

THE VIKING™ ESP LOW-PROFILE MOTORS



Reduce Energy Waste With A Proven Horsepower Match

BACKGROUND

When a Permian operator needed to produce a new horizontal well completed with 5.5-inch, 20 lb/ft casing, they selected Valiant to provide equipment and well services, based on our ability to meet the horsepower and clearance requirements with THE VIKING V422 series motors. Using the well data provided by our customer, a system was designed with 335 stages of enhanced high pressure, abrasion resistant modular VC4300 pumps, and it was calculated that the horsepower consumption at 55 and 60 Hz would be 318 and 435 HP, respectively.

EMPIRICAL DATA

However, when the system was installed and the frequency was ramped up over the first two months of operation from 45 to 55.5 Hz, the actual electrical consumption was calculated to be 270 HP, or 15% less than the design predicted. It is estimated that actual motor requirements at 60 Hz would be in the range of 300 HP, considerably lower than the projected 435 HP and well within the range of the Valiant VIKING motor. Because these conditions are characteristic of unconventional wells across the Permian Basin, it suggests that design projections of HP requirements at 60 Hz may lead to motor oversizing for these applications.

SUMMARY:

THE VIKING™

- Rated at 336 HP/3996 V/59.5 with application-dependent re-rating options and shaft rating up to 490 HP
- Capable of producing the maximum horsepower requirements typical of new-drill applications
- Sizing based on observed power draw permits the use of #4 cable for savings up to \$2/foot compared to the use of #2 cable
- Remains a good fit throughout the ESP lifecycle by minimizing wasted capacity

Location

- Permian Basin
- Midland County
- Wolfcamp Formation

Application

- Producing new horizontal well with 5.5-inch, 20 lb/ft casing
- Well depth: 8,353 ft.

Solution

- 400-Series ARM, enhanced high pressure pumps paired with THE VIKING™ motor
- Safe installation and reliable uptime without issues
- Profitably maximized the well's production during critical payback period

THE VIKING motor was designed to fill a specific gap in technology while meeting customers' performance and economic objectives.

Easily pairable with existing equipment, THE VIKING is a modular solution that provides versatile configuration options, allowing operators to install the equipment best fit for their application.

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A Powerful Solution for 5.5" Heavy Wall Casing

Right-sizing electric submersible pumping systems requires equipment that can deliver the greatest production rates within the physical constraints of the wellbore.

For wells completed with 5.5-inch 20 lb. or 23 lb. casing, standard motors with a 4.56-inch diameter come close to or exceed the API drift tolerance, increasing the risk of clearance-related issues.

To maximize production and ensure reliable deployment, Valiant offers THE VIKING, a low-profile, 4.22-inch diameter induction motor that meets the highest horsepower requirements for unconventional wells.

Motor Specifications

THRUST BEARING	High Load, High Temperature, PEEK Coated
SHAFT	High Strength, 1 1/8 in. 490 HP Rating
SEAL	Modified V4 Series Seal, BPBSL or BSL Available in Direct Tandem Without Crossover
MLE	Standard V4 Series MLE
HORSEPOWER	Standard Offering: 336 HP in Tandem Up to 400 HP Available Upon Request
TEMPERATURE	Rated Operating Temperature: 400°F (204°C)

Applications

Minimum casing size:

5.5" / 20, 23 lb.

Deviated, abrasive wells

Heavy scale conditions

Features & Benefits

- No Removal of Lockplate Necessary**
 Operate at full capacity without compromising mechanical integrity
- Robust Motor Protection**
 4.00" BPBSL or BSL seals provide enhanced durability compared to smaller series
- Pull Equipment With Confidence**
 Reduced diameter mitigates risk of equipment getting stuck in the well
- Horsepower Coverage**
 Application-dependent re-rating options available with high strength, 1 1/8" shaft rated up to 490 HP



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