

KUDU Rodless PCP

Downhole permanent magnet motor and pump system

APPLICATIONS

- Progressing cavity pump (PCP) wells
- Low-flow ESP wells
- High-dogleg-severity (DLS) wells
- Wells with rod restrictions, tubing wear, or wax problems
- Coalbed methane wells
- Offshore heavy oil wells

BENEFITS

- Limits capex and opex by easily adjusting to a broad range of production rates without pump replacement
- Reduces power consumption with higher energy efficiency, especially in low-flow wells
- Maximizes lifting efficiency for high-viscosity fluids because of its lower torque and pressure loss compared with surface-driven pumps
- Minimizes location safety risks by eliminating rod backspin on the surface
- Prevents surface leaks by eliminating the stuffing box
- Limits wellsite maintenance costs by eliminating surface equipment
- Eliminates surface noise disturbances by moving the motor downhole

FEATURES

- Permanent magnet motor (PMM) downhole drive
- Constant torque in the full PCP speed range (50 to 750 rpm)
- Compatibility with ESP telemetry systems for pump intake and discharge pressure (PIP and PDP), motor and well fluid temperature, vibration, and other operational parameters
- Compatibility with ESP completion technology

KUDU rodless PCP downhole permanent magnet motor and pump system is an energy-efficient, robust alternative to ESPs and conventional PCP technology—even in deep wells with high dogleg severity. The system's constant-torque motor enables operation over a wide range of production rates, resulting in simplified artificial lift planning and reduced capex and opex.

Match your well conditions and production strategy

Motors and pumps for the KUDU rodless PCP system are selected to best suit your well conditions, operating strategy, and production rate targets. Schlumberger low-speed downhole PMMs and PCPs are designed to work together without being limited by the well's deviation profile and traditional PCP application depth. The motor and pump combination drives selection of other system components to optimize run life and functionality. The downhole assembly is effective in temperatures up to 248 degF [120 degC] and resists corrosion with a special Monel® coating. The rodless PCP design eliminates the main root cause of PCP failure in deviated wellbores—rod and tube wear—resulting in exceptionally longer run life compared with conventional rod-driven PCPs.

Adjust settings rather than replacing the pump

KUDU rodless PCP system delivers constant and high torque across the full PCP speed range from 50 to 750 rpm. This flexibility facilitates adjustment to accommodate a broad range of well production rates without replacing the pump.

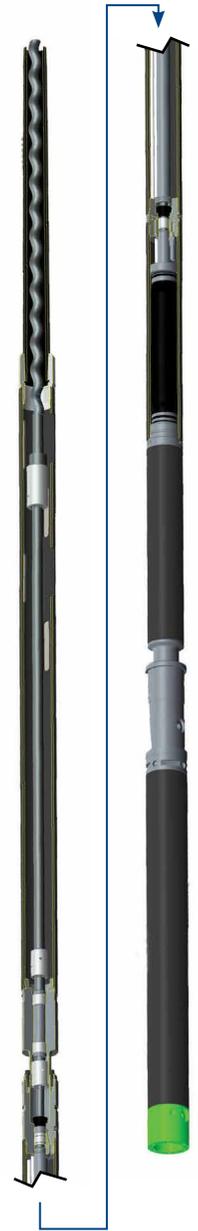
A synchronous machine incorporating rare earth magnets in its rotor design, the PMM provides additional benefits, including improved efficiency because of low power loss in the rotor and enhanced dynamic performance with a variable frequency drive specifically designed for PMMs.

Optimize performance in real time with downhole monitoring

Downhole telemetry can be used to prevent pumpoff conditions, monitor equipment performance, and optimize well production.

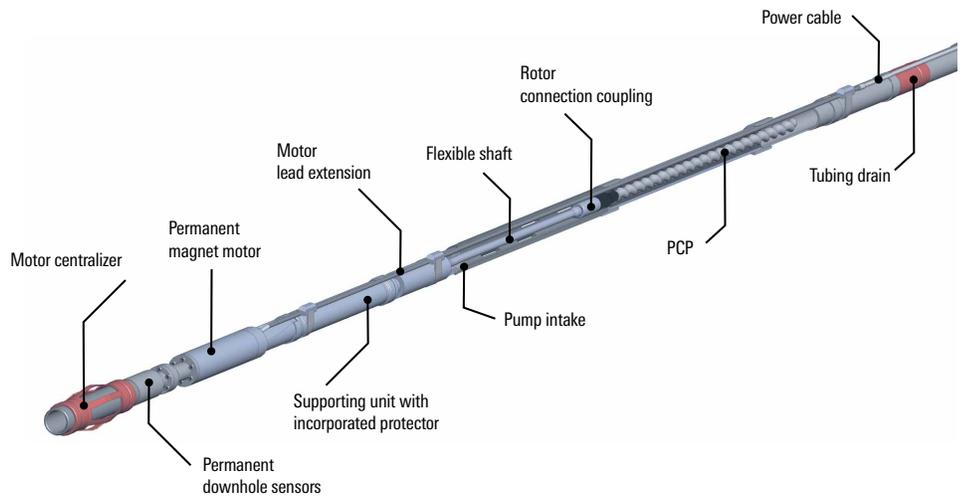
The telemetry system includes a multisensor downhole gauge package and a digital well monitoring system. The downhole sensors are connected to the PMM base, and the surface interface box is mounted inside the control panel. A power cable delivers signals from downhole for interpretation by a surface data acquisition system that sends them to the variable speed drive (VSD) for monitoring, control, and recording.

The system can be designed to acquire intake pressure and temperature, well fluid temperature, motor winding temperature, vibration, and pump discharge pressure.



KUDU rodless PCP system downhole assembly.

KUDU Rodless PCP



KUDU rodless PCP system downhole components.

KUDU Rodless PCP System Specifications

Production rate [†] , bbl/d [m ³ /d]	12 to 1,900 [2 to 300]
Maximum vertical setting depth, ft [m]	10,000 [3,000] [‡]
Maximum downhole temperature [‡] , degF [degC]	248 [120]
Operational speed range, rpm	50 to 750
Nominal torque, lbf.ft [N.m]	44 to 752 [60 to 1,020]
Maximum pump axial load, lbm [kg]	6,600 [3,000] [§]
Minimum casing size, in [mm]	5.5 [139.7]

[†] Based on pump model, fluid level, and pump setting depth.

[‡] Depends on application.

[§] Higher ratings are available on special request.

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