

# Oilgear

## HYDRAULIC POWER AND CONTROL

for the Oil Drilling, Completion and Process Industries



## Partner with the Oil Industry

The Oilgear Company is a global builder of hydraulic drives and electronic control systems for diversified industries sharing a common need for the highest level of machine performance, reliability, economy and product support possible. The oil industry is one of these industries.

Our partnership with the oil industry began in 1957 when Bethlehem Steel sought out Oilgear to design and build the hydraulic drive and control systems required for the jacking system used on their "Mr. Gus II" and other similar class jack-up rigs. These units had to be roughneck tough, able to withstand grueling operating conditions without any predisposition to breakdown or failure. Oilgear responded to the challenge with an innovative electrohydraulic control system that permitted manual, individual leg or fully-automated operation. Many of these Bethlehem rigs are still in operation today with the original Oilgear Petrodyne system continuing to provide reliable service.



Today, our partnership continues. We've expanded our product offerings and global support network to better serve the oil industry. Our products are now used in over 100 countries, and are located in every major petroleum-producing area of the world. Roughnecks and operators alike confidently operate in the most adverse conditions with Oilgear as a partner.

Our mission is to deliver to you a value-engineered package that will meet or exceed your performance specifications, faster and more cost-effectively. We offer our customers complete single source, turnkey engineering, fabrication, installation and start-up responsibility on new systems and upgrade. Delivered on time, anywhere in the world.

*Every pump  
and system comes with the  
Oilgear Performance Assurance —  
a corporate commitment  
to stay with your installation  
until our equipment performs  
as specified.*

## Engineering and Application Expertise

Oilgear's engineering capabilities are second to none. Our engineering department and product research facilities are staffed by an international group of in-house graduate and registered professional engineers trained in the electronic, hydraulic, mechanical and software disciplines. Our application and field engineers are factory-trained and have spent years, often decades, working in the market segment they service. Every Oilgear engineer brings this personal experience to the meeting table, plus the collective knowledge gained from Oilgear's 75 years of servicing general industry with innovative fluid power solutions. Our commitment to providing you with the best solution for your needs continues after our initial meeting. We'll use our performance-predicting mathematical modeling and simulation software to analyze your requirements, and then use our state-of-the-art CAD capabilities to quickly engineer a drive or control system that is tailored to fit your specific needs.

## Manufacturing

Oilgear's corporate headquarters and main manufacturing center are in Milwaukee, Wisconsin. Further domestic manufacturing capacity and product specialization are provided by our Fremont, Nebraska, pump manufacturing facility. We also have extensive manufacturing centers in Europe, India, Japan and Korea. Each of our facilities is staffed by a highly skilled labor force using modern, state-of-the-art machine tool centers to produce premium-grade components. Our workers are encouraged to identify and suggest new procedures as part of our continuing process improvement program. Demanding quality control standards and internal performance audits ensure that Oilgear customers worldwide receive uniform, defect-free products.



## Global Service Network

No matter where you are, we can quickly and efficiently service you. Our regional sales and service center for the U.S. domestic petroleum industry is located in Dallas, Texas. International sales and engineering support is available in more than 50 countries. Offshore or onshore, one phone call gets you help – fast. Factory-trained Oilgear service personnel are ready to provide timely on-site service 24 hours a day, 365 days a year. Our extensive parts inventory on three continents enables us to ship either new or factory-remanufactured exchange pumps and components, often within 24 hours of receiving your request.

Machine reliability can be further enhanced by an Oilgear custom-designed preventative maintenance program conducted either on-site or at one of our facilities. Application specialists can also visit your site to make recommendations on how your equipment can be upgraded for improved productivity and savings.

## Certification

Oilgear maintains close relationships with various regulating agencies and certifying organizations including ABS/CSA/DNV/LLOYDS/NACE/UL. Certification to these and other standards is available on Oilgear systems.



