



WORLD WIDE WATER



MTA PIPE-INSPECTOR®

CABLE-LESS VIDEO INSPECTION WITH INTEGRATED LEAK DETECTION



MTA Messtechnik GmbH

Service & Products for Water and Wastewater Management,
Industry and Environmental Engineering





INSPECTION OF TRANSPORT AND DISTRIBUTION NETWORKS THE LIMITS TODAY

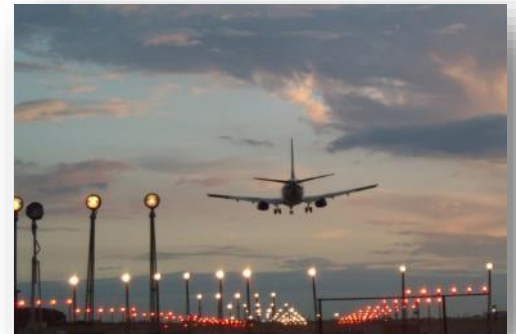
- Cable length – tethered video systems
- No optical control– acoustic inspection
- Operational interruptions
- Limited accessibility





ACCESSIBILITY

- Airports
- High traffic locations
- Industrial zones
- Restricted areas





MAINTENANCE AND INSPECTION LEGAL OBLIGATION

- Mainly based on pipeline age
- Lifetime approx. 50 years
- Necessary renewal rate approx. 2%

Current Situation

- 40% of the laid pipes are older than 60 years
- Maintenance and servicing without knowledge of pipeline condition





INFLUENCES ON PIPES AND THEIR LIFETIME

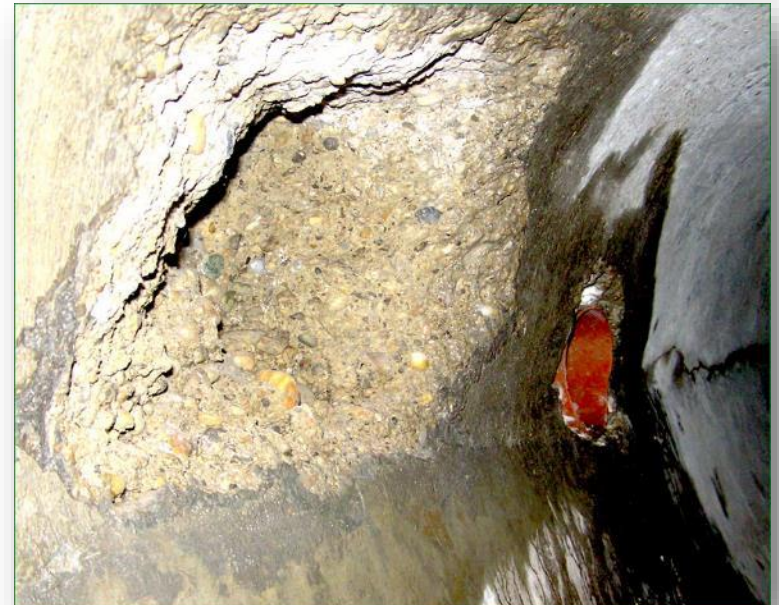
- Pipe pressure
- Pressure changes
- Flow rate
- Water parameters
- Sediments
- Soil condition
- Material-specific ageing
- Traffic loads





THE REPAIR OPTION

- Short-term solution
- Only punctual repair
- No long-term measure

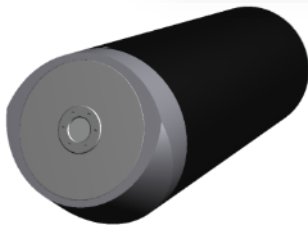




WORLD WIDE WATER



MTA PIPE-INSPECTOR® MODELS FOR DN 100 – 3000 | 4" – 120"



