	Lower emissions
Stem fugitive emissions per ISO 15848-1 Class B	Lower emissions, enhanced process safety
Fire safe certification: API-607	Enhanced process safety
Low emission packing: API 622	Most effective technology

# V Series Metal Seated Ball Valves

## The flagship of the ValvTechnologies' product line

### 1. Integral metal seat

With our patented HVOF RiTech® coating technology, the integral seat in ValvTechnologies' valves is resistant to the attack of abrasive and corrosive production applications.

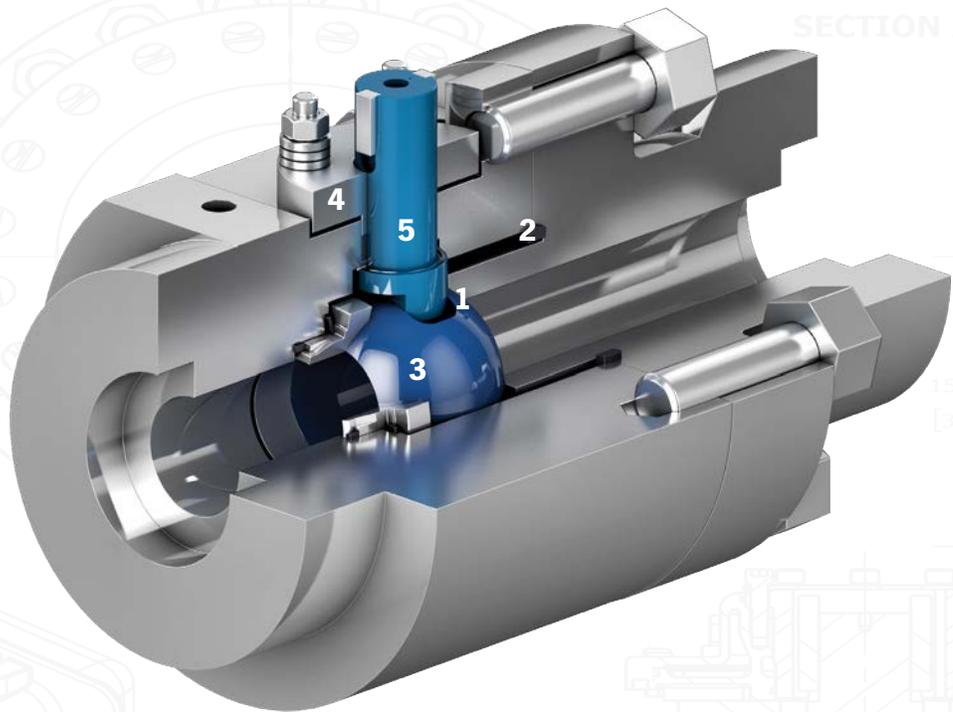
### 2. Body seal ring

ValvTechnologies employs a field-proven seal ring technology to ensure sealing under all operating conditions, up to 1400°F. The body seal ring is loaded at a pressure higher than 20,000 psi. In addition, valves sized 3" and above contain a secondary Grafoil® seal to further guarantee reliability.

### 3. Patented coating process

The sealing surfaces are overlaid with tungsten or chromium carbide using our HVOF RiTech® coating process. These surfaces have a hardness of 68 - 72 Rc to provide uninterrupted operation in the most severe conditions with zero-leakage.

***ValvTechnologies' design features are the implementation of extensive industry experience.***



### 4. Live-loaded gland area

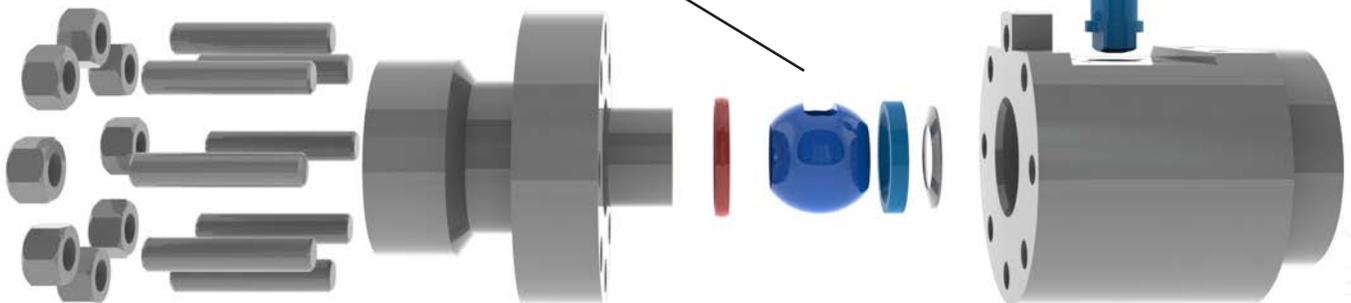
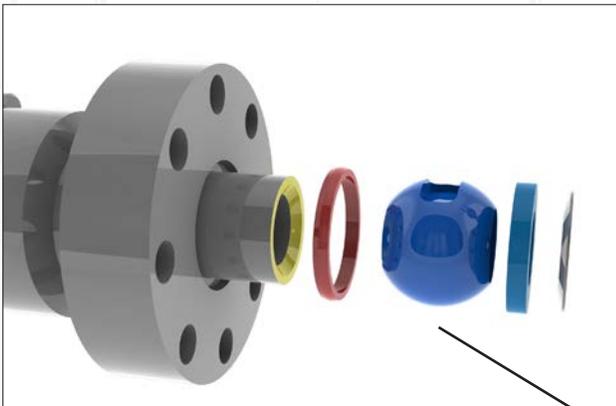
The V Series' sealing design features a four stud, live-loaded assembly designed for heavy industrial applications. The sealing material is high purity Grafoil® surrounded by stainless steel wire mesh anti-extrusion rings. The six Belleville® springs (per stud) provide constant load pressure through extreme thermal shocks and prevent wear leaks in high-cycle service.

### 5. Blow-out proof stem

ValvTechnologies' design utilizes a one-piece, hard-coated, blow-out proof stem that is inserted through the inside of the body cavity eliminating the possibility of blow-out through the gland area. There are no pins, collars or other devices used to retain the stem in the valve body.

### V Series Key Performance Features and Benefits

Features	Benefits
Guaranteed tight shut-off	Enhanced process safety
Quarter turn operation - readily automated	Increased safety, ease of operation, reduced space requirements
Low pressure drop - high Cv	Process efficiency
Custom engineered	Process optimization
Dimensions to ANSI B16.10	Interchangeable with equivalent valves
Low emission packing and seals	Reduced emissions
Single piece anti-blow-out stem design	Enhanced process safety
Resistant to solids	Reduced maintenance costs, minimum downtime
Certified to use in SIL-3 and SIL-4 loops	Enhanced process safety
Live-loaded gland system (four stud design)	Reduced emissions
Stem fugitive emissions per ISO 15848-1 Class B	Reduced emissions, enhanced process safety
Fire safe certification: API-607	Enhanced process safety



# Zero-leakage Valve Solutions



## Worldwide Office Locations

**Australia**

**Brazil**

**Canada**

**Chile**

**China**

**Colombia**

**India**

**Japan**

**Kazakhstan**

**Malaysia**

**Poland**

**Saudi Arabia**

**Singapore**

**South Korea**

**Spain**

**Thailand**

**Turkey**

**United Arab Emirates**

**United Kingdom**

**United States**

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