

Itron

Knowledge to Shape Your Future

Water Loss

Management

Solutions



DigiCorr
Digital Transceiver

smart stewardship

Water lost through broken or aging distribution pipes amounts to 20 percent, conservatively, for the water industry. Identifying and mitigating water loss represents the single greatest supply-side opportunity for water providers to conserve water, recover lost revenues and improve overall operational efficiency.

Globally, water providers face a host of challenges in the 21st century. Aging distribution infrastructure, rapid population growth, and environmental concerns and constraints rank among the highest. In drought-prone regions, unaccounted-for water threatens resource sustainability as well as the effectiveness of voluntary and mandatory conservation efforts. Even where water is plentiful, successful management of aging pipes and valves can achieve important benefits through increased efficiency and long-term revenue assurance.

smart pipeline

Service line breaks are responsible for a majority of water lost in the distribution system. Improving pipeline integrity can significantly reduce a utility's overall unaccounted-for water, which in turn, allows water providers to eliminate needless treatment costs, defer capital expenditures for surplus production facilities, and recover the wholesale/retail value of water that can now be delivered.

State-of-the-art acoustic sensing technology represents a true breakthrough in supply-side preservation solutions for the water industry. By actually "listening" to the distribution system, an innovative combination of acoustic sensors, automated meter reading (AMR) technology and innovative data analysis software is revolutionizing water leak detection, pinpointing and mitigation.

patented technology

Itron's suite of advanced leak detection systems provides enterprise solutions for pipeline management. Using patented acoustic technology and the Itron Water Fixed Network, water providers can analyze vibration patterns from anywhere in the distribution system, using advanced signal processing to characterize sound patterns in the pipes over time—significantly improving their ability to proactively maintain critical water infrastructure.





MLOG

Maximize revenue recovery with a smart grid of innovative acoustical sensors

MLOG is a network of intelligent, leak detecting sensors that integrate seamlessly with the Itron Water Fixed Network to monitor the entire water distribution system. MLOG sensors analyze sound patterns in their environment, detecting new, evolving and pre-existing leaks automatically. Affordable and comprehensive, MLOG is a permanent automatic solution to reducing water loss and increasing pipeline integrity in every street and home. Around the clock, secure leak detection data is collected automatically by the Water Fixed Network. With many advanced software features, the patented MLOG system detects and localizes leaks so utilities can optimize repair and remediation efforts (U.S. Patent No. 6,957,157).



ZCorr

Pinpoint leaks through strategic deployment of innovative leak sensors in a single overnight surveillance

ZCorr Digital Correlating Loggers provide breakthrough performance in surveying and pinpointing leaks over several miles of water distribution system pipe in a compact, cost-effective solution. ZCorr's digital technology offers significant advantages over traditional loggers with its ability to create highly synchronized sound recordings of multiple leaks in a zone overnight in one step. After daytime retrieval of the loggers, ZCorr's advanced signal processing software automatically pinpoints any leaks present. ZCorr technology is patent-protected (U.S. Patent No. 6,567,006).



DigiCorr

Effective long-range integrity testing with state-of-the-art digital correlation

The latest version of the industry's original digital correlator, DigiCorr combines technologically advanced sound processing, high-resolution data management and mapping with the industry's easiest-to-use operator interface. Automatic leak frequency analysis (ALFA™) provides the exclusive ability to locate even the smallest of leaks on all pipe materials, even under the most extreme conditions. DigiCorr technology is patent protected (U.S. Patent No. 5,974,862).



UNILOG

Narrow the focus of intensive leak detection efforts with affordable, system-wide coverage

Deployed in underground valve chambers, these light-activated digital sound loggers economically survey a wide area for leakage. The intelligent digital sensor records and analyzes sound from the water pipeline, allowing leak pinpointing efforts to be concentrated in areas where leaks are most probable.



Digital Leak Detector (DLD)

Rugged, lightweight digital audio processing for buried water pipelines at your fingertips

DLD is the first true digital sound leak detector in the industry. Lightweight and simple to use, the LCD display presents visual cues of water leakage. Using dynamic range compression and digital precision, DLD easily identifies leaks that are undetectable by other leak detection technology on the market.



profile

Itron Inc.