Gravity



Pressure



MTA PIPE-INSPECTOR® PRESSURE APPLICATIONS

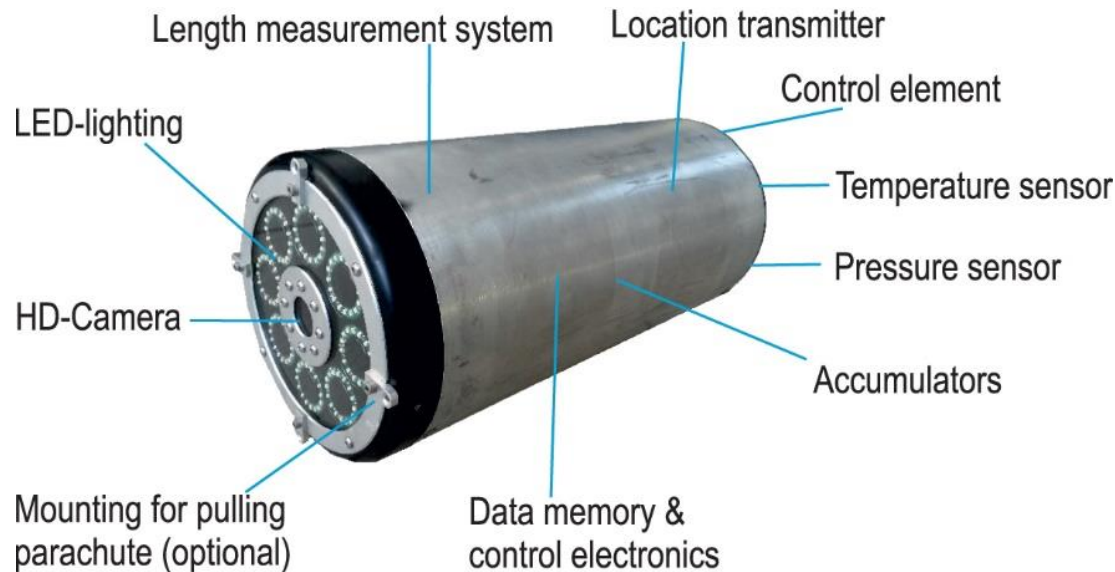
Max. 100bar, optimal flow velocity: 0.5-1.5m/s

Optical and acoustic sensors, pressure, temperature and length measurement, locating signal, internal power supply

Model	Application	Runtime approx.
PI DN 65mm 2,5"	DN 100 – 250 4" – 10"	3h – 8h
PI DN 125mm 5"	DN 250 – 600 10" – 24"	6h – 10h
PI DN 225mm 9"	DN 400 – 1200 16" – 47"	8h – 35h
PI DN 400mm 16"	DN 600 – 1800 24" – 70"	12h – 35h
PI DN 800mm 32"	DN 1500 – 3000 60" – 120"	14h – 35h



MTA PIPE-INSPECTOR® PRESSURE APPLICATIONS FEATURES

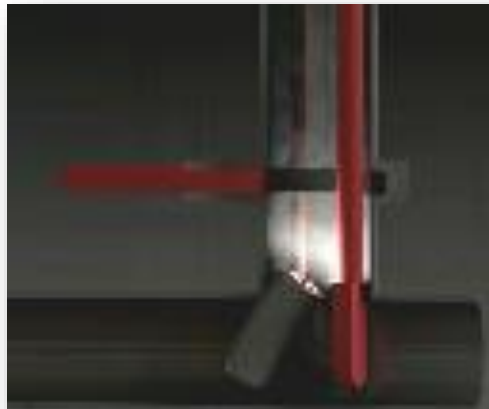


- Video inspection
- Acoustiv leak detection
- Location of air pockets
- Length measurement
- Up to 100bar operational pressure
- Battery mode
- Self floating
- Centering in the pipe
- 90° bend capable
- Locating signal (32,8kHz or 512Hz)
- USB interface



