

## KUDU ESPCP PMM electric submersible PCP with permanent magnet motor

Rodless technology that addresses the challenges faced by conventional progressive cavity pumps and efficiently handles a wide range of production rates



**Production Rate:**  
12 to 1,900 bbl/d  
[2 to 300 m<sup>3</sup>/d]<sup>†</sup>



**Downhole Temperature:**  
Up to 248 degF [120 degC]<sup>‡</sup>

### Where it is used

KUDU electric submersible progressive cavity pump with permanent magnet motor (ESPMP) is an energy-efficient, robust, rodless alternative to conventional PCP technology. It is ideal for wells with high deviation or dogleg severity (DLS), wells with rod restrictions or wax challenges, and offshore wells—including heavy oil wells—where use of a downhole safety valve is mandatory.

### How it improves wells

In deviated wellbores, where rod and tubing wear due to excessive friction is the root cause of PCP failures, the rodless design results in exceptionally longer run life compared with conventional rod-driven PCPs. It also eliminates the need to mobilize long, heavy rodstrings.

The KUDU ESPCP PMM delivers constant and high torque across the full PCP speed range of 50 to 500 rpm. This flexibility enables accommodating a wide range of production rates without replacing the pump, which simplifies artificial lift planning and reduces capex and opex. No downhole gearbox or speed reducer is required.

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

Lower torque and pressure losses compared with surface-driven pumps maximize lifting efficiency for high-viscosity fluids. Eliminating rod backspin minimizes safety risks on site, and with no stuffing box, surface leaks cease to be a concern. Additionally, moving the motor downhole eliminates noise, while maintenance costs and HSE risks decrease because there is no drivehead on surface.

### How it works

Motors and pumps for the KUDU ESPCP PMM system are selected to best suit the specific well conditions, operating strategy, and production rate targets. The motor and pump combination drives selection of other system components to optimize run life and functionality.

### What else I should know

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

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 VFD for monitoring, control, and recording.

The system can be designed to acquire intake pressure and temperature, motor winding temperature, vibration, and pump discharge pressure. Compatibility with ESP telemetry systems and completion technology—including the ESP cable—facilitates replacing an ESP with a KUDU ESPCP PMM and improves cost-effectiveness.

#### KUDU ESPCP PMM Specifications

Max. vertical setting depth, ft [m]	10,000 [3,000] <sup>†</sup>
Operational speed range, rpm	50 to 500
Nominal torque, lbf.ft [N.m]	44 to 752 [60 to 1,020]
Max. pump axial load, lbm [kg]	11,000 [5,000] <sup>‡</sup>
Min. casing size, in [mm]	5.5 [139.7]

All specifications are subject to change without notice.

<sup>†</sup> Depends on application

<sup>‡</sup> 22,000-lbm [10,000-kg] system available on special request



*The KUDU ESPCP PMM downhole assembly has a special Mone!® coating that helps resist corrosion.*

<sup>†</sup> Depends on pump model, fluid level, and pump setting depth

<sup>‡</sup> Depends on application