What’s new in artificial lift

Part II — Advances in subsea boosting, HT pumps and shale gas dewatering.

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In Part I published in the March 2010 issue, we covered recent developments in gas well dewatering, coiled tubing conveyance, hydraulic pumps and surface units. Part II presents advances in ESPs, PCPs, beam or rod pump systems and gaslift technology. First mentioned among these developments is the first installation of a subsea horizontal ESP boosting system that will take place by mid-2010 to support production in ultra-deep waters of the Gulf of Mexico. At the other end of the North American continent, new high-temperature PCP and ESP systems have been developed for Canada’s oil sands SAGD and CSS applications.

Advances in artificial lift monitoring include a web-accessible system that adds expert analysis to beam system status data. A new multiphase flowmeter is available that uses variable-speed drive and downhole sensor data and performs neural network computing to infer a real-time flowrate.

New gas lift offerings include a high-pressure gas lift valve and a system to add gas lift to the perforations of a gas well for dewatering. We also present a new plunger lift dewatering technique being used in high-pressure Haynesville shale wells.

Beam or rod pump system developments include a new rod pump, that provides deeper, heavier pumping with a dynamometer to monitor and change the production rate; a motor control panel that has an integrated rod pump controller, and a brush sand seal for bottom hold-down rod pumps. A “green” beam system compressor is available to minimize noise and greenhouse gas emissions.

GAS LIFT VALVE
WITH SAFETY SEAL

Schlumberger has improved the safety performance of its XLift high-pressure gaslift system with the development of a family of valves qualified to serve as a safe pressure barrier, Fig. 4. The valves have passed Statoil’s Requirements to Well Completions Equipment tests. With a choice of four different application-specific valves, the XLift system delivers high-volume injected gas to lift oil while providing a safer pressure barrier between the cased-hole annulus and production tubing. The system also employs a reverse flow check valve that reduces the risk of hydrocarbon migration to the wellbore annulus and works in harmony with the production packer and the subsurface safety valve to form a primary well control barrier. The XLift system can also maintain a safety seal during well shut-in periods. The system’s flow check has a working pressure of 10,000 psi and a 350°F temperature rating. The gas lift system can be deployed in a side pocket mandrel during the initial completion stages of a well or by slickline.

Fig. 4. The Schlumberger gas lift valve is capable of acting as a safety barrier.