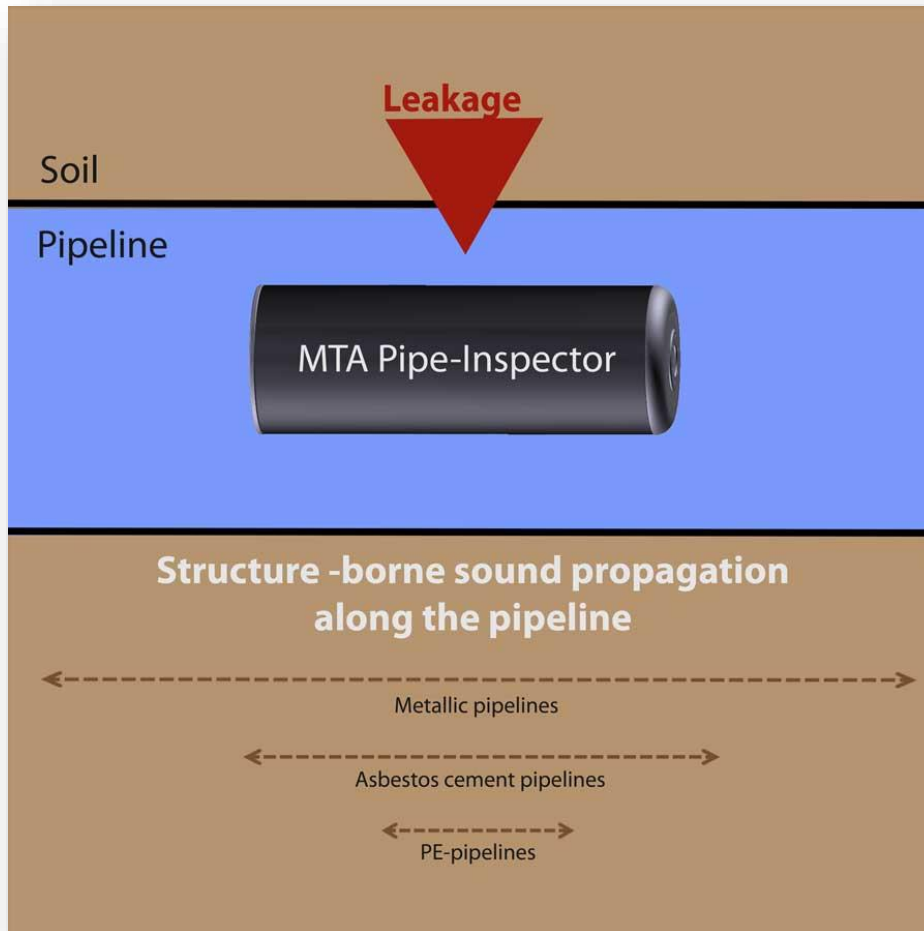
MTA PIPE-INSPECTOR® LAUNCH AND RETRIEVAL

- Via existing fittings, pigging station,
- By means of MTA insertion sluice
 - Insertion piston
 - Insertion sluice
 - T-piece with valve
 - Retrieval rescue net
 - Retrieval sluice



