ITT

GOULDS PUMPS | RHEINHÜTTE PUMPEN | Bornemann | Engineered Valves | HABONIM

ITT Brands

Pumps and Valves for CO_2 Capture, Transportation and Storage



CO_2 Capture

In most cases, carbon dioxide is captured and purified for commercial applications would be vented into the atmosphere at the production point if not recovered for transport or beneficial use at other locations.

Goulds Pumps, Rheinhutte Pumpen, and Bornemann pumps have proven experience meeting highly challenging applications like these. From the initial pump selection or design to aftermarket support, we will support your carbon capture needs:

- Complete line of process pumps, including high-efficiency units for virtually every CO2 service
- Customized onboard diagnostics that improve efficiency, reduce downtime and optimize life cycle costs
- Unmatched expertise in a broad range of materials of construction and advanced surfacing technologies.
- Vast global service network with unrivaled experience performing hydraulic re-rates and upgrades, regardless of OEM

The most common operations from which commercially-produced carbon dioxide is recovered from industrial plants which produce hydrogen or ammonia from natural gas, coal, or other hydrocarbon feedstock, and large-volume fermentation operations in which plant products are made into ethanol for human consumption, automotive fuel, or industrial use. Breweries producing beer from various grain products are a traditional source. Corn-to-ethanol plants have been the most rapidly growing source of feed gas for CO2 recovery. CO2-rich natural gas reservoirs found in underground formations found primarily in the western United States and Canada, are another source of recoverable carbon dioxide.



Experience You Can Trust

Goulds Pumps, Rheinhutte Pumpen, and Bornemann pumps are leading global solution providers with strong expertise in pump design, quality, and technical innovation. With over 160 years of experience, Goulds Pumps, Rheinhutte Pumpen, and Bornemann pumps offer a full line of pumps, equipment and service to major industries, including Oil and Gas, Chemical Processing, Hydrocarbon Processing, Power Generation, Pulp and Paper, and General Industry.

As the only manufacturer to enable digital monitoring on any process pump, we continue to lead the industry in both mechanical pump design and the adoption of smart technologies.

Goulds Pumps, Rheinhutte Pumpen, and Bornemann pumps provide comprehensive pump solutions to Carbon Capture and Storage (CCS) applications. Building on our history of being a strong partner to our customers with proven engineering expertise, we have expanded our development of pump solutions for CCS.



CO_2 Capture

Pump Supplier of Choice for Carbon Capture and Storage (CCS)

ITT Goulds Pumps, Rheinhütte Pumpen, and Bornemann pumps boast unrivaled expertise in developing and implementing pumping technologies and systems for capturing, transporting, and storing carbon dioxide(CO2). ITT Goulds Pumps, Rheinhütte Pumpen, and Bornemann pumps also possess unsurpassed experience in pumping the many solvents used to capture CO2 is uniquely qualified to be the primary pump partner for customers wishing to reduce their carbon emissions.



Pump Designs

Offers a wide range of pump types to meet the varied and numerous applications in CCS. These include:

- Single stage process
- Single and multistage between bearings, axially split
- Single and multistage between bearings, radially split
- Double case
- Vertical
- Slurry



Available Standards

Pumps comply with the most stringent industry standards, including:

- API 610
- ASME (ANSI) B73.1/B.73.3/ B.73.5
- ISO 2858
- ISO 5199
- Hydraulic Institute







CO_2 Capture

Advanced Solutions to Reduce Carbon Footprints

Combines technical expertise with cutting-edge technology to reduce the carbon footprint of industry through reduced emissions, lower energy use, and greater mechanical and process reliability.



Technical Services

Technical Services works with plant operators to maximize productivity and minimize greenhouse gas (GHG) intensity. Nearly 200 design and application engineers are stationed on six continents to help to identify and implement proactively identify and implement equipment and system modifications that reduce energy usage and improve reliability while lowering safety, health and environmental (SH&E) costs.

Technology Advantage™

Technology Advantage combines state-of-the-art data collection and analytical technologies with advanced equipment diagnostic solutions to identify and implement proactive maintenance, upgrades and system modifications that reduce equipment shutdowns, and process flaring. ITT has in-house capabilities to perform lateral critical speed and torsional analysis.



Goulds Pumps and Rheinütte Pumpen - y

Providing increasingly crucial technologies

If industrial enterprises and energy providers are to achieve their ambitious climate protection goals, they will need to find a way to isolate, transport and safely store or process the CO2 they produce. The separation and sequestration of CO2 is known internationally as carbon capture and storage (CCS), and its subsequent use instead of storage is referred to as carbon capture and utilization (CCU).

The full course of action is a process chain, the links of which consist of carbon capture, compression, transport, and injection for subsequent storage or utilization.

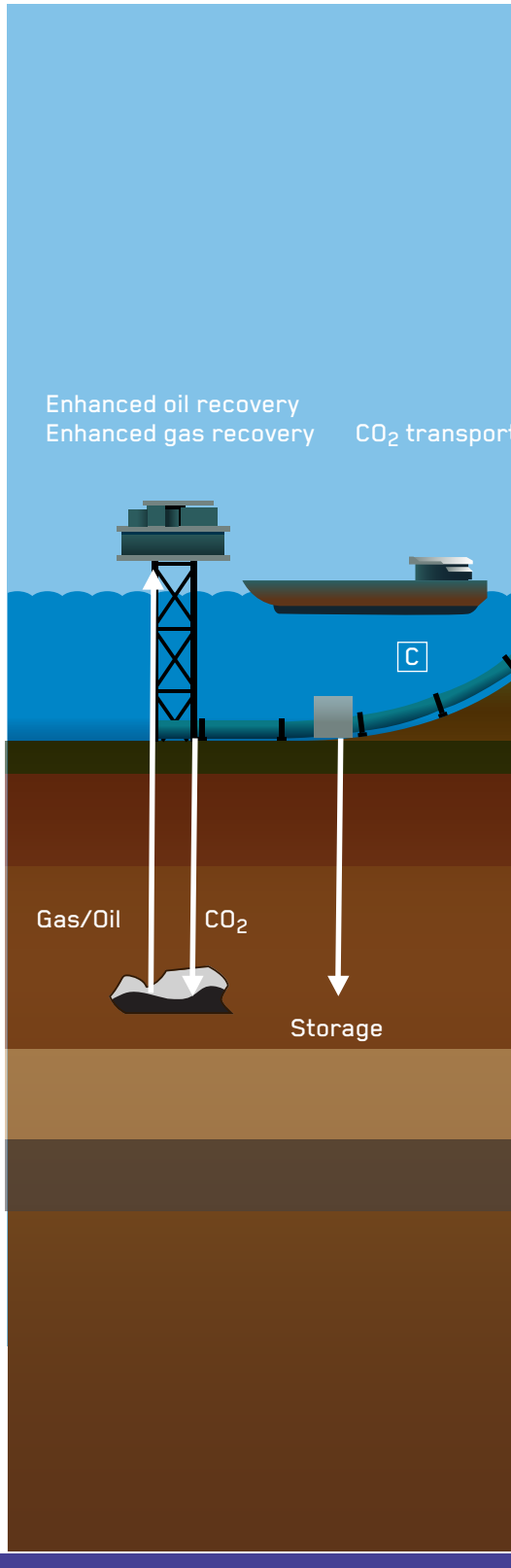
Perfect products, special consultancy

Our long-standing experience makes us your ideal partner to reliably and efficiently find and implement individual solutions for all points of the process, for all methods of capture and for all types of plant. As a global market leader for pumps and systems, we also make a perfect partner for all operators, consultants and engineering contractors.

