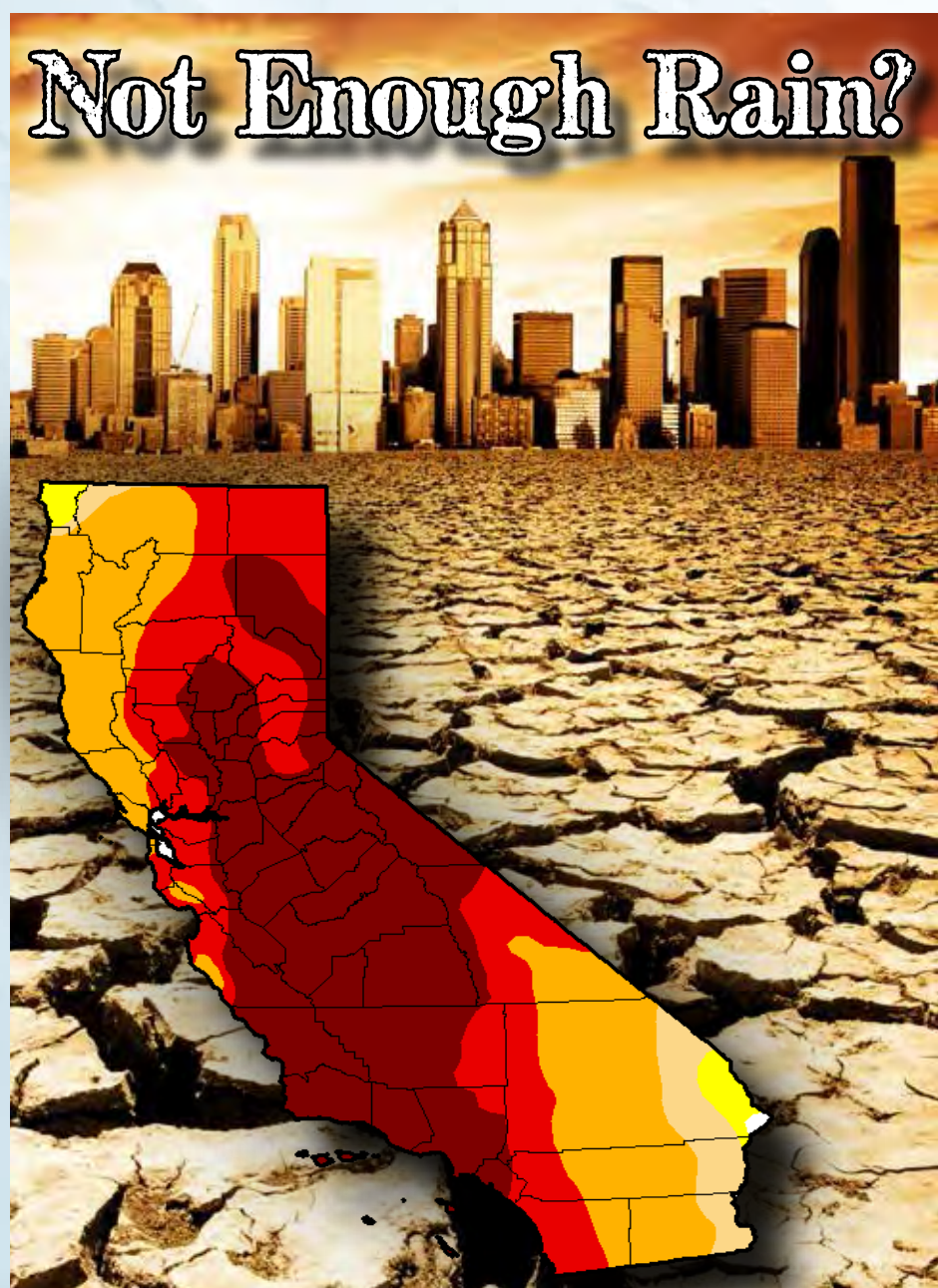


Critical H₂O Chronicles

AN ELECTRO SCAN INC. PUBLICATION. ALL RIGHTS RESERVED. ISSUE No. 6, OCTOBER 2015



RELIABLE & REPEATABLE SOLUTION FINDS & MEASURES WATER LOSSES Services Offered Exclusively By Electro Scan Inc.



Not Enough Rain?

Electro Scan Helps Solve California Drought Crisis

“We have to become more resilient, more efficient, and more innovative and that’s exactly what we are going to do.”
Gov. Jerry Brown on CA Drought

Entering into its fourth year of severe drought, California is ready for serious water leak detection.

“Given new California legislation to be signed by Gov. Brown, new mandates affecting 450 of the state’s largest utilities are requiring annual water audits and water loss control training programs,” states Chuck Hansen, Chairman, Electro Scan Inc.

“Considering the shortcomings of acoustic sensors and data loggers to find leaks, especially in plastic, PE, and HDPE pipes, Electro Scan’s breakthrough technology is at the right place, at the right time,” continues Hansen.

“To put things in perspective, an 8% water loss from leakage is equivalent to losing a one month supply of water, with most utilities experiencing from 10% to 30% in water losses [apparent and real losses] each year.”

Electro Scan technology is filling a gap in the water leak detection market by providing the industry’s first reliable, repeatable, and measurable tool to find potable water losses.

Continued on Page 7

Electro Scan Finds Leaks Missed By Acoustic Sensors & Data Loggers

Electro Scan Inc. unveiled its patent pending low voltage conductivity technology at WEFTEC in Chicago, representing the water industry’s first tool to estimate gallons per minute leakage rates. Previously winning the coveted Innovation Award for Electro Scan’s ES-620, Electro Scan can deliver much needed insight into pipe conditions by providing unparalleled data intelligence for gravity sewer mains, and now pressurized water mains.

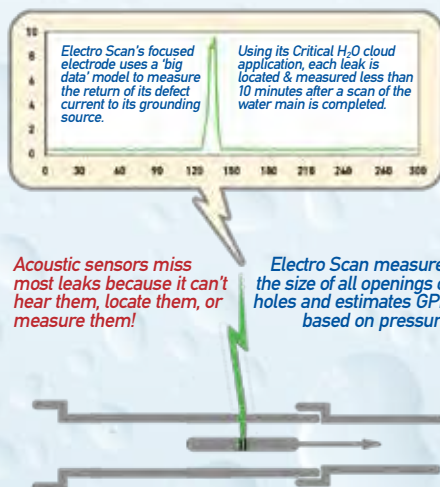
Electro Scan’s latest product, a 4-in-1 probe for pressurized water mains, once again, proves to be a highly anticipated, worthwhile, and needed product for the water sector. By combining its patent pending (1) low voltage conductivity, (2) pressure sensor, (3) high resolution CCTV camera, and (4) acoustical hydrophone to compare old v. new technologies, Electro Scan provides unprecedented insight into the condition of an agency’s water infrastructure.

With its comprehensive 4-in-1 probe, Electro Scan looks forward to helping your agency or water company implement this new technology when evaluating water and other pressurized pipes.

Electro Scan, also referred to as low voltage conductivity or focused electrode leak locator, is a next generation solution to locate and measure leaks and find non-revenue water losses not detected by acoustic sensors or data loggers.

Electro Scan is simple geophysics -- if electrical current can pass through the wall of a pipe, water will too. Except with Electro Scan, not only can we locate every leak in a pipe, but we can estimate its defect flow in either gallons per minute or liters per second. Every leak... for every pipe...every time.

If a pipe has no leaks, an electric current will have no place to go and will remain flat. But, if there is a leak or any opening that allows water to leak out of a pipe, an electric current will spike, with the ability to measure its area under the curve to estimate the rate of flow.



Continued on Page 9

Electro Scan Finds Water Leaks

One of the first in North America to trial low conductivity testing, an Arizona firm worked with Electro Scan to conduct a test of a 315ft 27in diameter water line.

Starting at the 200ft mark, an above ground visual inspection quickly saw traces of water bubbling up through the ground as verification, but no specifics as to the number or severity of each defect flow in the pipe.

Undergoing several previous inspections, Electro Scan found a 50ft section with a defects located at each joint.

Continued on Page 5



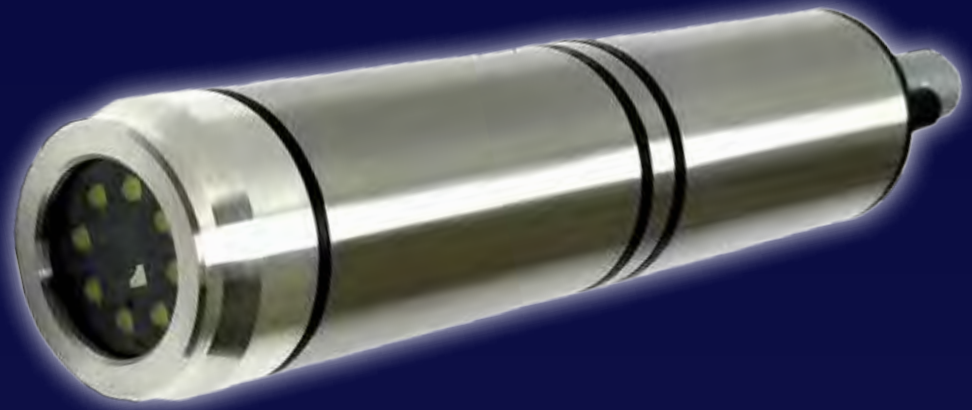
NEW

Next Generation Multi-Sensor Water Leak Detection Technology

Automatically Locate and Measure Leaks in Pressurized & Gravity Water Mains.

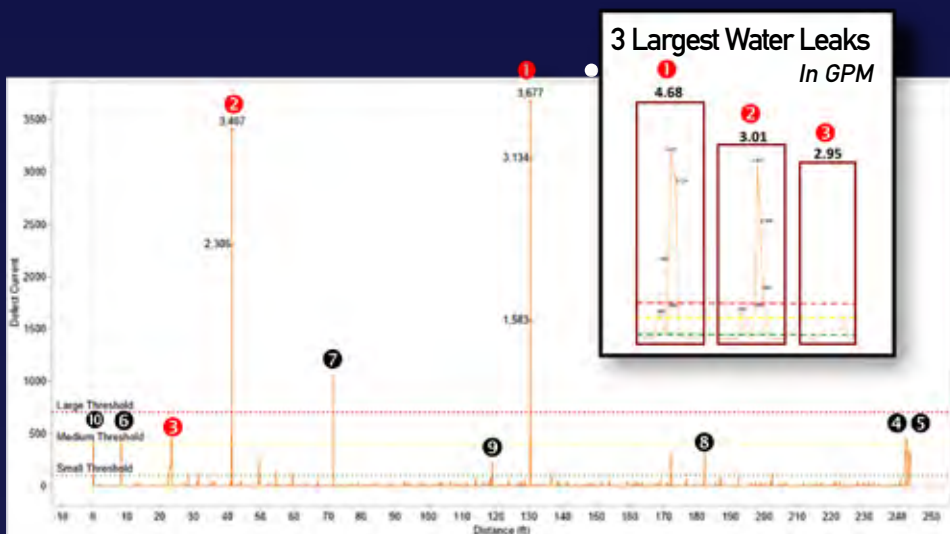
Electro Scan's Proprietary 4-in-1 Probe Includes:

- Low Voltage Conductivity
- High Definition CCTV
- Pressure Sensor
- Acoustic Hydrophone



Low Voltage Conductivity Leak Detection is Here!

