

Chuck Hansen to Present New Standards for Testing Cured-In-Place Pipes as 'Watertight' at Australian No-Dig Conference

Electro Scan's Adoption Grows as Traditional Pipe Inspection Methods Fall Short of Testing Cured-In-Place Pipe for Watertightness and Locating Infiltration

SACRAMENTO, CALIFORNIA, USA, August 26, 2019 /EINPresswire.com/ -- Electro Scan Inc. announced today that its Chairman & Founder, Chuck Hansen, will be returning to Melbourne, Australia to speak at the 13th Annual 'No-Dig Down Under' Conference and Exposition, 11 September 2019. Hansen will present 'New Standards for Testing & Certifying Cured-In-Place Pipe (CIPP) as Watertight.'



Today, a large percentage of CIPP liners installed worldwide undergo little to no testing for watertightness and simply rely on a video inspection — after installation — to ensure that a smooth liner has been installed and that all lateral connections were re-opened.

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It's hard to tell a utility that their pipe leaks more after CIPP lining. But it happens more often than not, despite using high resolution CCTV cameras after customer laterals are re-opened.”

Chuck Hansen, Chairman & Founder, Electro Scan Inc.

Despite the longstanding use of trenchless technology to renew or replace existing pipelines without digging, only recently has machine-intelligent Focused Electrode Leak Location (FELL) technology become available to provide unbiased & unambiguous full-length 360-degree CIPP liner assessments for watertightness.

While CIPP lining technologies have improved since their original introduction in 1972, the ability for contractors to achieve consistent quality installations has not yet been demonstrated.

Hansen's paper will review the adoption of new standards for testing CIPP for sewerage assets, in accordance with [ASTM F2550](#) "Standard Practice for Locating Leaks in Sewer Pipes By Measuring the Variation of Electric Current Flow Through the Pipe Wall" and for water assets, in accordance with [AWWA M77](#) "Condition Assessment for Water Mains."

Utilizing the new testing standards, Electro Scan Inc. recently provided assessment services to the Institute for Underground Infrastructure (IKT), based in Gelsenkirchen, German, as part of its government-sponsored Short-Liner CIPP research study.

Reaction from global CIPP suppliers & contractors has been mixed, with several leading lining companies recommending the new testing standard to demonstrate their product superiority and commitment to deliver consistent & sustainable watertight liners.

In contrast, leading water utilities & smart cities have applauded the new testing standard to combat rising sea levels, the effects of climate change, and to maintain resilient underground infrastructure.

Recently, over 160km (100 miles) of condition assessment projects — using the new inspection standards — were announced in the U.S., including a 50km (30 mile) project for Hillsborough County, Florida, and a 35km (22 mile) project for the City of Kansas City, Missouri Smart Sewer program.

Separately, Kansas City's Smart Sewer program recently conducted a 10km (6 mile) legacy CIPP assessment, including fully-lined sewer mains and full-length laterals, assessing installations less than 5 years old.

Last week, Electro Scan announced the release of new Artificial Intelligent (AI) software that locates & measures CIPP pinholes in liters per second and gallons per minute.

FELL testing of CIPP is fast, accurate, and repeatable, and can be scheduled immediately following curing, allowing contractors to make needed repairs, prior to Owner Acceptance.

Similar to 'holiday testing' of protective coatings, Electro Scan uses a machine-intelligent electrically-charged probe to automatically locate & measure leaks in liters per second or gallons per minute.

If a low voltage circuit is established between the inside of a pipe and the surface, a leak location can be digitally mapped to the closest 1 centimeter or 3/8 inch with the amount of electric current converted to liters per second or gallons per minute using Electro Scan's cloud-based application.



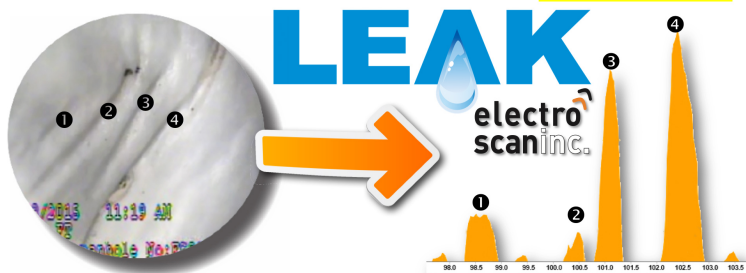
Cured-In-Place Pipe Finding CIPP Defects That Are Not Watertight

Widespread Use of Cured-In-Place Pipe (CIPP) for Trenchless Rehabilitation Results in Increase Demand for Early Warning QA/QC of Leaks, Pinholes, and Liner Permeability.

