echologics®
A Mueller Co. COMPANY

LeakFinderST™

SPEED AND ACCURACY. WITHOUT COMPROMISE. WITHOUT DIGGING.

Superior leak resolution and accuracy across all materials including PVC.

It began when Severn Trent Water (STW) in their drive to innovation in the science of leak detection commissioned fundamental research into leakage within plastic pipes. Collaborating with Loughborough University led to the development of a prototype leak noise correlator which demonstrated a marked improvement in performance. Results demonstrated that the new correlator out-performed all commercially available equipment. Following extensive university research, STW approached Echologics to commercialize this correlator. Echologics, globally recognized for its innovative research into leak detection in plastic pipes, was the ideal partner. Further development led to a commercial prototype, complete with active trials using STW leak detection field crews since. These trials have proved so successful that Echologics has launched this as their next generation correlator. Branded LeakfinderST, it's now commercially available.

With the LeakFinderST correlator, Echologics introduces a whole new level of speed and accuracy in locating leaks. Until now. leak noise correlators have had limitations in pinpointing leaks in mains. Speed and accuracy were just relative measures.

SUPERIOR LEAK RESOLUTION

The LeakFinderST correlator enables customers to locate "quiet" narrow band, low frequency leaks and leaks previously identified as background leakage on water mains, with a wide range of materials such as:

Plastic (PVC, PE, MDPE, HMDPE)
Pre-Stressed Concrete Cylinder Pipe (PCCP)
Asbestos Cement (AC)
Ductile & Cast Iron (DI, CI)
Steel

RAPID CORRELATION TIME

As an advanced Windows-based leak noise correlator, the LeakFinderST correlator can quickly and cost-effectively locate leaks that other correlators cannot. Its enhanced correlation function accurately identifies narrow-band leak noise – making it ideal for PVC pipes, small leaks, multiple leak situations, and testing environments where there is high background noise.

EASY TO USE

The LeakFinderST correlator has been lab and field tested. It was designed and developed by acoustic engineers and the interface perfected in the field, through collaboration with end users, to provide an accurate, non-invasive leak detection system that is simple to operate. Anyone that has ever used Microsoft Windows can easily and confidently learn how to operate the LeakFinderST correlator.

DIMENSIONS:

A. Receivers/Transmitters:
6.6" x 4.3" x 2.7" (16.8cm x 10.8cm x 6.9cm)
B. Sensor: 6.8" x 0.6" (17.3cm x 1.5cm)
C. Pelican case: 22" x 18" x 10 (56.0cm x 45.5cm x 26.5cm)

THINK OUTSIDE THE MAIN.™

GREAT ACCURACY ON PVC.

There was a suspected leak on 3" PVC pipe in Clungunford, Shrophire area in UK. The LeakFinderST correlator was utilized to identify the precise leak location by bracketing the leak over 420 ft (128 m). The field technicians accurately correlated the exact leak location, which was confirmed by ground sounding over main. Excavation team was dispatched and the leak was found as pinpointed by the LeakFinderST correlator and the flow rate of the leak was 3.5 gpm (0.8 m^3/hr).

A SINGLE CORRELATION IN SHROPSHIRE, UK.

There was a suspected leak on a 3" Asbestos Cement pipe on Meole Brace, Shropshire area. The LeakFinderST correlator was used to identify the precise leak location by bracketing the area of the suspected leak over 92 meters. The leak was found in a single correlation. There was no correction or adjustments needed. The leak location that was pin-pointed by the LeakFinderST correlator was confirmed with the surface noise and noise on stop-tap, 2 meters away from the leak location. Excavation team was dispatched and the leak was found as pinpointed by the LeakFinderST correlator. The leak size of 4.4 gpm (1.0 m^3/hr) was confirmed.

OVERCOMING NOISE INTERFERENCE IN LEICESTERSHIRE, UK.

A difficult leak was detected at Wing in Leicestershire. The night-line for the area had risen and a resultant step test indicated a leak was likely in an area just downstream of Wing Reservoir on a 150mm AC Pipe with an operating pressure of only 1.2 Bar. There was the additional issue of pump noise at the reservoir that interfered with the leak noise. Investigations by an alternative correlator had resulted in two dry holes and an unsuccessful leak detect. The LeakfnderST correlator was then utilized and the area of the suspected leak was bracketed by extending the correlation to a distance of 298m. The resultant peak was accurate and successful excavation/repair followed. The resulting drop on the area flow graph established that the leak had a volumetric flow of 22 gpm (5m^3/hr).

LeakFinderST GIVES YOU:

Feature:	Automatic noise filter and velocity calculator
Advantage:	Highly accurate pinpointing of leaks on any material of pipe or multiple pipe types
Benefit:	Saves money and effort through the avoidance of dry holes
Feature:	Advanced engineering of sensor acoustics and signal processing
Advantage:	Finds low-acoustic-frequency leaks, such as in PVC or other quiet leaks, that other correlators miss
Benefit:	Saves water and money from the discovery of long-running and previously undetectable leaks
Feature:	PC-based software platform with streamlined user interface
Advantage:	Easy to determine leak position, frequency levels and filter settings
Benefit:	Saves time and effort of field operators

OUTSTANDING INNOVATION AWARD

OUTSTANDING INNOVATION 2014
WATER INDUSTRY ACHIEVEMENT AWARDS 2014
★ ★ ★ WINNER ★ ★ ★

MOST INNOVATIVE NEW TECHNOLOGY AWARD

MOST INNOVATIVE NEW TECHNOLOGY OF THE YEAR
WATER INDUSTRY ACHIEVEMENT AWARDS 2014
★ ★ ★ WINNER ★ ★ ★

These awards are a unique demonstration of what can be achieved with collaboration between a top research university, a leading water utility, and commercial enterprise.

