
ARTICLE

Artificial lift

in chemical, oil & gas industry

BALDOR • RELIANCE



Optimize your surface pumping application

Produce more with less energy

Artificial lift refers to any process that assists the flow of oil from a reservoir to the surface. Almost all oil production requires some version of artificial lift during the life of the well. Even if oil flows freely initially, over time, the well pressure will decrease, and the well will require some means of artificial lift for further extraction. ABB Baldor-Reliance motor solutions provide reliable power for many of the various methods of achieving artificial lift.



The most common method used for this purpose is the beam pump, the oldest type of artificial lift system. The beam pump is a version of a rod pump; as the beam moves up and down, the rod moves up and down in the well creating suction that lifts the oil to the surface.

ABB manufactures Baldor-Reliance motors designed specifically for these types of oil field applications. The specifications for a beam pump when operating direct on line demands a high-slip motor, and Baldor-Reliance oil well pump motors are designed for use on beam pumping units, punch presses and applications requiring high torque and high slip and are available with the common voltages used in the oil fields: 230, 460 and 575.

In some larger oil fields, there has been a trend toward replacing high-slip motors with high-efficiency motors paired with variable speed drives. The advantages of a motor/drive pairing include energy savings and more precise control of the pumping process. Although very few pumping applications require 100 percent flow continuously, many of the motors employed in these systems are started at full speed and remain running at full, fixed speed while in use. This practice consumes more energy than necessary, driving up costs and placing unnecessary mechanical stress on the system.

In contrast, if the speed or flow is controlled by the motor directly using a drive, operators can match the motor's speed to the requirements of the pump, allowing the system to consume only the amount of energy required by the application, and no more. The motor and power supply can be "right-sized" rather than oversized, further reducing energy consumption. Additionally, the drive can be incorporated into a control system that monitors and optimizes the pump and flow of oil. The active front end of the ABB drive provides an advantage in system efficiency as it returns regenerated energy to the electrical supply.





Horizontal pumps and progressive cavity pumps are other areas where Baldor-Reliance motors provide reliable performance to meet the extreme demands of oil field applications. Horizontal pumps consist of a multistage centrifugal pump, thrust chamber and conventional AC motor mounted on a common base. Low maintenance costs are one of the benefits of this choice. Because the components are not specialized, horizontal pumps are often a quick solution from order to delivery. Progressive cavity pumps can be applied downhole and as surface pumps. Their operating efficiency is better than many other options, which lowers operating expenses. They also may be selected based upon the viscosity of the liquids and the structure of the well.

ABB offers a full range of performance-proven, energy-efficient, motors and variable speed drives for the chemical, oil and gas industry. Our products are engineered with industry-driven designs and patented technologies that ensure greater uptime with less maintenance. With our in-depth understanding of application needs, we provide dependable solutions that keep operations running reliably day after day. We are focused on helping energy companies operate more efficiently to reduce their environmental impact, while enabling new, clean energy value chains to fuel our future.





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