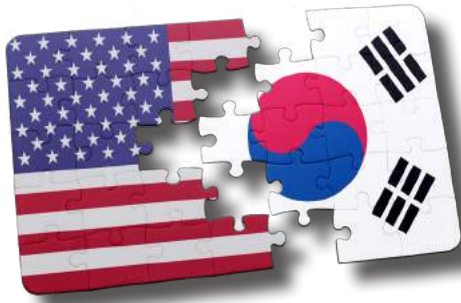




electro
scaninc.

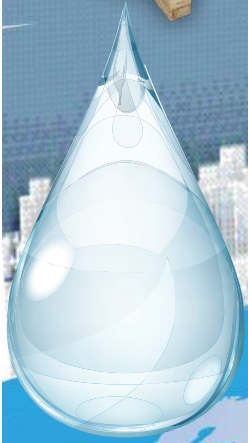
+



자연과 도시환경을 지키는
(주)세 인
ENGINEERING

Electro Scan in Korea

Machine-Based Pipe Condition Assessment & Leak Detection



Smart City



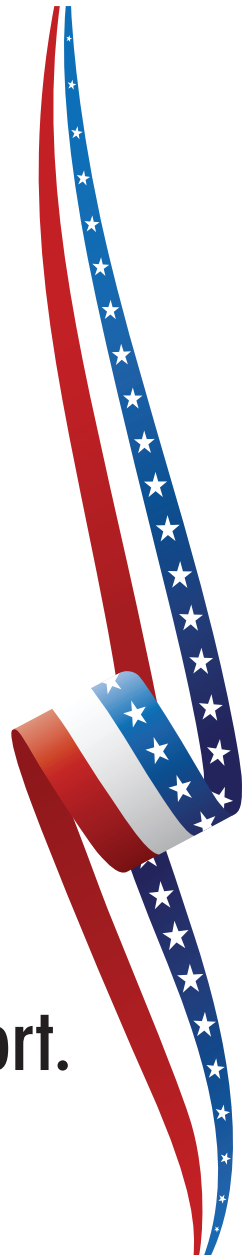
Republic of Korea Fastest Internet Speeds in the World



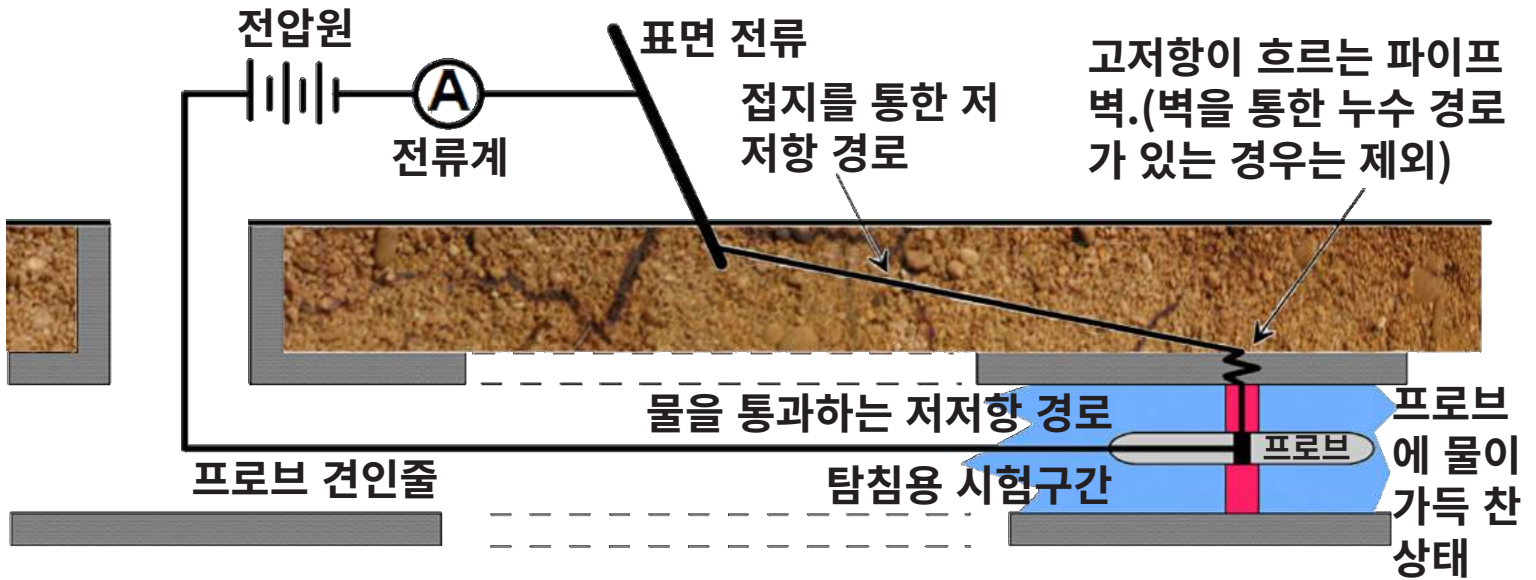
자연과 도시환경을 지키는
(주)세 인
ENGINEERING

electro[^]
scaninc.

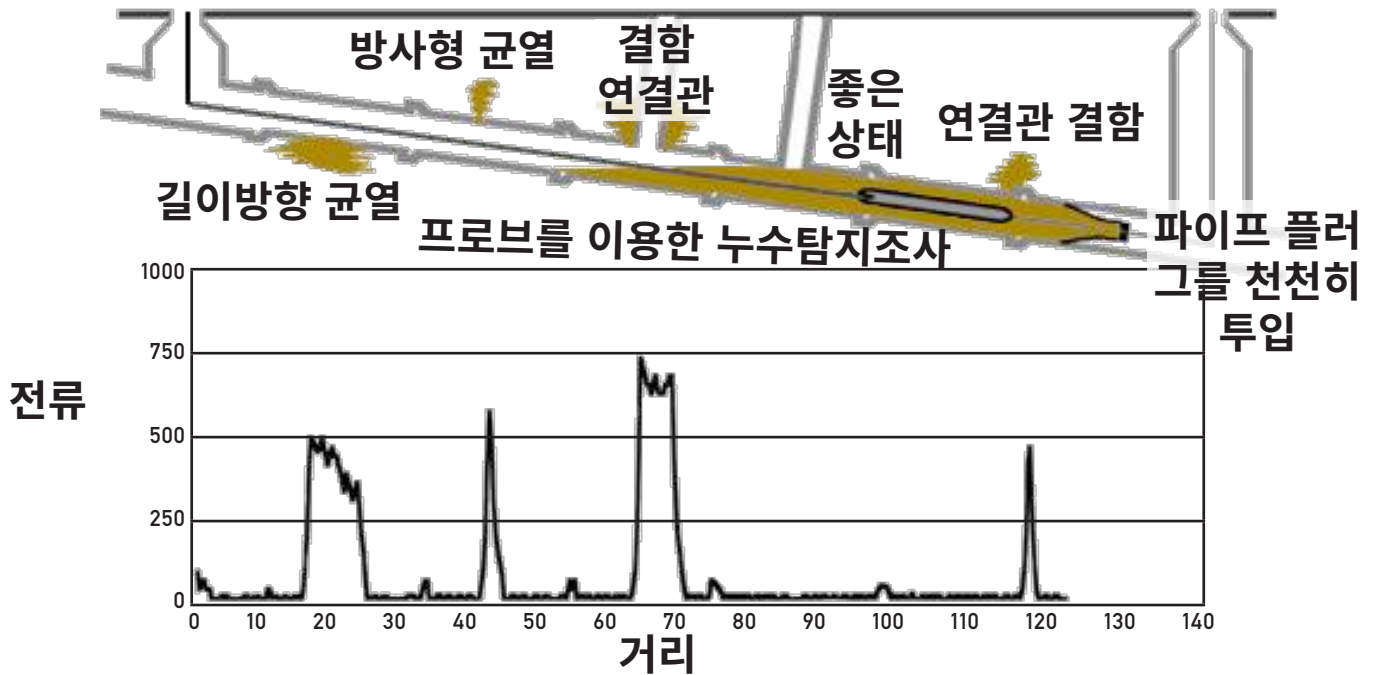
- Exclusive Representation in Korea.
- Technology as a Service Provider.
- Software as a Service Provider.
- Equipment Sales.
- Professional Services.
- International Support.
- Best Practices for Field Surveys.
- Korean-Language AWS Cloud Support.