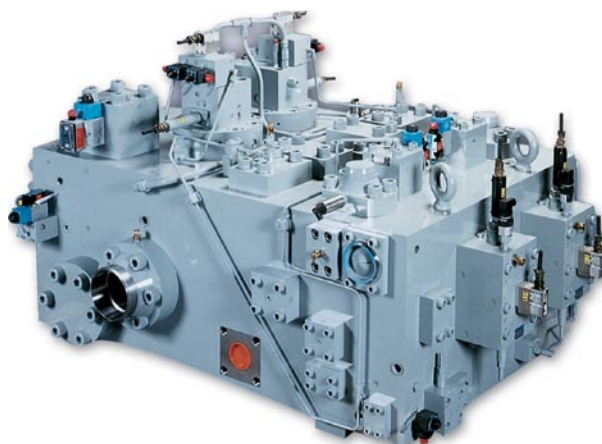




## Products

### High-performance, High-reliability Pumps

Every Oilgear pump embodies the collective know-how gained from our 75-year history of building pumps. Our pumps offer unparalleled levels of performance, reliability and long life service. Oilgear standard variable displacement axial piston pumps offer displacements ranging from .32 in<sup>3</sup>/rev to 33.4 in<sup>3</sup>/rev at operating pressures up to 5,000 psi. High-pressure Oilgear Towler FCS series fixed displacement check valve-type pumps offer continuous operation up to 15,000 psi.



Oilgear pumps offer many benefits. High horsepower-to-weight ratios reduce on-board space requirements. Fast response, horsepower limiting, load sensing and pressure compensating pump controls ensure energy efficient pump operation. Further economy may be realized as full thru shaft horsepower ratings allow in-line coupling of axial pumps and driving from one prime mover. Extreme tolerance to dirt and fluid contamination is afforded by specially-treated hard-on-hard internal wear surfaces coupled with an innovative hydrodynamic bearing design. Compatibility with biodegradable and fire-resistant fluids reduces environmental liability.

### High-performance Valves and Integrated Manifolds

Oilgear manufactures a full component of spool, cartridge and specialty servo valves for demanding flow control applications. These valves can be combined into compact, low-maintenance, custom-integrated, manifold assemblies for high-volume and high-pressure operation with minimal pressure drops.

## Electronic Controls

We understand electronic process controls, and can design a package to fully automate your drill floor or other related operations. As an official Allen-Bradley designated System Integrator, we are in the position to provide the highest level of PLC sophistication available in the world, and offer numerous levels of process control for integration into new and existing installations.

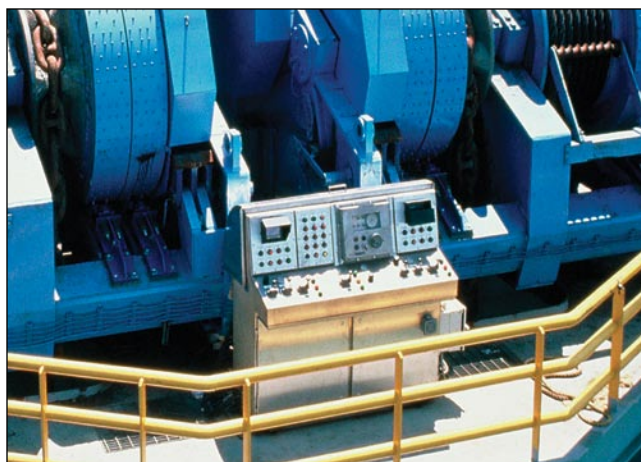
Oilgear electronic control systems feature both multi-system analog and digital interfaces for maximum-control flexibility. We can integrate and control any number of measurable process variables or machine performance parameters in real-time.

Oilgear manufactures special control desks and consoles suitable for a variety of offshore and land-based applications. We build these units with the specialized needs of the drilling industry in mind. Our control desks and consoles are compact for application in restricted spaces. They're built tough to provide years of service in the harshest of environments. NEMA 4/4X construction is standard and intrinsically safe, explosion-proof and purged systems are available as options.

