

420 Corsair™ Motor Improves Drawdown in Tight Clearance Long-string Unconventional Wells

OPTIMIZED POWER OUTPUT INCREASES PRODUCTION 15%

PERMIAN BASIN

CHALLENGE

Tight clearance between ESP motor OD and casing ID increases the risk of:

- » Damage during installation
- » Overshot retrieval issues
- » Scale build-up, which can reduce motor cooling

SOLUTION

420 Series Corsair motor features:

- » Reliable ESP motor with 400-hp maximum
- » Smaller motor OD to fit into tighter wellbores
- » Conventional induction motor design for dynamic load conditions

RESULT

Compared to larger OD ESP design with similar productivity index (PI) and water cut, producing from the same pad:

- » Drawdown increased 12%
- » Production increased 15%
- » Monthly production revenue increase by over \$60,000 (@ \$80/BO, \$2.50/MCF)

OVERVIEW

North American operators have begun completing unconventional wells with 5-1/2-inch “long string” production casing run to surface instead of the traditional 4-1/2-inch liner. “Heavy wall” (20-23 lb./ft) casing is used because it is better suited than lighter wall casing for fracking and completions.

CHALLENGE

The move to running 5-1/2-inch heavy wall casing creates several potential issues because of tighter clearances between the outer diameter (OD) of the electric submersible pump (ESP) systems typically designed for these applications and the smaller internal diameter (ID) of the thicker wall casing. During installation, tighter clearances increase the possibility of damage to the MLE cable and ESP equipment. During operation, the smaller flow area around the motor leads to increased fluid velocity, pressure, and the potential for scale build-up and motor cooling issues. Tighter clearances also make overshot retrieval of equipment more difficult.

Smaller motor designs have better clearances but may not provide adequate power or may be too long in tandem configurations for the tangent section. Permanent magnet motors (PMM) can provide higher power ratios in smaller diameters but have experienced dynamic load failures and can be a safety hazard during maintenance.

SOLUTION

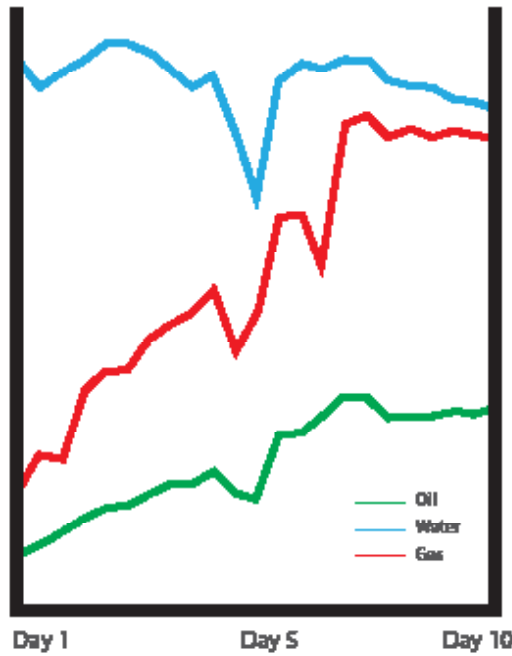
Summit ESP® engineers have designed a 420 Series Corsair motor which provides:

- Greater clearance for smooth installation to avoid damage
- Higher horsepower for maximum reservoir inflow performance (IP) in a shorter unit length
- Decreased potential for scale build-up
- Reduced motor operating temperatures

RESULTS

For one operator, a 420 Corsair™ EMS motor coupled with Tiger Shark® TS3 pumps was installed on the same pad as another well in which a larger diameter system was installed. Both wells had a similar productivity index rate and water cut. The 420 provided the power needed to increase drawdown by 12% and total fluid production by 15% compared to the larger, traditionally sized equipment.

Drawdown
increased
12%



Production
REVENUE
Increased
\$22,500
over 11 days

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