

Oil and Gas Innovation:

Upstream. Worldwide.

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climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

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Parker

ENGINEERING YOUR SUCCESS.

Your Needs:

Deeper. Hotter. Higher. Better. Lighter. Safer. Greener.



Our Advantages:

Bigger. Broader. Smarter. Leaner. Connected. Available.

Parker has been an integral part of oil and gas exploration and production for more than five decades. This experience has made us valued partners and technology experts, leading the way with the engineered solutions today's energy companies are looking for. From deepwater mooring systems, advanced filtration and particle detection systems, and custom umbilicals to dynamic metal seals, stainless steel piston accumulators, subsea cylinders, and literally hundreds of other certified, advanced technology components, Parker can help you keep exploring and producing at peak efficiency.



Worldwide availability.

With over 50,000 employees serving nearly 500,000 customers in almost 50 countries, Parker is everywhere you need us to be. Working with Parker provides you access to an integrated network of 312 manufacturing plants, 13,000 distribution and MRO outlets, and over 1,700 ParkerStores. That's the kind of network global businesses demand.



Flexibility.

As the world's motion control expert, Parker offers you a complete range of proven, off-the-shelf products. These products deliver streamlined systems and subsystems with exceptional quality and durability, reducing costs and advancing performance. Not only that: our technicians and market-specific engineers are ready to help you with system or subsystem design, on- or off-site.

Innovation.

Nobody does it better than Parker. Our mandate for continuous improvement drives us to partner with our customers to create solutions that are smaller, lighter, sustainable, more energy efficient, and highly reliable.

Reliability.

National and international certifications verify that our systems and solutions offer the highest possible quality for the most efficient performance. These include the following:

ABS	DOSH
A.S.1210	GOST
ASME	KHK
ATEX/IECEx	NACE
B31.1/B31.3	NORSOK
CE	PED
CRN	PM
DNV	SELO

OFFSHORE . . .



- Aircraft fueling hose
- Crane hydraulics
- Deployment baskets
- Intervention Workover Control Systems (IWOCS)
- Material handling equipment
- Mooring – long-term and temporary
- Nitrogen generation
- Rotary seals
- Top drives
- Water making and conditioning

ON BOARD . . .



- Gas dehydration
- Gas sampling
- Gimbal bearing assemblies
- HP and HHP gas compression
- Intervention Workover Control Systems (IWOCS)
- LLP gas compression
- LP and MP gas compression
- Main E&I building
- Marine hose
- Mooring
- Oil dehydration
- Oil offloading
- Parker PMS (Position Monitoring System)
- Power generation
- Power generation (three trains)
- Production manifolds
- Seawater deaeration
- Seawater filtration and utilities
- Seawater water injection

SUBSEA . . .



DRILLING SYSTEMS:

Accumulators – piston, bladder, composite, and stainless steel

Connector plates

Connector systems – titanium and stainless

Engineered laminated elastomeric flexible bearings

Explosion-proof directional valves (ATEX)

Extruded and precision-machined packer elements

Fluid filtration cartridges and ASME-certified vessels

Full flange fittings

High-temperature, high-pressure O-rings

Hotlines

Multi-couplers

Phastite® push-fit connectors

Radial-seal flange adapters (seal-subs)

Riser adapters

Riser clamps

Riser diverters

Riser end caps

Riser flexible joints

Riser shims

Subsea hydraulic cylinders

Triplex hydraulic pumps

Wellhead connector seals

BLOW OUT PREVENTER (BOP):

BOP hose bundles

Control lines

High collapse-resistant hoses (HCR)

High-pressure thermoplastic hoses

Hose bundle repair kits and service

Hose, fittings, and valves

Integrated composite BOP sealing systems

Parker Intervention Clamping System (PICS)

Seals, O-rings, and wipers

PARKER IS THERE.



- 3-D structural scanning
- 3-D structure
- Accumulator technology – bladder and piston
- Chemical injection hose
- Connecting systems
- Control umbilicals
- Custom subsea hydraulic cylinders
- Dynamic metal and elastomeric sealing systems
- High-pressure filtration
- High-temperature, high-pressure sealing systems
- Hydraulic and electrical flying leads
- IWOC umbilicals
- Multi-Camera Metrology System (MICAMS)
- Power cables
- Single Camera Metrology System (SICAMS®)
- Stab plates
- Steel tube and thermoplastic umbilicals
- Ultra-high-temperature metallic seals

New Parker Technologies and Innovations in



INNOVATION

Sealing application with severe shock and momentary pressure spikes?

