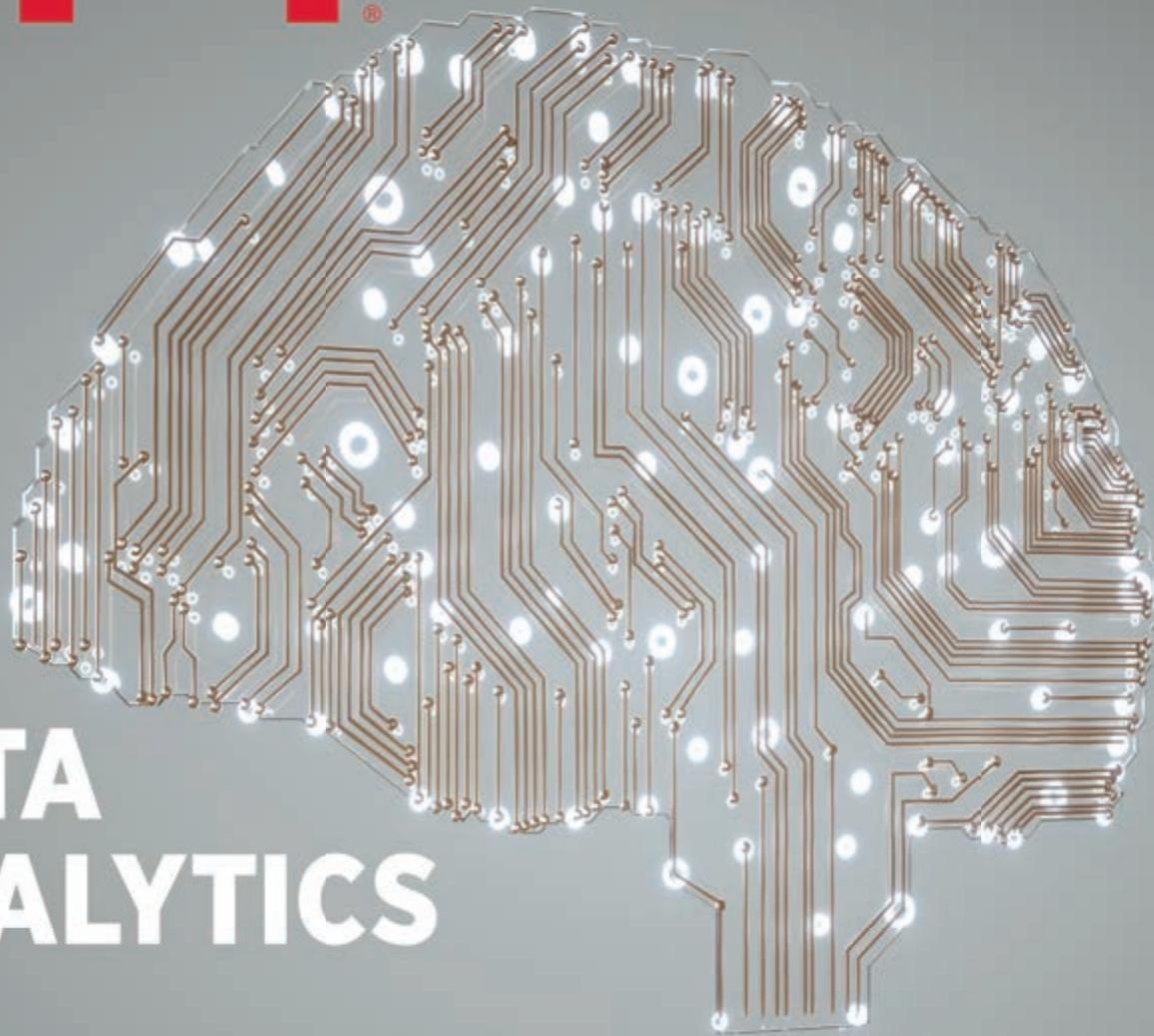


JPT



DATA ANALYTICS

**OFFSHORE DRILLING AND COMPLETION
TIGHT RESERVOIRS
SAND MANAGEMENT**

FEATURES

Fracturing Test Data
Anadarko's Digital Legacy
Shale Liquid Loading
Fracture Diagnostic Innovation