- Integrated driller cabins
- Coiled tubing control
- Local mooring controls
- Pipe-handling systems
- Production controls
- Pedestal crane controls
- Local driller controls
- Automated mud systems
- BOP handling systems
- Dynamic position controls



We've designed our operator interface to ensure ease-of-use and safe operation. Touch screen controls and specialized graphic-user screens provide quick visual assessment of all system functions – walls of gages and indicators are eliminated. Automatic self-checking diagnostics and failure annunciator displays provide positive warning of unsafe conditions. Joystick controls and optional foot pedals provide responsive and positive interaction between man and machine during manual operation modes.







## Offshore Applications

### Jack-up Systems

Oilgear drive and control systems for application on rack-and-pinion elevating systems are designed to provide smooth, positive jacking of offshore platforms.

Hydraulic features include:

- Compact reservoir assemblies
- Servo-controlled pumps
- Accumulators for emergency brake release
- Pinion gear drive with integral brake
- Integrated manifolds for elimination of fluid leakage and improved reliability

Electronic features include:

- Allen-Bradley PLC with built-in redundancy
- Central control console with color touch screen interface
- Diagnostic/warning messages/remote diagnostics
- Automatic, semiautomatic, and manual operation

### Mooring System Controls and Drives

Oilgear heavy-duty hydraulic drives and control consoles offer precise positioning and control of platform mooring systems.

Key features include:

- Fully-automatic or manual operation
- Compact hydraulic power units
- Intrinsically Safe - Zone 1 rated consoles
- NEMA 4/4X construction standards
- NAVSAT interface option
- Allen-Bradley PLC for multiple axis monitoring and control



## Power Units

Prepackaged Oilgear disc brake hydraulic power units and control systems control drawworks on rigs in the North Sea. Allen-Bradley PLC electronic controls and fast response Oilgear pumps provide exacting weight on bit control of the drill string for maximum drilling productivity.

Oilgear can build electric or diesel-driven hydraulic power units for BOP and pipe-handling systems, power swivels and any other rig system requiring precision drive and control of heavy loads. Skid-mounted hydraulic power units are designed to be easily integrated into new and existing installations. Heavy-duty steel crash frame construction and reinforced lifting lugs ensure safe transport and installation at the job site. All components are arranged for easy servicing and maintenance.

### *Dynamic Position Control*

Oilgear control systems can be utilized for many types of offshore motion control applications including current/wind compensation, crane load compensation, riser tensioning systems, thruster power control and NAVSAT position systems for pipe-laying vessels. Complex, multiple axis motions are precisely monitored and controlled by Allen-Bradley PLC's, integrated with fast response servo-controlled Oilgear pump and manifold packages.



### *Survey and Support Vessels*

Oilgear builds a variety of drives for ship-steering and winch applications on survey and support vessels. Oilgear drives eliminate problematic gear boxes, and provide constant torque during cable pay-in and pay-out operations. Operation on biodegradable hydraulic fluids provides further benefits as environmental liability is reduced.



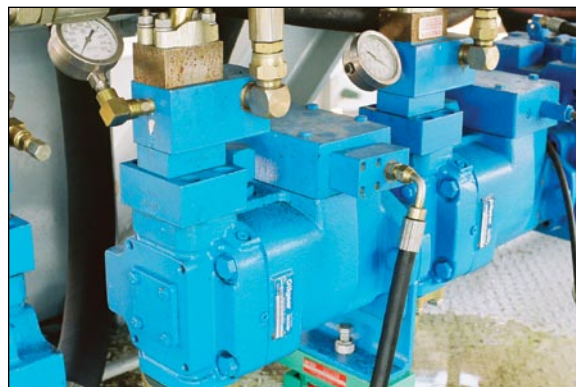




## Land-Based Applications

### Land Rig Drives

Oilgear's wide range of pump sizes and control options afford an optimum pump package for any rig drive requirement. Dreco semiautomated slant hole rigs rely on Oilgear hydraulic pumps for complete rig floor automation. The full thru-shaft horsepower capability of Oilgear pumps eliminates drive box requirements resulting in a less-expensive, more compact drive package. Additional benefits are realized as Oilgear load sense controls prevent excessive horsepower draw-off of the prime mover. Extreme tolerance to dirt makes Oilgear pumps a natural choice for the harsh environments in the Middle East.