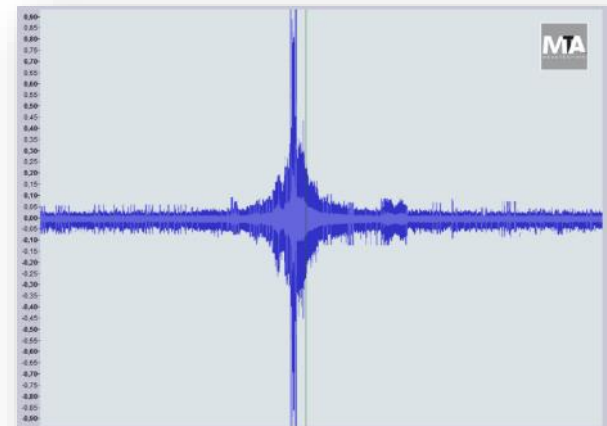


ACOUSTIC LEAK DETECTION



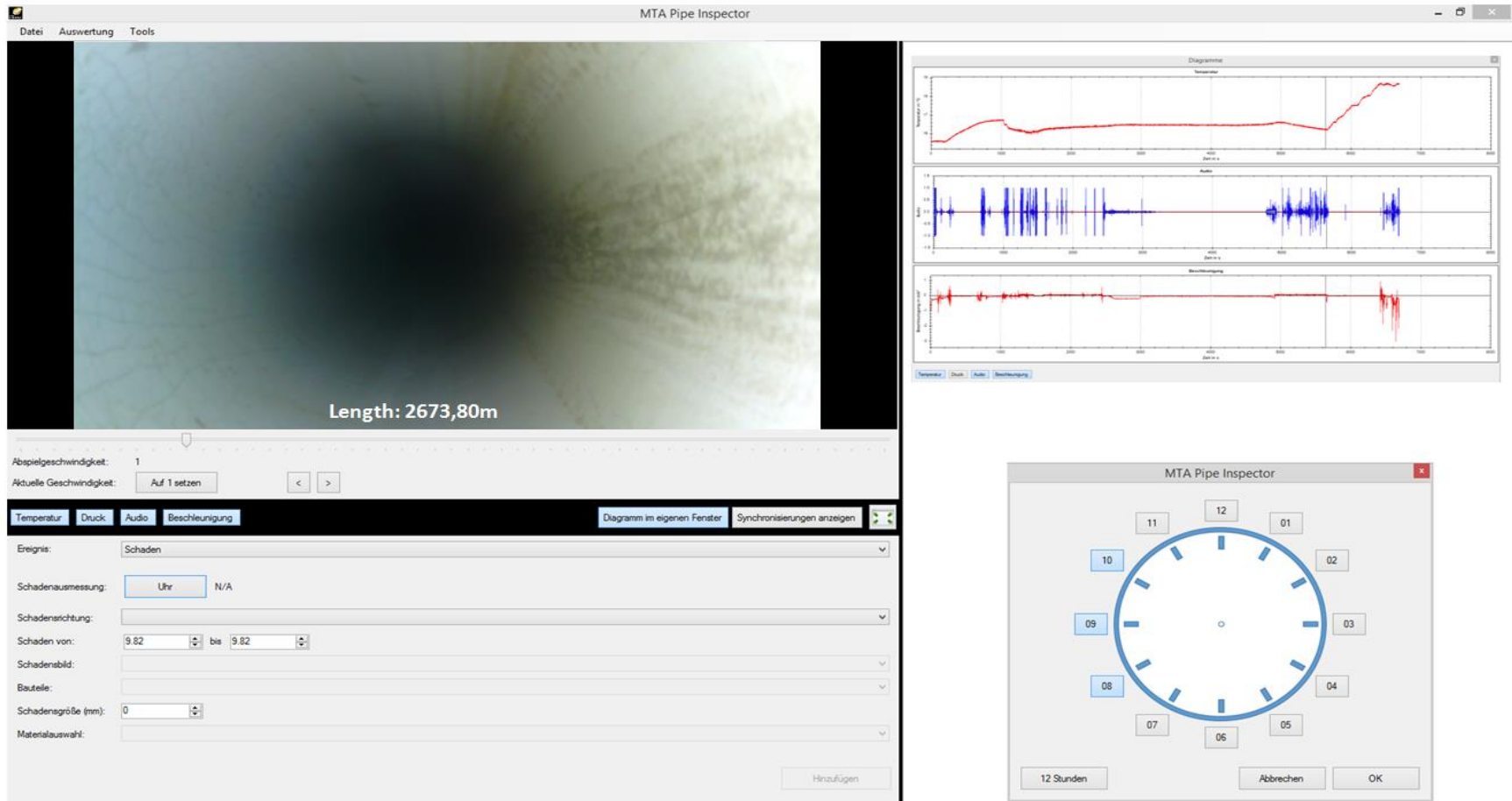
Pinpointing micro leakages

Steel pipes approx. > 1l/h at 5bar/72PSI
PE approx. 10l/h at 5bar/72PSI



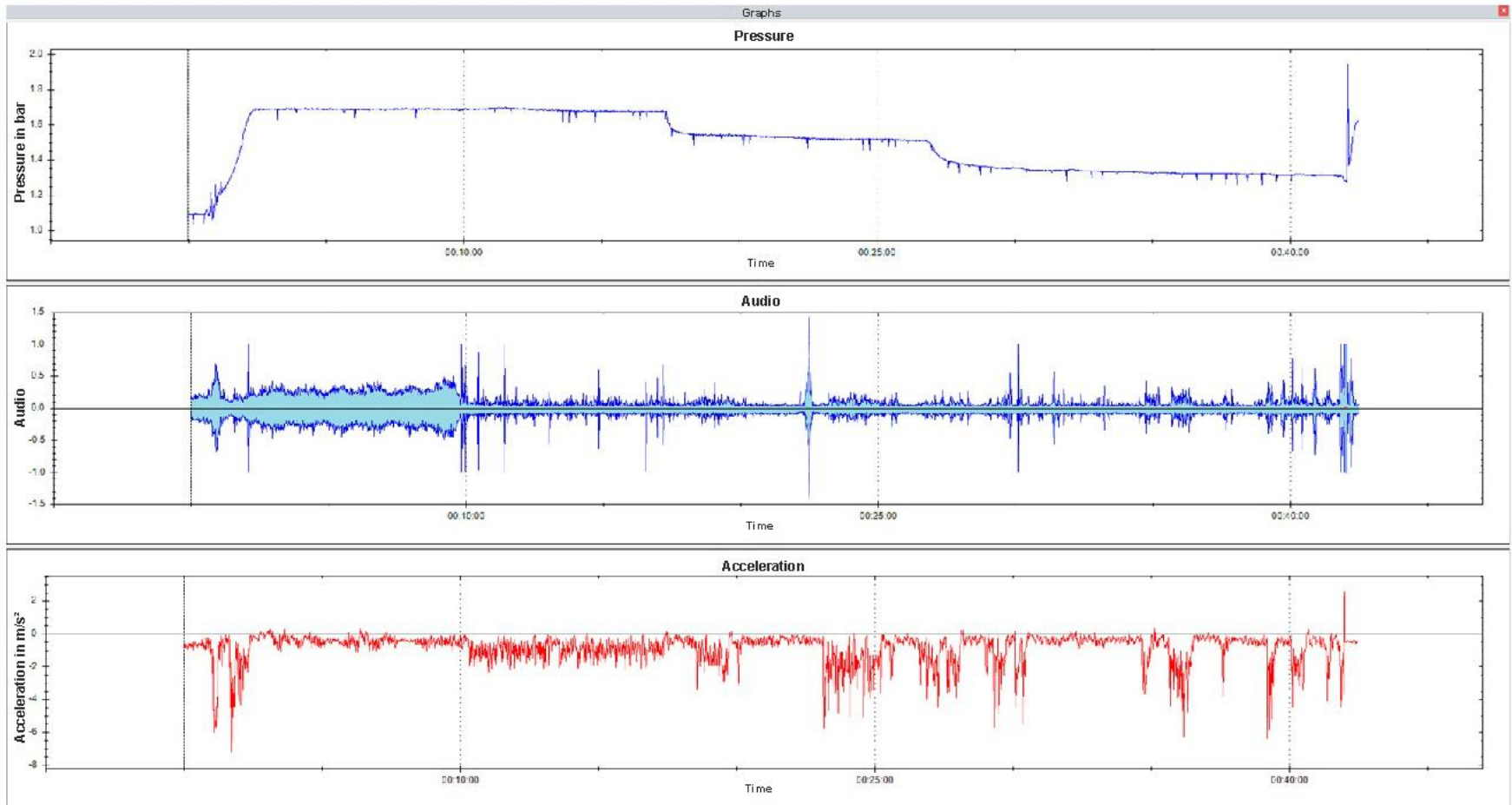


DAMAGE DETERMINATION





RESULTS AS DIAGRAMS





INSPECTION PROTOCOL | EXAMPLE

MTA Pipe-Inspector® - Video Inspection				
Date: 05.04.2017		Operator: MTA-Messtechnik	Weather: Dry	Report No.: 201704002
Pipeline Type Circular Profile	Pipe Inspector: 1512002	Cleaning: No		Page 1/1
Place Post Code Street Area		Section Start Point End Point Section Length [m] 3179m		
Inspection Purpose Medium	Leakage Potable Water	Profile Material	DN 300 Grey cast iron	
Position	Code	Observation	MPEG	Picture
[m]				
0.00 m		Start point	00:00:00	PI_001.jpg
827 m		Branch	00:24:08	PI_002.jpg
1 663 m		Begin - Air Pocket	00:48:31	PI_003.jpg
1 691 m		End - Air Pocket	00:49:20	PI_004.jpg
2 001 m		Leakage	00:58:23	PI_005.jpg
3 179 m		End point	01:32:46	PI_006.jpg
Annotations:				
The turbidity was measured during the inspection continuously at the end point (nearby hydrant). The maximum value did not exceed 2FNU.				