Think Resilon® 4300 polyurethane, the most wear-resistant polyurethane on the market. The temperature resistance, compression set resistance, and rebound/resilience of this compound give it major advantages over other urethane formulations, and clear benefits for oil and gas applications. Right now, Resilon® 4300 polyurethane is being used for injection-molded mud piston cups. The Resilon® 4300 polyurethane cups last longer and resist degradation better than other elastomer piston cups. Resilon® polyurethane is also being used for flexible boots on drilling tools to increase service life.



RELIABLE

Code 62 Dual-Seal subsea adapters and fittings



The new sealing technology of our Code 62 Dual-Seal flange adapters provides major advantages in pressure capability, vibration resistance, impulse resistance, reduced side-loading sensitivity, and increased ingression pressure resistance over standard Code 62 adapters. The only manufacturer to offer both an adapter line and complementary hose assembly with this technology, Parker's unique design and metallurgy of the 90- and 45-degree adapters, as well as the direct crimp hose end, provide increased strength, pressure, safety, and reliability. Because of this improved non-weld design, all fittings and adapters in sizes -8 (1/2") through -24 (2") are certified to 517 bar (7,500 psi) and are NACE-compliant for H_2S environments.

EXPLOSION-PROOF



Non-electric air dryers eliminate danger, protect valves

Potentially explosive, oil and gas analyzer sheds require dry compressed air for optimal instrument and stream selector valve performance. Competing explosion-proof desiccant air dryers are heavy and expensive. Parker's membrane air dryers are smaller and lighter. And they're inherently explosion-proof because they use no electricity.

FASTER, MORE ACCURATE RESULTS

Single Camera Metrology System (SICAMS®)



SICAMS® services can be applied to subsea surveying where dimensions and angles are required. Factors that determine the accuracy of photogrammetric subsea metrology include image resolution, camera calibration, angles between photos, photo orientation quality, photo redundancy, and target recognition. Parker's SICAMS® successfully addresses all of these factors. SICAMS® captures images from many angles, producing a more accurate 3D model of the object being measured. In addition, enhanced blunder detection and a reporting tool built into the processing software provide a clearer image and more reliable 3D model. Accurate results, guaranteed at 1 in 5,000 – with even higher accuracy having been achieved – are delivered onsite, making SICAMS® a highly cost- and time-effective service.

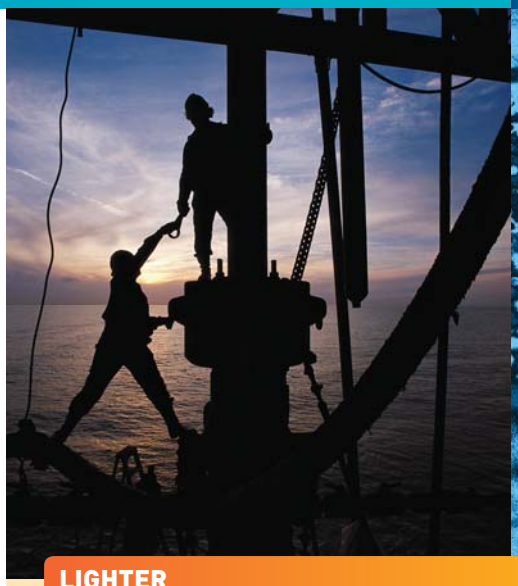
CUSTOMIZED SOLUTION

Intervention Workover Control System (IWOCS): Custom-designed solution for well completions, P&A, and workovers

Used for well completions, subsea tree installations, workovers, as well as plug and abandonment (P&A) of obsolete wells, Parker's IWOCS Open Water Package can operate in water depths up to 701 meters (2,300 ft). The leased system components include an IWOCS reel with hydraulic umbilical, a hydraulic power unit (HPU), gang box/work van container, a particle counting scope kit, and various other components. IWOCS umbilicals are designed to safely provide direct hydraulic control to the tree-running tool (TRT) and other subsea tree functions. Each umbilical contains up to 20 lines with a maximum working pressure of 862 bar (12,500 psi) and is equipped with an emergency shutdown system (ESD).