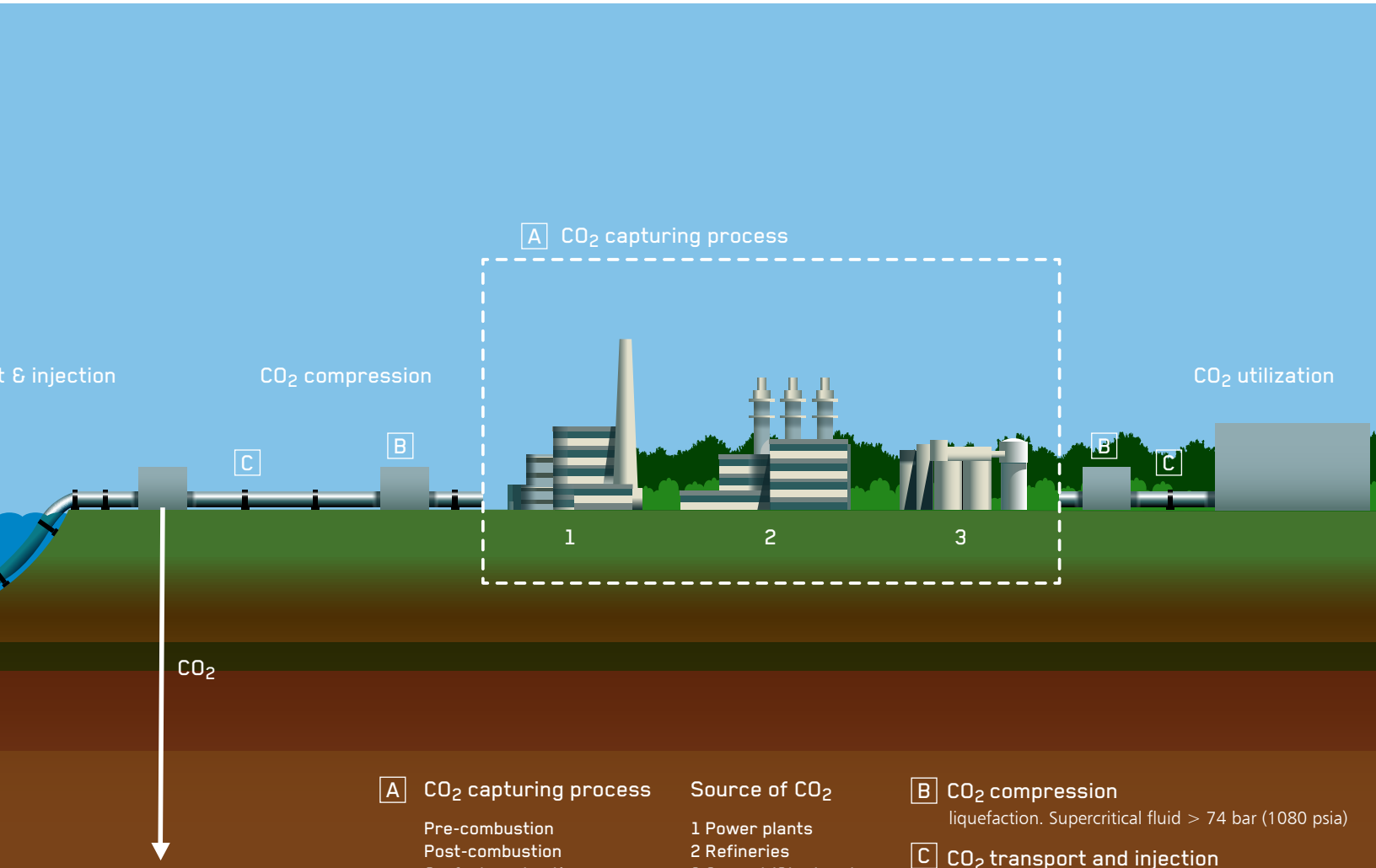
Our full solids non-metallic material offers a strong corrosion and wear resistance in Scrubber systems with optimized sealing solutions for corrosive and solid loaded scrubber fluids.

We have optimum application-specific pump designs that meet the high requirements in the field of flue gas cleaning. Our pumps are characterized by long service intervals, operational reliability, and extremely favorable life cycle costs.

Give us a call today and chat with one of our specialists.



our partner for CO2 applications.



A CO_2 capturing process

Pre-combustion
Post-combustion
Oxyfuel combustion

Source of CO_2

1 Power plants
2 Refineries
3 Cement/Steelworks

B CO_2 compression
liquefaction. Supercritical fluid > 74 bar (1080 psia)

