



Water loss localization

24 Hours a Day. 365 Days a Year.

LeakView™

WATER MAIN BREAK DETECTION
NON REVENUE WATER MANAGEMENT
24/7 NOTIFICATIONS

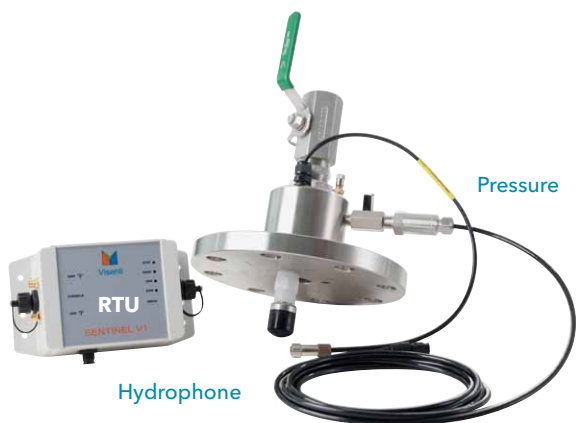


Real-Time Pipe Failure Detection

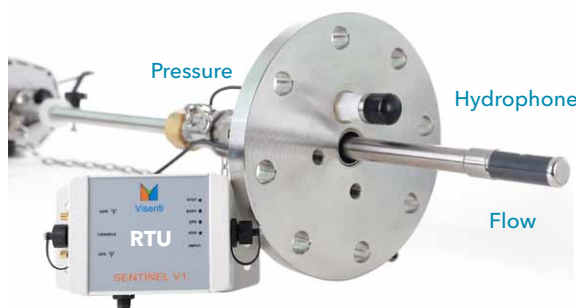
Advanced sensing platform measuring multiple pipe leakage indicators – pressure, acoustic and flow – integrated with state-of-the-art analytics to keep an eye on pipe breaks in critical network sections – round the clock!

Visenti's LeakView™ system is comprised of multiple pipe leakage indicators such as high-rate (64-256 samples/sec) pressure sensors, hydrophones and flow meters installed at optimal locations - coupled with minute-by-minute data analytics for anomaly detection. This solution is offered in two sensing configurations depending upon the leakage and burst detection needs:

Pipe Burst/Leak Detection & Localization: Pressure Transient & Hydrophone units – suitable for distribution network, trunk mains and customer connections are installed on existing tapping points such as fire hydrants:



Non Revenue Water Tracking, Water Loss Management and Anomaly Detection: Flow meter, Pressure Transient & Hydrophone units are installed to detect and track losses on transmission mains and DMA/DMZ.



The sensing devices transmit continuous information about potential leaks in the pipe network to a data management and analytics engine. The LeakView™ system identifies the pressure transients, acoustic noise and/or flow anomalies related to such breaks and localizes them to the faulty pipe with high likelihood. This detection process is automated and provides information on the severity of leaks to help the repair crews prioritise their response.

System Performance

- LeakView™ can be deployed on Trunk mains, Open networks or inside DMAs.
- Pipe breakage can be detected and localized from a range of 1 Km or more using pressure transients or 500m using hydrophones, depending on network connectivity and configuration.
- Water main breaks can typically be detected on pipes with diameter above 100mm. Leakage detection on smaller diameter pipes requires a higher density deployment
- Pipe bursts can be detected on pipes made of Asbestos Cement, all metal pipes such as Cast Iron, Ductile Iron, Steel etc. Plastic pipes such as PE, HDPE and PVC require higher density sensor deployments.
- Water main breaks can be detected and localized in real-time (24/7) . Not only during the night!
- Leak localization accuracy using pressure transients or acoustics is dependent on the GIS data accuracy. On average, the accuracy is 20m to 100m. Thereafter, the utility needs to survey the suspected pipe to pinpoint the leak.
- Alerts are sent in real-time to the customers and can be integrated within customer's own SCADA system.

Monitoring and Command Center



Visenti also offers a subscription-based 24/7 alarm monitoring service to complement LeakView™. Once a critical leak event is identified, Visenti's Control Center is activated to respond to the alert escalate to the most relevant network operators.



