Low Voltage Condition Assessment is Here!


Upgrade Your CMOM, SSES, and GIS Programs

As Featured in the SEVENTH EDITION, VOLUME 1, OPERATION AND MAINTENANCE OF WASTEWATER COLLECTION SYSTEMS Manual

New Lesson 4.4 - ELECTRO SCANNING INSPECTION
Chapter 4 - Inspection and Testing Collection Systems

- Find Major Defects Missed by TV Inspection
- Locate Leaks & Estimate Their GPM
- Certify CIPP Lining & Point Repairs
- Identify Sources of Infiltration
- Add to Your Existing TV Truck or Van

* Low Voltage Condition Assessment is Here!

Represents the industry's first reliable, repeatable, and measurable way to provide unbiased sewer pipe condition assessments without third party interpretation or operator judgement.

Add Electro Scan to...
- Aries
- Cues
- Envirosight/Ipek
- IBAK
- Rausch

Sewer Probe
No Defect Coding. No Operator Judgment. No Third Party Data Interpretation.

Electro Scan Added to Seventh Edition, Volume 1 of Industry Leading Wastewater Collection Manual

When Chuck Hansen asked his good friend and industry pioneer, Ken Kerri, Ph.D., P.E. and founder of the Office of Water Programs, in 2011 to perform due diligence on the viability of low voltage technology to assess sewers, Hansen was blown away by his findings.

Said Dr. Kerri, “If [Electro Scan] does half of what I think it can do, it will forever change the industry. All you have to do is figure a way to put it in a TV truck so crews can easily switch back and forth.”

So began a reengineering and patenting of a technology that had its roots in Germany beginning in the 1990s, including a number of EPA & WERF benchmark studies and adoption by leading sewer utilities.

In 2013 -- after publication of ASTM F2550-13, winning a series of major awards, and additional investigations -- Dr. Kerri asked Hansen to help him co-author a new chapter for the new edition of his famed OPERATION AND MAINTENANCE OF WASTEWATER COLLECTION SYSTEMS, VOLUME 1 manual.

Electro Scan Partners With WRc in the UK

The People That Brought Us ‘Weeper, Dripper, & Gusher’

Known for its international defect and coding standards for closed-circuit television (CCTV) inspection licensed by NASSCO in the United States for its PACP certification program, WRc (Swindon, England) has teamed with Electro Scan Inc. to offer its patented low voltage inspection services throughout England, Scotland, Northern Ireland, and the Republic of Ireland.

Famous for bringing U.S. sewer agencies terms like ‘weeper, dripper, and gusher’ to describe infiltration, Electro Scan will be offered for assessing sanitary sewerage and stormwater mains.

Included as a standalone lesson in Chapter 4: Inspecting and Testing Collection Systems, Electro Scan is joined by updated lessons on CCTV, Smoke Testing, and Dye Testing.

“I am delighted to bring this game changing technology to the sewer business,” states Chuck Hansen of Electro Scan. “And an honor for Dr. Kerri to invite me to co-author the lesson on Electro Scanning Inspection.”
Introducing New Standards For Inspecting Sewers

Purchase a copy of the new Seventh Edition of the OPERATION AND MAINTENANCE OF WASTEWATER COLLECTION SYSTEMS manual for more practical applications.

1. Vitrified Clay Pipe (VCP) Assessment Using Electro Scan

<table>
<thead>
<tr>
<th>DEFECTS</th>
<th>% OF DEFECT LENGTHS</th>
<th>GPM SUMMARY</th>
<th>DIAMETER &amp; DISTANCE</th>
<th>OPERATOR INFO</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DEFECT</th>
<th>% DEFECT LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>0.01540</td>
</tr>
<tr>
<td>Medium</td>
<td>0.00790</td>
</tr>
<tr>
<td>Large</td>
<td>0.00650</td>
</tr>
<tr>
<td>All</td>
<td>0.02939</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>GPM</th>
<th>GPD</th>
<th>GPD/IM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor GPM</td>
<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate GPM</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe GPM</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total GPM</td>
<td>350</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bad News: Major sections look like they worked, but may have caused large leaks at end points. Unless repairing collapses, not the 'best' rehab decision.