Oil and Gas



MORE THAN 50 PERCENT SAVINGS

Nitrogen gas generators eliminate cylinders, bulk liquid systems

Used for underbalanced drilling, inerting of storage vessels and gas seals, well workovers, enhanced oil recovery, and myriad stand-alone other operations, nitrogen is critical to oil and gas operations. But nitrogen in cylinders is costly and bulk liquid systems are large, expensive, and potentially hazardous.



Parker's PSA and membrane Nitrogen Gas Generators are a smarter choice, saving more than 50 percent over cylinders and liquid systems. Parker Nitrogen Gas Generators eliminate unexpected shutdowns due to empty cylinders or truck delivery delays, avoid contamination from possible liquid spills, and protect the environment with no greenhouse gas emissions. Plus their compact size frees up valuable floor space when compared to cylinders.

These superior Nitrogen Gas Generators can be integrated into turnkey nitrogen systems with air compressors, boosters, and more to deliver extremely cost-effective and highly reliable performance.

SHORTEST LEAD TIMES



New Roundline cylinders really deliver

Sooner rather than later. The new Series RDH is a catalog-based hydraulic cylinder platform that combines the fastest delivery with the greatest design flexibility for unprecedented customer satisfaction. Plus advanced sealing and bearing technologies deliver longer cycle life and reduced downtime in a smaller, lighter footprint. Onshore in catheads and torque wrenches . . . offshore in top drives and material handling . . . or subsea in running tools and BOP actuators, our industrial grade Roundline cylinders offer the safe, superior performance the oil and gas industry demands.

SAFETY



Oil and gas elastomers tested and certified to NORSOK standards

Developed by the Norwegian Petroleum Industry, NORSOK M-710 specifies standards for rapid gas decompression (RGD), also known as explosive decompression (ED), and sour gas (H_2S) aging on elastomers and thermoplastics. These tests give insight regarding the performance and life expectancy of a seal in various oil and gas applications. Parker's materials passed the challenging expectations and requirements set by the NORSOK standard.

LIGHTER

Losing the weight

Time may be money in the oil and gas industry, but so is weight. That's why Parker's custom shapes, sealing systems, and components in a broad range of thermoplastic elastomers, advanced polyurethanes, fluoropolymers, and performance resins are in such high demand. For instance:



Riser clamp

- Lighter, more buoyant HPDE riser clamps and riser shims are replacing heavier metal or urethane clamps, reducing the number of buoyancy modules needed on a riser string.
- Parker's flowline seals offer a 40 percent weight reduction by replacing steel backup rings.
- Using an engineered thermoplastic material, telescoping joint packers are now replacing steel ring inserts for 50 percent less weight.

New Parker Technologies and Innovations in

INVENTORY CONTROL

Thousands of parts – one part number

Parker's custom seal kits offer a smart alternative to the complexity and cost of expendable components for oil and gas equipment and tools. The sophisticated repair kits, used for complicated equipment like blow-out preventers and MWD downhole tools, are used by some of the largest players in the industry as a way to speed, simplify, and improve MRO operations.

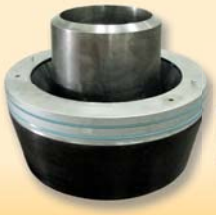


SHORTER LEAD TIMES

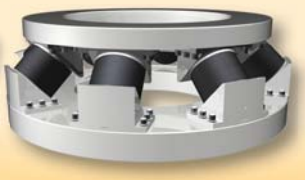
Energy management systems

Utilizing our engineering expertise in elastomer material science, product design, and validation, including FEA, Parker is able to deliver highly engineered, large-scale energy management systems with shorter lead times. These extremely large and complex elastomeric/metal assemblies for offshore drilling safeguard multimillion dollar drilling operations.

- **Subsea and surface flexible joints** absorb side load and wave action to allow for flexing of the riser system during offshore drilling.
- **Flexible elements** in tethering systems are critical in anchoring production platforms to the seabed.
- **Gimbal bearings** safeguard drilling equipment and maintain optimal load distribution under stresses of pitch and roll.



Flexible element: 91 cm high x 127 cm wide (36" x 50")



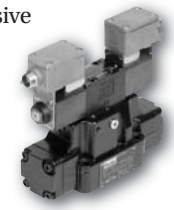
Gimbal bearing: 76 cm high (30")

GREATER CONTROL

Proportional and directional control valves

In top drives, drill floor, pipe and material handling equipment, Parker's proportional and directional control valves provide strong metering characteristics in all standard flow sizes for improved hydraulic control. Plus ATEX coils inside certify the valves for use in potentially explosive atmospheres.





