

MLOG™ Radio

Water Loss Management

Introduction

The time has arrived when water providers can no longer afford leaks in their distribution systems. Non-revenue water losses and the associated pumping and treatment costs are simply too high.

Itron MLOG is an advanced water loss management solution that proactively monitors for leaks in water distribution systems 365 days a year. An intelligent, round-the-clock leak detection system, MLOGs are patented, maintenance-free acoustic sensors that detect leaks automatically across the entire distribution system.

MLOG Radio is a low-cost standalone network of sensors that provide continuous surveying of the entire distribution system. Each rugged and battery-powered MLOG Radio sensor communicates with a handheld MLOG Controller and can be read during normal monthly field visits for meter data collection or can be read independently.

Using MLOG, water providers of all sizes can detect even the smallest leaks and take action to reduce non-revenue water losses, reduce associated operational costs and improve water management.

Every night, MLOG acoustic sensors collect and analyze sound patterns in their environment, detecting new, evolving and pre-existing leaks automatically. Once the leak data is collected back at the utility, mlogonline Network Leak Monitoring System analyzes the data, graphically displaying all MLOG locations on distribution system maps and highlighting areas of elevated leakage potential. Flexible reports and an expanding database of historical information provide comprehensive and intelligent analysis of the entire water distribution system.



> MLOG Controller



MLOG Information Table

Displays all MLOG data from one or more water distribution systems—sorting, searching and ranking all MLOG sensors by leak status:

- > Probable leak ●
- Possible Leak ●
- No Leak Likely ●
- Out of Staus ●
- > Date that MLOG data was last received and analyzed
- > ID number of sensor installed
- > Basic street map, or satellite view of service area
- > Data can be sorted by column

Water System Summary			
Last Updated: 1/21/2008 573 mlogs installed			
<input checked="" type="checkbox"/> 23 Probable Leak	<input checked="" type="checkbox"/> 499 No Leak Likely	<input checked="" type="checkbox"/> 225 Leaks	
<input type="checkbox"/> 41 Possible Leak	<input type="checkbox"/> 24 Out of Status	<input checked="" type="checkbox"/> 91 Noises	
Enter an mlogid or address to find <input type="text"/> Search			
Right click on the map to install a new mlog, leak or noise source			
mlog Devices			
ID	Address	Status	Rank
15866	1311 W Crawford Ave	●	1
1424	134 E Peach St	●	2
1741	131 N Arch St	●	5
1849	703 Rockridge Rd	●	6
1883	114 N Prospect St	●	7
1664	814 Marietta St	●	8
1497	1922 Second St	●	9
1487	408 Eliza St	●	10
1528	610 Trump Ave	●	11
1621	103 W Blake Ave	●	12
15858	212 E Cedar Ave	●	13
1397	150 W Painter St	●	16
Leaks/Noises			
Type	Details	ID	Address
Main	10/18/2008	1724	231 S Prospect St
Main	9/24/2008	1485	Decatur near Pulaski...
Main	9/15/2008	1597	414 S. 9th Street

Introduction

MLOG is a network of intelligent, leak detecting sensors that monitor the entire water distribution system 365 days a year. Every night MLOG sensors analyze the sound patterns in their environment. The leak data is then collected by the MLOG Controller during field visits, such as monthly meter data collection and brought back to the utility for advanced sound analysis and leak pinpointing.

How It Works

- Step 1: An MLOG sensor is deployed in the water distribution system.
- Step 2: The Analyze process receives readings by e-delivery to mlogonline (FTP or E-mail).
- Step 3: mlogonline Network Monitoring System computes a leak index for each MLOG sensor and assigns a leak status:
 - No leak
 - Possible leak
 - Probable leak
 - Out of Status
- Step 4: The communication module generates messages, alerts and reports to direct leakage investigations and pinpointing activities.

Installation

The MLOG patented acoustic sensors are rugged, waterproof, battery-powered devices that can be installed either indoors or outdoors on a service pipe, usually near a water meter. MLOG sensors installation ratios are dependent on pipe material and distance between water service connections and can range from every fifth to every tenth service connection. Once installed, they are maintenance-free.

Data Collection

MLOG leak detecting sensors record sound data from the distribution system for four hours every night. The MLOG recordings data is then transmitted to the utility.

- > Via radio transmission from a handheld MLOG Controller

Data Analysis

By analyzing sound history and nighttime patterns, mlogonline creates a leak index for all MLOG sensor locations. Water providers can view the status of installed sensors, view the sensor information table and view area maps with sensor locations and activity summaries.