파이프의 단순화된 전기 주사 회로의 개략도



전류 변동 테스트 및 거리에 따른 집중 전류 변동 플롯

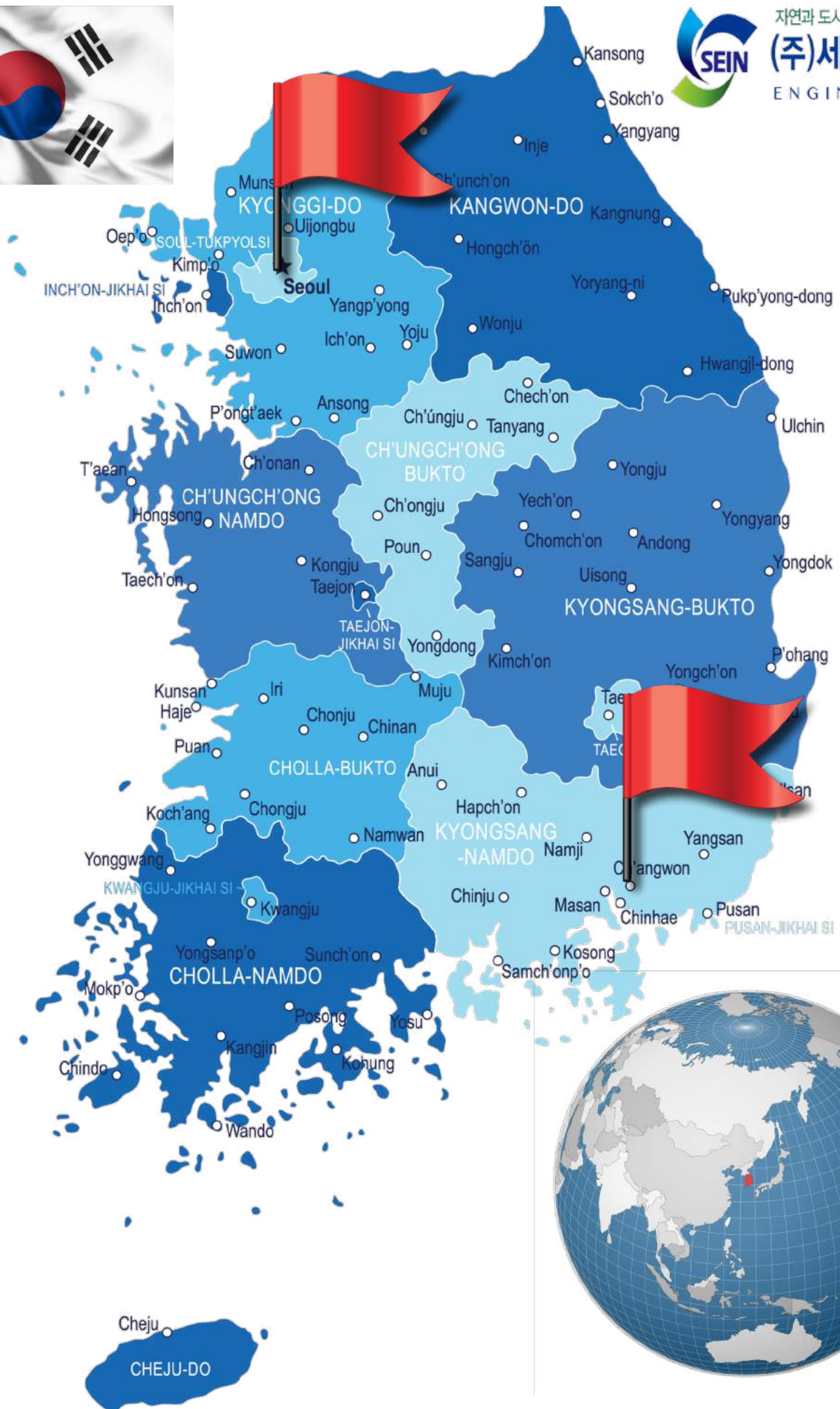


집중된 현재 데이터 요약

조사하수관	조사 구간 (맨홀 거리)	관경	관종	연결부 간격	누수 누수 여류	조사 결과 분류 누수 여류(%)					
						대	중	중	중	중	중
R_09_02 Cheryl Dr	328	6	VCP	4	6	0.3%	1.1%	0.4%	0.3%	1.5%	1.8%
R_09_03 Cheryl Dr	351	6	VCP	4	6	0.0%	0.2%	0.6%	0.2%	0.6%	0.8%
R_09_05 Cheryl Dr	351	6	VCP	4	0	0.1%	0.0%	0.2%	0.1%	0.2%	0.3%
R_09_06 Cheryl Dr	337	6	VCP	4	2	0.1%	0.2%	0.3%	0.4%	0.2%	0.6%
R_09_08 Cheryl Dr	226	6	VCP	4	0	1.8%	0.2%	1.4%	2.6%	0.8%	3.4%
R_09_16 Loma Vista Dr	348	6	VCP	4	4	0.5%	0.3%	0.9%	1.4%	0.3%	1.7%
R_09_23 Gary Ct	345	6	VCP	4	5	6.0%	2.6%	1.2%	8.9%	0.9%	9.8%
R_09_34 Traverse St	312	6	VCP	4	3	1.0%	3.0%	3.1%	6.5%	0.6%	7.1%
R_09_35 Traverse St	308	6	VCP	4	2	0.0%	1.6%	2.9%	4.3%	0.2%	4.5%
R_09_44 Gary Ct	300	6	VCP	4	3	0.1%	1.2%	1.0%	2.0%	0.3%	2.3%
S_09_01 Cheryl Dr.PR2	311	6	VCP	4	3	0.0%	0.0%	0.8%	0.1%	0.7%	0.8%
S_09_02 Cheryl Dr.PR2	400	6	VCP	4	5	0.4%	0.2%	1.6%	0.4%	0.8%	1.2%
S_09_03 Cheryl Dr.PR2	285	6	VCP	4	5	0.7%	0.0%	0.3%	0.1%	0.9%	1.0%



