



ITT

Engineered Valves

Power

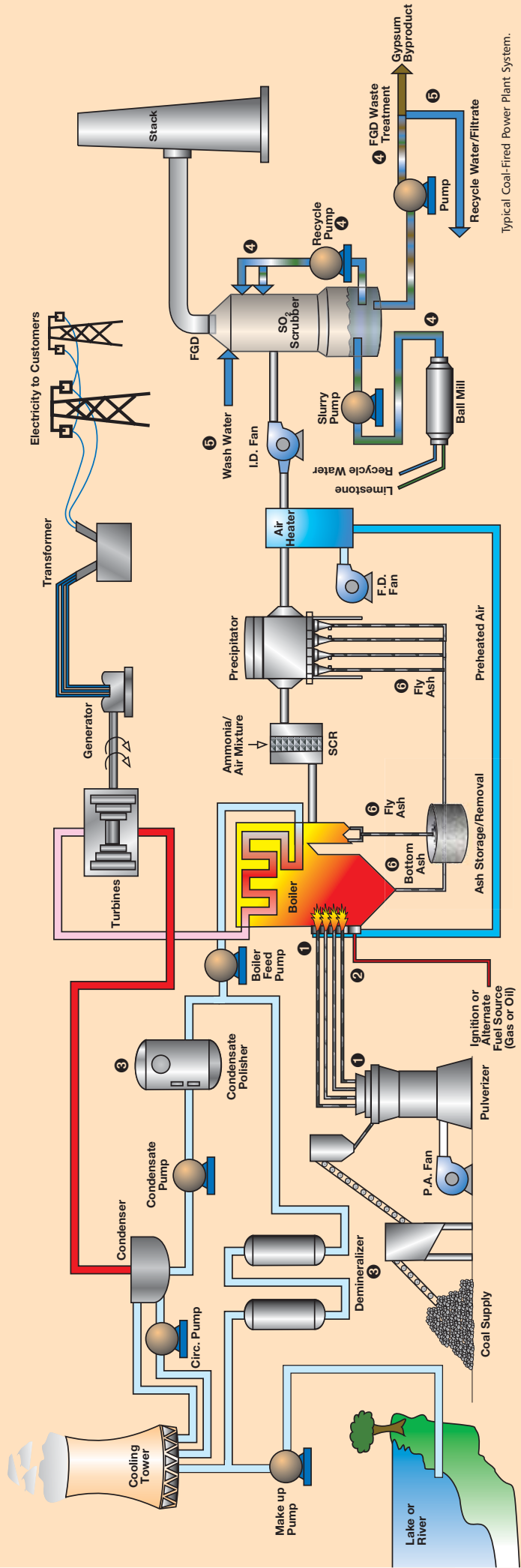
QUALITY VALVE PRODUCTS

DESIGNED SPECIFICALLY FOR THE

POWER INDUSTRY.

www.engvalves.com

Power Plant System



Typical Coal-Fired Power Plant System.



Pulverizer/Cool Burner Isolation

- "Pop-in" style replaceable seats available in a variety of materials
- Optional hard facing seats/gates for additional abrasion resistance
- Exceeds NFPA 85 dust/tight requirement
- Custom-engineered designs for retrofit applications



Burner & Igniter Safety Shutoff Valve

- Compact 3-in-1 design requires less space and reduced installation time and labor.
- Oil shutoff, atomizing shutoff and purge in single valve system
- Gas double block and vent in single valve system
- Factory Mutual (FM) Approved



Demineralizer/Condensate

- 50+ years of proven service for demineralizer
- Reliable long term life
- Easy in-line maintenance
- Modulating and control capabilities
- No packing glands to maintain



FGD Slurry

- Limestone and gypsum slurries
- Zero Discharge options available
- Urethane and rubber-lined designs available
- Wide selection of special alloy materials for high chlorides



FGD Waste Treatment

- Filtrate, reclaim, mist eliminator wash, dewatering
- Rugged design for reliable, long-term life
- Easy in-line maintenance
- Diaphragm able to close over suspended solids
- Modulating and control capabilities



Ash Handling

- Bottom ash and fly ash, dry and wet
- Designs available up to 1600°F (871°C)
- Bubble-tight, bi-directional shutoff
- Upgraded seats and gates available for more abrasive applications

Applications & Products

Pulverizer & Coal Burner Isolation

Fabri-Valve® C45

Fabri-Valve® knife gate valves are used worldwide in erosive applications such as pulverizer isolation and coal burner isolation.