2. Point Repair Assessments Using Electro Scan

Good News: Point or spot repairs (Circles 1, 2, and 3) completed by this California sewer utility were 'Good' (i.e. no electrical current escapes).

ZOOM-IN

Bad News: Major sections look like they worked, but may have caused large leaks at end points. Unless repairing collapses, not the 'best' rehab decision.

3. CIPP Assessment Using Electro Scan

Never Again Accept a Cured-In-Place Pipe Lining with Leaks, Defective Service Connections, or Hidden Tears.

<table>
<thead>
<tr>
<th>DEFECTS</th>
<th>% OF DEFECT LENGTHS</th>
<th>GPM SUMMARY</th>
<th>DIAMETER &amp; DISTANCE</th>
<th>OPERATOR INFO</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DEFECT</th>
<th>% DEFECT LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>0.0000000</td>
</tr>
<tr>
<td>Medium</td>
<td>0.0000000</td>
</tr>
<tr>
<td>Large</td>
<td>0.0300000</td>
</tr>
<tr>
<td>All</td>
<td>0.476</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>GPM</th>
<th>GPD</th>
<th>GPD/IM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor GPM</td>
<td>3.84</td>
<td>5.530</td>
<td>23,057</td>
</tr>
<tr>
<td>Moderate GPM</td>
<td>0.48</td>
<td>5.530</td>
<td>23,057</td>
</tr>
<tr>
<td>Severe GPM</td>
<td>3.84</td>
<td>5.530</td>
<td>23,057</td>
</tr>
<tr>
<td>Total GPM</td>
<td>8.16</td>
<td>8.062</td>
<td>39,092</td>
</tr>
</tbody>
</table>

Total: 100.00 ft

Atmospheric Test: 11/14/2014 3:20 PM
Electro Scan Investigates Sewer Main That Showed Zero Defects As Recorded By Certified CCTV Operator

Electro Scan is frequently asked, ‘How does CCTV inspection compare to Electro Scanning Inspection?’ While TV operators can always have an off-day – especially if the camera is operated at Mach speed traveling through a pipe – Electro Scan significantly alters how TV is used, especially if finding sources of infiltration and SSOs is a key objective of the sewer agency.

After over 300 projects, benchmark demonstrations, and side-by-side comparisons with CCTV, you can’t help but see how certified camera operators miss openings at joints, inverts, and service connections where water can easily enter or exit a pipe, but cannot be easily seen even with high resolution cameras.

While CCTV is still an important inspection tool to assess the need for periodic maintenance, especially to assess grease, roots, and debris, its usefulness to certify repair, rehabilitation, and renewal projects has reached a crossroads, as Electro Scan has been found to more accurately detect leaks in a pipe. A surprise to many, but not after seeing comparative ‘bake-offs’ like the benchmark completed below of a sewer main with ‘no defects.’

Below) While CCTV inspection was completed over a year prior to the Electro Scan survey, Electro Scan found 93 Total Defects, including 78 Large Defects, many of which exceeded our maximum defect flow of 10 GPM per defect. Total estimated defect flow for the entire 390ft, 6in, VCP sanitary sewer main was 268.05 GPM.

NOTE:
This California benchmark was completed by a certified CCTV operator that compared a TV Inspection Report having an Overall Pipe Rating Index (OPRI) of ZERO to Electro Scanning Inspection.

Located in a known flood zone with high groundwater, the City suggested this sewer to see what Electro Scan could identify when compared with a pipe with no CCTV defects and considered in Good Condition.

Electro Scanning Inspection was performed at 2pm on a clear day, with sewer already running half-full.

Pipe Diameter: 6 inches
Pipe Length: 390 feet
Pipe Type: VCP

Defect Flows
GPM 268
GPD 385,992
GPD IDM 924,082

Electro Scan Date: 2/19/2014

93 DEFECTS
78 or 84% of Defects Are ‘Large’

NEW STANDARD

While CCTV may view major structural defects, it is not able to see through joints or cracks to determine if a pathway exists for water to enter or exit a pipe.

Electro Scan (not CCTV) should be used first for SSSE and I&I studies. Then, CCTV should be used to document major Electro Scan defects.
Electro Scan's Sewer YouTube Channel Leads Industry With Over 250,000 Views*

Unmatched in the Trenchless Technology industry, Electro Scan's Sewer Channel has become a social media darling, breaking records for YouTube views as compared to all other competitors in the pipe condition market.

