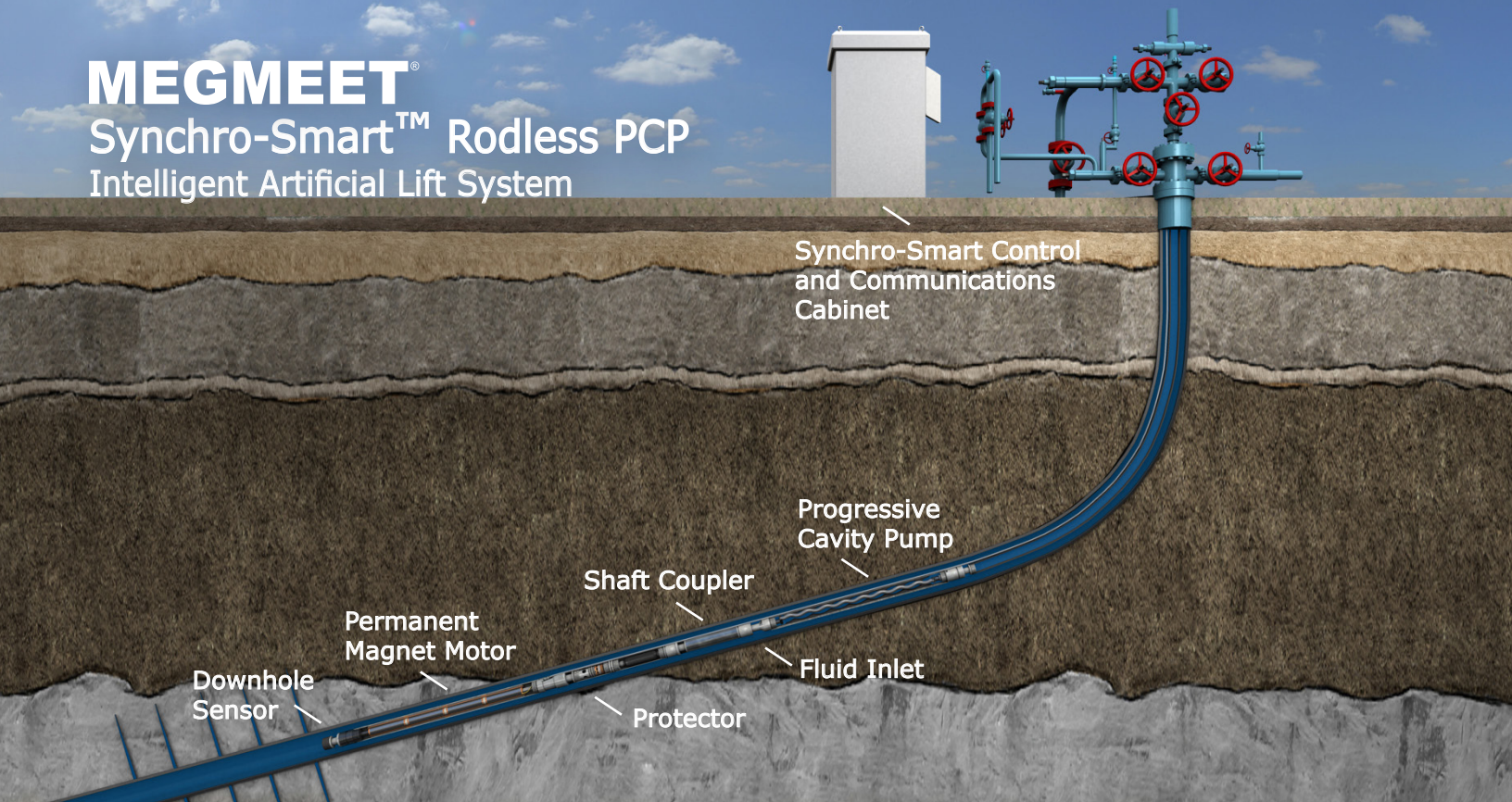


MEGMEET[®]

Synchro-Smart[™] Rodless PCP

Intelligent Artificial Lift System



Synchro-Smart Control
and Communications
Cabinet

Progressive
Cavity Pump

Shaft Coupler

Permanent
Magnet Motor

Fluid Inlet

Downhole
Sensor

Protector

Benefits

- Maximizes profits with lower power consumption and higher efficiency
- Decreases downtime from rod and tubing wear
- Increase production with dynamic fluid level management
- Eliminates manual well interventions using web based monitoring and control
- Improves aesthetics by eliminating noise from moving parts and decreased surface equipment