Itron is a leading technology provider and critical source of knowledge to the global energy and water industries. Nearly 3,000 utilities worldwide rely on Itron technology to deliver the knowledge they require to optimize the delivery and use of energy and water. Itron delivers value to its clients by providing industry-leading solutions for electricity metering; meter data collection; energy information management; demand response; load forecasting, analysis and consulting services; distribution system design and optimization; web-based workforce automation; and enterprise and residential energy management.

To know more, start here: www.itron.com

Contact

Corporate Headquarters

2111 North Molter Road
Liberty Lake, Washington 99019
U.S.A.
Tel.: 1.800.635.5461
Fax: 1.509.891.3355



Knowledge to Shape Your Future

Water Loss Management MLOG™

introduction

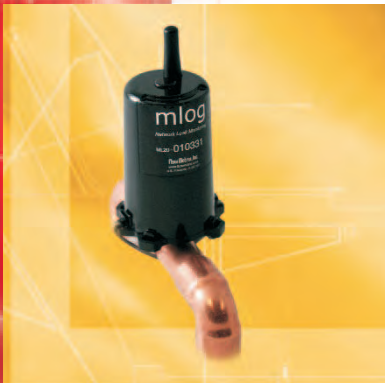
Water Pipeline Integrity Management for the 21st Century

Itron MLOG is an advanced water loss management solution that integrates with Itron Water Fixed Network to provide intelligent, round-the-clock distribution system monitoring 365 days a year. Patented, maintenance-free acoustic sensors detect leaks automatically across the entire distribution system. Using MLOG and Water Fixed Network, water providers of all sizes can reduce unaccounted-for water, improving infrastructure maintenance.

advanced leak detection

Every night MLOG acoustic sensors analyze sound patterns in their environment, detecting new, evolving and pre-existing leaks automatically. MLOG sensors connect to Itron 200 Series Water Endpoints within the coverage area. Sound data is collected along with other metering information and delivered through the Water Fixed Network to the utility. MLOG pipeline management software analyzes the data, graphically displaying all MLOG locations on distribution system maps and highlighting areas that have elevated leakage potential. Flexible reports and an expanding database of historical information provide comprehensive and intelligent analysis of the entire water distribution system.

Alternatively, radio-based MLOG sensors can be deployed standalone in a walk-by or drive-by application.



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 and then the data is transferred via the Water Fixed Network 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: Water Fixed Network collects the MLOG data from the sensors.
- Step 3: MLOG software computes a leak index for each MLOG sensor and assigns a leak status:

- No leak
- Possible leak
- Probable leak

Step 4: Automatic software analysis, electronic and printed reports track leakage and direct investigation and pinpointing of all leaks localized by MLOG.

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. Typically, MLOG sensors are installed on every tenth water service. Once installed, they are maintenance-free.

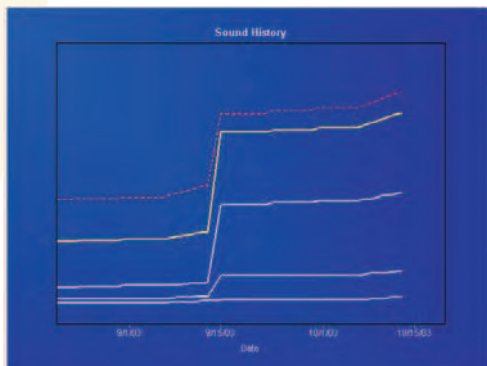
data collection

MLOG leak detecting sensors record sound data from the distribution system for four hours every night. The MLOG sensor data is then transmitted to the utility in one of two ways.

- > Via the Itron Water Fixed Network (WFN) system
- > Via radio transmission from a handheld MLOG Controller

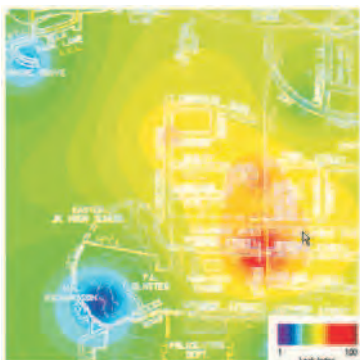
data analysis

By analyzing sound history and nighttime patterns, MLOG pipeline management software creates a leak index for all MLOG logger locations. Water providers can view the status of entire regions on the MLOG Color Map or view the status of each logger in the MLOG Data Manager.