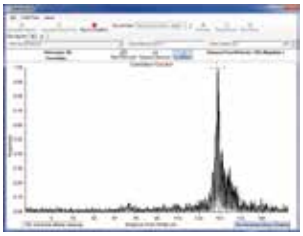
LEAKFINDERST™ EASY SET-UP

Step 1: Verify units are functional.

Step 2: Mount two sensors outside of a selected pipe on air valves, fire hydrant or other existing appurtenances.

Step 3: Select pipe material on transmitters.

Step 4: Verify radio communication on the receiver.



Step 5: Start correlation on the laptop and quickly find your leak.

TECHNICAL INFORMATION

OPERATIONAL PARAMETERS	
Ambient Temperature	-27°F to 130°F (-33°C to +55°C)
Liquid Temperature	33°F to 100°F (0.5°C to 38°C)
Liquid Flow Velocity	< 5 ft/s (1.5 m/s)*
Pressure	15 psi - 150 psi (100 kPa - 1000 kPa)
Pipe Material	Cast Iron, Steel, Ductile Iron, Asbestos Cement, PCCP, PVC, PE, and other plastics
Pipe Diameter	1/2" to 16" diameter (13 mm to 406 mm)**
Maximum Sensor Spacing	Contact Sensor: Upto 600 ft (183 m) Hydrophone: Upto 1000 ft (305 m)

* Higher velocities may result in turbulent flow introducing noise into the pipeline. Measurements can be performed at higher velocities, however sensitivity may be limited.
** Dependent on pipe material and site condition. Please contact Echologics specialists for more info.

SPECIFICATIONS	
Features	Enhanced correlation function Built-in noise reduction Selectable frequency range (automatic or manual) Propagation velocity calculator Support multiple pipe materials Support mixed pipe sections Playback of recorded leak sounds Volume-controlled 3.5 mm stereo output Available in languages other than English
Sensors	2 x Accelerometers with High-sensitivity piezoelectric sensing element Built-in amplifier with Automatic Gain Control (AGC) Frequency response .5 to 3000Hz 32-lb (14.5 kg) pull base magnet 10' (3 m) cable having -40 - +194° F (-40 to +90° C) temperature rating
Optional Sensors	2 high sensitivity hydrophones Operating frequency range from 0.5 - 1500 Hz. Low pressure operation up to 150 psi (1,000 kPa), or High pressure operation up to 400 psi (2,700 kPa).
Communication	Wireless radios operating in the Low Power Frequency Bands: - Industrial/Business Pool Group A1 (450 to 470 MHz) - ISM 433 MHz (70 cm) band. Operating range: 1.2 mi (2 km) Note: radio operating license depends on geographic location
A/D Converter	2 channels, 16 bit resolution 0.5 to 20,000 Hz frequency response (-3 dB @ .1 Hz) Time resolution: 25-microsecond (44.1 kHz sampling rate) Signal to Noise Ratio (SNR) = 84 dB (44.1kHz, Gain = 0dB) Adjustable gain: -31 dB to 24 dB Plug and Play Driver
Security	HASP key encryption.
EMI	FCC15 Class A/ICES-003/EN 55011
Power Supply	Input Voltage: 15V DC Rechargeable high-capacity NiMH batteries Low-battery indicator Battery charge indicator 15 hours of operation on fully charged battery @ 20 C (68 F)
Enclosure	Conforms to Waterproof IP68 Rugged aluminum case Protective rubber boots for durability and shock resistance Foil switches
Warranty	Two-year limited warranty. Hardware protection plans covering extended warranty or accidental damage are available. Warranty covers manufacturing defects only. It does not cover failure resulting from misuse, accident, modification, field maintenance and unsuitable physical or operating environment. The warranty does not cover the sensors except for dead-on-arrival cases.

LeakFinderST from Echologics

Echologics is globally recognized as a leader in non-invasive leak detection technology. The LeakFinderST correlator is designed by engineers for engineers to pin point quiet leaks accurately. Advanced signal processing and acoustics sensor design is capable of finding quiet leaks other leading correlators miss. Automatic noise filter and velocity calculator is highly accurate in pinpointing leaks on any materials of pipe or multiple pipe types, avoiding dry holes. PC-based software platform and streamlined graphical user interface makes it easy to determine leak position, which optimizes operator experience and confidence.

Mueller Co.

Echologics, an affiliate of **Mueller Co.** and part of the **Mueller Water Products, Inc.** (NYSE:MWA) group of companies, develops water infrastructure diagnostic technologies for water loss management, leak detection and pipe condition assessment. Mueller Water Products, Inc.'s broad product and service portfolio includes engineered valves, fire hydrants, metering products and systems, leak detection and pipe condition assessment. We help municipalities increase operational efficiencies, improve customer service and prioritize capital spending, demonstrating why Mueller Water Products is Where Intelligence Meets Infrastructure®.

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