PURPOSE: To accurately detect leaks in live drinking water mains without the need to shut down, isolate or dewater parts or all of the water system. The technology can be used in any size pipe, of any length, and any material. Consequently it is applicable for water distribution systems and transmission mains. The performance of the technology is not affected by background noise, electrical interference, low pressure, pipe material, water system configuration, or distance between access “listening” points at appurtenances along the water lines. The technology detects and localizes leaks in a single step.

PRINCIPLE: Helium leak detection employs the Gas Tracer Methodology. Specifically, this method is referenced in the American Water Works Association – Water Audits and Loss Control Program – Manual of Water Supply Practices – M36. Although M36 speaks to the use of helium in dewatered lines, it also refers to “technology is being developed to sense leaks on water-filled, pressurized pipelines.” Indeed, our helium tracer gas technology is being deployed in live, fully pressurized water systems. Since 2007, we have thousands of miles of experience working with this technology around the globe.

The technology is quick to implement and generally does not require excavation of the water main for access, since the helium gas is injected into a water line through a standard ¾ inch tap. In addition, it does not impede or interrupt the normal operation of the water system.

APPROACH: The helium gas leak detection technology is used for detecting leaks in live potable (and non-potable) water pipelines and systems. The steps in the process include the following: The helium gas is injected into a water line through stainless steel components. The dissolved helium is circulated throughout the water system through the normal water system operation. The gas finds its way to the ground surface through leaks in the water system (pipe breaks, connections, service lines, meters, etc.). Since helium is 5x lighter than air, once the helium and water mixture escapes from the water system, the helium gas migrates to the earth’s surface. The path of the pipeline is traced above ground with specialized helium detection equipment to measure the concentration of helium in the atmosphere. An abnormally high concentration of helium measured above the surface of the ground is indicative of a leak. Where impervious services are encountered above the pipes, small holes are drilled into the surface to promote a quicker release of helium. Once a leak is detected it is marked for identification purposes.
HELIUM PROPERTIES: Helium is the 2nd most abundant element in the universe and is lighter than air. It is tasteless, odorless, and non-flammable. It is inert and consequently does not react with water or water system materials. It is commonly used in the medical, food, and sea diving industries.

The helium gas we inject for the purpose of leak detection is better than 99.99% pure helium. Further, our gas has been tested and certified by National Sanitary Foundation International (NSF) and bears the **NSF / ANSI Standard 60 Certification for Drinking Water Treatment Chemicals** designation.

TECHNOLOGY & EQUIPMENT: The technology has been used since 2007 and proven extremely effective in locating leaks in drinking water systems on all pipe materials and sizes. There is no theoretical upper limit on the size of pipe that can be surveyed with the technology. Our technology has been used on thousands of miles of water main throughout the world in typical and challenging site conditions and environments.

Below are sketches taken from our company’s US patent for the technology. The injection components are manufactured with stainless steel. The first drawing is of the injection equipment. The second drawing shows the components of the detection equipment used to monitor the concentrations of helium above ground.

For more information about the technology, please contact:
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