자연과 도시환경을 지키는
(주)세인
ENGINEERING



Major Cities in Korea

Population

SEOUL
10 Million



INCHEON
2.8 Million



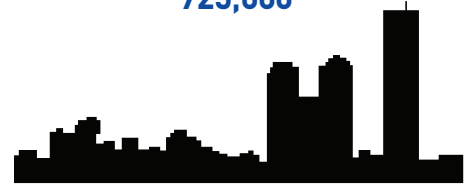
SUWON
1.3 Million



BUNCHEON
830,000



CHEONGJU
725,000



ULSAN
900,000



CHANGWON
1 million



DAEGU
2.2 million



YONGIN
1.1 Million



DAEJEON
1.6 million



GOYANG
1.1 million



MASAN
450,000



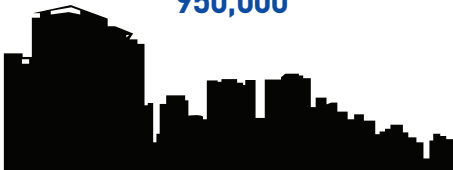
GWANGJU
1.5 million



NAMYANGJU
530,000



SEONGNAM
950,000



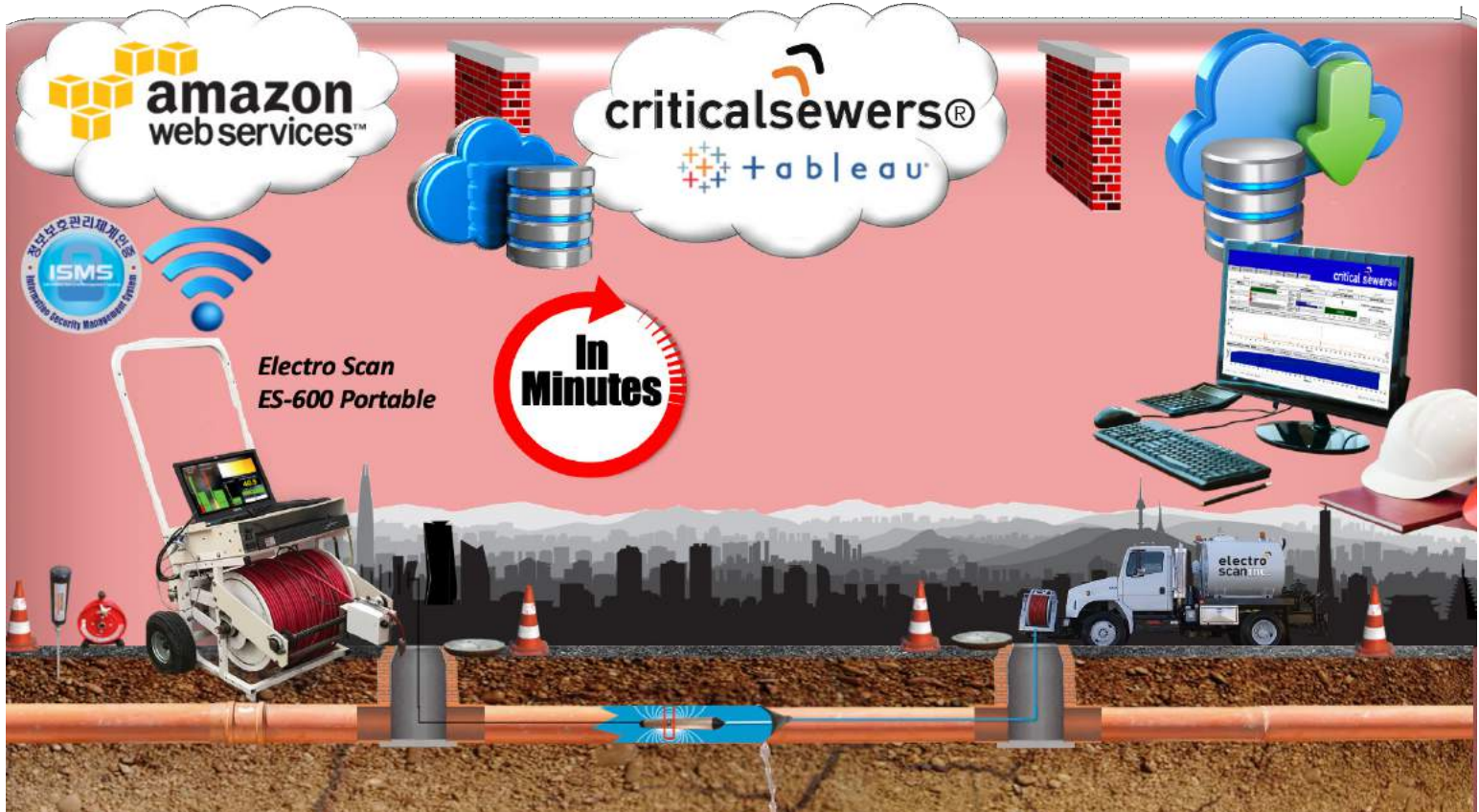
MOKPO
250,000



SEJONG
230,000



Cloud Reporting Leak Locations



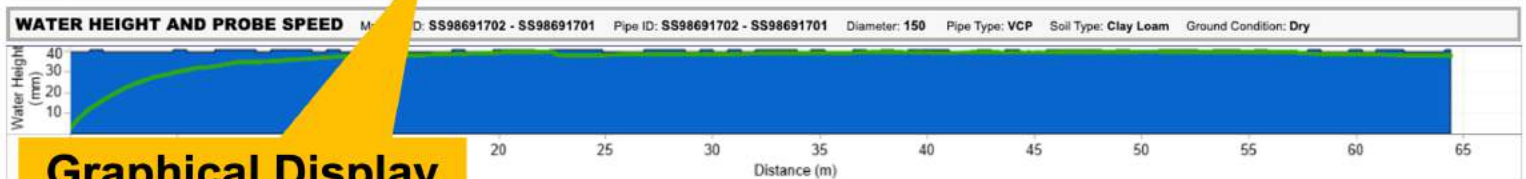
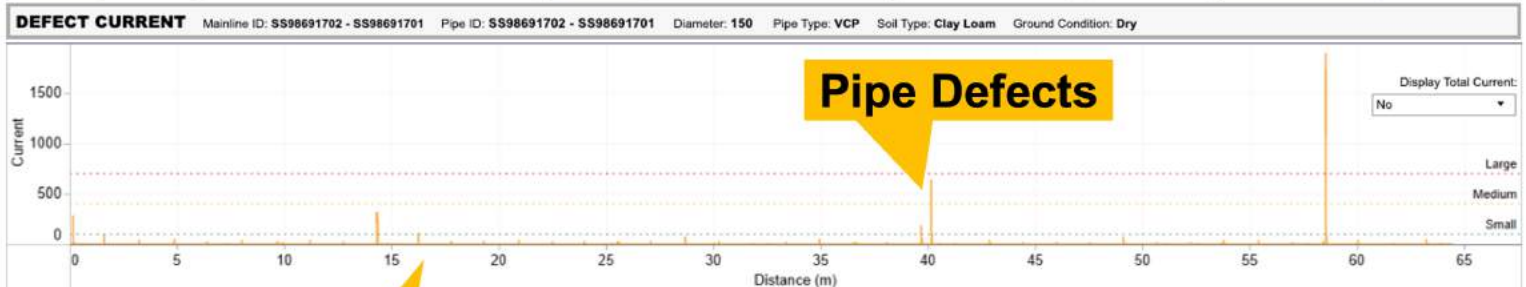
Leak Locations and Measurement, Without Subjective Data Interpretation.