Chris Carpenter, *JPT* Technology Editor

Gas Regulator Valve

Oxford Flow introduced the IM gas regulator valve to increase reliability and reduce costs for operations in gas distribution, power generation, industrial gas, and oil and gas (Fig. 1). In an ongoing trial, the valve has been installed and commissioned easily, regulating gas pressure with rapidly changing demand profiles within an accuracy class rating of 1.5%. This accuracy enables operators to achieve faster network stability on commissioning, even where flow rates vary significantly. In addition, the valve's compact construction reduces weight and the need for expensive lifting equipment during installation and maintenance. In conventional valves, the diaphragm tends to be the most common failure point. The new design has eliminated the diaphragm, stem, and external mechanical actuator. With only one moving part, the design minimizes potential leaks and the risk of fugitive emissions, maximizing efficiency and reducing maintenance costs.

► For more information, visit www.oxford-flow.com.

Fiber Rope Extension System

National Oilwell Varco (NOV) has patented the Fathom fiber rope extension system for use in offshore applications.



Fig. 1—Oxford Flow's IM gas regulator valve minimizes potential leaks and the risk of fugitive emissions.

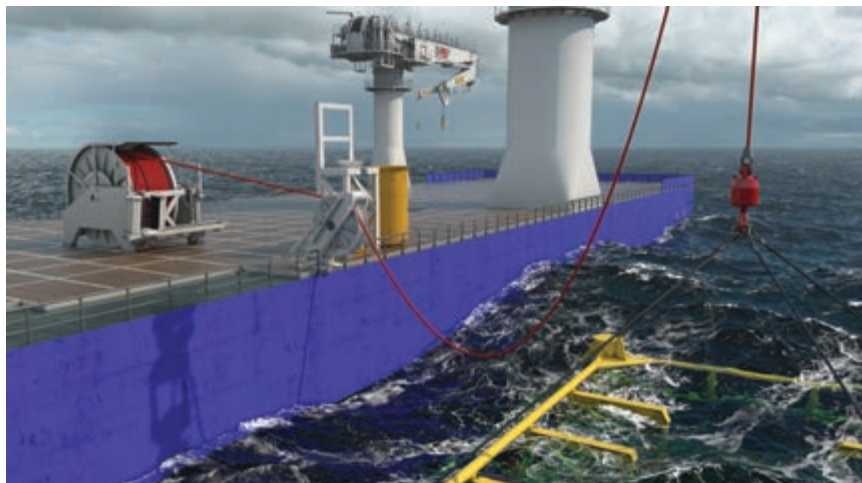


Fig. 2—The Fathom fiber rope extension system from NOV can expand the working range of cranes while increasing lifting capacity in deeper waters.

The primary purpose of the system is to expand the working range of cranes while increasing lifting capacity in deeper waters (Fig. 2). This can be achieved without significant design changes to the original crane. In the Fathom system, fiber rope is used as an extension of the steel wire rope installed on an offshore crane through a series of connection balls and rope segments. The submerged hookload will be equal to the crane's safe working load reduced by the weight of submerged fiber rope, including hardware terminations, loose gears, steel wire rope payed out, and the traveling connector. Fathom offers five times greater lifting capacity than wire rope at 5000 m. The system allows operators to perform the same job with a much smaller crane because of the very low weight of the fiber rope, which allows better hoisting-capacity use.

► For more information, visit www.nov.com.

Gas-Sampling Tube

GEOLOG has recently upgraded the design, manufacture, and quality-assurance (QA) procedures for their rig-site gas-sampling tubes. To align with this evolution, the improved gas-sample container has been relaunched as the GeoTube. The manufacturing QA pro-

cess has been revised fully, with a rigorous batch-testing procedure implemented to ensure that each tube is evacuated to a consistent level of vacuum for more reliable sampling. The tubes provide a cost-effective alternative to other gas-sampling containers. This enables many more samples to be taken for the same cost, allowing greater depth resolution in sampled gas (Fig. 3). The tube is filled from a front-mounted port fitted to every GEOLOG mudlogging gas-distribution system; therefore, no additional equipment is required to take samples. The tubes are much more compact than alternative products; modern laboratory equipment requires only small volumes to carry out analysis.