The water industry's first reliable & repeatable tool to locate & measure water leaks in pressurized water distribution & transmission mains.



Available as a professional service using its fleet of Water Leak Detection Vans, Electro Scan is overhauling how leading water utilities find and measure water losses.

Learn how Electro Scan can partner with your water utility to easily introduce its game changing technology to locate and measure water losses.

Key Highlights

- No reliance on third party data interpretation.
- Locate all cracks, holes, defective joints & service connections, and other defects where water leaves the pipe.
- Automatically measure each defect's flow in estimated gallons per minute (gpm) or liters per second (lps).
- Rate each water main on its Total Defect Flow.
- Find all anomalies not found by acoustic sensors, gas tracers, electro-magnetic sensors, and high resolution CCTV.
- Automatically generate cloud-based reports in 10 minutes after scan completion.
- Offered as a service exclusively to North American water utilities.
- 2,000 ft length using in-pipe tethered probe.
- Entry through hydrants, valves, and large meters.
- Pressurized and gravity mains.
- Closed pipes and open water channels or ditches.



U.S. and International Patent Pending

ASTM F2550-13 Compliant

electro^{scan}inc.

Reliable, Repeatable, & Measurable Technology Finds Water Losses

Pipe Specifications Especially Designed For Advanced Pipe Materials.

Operating Temperature Range	-5°C to 45°C (23°F to 113°F).
Operating Pressure Range	0-90 PSI.
Location Accuracy	0.4 inches (1cm).
Conveyance Type	Pressurized or gravity mains.
Insertion Tube Launch	Fire Hydrants, Air Valves, Gate Valves, Flow Meters, Hot Taps, Pressure Fittings.
Required Flow	1 ft (305mm) per second (fps).
Transport	Parachute.
Pipe Materials	Asbestos Cement (AC), Cement-Mortar Lined and Coated Steel Pipe (CMSP), Cured In-Place Pipe (CIPP), Fiberglass Reinforced Pipe (FRP), High-Density Polyethylene Pipe (HDPE), Prestressed Concrete Cylinder Pipe (PCCP), Polyethylene Pipe (PE), Polyvinyl Chloride (PVC), and Reinforced Concrete Pipe (RCP).

Multi-Sensor Probe Find Leaks Not Detected by Acoustic, Electro Magnetic, Helium Tracers or CCTV.

Probe Length	6.25 inches (158.75mm).
Rigid Length	10 inches (254mm).
Cable	Neutrally buoyant.
Cable Type	Fiber optic and copper.
Single Point Access Range	1,000ft (305m) range or 2,000ft (610m) range from a single point of access.

Low Voltage Conductivity Next Generation Defect Location & Measurement (gpm or lps).

Voltage	11 volts, AC, RMS.
Current (max)	40 mA.
Electrical Array	Focused tri-electrode array.
Defect Flow Calculation	Gallons per minute (gpm) or Liters per second (lps).
ASTM F2550-13	Yes. Able to automatically locate all cracks, fissures, broken joints, and leaking service connections, by measuring the change in electrical current able to pass through the wall of a pipe.

High Definition CCTV In-Pipe Navigation & Documentation of Location of Low Voltage Defects.

Resolution	1920 x 1080, 30 fps, H.264 compressed stream.
Minimum Illumination	6 Lux at F2.8.
Output Compressed Video Formats	Digital (.AVI and .MP4); High-sensitivity complementary metal-oxide-semiconductor (CMOS) image sensor combined with an advanced image processor superior video and still image quality.
Focus	Fixed position, autofocus, auto white balance, and image stabilization.
Focal Length	5.3mm.
Video Streams	Two simultaneous video streams, including a high quality stream for archiving and a low quality stream for live viewing on mobile devices, each with independently configurable resolution & bit rate streaming that can be output to specific network addresses.
Text Overlay	Built-in overlay generators allow up to 160 text characters to be positioned anywhere in the video frame.
Snapshot	Capture and store hi-res jpg 4096 x 3096.
Lighting	8 LEDs, 4500 Lumens.

Pressure Sensor In-Pipe PSI to Help Calculate Defect Flow Rate at Specific Leak Locations.

Type	Media compatible piezoresistive silicon pressure sensor.
Digital Output	24-bit $\Delta\Sigma$ ADC pressure sensor.
Temperature Monitoring	Integrated for accurate pressure calculation compensation.

Acoustic Hydrophone Legacy Method to Assess Metallic Fittings & Benchmarking Old v. New Standards.

Frequency Range	1Hz to 170 kHz, omnidirectional.
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INDUSTRY AWARDS

Best Innovative Technology **WEF**
 Best Project **UKSTT**
 Product Innovation Award **NASTT**
 Best CleanTech Company **The New Economy**



View from HD CCTV Camera!

Mark Grabowski, Lead Design Engineer of Electro Scan's 4-in-1 Probe for Water Mains, gladly showed off his team's hard work.

Finding Defects in Water Mains in Arizona

Sometimes having high desert sources of water coming into a water treatment plant are more pure than some urbanized treatment plants.

As a result, it is important to ensure some of its most difficult to access water mains are inspected to determine current levels of water loss.

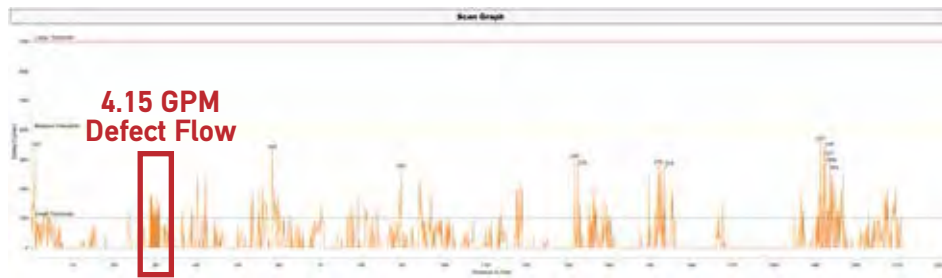
Using Electro Scan's push rod version of its leak detection low voltage technology, Electro Scan's field operations conducted a leak detection survey in less time than it took to arrive at the job site from the main road.

Individual defect locations, shown in the table to the right, correspond to the first 42ft of the pipe, measures the height of its defect grade (i.e. Small,

Medium, Large), Defect Start (ft), Defect End (ft), Defect Length, and GPM Flow.

As shown in prior USEPA studies, consulting engineers and water utility professionals should not necessarily focus on the defect height or grade, but instead, focus on the area 'under the curve' determining the Total Gallons Per Minute (GPM) of defect flow.

While a leak may generate a steep spike as the Electro Scan defect current seeks to return to its grounded source, it is not uncommon to have a Small or Medium Grade represent a Medium or Large defect flow.



Defect by Location in Pipe				
Analysis Defect Grade	Defect Start (ft)	Defect End (ft)	Defect Length (ft)	GPM Flow
Small	0.718	1.145	0.427	1.320
Small	2.776	2.776	0.000	0.160
Small	3.697	3.697	0.000	0.180
Small	4.131	4.131	0.000	0.100
Small	4.495	4.495	0.000	0.250
Small	23.599	23.599	0.000	0.330
Small	26.653	27.044	0.390	0.860
Small	28.828	29.596	0.768	1.950
Small	29.760	29.914	0.154	0.470
Small	30.256	31.023	0.768	1.730
Small	33.510	33.510	0.000	0.130
Small	36.620	36.620	0.000	0.170
Small	38.697	38.697	0.000	0.150
Small	38.966	39.140	0.174	0.420
Small	40.275	40.715	0.440	1.300
Small	41.820	41.820	0.000	0.220



New Level of Accuracy Arrives to Find and Measure Water Loss in Water Distribution Mains

Pinpointing water losses using acoustic sensors may be coming to an end as Electro Scan introduces its international patent-pending low voltage tri-electrode technology.

Since the early days, water crews have been challenged to hear leaks in water mains.

Years later, the ability to measure sound vibrations to accurately locate and measure defect flows remains a challenge, especially from:

- Ambient noise
- Water table heights
- Pipe materials, especially non-metallic
- Pipe diameter
- Leak size
- False-Positive anomalies
- Inability to quantify defect flows
- Changes in backfill materials
- Lengthy data processing & reporting times
- Lack of repeatability, by crew, by equipment
- Inexperienced field crews
- Need for third-party data interpretation
- Silent or undetected leaks

The inaccurate or incorrect condition assessment of our nation's water mains represents a key risk for most water utilities.

