New Technologies Optimize Production

By Al Pickett
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Optimizing production efficiency and well performance are perennial challenges for oil and gas companies, but with so many operators funding their drilling and operations budgets from internal cash flows, the economic realities of the past year have only served to reinforce the need to make production optimization a top priority to maximize revenue streams. Consequently, operators are examining their oil and gas properties to determine how advanced technologies and services can help them improve results in the field and better monetize the value of their producing assets.

Equipment manufacturers and service providers are responding by introducing technologies to help operators get the most out of producing fields and meet financial performance targets. The newest offerings include subsea wellheads and controls, innovative production system designs, motor control panels, fiber-optic distributed temperature sensing tools, monitoring and well protection systems, scalable automation solutions, and leak-proof stuffing boxes.

Fiber Optic Service

The new Schlumberger OPTICall™ thermal profile and investigation service combines the features of permanent fiber-optic distributed temperature sensing (DTS) systems with the ease of use of standard slick-line systems, according to Gordon Smith, slick-line measurements manager for Schlumberger.

The service uses OpticLine™ fiber optics for single-ended, instantaneous, on-demand DTS in real time over the entire length of the line. “It is very easy to deploy, in the same way as standard slick-line and allows simultaneous thermal profiling of a well bore,” Smith says. “We have already successfully run the OPTICall service on- and offshore in more than 250 wells in 11 countries.”

There are several applications for the new OPTICall service, says Smith, who cites one example of an operator in Europe who had a small and slow, but serious leak in a well. “The operator tried a number of technologies, but could not find the leak,” Smith offers. “It took less than eight hours to have the OPTICall service on location, and within an hour, we had identified the leak location.”

David Harrison, testing services marketing communications manager for Schlumberger, adds, “DTS systems have been available for years, but only in permanent installations. But most wells were completed before this technology was developed.”

He notes, “This is the first system to be able to go out on demand and take measurements. The OPTICall service is ideal for mature wells completed before DTS was available or where installing permanent DTS was uneconomical.”

Detecting leaks is just one benefit of the OPTICall service. Harrison says gas lift optimization is another core feature of the service. “With the fiber optic line,
you can see the complete length of the well bore at one time, which allows the operator to see all the gas lift valves and analyze the flow,” he states.

Evaluating the effectiveness of hydraulic fracture treatments is another key application area, especially with the growing number of frac jobs in unconventional plays around the country. “You can run a line and look at temperature changes and fracturing effectiveness,” says Smith.

According to Smith, customers appreciate the fact that they can get results from the OPTICall service right at the well site. “It is monitored in real time, and common problems such as a leak often can be seen immediately,” he points out. “It is very intuitive. Depending on how long it takes to set up, it may take only an hour or two to do an evaluation.”

For more complex flow issues, Schlumberger offers THERMA™ thermal modeling and analysis software that is used with the OpticLine system to assess well flow performance in production, injection, and acid stimulation applications. Smith says the software can provide a more detailed analysis in addition to the initial field report, including loading multiple DTS temperature traces. Smoothing algorithms applied to the data reduce statistical noise, allowing each trace to be examined in detail, he adds, noting that viewing the data as a series of traces in two or three dimensions allows time-based properties of the well performance to be identified.

The Schlumberger Vx™ multiphase well testing technology also can be used in conjunction with the OPTICall service to give an operator an even more complete analysis of a well’s performance, Smith concludes.