

**NEW LIFT TECHNOLOGY FOR STRIPPER
OIL WELLS & GAS WELL DEWATERING**

Ver, 7 2010

- ✓ Reduce energy, maintenance, and installation costs by 50-70%
- ✓ Eliminate unreliable, bulky, and dangerous surface equipment
- ✓ Extend the economic life of oil and gas wells



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3 1/2" HYDRAULIC SUBMERSIBLE PUMP

The Hygr is a positive displacement, piston-driven pump, operated by two fluid lines: a drive line and a product return line. Pressure applied to the drive line moves the transfer piston upwards, lifting production fluid trapped in the transfer chamber above the check valve and drawing production fluid from the well into the lower chamber. When drive pressure is reduced, the differential in hydrostatic pressure between the fluids in the product and drive lines forces the transfer piston downward. This process causes the check valve to open and the transfer chamber to refill.

KEY BENEFITS

No external moving parts/rods to wear or break, and no stuffing boxes to leak

No down-hole electrical components

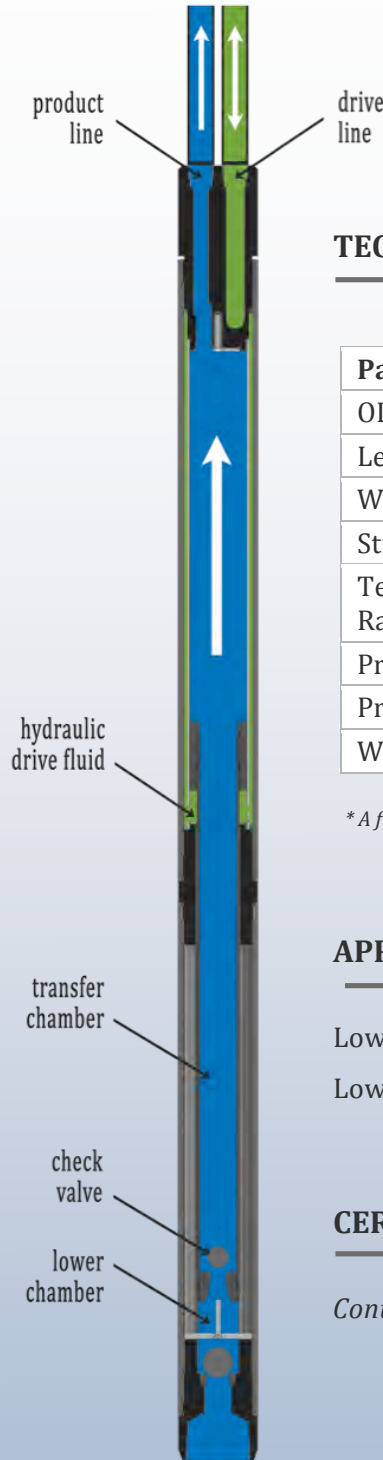
Driven by durable, low energy 1-5 hp surface electric drive systems

Low friction, wear resistant seals with excellent corrosion handling for maximal pump life

Pump can operate dry and is self-priming, reducing monitoring requirements

Can be deployed directly without additional completion equipment

Able to pump suspended solids and can be configured with sand screen to filter larger particles for extended life



TECHNICAL INFORMATION

Parameter	3 1/2" HYGR Pump
OD	3 1/2" (88.9 mm)
Length	56.9" (1422 mm)
Weight	82lbs (37kg)
Stroke	12.6"
Temperature Rating	Dependent on Elastomer Selection
Production Rate	1-30 bpd*
Pressure Rating	4,000psi
Working Depth	to 4,000 ft

** A function of stroke rate, depth and conduit line size.*

APPLICATIONS

Low volume gas well deliquification

Low volume oil production

CERTIFICATION

Contact Hydro Pacific for details.

PRODUCTION QUALITY

Hydro Pacific partners with leading industrial manufacturers and suppliers to ensure our high quality standards are maintained. To maximize pump reliability, our HYGR pumps are produced by Sicom Industries, an ISO:9001 precision-milling firm supplying the military, automotive, and aerospace industries.

MATERIALS SELECTION

Contact Hydro Pacific for details on elastomers, metals and other components used in our pump and drivers.



UMBILICAL

The HYGR pump is driven from surface using two 3/4" hydraulic lines*. One line is used to provide hydraulic power to the pump and the other provides a conduit for the produced fluid to return to surface. The umbilical can take the form of dual threaded steel lines, dual coiled tubing strings, or a single FLATpak or cylindrical string to ensure simplified spooling.

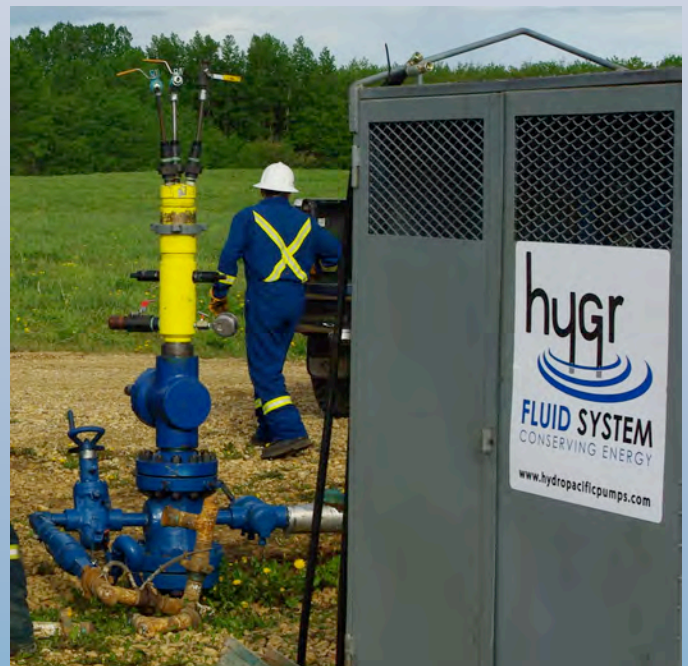
** The overall dimensions and type of umbilical required may vary depending on well depth, fluid and corrosion handling requirements.*

SURFACE TERMINATION

In oil production and gas well deliquification installations, the HYGR pump is suspended from a surface BOP by the umbilical.

Exact details of the system will be dependent on the existing surface infrastructure at the well site.

Please contact Hydro Pacific to discuss in greater detail.



SURFACE DRIVE UNIT

The surface drive unit provides the hydraulic pressure to actuate the Hygr Pump. Units can be electro-hydraulic or gas-hydraulic, comprising of a 1-25hp motor that pressurizes the hydraulic oil and actuates the sumped Hygr pump. Hydraulic oil is circulated from an open system reservoir within the unit that allows the system to self-prime. All surface units include metal enclosures and control systems with varying levels of automation and monitoring (see below).

Fuel or power options include wellhead gas, propane, or 230V electrical source. *Solar/wind options will be available soon.*



KEY BENEFITS

Systems are sized to run at optimum levels, minimizing wear and extending pump life

Easily controlled adjustable timer valves to optimize stroke rate and cycle time for each well

Low maintenance hydraulic motors with hydraulic fluid filter for extended life

Optional offsite communication system to allow adjustment of cycle times and system monitoring

Optional control systems can cycle operation based on time conditions, oil/water production and/or wellhead gas pressure.

REMOTE CONTROL AND MONITORING SYSTEM *

A remote control and monitoring module can be included as an optional extra. The module can be linked in to an operator's production systems, allowing remote monitoring of pump performance and giving the option to stop/start the pump on demand or activate an emergency shutdown procedure.

** Contact Hydro Pacific for more details.*

