Trunk Main Pipe Monitoring System

- Leak detection by Hydrophone Correlating sensors
- Designed for Large - diameter pipes of any material
- Battery operated, for 5 years continuous work
- Cellular 3G/4G communication (LTE IOT will be available by end of 2019)
- New - generation automatic data analysis
- Intuitive web-based GUI, integrating GIS information
- High - frequency recording of positive and negative pressure
- Comprehensive pipe assessment information accumulated over time
- Option for Continuous Pressure trending

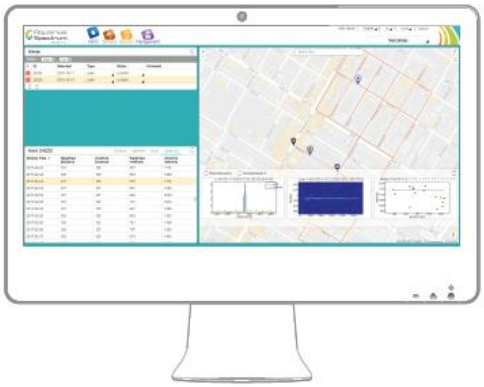
System Overview

Aquarius Spectrum introduces an innovative system for trunk main pipe monitoring that provides continuous monitoring of leaks, pressure surges, and pipe condition. Highly sensitive hydrophone correlating sensors can detect and locate leaks at large distances, and alert on harmful pressure surges.

The system can monitor large-diameter pipes of any material, over large distances of typically 2,000 feet between correlation sensors (assuming pressure of at least 50 PSI).

The system can be installed underground (in air vent pits), or aboveground. The sensors are equipped with 3G/4G cellular communication modems and state-of-the-art synchronization modules, capable of transferring large amounts of data and performing highly accurate correlations.

The system provides a flexible and cost-effective solution for pipe monitoring and leak detection. The hydrophone sensor can include an optional pressure sensor that provides accurate pressure trending every 1-60 seconds, and high - resolution recording of pressure surges. Data analytics uses innovative learning algorithms that perform adaptive signal filtering and proprietary multi-spectral correlations for leak detection. Entirely automated leak detection provides concise information on leak location and intensity. Proprietary methods, based on leak dynamics and statistical measures, provide comprehensive pipe conditioning information.



Aquarius Spectrum

Trunk Main Pipe Monitoring System

Specifications

Hydrophone sensor

- 1" male thread, with a range of adapters and air vents
- Cable (up to 5m) to the electronic unit
- M12 connector for the electronic unit
- 16 bar continuous pressure rating
- Frequency range: 0.2-2000Hz
- Dynamic range: 20 bit
- Waterproof IP68

Electronic unit

- Communication: 3G/4G cellular modem
- Transmissions: scheduled, 1-3 times/day
- Waterproof enclosure: IP68
- M12 connector for hydrophone or vibration sensors
- Optional external antenna connector
- Temperature range: -20°-60° C (-4°-140° F)
- Battery: designed for 5 years of operation
- Advanced synchronization of less than 1ms
- Automatic detection and recording of pressure transients for hydrophone and pressure sensors*
- Easy installation by Android app
- Remote configuration and parameter changes
- Dimensions: 200x80x60mm (7.8"x3.2"x2.4")
- Certification: CE, FCC

Optional Pressure sensor

- Pressure range 0-20 bar
- Accuracy: 0.25%
- 12-bit resolution
- Pressure trending sampling rate: configurable, every 1-60 seconds
- Pressure transient sampling rate: up to 1024 samples per second
- Interface: 1/4" NPT thread
- Waterproof IP68
- Cable (up to 5 m) to the electronic unit

Analytics and data presentation

- The analysis is performed on GIS pipe information, including pipe material and diameter variations for precise velocity calculation
- Automatic leak detection for all types of pipe material
- Advanced multi-spectral correlation signal analysis and adaptive signal filtering
- User-friendly web-based interface, integrating of GIS information
- Intuitive display of leaks, statistics, and pressure transients
- Automatic alerts on harmful pressure surges

* Patent Pending Technology by Aquarius Spectrum Ltd.