



pure[®]
TECHNOLOGIES

Inline Leak Detection

*Accurate Leak and Gas Pocket Detection
for Large-Diameter Pipelines*



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Large-Diameter Leak Detection

There are about 12 billion gallons of water lost per day globally, a lot of which could be prevented with the implementation of leak detection programs. While leaks on small-diameter water distribution mains are the most common leak found, they account for only a small percentage of the total water lost from leaks. A study completed by the *American Water Works Association* showed that leaks on large-diameter transmission mains account for almost 50 percent of water loss, while they make up less than 5 percent of the total leaks. Focusing leak detection programs on large-diameter pipelines is the most effective method in reducing water loss. In addition to reducing water loss, the early identification and repair of leaks is important to overall pipeline integrity, as the presence of leaks is often a preliminary indication of failure.

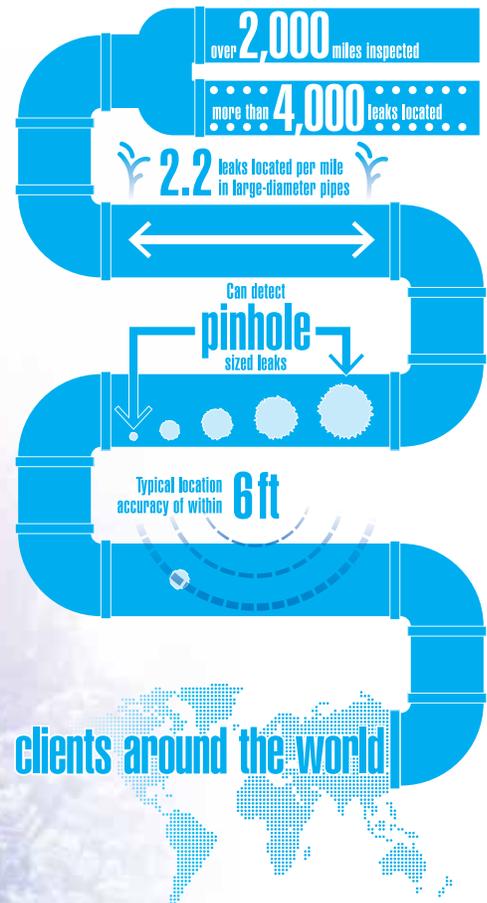
Why Use Inline Leak Detection?

While there are many methods of locating leaks on water transmission mains, inline leak detection is the most accurate because it brings the leak detection sensor directly to the source of the leak. In many cases, leaks are located well below the surface and do not become visible for a long time, if ever, meaning utility operators don't know that a pipeline is leaking; Inline leak detection can accurately locate these buried leaks. In addition large-diameter pipelines often run beneath busy streets and are a crucial source of water for rate payers; operators cannot afford to shut down service and excavate large portions of a city street to search for suspected leaks. The accuracy of inline leak detection can effectively reduce shutdown and excavation times, allowing operators to carry out fiscally responsible and efficient repair projects.

VALUE OF WATER LOST (USD)*

Diameter of Leak Hole (inches)	.1"	.25"	.33"	.5"	.75"
1 Year	\$2,509	\$15,684	\$27,826	\$62,734	\$141,152
5 Years	\$12,547	\$78,418	\$139,130	\$313,670	\$705,758
10 Years	\$25,094	\$156,835	\$278,261	\$627,340	\$1,411,515
20 Years	\$50,187	\$313,670	\$556,521	\$1,254,680	\$2,823,031

Pure's Large-Diameter Leak Detection Experience





SmartBall® Leak Detection

Free Swimming Leak Detection

SmartBall leak detection is a free-flowing tool used to locate leaks and gas pockets in pressurized pipelines. It is effective on any pipe material and is capable of completing long leak detection surveys in a single deployment without disruption to regular pipeline service. The tool is equipped with a highly sensitive acoustic sensor that is able to locate 'pinhole' sized leaks.