C CO_2 transport and injection

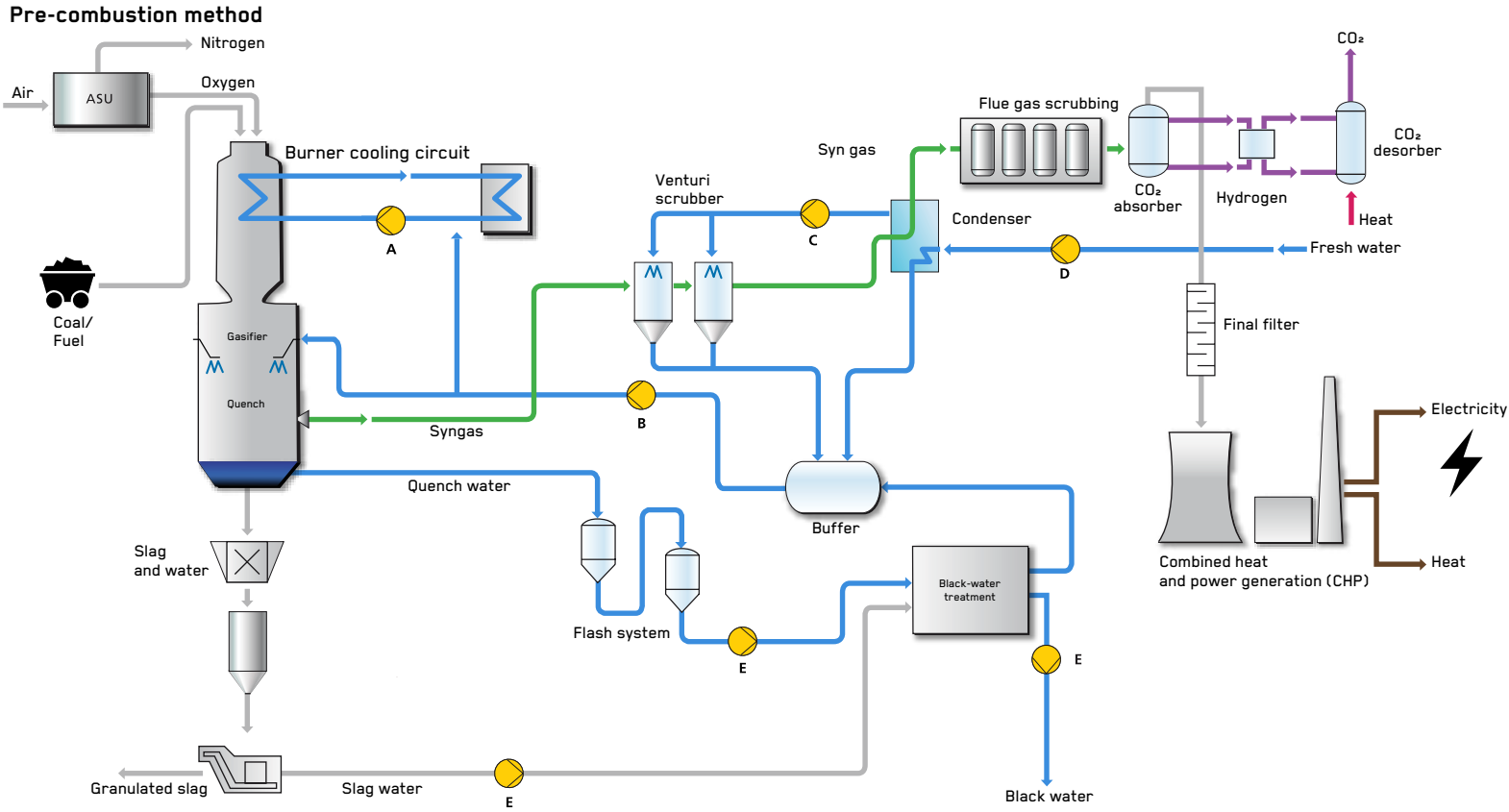
Capture » Compression » Transport » Injection

The Pre-combustion Method

In the pre-combustion method, the CO2 is captured prior to combustion. This involves subjecting coal to high temperatures and high pressure in a gasifier, hence converting it to syngas consisting primarily of hydrogen (H2) and carbon monoxide (CO).

Energy recovery included

In a downstream shift reaction, the syngas is converted to hydrogen and CO2 that can be captured. The hydrogen serves as fuel for generating energy in a gas turbine. Referred to as the integrated gasification combined cycle (IGCC), this process is best suited for new plants.



Goulds Pumps & Rheinhütte pumps
A. Pump for cooling-water circuits (burners)
B. Pump for cooling -water circuits (syngas)
C. Pump for flue gas scrubbing
D. Pump for feed-water and fresh-water applications
E. Pump for black-water treatment



ANSI, ISO and API Process Pump

model 3196 | model ICP | model 3700 | model IC





Heavy-Duty, Axially Split Between Bearings Pump

model 3600 | model 7200SB | model 3620/40



Multistage/Double Suction

model 3409 | model 3393 | model 3410



Sealless Lined & Non-Metallic

model 3296 | model 3298 | model ICM



Process Pump

model 3180



Non-Metallic pumps

model RCNKu+ | model RCNKu | model NM3196 | model 3198



Multiphase pumps

model MPC HC



Vertical mixed and radial flow type pumps

model VICR | model VIT | model VIC | model VCW

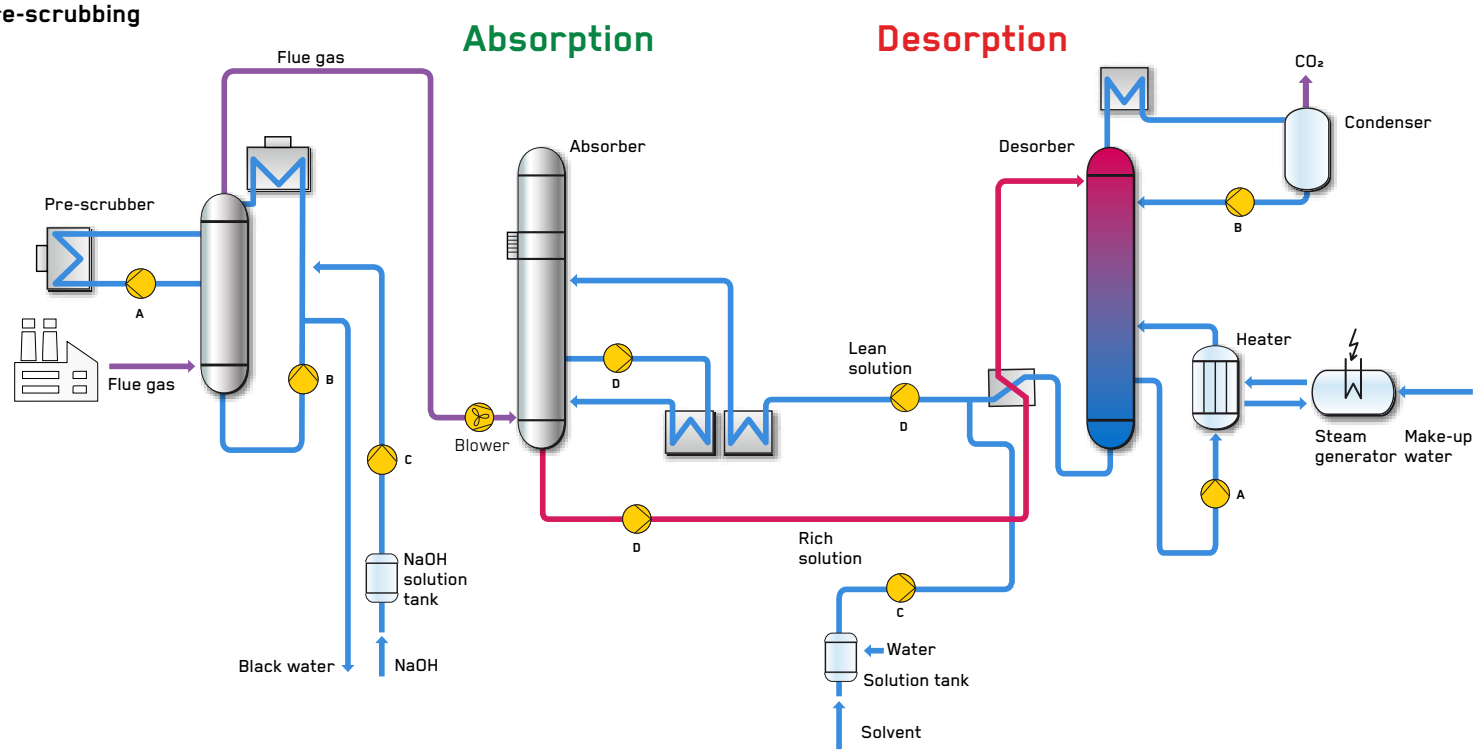
The Post-Combustion Method

The post-combustion process is a method of separating CO2 out of flue gas from a combustion process. Several different variants are available, and there are physical as well as chemical methods for scrubbing the flue gas.