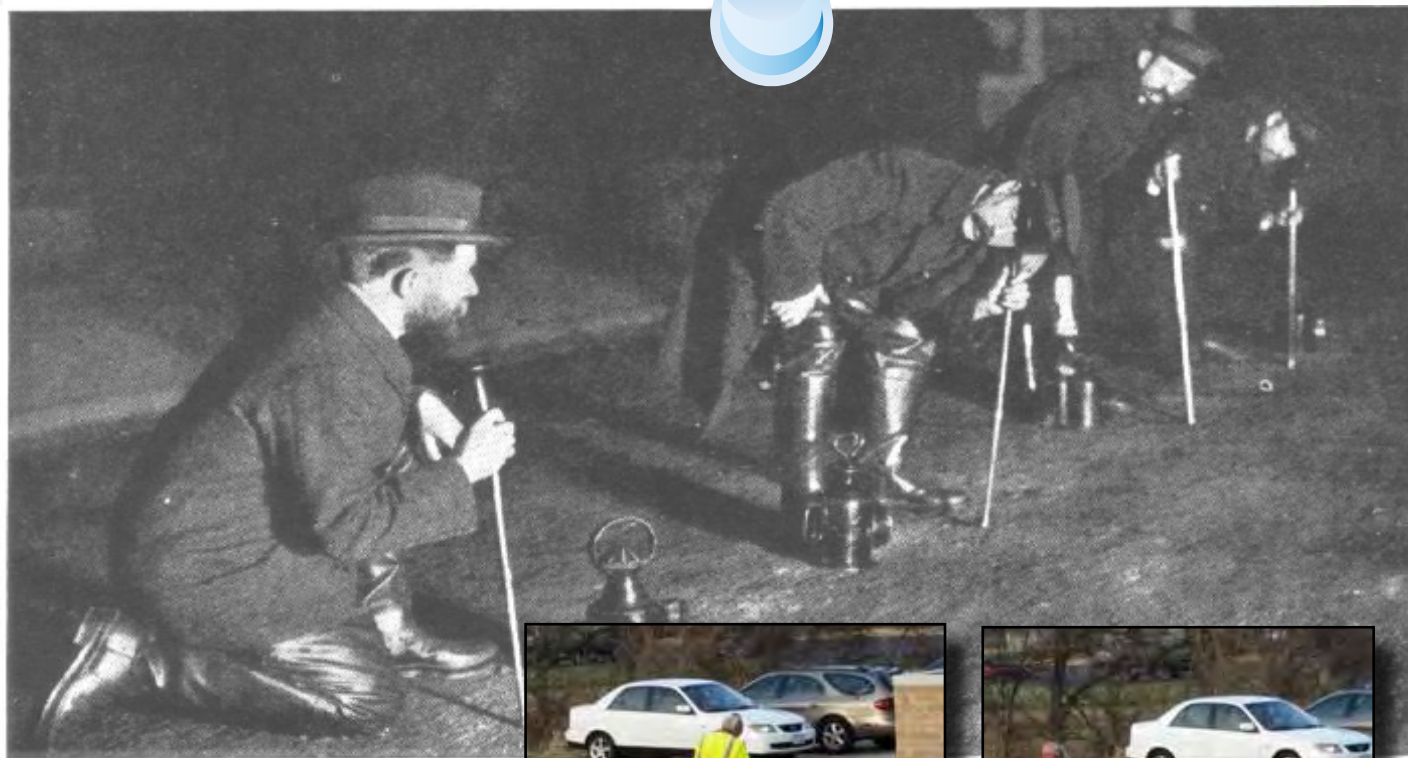
Whether prioritizing existing water mains needed to determine criticality and ranking of worst-to-best pipes or certifying CIPP rehabilitation, repair, and renewal projects to assure a zero-leak rating as a condition of acceptance -- water utilities must use the best possible solution to allocate and deploy its scarce capital.

Representing a bottom-up approach to assess pipe-by-pipe defect flow ratings -- a first in the water business -- privately managed and publicly operated water utilities can now find all openings in its pressurized network to improve the accuracy of assessing its critical water mains.

Designed specifically to assess ACP, CCP, CFRP, CIPP, CMLC, CMLS, FRP, HDPE, RCP, PCCP, PE, PVC, and others, Electro Scan's international patent-pending 4-in-1 tethered probe combines its core low voltage conductivity technology with an acoustic sensor, high resolution CCTV, and pressure sensor, to assess your system.

The Early Days...

Listening For A **LEAK?**



Today...



Pictured above a modern day (2015) acoustic leak detection conducted by a Great Lakes Region water utility. A contract worker attaches a hydrophone listening device for under 60-seconds to find leaks. At least it is fast, easy, and inexpensive. No leak found.

Drought Changes Economics for Finding & Fixing Water Losses Before Reaching a Customer's Meter

New Normal in H₂O Economics: Dramatically Lower Revenues Force Cutbacks in O&M and Capex to Service Bond Payments

If only we had fixed our leaking water mains before the drought hit! Shoulda... Coulda... Woulda...

We all understand that conservation and more efficient use of water allows us to extend our existing resource base. Better monitoring and metering of water consumption helps us become more efficient, while increasing our reuse of effluent becomes more acceptable and common place.

As the water industry has applauded Governor Brown's bold action calling for California's 38 million residents to conserve water, fiscally conservative water utilities understand the pressure.

But our dilapidated and crumbling infrastructure cries out for more attention and investment dollars now.

The conventional estimate is that 80 percent of the water used in California flows into the state's multi-billion-dollar agricultural sector. The 20 percent left for urban use is split between homes, businesses, and government.

About 6 percent of the state's water is consumed by industries, commercial operations, and governments. About 14 percent is poured into bathtubs, toilets, and washing machines or sprayed over residential lawns.

By now, the whole nation is aware that its fruit and vegetable basket, California, is in the fourth year of an unprecedented drought. One NASA scientist recently projected that the state may only have

roughly a year's supply of water left in its reserves. While that number is not entirely cut and dry (pardon the pun), it's clear that California's water crisis is real and that solutions are late in coming. For the first time in the Golden State's history, its Governor, Jerry Brown, has placed mandatory water restrictions on residents and municipalities.

We can all agree that individual water conservation – efficient toilets and washing machines, shorter showers and smarter landscaping – should be expanded and embedded in our culture. But restrictions on households are not enough to dig us out of our water woes. Given that residential and municipal uses account for less than 15 percent of California's annual water use, we must ask: who is guzzling California's water and what should Governor Brown do to rein in these users?



Low Voltage Conductivity Confirms Engineer's Suspicions

Continued From Page 1

PROBLEM: A 27in gravity-fed raw water concrete irrigation main was thought to be leaking. After previous inspections, including CCTV of the dewatered pipe, Electro Scan was invited to evaluate the pipe to pinpoint any leaks.

SOLUTION: Electro Scan technology accurately locates and measures leaks without

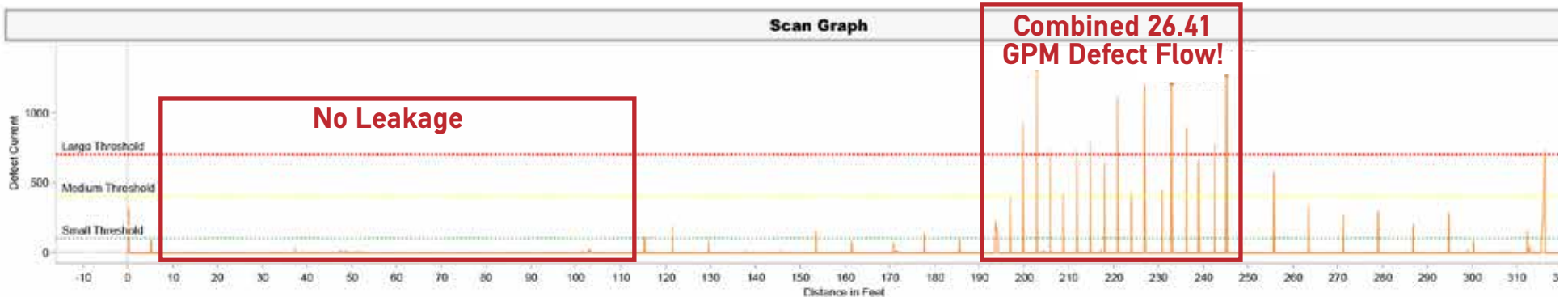
operator interpretation using a probe that emits a low voltage high, frequency electric current to assess the pipe wall. Traveling at 45-60ft per minute and taking readings every 14 milliseconds, the Electro Scan probe collects 10-20,000 data points (every 300ft) with data processed on its CriticalH2O cloud application estimating defect flows in gallons per minute (gpm) for each leak and total pipe segment. The water probe utilizes the existing cable and reel solution,

typically found in CCTV vans and can locate defects to the closest 0.4in (1cm).

While sewer probes may be sanitized for use in clean water systems, Electro Scan has developed a special 4-in-1 probe for pressurized water mains for direct entry through air valves, fire hydrants, flow meters, gate valves, and pressure fittings. The new probe, offered only as a service from Electro Scan, includes Electro Scan's

low voltage conductivity technology, an acoustic sensor, color HD CCTV camera, and pressure sensor.

RESULT: Electro Scan was able to locate 31 defects for the 315 ft pipe, resulting in a combined defect flow rate of 35.21 gpm. As suspected, the 60 ft. section where bubbling water was found accounted for 75% of the total defect flow.



Identifying and Measuring Water Loss in GPM Linked to Specific Water Mains! Its Like Finding The Holy Grail of the Water Business

General Managers and Board Members have all heard the familiar complaint from citizens action groups that "its easy to lower water loss; simply increase estimates of unbilled metered and unmetered consumption."

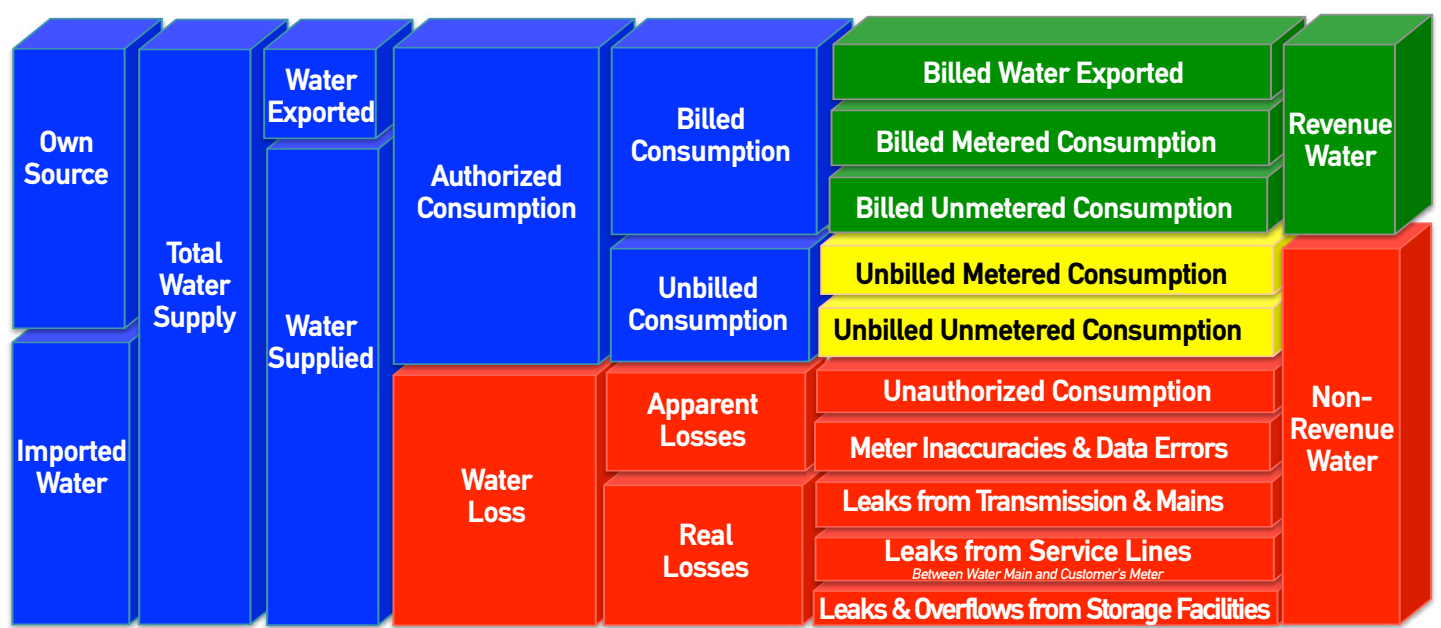
Let's face it, without available tools that can magically look inside our water mains and automatically tell you how much and where leaks are occurring, it will be difficult to performance tune our water equation.