“Cut & Paste” the URL (Right) and see explaining showing the most exciting innovations in the global wastewater business.

And, visit its website to read about its recent developments and its Strategic Alliance with WRc, Swindon, England, originators of the NASSCO coding system for CCTV.

*YouTube views as of January 15, 2016.

*** SPECIAL PRICING IF PURCHASED BEFORE JUNE 30, 2016 ***

CONVERT FROM CCTV TO ELECTRO SCAN, AND BACK AGAIN, IN LESS THAN 10 MINUTES.

Are You Getting Quality CIPP Lining Projects?

2015 Are You Getting a Quality Cured-In-Place Pipe (CIPP) Lining... 108,766 views

2013 WEF Best Innovative Technology Award 65,797 views

2015 Miami-Dade and Electro Scan 44,445 views

2015 The First Snow in Vail, Colorado 43,183 views

https://www.youtube.com/channel/UCMCoHrGrn_V0DF4psFRFOw
How Does Electro Scanning Inspection Compare to Other Inspection Techniques?

Electro Scan’s low voltage conductivity technology do not rely on your parent’s closed-circuit television inspection camera or other device to find defects in sewers. Representing a new breed of water loss leak detection solutions – without the need for third party data interpretation or operator guesswork – Electro Scanning Inspection provides unbiased, unambiguous pipe condition assessment and leak detection data unlike anything delivered by CCTV, Smoke Testing, Dye Flood Testing, or Pressure Testing (i.e. limited to a PASS FAIL ONLY, not a location or magnitude of source of failure).

Electro Scanning Inspection is like comparing iPhones to 8-track tape players. Call Electro Scan today to learn how to get started.
Hamilton Township Municipal Authority's Sharon Purnell, Manager, for inviting the Electro Scan crew to their Annual BBQ & Pig Roast, held October 2015. Ms. Purnell became Manager in 2011 and has been with the Authority for +30 years!

A big THANK YOU to Hamilton Township Municipal Authority’s Sharon Purnell, Manager, for inviting the Electro Scan crew to their Annual BBQ & Pig Roast, held October 2015. Ms. Purnell became Manager in 2011 and has been with the Authority for +30 years!

“Don’t be fooled by the size of HTMA” states Pete Dannenberg, Electro Scan’s Manager of Field Services. “Despite managing only 70 miles of sewer main, they’ve scanned nearly 30,000 ft since their purchase & installation in August 2014.”

Did you know that your sewer utility can Electro Scan 3 times as much footage as CCTV inspection? Not to mention find 5-10 times the number of defects? Sign-up today and start learning all the ways that Electro Scan will save your utility money. Call us today to learn more.

Jamie Johnson, Director of Services Electro Scan Inc.

$495.00

www.ElectroScan.com

Electro Scanning Inspection measures leaks at wrinkles, once accepted by engineers if the wrinkle did not materially impede sewer flow or contractor ground it down to a flat surface.

LABORATORY TESTING OF CIPP LINING ON SAMPLE ONLY*

*Sample CIPP lining is generally cut from the extended liner that enters the manhole -- a requirement for all sewer utilities in Germany, with a growing number of EU countries considering the requirement. While testing is limited to a single section, there are no requirements for testing the full length of post-installed liners, other than visual inspection.
Join Leading Sewer Utilities Using Sole Source Justification to Add Electro Scan to CCTV Trucks & Vans


Issuing an RFP or RFQ to purchase Electro Scan equipment may not be required, as determined by a growing number of municipal sewer utilities.

Priced in accordance with generally available camera technologies, including associated software, long-term support, and data management alternatives, Electro Scan’s status as the exclusive supplier for electro scanning inspection, also referred to as low voltage conductivity inspection, may be directly purchased as a Sole Source Justification by your Agency or Utility.

Check with your Purchasing Dept. or contact Electro Scan today.

