

A large, yellow offshore oil and gas platform is shown against a clear blue sky. The platform features several tall, white, cylindrical structures, likely chimneys or towers, and a complex network of yellow pipes and walkways. A crane is visible on the right side of the platform. The platform is situated over a body of blue water.

Electric Motors & Generators for Oil & Gas Drilling: Your Preventative Maintenance Guide

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In the oil and gas industry, high-efficiency electric motors power the drill rig equipment used during onshore and offshore drilling operations. To perform effectively and reliably, these motors must be capable of withstanding the constant impacts, vibration, temperature fluctuations, and corrosive conditions encountered in extreme drilling environments. Modern electric motors have become increasingly specialized within drilling applications, with designs created specifically for horizontal, vertical, directional, and extended-reach well drilling.

Given the importance of electric motors for powering critical drilling operations, establishing a preventative motor maintenance protocol is key for maintaining optimal levels of safety and efficiency in the equipment they support. This eBook discusses the diverse roles of electric motors in the oil and gas industry, as well as the importance of implementing proper motor maintenance.

What is Onshore Drilling vs. Offshore Drilling?

The location of the drilling site dramatically influences operating costs, time investment, and equipment required to support a drilling operation. Onshore drilling operations involve drilling on land, below the earth's subsoil. Daily operating costs are generally lower with land-based operations since crew accommodations such as housing and helicopter transportation are not required. The rig setup process for onshore operations is also much simpler, with most rigs built in a matter of days or hours, depending on the design of the rig. This means that the drilling process can be initiated much more quickly compared with remote drilling operations.



In contrast to onshore drilling, offshore drilling occurs in remote, offshore locations and involves drilling beneath the seabed. These operations require a much larger financial investment, and the rig setup process is considerably more complicated since it needs to accommodate everything from crew member amenities to the oil drilling machinery and processing facilities. Drilling offshore also involves a significantly longer time commitment, as the rigs must travel through several thousands of feet to reach the earth's seabed. Furthermore, offshore rigs require more specialized designs to withstand the extreme pressures occurring at those depths.

The Role of Electric Motors for Oil & Gas Drilling

Electric motors have become increasingly compact and powerful, allowing the oil and gas industry to achieve higher levels of safety and efficiency in a range of onshore and offshore drilling applications. The consistent, reliable power provided by electric motors supports the equipment and systems required to extract, process, store, and transport crude oil, natural gas, and petroleum products. Specific uses of electric motors in this industry include:



- Powering the drilling process. In oil and gas drilling applications, electric motors can power everything from the draw works of the drilling rig to the machinery used to separate drill cuttings. Induction motors and synchronous generators generate power in both onshore and offshore drilling operations.

- Driving fluid flow equipment. Electric motors are widely used in oil and gas drilling applications to drive fluid-control equipment such as air compressors, fans, and pumps. For example, pump motors provide power for water injection processes and other high-pressure pumping applications.



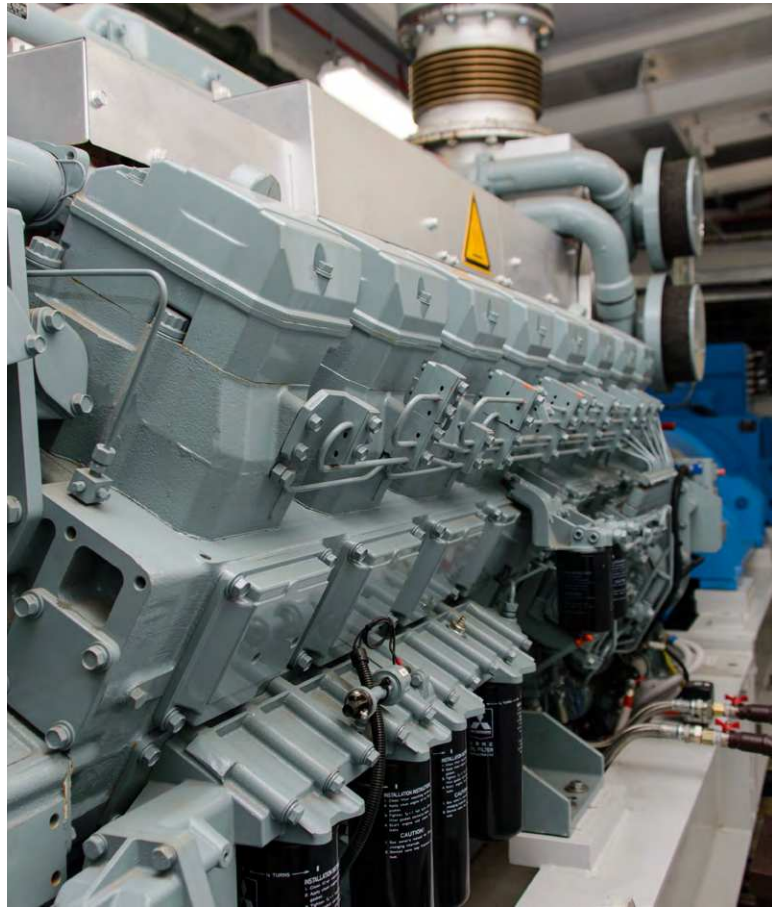
Electric generators have become especially popular in offshore applications, where finding reliable and affordable power once presented significant challenges. Each oil rig is itself like a small village with dozens of residents.