Readily Retrofitted

First, the flue gas is relieved of its ash, sulfur, and nitrogen oxides and cooled. Then, it is put through a scrubber (absorber), where a solvent captures the CO2. The CO2-laden solvent is then pumped through a desorber, where heat is added to separate the CO2 from the solvent and make it ready for further treatment. The solvent can then be returned to the process.

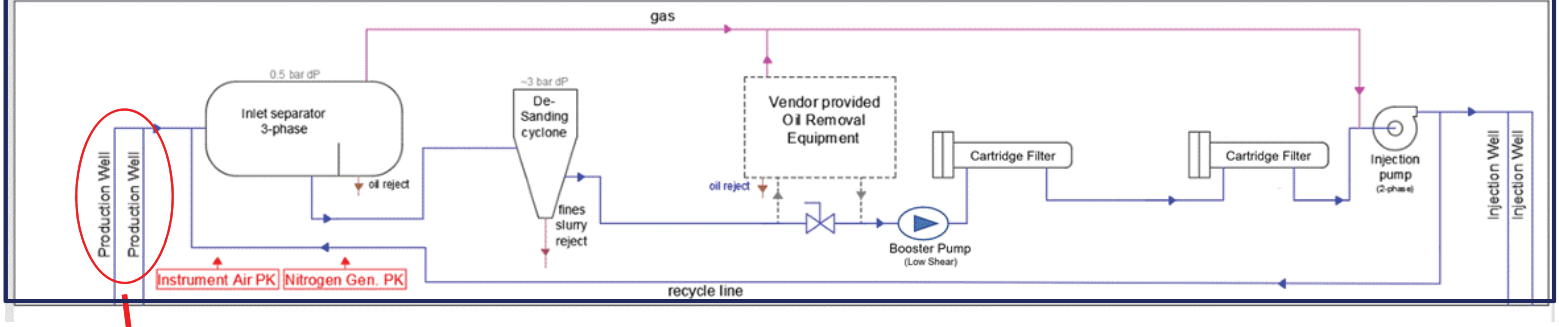
Post-combustion method
Pre-scrubbing

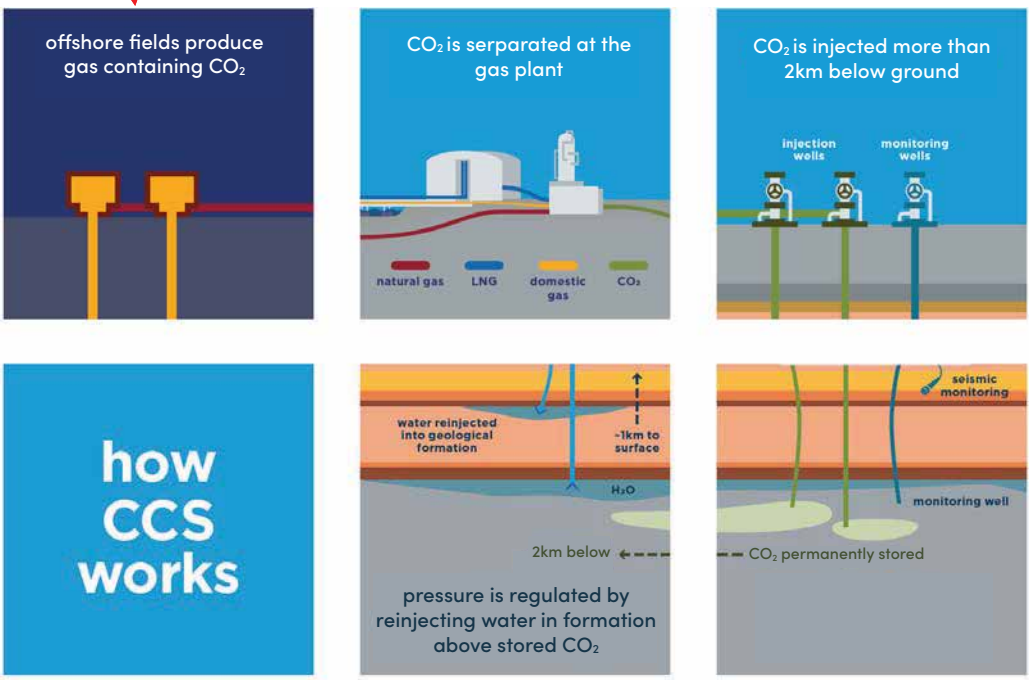


Goulds Pumps & Rheinhütte pumps
A. Pump for flue gas scrubbing
B. Pump for cooling -water circuits
C. Pump for solvent handling
D. Pump for solution transport

ITT provides equipment from Production well to the Injection well with Goulds Pumps and Bornemann pumps.

