Digital Equipment Monitoring

Predictive maintenance improves reliability and service quality.

As digital technology transforms oil and gas production with industrywide efficiencies, equipment utilization is on the rise, which also increases the stress on the equipment and the frequency of maintenance.

To ensure that stimulation, completion and perforating equipment is prepared to perform reliably for every operation, Schlumberger’s new OneStim business, which is dedicated to North America operations, manages stimulation and completion equipment from an all-digital, centralized facility in Denton, Texas. There, service teams use real-time data analytics to predict—and prevent—the onset of major component failures.

Reducing costs and minimizing disruptions

The status of the equipment can now be monitored in real time. This means that for any frac pump anywhere in North America, OneStim can determine where the equipment is and how it is performing. For instance, when monitoring the acoustic response of the pump, it can be determined when a pump is approaching a failure phase and proactively service the equipment and perform preventative maintenance. Real-time data from the equipment is collected 24/7 at the remote monitoring center where experts alert field personnel to remove equipment from operations. Maintenance can then be done before failures occur.

Preventing damage reduces service company costs, which in turn reduces costs for operators. For example, a fluid end or power end failure during an operation can result in hundreds of thousands of dollars in damage, plus operational delays. Proactive, preventive maintenance cuts the cost by orders of magnitude and enables scheduling, rather than having an incident at a critical point in an operation. This proactive approach ultimately reduces the time equipment remains offline, keeping OneStim more agile and ready for the next job.

Centralizing project, equipment and logistics planning

OneStim also manages the operational details of each completion program at one central location, with real-time data guiding logistical decisions to streamline operations.

At the central operations planning control center in Sugar Land, Texas, each completion program is managed with state-of-the-art digital solutions, including mobile app logistics tracking. Real-time data are used to coordinate people, products, equipment—all in one view.

This offers many operational advantages, including:

- Centralized decision making;
- End-to-end supply chain integration;
- Process consistency and standardization;
- Collaborative environments; and
- Optimized resource utilization and scalability.

These benefits help to expedite service delivery, reduce risks and increase overall well productivity. Streamlining the entire completion-to-production cycle generates program savings and enables consistent delivery of every well according to plan.

Digital automation and monitoring

With digitally enabled technologies such as the automated stimulation delivery platform (ASDP), OneStim also brings more efficiency onto the well site. The ASDP’s automated process system controls all equipment with a one-touch approach. This system employs monitoring and predictive health processes to run each job as designed and minimize downtime.

By integrating innovative technology with streamlined processes and automation, this platform improves reliability, enhances efficiency, minimizes dust and automates wellsite processes to ensure that each operation is successfully run as designed. For example, automated features of the missile manifold of the ASDP trim up to 15 minutes from each fracturing stage, which could add up to two days operational time saved per month.

Consistently placing more stages per day

For an operator in West Texas, OneStim was able to use digital technology to organize the most efficient operations and break the previous record of eight stages placed per day. The team pumped 12 stages in 24 hours, a 50% improvement on the established record. The team would then go on to place the equivalent of 23 stages in a 48-hour period by coordinating people, equipment and logistics at the job site.

This is one of many examples of how centralized equipment monitoring and operational coordination is used to delivery wells consistently and efficiently. With real-time data analytics to enable proactivity across many facets of unconventional operations, OneStim helps operators make informed decisions during well completions and reduce overall downtime for more productive operations.

CONTRIBUTED BY SCHLUMBERGER

Experts at the Denton Center of Reliability and Efficiency in Texas oversee remote hydraulic fracturing operations. (Image courtesy of Schlumberger)