

# Rod Pump Systems

# Artificial Lift

We deliver a field-proven, highly-engineered, comprehensive resource for artificial lift equipment and packaged solutions all over the world. Our breakthrough innovations in hydraulic rod pumping systems, progressing cavity pump systems and automation controls & monitoring are changing the way operators view their long-term production through artificial lift. Our artificial lift professionals will collaborate with you to properly evaluate well conditions and provide customized solutions, helping you to optimize your production for the life of your wells. Let us be your new 24/7 production partner.

## Rod Pump Systems

Our rod pumping systems deliver enhanced safety, increased efficiency, longer MTBF and better control over your oil and gas production. With a smaller footprint, quick installation time and the ability to quickly adjust stroke speed and length, our family of reliable artificial lift alternatives are engineered to maximize the profitability of each well for years to come.

Our products include:

- Hydraulic Pumping Units
- Automation Controllers and Monitoring
- Downhole Rod Pumps and Components
- Service Hookups

## Aftermarket

Our products are backed by the reliability and responsiveness of our aftermarket group. Highly trained field service technicians are on call to handle on-site service needs 24 hours a day, seven days a week.

Our services include:

- Equipment Installation & Commissioning
- On-site service repair
- Remote diagnostic service

# Hydraulic Pumping Units

## Corlift™

### Three-of-a-Kind

**Right:** Though the image only shows two of our hydraulic pumping units, this wellsite actually uses three of our Corlift 30-144 units. Each of these systems is also running our hydraulic power skid, and touchscreen hydraulic pump controller. They are operating in an oilfield in Roosevelt, Utah.



Our Corlift™ hydraulic pumping unit (HPU) is a cost-competitive, industry proven technology and is an integral part of our hydraulic rod pumping system, ideal for many oil and gas applications. Lower set up costs and minimal ground disturbance make these low profile units ideal for pumping in areas where conventional pump jacks are not economical. This system consists of a mast with a single hydraulic ram which is mounted directly to the wellhead and driven by a power skid. The power skid is field proven, EPA certified and delivers the quality you need. With lifting capabilities up to 30,000 lbs. peak polished rod load and variable stroke length up to 144 inches; the Corlift HPU is ideal for producing wells with varied conditions.

### Features and Benefits

- Low set up costs
- Minimal install time (requires 3 hours with 1 ton picker truck)
- Easily moved, requiring minimal manpower
- Power Skid available in gas, diesel, or electric (EPA certified skids are optional)
- Manufactured in ISO 9001 certified facility
- Low profile and small footprint = minimal environmental impact
- Guide wires not required
- Quick and easy adjustments to SPM and stroke length
- Variable stroke speed allows for optimal pump filling
- Can be used with rod and tubing rotators

### Common Applications

- Oil and gas production
- Dewatering gas wells
- Coal Bed Methane (CBM)
- Remote locations
- High sand/debris content well
- Light or medium crude

# Hydraulic Pumping Units

## Morlift™

Our Morlift™ HPU is a cost-competitive, industry proven technology which is an integral part of our hydraulic rod pumping system that answers all of your production needs. The hydraulic pumping system works in conjunction with a state-of-the-art nitrogen accumulator to decrease load fluctuation, reduce stress on the engine and hydraulic components, and prevent unnecessary downtime for maintenance and repairs. It also allows for pumping with lower horsepower which increases fuel efficiency and reduces operating costs. The 5.7L power skid is field proven, EPA certified and delivers the quality you need. With lifting capabilities up to 40,000 lbs. peak polished rod load and variable stroke length up to 144 inches; the Morlift HPU can produce wells with extreme depths.



### Twice as nice

**Left:** Two of our Morlift 40-144 stroking in unison in an oilfield in Roosevelt, Utah. Each unit is running in a system also using our hydraulic power skid, accumulator skid, and touchscreen hydraulic pump controller.

### Features and Benefits

- Low set up costs
- Minimal install time (requires 3 hours with 1 ton crane)
- Power Skid available in gas, diesel, or electric (EPA certified skids are optional)
- Manufactured in ISO 9001 certified facility
- Very small footprint = minimal environmental impact
- Guide wires not required
- Quick and easy adjustments to SPM and stroke length
- Upstroke and downstroke balanced with accumulator skid
- Variable stroke speed allows for optimal pump

### Common Applications

- Oil and gas production
- Dewatering gas wells
- Coal Bed Methane (CBM)
- Remote locations
- High sand/debris content wells
- Medium or heavy crude

# Surface Equipment

## Power Skid



We designed our power skids specifically to work with our Corlift and Morlift hydraulic pumping units. Our power skids afford you portability and versatility to power your well where, and how you want. And if you are concerned with your impact on the environment, we've got you covered - we have an EPA Certified power skid as well.

### Features and Benefits

- Enclosed bottom to contain any accidental leaks or spills
- Hydraulic Pump - Positive displacement piston pump
- Hydraulic Reservoir - 140 gallon tank provides adequate capacity and cooling for most applications
- Hydraulic Filter - In-tank filter capable of filtering particles as small as 5 microns absolute
- Large tank cover for easy accessibility
- Proportional directional pilot operated control valve
- Murphy safety shut downs and tattle-tales

### Options

- Natural gas
- Propane
- Diesel
- Electric

## Production Service Hookup

Our products are recognized for a superior quality and design, unsurpassed in the oilfield. From the largest range of stuffing boxes and production blow out preventers to the most comprehensive line of polished rod accessories, our equipment can complete a total hookup for your progressing cavity pump & rod pumping applications.