Schematic overview of the CO2 capture process





Application Solutions

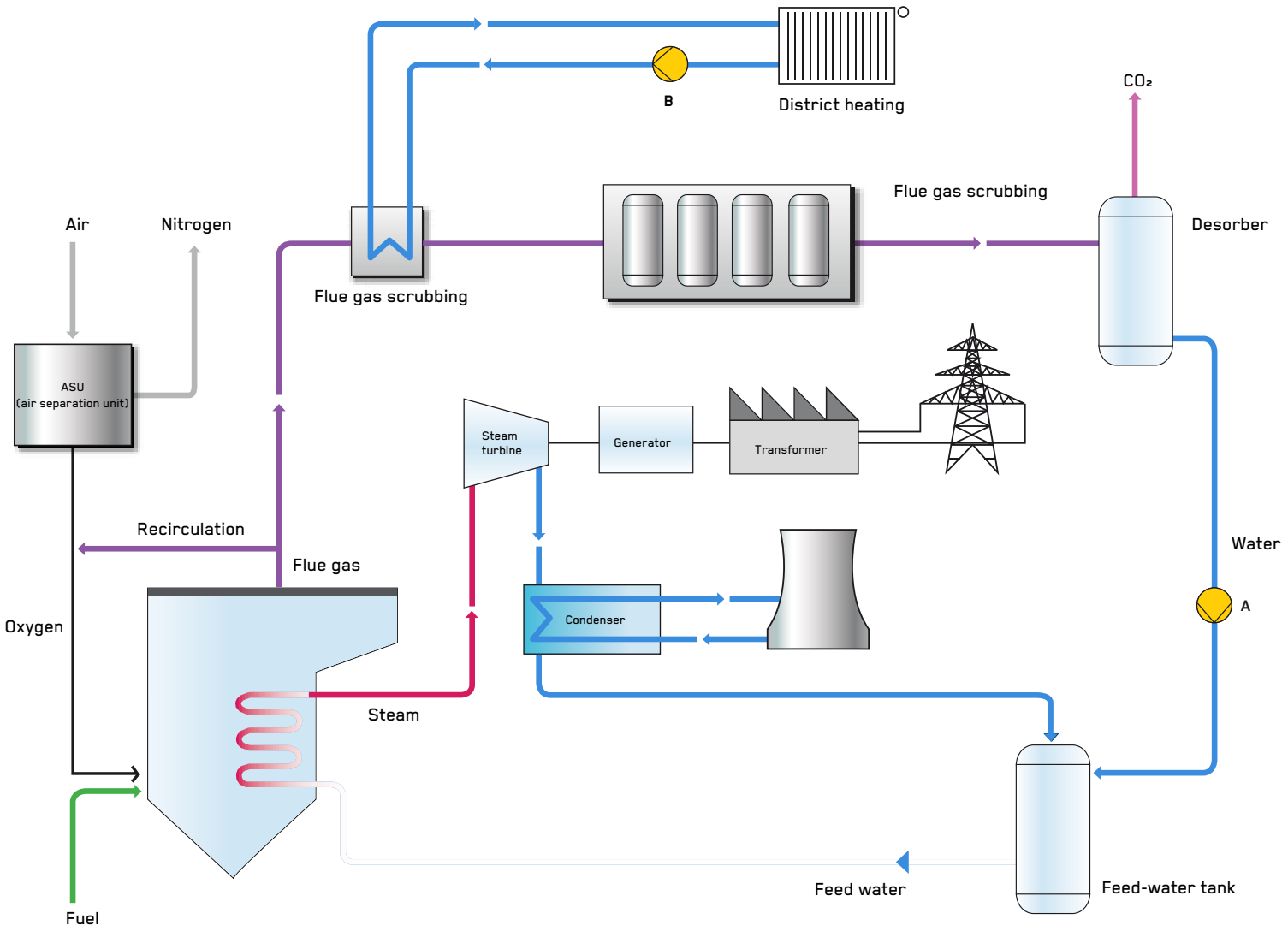
			3600	VICR	3393	7200SB 3600	
Separation systems	Pre-combustion	Cooling-water circuits (burners)					
		Cooling-water circuits (syngas)	■	■	■	■	
		Flue gas scrubbing					
		Feed-water and fresh-water applications	■	■	■		■
		Black-water treatment					
	Post-combustion	Flue gas scrubbing		■	■		
		Cooling-water circuits					■
		Solvent handling					■
		Solution transport					■
	Oxy fuel	Cooling-water circuits					■
		District heating					■





■	■	■	■	■			■				3409 3410
				■	■	■			■		3180 IC
								■	■	■	3700 ICP
	■							■	■	■	3620 3640
	■	■	■					■	■	■	3700 3196
■		■	■		■	■	■	■	■	■	3296 3298 ICM
				■			■				VIC VIT VCW
			■								3171 GVSO
					■			■			3198 RCNKu NM 3196

OXY FUEL Combustion Capture Process



Goulds Pumps & Rheinhütte pumps
A. Pump for cooling -water circuits
B. Pump for district heating

CO_2 Capture

CO_2 Capture Technologies

The process technologies we provide to capture CO2 have been well-proven in the gas processing, chemical and petroleum industries for more than 50 years and has been there every step of the way.

With the growing worldwide emphasis on curtailing and regulating GHG, CO2 capture technologies may soon be applied on a much larger scale to fossil fuel power stations, oil and gas processing plants, and general industrial manufacturing, such as steel mills and cement plants. To comply with GHG limits, the industries will need to install CO2 capture absorption trains with reliable pumping solutions.

Experience, Technology, and Support You Can Trust For Your Carbon Capture Needs

With one of the largest installed bases of CO2 solvent process pumps in the world; we have proven experience meeting highly challenging applications. From initial pump selection or design to aftermarket support, ITT Goulds Pumps and Rheinhütte Pumpen names you can trust for your carbon capture needs:

- The most complete line of process pumps, including high-efficiency units for virtually every CO2 service
- Customized diagnostics that improve efficiency, reduce downtime and optimize life cycle costs
- Unmatched expertise in a broad range of materials of construction and advanced surfacing technologies, including through hardening, HVOF, and DLD overlays and ceramic coatings
- The largest global service network with unrivaled experience performing hydraulic re-rates and upgrades, regardless of OEM







ANSI, ISO and API Process Pumps

3196



- Capacities to 1,364 m³/h | 7,000 GPM
- Heads to 223 m | 730 ft
- Temperatures to 371° C | 700° F
- Pressures to 26 bar | 375 PSIG

Applications:
- Chemical
- Petrochemical
- Pulp & Paper
- Primary Metals
- Food & Beverage
- General Industries

Materials: Ductile Iron, 316SS, CD4MCu, Alloy 20, Monel, Nickel, Hastelloy B and C, Titanium

ICP



- Capacities to 450 m³/h | 1,980 GPM
- Heads to 150 m | 492 ft
- Temperature ranges from -40° C to 280° C | -40° F to 535° F
- Pressures to 25 bar | 363 PSIG

Applications:
- Hot Water
- Thermal Oils
- Heat Transfer Fluids
- Die/Mold Pre-Heating Systems
- Pilot Plants
- Electronic Heating and Cooling
- Reactor Heating
- Urea

Materials: Carbon Steel, 316SS, Alloy 20, Duplex SS, Hastelloy C

3700



- Capacities to 1930 m³/h | 8,500 GPM
- Heads to 360 m | 1,200 ft
- Temperatures to 425° C | 800° F
- Pressures from full vacuum to 60 bar | 870 PSIG

Applications:
- Column Reflux
- Column Bottoms
- Reboiler
- Injection
- Fuel Blending
- Heat Transfer
- Slop Gas Oil
- Heavy Gas Oil
- Stripper Overhead
- Hot Oil
- Column Charge
- Reactor Feed
- Stabilizer Overhead
- Scrubber Circulation
- Tower Bottoms
- Offsite Hydrocarbon Transfer

Materials: All API materials, custom materials available

3171



- Capacities to 722 m³/h | 3,180 GPM
- Heads to 95 m | 344 ft
- Temperatures to 232° C | 450° F
- Pit Depths to 6 m | 20 ft

Applications:
- Industrial Process
- Industrial Sump Wastes
- Molten Sulfur
- Tank Unloading
- Corrosive and Non-CorrosiveLiquids

Materials: Cast Iron, Bronze-fitted, Carbon Steel, 316SS, Alloy 20, Hastelloy B and C, Duplex SS

