ViewPoint II / SPTX Downhole Sensors

Reliable downhole data acquisition for monitoring artificial lift system and well performance

Applications

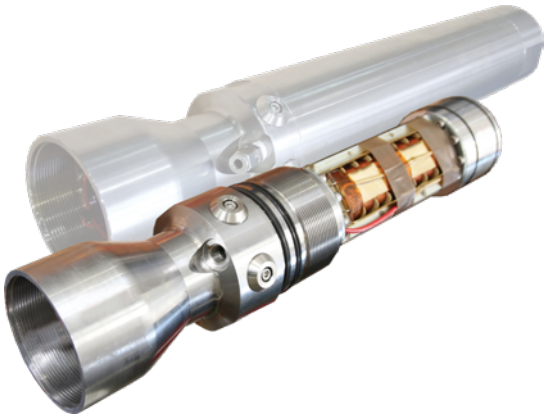
- Electric submersible pump (ESP) systems
- Permanent magnet motor (PMM) driven progressing cavity pump (PCP) systems

Benefits

- Real time continuous monitoring increases system run life
- Maximize production while providing key reservoir management data
- Compatibility with ESP motors of all manufacturers

Features

- Multiple system configurations provide fit-for-purpose capabilities
- Designed to withstand severe electrical imbalances and ground faults without damage to the sensor
- Resistance Temperature Detector (RTD) provides more stable motor temperature readings
- Protocols utilized ensure more reliable data transmission
- Compatible with SCADA systems using Modbus protocol
- Maximum operation environment temperature +150°C
- Automatic and routine system insulation resistance verification



The ViewPoint II / SPTX downhole monitoring system measures and acquires key reservoir, well, and pump operating parameters used at surface to monitor and manage equipment and well performance. This next generation downhole gauge uses the latest in instrumentation technology for reliable monitoring of ESP and PMM-PCP systems even under harsh bottomhole conditions.

The ViewPoint II / SPTX downhole monitoring system comprises three main components, which can be flexibly configured for maximum cost-effectiveness and performance. System components include the downhole sensor, a surface choke, and surface electronics.

Surface Choke

The high voltage surface three-phase choke or Dual Coupler, isolates and protects ViewPoint II / SPTX surface electronics from the high voltage applied to the downhole ESP equipment.

The Dual Coupler comes equipped with a safety interlock system to eliminate any potential shock hazard to personnel at surface. Normally required on all ESP installations including a ViewPoint II downhole sensor, the Dual Coupler can be alternately configured as a Star choke and can typically be mounted in the VSD, switch-board, transformer, or other NEMA enclosure (note: this choke is not compatible with the SPTX gauge).

Downhole Sensor

The ViewPoint II / SPTX downhole sensor includes five standard output channels to monitor intake pressure and temperature, motor temperature, vibration, and current leakage. The SPTX sensor includes an additional sixth channel used to monitor discharge pressure. A variable speed drive (VSD) or other controller at surface uses these key parameters to help manage downhole ESP system performance.

Both downhole sensor models incorporate state-of-the-art electronic components and design,
and are qualified to the highest industry standards. All Levare sensors undergo rigorous qualification testing that includes temperature cycling, shock, vibration, and pressure impact to ensure high performance and reliability under the most challenging downhole conditions.

Surface Electronics

The surface electronics equipment required for use with ViewPoint II has two available configurations. The Surface Telemetry Unit (STU) is a standalone printed circuit board that is DIN-rail mounted and integrated within an existing VSD. The STU is the primary device providing data logging, event history, trips, alarms, and communication interfacing with the drive and external SCADA systems.

Alternately, a standalone surface panel is used where the localized display of monitored parameters is required and is not otherwise available. This unit is a plug-and-play device that includes an STU card and liquid crystal diode (LCD) display mounted within a weatherproof (IP56 rated) enclosure. The surface device performs insulation-resistance checks between each downhole data frame transmission as a continuous monitor of system electrical integrity.

Acquired downhole data is available for transfer to any SCADA system using a Modbus protocol. Data communication and transfer integrity is further supported using all weatherproof cable connections to ensure uninterrupted availability of downhole sensor, power, I/O, trip, and alarm data.

ViewPoint II / SPTX Configurations

	ViewPoint II	SPTX
Pump intake pressure	V	V
Pump intake temperature	V	V
Motor temperature	V	V
Vibration (X & Y axis)	V	V
Current leakage	V	V
Pump discharge pressure		V

ViewPoint II / SPTX Measurement Specifications

Pump intake pressure	0 – 6,000 psi	(0 – 41 MPa)
Pump intake temperature	-20°C to +150°C	(-4°F to 302°F)
Motor temperature	-20°C to +300°C	(-4°F to 572°F)
Vibration (X & Y axis)	0 to 10 g	
Current leakage	0 to 20 mA	
Pump discharge pressure	0 – 6,000 psi	(0 – 41 MPa)

ViewPoint II / SPTX Mechanical Specifications

Length	23.0 in. (0.58 m)
Outside diameter	3.75 in. (95 mm)
Weight	38.0 lb (17 kg)
Body material	316 SS or CS
Elastomer	AFLAS
Polarity	+ve w.r.t. ground
Megger, max	5 kV DC (-ve w.r.t. ground)
Lower-end connection	2 – 3/8" EUE 8rd-Box