The offshore drilling sector relies heavily on electric motors to power the extraction equipment itself, but also for other less obvious needs, such as power for work and living areas, cooking equipment, waste processing machinery, water desalination processes, and much more.

Importance of Preventative Maintenance for Electric Motors

For both onshore and offshore drilling equipment, establishing a preventative maintenance plan is vital for optimizing productivity, maintaining compliance, managing expenses, and mitigating risks. The drilling environment exposes equipment to a unique and dynamic set of stresses, and an equally unique maintenance program is required to keep equipment performing at peak efficiency. Pre-scheduled monitoring and servicing protocols should also be extended to the motors that power the drilling equipment, as this will help prevent failures and prolong service life.

A consistent and systematic approach toward electric motor maintenance and inspection is necessary in order to identify, troubleshoot, and correct potential issues before they result in unexpected equipment downtime and costly repairs. While each maintenance protocol should be adapted for the motor and its specific application, most protocols include the following steps:



- Visually inspecting the overall motor and noting its general physical condition

- Inspecting the motor's brush and commutator for indentations, scratches, and general signs of wear and tear

- Testing the motor windings to identify any abnormalities or signs of failure

- Verifying bearing fits and tolerances

- Conducting vibration tests to detect and correct excess vibrations before they lead to bearing or winding failure

- Performing infrared thermography to generate temperature profiles that can be used to detect airflow deficiencies, insulation failures, and other motor issues

- Maintaining detailed records of each maintenance procedure, test, or repair for future reference

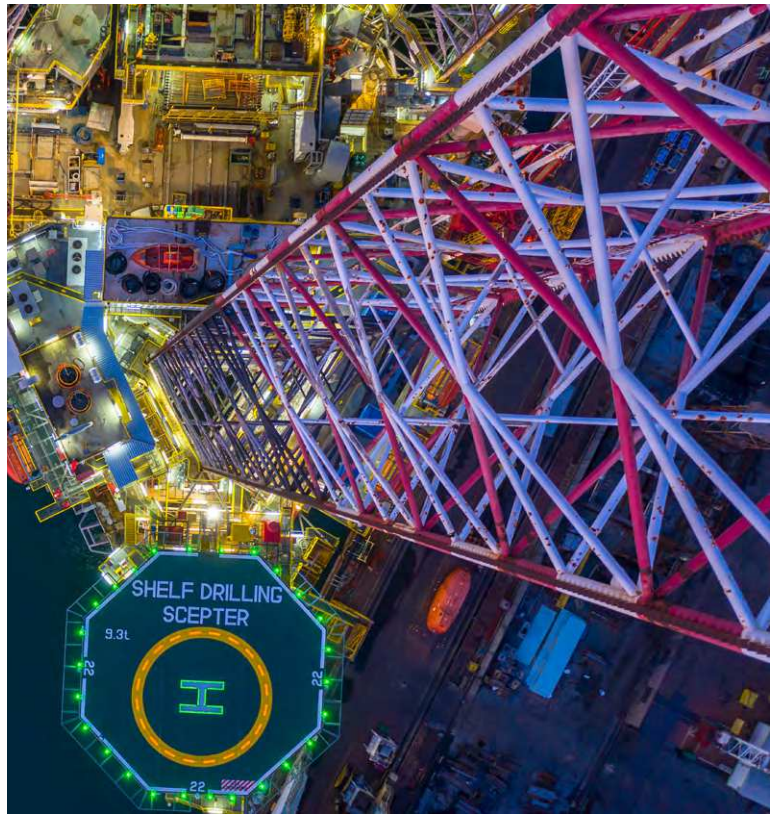
Renown Electric's Services for Oil & Gas Drilling

