

# Power Generation

Engineered pumps & valves for utilities



**ITT**

ENGINEERED FOR LIFE

# Power Generation

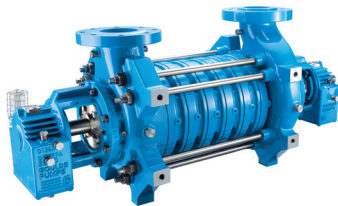
ITT Corporation (NYSE: ITT), a global leader in the power generation industry and other vital end markets, provides a range of essential products, including its Goulds Pumps and Engineered Valves product lines, as well as monitoring and controls equipment and aftermarket services from ITT PRO Services.

Throughout a power plant you'll find these and other products:

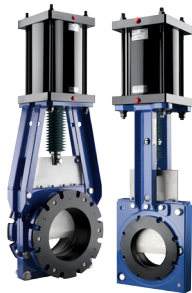
- **ITT Goulds VIT Vertical Pumps** incorporate advanced design techniques. Three different VIT pump models cover a wide range of hydraulic conditions to meet virtually every pumping service in a wide range of industries with optimum efficiency.



- **ITT Goulds Pumps Model 3393** multi-stage pumps are designed for a wide range of high-pressure services, including boiler feed and reverse osmosis applications. The Model 3393 is the only reverse osmosis pump that makes on-board digital monitoring a standard feature, with a warning light to alert operators of potential problems.



- **ITT Engineered Valves' Fabri-Valve®** knife gate valves handle process fluids. These custom-engineered designs can be retrofitted to complement various process systems.



- **Fabri-Valve® C45 knife gate valves** can be used in erosive applications, such as pulverizer isolation and coal burner isolation. Optional hard facing

seats or gates are available for additional abrasion resistance.

- **The Fabri-Valve® 33 PTA** slurry valve is specifically designed for demanding slurry applications and to maximize service life and minimize down time.
- **Skotch® Trifecta** gas valves combine the function of three valves into one unit for increased safety and reliability in oil-fired and gas-fired system operations. ITT's Trifecta valve system is used extensively in the power generation industry.
- Through our **PRO Services®** business, we provide an array of solutions to repair rotating equipment, improve pump equipment performance and manage total cost of ownership for customers.

- **PumpSmart® control systems** provide advanced pump control, protection and optimization, designed to prevent failures, improve pump reliability and maximize flow economy.



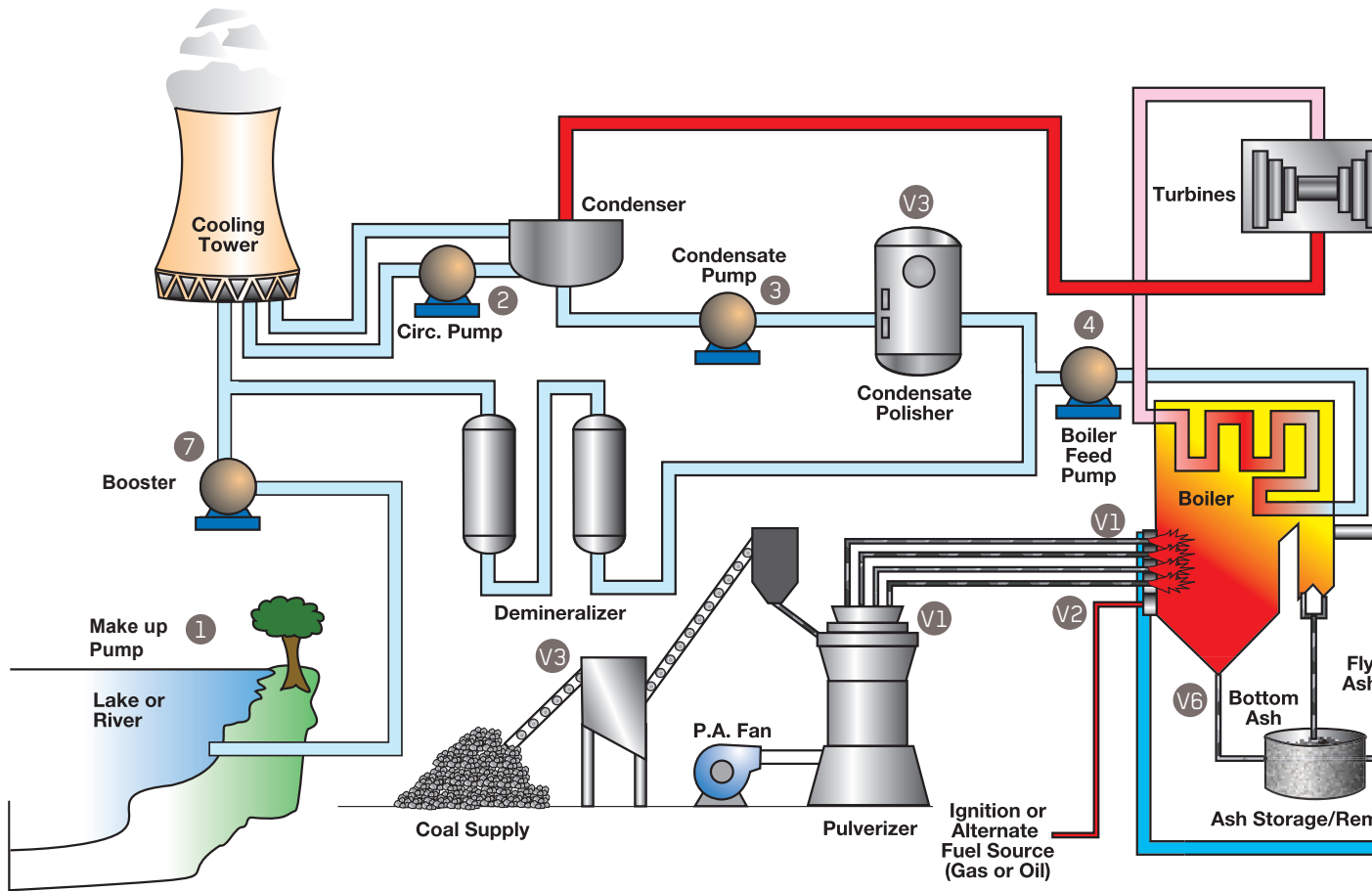
- The **ProSmart® predictive condition monitoring system** collects and analyzes machine health every 5 seconds and provides automatic notifications of changing conditions. The system empowers plant managers with important information to help identify and solve problems before they impact production.