Defect Count

DEFECTS	LENGTHS	LPS SUMMARY	DIAMETER & DISTANCE	OPERATOR INFO
Large 1	0.06%	Severe 0.000	150	 16/03/2020 2:06:03 PM 16/03/2020 2:50:52 PM
Medium 1	0.04%	Moderate 0.146	 0 20 40 60 Distance (m)	
Small 5	0.07%	Minor 0.079		
Pinhole 0	0.00%	Total LPS 0.225		
All Defects 7	0.17%	LPD 19,406		
		Severe % 0.000%		
		Moderate % 64.890%		
		Minor % 35.110%		

Total Defect Flow LPS, LPD

Pipe Defects



Graphical Display By Footage



Korean Cloud Reporting 한국어 클라우드 보고

My Electro Scan
파일 다운로드
지지됨
로그 아웃

Electro Scan		경계 번호	경계 위치	수위 그리고 속도	주사 요약
결점	길이	LPS 요약		적경 그리고 거리	운영자 정보
큰	0	0.00000	중증 0.00 보통의 0.34 미상년자 0.01 총 LPS 0.35	150	Tech Electroscan Project Summer Sewer Job Valle des Vaux
중간	0	0.00000	LPD 30.089	34	대기 테스트 05/08/2021 9:45:03 AM 스캔 시작 05/08/2021 10:43:41 AM
작은	2	0.01450	중증 % 0.00% 보통의 % 98.01% 미상년자 % 1.99%		
전술	2	0.00150			
총 결점	4	0.01600			

결점 전류
본선 ID: M06F048 - M06F050
파이프 ID: M06F048 - M06F050
직경: 150
파이프 유형: CIPP
도량 유형: 지상 상태: Dry

수위 그리고 속도
본선 ID: M06F048 - M06F050
파이프 ID: M06F048 - M06F050
직경: 150
파이프 유형: CIPP
도량 유형: 지상 상태: Dry

600
400
200
0

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

200
100
0

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

Undo
Redo
Revert
Refresh
Pause

View Original
Share
Download
Full Screen

FLOODING

The annual precipitation ranges from 1,000 mm to 1,800 mm in the southern part of Korea and from 1,100 mm to 1,400 mm in the central part. More than half of the annual precipitation falls during the Changma season when a stationary front lingers across the Korean Peninsula for about a month during the Summer.

- 1 Seoul
- 2 Chuncheon
- 3 Soyang Dam

Annual Precipitation in Chuncheon

Year ↕	Precipitation (mm)
2014	677
2015	758
1982	928
1994	931
1977	937
1973	985
1986	1022
1980	1038
1988	1064
1976	1072
1992	1102
1974	1103
2001	1108
1983	1154
2000	1155
1993	1161

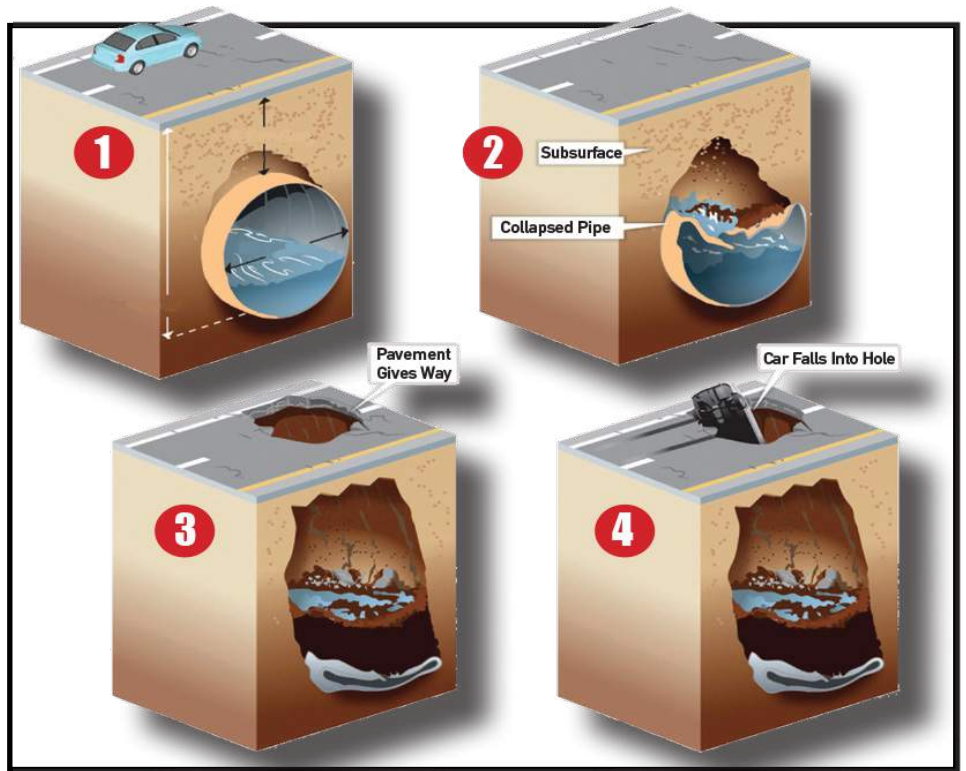
DROUGHT

A drought beginning in June 2015 affected both South & North Korea. The amount of rain that year was in places less than half of average, following a dry year in 2014.

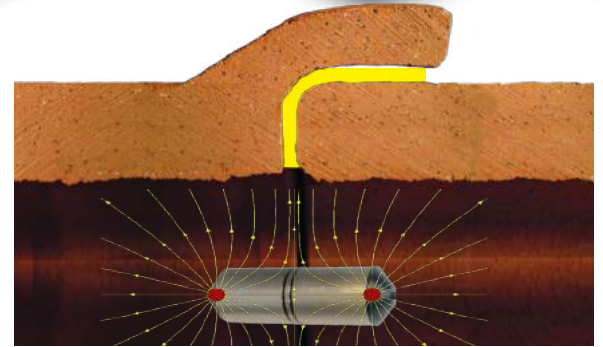
On June 19, 2015 the water level in Soyang Dam was 152.24m (499.5 ft), *the lowest recorded level since its creation in June 1978 and Soyang Lake completely evaporated.*

Japan

Sinkhole Unseen Defects In Stormwater Pipes Plague Korean Streets



Electro Scan is able to
locate & measure leaks
at every pipe joint, crack,
fissure, and bad tap
connection, missed
by CCTV cameras.