Selected sewer utilities that have already taken advantage of a Sole Source Justification -- without requiring a public bid – to purchase equipment, and add Electro Scan to an existing CCTV rig, include:

- City of Coos Bay, OR
- City of Tallahassee, FL
- Metropolitan Sewer District of Greater Cincinnati, OH
- Hamilton Township Municipal Authority, PA
- Miami-Dade Water and Sewer Department, FL

Special Pricing If Purchased By June 30, 2016

Electro Scan Becomes Another Tool In Toolbox, Doing What CCTV Can’t!

Find Infiltration | Certify Rehabilitation

When Chuck Hansen asked his good friend and industry pioneer, Ken Kerri, Ph.D., P.E. and founder of the Office of Water Programs, in 2011 to perform due diligence on the viability of low voltage technology to assess sewers, Hansen was blown away by his findings.

Said Kerri, “If [Electro Scan] does half of what I think it can do, it will forever change the industry. All you have to do is figure a way to put it in a TV truck so it’s a familiar tool to the operator.”

Advantages Using Electro Scan for Sewer Condition Assessment

<table>
<thead>
<tr>
<th>Advantage</th>
<th>CCTV</th>
<th>Electro Scan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatically Finds Potential Sources of Infiltration</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Automatically Finds Leaks Inside Joints</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Automatically Finds Leaks at Service Connections</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Automatically Finds Sources of Infiltration at Cracks</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Automatically Finds Leak Locations (within 0.4 in or 1 cm)</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Automatically Measures Size of Leaks (Estimated in GPM or LPS)</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Automatically Finds Defects That Leak from Bad Couplings</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Automatically Finds Defects That May Still Leak After Repairs</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Automatically Finds Defects That Leak in Re-Lining Projects</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Automatically Finds Defects After Service Re-Connections</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Automatically Finds Leaks, If Silt or Debris on Bottom of Pipe</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Able to Conduct Inspections, If Sewer Pipe Is Full of Water</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Able to Determine Size of Potential Leak, If Roots Are Present</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Automatically Finds Leaks at Joints, If Grease Is Present</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Able to Determine Size of Leaks, If Pipe Has Encrustation</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Requires Active Infiltration to Identify Defect at Source</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Contains Moving Parts That Could Clog from Debris or Silt</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Requires Bypass During Inspection, If Pipe Full</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Requires Special Training and Certification to Identify Defects</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Relies on Visual Observations to Record Defects</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Ave. Speed of Inspection (6-30” Sewer Main Diameters)</td>
<td>3ft/min</td>
<td>50f/min</td>
</tr>
</tbody>
</table>

(Special) Electro Scan? No! This is a polygraph or lie detector test, illustrating how Electro Scan’s patented Low Voltage technology finds all defects to certify rehabilitation projects – missed by visual inspection – and helps hold sewer contractors accountable for their work!
Re-Inventing the Sewer Condition Assessment Market

How Did Electro Scan Do It!

We are often asked ‘how [we] changed the market for sewer and water pipe condition assessment so quickly?’ And, the simple fact is that it was time. Of course, it didn’t hurt having +30 years in the industry, a working knowledge of technological innovations, and being well financed.

But, given the slow speed of most government agencies, the trick is building a product that has an immediate and substantial competitive advantage over legacy solutions, having the perseverance to support your customer, no matter what happens along the road, and having fun, too!
Chuck Hansen Comes Out of Retirement
To Lead Electro Scan & Accelerate Growth

Selling a company for $100 million after turning 50 years old might make some people buy a house on a beach and never look back, but not Chuck Hansen. Founder & former Chairman of Hansen Information Technologies, and developer of some of the largest water & sewer asset management systems, Hansen founded Electro Scan Inc. in October 2011 to introduce low voltage conductivity testing instrumentation to water & sewer agencies.

“I was always disappointed to see our customers rely on incomplete or inaccurate information to prioritize their repairs & rehabilitation, especially using faulty CCTV reports and acoustic data,” says Hansen. “By comparison, I saw earlier versions of low voltage technology, but knew they weren’t managing the data right, not to mention making it user friendly for field crews.”

Located in Sacramento in the original building where he started Hansen Software in 1983 with his Dad and older brother, Scott, Electro Scan is now a global juggernaut with offices in London, Melbourne, Toronto, Frankfurt, and Miami, FL.

Electro Scan Awarded 2015 ‘Best Project’ By UK Society of Trenchless Technology

Electro Scan (UK) Limited has won the 2015 Best Project Award as announced by the United Kingdom Society for Trenchless Technologies (UKSTT) on behalf of its project with Severn Trent Water Plc.