# Power Plant System Pumps & Valves



1  
Vertical Pump  
Model VIT  
(Single & Double Suction)



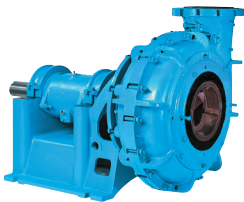
2  
Vertical Mixed & Axial Flow  
Model WC-GP



3  
Vertical Can Pump  
Model VIC



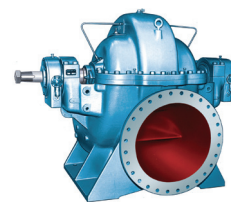
4  
High Temperature Multistage  
Model 3600



5  
Abrasive Slurry Handling  
Model SRL



6  
Vertical Sump  
Model 3171

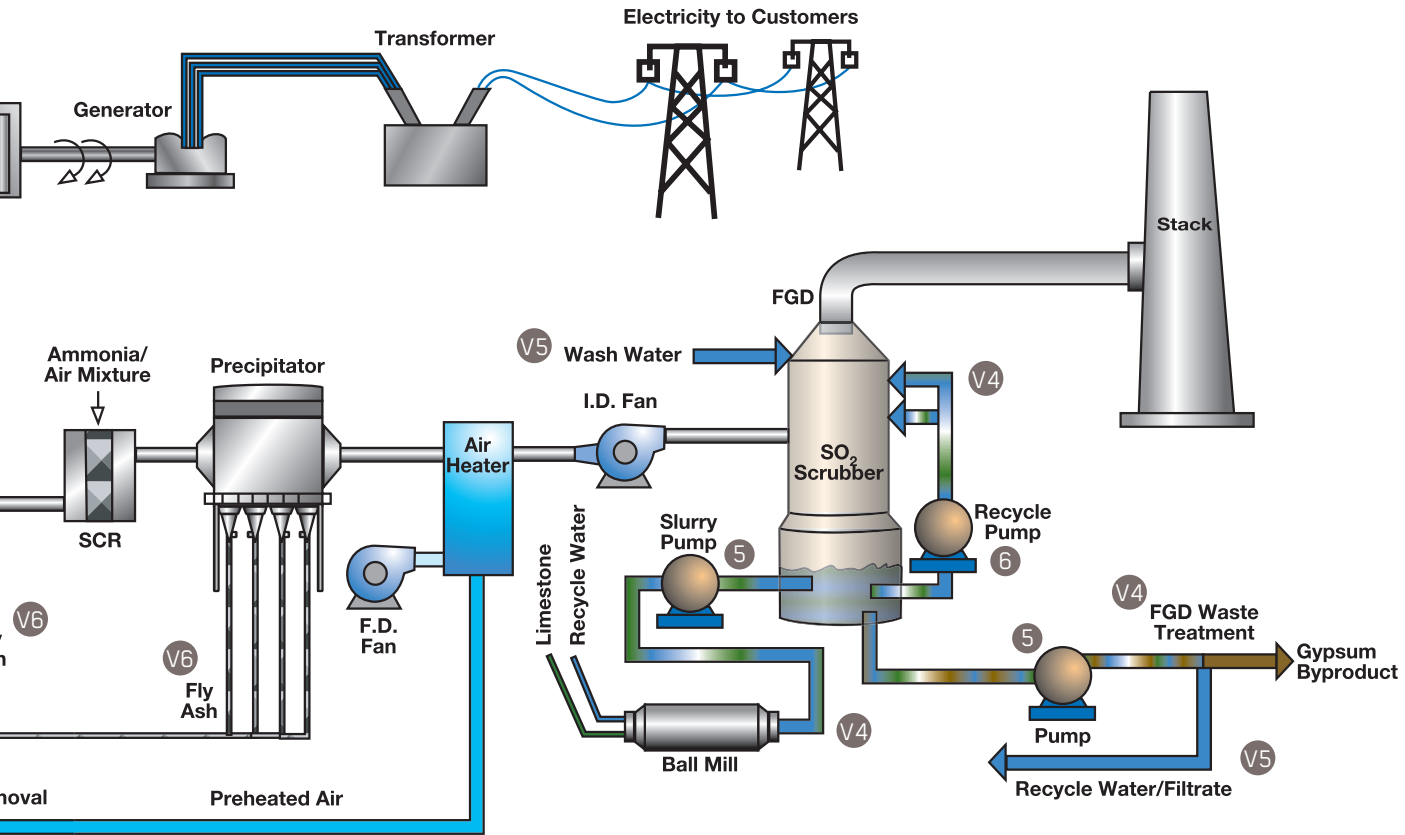


7  
Horizontal Splitcase  
Series 3400

**Illustration Key:**

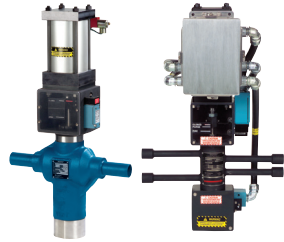
**PUMPS:** Circled Numbers

**VALVES:** Circled "V" Numbers (V1, V2, etc.)



V1

**Pulverizer/Coal  
Burner Isolation**  
Fabri-Valve® Knife  
Gate Valves



V2

**Burner &  
Igniter Safety  
Shutoff Valve**  
Skotch® Burner  
SSOV



V3

**Demineralizer  
Condensate**  
Dia-Flo®  
Diaphragm Valves



V4

**FGD Slurry**  
Fabri-Valve®  
Knife Gate Valves



V5

**FGD Water/  
Waste Water**  
Dia-Flo®  
Diaphragm  
Valves



V6

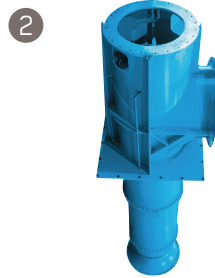