That is, until the right tool comes along.

Electro Scan continues to support the top-down analysis and assessment of our water networks, but when the right technology comes along that can correctly find all the holes in our pipes, it's like Indiana Jones has just found the Holy Grail to show how to quantify real losses, linked to specific mains.

Off-the-shelf algorithms of age, diameter, material, length, and installation, can now be overlaid with actual water loss leakage rates on in-house GIS systems to re-rank and re-prioritize CIP programs to get the biggest bang from our customer's (and bondholder's) bucks.

Revenue and Non-Revenue Water Distribution



Source: AWWA Water Audits and Loss Control Programs, Manual of Water Supply Practices, M36, 2009.

Acoustic Sensor Included in 4-in-1 Probe To Assess Metallic Connections & Highlight Superiority of Low Voltage Conductivity

Electro Scan decided to include a sophisticated acoustic hydrophone in its 4-in-1 Probe for two important reasons:

First, since low voltage conductivity sensors are not designed to assess leaks in metallic pipes, such as ductile iron or steel, Electro Scan's technology will automatically identify all service connections using a metallic fitting to connect the service to the water main. By adding an acoustic sensor or hydrophone, Electro Scan's new probe will also be able to 'listen' for any defects that might be found. Of course, Electro Scan's hydrophone will have the natural limitations that all acoustic sensors have, including recurring

false readings, missed defects, and other shortcomings for assessing metallic pipes.

Second, the acoustic hydrophone gives sound or vibration patterns some engineers have grown accustomed to in previous acoustic inspections. More importantly, having its own hydrophone, Electro Scan will be able to readily compare Acoustic vs. Low Voltage Conductivity results.



Acoustic Anomaly

Key Features of Electro Scan's 4-in-1 Probe Acoustic Sensor	
Hydrophone	Yes
Frequency Range	1Hz to 170 kHz
Circumferential Beam Pattern	±3dB up to 100
Horizontal Beam Pattern	Omnidirectional ±

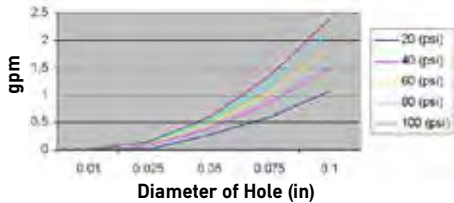
Electro Scan's Low Voltage Conductivity Finds Defects Missed By Acoustic (Sound), Helium Tracers (Smell), Visual Detection (Sight)

Limitations in 'Listening' for Leaks

The pipe material and diameter have a significant effect on the attenuation of leak signals in the pipe. For example, leak signals travel farthest in metal pipes and are attenuated greatly in plastic ones.

The larger the diameter of the pipe, the greater the attenuation, and the harder it is to detect the leak. The pipe material and diameter also affect the predominant frequencies of leak signals — the larger the diameter and the less rigid the pipe material, the lower the predominant frequencies.

Leak Losses for Circular Holes



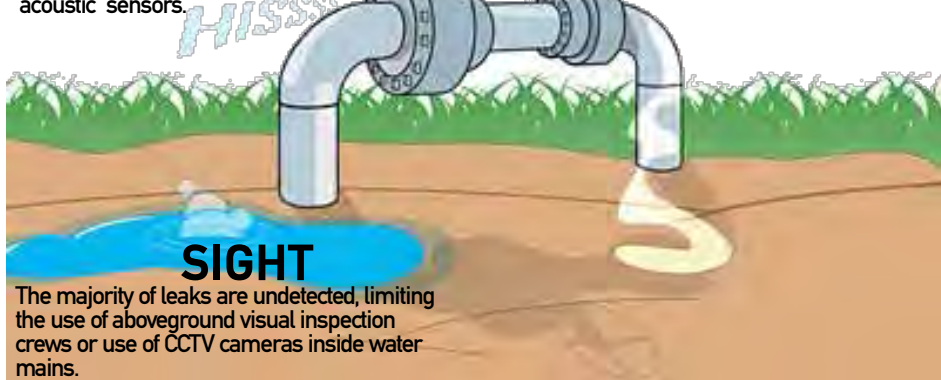
- High signal attenuation, low frequency content, and the pronounced effect of fittings on the wave propagation.

- Significant variation in the sensitivity, frequency range, and signal-conditioning and processing features of different acoustic leak-detection devices. The more sensitive the leak sensors and the higher the signal-to-noise ratio of the equipment, the smaller the leaks that can be detected.

- Modern acoustic equipment incorporates signal-conditioning components such as filters and amplifiers to make leak signals stand out. Filters remove interfering noise occurring outside the predominant frequency range of leak signals. Amplifiers improve the signal-to-noise ratio and make weak leak signals audible.

SOUND

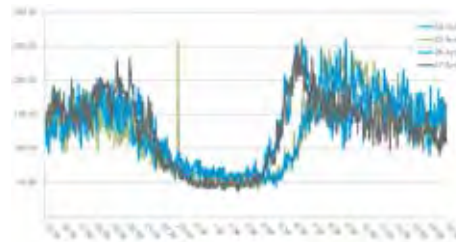
Varying pipe materials, size, time-of-day water pressure, diameter, and unfiltered noises limit the use of acoustic sensors.



SIGHT

The majority of leaks are undetected, limiting the use of aboveground visual inspection crews or use of CCTV cameras inside water mains.

- Leak signals susceptible to interference from low-frequency vibrations, e.g., from pumps and road traffic. The strength of leak signals at the ground surface is influenced significantly by the soil type and the water table level.



- Experience has shown that leak sounds are more audible on sandy soils than in clay soils, and on an asphalt or concrete surface than on grass. Leak signals are "muffled" if the pipe is below the water table level.

- The characteristics of leak sounds vary with the leak type and size. Splits and corrosion pits in pipe walls induce stronger leak signals and higher frequencies than leaks in joints or valves.

- Generally, the larger the leak the stronger the leak signal, but this may not be true for very large leaks.

- The higher the pipe pressure, the stronger the leak signals; it is difficult to detect leaks in pipes having pressures less than 1.05 kgf/cm² (15 psi).

Drawbacks in 'Sniffing' Out Tracer Gas

With this technique, a non-toxic, water insoluble and lighter-than-air gas, such as helium or hydrogen, is injected into a segment of a water pipe. The gas escapes

SMELL

While helium released in water mains may escape through leaks into the surrounding bedding, traces may surface many feet from actual leak location.

at a leak opening and then, being lighter than air, permeates to the surface through the soil and pavement. The leak is located by scanning the ground surface "directly above" the pipe with a highly sensitive gas detector.

Helium is the preferred methodology for leak detection for large-diameter mains, such as transmission mains where there are few or distant listening points and areas of low, intermittent, and high pressure. The helium gas being used is NSF Standard 60-Certified for Drinking Water Treatment Chemicals.

The technology uses helium gas as a tracer to locate leaks. As documented in AWWA's Manual of Water Supply Practices M36: Water Audits and Loss Control Programs, helium gas is injected into live water mains, with no need to isolate a zone, depressurize, or shut the water system down. The helium mixes with flowing water and travels throughout the pipe network to the desired area(s) to survey for leaks. When the helium-marked water leaves the pipe network through leaks in the pipe wall—through loose connections or at service laterals, meters, or valves—the helium separates from the water. Because helium is four times lighter than air, the helium floats to the surface where it can be measured aboveground with specialized monitoring equipment. Elevated levels of helium detected above a leaking pipeline indicate a leak is nearby.

Helium travels through the ground but might surface several feet or yards away from where it leaked out of the pipe. Tracer helium, at best, might verify that a leak is present, but it lacks the abilities to clearly detect where it escaped from the pipe, provide an estimated exfiltration rate, and results are often not repeatable.

Using CCTV for 'Sight' Leak Inspections

Because exfiltration cannot be seen, low visibility when a camera is fully submerged, and the inability to "pan, tilt, zoom" in pressurized water mains, it's easy to see why CCTV is not designed to find leaks in water mains... No pun intended.

Even as cameras become more advanced, as seen in the sewer industry over the last 50 years, it's still not clear how the obstacles of surveying a pressurized main



could be overcome. With CCTV missing 70-100% of defects in sewer mains, results in water mains can expect to have even poorer results.

Electro Scan to Attend Annual Franchisee Convention

Ranked #1 in Entrepreneur® magazine in the "Maintenance Products and Services" franchise sector for the last five years, American Leak Detection is the world leader in the industry they created - the accurate, non-destructive detection of hidden leaks (water, sewer, and gas).

Electro Scan Inc. is delighted to be invited to attend its first American Leak Detection Annual Convention & Expo, November 4-8, 2015, held at the Palmer House Hilton, Chicago, IL.

A Gold Sponsor at this year's Convention, Electro Scan understands the speed of light that commercial businesses move in comparison to their government counterparts.

"I'll never forget when Jimmy Carter wandered up to one of our inspection trucks during a project at Baby Beach in Dana Point, California," stated Mark Grabowski, VP and General Manager, Electro Scan Inc. "We weren't quite sure how they knew about the project -- assessing California's most polluted beach -- but were glad to get a telephone call a few months later asking if we would be inter-



ested in attending their annual meeting in Chicago."

From concealed plumbing systems to swimming pool cracks, to municipal water utility projects, American Leak Detection has been a 'go to' solution provider using the most advanced, sophisticated electronic devices - without bashing holes in walls or digging up a backyard deck or yard.

American Leak Detection sets the standard for non-invasive leak detection and repair with proprietary methods and technology.

Founded over 40 years ago, American Leak Detection operates networks in four countries, on three continents. We are looking forward to meeting its highest achieving franchisees.

Just the Facts...

Business Type
Franchise

Min. Liquid Capital
\$25,000 to \$35,000

Total Investment
\$83,255 to \$233,550

Number of Units
299

In Business Since
1874



Electro Scan is Platinum Sponsor at CA-NV AWWA Section Annual Meeting at Tropicana Hotel in Las Vegas, NV

What happens in Vegas, stays in Vegas?

We hope not because demand is already exceeding supply of Electro Scan's new fleet of Leak Detection Vans.

Las Vegas will be the next stop for Electro Scan's Low Voltage Leak Detection Van after its attendance at the 88th Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC), held Sept 26-30, 2015, McCormick Place, Chicago, IL.

Largest of all AWWA sections, the CA-NV section is a leader in many aspects of water operations and management, and already receptive to Electro Scan's next generation technologies to locate and measure water loss.

