

Wireless AquiTraq

Tubing Sensing Mode (W3S Patented)

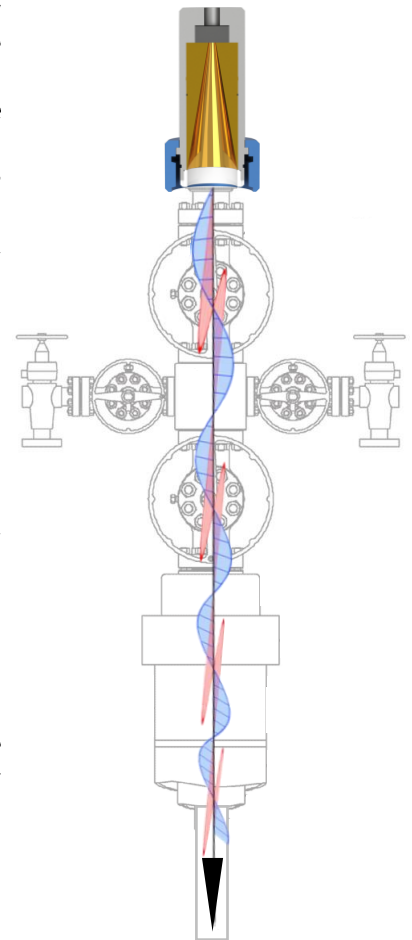


Welldata's Wireless Fluid Level Monitoring (FLM) technology uses Microwave technology to accurately determine wellbore fluid level depths and movement, real-time. In the tubing sensing mode, an EM Transceiver, integrated into a special design tree cap, is positioned over the well and transmits EM pulses down the wellbore. The shape of the transceiver is designed to repurpose the casing, or tubing string if present, into a waveguide. The frequency range and polarization of the Microwave pulses are harmonised to suit the tubing configuration to effect a reflected signal at gas-liquid and/or oil-water contacts. The reflected signal is received and a subsurface fluid level measurement displayed on Surface Readout Equipment.

This real-time wireless FLM measurement technique (patented by W3S) completely eliminates the need for any form of wireline intervention for periodic determination of well fluid levels, and completely eliminates the need for downhole sensors, electronics, instrument cable and cable protectors for applications requiring continuous monitoring of fluid levels. Furthermore, the operating principle ensures exceptional measurement sensitivity and repeatability, and results in very high-resolution data, enabling very small changes in fluid level to be accurately tracked. The fluid level measurement is devoid of sensor drift, with long term accuracy therefore being extremely stable. The Microwave pulsing propagation technique can also detect casing and tubing collars, similar to a Casing Collar Log (CCL). This results in the ability to correlate computed fluid level depths by comparing the tubing connection reflections with the casing/tubing tallies.

The simplicity of this intervention-less, wire-less, fluid level measurement technique enables very rapid determination of fluid level depths, and is therefore ideally suited for a wide range of applications, including:

- Long term trending of aquifer water levels
- Long term trending of oil-water contracts
- Long term surveillance of under-pressured reservoirs
- Determine water levels prior to running low-flow pump sampling systems



Features and Benefits

- Absence of downhole equipment greatly improves system ruggedness and reliability.
- Intervention-less measurement technique enables rapid determination of fluid level depth.
- Intervention-less technique enables rapid determination of fluid level movement.
- High measurement sensitivity, repeatability, accuracy and resolution results in high quality data.
- A fast update rate and acquisition of high quality data enables precise analysis of pressure transients.
- Zero measurement drift, ideal for long term tracking of fluid levels.
- Simple 1-man wellhead installation reduces OPEX and QHSE risk profile.
- Suitable for any size of casing, tubing and small capillary lines.
- Remote monitoring system can be implemented.
- A fully integrated Tree Cap with Sensor System is available for installation on a 3-5000psi rated API 6A Wellhead.

Specifications

Equipment	Wellhead insert Antenna and Surface Readout Equipment EM Transceiver on wellhead (pressure control available)
Range	0 – 2000 m
Accuracy	0.01%
Certification	ANSI/IEEE-STD-488.1, ANSI/IEEE-STD-488.2, IEC-1000-4-2, IEC-1000-4-3, IEC-1000-4-4, IEC-1000-4-6, IEC-1010