**Ash Handling**  
Fabri-Valve® Knife  
Gate Valves





**Vertical Pump**  
**Model VIT (Single & Double Suction)**

A wide range of hydraulic conditions allows meeting requirements of virtually every power pumping service, including auxiliary to the circulating water pump and screen wash services. Double suction pumps for water treatment, and raw water make up services.



**Vertical Mixed & Axial Flow**  
**Model WC-GP**

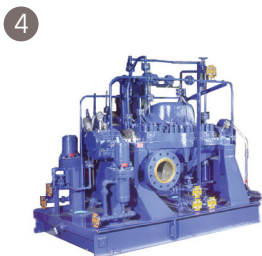
Custom designed for maximum reliability and high efficiency.

- Open or enclosed impellers
- Multiple specific speed designs to meet any system requirement
- Pull-out design available for reduced downtime and maintenance costs
- Available in a wide variety of materials



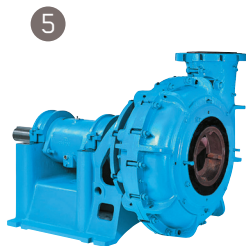
**Vertical Can Pump**  
**Model VIC (Single & Double Suction)**

Fabricated discharge head, and in-line suction and discharge simplify installation. Available in single or double suction, for efficient operation at any NPSH, for condensate extraction service.



