

RTS-Alert Continuous Deployment Monitoring System

Reduce HSE Risk and Improve Installation Efficiency

Applications

- Data monitoring during installation or retrieval of any ESP systems

Benefits

- Reduces personnel exposure to HSE risk
- Reduces ESP installation time
- Supports improved SQ event diagnostic data collection
- Reduces cost through improved rig utilization efficiency

Features

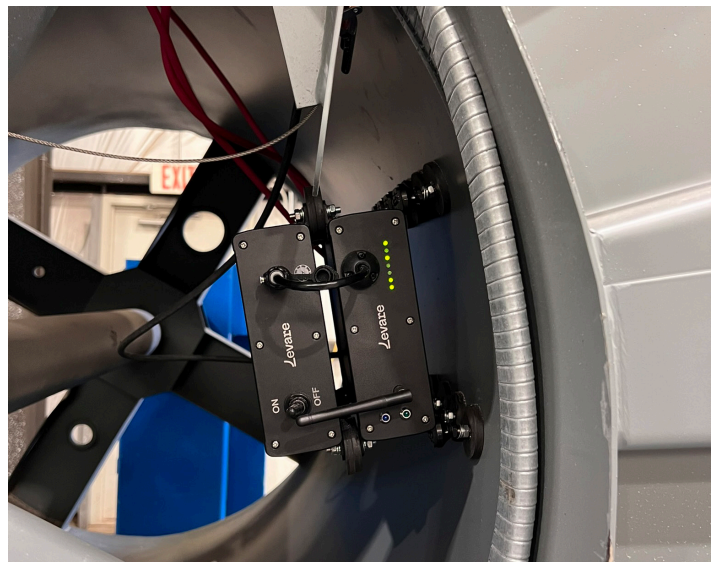
- Engineered three-phase ESP power cable electrical shorting and isolation device
- An autonomous data logging unit installed magnetically inside the cable reel.
- Battery unit providing up to 24 hours of data acquisition
- Remote data surveillance through secure private satellite or cellular connection
- Time-based log of key downhole and surface parameters recorded during deployment
- Utilization of standard ESP gauges
- Data visualization on multiple devices via internet
- Visual and audible user-defined alert set points
- Wireless-connected rig floor audible alarm

The Rig Time Saver-Alert (RTS-Alert) continuous deployment monitoring system acquires and logs valuable downhole and surface measurement data while installing or retrieving electric submersible pump (ESP) systems in a well. Key output parameters monitored are used to

- Help reduce field personnel exposure to electric shock hazard
- Aid in the investigation and resolution of potential deployment-related service-quality events
- Provide a measure of installation or retrieval operational efficiency (ESP Field Technicians and rig crew).

ESP system operations utilizing permanent magnet motors (PMM) introduce the potential risk for electric shock exposure at surface.

In the event the downhole system (pump and motor assembly) experience any unplanned shaft rotation (backspin), the PMM acts like an AC generator and can potentially generate lethal voltage and current in the power cable.



The RTS-Alert system helps protect personnel against the potentially harmful effects of backspin by first shorting and isolating the power cable leads at the reel and by continuously monitoring for any current on the cable generated by backspin during deployment. Threshold set points defined by the user in the RTS Alert system to detect anomalous current or downhole pressure conditions, trigger both visual and audible alarms alerting personnel in the vicinity to potentially hazardous backspin condition.

Continuously Monitor Key Data During Installation and Retrieval

The RTS Alert system monitors pressure, temperature, vibration, and cable insulation by connecting to standard ESP downhole gauges through the ESP power cable ends at the cable reel. Cable current is measured using a build-in CT sensor in the central unit. Visual monitoring of these key parameters is available locally (on site) at the data logger as well as through communication module with a LCD screen or accessing the website via Internet.

Record, Manage, and Continuously Improve Rig and ESP Deployment Efficiency

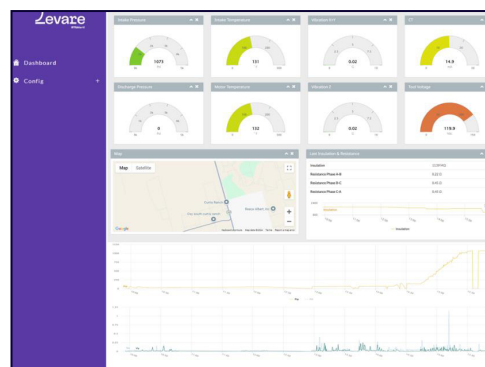
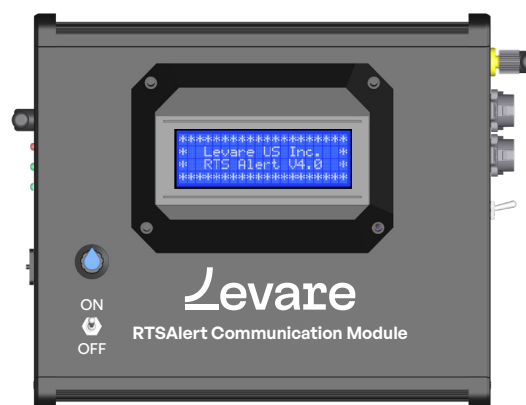
Data recorded during ESP installation or retrieval is available in both log and digital output form. Time-based logs combined with the tubing tally readily identify the depth of event anomalies such as spikes in current or pressure, or the loss of system electrical integrity (cable insulation). Historically, downhole gauge and system electrical integrity are verified only at discrete intervals during installation (example: every 30 stands of tubing). RTS-Alert continuous monitoring and the resulting detection of conditions that could be detrimental to personnel or downhole equipment enables users to take action in near real time, saving hours of rig time.

Optional satellite or cellular transmission of monitored data enables remote surveillance of deployment operations in real time. Recorded log data also opens up avenues for the benchmarking and management of rig and installation efficiency measurements.

Automated ESP Electrical Checks

ESP cable insulation measurements and phase-to-phase conductor resistance readings are reported without the need to stop the rig activity, increasing job productivity and improving safety by eliminating the need to handle the power cable to conduct these measurements.

To conduct the meg tests, the three cable leads connected to the shunting block on the cable reel use a switching device to read measurements between phases and to ground. The system can be switched-out to a digital meter for DC meg testing of the cable at regular intervals without the intervention of a field service technician.



The RTS-Alert continuous deployment monitoring system provides visual surveillance of key parameters via Bluetooth-connected mobile and tablet devices.

RTS patent number, WO 2023/212078