Applications

- High viscosity wells
- Directional and horizontal wells
- Low-flow wells
- Wells with rod restrictions or tubing wear or wax problems
- High sand-cut-wells
- High dogleg-severity wells

Features

- Web-based monitoring and control platform accessible with mobile devices
- Synchronous permanent magnet motor (PMM) down-hole drive
- Integrated down-hole sensor
- Constant torque in the full PCP speed range
- Variable speed drive motor control and communications cabinet

Synchro-Smart[™] Rodless PCP

The Synchro-Smart[™] Rodless PCP downhole permanent magnet motor and pump system is an energy-efficient pump, which combines both the advantages of a downhole driven system and the benefits inherent to PCP technology. The Synchro-Smart[™] permanent magnet motor increases the overall lifespan of the system eliminating the maintenance of surface equipment. The PCP enables operation in a wide range of conditions including high viscosity, sandy and high gas-to-oil ratio wells.

Changing Pump Technology to Offset Declining Wells

Wells transitioning from high volume production utilizing ESP's or other artificial lift methods can transition to the Synchro-Smart[™] Rodless PCP maintaining the above ground low-profile aesthetics for production rates up to 600 bbl/d. The flexibility of the rodless system enables continuous production at lower depths with remote manual speed adjustment for evolving well conditions.

Lower OPEX with Synchro-Smart[™] PMM Technology

Permanent magnet motors are synchronous machines utilizing rare earth magnets in their rotor design, which produce the rotor flux. These advanced motors have higher power density and are shorter than conventional induction motors providing flexibility in well placement. The synchronous operation and higher efficiency results in lower energy usage and lower operating cost. The Synchro-Smart[™] variable speed drive motor control cabinet supports automatic control of production rate and fluid level to safely make full use of available pump capacity.



Synchro-Smart™ eliminates all surface moving equipment

MEGMEET®

Synchro-Smart™ Rodless PCP

Specifications

Production Rate

6.5 to 600 bbl/d (1 to 95 m3/d)

Max Downhole Temperature

250 deg F (120 deg C)

Maximum Vertical Setting Depth

8000 ft (2440 m)

Min Fluid API Gravity

10 degrees

Operational Speed Range

60 to 250 rpm

Max Sand Content by Volume

2.5%

Max Gas Content by Volume

30%

Rated Torque

110 to 590 lbf*ft (150 to 800 N*m)

Dynamic Flow Level

350 to 6500 ft (107 to 1980 m)

Rated Motor Power

4 to 22 kW

Min casing size, in (mm)

4.8 (121.4)

Synchro-Smart™ Control and Communications Cabinet

The above-ground cabinet houses the Synchro-Smart™ intelligent control system, the variable speed drive and the wireless communications module. The system on/off and operation parameters are set at the cabinet with LED's displaying operation status. The sophisticated digital closed loop control system can be set to maintain constant dynamic fluid level or constant pump speed, detect pump off conditions and monitor equipment performance. Synchro-Smart™ control achieves precise control by compensating for signal transmission degradation in the submersible cable. The wireless communications module supports web based access to all well and pump operation data. Remote on/off and constant dynamic fluid level settings can be controlled.

Permanent Magnet Motor

The workhorse of the Synchro-Smart™ system, the energy efficient and compact, Synchro-Smart™ permanent magnet motor lowers OPEX by reducing energy consumption and avoiding work over costs. Designed for long downhole operation, the motor speed can be adjusted to match maturing well conditions while maintaining operations. The patented anti-demagnetization design extends the life of the permanent magnet rotors for high reliability production. Unlike traditional ESP induction motors the Synchro-Smart PMM does not utilize a gear reducer eliminating a common point of failure and increasing reliability.

Progressive Cavity Pump

Progressive cavity pumps suit a wide range of conditions including low volume wells with unstable inflow, wells with viscous, abrasive fluids, high GOR wells, and wells with scale and high asphaltenes. PCP's are especially well matched for heavy oil production. The Synchro-Smart™ system offers a wide range of PCP rotors and stators to cover the widest range of applications.

Downhole Sensor

The Synchro-Smart™ downhole sensor provides operators the ability to fully capture the information from their artificial lift systems to help minimize downtime, increase equipment run life and optimize production. The downhole sensor detects temperature, pressure, and vibration data which is transmitted via power line coding-carrier-decoding technology through submersible cable to the Synchro-Smart™ Control and Communications cabinet. The autonomous dynamic fluid level control is made possible using the sensor data inputs.