The Fabri-Valve Figure C45 design meets all NFPA 85 requirements/specifications for Dusttight Valves and Barrier Valves for pulverized fuel systems, including the quick closing requirement. Unrestricted full-port flow and ANSI 125/150 lb. flange bolting are standard with custom ID's and bolt patterns available. For additional abrasion resistance and extended service life, the following options are available:

- Hard-facing of integral seats
 - Field-replaceable, hard-faced seats
 - Hardened gates
 - Deflection (wear) cones
- Fabri-Valves can be fitted with a choice of actuation packages including:
- Manual rising stem
 - Manual non-rising stem
 - Chain wheel
 - Nut Drive
 - Pneumatic
 - Electrical
 - Bevel gear



Fabri-Valve C45 Knife Gate Valve with replaceable seat

Deminerlizer/Condensate Polishing

Dia-Flo® Diaphragm Valves

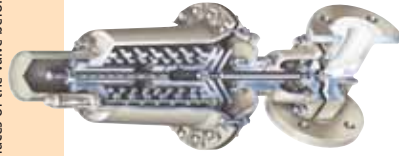
Dia-Flo® diaphragm valves have been proven the most reliable design for demineralizers for more than fifty years. The demineralizer process purifies water by the ion

Exchange method, reducing the amount of ions in the salt solution. Ions naturally occur in water in the form of dissolved mineral salts. Condensate polishing is an ion exchange method used to remove trace contaminants, both dissolved and suspended from high purity water.

The plastic lined weir body diaphragm valve is the valve of choice because of its clean and versatile design, and ease of operation.

- Teifel® lining is typically used in the regeneration of cation resins, which involves the handling of hydrochloric acid or sulfuric acid.
- Polypropylene lining is used in caustic solution and the balance of the piping system.

Diaphragm valves are automated with either double-acting or spring-opposed pneumatic diaphragm type actuators. The actuators are generally specified with adjustable opening stop (rate-set) and open/closed limit switches for remote position indications. Two types of external corrosion protection are available: White epoxy and PVDF coating. These coatings are applied to exterior and interior surfaces of the valve before assembly.



Dia-Flo 2529 with fail closed actuator and PVDF coating

Teifel® is a registered trademark of Dupont

Burner & Igniter Safety Shutoff Valves

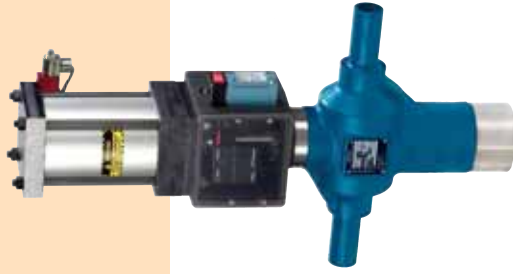
Skotch® Gas Valve System

The Skotch Trifecta is a compact high-performance valve system providing "double-block and vent" for gas burners and igniters. Conventional systems require three valves and actuators to accomplish what Skotch provides in a single valve system.

A single actuator mechanically opens the two block valves and closes the vent, assuring that the valves operate in sequence. Use of independent spring-to-close block valves ensures that obstructing one valve does not prevent the other from closing. The Trifecta valve system has no exposed linkage that can be damaged and requires no adjustments for proper operation.