The project was the largest and most comprehensive comparison of the Electro Scan technology and Closed-Circuit Television (CCTV) inspections using the WRc Manual of Sewer Condition Classifications. Working under the guidance of Severn Trent’s in-house engineers and project managers, the project was conducted in an English village that had experienced persistent and unexplained sewer flows.

CCTV had been used on multiple occasions so a key objective of the project was to determine if Electro Scan could identify and measure defects not found by previous visual observations. Result: Electro Scan’s international patent-pending technology not only identified a number of potential sources of infiltration, not seen by previous CCTV inspections, but provided estimated defect flows for each sewer main and each identified defect.

Electro Scan in Japan...

...and in the United Kingdom.

Electro Scan Awarded 2015 ‘Best Project’ By UK Society of Trenchless Technology

Electro Scan in Japan...

...and in the United Kingdom.

Mark Your Calendar: May 4, 2016


Gain deeper understanding of how Electro Scan technology is used to prioritize rehab projects and certify newly installed pipe and liners in sewer mains and laterals. Get first hand small agency, large agency, and contractor perspective of their experiences with Electro Scan technology and how it is being implemented into their SSES and CMOM programs.

Electro Scan, governed by ASTM F2250-13, is changing the pipeline inspection market by locating defects and measuring (in GPM) their potential for infiltration during wet weather events. For the first time, Owners are able to prioritize rehab projects based on GPM defect flows to get the biggest reduction in infiltrating wastewater treated in their facilities and avoiding regulatory repercussions from SSOs.

Allowable infiltration thresholds are now becoming the basis of how Owners are certifying and accepting rehab projects. Additionally, participants will learn how Electro Scan is being used to help identify locations of potential infiltration in sensitive ecological areas.

Attendees will gain valuable knowledge on how a “condition snapshot” provided by electro scanning results can be applied as a road map for CCTV operators, used in decision-making, and other practical field applications.

Finally, a discussion from municipal guest speakers will give a unique small and large agency perspective on how Electro Scan is being used to detect infiltration and why they have made changes to their programs to avoid Regulatory Injunctions or remain EPA Consent Decree Compliant.

Contact Carissa Boudwin, Director of Marketing
Electro Scan, Inc.
Email: carissa@electroscan.com

Approx. 15,000 Data Points
Every 300 ft of Pipe
Eagle River Water & Sanitation District, Vail, Colorado
Electro Scan 1-Day Demo Leads to 50,000ft Project

After attending the Electro Scan Trenchless Technology Webinar in June 2015, the friendly folks at Eagle River Water & Sanitation District (ERWSD) invited Electro Scan to stop by if ever in the neighborhood.

Dropping in August 5, 2015, it was clear that ERWSD had done their homework, meaning they knew what pipes they wanted to have us scan, already knew the defects that they wanted to see if Electro Scan could spot, and had a ‘hard to televising’ sewer main, especially since it ran under a creek and always seemed to be running full.

In other words, a great way to spend a Summer day in the Rockies.

Electro Scan wishes to thank the hospitality of ERWSD, including Linn Brooks, Todd Fessenden, Glen Phelps, Mike Thompson, and Siri Roman.
“Every CCTV truck or van should add Electro Scan to accurately assess pre- and post-rehabilitated sewers. Why would you keep your hammers in one truck and your screwdrivers in another when you need both to get it right?”

Chuck Hansen
Founder & Chairman, Electro Scan Inc.
Former CEO, Hansen Information Technologies

Pre-Rehabilitation Assessment

CCTV  electro\textsuperscript{2}scan\textsuperscript{inc.}  CCTV  electro\textsuperscript{2}scan\textsuperscript{inc.}

No TV Callout

Joint Infiltration

Active Infiltration Dripper

Post-Rehabilitation Assessment

CCTV  electro\textsuperscript{2}scan\textsuperscript{inc.}  CCTV  electro\textsuperscript{2}scan\textsuperscript{inc.}

No TV Callout

No TV Callout

No TV Callout

No TV Callout

0.35 GPM
Defect Flow

Electro Scan Inc. Copyright © 2016.