

What's new in artificial lift

Excerpts From: Part 1—Fifteen new systems for beam, progressing-cavity, plunger-lift pumping and plunger lift

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Described here are 15 recent developments in three categories of artificial lift technology, including: beam pumping (seven items); progressing-cavity pumping (PCP) (four); and plunger lift (four). Part 2, coming in the May issue, will present electrical submersible pumping (ESP) and other, miscellaneous, artificial lift-related innovations.

Beam pumping - by far the most widely used type of artificial lift - comprises a motor-driven surface system lifting sucker rods within the tubing string to operate a downhole reciprocating pump. PCP systems are based on a surface drive rotating a rod string which, in turn, drives a downhole pump rotor operating within an elastomeric stator. In plunger lift, a freely moving plunger falls through fluids in the tubing and is lifted back to surface with its slug of mostly liquids by use of formation, or injected, gas admitted from the tubing-casing annulus.

PLUNGER LIFT

Plunger lift controller. The latest in a line of production optimization solutions is the CEO FOUR controller from Weatherford and eProduction Solutions, Fig. 11. This new controller extends the control methods of the CEO THREE+ controller. Optimization functionality has been added that allows operators to more accurately detect well conditions to produce wells at maximum efficiency levels.

As with the earlier system, the new controller provides time, pressure, rate and differential-based control modes. The new system adds: gas-flow calculations through AGA standards, a smart interface to industry standard tank level gauges, a generic Modbus scanner to poll local EFM RTU equipment and enhanced data-logging capabilities. These new features allow the operator to monitor/ collect additional data from the well site and adjacent production facilities.

The addition of flowrate and tank-level gauge support allows the operator to optimize well production through tuning of the system for maximum efficiency. For

example, the controller can poll a flow computer and store gas flow volume and rate information using the multi-channel data logger. Centralizing the information from all smart devices significantly reduces complexity and cost of well-site configurations and enables use of a single radio to retrieve all necessary well-site information.

The CEO FOUR rounds out Weatherford's plunger lift offering in conjunction with eProduction's production enhancement solution, to offer a range of options - from a very simplistic controller, all the way through advanced control options.



New plunger-lift controller model extends capability of previous systems to collect additional well and production facility data.

See the April 2005 edition of World Oil for the complete "What's new in artificial lift" article.