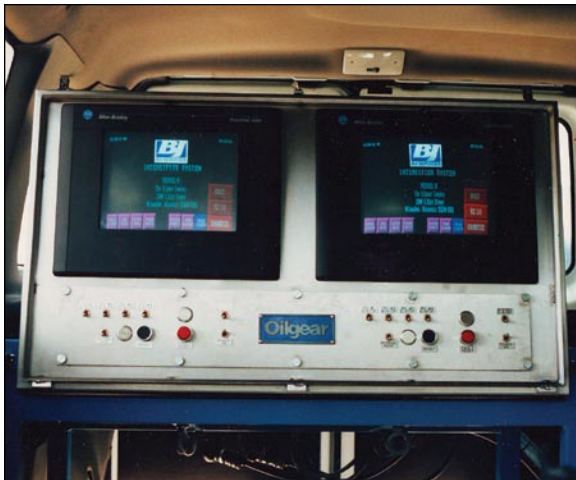


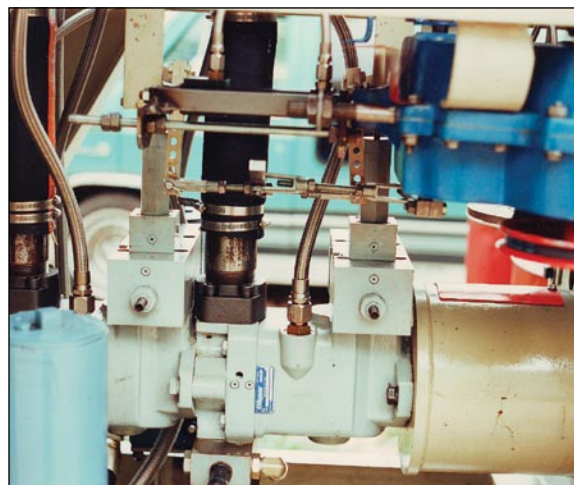
# Production



## Fracturing Units

Oilgear's Petrodyne Group builds mobile intensifier units used in hydraulic fracturing processes for well stimulation. Diesel-driven, high-pressure Oilgear Towler FCS pumps and long stroke intensifier units provide pulseless hydraulic delivery of upwards of 20,000 psi. A PLC control system, housed in a separate control van, precisely regulates intensifiers and allows selective sequencing of pumps for varying process requirements. Touch-sensitive screens provide real-time process monitoring.





## Production

### Pump Jacks

Oilgear two-way PVG 130 pumps with "A" controls precisely follow selected pump curve profiles as they drive walking beams of modified Lufkin pump jacks, resulting in improved down hole pump performance and elimination of sucker rod stress.



### Field Flow Measurement

Oilgear flow meters provide reliable and accurate flow measurement at tank battery gathering stations. Rugged Oilgear flow meters are extremely tolerant of gas-induced over-speeding, and they are able to pass contaminants up to 1/2" without damage, thanks to our offset rotor cage construction design. Servicing, if ever required, can be accomplished without removing the meter from the line. A variety of mechanical and electronic readout options, including remote telemetry such as Modbus® and Foundation Fieldbus™ communication protocols, make Oilgear flow meters ideal for a variety of oilpatch applications. Oilgear flow switches are also available for detection of flow in a variety of process application.





# Petro and Petrochemical Processing

## Refinery Valve Actuation

Oilgear PVG 130 pumps run on fire-resistant, water-based fluids that actuate injection valves in fuel additive processing plants. Fast, 50-millisecond pump response provides better process control, and ultimately, better product. Customers report the service life of these pumps exceed their expectations.

## High-pressure Catalyst Injection Systems

Oilgear Petrodyne builds high-pressure catalyst injection systems for the petrochemical process industry. This unit is one of a series for application in a low-density polyethylene manufacturing plant in China. A servo-controlled Oilgear PVW 15 pump drives an Oilgear intensifier pump which delivers process catalyst at pressures of 40,000 to 45,000 psi.



Oilgear Oil Drilling Industries





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For more information about your application or the products in this brochure, please contact your nearest Oilgear facility.



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