GVSO



- Capacities to 4000 m3/h | 17612 GPM
- Heads to 150 m | 492 ft
- Temperatures to from
  -40 °C to 600 °C | -40 °F to 1112 °F
- Pressures to 40 bar | 580 PSIG

Applications:

Aggressive, also contaminated fluids, liquefied gases and melts like e.g. sulphuric acid at all concentrations, oleum, molten sulfur, Phthalic acid and molten salts

Materials:

- 1.0619 (A 216 Grade WCA / WCB)
- 1.4136S (Rheinhütte material)
- 1.4306S (A 743 CF-3 (Type 304L))
- 1.4408 (A 743 CF-8M (Type 316))
- 1.4517 (A890 Grade 1B / A743 Gr. CD4MCuN)
- 1.4529S (A 743 CN3MN (AL-6 XN))
- 1.4581 (A 743 CF-8M (+Nb) / A 351 CF10MC (Type 316Cb)
- 1.7357 (A 217 Grade WC6)
- R30.20 (A 743 CN7M (Alloy 20))
- RH-SX (alloy SX)

IC i-FRAME



- Capacities to 450 m^3/h | 1,980 GPM
- Heads to 160 m | 525 ft
- Temperature ranges from
  -40° C to 280°C | -40° F to 530° F
- Pressures to 25 bar | 360 PSIG

Applications:

- Chemical
- Petrochemical
- Pulp & Paper
- Primary Metals
- Food & Beverage
- General Industries

Materials:

Ductile Iron, Carbon Steel, 316SS, Duplex SS, Alloy 20, Hastelloy C, Titanium

Heavy-Duty, Axially Split Between Bearings Pumps

3600



- Capacities to 1,930 m^3/h | 8,500 GPM
- Heads to 2,740 m | 9,000 ft
- Temperatures to 205° C | 400° F
- Pressures to 275 bar | 4,000 PSIG

Applications:

- Refineries
- Injection offshore platforms
- Pipeline
- Boiler feed
- Descaling
- Mine dewatering
- Process transfer
- Desalination
- Water injection
- CO^2 injection

Materials: All API materials, custom materials available

3620/3640



- Capacities to 4,540 m^3/h | 20,000 GPM
- Heads to 455 m | 1,500 ft
- Temperatures to 455° C | 850° F
- Pressures to 70 bar | 1,000 PSIG

Applications:

- Refinery – Tower bottoms, process feed, column reflux, circulation and pump around, process booster
- Power Plant – Boiler feed booster, boiler circulation, ash sluice

Materials: All API materials, custom materials available

7200SB



- Capacity to 600 m^3/h | 2,200 GPM
- Total Dynamic Head to 2430 m | 8,000 ft
- Temperature to 425° C | 800° F
- Pressure to 275 Bar | 4,000 PSIG
- Operating Speed to 3,600 RPM

Applications:

- Petroleum refining, production, and distribution
- Petrochemical and demanding chemical processing
- High temperature applications including boiler circulation
- General industrial requiring high temperature or high pressures

Materials: All API materials, custom materials available

Multistage/Double Suction

3393



- Capacities to 750 m³/h | 3,300 GPM
- Heads to 1,000 m | 3,300 ft
- Temperatures to 177° C | 350° F
- Pressures to 114 bar | 1,650 PSIG

Applications:

- Reverse osmosis
- Boiler feed
- Cogeneration
- Shower / spray service
- Pressure boosting
- High Pressure Cleaning
- Snow making

Materials: 12% chrome, duplex and super duplex stainless steels, Other materials available upon request.

3409



- Capacities to 2,725 m3/h | 12,000 GPM
- Heads to 259 m | 850 ft
- Temperatures to 120° C | 250° F
- Working Pressures to 2758 kPa | 400 PSIG

Applications:

- Process – Quench water, Stripper bottoms, Reboiler circulation, Cooling tower
- Pulp & Paper – Primary and secondary cleaner, filtrate, mill water supply Fan pump, Headbox supply, Shower
- Primary Metals – Cooling water, quench and leaching
- Municipal – High lift, low lift, wash water, waste water, raw water
- Power Generation – Cooling tower, Component cooling, Service water, Ash Sluicing, Heater drain
- Marine – Bilge and ballast, cargo, cooling water, fire pump
- General – River water, Brine, Sea water

Materials: Cast Iron / Bronze, All Iron, Cast Iron / Stainless Steel, Cast Iron / Ni-Al-Br, All Stainless Steel. Other materials available upon request.

3410



- Capacities to 1,817 m3/h | 8,000 GPM
- Heads to 174 m | 570 ft
- Temperatures to 177° C | 350° F
- Pressures to 1,724 kPa | 250 PSIG

Applications:

- Process – Quench water, Stripper bottoms, Reboiler circulation, Cooling tower
- Pulp & Paper – Primary and secondary cleaner, filtrate, mill water supply shower, fan pump
- Primary Metals – Cooling water, quench and leaching
- Municipal – High lift, low lift, wash water, waste water, raw water
- Utilities – Cooling tower, component cooling, service water
- Marine – Bilge and ballast, cargo, cooling water, fire pump

Materials: Cast Iron / Bronze, All Iron, Cast Iron / Stainless Steel, Cast Iron / Ni-Al-Br, All Stainless Steel. Other materials available upon request.

Vertical API and ANSI Pumps

VICR



- Capacities to 636 m3/h | 2,800 GPM
- Heads to 1,372 m | 4,500 ft
- Temperatures to 204°C | 400° F
- Discharge flange sizes from 38 mm to 203 mm | 1.5" to 8"
- Powers to 3,000 KW | 4,000 hp

Applications:

- Pentane, Propane, LPG and other light hydrocarbons with specific gravities ranging from 0.2 to 1.0
- Hotwater applications such as Boiler feed water

NOTE: Can be built to follow API or ANSI specifications.

VIT



- Capacities to 15,900 m3/h |70,000 GPM
- Heads to 1,067 m | 3,500 ft
- Pressures to 176 kg/cm2 | 2,500 psi
- Bowl sizes from 152.4 mm to 1,400 mm| 6" to 55"
- Temperatures to 204°C | 400° F
- Horsepower to 3,730 KW | 5,000 HP

Applications:

- Cooling Water
- Seawater & River Water Intake
- Industrial Process Pumps
- Utility Circulating Water
- Condenser Circulating Water Pumps
- Fire Service
- Reclaimed Water

Materials: Any Machinable Alloy

NOTE: Can be built to follow API or ANSI specifications.

VIC



- Capacities to 15,900 m3/h | 70,000 GPM
- Heads to 1,067 m | 3,500 ft
- Pressures to 176 kg/cm2 | 2,500 psi
- Bowl sizes from 152.4 mm to 1,400 mm | 6" to 55"
- Temperatures to 204°C | 400° F
- Horsepower to 3730 KW | 5,000 HP

Applications:

- Pipeline Booster
- Product Transfer, Refinery Blending
- Injection-Secondary Recovery
- Chemical Transfer
- Boiler Feed
- Condensate
- Cryogenics
- LNG Transfer
- Light Hydrobarbons
- Water Services

Materials: Any Machinable Alloy

NOTE: Can be built to follow API or ANSI specifications.