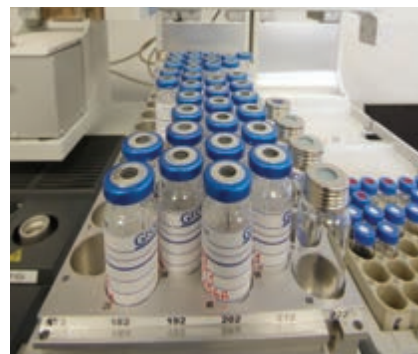


Fig. 3—GEOLOG's GeoTube gas-sampling tubes offer compact design and increased cost efficiency.



Fig. 4—The AlphaST single-trip cementing and sidetrack system does not require a cement plug.

Compatibility of the design with auto-loading technology allows the tubes to be analyzed quickly and efficiently in the laboratory.

► For more information, visit www.geolog.com.

Single-Trip Cementing System

Weatherford introduced the AlphaST single-trip openhole cementing and sidetrack system, which can initiate sidetrack operations without the need for a cement plug (Fig. 4). The system is designed to increase operator flexibility, eliminate multiple trips, and avoid costly cementing operations. The system enables operators to avoid the cost and time of setting a cement plug, waiting on cement, and time drilling it. For an operator in the Permian Basin, previous sidetrack attempts with conventional cement plugs failed in the hard formation, requiring multiple trips in the hole and resulting in damaged directional bottomhole assemblies. Re-

entry experts reviewed the application and installed the AlphaST system. After landing at the required depth, the team set the inflatable production packer to anchor the whipstock and drilled off the formation in a single trip, saving the operator 29 hours of rig time and more than \$100,000 of operational expense.

► For more information, visit www.weatherford.com.

Tool-Management Platform

HYTORC has entered into a partnership with Cumulus Digital Systems, whose Internet of Tools platform collects data from digitally enabled tools to provide real-time quality assurance and progress tracking. The partnership will couple HYTORC's bolting solutions with Cumulus' Smart Torque System (STS) to create fully connected and data-driven solutions that improve safety, quality, and productivity significantly in bolting maintenance and construction (Fig. 5). Paired with HYTORC bolting solutions,

STS technology allows users to program bolting patterns on a tablet and transmit that information directly to a pump. The pump then activates the rest of the connected HYTORC bolting solution—hydraulic or battery-powered torque tools—to tighten bolts automatically and uniformly, increasing joint integrity substantially by achieving a verifiable, even-circumferential, and targeted bolt load. By applying STS, users can realize up to 60% reductions in quality assurance and control costs and reductions in bolting time of 50% or more. STS features digital-documentation functionality and has also been proven to reduce dangerous, and potentially costly, bolting safety incidents.

► For more information, visit www.hytorc.com.

Robotic Cleaning Technology

Tube Tech introduced a cleaning robot capable of eradicating more than 90% of heat-exchanger fouling. A defining feature of the new technology is the system's ability to record videos and images of blockages, with cleaning taking place while it automatically adjusts to warped tubes. The robot can be programmed with information supplied by the customer, creating a visual representation of the bundle for technicians to analyze before gaining access to the site. This information is used to select the best cleaning process, which can be preprogrammed into the robot, saving valuable time on site. Traditional water jetting can damage costly assets, using 25% more water than necessary and only cleaning between 30–50% of fouling. The new technology protects assets and reduces water consumption. The robot is able to bring assets back to original-design thermal efficiency regardless of the level of fouling, reducing CO₂ emissions dramatically. The system features an adjustable lance-and-track system and a smart digital sensor with distance control, ensuring that cleaning is precise and thorough while protecting the materials within the heat exchanger. The system is used remotely, which ensures operator safety. **JPT**

► For more information, visit www.tubetech.com.



Fig. 5—HYTORC and Cumulus Digital Systems have introduced an integrated software platform for improved bolting maintenance and construction.