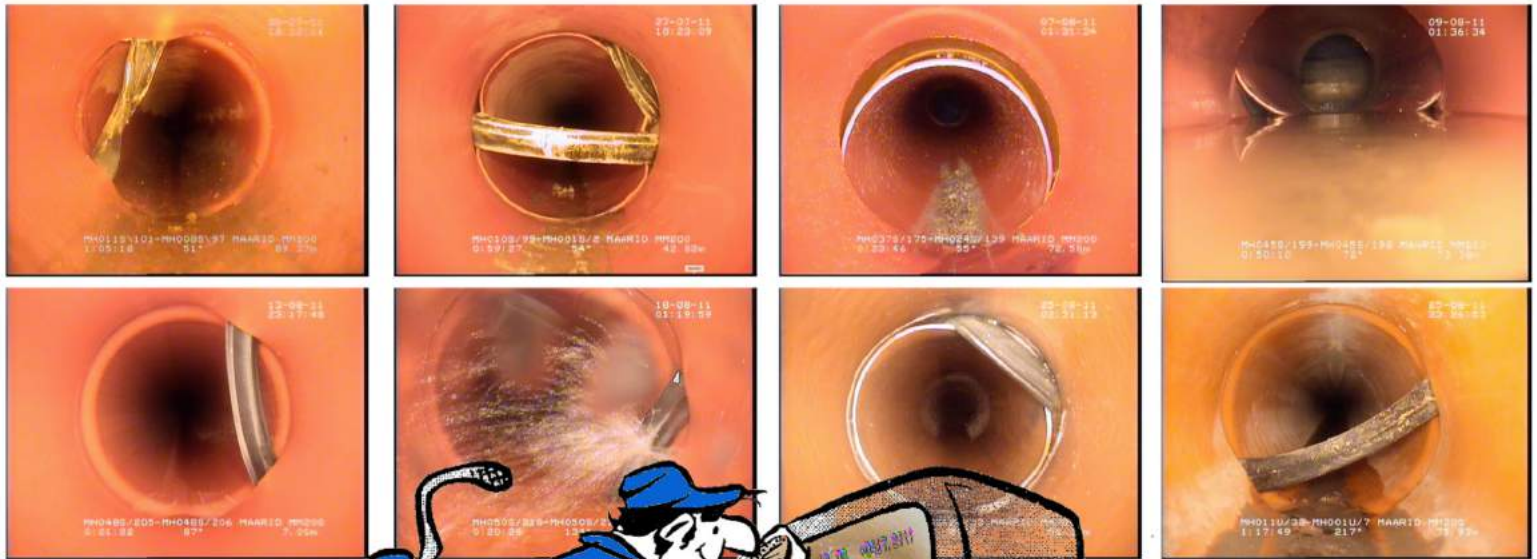
Seoul Digital Foundation
(SDF) developed an AI sewer
defect detection system
based on CCTV that will be
deployed in every district of Seoul
in 2022.

But CCTV is unable to tell superficial
cracks from cracks that go through
the pipe wall, can't tell if
joints leaks, and can't tell
repairs are
watertight.

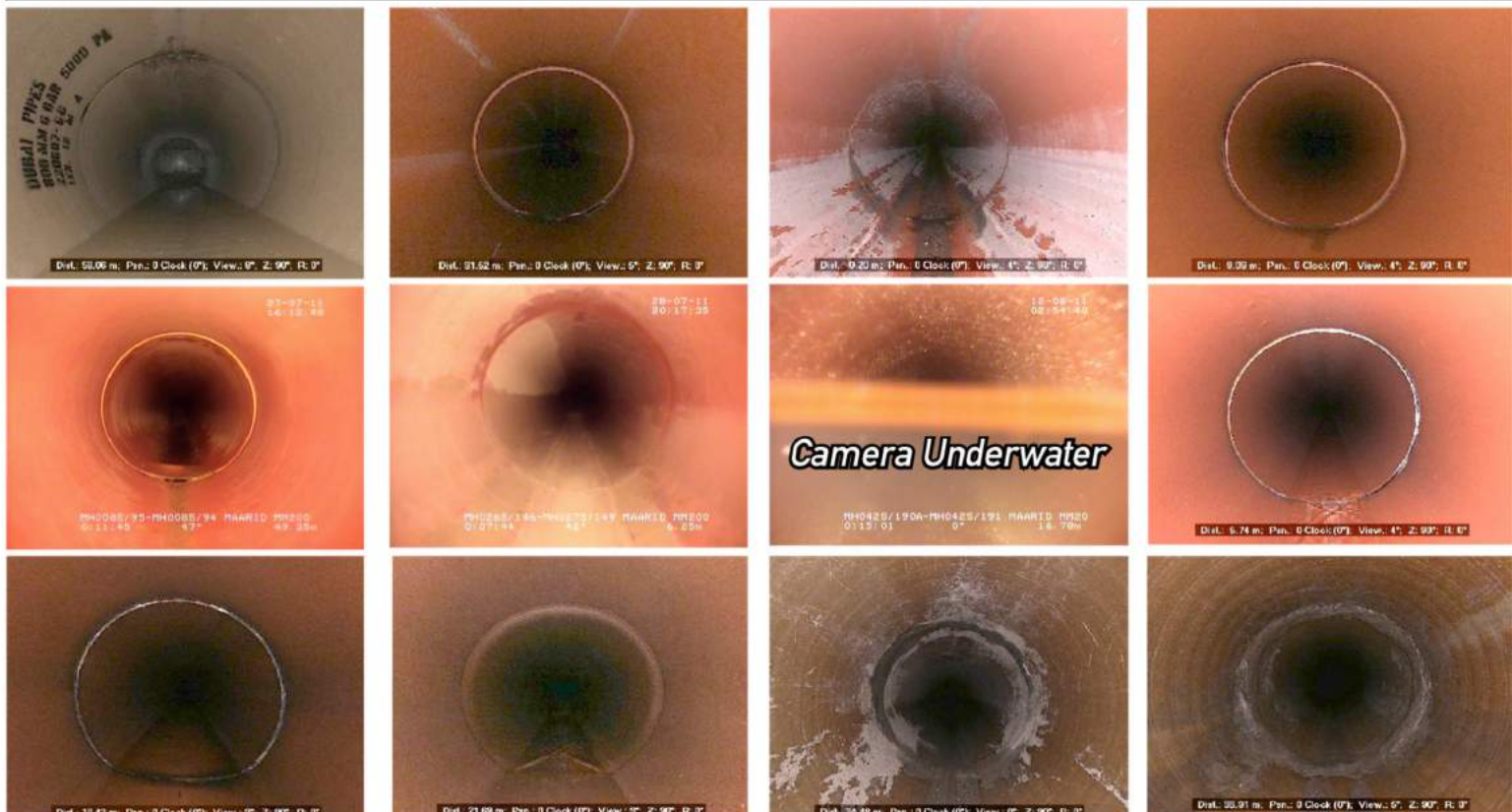


SOLUTION
electro^{scan}inc.