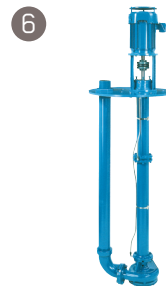
**High Temperature Multistage**  
**Model 3600**

Between bearings, axially split multistage process pumps designed for smooth, reliable operation in boiler feed and other high pressure applications.



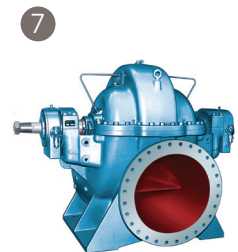
**Abrasive Slurry Handling**  
**Model SRL**

The SRL pumps are designed to handle the toughest abrasive slurries such as Flue Gas Desulphurization. Features include wear resistant rubber liners for maximum life; engineered for ease of maintenance.



**Vertical Sump**  
**Model 3171**

Used for coal pile runoff sump, boiler blowdown sump, and other miscellaneous power plant services.



**Horizontal Splitcase**  
**Series 3400**

Used for condensate booster, service water, cooling water booster, river waste makeup, raw water, reclaimed water and more.

V1

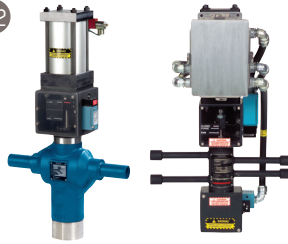


### Pulverizer/Coal Burner Isolation

#### Fabri-Valve® Knife Gate Valves

- “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

V2



### Burner & Igniter Safety Shutoff Valve

#### Skotch® Burner SS0V

- 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

V3



### Demineralizer Condensate

#### Dia-Flo® Diaphragm Valves

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

V4



### FGD Slurry

#### Fabri-Valve® Knife Gate Valves

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

V5



### FGD Water/Waste Water

#### Dia-Flo® Diaphragm Valves

- 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

V6



### Ash Handling

#### Fabri-Valve® Knife Gate Valves

- Bottom ash and fly ash, dry and wet
- Designs available up to 1,600°F (871°C)
- Bubble-tight, bi-directional shutoff
- Upgraded seats and gates available for more abrasive applications

# Additional Pumps & Valves

## The Right Equipment for Every Power Plant Service

### Reliability. Durability. Performance.

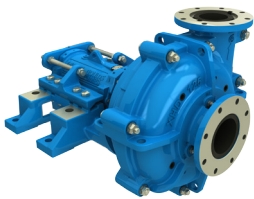
Goulds Pumps manufactures and services a complete family of proven pumps for power plant operations — our products are involved in every phase, from boiler to condenser, through the entire cycle. Pumps for handling boiler feedwater, scrubbing exhaust gases, transferring corrosive chemicals and supplying cooling water. Corrosion, abrasion and extreme pressures and temperatures are just a few of the conditions our process pumps are designed to withstand.

Goulds pumps are tailored to meet the individual needs of the power industry with demonstrated superior field reliability incorporated in each design.

We engineer each pump with the user in mind to meet the needs of the application and to ensure ease of maintenance and service. We have a long history of providing reliable and durable pumps for the power industry.

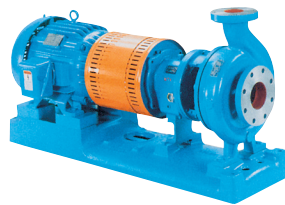
When you demand the most dependable and efficient pumping equipment to keep pace with your power fluid handling needs — whether it's an 80 MW combined cycle plant or a 1,200 MW coal fired main station utility — we have the products to meet your pumping requirements.

Goulds Pumps...providing an unparalleled level of experience and expertise to solve your most difficult pumping problems for power generation.



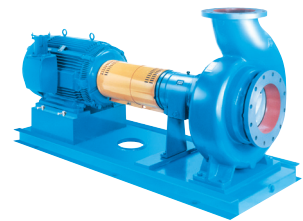
#### Severe Duty Slurry Model XHD

For mines and related operations that need to handle the heaviest slurries under the toughest conditions.



#### End Suction Process Model 3196

For heater drain, condensate transfer, polisher, lube oil, screen wash, redrain water, mist elimination and other miscellaneous applications. Over 600,000 installations worldwide.



#### Large End Suction Process Model 3180/3185

For higher capacity heater drain, condensate, and Flue Gas Desulfurization services.



# Additional Pumps & Valves

## Flue Gas Desulphurization (FGD) Valves

### Fabri-Valve® XS150-ULV Knife Gate Valve

For all FGD Slurry applications, the Fabri-Valve XS150-ULV incorporates replaceable urethane liners along with the patented perimeter seal technology for best in class performance.