The proven advantages include:

- Compact design requires less installation space
- Reduced installation time and cost
- No out-of-sequence operation
- Simplified Burner Management System (BMS)
- Factory Mutual (FM) approved system



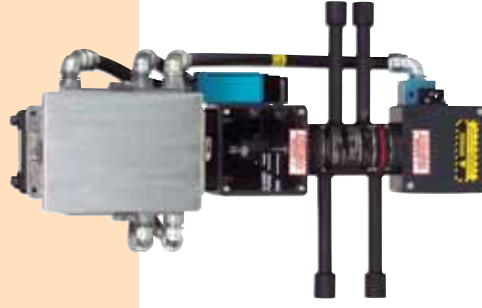
Skotch T4150C gas burner/igniter valve

Skotch® Oil Valve System

The Skotch Trifecta oil valve system is a "combination oil safety shutoff, atomizing, and purge valve" utilized with all types of burners and igniters, including steam, air, or mechanically atomized. Conventional systems require at least three valves and actuators to accomplish what Skotch provides with a single valve system. These systems are compatible with #2, Bunker C, Crude, and Waste Oils.

The unique two-stem design offers a number of proven advantages:

- Prevention of out-of-sequence operation, eliminating contamination of purging media
- Purge sequence is an integral part of valve closure, allowing almost instantaneous switching from firing to purging modes
- Simplified Burner Management System (BMS)
- Factory Mutual (FM) approved system



Skotch T506 oil burner/igniter valve

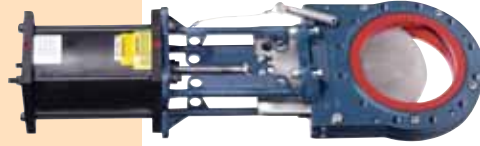
Applications & Products

Flue Gas Desulphurization (FGD) Slurry Valve Applications

Fabri-Valve® XS150-ULV

For FGD slurry applications, the Fabri-Valve XS150-ULV urethane lined valve provides an economical solution without discharging media to the environment. The valve contains a robust perimeter seal together with two replaceable urethane liners. A triple scraper design is incorporated into the liners, which cleans the gate during operation and prevents media build up in the chest area. The XS150-ULV can be equipped with pneumatic, electric, or hydraulic actuators.

- The advantages of the design include:
- Zero discharge
 - Zero leakage
 - Liner is not used for sealing
 - One-piece perimeter seal provides bubble-tight, bi-directional shutoff
 - Injectable packing design allows adjustments to be made under pressure
 - Robust gate resists distortion due to the effects of water hammer



Fabri-Valve XS150-ULV Knife Gate Valve

Dia-Flo® Rubber Lined Valves

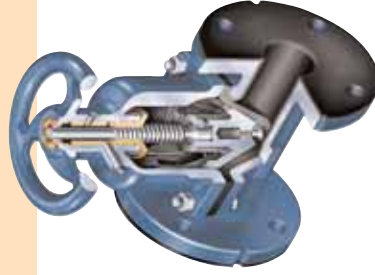
For smaller valve sizes, the Dia-Flo diaphragm valve provides a reliable and economic solution in FGD slurry applications. The valve is easily maintained in-line and there are no packing glands to maintain. The diaphragm is able to close over suspended solids. Electric and pneumatic actuation packages are available.

In addition, the Dia-Flo diaphragm valve has been utilized successfully in slurry throttling applications. The unique wear and straight-through design valve bodies coupled with thick rubber liners provide excellent life in these difficult applications. The weir style valve is available with the patented Dual-Range bonnet, which provides excellent throttling characteristics from 0% to 80% full stroke.

Water/Wastewater Applications

Dia-Flo® Diaphragm Valves

After the flue gas has been desulphurized the waste steam may contain heavy metals such as selenium, mercury, and arsenic. Depending on the local water quality criteria and current environmental guidelines, the waste stream will need to be further treated before it is discharged. Dia-Flo diaphragm valves have been used extensively on these waste treatment systems, which are typically supplied by major Water Treatment OEM companies. The simplicity in design and low maintenance cost of the diaphragm valve makes it an excellent choice for waste treatment.



