



# Australia's first permanent leak detection network

## Sebalog N-3 Correlating network noise loggers

### Description

Monitoring of trunk mains in remote areas can be very expensive, due to the amount of time that is needed to access the site before leak inspection can begin. Furthermore, the large diameters of trunk mains represent a problem for many conventional acoustic leak detection systems. Despite these challenges it is important to closely monitor trunk mains, as leaks on such pipes can lead to great water losses, and in the worst case, to pipe bursts. SebaKMT's fixed network of correlating noise loggers enables both the remote monitoring of trunk mains and the exact location of leaks, even on large diameter pipes.

- » Remote leak monitoring and pinpointing
- » Transmission of acoustic recordings for correlation
- » Advanced web-based evaluation software
- » Adaptable to existing SCADA systems
- » Cascading repeater functionality

Within the first months of the installation for Wingecarribee Shire Council several leaks were identified by the N3 system and later verified in the field, saving the community a lot of water, and a lot of money.

### Project

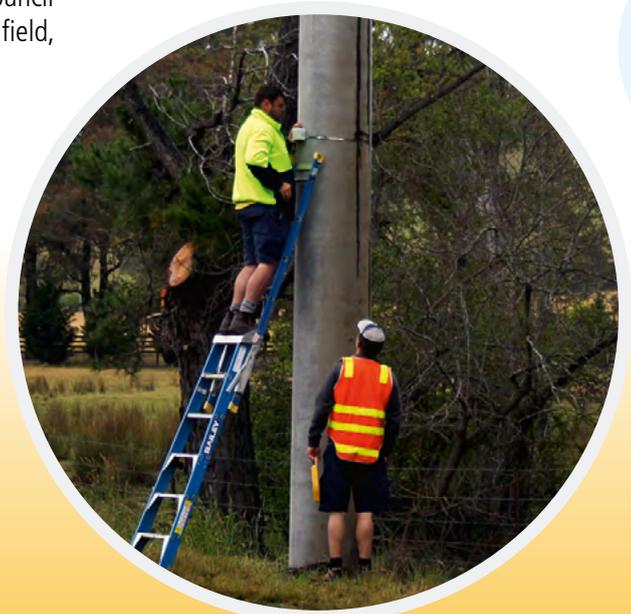
14 km trunkline monitoring with a fixed network of correlating noise loggers.

### Period

Started December 2013

### Customer

Wingecarribee Shire Council,  
Australia





“We were very impressed that the **Sebalog HydroCorr** enabled us to **locate the leak** despite the **very low pressure** and **large pipe diameter**.”

Martin Grupp, Site Manager,  
Zweckverband Landeswasserversorgung

## Sebalog HydroCorr

### Correlating noise loggers with hydrophone sensors

#### Description

In mid-November, flow measurements by the regional water supplier in Stuttgart revealed the likelihood of a major leak in a DN 900 grey cast iron water main. Pressure measurements were carried out along the pipeline and the location of the suspected leak was narrowed down to a section of approximately 250 metres. To find the exact position of the leak, a Sebalog HydroCorr system was used, consisting of correlating noise loggers with hydrophone sensors.

Although the pressure in the pipe was only around 1.5 bar, it was possible to carry out a successful measurement and receive a definite correlation result. The following pipe excavation confirmed the correlated leak location, revealing a 5 metre-long crack in the bottom of the pipe.

#### Project

Leak location in a DN 900 grey cast iron water main

#### Quantity

1 Sebalog HydroCorr set

#### Period

November 2013

#### Customer

Zweckverband Landeswasserversorgung, Stuttgart





# Reducing leak run-time in small, remote communities with web-based correlation technology

## Sebalog N-3 Correlating network noise loggers

### Description

The Sebalog N-3 fixed network of correlating noise loggers is the future standard solution for water network monitoring and remote leak pinpointing. The system is composed of Sebalog N-3 noise loggers, signal repeaters and a central communication box. Due to the transmission of acoustic recordings, the system can not only display noise levels and frequencies, but can carry out the correlation of sound recordings.

The main advantages of the Sebalog N-3 fixed network are:

- » Remote leak monitoring and pinpointing
- » Transmission of acoustic recordings for correlation
- » Advanced web-based evaluation software
- » Adaptable to existing SCADA systems
- » Cascading repeater functionality
- » Interactive pipe mapping tool

### Project

Several network installations in different communities throughout Israel.

### Quantity

200 noise loggers

### Period

2011 - ongoing

### Customer

Mey Ram, Israel





„We can **transmit the data from 100 noise loggers** with **just two GSM boxes**. That's great, because we therefore have **minimal data transmission costs!**“

Mr. Tobias Nayda, DEW21,  
Head of maintenance and inspection

## Sebalog N-3 Correlating network noise loggers

### Description

The Sebalog N-3 fixed network of correlating noise loggers is the future standard solution for water network monitoring and remote leak pinpointing. The system is composed of Sebalog N-3 noise loggers, signal repeaters and a central communication box. Due to the transmission of acoustic recordings, the system can not only display noise levels and frequencies, but can carry out the correlation of sound recordings.

The main advantages of the Sebalog N-3 fixed network are:

- » Remote leak monitoring and pinpointing
- » Transmission of acoustic recordings for correlation
- » Advanced web-based evaluation software
- » Adaptable to existing SCADA systems
- » Cascading repeater functionality
- » Interactive pipe mapping tool

### Project

Permanent leak monitoring of the densely populated inner district of Dortmund city.