IAMS Search		PER PAGE 10	Pressure Anomaly (4)	Quality (0)	Feb 14, 2017 - Feb 15, 2017	RELOAD	(04.22)
6 RANK	Tanjong Katong Complex (Stn 30)	1	1	1	N.A	survey next day	[No Comments]
5 RANK	Ubi Ave1 (Stn 29)	1	1	1	long_drop	survey next day	[No Comments]
7.5 RANK	Marine Parade Rd_VJC (Stn 48)	4	1	1	N.A	deploy crew immediately	[No Comments]
7 RANK	Fort Rd (Stn 39)	1	1	1	N.A	deploy crew immediately	[No Comments]

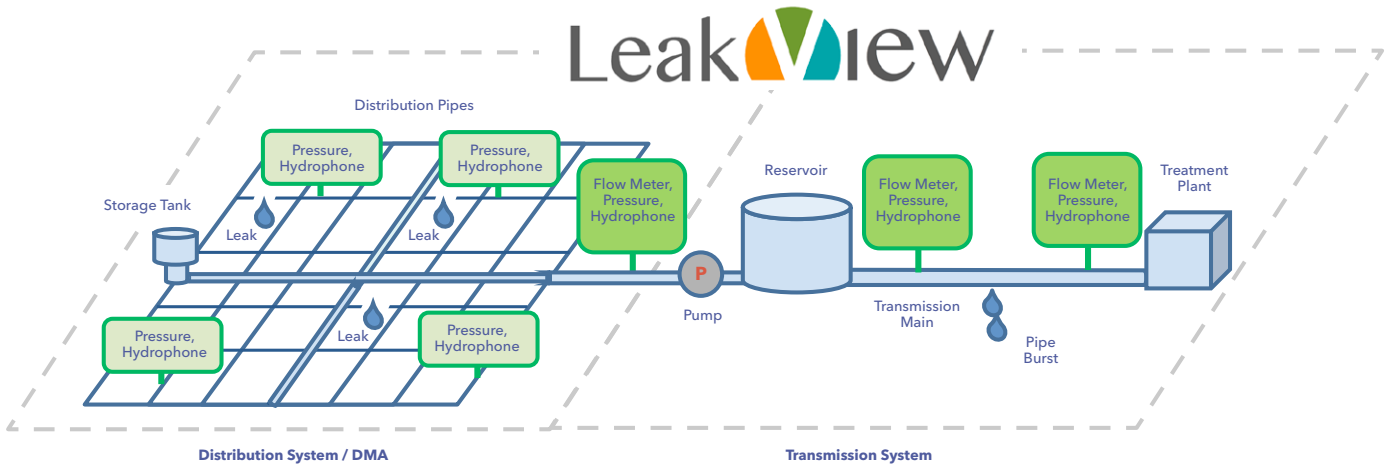
Pressure transient-hydrophone sensors providing extensive pipeline coverage, and 24/7 alerts allow cost effective large-scale pipe failure detection on critical parts of the network.



Real-time Alarms sent to a 24/7 control room help monitor the pipe network, prevent false alerts and improve response time.

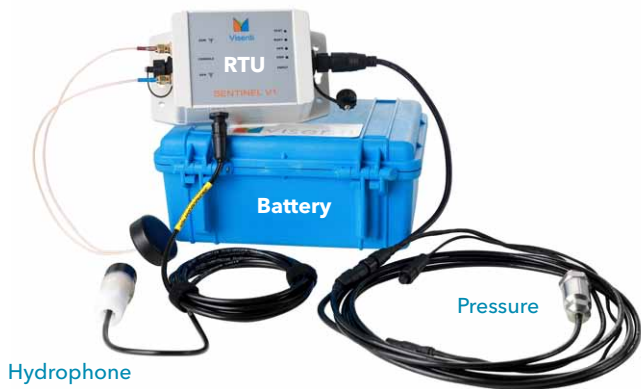
Visenti combines the benefits of three major leak detection methodologies - Pressure Transients, Hydrophones and Flow rates - to provide a comprehensive non-revenue water reduction solution.

	Pressure Transients	Hydrophones	Flow
Network	Long Distance up to 1.0 Km	Small Distance up to 500m	At the DMA Inlet, for entire DMA
Pipe Size	All pipe diameters	Most effective on pipe diameters below 600mm	More suitable for medium large diameter pipes
Pipe Material	All pipe materials	Best suited on metallic pipes	NA
Detection Time	24/7 Detection	Most effective during night time / during quiet hours	Effective over daily/weekly trend analysis
Network Types	Suitable to all network configurations - DMA, Trunk Mains, Open Networks	Suitable to all network configurations - DMA, Trunk Mains, Open Networks	Suitable for well managed DMAs
Localization Accuracy	Leak Localization Accuracy up to +/-50m - with each sensor covering several KM of pipe	Can potentially Pin-point leak events up to +/- 5m	DMA level indication of leaks and water losses
Alert Time	Alerts sent within minutes of the occurrence of pipe burst	Alerts are monitored over a period of 24-48 hours to confirm existence of developing leak	Alert on pipe burst are sent within minutes, alerts on increased water losses are sent on daily basis
Type of Leak	Detects newly occurring bursts	Detects leaks growing over time	Detects background existing leakage