LONGER LIFE

HCS rotary manifolds offer superior sealing



Used in crane swivel joints, HCS rotary manifolds solve the problems of seal extrusion, poor mounting, and hose fatigue in high duty cycle rotation applications. Even under continuous rotation at high pressure, Parker's unique step shaft, lock-in seal, and customized mounting designs ensure extensive service life. Plus, a compact envelope enables easier installation and alleviates hose routing issues.

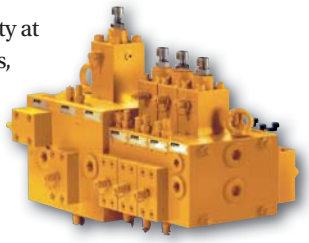
SMALLER • LIGHTER • MORE ROBUST

CVG control group for offshore cranes



Used for heavy offshore cranes with flows of 265 to 1,893 lpm (70 to 500 gpm), this proportional control valve group is the only technology on the market to offer accurate control of high flows up to 1,200 lpm (317 gpm) as well as extreme high flow capacity at low pressure drops. Its compact size is a plus inside the crane king, replacing a massive sub-plate manifold, while its robust design makes it less sensitive to contamination in aggressive environments.

HPU manifolds for oil and gas hydraulic systems



Offering a compact size, optimized layout, high flow capacity at low pressure drops, and robust design for offshore conditions, Parker's customized HPU manifolds are a smart choice for hydraulic drilling machines. The manifold shown here houses 333 valves, delivering the flow of 16 pumps to different actuators in the drilling tower.



Steerable thruster

Parker provides the lubrication oil filtering, pitch control, and clutch control systems in this 360 degree rotating steerable thruster used in the dynamic positioning of drilling vessels and semi-submersible drilling rigs.

Oil and Gas

CLEAN WATER



For quality of life – and quality of operations

Operating offshore includes the effective delivery of clean water for the many uses of the team – from drinking, cooking, and cleaning to wash down and drilling mud water. Storing large quantities of potable fresh water on offshore platforms and service vessels is expensive and cumbersome. An effective alternative solution is a saltwater desalination system using proven Parker filtration and reverse osmosis technologies. The CC Series Watermakers are self-contained units that can produce up to 100 m^3/day (26,000 gpd) at a low cost-per-unit. Various pre-treatment and post-treatment options are also available.



Parker recently collaborated on one of the most advanced diving support vessels in the world. Parker's new solution for the vessel included prefabricated pipe assemblies as large as 190 mm x 20 mm (7.5" x .8"). These 350 bar (5,076 psi) assemblies improved installation efficiency and reduced flushing time by 50 percent.

CORROSION RESISTANCE



Modular ATEX- and IECEx-certified electrical parts

Parker has developed a wide range of ATEX electrical parts covering all ATEX zone applications. This includes a stainless steel chemical, petrochemical, refinery (CPR) range of "ia" and "d mb" parts for more aggressive applications prone to corrosion. Designed for process actuator and valve control, the modular parts are fully interchangeable with a wide variety of current Parker valves, and offer a lightweight and compact design.



Corrosion-resistant compression tube fittings with Suparcase® treatment cover range of pressure

Parker's proprietary Suparcase® is a metallurgical process for the treatment of stainless steel, high-nickel alloys, and titanium. Suparcase® is not a coating, but a surface treatment process that provides hardness and resistance to abrasion, erosion, corrosion, and fatigue.

Parker's single ferrule CPI™ compression tube fittings and medium pressure MPI™ compression tube fittings, both with Suparcase® ferrules, cover pressures up to 1034 bar (15,000 psi), and are corrosion resistant, easy to install, and perform well in high-vibration applications.



MORE GLOBAL CONNECTIONS

Service centers offer customized, turnkey piping system solutions

The Parflange® F37 non-welded hydraulic piping system is the foundation for Parker's global network of Complete Piping Solutions (CPS) centers. These centers can provide customized, turnkey solutions including project consultation, piping design, pre-fabricated assemblies, and installation services for oil and gas applications on land and offshore. The CPS centers offer single-source piping solutions that can be complemented with the full breadth of Parker technologies. Currently there are centers in the United States, Norway, Brazil, Singapore, and South Korea, with additional locations soon to open in Germany, China, and Poland.

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