INSPECTION RESULTS

- All relevant data on pipe condition
- Decision base for strategic maintenance, servicing and renovation
- Basic data for risk assessment, determination of consequential costs and economic losses





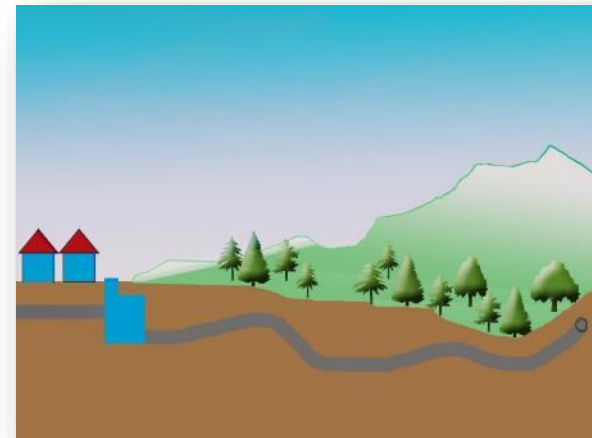
MTA PIPE-INSPECTOR® SCOPE

	MTA Pipe-Inspector®	Untethered Acoustic Devices	Tethered Video Cameras	Cameras with Parachute
Type of inspection	cable-less	cable-less	wired	wired
Application				
Potable water	✓	✓	-	✓
Wastewater pressure	✓	✓	-	✓
Wastewater open channel	✓	-	✓	-
Hydropower	✓	✓	-	✓
Gas	✓	?	-	-
Oil	✓	?	-	-
District heating	✓	✓	-	✓
Recording				
Video inspection	✓	-	✓	✓
Leakage detection	✓ (>1l/h)	✓	-	✓
Air pockets	✓ (optical)	-	✓	-
Integrated length measurement	✓	-	✓	✓
Pressure measurement	✓	-	-	-
Temperature measurement	✓	-	-	-
Pipeline profile	✓	-	-	-
Detection signal	✓	-	✓	-
Pipe diameter DN				
DN min.	DN100 / 4"	DN100 / 4"	DN100 / 4"	DN100 / 4"
DN max.	DN3000 / 118"	?	DN3000 / 118"	DN1000 / 40"
Inspection length max.	50km / 30mi	10km / 6.2mi	0,5km / 0.3mi	2km / 1.2mi
Bend capable up to	90°	90°	-	maximum 1 bend
Pressure class	up to 100bar / 1.450PSI	?	1bar / 14.5 PSI	10bar / 145PSI
Certificate for potable water	✓	?	-	?



MTA PIPE-INSPECTOR® BENEFITS

- Optical state determination and acoustic leak detection
- Raw and drinking water, wastewater, hydropower, industry, gas and oil pipelines
- Inspection lengths up to ~50km / 30mi in a single pass
- For all pipe materials
- 90° bend capable
- No excavations
- No operational interruptions
- Foreign water identification
- Peak and air pocket identification
- State development monitoring by repeated inspections





PROJECT EXAMPLES



DRINKING WATER MAIN, THE NETHERLANDS

LEAK DETECTION

- Pipeline DN 700 | 28"
- Length 3,260m | 2mi
- Material Reinforced concrete
- Equipment MTA PIPE-INSPECTOR
PW DN 225P
length 470mm | 18"