"My first AWWA CA-NV attendance was in 1986 at Lake Tahoe," states Chuck Hansen, Chairman, Electro Scan Inc. and former Chairman, CEO & Founder of Hansen Information Technologies, a leading provider of water & sewer asset management applications sold to Infor Global in 2007. "Like our upcoming attendance at the AWWA CA-NV Section Annual Meeting at the Tropicana Hotel in Las Vegas, nobody had ever heard of Computerized Maintenance Management

Systems (CMMS) to track work orders for customer service requests, water main breaks, hydrant flow testing, valve exercising, and activity-based costing."

Back for his second act, Hansen is now spearheading a new breed of water loss leak location with his new patent-pending low voltage conductivity technology.

"We spent a lot of time at HANSEN looking at emerging technologies and their potentially new data dictionaries that might need to be added to our SQL relational databases," said Hansen. "I had been watching the Electro Scan technology for almost ten years, before starting due diligence and deciding to acquire the available technology."

"We are delighted with the initial response to our advanced leak detection tools and feel we are in the right place, at the right time, with the right technologies," states Hansen. "We are also quite happy that many leading water utilities include legal language in the contracts that allow for more innovative solutions to be substituted for existing solutions, especially in case a current vendor's solutions are deemed technologically obsolete. I hope to see you stop by our van in Vegas, and learn about the future of water."



Don't miss the most important presentation by industry veteran, Chuck Hansen (formerly Chairman & CEO, Hansen Information Technologies -- Chuck sold Hansen for \$100 million and is Electro Scan's principal investor).

Chuck will be speaking Wednesday, October 28 at 1:30pm, as part of Session 28A: Pipeline Rehabilitation, presenting:

"An Innovative Leak Detection Technology That May Bring a Paradigm Shift to Locating Leaks & Measuring Water Loss."

Electro Scan Inc's Northern California Headquarters 'Best Positioned' To Help Utilities Address the Drought

Continued From Page 1

Electro Scan Inc.'s corporate headquarters in California's state capitol of Sacramento, give it a unique advantage to other out-of-state private and publicly-traded companies that serve the water industry.

"I'm proud to be a native Californian, attending Orange Grove Elementary, Winston Churchill Middle School, and La Sierra High School (Class of 1974)," states Chuck Hansen, Chairman and key investor for Electro Scan Inc. "Sacramento was an equivalently great headquarters for my previous enterprise software application company, serving the water, sewer, and highway markets for asset & work management applications."

"We are fortunate to be a customer of California American Water Co., a subsidiary of American Water Company," states Janine Mullinix, VP Administration, Electro Scan. "With our workers as customers for over a dozen different water companies throughout the area, we are pleased to have direct access as Customer and Business Partner, to help diagnose and find solutions for finding water losses to combat our historic statewide drought."

With manufacturing facilities located in Woodland, Calif., Electro Scan is proud to be a "Made in California" high technology service provider.



Helping Farmers and Irrigation Districts Find Water Losses Using Electro Scan's Low Voltage Conductivity Leak Location Technology

State Water Project Delivers Water to Over 23 Million People Through a Complex Network of Canals and Irrigation Districts

The California State Water Project, commonly known as the SWP, is a state water management project under the supervision of the California Department of Water Resources.

The SWP is one of the largest publicly built and operated, water and power development and conveyance systems in the world, providing drinking water for more than 23 million people and generating an average of 6500 GWh of hydroelectricity annually. However, as it is the largest single consumer of power in the state itself, it has a net usage of 5100 GWh.

The SWP collects water from rivers in Northern California and redistributes it to the water-scarce, but populous Southern California region through a network of aqueducts, pumping stations and power plants. About 70% of the water provided by the project is used for urban areas and industry in Southern California and the San Francisco Bay Area, and 30% is used for irrigation in the Central Valley.

To reach Southern California, the water must

be pumped 2,000 feet (610 m) over the Tehachapi Mountains – the highest single water lift in the world.

The SWP shares many facilities with the federal Central Valley Project (CVP), which primarily serves agricultural users. Water can be interchanged between SWP and CVP canals as needed to meet peak requirements for project constituents, providing an estimated \$400 billion to California's economy.

Since its inception in 1960, the SWP has required the construction of 21 dams and more than 700 miles (1,100 km) of canals, pipelines and tunnels, although these constitute only a fraction of the facilities originally proposed.

As a result, the project has only delivered an average of 2.4 million acre feet (3.0 km³) annually, as compared to total entitlements of 4.23 million acre feet (5.22 km³). Environmental concerns caused by the dry-season removal of water from the Sacramento-San Joaquin River Delta, a sensitive estuary region, have often led to further reductions in water delivery. Work continues today to expand the SWP's water delivery capacity while finding solutions for the environmental impacts of water diversion.

To date, few if any commercially available products have been able to provide condition assessment of open channel and cement mortar-lined ditches.

Today, Electro Scan is leading the industry in providing precise survey technologies that can locate and measure defect flows in gpm.



New Technology Rewrites PCCP Condition Assessment, Revamps Prioritization of Water Main Replacement

Detecting degraded Prestressed Concrete Cylinder Pipe (PCCP) in water mains has been hit or miss, at best.

Used by 90 out of the 100 largest water utilities in the United States especially in water mains 24" and above, the inability to consistently locate micro-cracking with acoustic sensors, electromagnetic sensors, or high resolution digital cameras or measure an estimated defect flow in gallons per minute or liters per second, has spurred development and use of low voltage conductivity technologies that overcome drawbacks of legacy inspection devices.

What was lacking was the ability to systematically provide an unbiased evaluation of the pipe wall, without the need for third-party data interpretation.

How PCCP Fails

In the past, many believed that the only indicator of upcoming PCCP failure occurred when longitudinal cracks were visually detected during the later stages of a progression to pipe failure, usually resulting from undetected micro-cracking or misinterpreting false-positive readings.

PCCP consists of a concrete core, a thin steel cylinder, high tensile prestressing wires and a mortar coating. The concrete core is the main structural load-bearing component with the steel cylinder acting as a water barrier between concrete layers, the prestressing wires produce a uniform compressive pressure in the pipe, and the mortar coating protects the prestressing wires from physical damage and external corrosion.

Relying on highly tensioned steel wire to hold concrete in compression, generally 24" and above, PCCP was generally known to have a high shock resistance, was fast to install, had good antiseptic properties, and was usually easy to maintain -- until it failed.

But, when water seeps through the cement mortar encapsulated in the pipe, the steel wire can be corroded and

eventually cause a rupture.

In fact, due to the basic properties of concrete, water seepage into inner surfaces of the pipe -- and ultimately its wire layers -- actually occurs much sooner.

Since there is only a short period of time between the appearance of telltale longitudinal cracking and failure, the discovery of major cracks or acoustic anomalies, may be only hours, weeks or perhaps several months before a sudden explosive burst occurs.

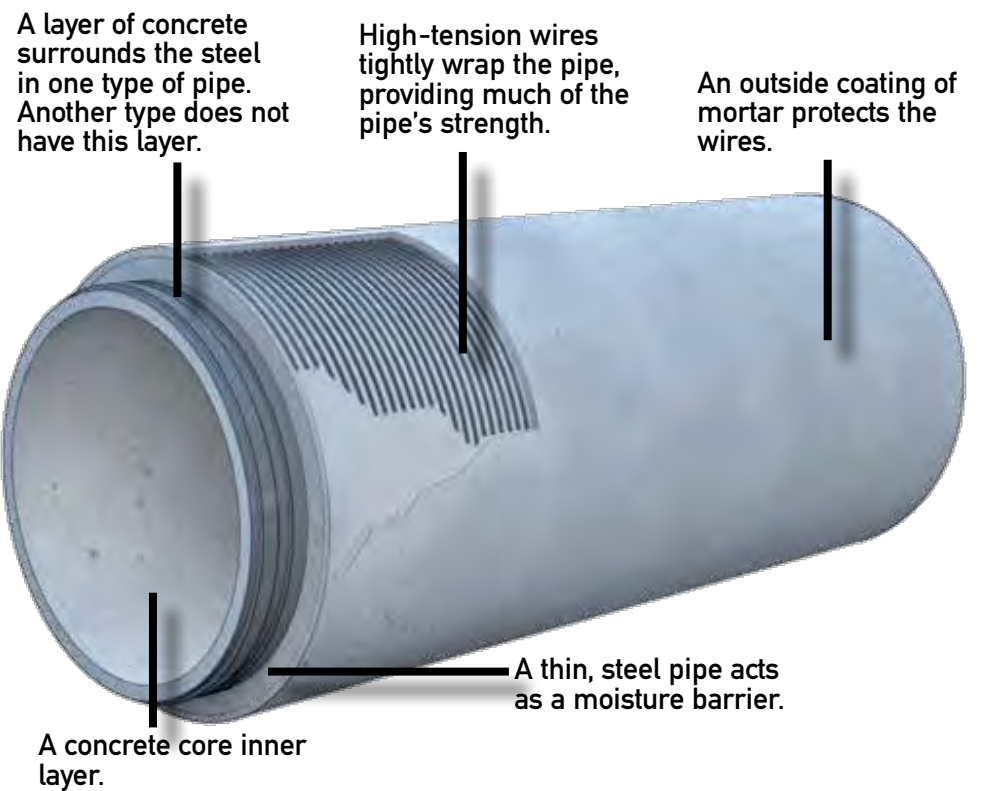
While pipes made of High Density Polyethylene (HDPE) represents a readily available substitute for PCCP, water utilities must still plan sustainable long-term replacement and renewal programs to limit water delivery disruptions.

In addition to broken prestressing wires due to corrosion or poor material quality, other factors contributing to pipe failures and leakage have included joint leaks, poor bedding, excessive external loading, hydrogen sulfide (i.e. for wastewater applications), poor quality of mortar lining, corrosive soil, and improper installation or construction damage.

Low voltage conductivity testing detects micro-cracking not visible using high resolution cameras or acoustic sensors, as well as visible macro-cracking, automatically indicating a defect's location and estimated gallon per minute (or liters per second) defect flow rate. Since initial micro-cracking occurs years before failure, the use of low voltage conductivity detection represents the first reliable technology that can identify critical pipes and develop comprehensive risk management strategies.

Sustainable PCCP Management

It is also important to note that additional factors, beyond wire breaks, acknowledging additional condition factors, limitations of wire break assessment, and to consider other rehabilitation approaches. There may be a more sustainable PCCP management approach (or combination of approaches) that should be consistently investigated.