VCW



- Capacities to 91,000 m3/h |400,000 GPM
- Heads to 180 m | 600 ft
- Powers to 7,500 KW | 10,000 hp

Materials: Bronze Fitted, All Bronze, SS Fitted, Ni Resist, All SS

NOTE: Can be built to follow API or ANSI specifications.

Sealed Lined & Non-Metallic

3296



- Capacities up to 159 m³/h | 700 GPM
- Heads to 213 m | 700 ft
- Temperatures to 280° C | 535° F
- Pressures to 19 bar | 275 PSIG

Applications:
- Batch Chemical Process
- Rail Car or Tank Unloading
- Specialty Chemicals

Materials: 316SS, others upon request

3298



- Capacities to 270 m³/h | 1,200 GPM
- Heads to 162 m | 500 ft
- Temperatures to 121°C | 250° F
- Pressures to 16 bar | 225 PSIG

Applications:
- Hydrochloric Acid
- Hydrofluoric Acid
- Ferric Chloride
- Pickling Acid
- Plating Acid
- Plating Solutions
- Chlorinated Brine
- Chlorinated Hydrocarbons
- Sodium Hypochlorite
- Chlorine Dioxide

Materials:
- ETFE

ICM



- Capacities to 400 m³/h | 1,760 GPM
- Heads to 210 m | 685 ft at 3,500 rpm
- Temperature ranges from -40° C to 180° C | -40° F to 360° F
- Pressures to 16 bar | 232 PSIG

Applications:
- Batch Chemical Process
- Rail Car or Tank Unloading
- Specialty Chemicals

Materials:
- Stainless Steel
- Hastelloy
- Ductile Iron
- Alloy 20

Sealed Lined & Non-Metallic

NM 3196



- Capacities to 318 m³/h | 1,400 GPM
- Heads to 152 m | 500 ft
- Temperatures to 93° C | 200° F
- Pressures to 15 bar | 220 PSIG

Applications:

- Hydrochloric Acid Unloading
- Ferric Chloride
- Sulfuric Acid Transfer
- Sodium Sulphite
- Sulphate Liquors
- Plating Solutions
- Filter Feed
- Aquarium Water
- Sea Wter
- Chlorine Dioxide

Materials:

- Glass reinforced Vinyl Ester (other resins available upon request)

3198



- Capacities to 182 m³/h | 800 GPM
- Heads to 137 m | 450 ft
- Temperatures to 149° C | 300° F
- Pressures to 16 bar | 225 PSIG

Applications:

- Hydrochloric Acid
- Hydrofluoric Acid
- Ferric Chloride
- Pickling Acid
- Plating Acid
- Plating Solutions
- Chlorinated Brine
- Chlorinated Hydrocarbons
- Sodium Hypochlorite
- Chlorine Dioxide

Materials:

- PFA

RCNKu



- Capacities to 2500 m³/h | 11007 GPM
- Heads to 100 m | 328 ft
- Temperature ranges from -40 °C to 190 °C | -40 °F to 374 °F
- Pressures to 16 bar | 232 PSIG

Applications:

- Brine
- Chemical Wastewater
- Chloralkali
- Flue gas scrubbers
- Waste incineration plants
- Hydrochloric acid
- Sea water
- Steel industry
- Sulphuric acid

Materials:

- PP
- PE 1000
- PE 1000R
- PVDF
- PTFE

Sealed Lined & Non-Metallic

RCNKu+



- Capacities to 400 m³/h | 1761 GPM
- Heads to 110 m | 361 ft
- Temperature ranges from -40 °C to 130 °C | -40 °F to 266 °F
- Pressures to 16 bar | 232 PSIG

Applications:

- Brine
- Chemical Wastewater
- Chloralkali
- Flue gas scrubbers
- Waste incineration plants
- Hydrochloric acid
- Sea water
- Steel industry
- Sulphuric acid

Materials:

- PP
- PE 1000
- PE 1000R
- PVDF

Process Pumps

3180



- Capacities to 9,000 m³/h | 40,000 GPM
- Heads to 125 m | 410 ft
- Temperatures to 230° C | 446° F
- Pressures to 16 bar | 232 PSIG

Applications:

- Paper Stock
- Black Liquor
- Chemical Process
- Wastewater

Materials:

Al/CD4MCuN, CD4MCuN, 316SS, 317SS, Hast-C, Alloy 20, Super Duplex. Other materials available upon request.

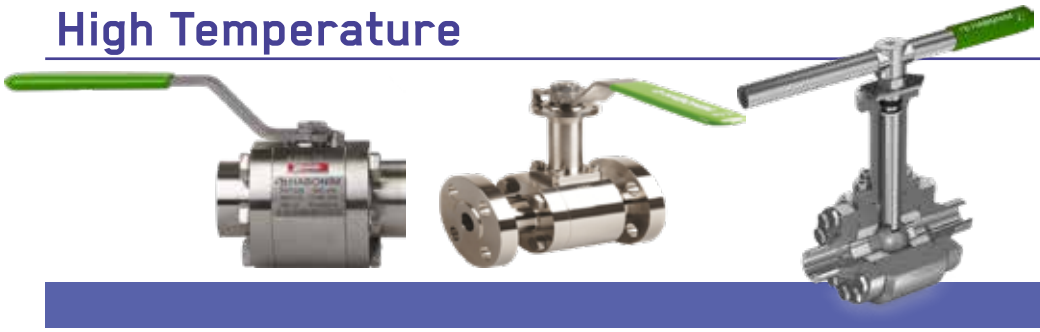
Habonim Valves

High Pressure



- Model 28
- Model 27
- Model 24

High Temperature



- Model Z47
- Model Z73/4

Industrial



- Model 47
- Model 31/2
- Model 73/4

Control



- Model N47
- Model N31/2
- Model N73/4

Valve Application Solutions

VALVES			28, 27, 24	Z47, Z73/4	47, 31/2, 73/4	N47,N31/2, N73/4
Separation systems	Pre-combustion	Cooling-water circuits (burners)	■		■	■
		Cooling-water circuits (syngas)	■		■	■
		Flue gas scrubbing	■		■	■
		Black-water treatment			■	
	Post-combustion	Flue gas scrubbing		■	■	
		Handling, injection	■	■	■	■
		Solution transport	■		■	
	Oxy fuel	Cooling-water circuits				
		District heating				

Engineered Valves



Dia-Flo

Dia-Flo® diaphragm valves are an economical solution for various CO_2 Capture applications due to their versatility in body and diaphragm materials. Capable of handling clear fluids as well as slurries, diaphragm valves are well suited for corrosive, abrasive and clogging services. Both Dia-Flo weir and straightway style valves are available with a manual operator or Dia-Flo® actuator (pneumatic or electric).