LeakView Sensing Equipment

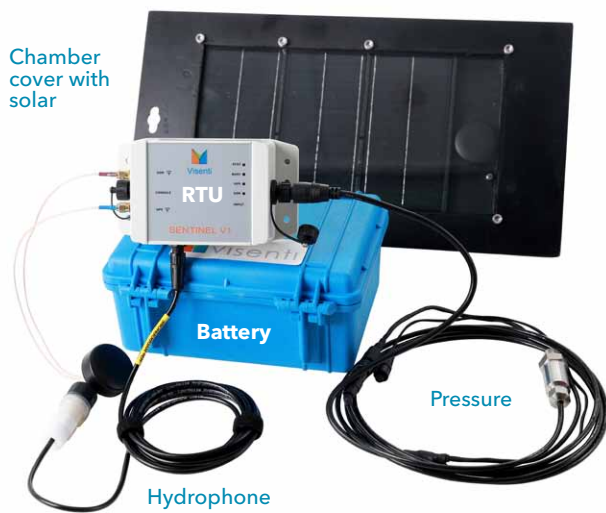
Visenti's pressure-hydrophone sensing equipment can fit to any installation scenario



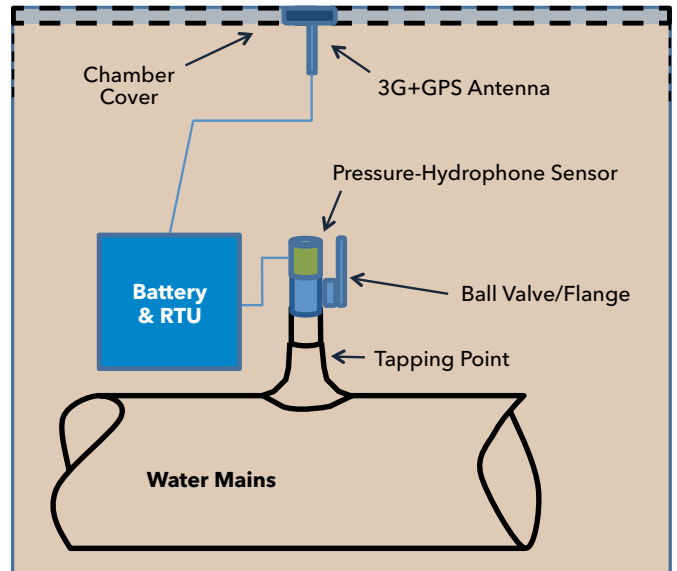
Underground Deployment



Hardware available with low profile solar panel integrated into chamber cover



Underground tapping schematic

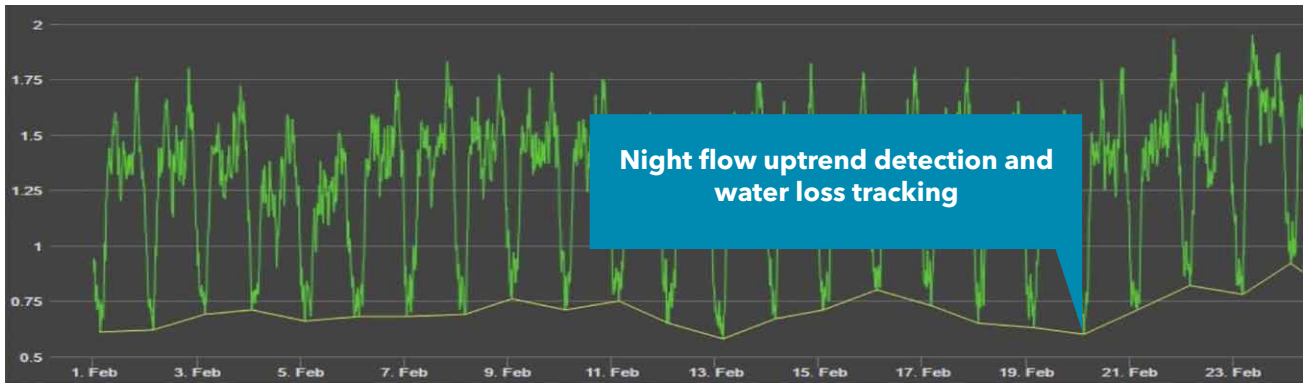


Above ground deployment

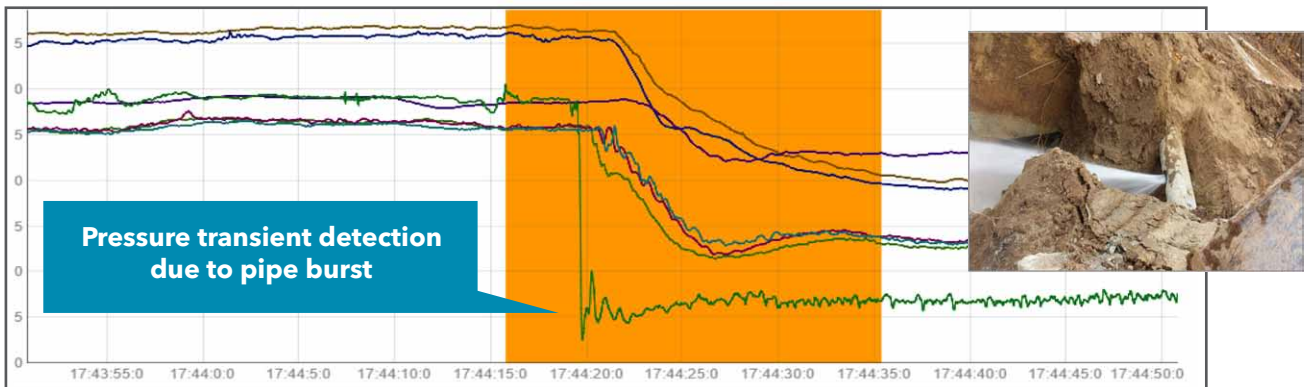


Case Studies

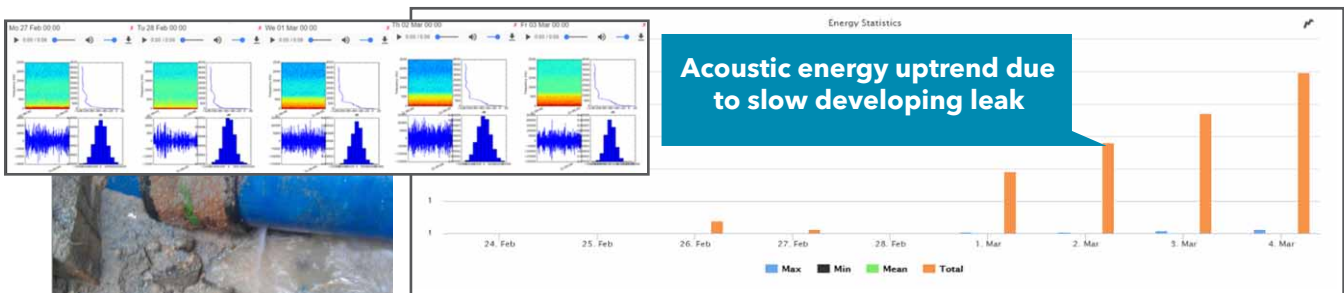
1 DMA level Water loss tracking through online minimum night-flow analysis



2 Steel Transmission main (diameter 300mm) burst detection and localization in real-time using pressure transients measured by multiple sensing sites



3 Cast Iron Distribution pipe (diameter 200mm) slow leakage detection from a range of 0.5Km using acoustic energy measured by hydrophone



Quick Return on Investment with Visenti's LeakView™

- Reduced run time of leaks, which is a major contributing factor of your NRW component.
- Early location and repair of underground and unreported bursts that can run indefinitely and can cause infrastructure damage.
- Repairing leaks early - minimising the risk of catastrophic failures, property damage, liability and higher repair and rehabilitation costs.
- Minimising shutdowns, or water outage, planning of shutdowns when convenient, not as an emergency, public perception.
- Reduced rehabilitation costs.
- Reduce public and property risk.
- Minimise legal / litigation costs / Reduction in insurance costs and claims.
- Proactive monitoring is evidence you are managing and minimising risk.
- Reduce the re-occurrence of bursts through managing, reducing or eliminating damaging transient events.
- Predictive burst analysis (predicting new burst events).
- A fraction of the cost of permanent acoustic noise logging.

What can Xylem do for you?

Xylem [ˈzɪl m]

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services, and agricultural settings. With its October 2016 acquisition of Sensus, Xylem added smart metering, network technologies and advanced data analytics for water, gas and electric utilities to its portfolio of solutions. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

For more information on how Xylem can help you, go to www.xylem.com



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