CCTV Is A Great Tool When Problems Are Obvious



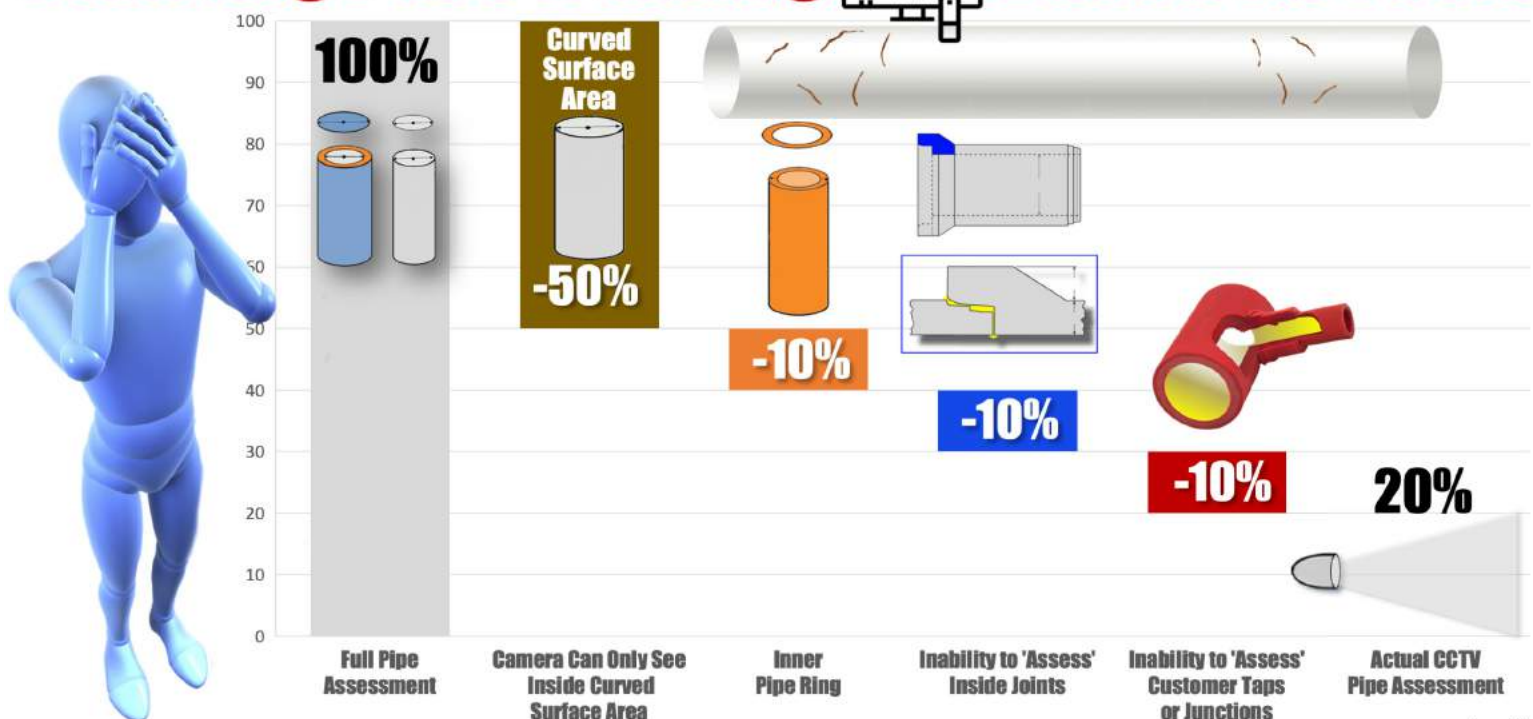
CCTV Not Effective If Problem **Not So Obvious**





CCTV and AI-CCTV Miss 80-100% of Leaks & Unable to Certify Repairs as Leak-Free

Challenge of 1-5 Rating Based on CCTV.





Measure the Size of Hole



electroscaninc.

Distributed Leaks



Localised Leaks



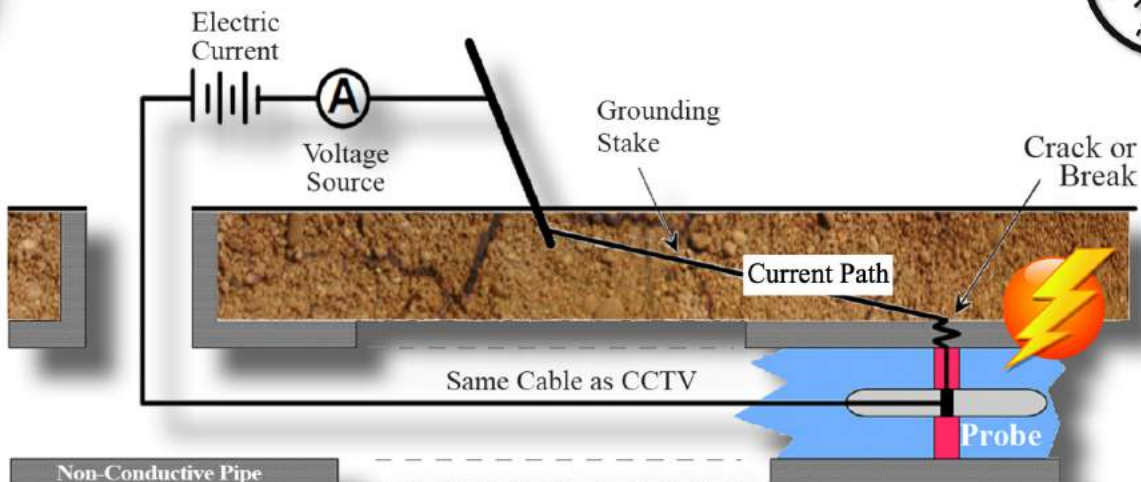
NO IMPACT FROM...

- GROUNDWATER
- GROUT
- DIAMETER
- CUSTOMER USE
- SOIL TYPES
- PIPE MATERIALS
- PIPE SHAPE
- TRENCH BEDDING
- SOIL RESISTIVITY
- EQUIPMENT BIAS
- LEAK LOCATION(s)
- FALSE READINGS

NO MORE VISUAL GUESSWORK.