Our products include:

- Stuffing Boxes & Packing
- Blow Out Preventers
- Tubing & Rod Rotators
- Polished Rod Accessories
- Wellheads
- Hookup Accessories



# Wear Prevention



## Rodec™, Hercules™, Tuboscope™

---

Our products and state of the art technology increases production and reduces workover costs. Asset protection is critical as highly corrosive environments and wear caused by contact between sucker rods and production tubing can damage your production string. Our proven system's approach of wear mitigation, corrosion control, inspection & advisory programs help you manage well performance.

Our products and services include:

- Hercules™ Rod Rotators and Rodec™ Tubing Rotators
- Tuboscope™ Rod & Tubing Guides
- Rod & Tubing Coatings
- Rod Guide Advisory Program (RGAP™)
- WellCheck™ Inspection System
- WellTrack™ Reporting Software

# Controllers

## Hydraulic Pump Controller (HPC)

---

Our Hydraulic Pump Controller provides economical pump-off control of hydraulic sucker-rod pumping systems. Using sophisticated modeling and control software and a powerful processor, we designed our HPC to compute surface and downhole conditions to best regulate the starting, stopping, or speed adjustment of the pumping unit. Comprehensive monitoring and reporting capabilities provide daily gauging, fault and event logging, a user-configurable data sampler, and more. HPC units are rugged and have been designed to withstand the harsh environments of the oil patch.



### Features and Benefits

- User-friendly, full color touch-screen display
- Automatic optimization
- Maximum pump fill
- Communicates over wifi or cellular modem

## Guardian™ Variable Frequency Drive (VFD)

---

Our Guardian™ VFD rod pump controller can greatly reduce maintenance and operating costs while providing optimum pump performance. Our software eliminates the need for resistor banks during basic operations.

### Features

- User-friendly interface
- Flowline and casing pressure inputs
- Counterbalances weight adjustment reporting
- Real-time position and torque display
- Multispeed options for customizing up and downstroke speeds
- Automatic pump fill detection on each stroke
- Belt slippage prevention and detection
- Detailed fault history with real date time-stamp
- Energy meter reports KWh consumption
- ON/OFF timer control

### Benefits

- Monitor and control your pumping remotely
- Real-time well diagnostic and control function
- Simple installation and startup
- Remote control and monitoring from any device
- Maximizes energy efficiency
- Support for extreme climate conditions



## Downhole Equipment

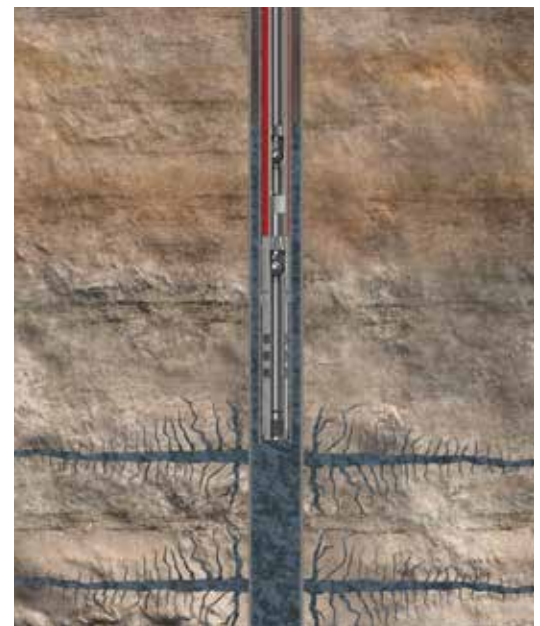
### Rod Pumps

---

We offer a full line of API 11AX Standard rod pumps and components that can be tailored to fit the specific characteristics of your well. Our rod pumps are available in many different lengths, diameters and materials to fit your well's conditions.

There are two basic types of subsurface pumps, the tubing pump and the insert pump. The tubing pump barrel is threaded directly onto the bottom of the production tubing, and is installed near the bottom of the well immersed in the oil within the well casing. The plunger is run into the tubing on the sucker rod string. Generally a standing valve puller is run between the bottom of the plunger as well as the separate standing valve. This makes the removal of the standing valve optional when pulling the sucker rods and plunger. The plunger, traveling valve, and standing valve can be serviced simply by pulling the rods, but it requires removal of the tubing to service the pump barrel.

An insert pump is run into the well on the rods as a complete unit. A seating assembly on the pump engages a seating nipple on the tubing when the pump is run in, or installed. After the well has pumped up, the additional pressure of oil in the tubing combined with the flow line pressure holds the pump firmly in place. The entire rod pump is removable, and therefore may be serviced merely by pulling the sucker rod string.



---

*National Oilwell Varco has produced this brochure for general information only, and it is not intended for design purposes. Although every effort has been made to maintain the accuracy and reliability of its contents, National Oilwell Varco in no way assumes responsibility for liability for any loss, damage or injury resulting from the use of information and data herein. All applications for the material described are at the user's risk and are the user's responsibility.*

**Corporate Headquarters**

7909 Parkwood Circle Drive  
Houston, Texas 77036  
USA

**Process and Flow Technologies**

2500 City West Blvd., Suite 2000  
Houston, Texas 77042  
USA

© 2015 National Oilwell Varco All Rights Reserved  
DPF1000028-MKT-001 Rev. 01