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Special Report: Artificial Lift Technology



New Technology Lifts Artificial Lift

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Necessity is often the mother of invention. That was certainly the case for Greg Boyles in 2004.

His company had just completed drilling 70 wells in an onshore, sand-laden heavy oil field in Trinidad & Tobago and was going into first production. "It was killing us with maintenance costs," recalls Boyles, chief executive officer of Houston-based Direct DriveHead Inc.

So, the company's engineers developed the Direct Drive DriveHead™, a device to operate and control progressive cavity pumps that eliminated the problems associated with conventional belt and pulley-type drive head systems that plagued their operation in Trinidad.

"We set out to make improvements to everything wrong with the typical drive head and add features not available in the market to give us the kind of power and control over our wells we needed," Boyles contends.

At first, Direct DriveHead Inc. planned to build something solely for its own use. As it turned out, however, other companies learned about the success of the system and started ordering Direct Drive DriveHead for their own use. In 2006, the company received a U.S. patent for the device and began full-scale mass production with help from Baldor Electric, NTN Bearing Corp., Boston Gear, FabCorp Inc. and others. Boyles calls the Direct Drive DriveHead a poor boy's "smart pump" that can be used for any artificial lift application down to 6,000 feet. It is economical and smart, because its logic controller will hunt to a desired fluid level and call the operator if there

is a problem at the well site, he explains.

Robotic Pump

Boyles says the Direct Drive DriveHead has all these bells and whistles at a very affordable price. "Imagine having a robotic pumper 24 hours a day, seven days a week that continuously monitors fluid levels, works to maintain a level the operator selects, and that communicates via a Web-based pump manger that can be accessed from a laptop anywhere in the world," he comments.

The Direct Drive DriveHead is being

used worldwide not only to pump heavy oil in sand-laden fields, but also to pump light oil, dewater gas wells, pump coalbed methane, and to pump off large frac jobs in order to reduce rig time used for swabbing, Boyles reports.

"We have customers who are now replacing their pumpjacks with our fully-automated unit and a progressive cavity pump for under \$15,000 total, and then selling their used pumpjacks for \$20,000," Boyles says. "Afterward, they are discovering that the switch reduced their electricity cost by 50 percent, because pump-



Direct DriveHead Inc.'s Drive-Head™ pumping system is designed for production applications in light and heavy oil, sand-laden fields, deepwater gas, and coalbed methane as well as pumping off large frac jobs.



jacks use a 20-horsepower motor, while our unit requires only five horsepower.”

Because the Direct Drive DriveHead has no belts or pulleys and uses a gear reducer/torque enhancer to rotate the rod string, it delivers a constant torque of 209 foot pounds of torque, according to Boyles. To pump 60 barrels of fluid a day from

6,000 feet requires only 60 foot/pounds of torque.

The drive comes equipped with a variable-speed frequency control and a logic controller as part of its standard package, Boyles notes. He says the Web based pump controller not only helps maintain fluid levels, but also stores vital histori-

cal well data for diagnostic purposes and will call the operator’s cell phone to send alarm notices that may need immediate attention.

Designed for a quick and easy plug-in and pump operation, the unit can be installed in a matter of minutes after running rods, Boyles adds. □