Science of Low Voltage Conductivity



COMPETITION

NO GPM

**QUESTIONABLE ACCURACY
INCONSISTENT RESULTS**

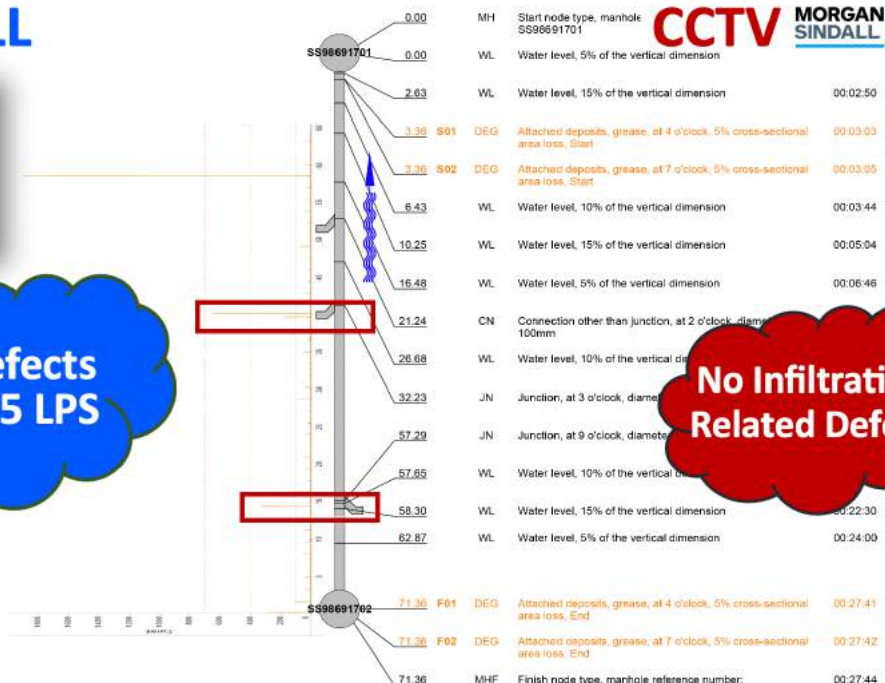


CONDUCTIVITY

CCTV **MORGAN SINDALL**

DEFECTS	
Large	1
Medium	1
Small	5
Pinhole	0
All Defects	7

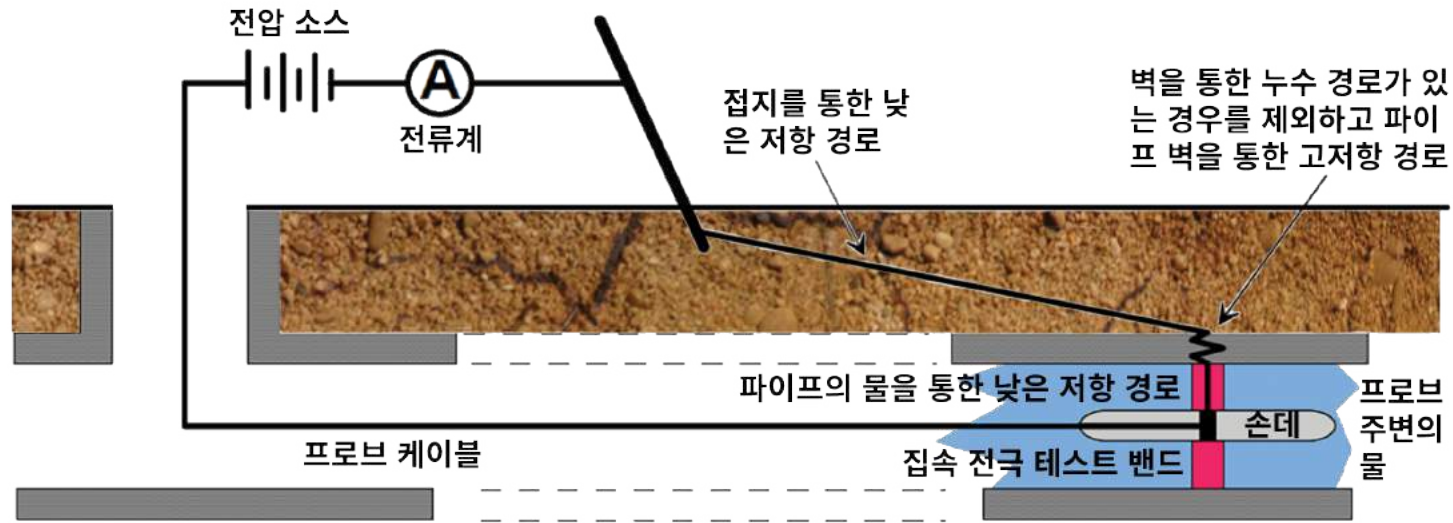
7 Defects
0.225 LPS



No Infiltration-Related Defects

STR no def	STR peak	STR mean	STR total	STR grade
0	0	0	0	1
SER no def	SER peak	SER mean	SER total	SER grade
2	4	3.81	272	4