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.



MLOG Color Map™

The MLOG Color 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 (blue) through high (red) leak index, using MLOG Color Map digital signal processing.

Status	Log #	Log ID	Address	Zone	Map	Date Installed	Date Last Read	Leak Index
●	13	1013	1290 Clam Hill Drive	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	46
●	19	1019	962 Lincoln Road	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	19
●	80	1080	720 Lincoln Road	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	38
●	81	1081	678 Briarwood Circle	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	63
●	82	1082	1324 Lincoln St.	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	50
●	83	1083	1462 Lincoln Street	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	33
●	84	1084	713 Main Street	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	49
●	85	1085	227 Quarry Lane	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	56
●	86	1086	357 Greystone Way	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	28
●	87	1087	2734 Flandell Street	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	34
●	88	1088	420 Janine Drive	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	19
●	89	1089	657 Day Street	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	29
●	90	1090	2 Dalton Circle	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	40
●	91	1091	1901 Bay Road	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	10
●	92	1092	478 Brenwood Drive	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	67
●	93	1093	H.H. Richardson	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	6
●	94	1094	134 Speener St	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	82
●	95	1095	1600 Douglas Drive	Easton B2	B2	2/14/2002 11:29 AM	2/14/2002 11:29 AM	28

MLOG Data Manager

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

- > Probable leak ● / possible leak ● / no leak likely ●
- > Map location / address / zone
- > Type of main / service pipe / meter
- > Urban / suburban / rural
- > Sound / leak / reading histories

competitive comparison

Feature	MLOG	Other Logger Systems
Battery Life		
Warranted	7 years	3 years
Expected	15 years in AMR Communication Mode 7 years in Radio Communication Mode	Up to 10 years if loggers are turned on/off with optional sleeper unit
Installation	Water service line at the meter (basement or meter pit)	Underground valve chamber on mains
Wireless Data Retrieval		
AMR connection	Works with all industry-standard AMR devices	No AMR connection capability
Mobile radio	2-way MLOG radio controller downloads analysis data and programs logger in one operation	Radio patroller transmits only leak / no-leak status. Downloading 7-day data summary requires the physical retrieval of logger and optional handheld interrogator unit
FCC requirements	902-928 MHz, advanced frequency-hopping, spread-spectrum. No FCC requirements for MLOG-AMR	463 MHz, single frequency channel, annual FCC licensing required
Antenna	Internal (sealed)	External, cabled, mounting kit & installation required
Environmental	Entire MLOG unit is sealed & waterproof (IP68)	Potted electronics (IP68); antenna not waterproof
Leak Response Time		
Fixed network AMR	Less than 24 hours	No AMR connection capability
Other wireless methods	Whenever water meter is read or on-demand	On patrol schedule or on-demand
Data Analysis (single Logger)		
Overnight sound pattern	Continuously from midnight to 4:30 am	Snapshot of data in the middle of the night
Long-term sound analysis	Yes	No long-term analysis capability
Frequency analysis	Identifies different types of leaks	No frequency analysis capability
Historical data record	Unlimited lifetime data managed in MLOG system software	7-day summary available via manual download in the field
Data Analysis (all Loggers)		
Leak Index	Yes	No
Color Map™	Yes	No
Historical data & analysis	Yes, at any selected time	No
Intelligent network-wide analysis	Yes	No
Software		
Integrated GIS maps & logger information	Yes	No
Logger information exports to GIS	Yes	No
Leak data exports to GIS	Yes	No
Online support	Yes, remote login by Itron	No

technical specifications

MLOG Leak Detecting Sensor

Sensing

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

Power

- > Source: AA lithium battery, factory replaceable
- > Battery life:
 - 15 years in AMR Communication Mode
 - 7 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)
- > Pipe mounting: 2 O-rings or tie-wraps (no tools required)

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 Transponder

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

MLOG Analysis Software

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

profile

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