CIPP INSTALLATION PROBLEMS

CIPP leaks can be caused by many factors AND NOT SEEN BY CCTV CAMERAS.

- | | | |
|---------------------------|-------------------------|------------------------|
| Accelerant Burns | Equipment Damage | Stretching |
| Accidental Cuts | Foreign Objects | Top-Hat Defects |
| Bad Service Reconnections | Low Resin-to-Felt Ratio | Wet-Out Failures |
| Blisters | Pinholes | Wrinkles, including |
| Defective Epoxy | Poor Curing | Buckling, Fins, Folds, |
| Delamination | Overcooking | Lifts, & Ridges |



CIPP leaks not seen by visual inspection or CCTV cameras.



Leaks in CIPP liners missed by Closed-Circuit Television cameras which cannot determine watertightness.

Results are available in minutes on its cloud-based application developed & managed by Hansen Analytics LLC, without the need for third-party data interpretation.

Electro Scan equipment can be purchased directly by a water utility and added to nearly a dozen brands of CCTV trucks or vans, to conduct their own legacy CIPP inspection projects and to prioritize pipes for rehabilitation that are not accurately selected using traditional TV cameras.

Alternatively, Electro Scan services can be provided by authorised FELL contractors, licensed on a project-specific basis.

The new FELL standard for CIPP can also be used to assess a variety of new & existing pipe materials, including metallic pipes that have epoxy linings or are cement-mortar lined and Spray-In-Place Pipe (SIPP) coatings.

The new standard has already been included in projects in the United States, Canada, Denmark, France, Germany, Japan, Switzerland, United Kingdom, and United Arab Emirates.

Today, water utilities in Australasia have an incentive to adopt the new standard to safeguard their capital investments and protect the environment from sewerage leaks that may contaminate local water supplies and contribute to water losses that may occur before arriving at a customer's tap.

New standards apply to testing of CIPP liners for use in gravity sewers, pressurized water mains, rising mains, and domestic plumbing fixtures.

The industry has long recognised the benefits of CIPP compared to conventional dig & replace.

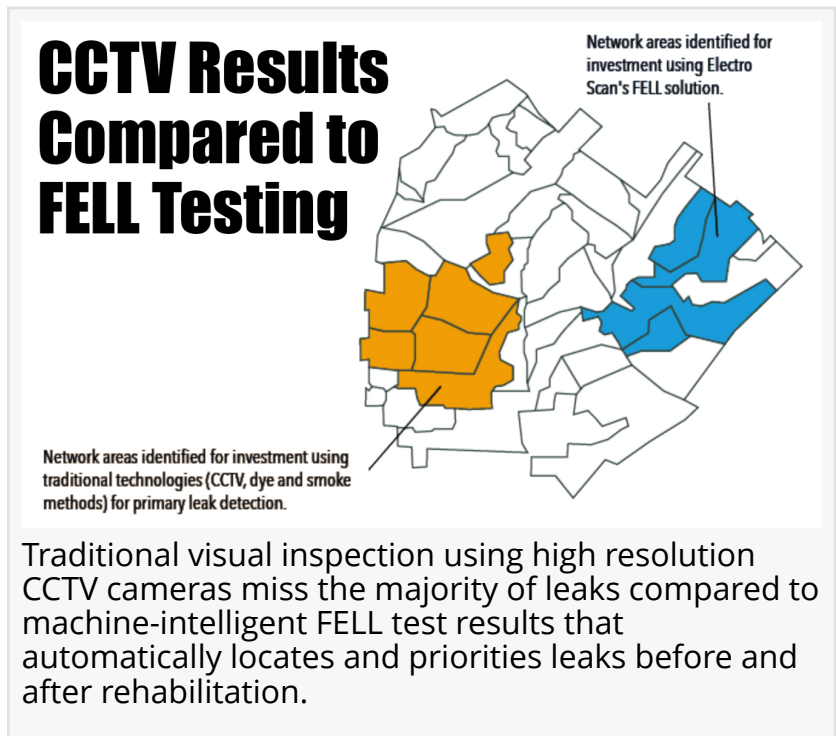
Yet, test coupons or samples taken at the end of a lined pipe are not representative of full-length 360-degree liner quality and CCTV cameras cannot judge watertightness of CIPP liners.