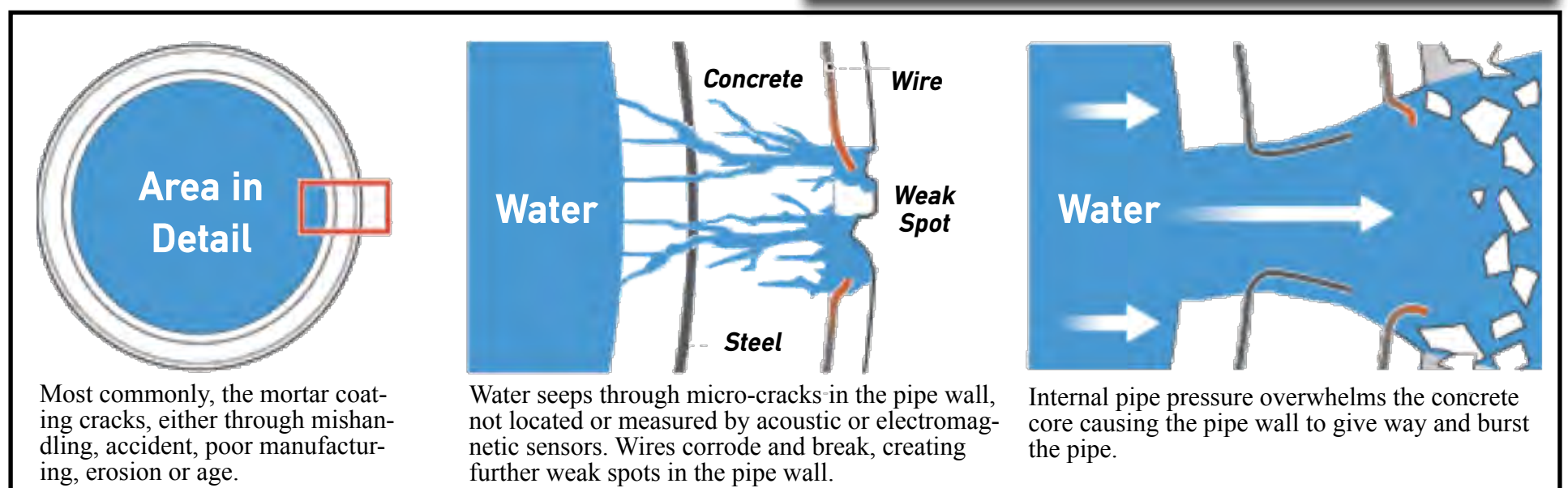


History of Prestressed Concrete Cylinder Pipe

First manufactured in 1942 as lined cylinder pipe, prestressing wire lined cylinder pipe was directly wrapped around a steel cylinder.

In 1952, a concrete encasement of the steel cylinder was used on both sides of the pipe. Known as embedded cylinder pipe, it differed from lined cylinder pipe by the encapsulation of a steel cylinder in a concrete core, wrapping prestressing wire around a concrete core rather than the steel cylinder as in lined cylinder pipe.

Agencies with most miles of PCCP	Miles of PCCP
Detroit	466
WSSC	350
Austin	260
Dallas	200
S. California	163
Miami-Dade	145
Baltimore	128
Phoenix	119
Fairfax Water	109
Louisville	100



Most commonly, the mortar coating cracks, either through mishandling, accident, poor manufacturing, erosion or age.

Water seeps through micro-cracks in the pipe wall, not located or measured by acoustic or electromagnetic sensors. Wires corrode and break, creating further weak spots in the pipe wall.

Internal pipe pressure overwhelms the concrete core causing the pipe wall to give way and burst the pipe.

Electro Scan Inc. Announces Entry into Potable Water Market, Joins Water Associations Across US

Electro Scan Inc., a global leader in leak detection, announced entry into the potable water leak detection market on World Water Day (March 22, 2015).

Shortly after, Electro Scan Inc. started the process of joining and participating in various water associations across the US, starting with The Water Council, Milwaukee, WI.

Focusing its leak detection efforts in the drought affected areas of the US, Electro Scan was honored to become an Affiliate Member of the Regional Water Authority. Based in Citrus

Heights, Calif., the Regional Water Authority is a joint powers authority that serves and represents the interests of over 20 water providers and associated agencies in the greater Sacramento area.

Other water associations Electro Scan Inc. is a proud member of include: AWWA, AMWA, AWWA CA-NV Section, and the Urban Water Institute.

Electro Scan is looking forward to working with water-thought leaders in the potable water market within these highly respected associations.



Limitations of Acoustic Sensors, Data Loggers, & Correlators Favor Electro Scan To Find Defects in PVC, PE, HDPE

Continued from Page 1

Plastic Pipe Limits Travel of Sound & Vibration Preventing Acoustic Sensors from 'Hearing' Leaks

The effectiveness of acoustic leak detection techniques has always depended on several factors:

Pipe size and depth, soil type and water table level, leak type and size, system pressure, interfering noise, and sensitivity and frequency range of the equipment, are just some of the conditions that often resulted in false-positive readings and undetected leaks.

Further complications have involved field set-up, calibrating equipment measurement devices, lack of repeatability of results -- either taken multiple times during a single day, using different crews with the same equipment, or using different equipment to diagnose the same pipe.

Finally, precise knowledge of the pipe specification data required to correlate leaks with traditional acoustic leak detection technologies has also been a challenge.

No bigger limitation exists for acoustic pipe than the pipe type or pipe material, with the most dramatic fall-off of consistent or sustainable assessment then with plastic pipes -- a serious problem in view

of the increasing use of plastic pipes in water distribution systems worldwide. Locating nonmetallic pipe leaks is extremely difficult, because the sound energy attenuates rapidly on these materials.

But most long-time users and experts agree that acoustic sensors, data loggers, and correlators, have never been useful in assessing leaks in plastic pipes, including PVC, PE, and HDPE pipes.

Characteristics of leak signals in plastic pipes differ significantly to metallic pipes. First, plastic pipes are much "quieter" and do not transmit sound or vibration as efficiently as metallic ones. Interfering traffic signals, attenuation of leak signals along the pipe, and underground noise in plastic pipes, render acoustic sensors, data loggers, and correlators, ineffective or useless to finding leaks.

Consequently, most operators are skeptical about the effectiveness of acoustic leak detection equipment -- a serious problem in view of the increasing use of plastic pipes in water distribution systems worldwide.

What's down there?
Here's a look at what the millions in feet of water lines in the city are made of:

Pipe composition	Length, in feet	Percent of total pipe
PVC (newer pipes)	12,007,203	32%
Unknown composition	8,783,542	22%
Asbestos concrete (older pipe)	7,960,785	20%
Cast iron (older pipe)	6,383,092	16%
Steel (including galvanized)	1,702,670	4%
Ductile iron	835,099	2%
Prestressed concrete cylinder	635,772	2%
Other*	672,721	2%

* Copper is included in "Other".
Source: Houston Department of Public Works | Houston Chronicle

WaterElectroScan YouTube Channel Surpasses 130,000 Views & Growing...

Electro Scan's YouTube Water Channel has been experiencing unprecedented traction for its recently posted videos, already surpassing +130,000 views since posting its first video on Earth Day - April 22, 2015. Uploaded as a teaser to let the industry know what was coming, Electro Scan launched its Water Leak Detection product in full swing September 10, 2015, posting its first in a series of videos detailing our new Water Leak Detection product.

The result: Electro Scan has accumulated YouTube views faster than any new product introduced for the water business. Check out our Water Channel as the excitement builds.



- 2015 Electro Scan's New Water Leak Detection Technology (40,166 views, 1 day ago)
- 2015 WEFTEC Team - Underwater HD CCTV Camera (14,328 views, 3 days ago)
- 2015 Announcing the Next Generation in Water Leak Detection (56,731 views, 3 weeks ago)
- 2015 Electro Scan for Water Leak Detection (22,160 views, 6 months ago)

Electro Scan Partners with Industry Leader ULC Robotics Inc., For Customizable Pressurized Water Main Entry

Hauppauge, NY -- Electro Scan has announced an exclusive partnership with ULC Robotics, Inc. a leading robotics, energy services, and research and development company focused on the energy and utility industries. The partnership will focus on the development of a highly customizable entry access solution for pressurized water mains.

"Electro Scan is delighted to team with a great partner like ULC," states Mark Grabowski, VP and General Manager, Electro Scan. "While they are most well-known for defining the future of gas utility maintenance tools, ULC's capabilities extend far beyond natural gas."

ULC Robotics' range of products and services help gas utilities confront the increasing need to repair and maintain gas pipeline infrastructure while causing less disruption to the public, reducing methane escape and eliminating leaks by developing and deploying innovative robotic repair systems and advanced camera inspection systems.

With a comprehensive portfolio of advanced robotic tools and cameras, ULC

Robotics' systems are designed and developed to enter live pressurized gas mains to perform internal inspection and repair. ULC will use their extensive knowledge of the gas industry to work closely with Electro Scan and develop a pioneering launch tube assembly that aims to dramatically improve the way Electro Scan deploys their unique technology into live, pressurized water mains.

The Research and Development team at ULC Robotics has a variety of experience working in other sectors of the energy industry including nuclear and electrical. The team has also developed products beyond the energy industry, which is why Electro Scan is excited to collaborate with ULC and revolutionize the way we work with water utilities.

"Well known in the gas industry, Greg Penza actually got his start working for his Dad in the sewer business," states Chuck Hansen, Electro Scan's Chairman. "We were just lucky that Greg hadn't started new solutions in the water business and had interest in helping us tackle technical issues using their toolbox of patents and know-how."



Pictured above: CISBOT, the cast iron joint sealing robot, from ULC Robotics internally sealing leaking joints inside a cast iron gas main



ULC's CISBOT travels under George Street, Edinburgh, Scotland repairing 1,920 feet of gas pipe.



Jerry Taverna, ULC Robotics' CISBOT Field Supervisor, drives the robot through a gas main in Edinburgh, Scotland.

ULC Robotics
88 Arkay Drive
Hauppauge, NY 11788
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<http://www.ulcrobotics.com/>

Gregory Penza, President
Aubrey Anderson, Project Manager
Nathan King, Marketing and Sales
Rob Kodadek, Director of R&D

Managing the Decay & Corrosion of Asbestos Cement Water Pipes Using Electro Scan Leak Detection Services

Electro Scan provides the first advanced tool to allow water utilities the ability to assess the degradation of Asbestos Cement (AC) pipe, estimated to be as high as 12 to 15% of all potable water mains. AC pipe was first introduced in North America in the late 1920s and became a common choice for potable water systems from the 1940s to the 1970s.

The use of AC pipe was largely discontinued in North America in the early 1980s, but AC pipe is still a significant portion of the water distribution systems in many North American cities. Health concerns associated with the installation, removal, and disposal of asbestos products ended the selection and installation of new AC pipe.