- Size Range: ½" – 12"
- Pressure Rating: 200 PSIG Max
- Temperature: 350F Max
- Materials: Unlined, Plastic/Rubber/Glass Lined, Solid Plastic
- End Connection: Flanged, Weld End, Threaded



Cam-Tite

Cam-Tite ball valves are engineered to provide the very best performance in demanding hazardous and corrosive applications. The unique non-spherical ball mechanically compresses both upstream and downstream seats to provide a tight, dependable seal independent of line pressure.

- Size Range: ½" – 6"
- Pressure Rating: 150#, 300# & 600#
- Temperature: 550F Max
- Materials: Carbon Steel, Stainless Steel, Alloy 20, Monel, Hastelloy C, Nickel, Titanium, Inconel
- End Connection: Flanged, Weld End, Threaded

Benefits:

- Minimizes pressure on seats to reduce cold flow and extend seat life.
- Eliminates the problem of "breakaway torque" in valves that must rest in the open position for long periods.
- Assures positive sealing regardless of line pressure or pressure differential.
- Eliminates seat damage caused by the leading edge of the ball port cutting into the seat as the ball closes.



Cam-Line

The unique Cam-Line trunnion ball valve was designed to overcome problems inherent in conventional lined plug and ball valves (high operating torque and stem leakage). The design objective was to produce a lined quarter-turn valve that is easy to operate with positive shut off at high and low pressures. To provide a reliable stem seal design, every Cam-Line valve comes standard with a low emission stem seal packing design.

- Size Range: ¾" – 6"
- Pressure Rating: 250 PSIG Max
- Temperature: 250F Max
- Materials: Ductile Iron / ETFE Lined
- End Connection: Flanged

i-ALERT®

Monitoring Solution

Sensor | App | Ai Platform



Monitor

Tracks vibration, temperature & run-time hours 24/7/365.

Alarm

Takes high resolution data when an alarm condition occurs and stores it for later analysis.

Trend

Captures data every 1-60 minutes and has up to 170 days of hourly on-board storage.

Analyze

Diagnose machine faults with vibration tools
Fast Fourier Transform (FFT) & Time Wave Form Analysis.

Environment

Rated for any industrial environment. water & dust resistant.
Intrinsically Safe with a 3-year battery life (use dependent).

- ATEX Zone 0 AEx ia IIB Ga (Groups C & D)

Wireless

Sync data via Bluetooth Smart enabled smartphones and tablets.

Online Monitoring

Monitor and manage your i-ALERT enabled machines in one place - i-ALERT Ai Online Platform. This subscription service requires no software to download or dedicated hardware to run.

www.i-alert.com

PumpSmart

PS220

Smart Control and Protection



The industry award-winning and patented pump control logic delivers real-time control and protection of your pumps while also providing valuable process insight. By protecting against pump failure due to process upsets, PumpSmart keeps your operation running longer and reduces unplanned repair activities and expense. By right-sizing your pumps to your system, we can reduce not only your energy consumption, but also wear & tear on your process systems.

Features:

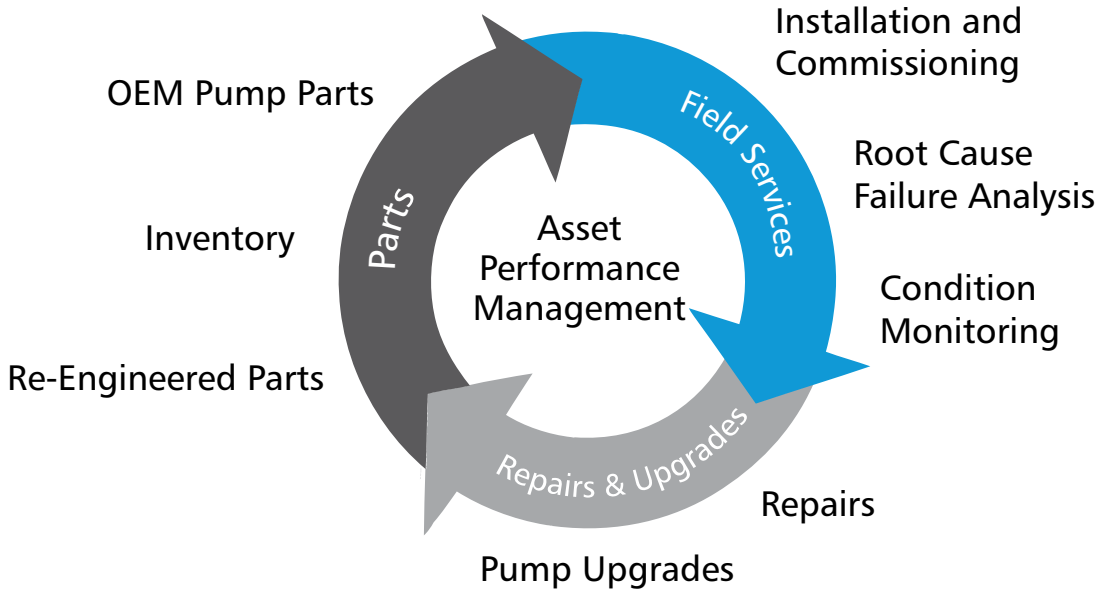
- **Smart Flow**
  This patented feature allows PumpSmart to accurately control a process flow WITHOUT a flow meter.
- **Pump Protection**
  Provides the operator the ability to set protection for low flow, no flow, run-out and cavitation.
- **Flow Economy**
  Calculates process efficiency by flow of product versus energy consumption (gpm/kW).
- **Multi-Pump Control**
  Provides control for up to four pumps in a parallel for automatic lead/lag changeover, redundancy back-up and synchronized torque control while still communicating to a field bus or DCS system.
- **Options and Engineered Solutions**
  Available in a low-harmonic configuration guaranteed to meet IEEE519 harmonic specifications for industries requiring low-harmonic distortion on the utility line.

www.pumpsmart.com

Reliability has no quitting time.

PRO services
An ITT Brand

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



https://www.ittproservices.com/About/Service-Locations

GOULDS PUMPS · RHEINHÜTTE PUMPEN · Bornemann · Engineered Valves · HABONIM

ITT Brands

240 Fall Street
Seneca Falls, NY 13148
Phone: 315.568.2811
Fax: 315.568.2418
www.gouldspumps.com

ITT RHEINHÜTTE Pumpen GmbH
Rheingaustraße 96-98
D-65203 Wiesbaden
T +49 611 604-0
info@rheinhuette.de
www.rheinhuette.de

ITT Bornemann GmbH
31683 Obernkirchen
Germany
Tel: +49 5724 390-0

ITT Engineered Valves
33 Centerville Road
Lancaster, PA 17603, USA
Tel: +1 (717) 509-2200

Habonim
www.habonim.com

© 2023 ITT Goulds Pumps Inc. B.CO2.en-US.2023-01