Dia-Flo Rubber Lined Valve

Ash Handling

For bottom ash and fly ash applications, Fabri-Valve knife gate valves provide reliable shutoff and require less maintenance. Fabri-Valve can be used in:

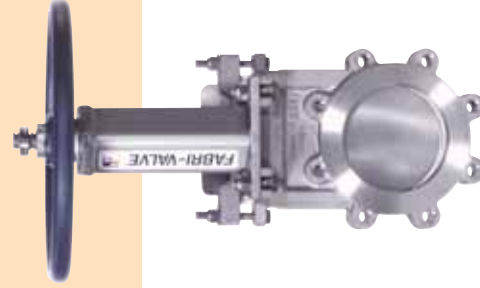
- Wet or dry applications
- Positive and negative systems including crossover with bi-directional shutoff

Fabri-Valve® XS150-ULV

The XS150-ULV provides bubble-tight bi-directional shutoff with the added abrasion protection of the urethane liners. The temperature limitation of the standard liners is 200°F (93°C). The perimeter seal technology allows for injectable packing adjustments on-line.

The advantages of the design include:

- Zero discharge
- Zero leakage
- Liner is not used for sealing
- One-piece perimeter seal provides bubble-tight, bi-directional shutoff
- Injectable packing design allows adjustments to be made under pressure



Fabri-Valve C67 Knife Gate Valve

Fabri-Valve® C67

The Fabri-Valve Figure C67 provides bubble-tight, bi-directional shutoff with its patented perimeter seal. The seal is retained in the valve body by its trapezoidal shape. A relief has been cast into the valve body. The relief greatly reduces seal compression set; the shape of the seal eliminates leakage due to seat rollover, and seat pullout. Maximum temperature rating is 400°F (214°C).

The C67 can be equipped with several options to extend the life:

- Hardened steel gates
- Ceramic-lined gates
- Chest liners prevent solids entrapment in chest area and also provide increased gate support.

Fabri-Valve® F39

The Fabri-Valve Figure F39 slide gate valve provides reliable shutoff in abrasive bottom ash applications and can be configured for use with circulating fluidized bed (CFB) boilers where bottom ash temperatures can migrate up to 1600°F (871°C).

Options:

- Handwheel or automated
- Replaceable seats
- Alternate materials to meet higher temperature ratings



Fabri-Valve F39 Slide Gate Valve

Nuclear Applications

Dia-Flo® diaphragm valves have a proven record of performance for many years in a variety of nuclear services, including radwaste systems, chemical volume control systems, boron regeneration systems, steam generator blow down, and service water systems. They have also been placed in other non-critical services such as general water services and air and vacuum applications.

Diaphragm valves for nuclear services generally have weir bodies with 304 or 316 stainless steel construction, butt weld or socket weld ends, and manual or automated designs. The automated design is normally fitted with limit switches and air preparation accessories for the actuator supply line. Manual designs can also be fitted with limit switches.

Additionally, our Cam-Tite® ball valves have a proven track record for reliable service at spent fuel re-processing

plants, radwaste reduction operations, nuclear off-gas treatment, dry chlorine applications, and in controlled atmospheres of helium, hydrogen and nitrogen.

Unique features of the Cam-Tite ball valve are the top entry design, non-spherical ball for positive sealing, low operating torque, blow-out proof stem, and the available “caged ball” option. The top entry design allows seat replacement without taking the valve from the pipeline. The “caged ball” option allows for quick repair or replacement of all internal components by simply unbolting the cover and lifting off the bonnet assembly.

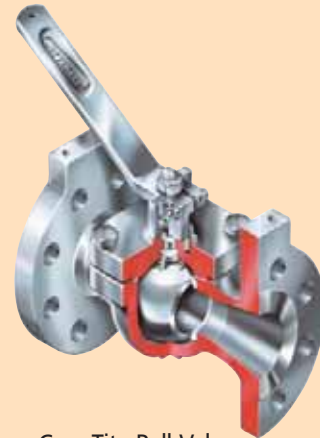
The Cam-Tite ball valve is available in various materials of construction, internal trims, end connections, and pressure ratings of up to ANSI class 600 lb, depending on size required.



Dia-Flo Diaphragm Valves

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Engineered Valves maintains the ASME Section III nuclear power plant components 'N' stamp – class 2 & 3 and complies with ANSI B31.1 power piping code for diaphragm and ball valves.



Cam-Tite Ball Valves

Engineered Valves

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