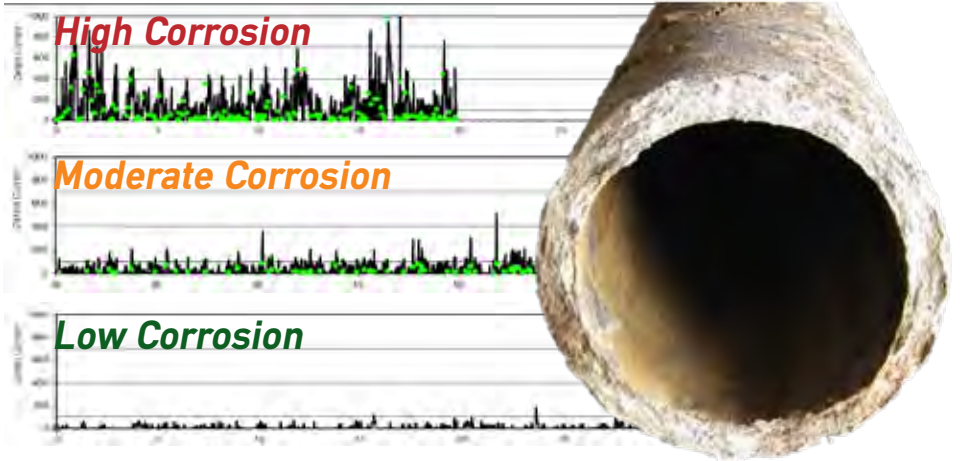
Today, little if any work has been completed on assessing the deterioration of AC pipe. Instead, the water industry acknowledges a variety of factors, including working environment and

operational conditions, and eventually, when stresses exceed their strength, they fail.

There is a substantial variability in the deterioration rate of AC pipes, and therefore also in their condition. Since total replacement is economically not feasible for many utilities, there is a great need to develop effective renewal strategies, like those emerging using Electro Scan.

Limited degradation models have been developed by academia, which is dependent on pipe age, water quality, and soil pore water pH; however, relatively low coefficients of determination in the various regression analyses warrant caution in the application of the results.

Contact Electro Scan to find out how its low voltage conductivity condition assessment can readily diagnose corrosion levels to help prioritize and plan replacement and rehabilitation.



Got Water?

California is home to over 100 bottled water facilities and the City of San Francisco Has Banned the Sale of Water Bottles?

It is estimated that each year, Nestlé pumps around fifty million gallons of local groundwater to be bottled and sold. Paying just shy of \$1.00 per 748 gallons of water it pumps from Sacramento's municipal water supply, Nestlé is just one example of how corporations reap the benefits of our domestic water supplies.

While Food & Water Watch has always opposed bottled water, depleting groundwater in an already depleted area is highly questionable.

In a bold move toward pollution control, San Francisco has just become the first city in America to ban the sale of plastic water bottles, a move that is building on a global movement to reduce the huge amount of waste from the billion-dollar plastic bottle industry.

Over the next four years, the ban will phase out the sales of plastic water bottles that hold 21 ounces or less in public places with waivers permissible if an adequate alternative water source is not available.



Electro Scan once considered supplying its own private label bottled water for tradeshows and marketing purposes, but given the huge waste and availability of more green solutions, management opted, instead, for reusable water bottles. Might have to start providing private labeled bottles of a Cabernet Sauvignon from Napa Valley.

Hansen Announces \$25,000 Donation for Water Loss Leak Detection Center of Excellence

Sacramento, Calif. -- In September 2015, CriticalH2O, Inc., a non-profit 501(c)(3) organization, announced the donation of \$25,000 matching fund by software entrepreneur and public works veteran, Chuck Hansen.

Representing California's leading Center of Excellence for Water Loss Leak Detection, CriticalH2O, Inc. was launched to consolidate, organize, and disseminate academic, commercial, and public sector advancements in solving key aspects of pipeline and irrigation water losses suffered by California water utilities, special service districts, and irrigation agencies.

"A new breed of internal pipe inspection tools are providing unprecedented information that is changing how water utilities decide how and when to repair & replace their crumbling infrastructure," states Chuck Hansen, Chairman of Hansen Investment Holdings LLC. "Procurement cycles no longer allow public entities to readily adopt and benefit from new technologies, so if private funds can be harnessed to provide needed oversight, we need to help."

CriticalH2O, Inc. expects to assess emerging high tech solutions for finding and quantifying water losses, in addition to helping establish new visual standards for using high resolution CCTV for water main condition assessment.



North American Water Loss Conference December 8 & 9 Introduces ES Water Leak Detection Services in Atlanta, GA



Atlanta, GA -- Electro Scan Water Services is pleased to announce its attendance at the North American Water Loss Conference, held at the Atlanta Peachtree Marriott, December 8 & 9, 2015.

Field Service and Consultants will be available to discuss requirements and specifications for planning your next leak detection project.

Moving from older legacy inspection technologies to more advanced solutions often delivers a force magnitude of actionable management information and asset intelligence, not previously available.

Plan on attending this important event and learn how global water utilities are adopting low voltage conductivity assessment tools to replace existing condition assessment practices. Scheduled to attend is Chuck Hansen, former Chairman of Hansen Information Technologies, now owned by Alpharetta, GA-based, Infor Global.

App Orchard & Electro Scan Announce Water Strategic Alliance to Offer Enterprise Search Engine

SACRAMENTO, Calif.-- Electro Scan Inc., a leading provider of leak detection instrumentation and cloud applications for the water, sewer, and gas pipeline industries, announced a Strategic Alliance with App Orchard Inc., makers of advanced cognitive-based solutions that capture, calibrate, and disseminate collective workforce wisdom across enterprises that can be presented in adaptive, intuitive, gamified applications.

Just like Google has evolved from being a keyword search engine to allowing users to ask simple yet powerful questions, App Orchard allows users across a business enterprise to ask questions and get answers about their operations and critical assets.

Electro Scan's partnership with App Orchard was announced in conjunction with the AWWA Annual Conference & Exposition, Uniting the World of Water, and the launch of Electro Scan's next generation low-voltage water leak detection and CriticalH2O cloud application.

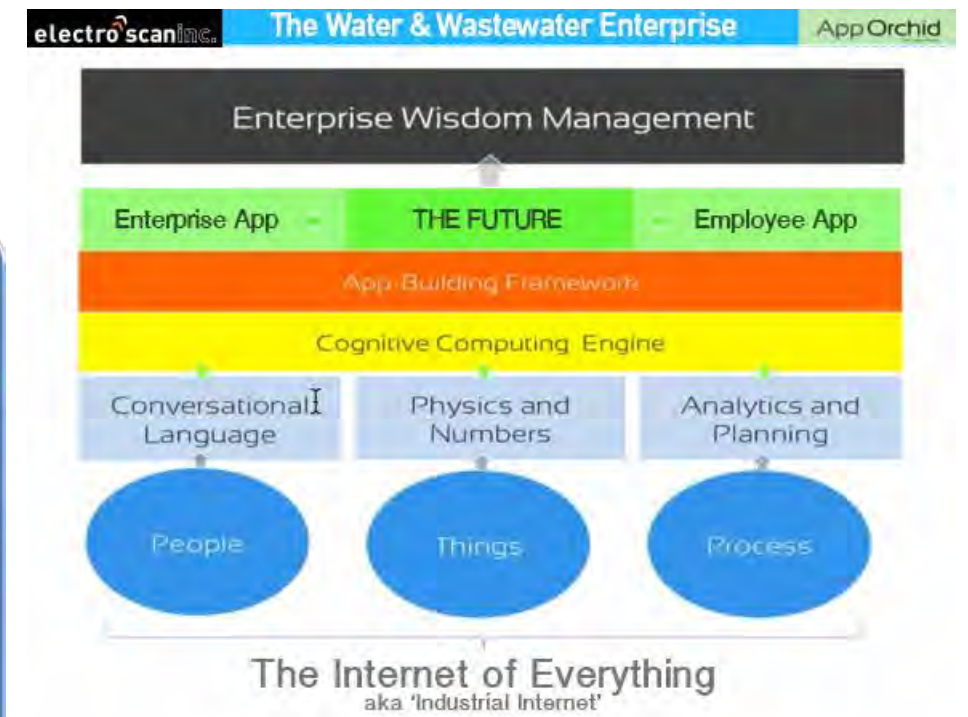
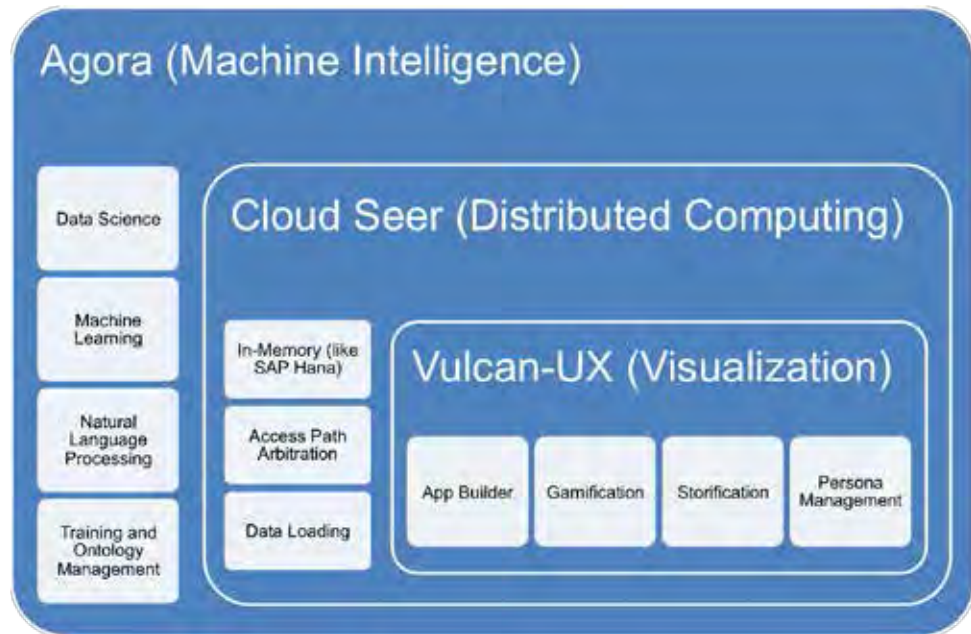
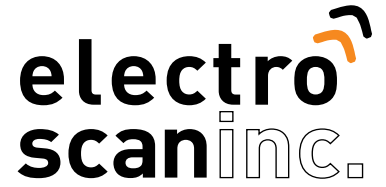
"The identification of critical resources can no longer rely on rigid hyper-optimized data models," explained Krishna Kumar, CEO and founder of App Orchard Inc. "Grass root tribal knowledge must be combined with traditional systems and ERP solutions using next generation heuristic tools to assess and address critical business resources. Big Data models and their analytics are only as strong as their weakest data source. That's why subject matter experts, like Chuck Hansen, and more accurate diagnostic tools, like Electro Scan, are an integral part of Smart Cities."

Prior to founding Electro Scan, Chuck Hansen was founder, Chairman and CEO of Hansen Information Technologies, a leading provider of asset management solutions for water and sewer utilities acquired by Infor Global in 2007.