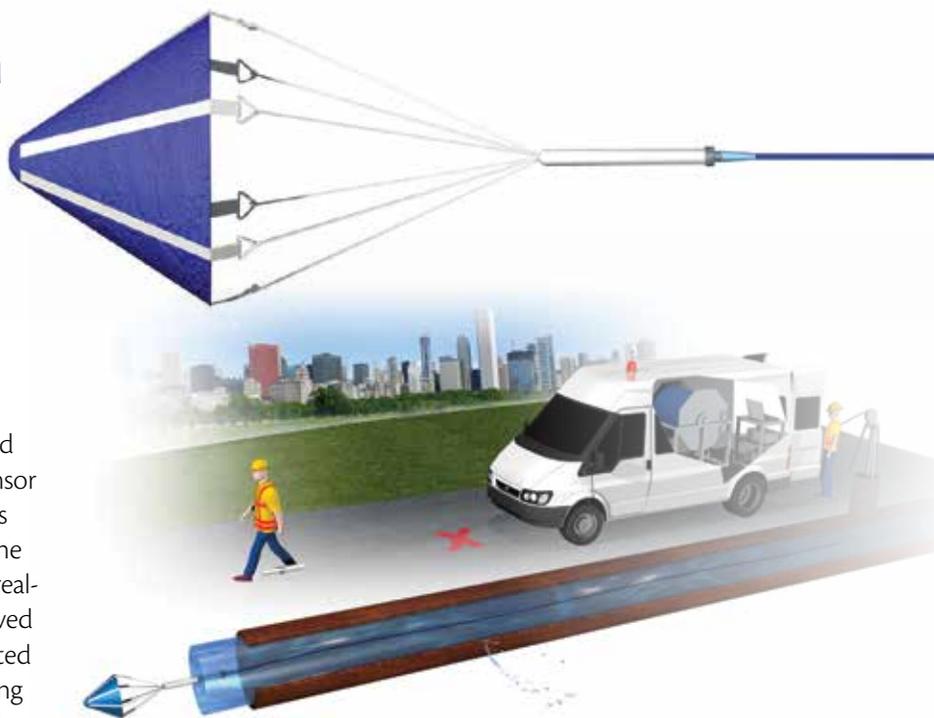
The SmartBall tool is inserted into a pipeline and travels with the water flow for up to twelve hours while collecting information about leaks and gas pockets. It requires only two access points for insertion and extraction, and is tracked throughout the inspection at predetermined fixed locations on the pipeline.

Sahara® Leak Detection

Tethered Leak Detection

The Sahara platform is a tethered leak detection tool used to locate leaks and gas pockets in pressurized water and wastewater pipelines. The tool is effective on any pipe material and allows the operator close control and sensitivity during inspections with no disruption to regular pipeline service. The acoustic sensor is highly sensitive and is able to locate 'pinhole' sized leaks.

Leak detection surveys using the platform are completed while the pipeline remains in service by inserting the sensor into a live pipeline through a tap. A small parachute uses the flow of water to draw the sensor through the pipeline while it remains tethered to the surface. This allows for real-time results and maximum control; the tool can be moved back and forth using a winch system to confirm suspected leaks. Sahara leak detection is tracked above ground using sensors, which also allows for the precise marking of leaks.



TECHNICAL SPECIFICATIONS

	SmartBall® Leak Detection	Sahara® Leak Detection
Tool Type	Free-Flowing	Tethered
Pipe Materials	All	All
Pipe Diameter	6-inches and larger	6-inches and larger
Typical Location Accuracy	± 6 ft. (1.8 m)	± 1.5 ft. (0.5 m)
Insertion point size	4-inches or larger	2-inches or larger
Inspection Length	Up to 15 miles per insertion	0.5-1 miles per insertion
Pipeline Mapping	No	Yes
Inline Video	No	Yes



Dallas Water Utilities (DWU)

Large-diameter water transmission mains in Dallas are at high risk of developing leaks in the summer. Due to the heat and dryness, the ground becomes extremely hard, this shifts the buried pipes slightly which can cause leaks to develop and increases the risk of pipe failure. In 2004, The Dallas Water Utilities (DWU), which services 2.4 million customers in Dallas and nearby communities, began an ongoing proactive annual leak detection program using Sahara technology. The program has been extremely effective for DWU, locating 120 leaks in 100 miles of large-diameter transmission main inspection. The estimated water savings from all of the leaks identified and repaired by DWU is about 7.2 million gallons per day. DWU has also seen a 17 percent reduction in catastrophic water main failures since the start of the program.

Birmingham Water Works Board (BWWB)

In January 2013, the Birmingham Water Works Board (BWWB) completed a leak detection survey using SmartBall technology on almost 8-miles of 36-inch to 42-inch Reinforced Concrete Pipe (RCP). The survey located 26 acoustic anomalies resembling leaks in four separate inspections. BWWB has since verified 20 of the leaks in the field with high location accuracy. The remaining six anomalies have either been associated with existing features or are too small to excavate for repair. The project allowed BWWB to reduce water loss and gain a stronger understanding on the overall condition of this pipeline for future condition assessment projects.



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