Renown Electric is a leading provider of electric motors and carefully tailored electric motor repair and maintenance services. From small fractional-horsepower motors to large 60,000-horsepower induction motors, our product selection includes options designed to support even the most demanding onshore and offshore oil and gas drilling platforms. Our diverse maintenance, service, and repair capabilities also include synchronous motors and generators.

Preventative Maintenance Services

With nearly 40 years of experience in our industry, we understand the importance of preventative equipment maintenance for the ongoing success of oil and gas drilling businesses. Even minor equipment malfunctions and flaws can quickly lead to significant downtime and expensive labor and repair costs. To avoid such issues, invest in a diligent maintenance program that can accommodate the unique requirements of your drilling operation. This includes inspecting and servicing the equipment's electric motors, which are regularly subjected to a range of aggressive and hostile operating conditions.

To meet the diverse needs of the oil and gas industry, we provide the following preventative and predictive electric motor maintenance services:



- Dynamic balancing

- Infrared thermography

- Laser alignment

- Oil analysis

- Vibration analysis

- Winding analysis

- Motion amplification



About Renown Electric

Properly maintained electric motors are key for supporting critical drilling operations in the oil and gas industry, especially with the increasing trend toward stronger, faster, and more efficient drilling equipment. Renown Electric partners with companies of all sizes in this demanding industry to develop personalized and affordable maintenance protocols aimed at maintaining equipment performance and minimizing costs and downtime. Certified by the CSA for servicing motors used in hazardous conditions, we are uniquely qualified to help customers achieve optimal motor performance and longevity in a range of harsh drilling environments.

Our other relevant certifications include:

- ISO 9001:2015

- Electro-Mechanical Authority (EASA) member

- Electrical Safety Authority (ESA) member

- ISN-compliant

- BROWZ-compliant

- EXIROS-compliant

- QUAREM-compliant

To learn more about our electric motor selection and how we can customize a preventative maintenance program for your product, please [contact us](#) today.

About Renown Electric

Founded in 1984 and centrally located in Concord, Ontario, Renown Electric operates from a 25,000 square foot state-of-the-art main repair facility, a 30,000 square foot large motor repair facility with 50 ton cranes throughout, and a 12,000 square foot warehouse dedicated to motor management and inventory of new products. Our team includes over 50 employees who excel in all aspects of electric and mechanical motor repair, remanufacture, overhaul, field service, on-site rewind, and engineering support.

We are proud to serve a diverse customer base from a wide range of industries from across the globe. No matter the size of the company, from a small start-up to a massive multinational concern, Renown offers unmatched customer service to support you every step of the way.

Renown is an authorized dealer and service representative for most major manufacturers, so our customers are assured the highest-quality products and repairs. Our engineering expertise and production capability allows us to remanufacture all major AC & DC motors up to 50,000 HP.

Our company has CSA qualification for the repair and service of motors and generators in hazardous locations, as well as [ISO 9001:2015](#) certification; we utilize the latest computerized testing techniques to ensure our repairs meet or exceed OEM specifications.

Renown has a large fleet of service and delivery vehicles—including a selection with cranes for simple and prompt job-site pick-up and returns.

Renown's commitment to service extends beyond the reaches of our shop by offering predictive maintenance programs designed to meet the customers' requirements. Programs include on-site laser alignment, balancing, vibration analysis, infrared thermography, oil analysis, and non-destructive testing.

To learn more about Renown Electric and the services we provide, [contact us](#) today.

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information**



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