Prior to founding App Orchard, Krishna Kumar was founder, CEO and CTO of Space-Time Insight, a leading provider of

geospatial situational intelligence applications. His current venture, App Orchard, is gaining momentum. At a recent SAP Annual Sapphire conference, App Orchard was selected as "SAP HANA Innovation Awards 2015" winner.

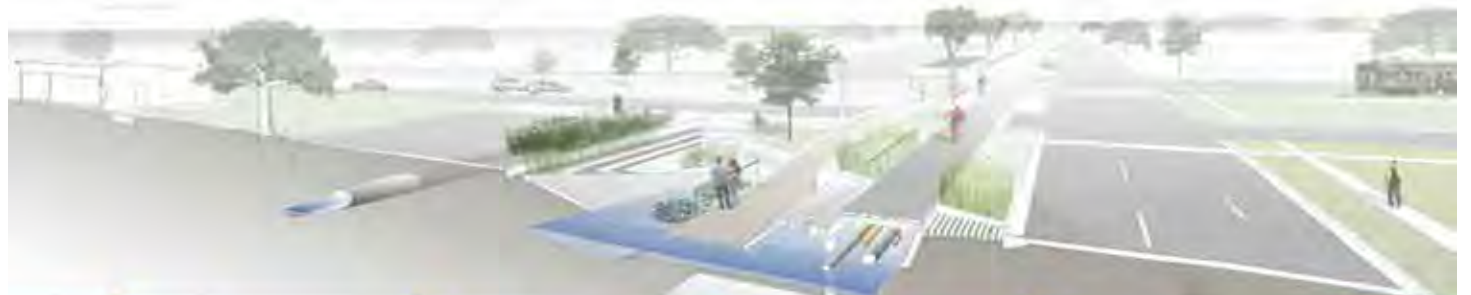
Water utilities can now have Electro Scan Water Services conduct assessments of 10-15% of their network and recommend long-term CIP programs by Age, Pipe Type, Diameter, Length, DMU, including integration of corporate databases like CRM, ERP, and Billing, in addition to Email, Social Media, and other internal documentation.



SELECTED WATER & WASTEWATER ONTOLOGY
 Automated Meter Readings, Asset Management, As-Built Drawings & Maps, Blockages, Budgeting, Bacteria Tests, Building Permits, Capacity Analysis, Capital Investment Plans, Closed Circuit Television Inspections, Customer Relationship Management, Citizen Complaints, Crime Data, Condition Assessments, Current Contracts, Corrosion Testing, Customer Billing, Defect Flow Analysis, Dye Testing, Electro Scan, Emails, Employee Certifications, Employee Timesheets, Employee Vacations, Energy Use, Equipment Runtimes, EPA & Regulatory Requirements, Exfiltration Tests, Facebook, Fiber Optic Testing, Field Inspections, Financial, Flooding Histories, Gate Valve Maintenance, Geographic Information System, Geology, Google Maps, Government Regulations, Geospatial Analysis, Ground Penetrating Radar, Groundwater Depths, Flow Meters, Flow Monitoring Systems, Hydrant Testing, Hydraulic Modeling, Hydraulic Testing, In-house Repairs, Infiltration Tests, Infrared Camera Testing, Instagram, Joint Pressure Testing, Laboratory Tests, Keynote, Laser Profiling Tests, Leak Reports, Legal Filings, Lift Stations, Maintenance Logs, Master Plans, Media Reported Events, Meeting Notes, Metered Consumption, National News Events, New Construction, Pinterest, Predictive Maintenance, Pressure Reducing Valves, Pressure (Air) Testing, Pressure Zones, Preventive Maintenance, Powerpoints, Public Events, Pump Stations, Ocean Tides, Rainfall, Rain Gauges, River Levels, Rehabilitation, Security Access, Sensor Data, Service Orders, Sewer Back-ups & Overflows, Smoke Testing, Social Media, Soil, Sonar, Spare Parts Inventories, Special Reports, Spreadsheets, Street Closures, Supervisory Control And Data Acquisition, Telephone Records, Traffic Reports, Treatment Plant Data, Troubleshooting Tactics, Tumblr, Twitter, User Manuals, Valve Exercising & Shut-offs, Vehicle Dispatch & Tracking, Video Micrometer Testing, Water Main Break Records, Water Pressures, Water Quality Tests, Water Tanks Levels, Well Depth & Pumping Histories, Work Orders, Weather, YouTube, 911 Emergency Fire Calls.

Data Stored in the Cloud, in the Fog, and in Worker's Minds

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<p>Weather Simulation Simulate weather conditions and study operational readiness of the Drainage Smart Grid for various conditions.</p>	<p>Hydraulic Modeling Analyze flow capacities by pipe diameters, materials, and service demand, including pipe performance.</p>	<p>Capital Investment Plans Analyze and visualize multi-year Capital Investment Plans, correlated to condition assessments.</p>	<p>Citizen Resource Management Perform statistical analysis relating service connections, complaints, parcels, street addresses and attachment to sewer mains.</p>
<p>Drainage Smart Grid Visualize the real time conditions of the Drainage Smart Grid through integrations with Hydraulic Modeling systems.</p>	<p>Federal, Statutory, and Local Regulations Library Track regulatory requirements over time, correlated with system performance.</p>	<p>Geospatial Visualization Visualize condition assessment details with pre- and post-rehabilitation historical activities, including past contractor performance.</p>	<p>Asset Management Visualize sewer cleaning histories, with work orders from IBM Maximo Asset Management system.</p>
<p>Tribal Platform Integrate field notes, emails, social media, maintenance logs, preventive maintenance, and predictive maintenance schedules.</p>	<p>Low-Voltage Conductivity Defect Flows Extrapolate low-voltage conductivity testing across the Drainage Smart Grid by age, pipe diameter, groundwater, and material.</p>	<p>CCTV, Sonar, Laser Profiling, Smoke, Dye, Data Cruncher Building correlations between CCTV inspections and low-voltage leak detections.</p>	<p>Pipe Rehabilitation Certification New performance measurement of CIPP lining, spot repairs, sectional repairs, and sliplining. Finding defects before project acceptance.</p>

Electro Scan Inc. Attends 22nd Annual Urban Water Institute Conference as Platinum Sponsor

Electro Scan Inc. selected its first public demonstration of its patent-pending 4-in-1 leak detection probe to be at the 22nd Annual Urban Water Institute Conference, held August 26-28, 2015 at the Hilton San Diego Resort.

“Electro Scan represents the cutting edge of technology that will enable water and wastewater agencies to accurately determine the condition of their aging pipelines,” states Lis Ohlund, Board Chair, Urban Water Institute. “This is just the type of technology that the policy makers and senior management staff that comprise our Urban Water Institute membership need as they decide where to spend their limited funds.”

The Institute is governed by a volunteer board of 40 directors drawn from hands-on policy makers, elected officials, and industry leaders who are active in the water resources industry.

A Patron Member of the Urban Water Institute, Electro Scan was the Platinum



Sponsor of the Institute’s Annual Water Conference where it demonstrated its 4-in-1 Water Leak Detection Probe.

Electro Scan’s all-in-one probe includes its proprietary low voltage conductivity sensor, acoustic sensor, pressure sensor, and high resolution CCTV camera, in a single in-pipe tethered probe providing unparalleled condition assessment data, finding locations and measurements of defect flows, not previously available from legacy inspection devices.

Conference attendees were able to see the technology in action, discuss budget requirements, and arrange follow-up meetings with their consulting engineers and Board of Directors.



Electro Scan’s Chuck Hansen and Matt Campos explain the advantages of low voltage conductivity.

Electro Scan Achieves New ISO Certification: OHSAS 18001



What is OHSAS 18001?

The OHSAS 18001 standard is internationally accepted as a method of assessing and auditing occupational health and safety management systems. Developed by leading trade and international standards bodies, it provides a framework for organizations to instigate proper and effective management of health & safety in the workplace.

By having a clearly defined management system in place to identify and control health and safety risks, organizations are able to minimize risks to their workforce and visitors or external contractors on its premises or while

in the field. The standard will allow Electro Scan and its subsidiaries processes for continually reviewing and improving its occupational health and safety standards.

- Key areas assessed, include:
- Management systems in place
 - Planning and risk assessment
 - Staff training and awareness
 - Communication of safety management
 - Response to emergency situations
 - Monitoring and continual improvement

Once again, congratulations to Electro Scan’s VP of Administration, Janine Mullinix, for overseeing the process, coordinating with

outside consultants, and educating staff. Now, Electro Scan is certified for ISO 9001, ISO 14001, and ISO OHSAS 18001, an achievement few leak detection suppliers and/or service companies have earned.



Like a Scene from HBO’s Hit Show Game of Thrones, Electro Scan is Prepared to Defend Its “Iron Throne”

“Knowledge is a weapon. Arm yourself well before you ride forth to battle.”
Maester Aemon
Game of Thrones

Winter may be coming, but you will not be seeing many competitors offering low voltage conductivity solutions in the foreseeable future -- especially given the “fire-breathing dragons and unbreachable moat” Electro Scan has been constructing since its founding in 2011 to protect its next generation leak detection technology.



International Patents & Intellectual Property Insurance Ensures Long-Term Competitive Advantage

William Buffett has said, “In business, I look for economic castles protected by unbreachable moats. After all, without a competitive advantage, how can investors expect their current investment to be around years into the future, let alone appreciate in value?”

Chuck Hansen, Electro Scan’s lead investor & founder, believes the same thing and has taken steps to go to war, if necessary, in order to protect Electro Scan’s ‘iron throne’. But what is Electro Scan’s defense and how did everything come together?



INTELLECTUAL PROPERTY Insurance Services Corporation
Electro Scan’s insurer for abatement & defense of its patents and intellectual property.

Also known as Focused Electrode Leak Location (FELL) or Low Voltage Conductivity (LVC), Electro Scan began its quest early to consolidate all available intellectual property related to the technology.

First, Electro Scan Inc. was founded October 31, 2011 in the State of Delaware, and within a month, acquired the intellectual property, including, but not limited to algorithms, conceptual designs, documentation, drawings, formulas, plans, reporting tools, software (in both object code and source code form), works in process related to the business and other assets and liabilities from Leak Busters, Inc. and Nevada-based PDQ Scan, Inc., filing its first patents in February 2012.



Not only were patents filed for its basic technology, but also includes its defect detection data processing method and integration to video pipe inspection. While other acoustic vendors have integrated video into their products, Electro Scan is the only company with rights combining FELL or LVC with CCTV.

International patent applications followed soon after U.S. patent applications, filed in accordance with the Patent Cooperation Treaty (PCT).

“It’s one thing for a nimble high tech company to file patents, but another to take out large insurance policies to

defend and aggressively pursue any copies or misappropriation of its intellectual property,” states Hansen.

“Larger companies or patent trolls are less likely to challenge up and coming companies, if they know they’re protected by policies that would cost several million dollars.”