DRINKING WATER MAIN, THE NETHERLANDS





WASTEWATER MAIN, AUSTRIA, LAKE WÖRTHERSEE

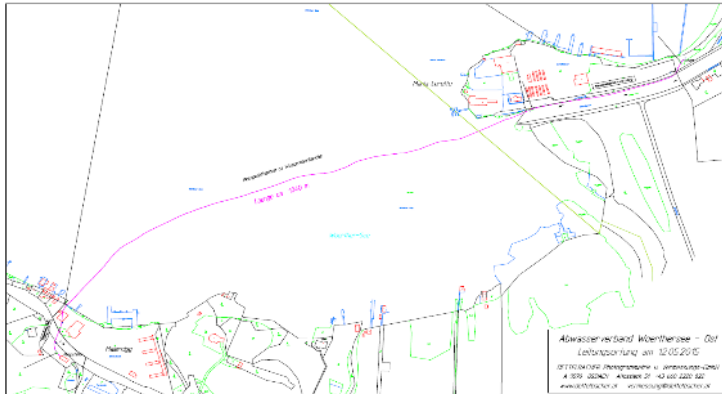
Pipeline detection | Optical inspection | Leak detection

- Pipeline DN 200 | 8"
- Length 1,040m | 3,412ft
- Material PE-HD
- Laying depth 27m | 90ft
- Equipment MTA PIPE-INSPECTOR
WW DN 65P
length 195mm | 8"
Pressure class PN32 | 465psi





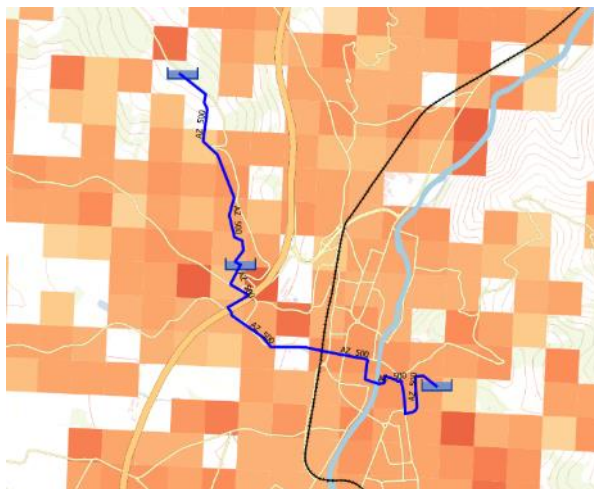
WASTEWATER MAIN, AUSTRIA, LAKE WÖRTHERSEE



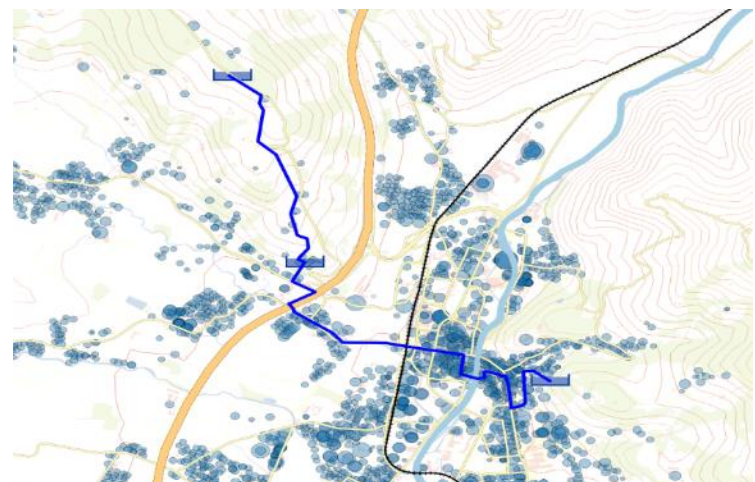
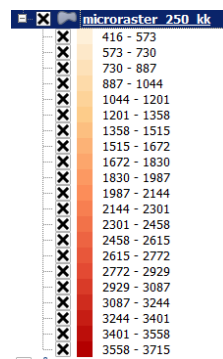


RISK MANAGEMENT

- Trend towards a state-oriented renewal strategy
- Implementation in urban planning
- Including business and economic aspects
- Important components of urban planning risk management



Purchase power



Water consumption/year



PIPE BURST IN MELBOURNE

- Subsequent costs
- Danger to life
- Liability





STEAM PIPE EXPLOSION IN NEW YORK CITY



Crossroad Lexington Avenue and 41th Street



WORLD WIDE WATER



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