Advantages:

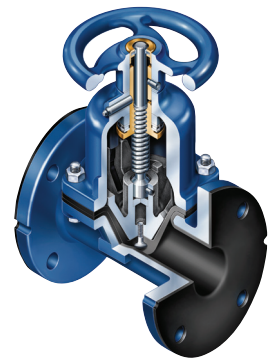
- Zero discharge
- Zero leakage
- On-line packing adjustment



### Dia-Flo® Diaphragm Valves

Dia-Flo diaphragm valves are an excellent choice for corrosive slurry since there are no wetted parts which are metal and the diaphragm is able to close over suspended solids. Dia-Flo diaphragm valves provide a reliable and cost-effective solution in the following FGD applications:

- Smaller drain lines
- Slurry throttling
- Recycle/wash water
- FGD waste water containing heavy materials

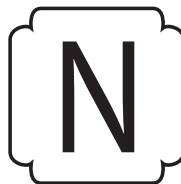


## Nuclear Power Plant Valves

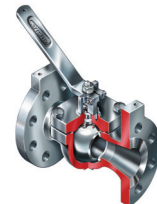


### Dia-Flo® Diaphragm Valves

For radwaste systems, chemical volume control systems, boron regeneration systems, steam generator blow down and service water systems.



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

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

# The Power of Value-Added Service

## State-of-the-Art Engineering Test Facilities

- 700,000 gallons (2,650 m<sup>3</sup>)
- Test capacities up to 400,000 GPM (90,850 m<sup>3</sup>/hour)
- 8,000 hp capability, 300 PSIG multiple gear drives
- 48" magnetic flow meters
- Enhanced data acquisition system
- All vertical pump configurations

## Installation and Commissioning

Installation specialists play a major role in every project of any size. Their mission is to assure the customer that all equipment is installed and operating according to original specifications.

## Parts

Distribution centers are strategically located worldwide, and inventory genuine products and parts for immediate response with the necessary equipment.

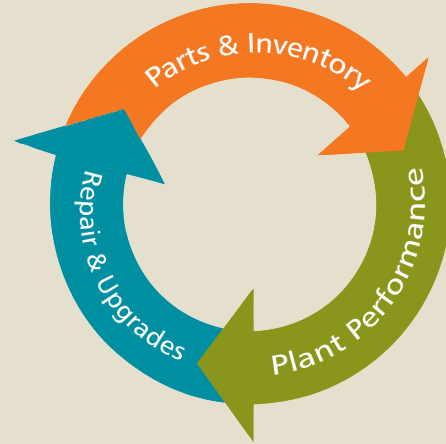
## Service Centers

Repair & Overhaul Shops can rebuild and repair all brands of pumps, valves, and other rotating equipment. This capability often eliminates the need for replacement, and decreases customer downtime. PRO Shops substantially reduce the need for customer inventory and our factory-trained field engineers apply leading edge engineering technology to each job.



## Reliability has no quitting time.

Building on over 160 years of Goulds Pumps experience, **PRO Services** provides an array of services focused on reducing equipment total cost of ownership (TCO) and increasing plant output, including predictive monitoring, maintenance contracts, field service, engineered upgrades, inventory management, and overhauls for pumps and other rotating equipment.



### Parts & Inventory

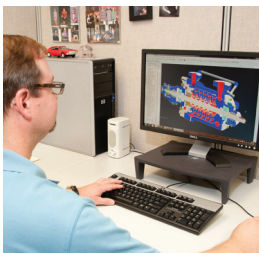
- Efficient and timely parts supply
- Engineered parts for obsolete equipment (ProCast)
- Reverse engineering and rapid pattern manufacturing
- Inventory analysis and management
- Replacement pumps
- Goulds Pumps parts

### Plant Performance

- Equipment monitoring & control products and services to improve system reliability and up-time
- Full service maintenance contracts
- ITT on-site experts identify and resolve bad actor equipment issues through:
  - Root cause failure analysis
  - Energy performance audits and improvements
  - Maintenance, operator and management training

### Repair & Upgrades

- Repair to OEM standards
- Field service
- Scheduled maintenance and plant shutdowns
- Engineered drop-in replacements
- Upgrades:
  - Upgrade pumps to the latest API standard editions
  - Hydraulic re-rates to operate pumps at the customer's required setting
  - Mechanical & material upgrades



Visit our websites at  
[www.engvalves.com](http://www.engvalves.com)  
[www.gouldspumps.com](http://www.gouldspumps.com)

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*ITT's family of industrial brands:*



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