Since Closed-Circuit Television (CCTV) operators are not able to tell the difference between superficial cracks and cracks that go through a pipe wall or joint, industry experts have long acknowledged that manually-operated cameras and subjective coding of defects were never meant to warrant CIPP liners as structurally-sound or leak-free.

Acoustic sensors, lasers, sonar, and electromagnetic sensors are not able to perform reliability testing of CIPP liners.

In 2016, the Japan Sewer Collection System Maintenance Association (JASCOMA) based in Tokyo, awarded Electro Scan Inc. 'Certificate #12 for Watertightness Testing' after two years of independent testing.

The larger the number of leaks, pinholes, and permeable surfaces in CIPP liners, the higher the risk a relined pipe will not perform throughout its useful life.



Once a liner is pulled through a sewer or water main it must be inflated, heated, and cured, to create a new pipe.

Typically using boiling water or steam to form a new pipe, a variety of problems can occur that result in undetected leaks.

Common defects that cause leaks — not detected by visual inspection — include overcooking the liner, failure to maintain minimum resin-to-felt ratios, and accidental cuts attempting to reinstate customer lateral connections.

The new standard covers all forms of CIPP installation, including thermal (boiling water), steam, ultraviolet (UV), and light-emitting diode (LED) curing methods.

"It's hard to tell a utility that their pipe leaks more after CIPP lining. But it happens more often than not, despite using high resolution CCTV cameras after customer laterals are re-opened," stated Hansen.

During the installation process, CIPP liners will temporarily prevent water & sewer flow between residential households and businesses to their respective main.

Relying on specialized equipment to cut a precise opening in the wall of the liner to reconnect the customer service, proper care must be taken to reinstate laterals on the first attempt.

If measurement of a lateral's location & position is not consistent with prior readings, or off by as little as a centimeter or a half-inch, damage to the host connection may occur that was not present before CIPP lining.

And, new holes may increase the total defect flow in pipes, even after rehabilitation.

Operators that miss a customer's service location might cut a test hole to find its location.

Commonly referred to as "poke and hope," intentional & unintentional cuts in CIPP liner walls may go unnoticed by visual inspection and compromise a pipe's structural integrity and watertightness.

Used to find leaks 'after' rehabilitation, utilities & councils are using the new inspection standard to test pipes 'before' rehabilitation, too.

"By identifying laterals that do not leak 'before' rehabilitation, utility operators can easily judge the quality of a contractor's lateral reinstatements by comparing before and after test readings," states Hansen.

Use of inappropriate equipment can also cause leaks in newly lined pipes, not seen or recorded by CCTV operators.

Like putting on new tires or chains to travel through snow or rough terrain, contractors may use rough-edged wheels, re-fitted onto CCTV cameras or other devices, after lining, to gain more traction and less wheel spinning.

Provided to help maneuver heavy equipment inside of CIPP lined pipes, most tenders or specifications do not prohibit the use of potentially harmful wheels.

Able to dig tracks in the bottom of poorly lined pipes, and not easily seen by CCTV, the new standard readily locates & quantify leaks caused by equipment.

Rehabilitation effectiveness can be measured immediately following repairs.

In 2015, WRc plc (Swindon, England) executed a Strategic Marketing Agreement to offer Electro Scan Services on an exclusive basis in the UK.

Interested water utilities, CIPP suppliers, and contractors may contact Mr. Hansen, directly, at chuck@electroscan.com to arrange a meeting.

Hansen is well known to the Australian water industry becoming the first asset management provider to offer a fixed asset accounting application, tied to specific sewerage & water assets, in compliance with AAS27 "Financial Reporting by Local Governments."

In 1995, Hansen's sewerage & water asset management solutions were selected by the former Association of Local Government Engineers of New Zealand (ALGENZ) to inventory & manage assets throughout New Zealand.

As the majority shareholder for Hansen Australasia Pty, Hansen's Melbourne office on Collins Street employed over 60 employees prior to the company's sale to Infor Global in 2007 for US\$100 million.

ABOUT ELECTRO SCAN INC.

Founded in 2011, the company designs, markets, and supports machine-intelligent products & services for pipe condition assessment, environmental compliance monitoring, and measuring rehabilitation effectiveness. In 2019, the company was named by BlueTech Research as a 'Top 15 Water Technologies to Watch'; Fast Company's 'World's Most Innovative Companies'; and, e.Republic Government Technology 'GovTech100.'

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