MLOG Leak Detecting Sensor Sensing

- > Sensitivity: 1 V/g
- > Range: Up to 500 feet
- > Bandwidth: 10-2,000 Hz

Power

- > Source: AA lithium battery
- > Battery life: 10 years in Radio Communication Mode

Physical / Environmental

- > Rating: Sealed, waterproof, IP68
- > Housing: Black polycarbonate and brass
- > Dimensions: 4.8" x 2.58" (12.21 cm x 6.57 cm)
- > MLOG Sensor Standard Install Kit: 1 1" Pipe Clamp, 1 1" Threaded Rod
- > Optional pipe mounting:
 - 2" Clamp for large diameter pipe
 - Right angle rod for shallow pit applications

Radio

- > Range:
 - 1100 feet (line of sight)
 - Up to 300 feet (obstructed view)
 - Up to 100 feet (meter pit with metal cover)
- > Type: 915 MHz, digital frequency-hopping
- > Certification: FCC approved, license-free

MLOG Controller Power

- > Source: Rechargeable, lithium ion battery
- > Battery life: 5 years

Radio

- > Read time: 1/10 of a second
- > Type: 915 MHz, digital frequency-hopping
- > Certification: FCC approved, license-free

Physical/Environmental

- > Rating: Weatherproof, IP54
- > Housing: ABS plastic, black
- > Weight: 5 oz (150 g)
- > Dimensions: 3.0" x 4.0" x 1.0" (7.6 cm x 10.2 cm x 2.5 cm)

Data Storage & Transfer

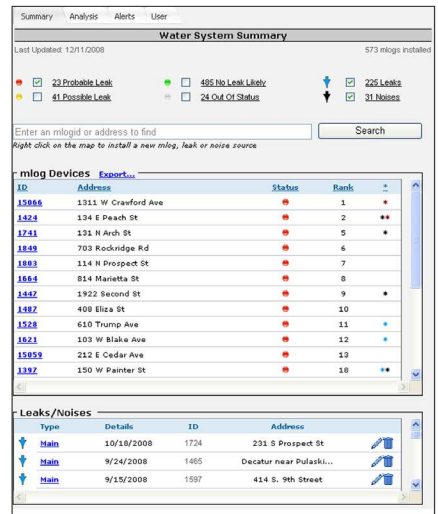
- > Memory: 4,000 MLOG readings
- > PC connection: USB

mlogonline Network Monitoring System

- > Operating systems: MS Windows® XP/2000/NT
- > Maximum number of sensors: Unlimited
- > Integrated water system maps

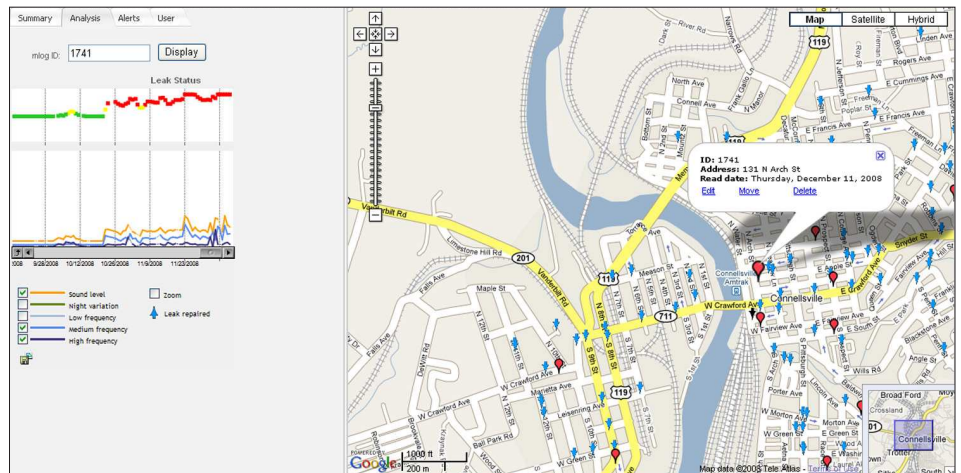
mlogonline Network Monitoring System

The map shows leakage at a glance, overlaying leak indexes from MLOGs within an area of the water distribution system. The color image indicates areas of low (green) through high (red) leak index, using MLOG advanced digital signal processing.



Sound History and Nighttime Pattern

MLOG automatically detects changes in the level and frequency of pipe sounds from night to night. The sound pattern during nighttime hours is also analyzed every night. This specialized leak information is used to create a leak index at each MLOG location.



About Itron Inc.

Itron Inc. is a leading technology provider to the global energy and water industries. Our company is the world's leading provider of intelligent metering, data collection and utility software solutions, with nearly 8,000 utilities worldwide relying on our technology to optimize the delivery and use of energy and water. Our products include electricity, gas, water and heat meters; data collection and communication systems, including automated meter reading (AMR) and advanced metering infrastructure (AMI); meter data management and related software applications; as well as project management, installation, and consulting services. To know more, start here: www.itron.com



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