무화과. 1 비전도성 파이프의 단순화된 전기 주사 회로의 개략도



무화과. 2 전류 변동 테스트 및 거리에 따른 집중 전류 변동 플롯

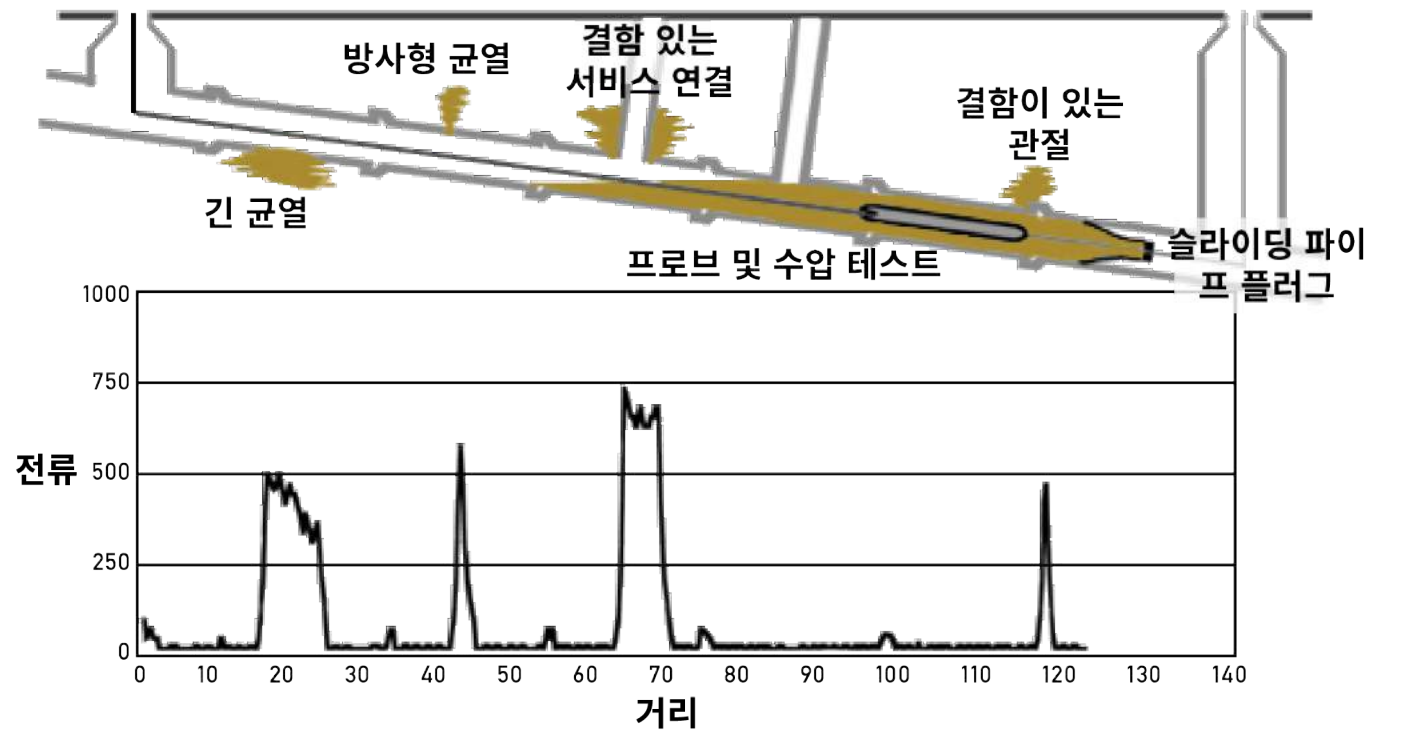


표 1 집중된 현재 데이터 요약

주소	파이프 길이	파이프 직경	파이프 재료	조인트 간격	흙 함유 퍼센트	테스트와 파이프 길이 퍼센트(%) 이유 등이					
						크리크	올드	파괴	파괴	다들	웁
R_09_02 Cheryl Dr	328	6	VCP	4	6	0.3%	1.1%	0.4%	0.3%	1.5%	1.8%
R_09_03 Cheryl Dr	351	6	VCP	4	6	0.0%	0.2%	0.6%	0.2%	0.6%	0.8%
R_09_05 Cheryl Dr	351	6	VCP	4	0	0.1%	0.0%	0.2%	0.1%	0.2%	0.3%
R_09_06 Cheryl Dr	337	6	VCP	4	2	0.1%	0.2%	0.3%	0.4%	0.2%	0.6%
R_09_08 Cheryl Dr	226	6	VCP	4	0	1.8%	0.2%	1.4%	2.6%	0.8%	3.4%
R_09_16 Loma Vista Dr	348	6	VCP	4	4	0.5%	0.3%	0.9%	1.4%	0.3%	1.7%
R_09_23 Gary Ct	345	6	VCP	4	5	6.0%	2.6%	1.2%	8.9%	0.9%	9.8%
R_09_34 Traverse St	312	6	VCP	4	3	1.0%	3.0%	3.1%	6.5%	0.6%	7.1%
R_09_35 Traverse St	308	6	VCP	4	2	0.0%	1.6%	2.9%	4.3%	0.2%	4.5%
R_09_44 Gary Ct	300	6	VCP	4	3	0.1%	1.2%	1.0%	2.0%	0.3%	2.3%
S_09_01 Cheryl Dr.PR2	311	6	VCP	4	3	0.0%	0.0%	0.8%	0.1%	0.7%	0.8%
S_09_02 Cheryl Dr.PR2	400	6	VCP	4	5	0.4%	0.2%	1.6%	0.4%	0.8%	1.2%
S_09_03 Cheryl Dr.PR2	285	6	VCP	4	5	0.7%	0.0%	0.3%	0.1%	0.9%	1.0%

한국어 클라우드 보고

KOREAN CLOUD REPORTING

My Electro Scan

파일 다운로드

지지도

로그 아웃

보기 선택:

스캔

데이터:

04/08/2021

05/08/2021

고객:

seinegi

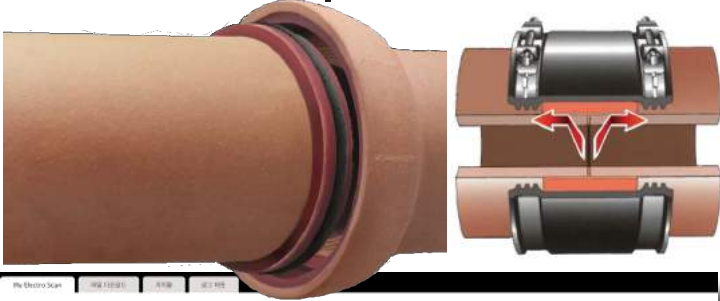
프로젝트:

Summer Sewer

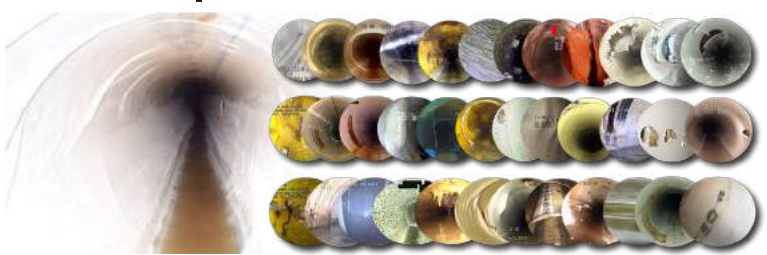
스캔	거리	관출	작은	중간	큰	LPS	LPD
2	107	2	17	30	1	3,325	287,322

데이트	본선 ID	파이프 ID	파이프 유형	직경	거리	관출	작은	중간	큰	LPS	LPD
05/08/2021	M06F048 - M06F050	M06F048 - M06F050	CIPP	150	34	2	2	0	0	0.348	30,089
04/08/2021	M07F003 - M07F005	M07F003 - M07F005	VCP	150	73	0	15	30	1	2,977	257,232

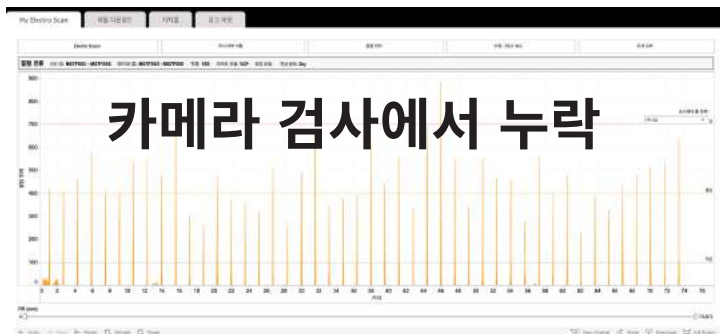
Clay Pipe | 점토 파이프



CIPP | 트렌치리스 파이프



카메라 검사에서 누락

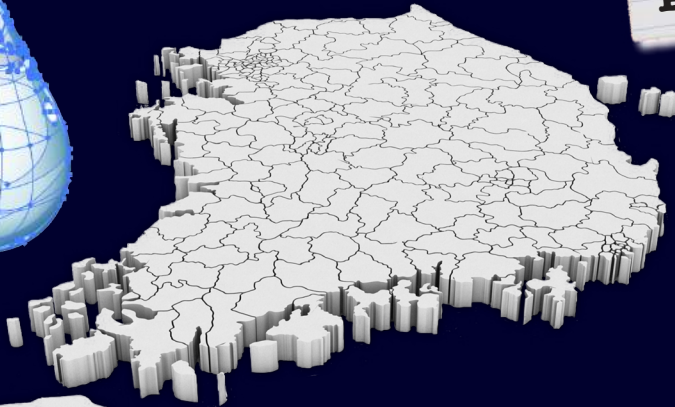
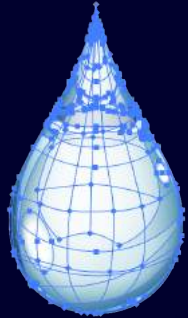


MISSED BY CCTV



Accurate, Fast, Repeatable

WELCOME SEIN ENGINEERING CO., LTD.



SALES



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Director, UK Field Services
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