PERMANENT MAGNET MOTORS

THE MOST **RELIABLE**, **ROBUST**,
ENERGY-EFFICIENT MOTORS
IN THE ESP INDUSTRY

NOVOMET

Permanent Magnet Motors

The Novomet permanent magnet motor (PMM) is the preferred motor in the artificial lift industry for electrical submersible pumping (ESP) systems. These powerful motors are the most reliable, robust, energy-efficient motors available with the widest range of size and horsepower options.

Our PMMs are viewed as the industry leader and the benchmark to which all other PMMs are compared. We have deployed more than 11,000 permanent magnet motors around the world and have installed more than 47% of the PMMs running in the Americas.

In unconventional wells, our permanent magnet motors deliver superior runlife and reliability by operating cooler than induction motors. In conventional plays, they not only run longer than induction motors, but they also reduce electricity consumption. And in smaller casing sizes, our 217, 319, and 406 series PMMs can run deeper in-hole and leave more room for fluid production in slimhole wells.

The Permanent Magnet Motor Difference

Unlike induction motors, PMMs use rare earth magnets and special circuitry to create a constant rotor magnetic field, delivering greater torque and rotation with less electricity. This design increases efficiency, decreases power consumption, and reduces motor heat. With Novomet motor winding compound technology, our PMMs are capable of reliable performance in temperatures up to 480°F (250°C). The benefits are superior motor runlife, the ability to coast through gas slugs without locking, and less electricity usage.

Short and Light, Powerful and Efficient

PMM rotors virtually eliminate electrical losses in the rotor, so they produce more available horsepower than conventional rotors. Because of this increase in horsepower density, Novomet ESP PMM motors are 30% shorter and lighter than equivalent horsepower induction motors.

Compared to asynchronous induction motors, our PMMs reduce electrical consumption up to 20% when underloaded, and by 10% at the best efficiency point.

Largest PMM Portfolio in the Industry

Novomet is proud to offer the largest selection of PMM size and horsepower offerings available in the industry. Refer to novometgroup.com for more information on all available horsepower (HP) and size combinations.

Field Service Technicians plugging in and securing the motor lead extension (MLE) to a permanent magnet motor during installation

APPLICATIONS

- Unconventional—toughest motor available
- Conventional—most efficient motor available
- Slimhole—smallest OD available

BENEFITS

- Delivers superior runlife and exceptional reliability
- Tolerates gas slugs with lower motor temperature
- Reduces electricity consumption and carbon footprint
- Enables slimhole production when our competitors can't
- Sized to spec with the widest PMM portfolio in the industry

RELIABLE.
ROBUST.
ENERGY EFFICIENT.

PMM Portfolio Summary Chart

Series		217	319	406	460	512	744
Available speeds (rpm)		8500	1000–6000	1000–4200 1000–6000	100–1500 1000–4200 1000–6000	1000–4200 1000–6000	1000–4200
Power factor		0.92	0.95	0.95	0.95	0.95	0.91
Motor efficiency		86	90	93	93	93	95
Rated winding temperature		392°F 200°C	482°F 250°C	482°F 250°C	482°F 250°C	482°F 250°C	482°F 250°C
HP ranges	100–1500 rpm				up to 54		
	1000-3600 rpm			up to 275	up to 394	up to 502	up to 1335
	1000–6000 rpm		up to 284	up to 391	up to 489	up to 720	
	8500 rpm	up to 47					
Tandem HP ranges		up to 94 8500 rpm	up to 270 1000–6000 rpm	—	—	up to 1030 4500 rpm	—

The actual motor HP rating for a specific well design will vary depending on ambient temperature and motor frequency.

High-Speed and Low-Speed Flexibility

Our variable speed drives use a unique voltage scheme to produce a wide range of rotation speeds while keeping electricity consumption steady. The result is a motor that is incredibly efficient when operating at typical speeds (500 to 6,000 rpm), and that can be easily adapted to low speeds (100 to 500 rpm) for use with low-flow wells and high-viscosity fluids. We have also adapted the PMM to function with progressive cavity pumps (PCPs) to create a highly reliable downhole-driven ESPCP.

Permanent Magnet Motor Safety

We are proud of our safety record and performance at Novomet. We have industry-leading safety procedures and protocols specific to running, operating, and pulling PMMs. Along with these procedures, our field personnel use a shorting device when handling ESP systems with a PMM, greatly reducing the risk of electrical discharge in backflow conditions. We are also proud to be contributors to the API guidelines specific to permanent magnet motors, currently under development.

NOVOMET

CONTACT US TODAY

To learn more about how our PMMs can extend
ESP runlife and improve reliability, contact us today.

https://www.novometgroup.com/contacts/