### Quantity

100 noise loggers installed so far.

### Period

2012 - ongoing

### Customer

DEW21 – Water and energie supplier of the city Dortmund, Germany





# Minimizing the running costs of one of Denmark's largest water suppliers

## Sebalog N-3 Correlating network noise loggers

### Customer's opinion

**Niels Rasmussen**  
(Operational Manager/Guldborgsund Forsyning):

Here at Guldborgsund Forsyning we have chosen to implement ISO 22000 for our drinking water supplies, which is an international standard for food safety management systems.

As part of the ISO 22000 process we are prioritizing the reduction of leaks, which do not only waste water, but are also a potential source of contamination. To ensure optimum drinking water safety and security, we have decided to install automatic leak detection technology in urban areas. After a thorough study of the various options we chose Sebalog N-3, because it is a very efficient leak detection system, is easy to install and will considerably help us reduce our running costs.

### Quantity

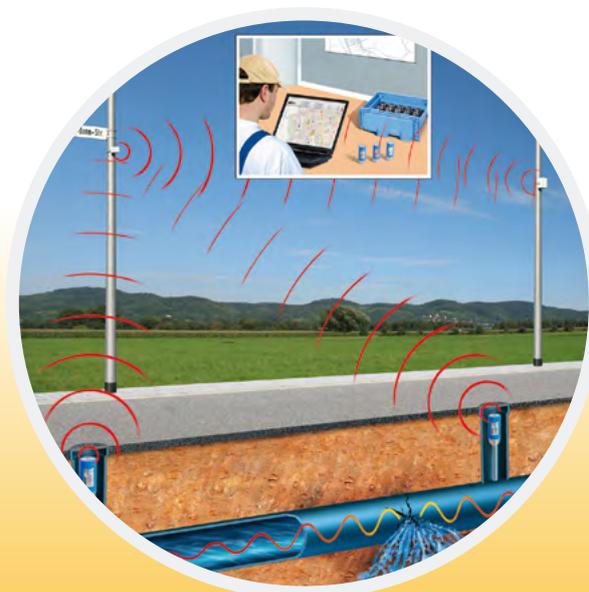
260 noise loggers installed so far

### Period

2012 - ongoing

### Customer

Guldborgsund Forsyning, Denmark





# It's a mobile leak detection department and a must for every municipality

## Leak detection van With incorporated office compartment and wet room

### Description

When on the road, you can be sure that you have all the necessary equipment for managing and maintaining your pipe network at hand with a SebaKMT leak detection van. You can transport high-quality measuring equipment such as correlators, listening equipment, noise loggers, line location equipment, etc. quickly, effectively and correctly. All your equipment is then within easy reach, whenever it's needed.

The van is divided into two sections. The front area accommodates the SebaKMT "Mobile Office". This contains all the main features that you need to work efficiently and in comfort while on the road – from seating, work surfaces & a wardrobe through to drawers and cupboards. An additional battery, both modern and powerful, ensures that all your equipment has an independent power supply. In the rear of the vehicle, the so-called wet room, the emphasis is on safety and ergonomics. This section contains shelving with drawers and cupboards to store equipment and tools securely and accessibly. The shelving can be expanded to meet individual customer requirements.

### Project

Network analysis and leak pinpointing in the city of Lobito, Angola

### Quantity

1 van full equipped with leak detection instruments in 20099

### Customer

Empresa de Águas e Saneamento do Lobito, Angola





# The most reliable **data logger** for the **remote monitoring** of **pressure** and **flow**

## Sebalog Dx

### Flow and pressure logger with GPRS

#### Description

Using a Sebalog Dx data logger allows you to always remain informed about exactly what is going on in your supply network. You can record pressure and flow on up to 4 channels simultaneously, and send the data conveniently and reliably as daily updates to the control centre by GPRS.

Thanks to its small size and robust housing, the Sebalog Dx can be used even under the most adverse conditions. The internal battery, which can supply the logger with power for 5 years under standard conditions, and its extremely large memory for over 1 million measurements give you all the freedom you need for your specific application.

Almost all configuration of the Sebalog Dx settings can be re-programmed remotely. The logger receives the new configuration automatically during communication with GSM, making it unnecessary (to spend time and resources) to re-program the logger on site. In the event of an alarm a trigger causes the logger to temporarily transmit online data via GSM, allowing you to see what happened following the alarm event.

#### Project

Pressure and flow monitoring in an urban area, India

#### Quantity

100 data loggers

#### Period

2012

#### Customer

Larson & Toubro (L&T), India





# From 30 % to 2 % – a success story from Styria

## Sebalog N-3 Correlating network noise loggers

### Description

In 2004, the public utility company Gleisdorf employed the first noise level loggers in its water pipe network, thus initiating the electronic age of permanent water loss monitoring. 156 Sebalog N-3 units are currently in use in the Gleisdorf water pipe network.

In the 8 years of operation, annual water loss was able to be reduced from 30% to 2%. This spares a yearly water loss of approx. 29,000 m<sup>3</sup> which would cost around € 19,000.

This reduction in the loss was possible because the noise level loggers can detect the smallest leak immediately. By detecting these early, greater damage is prevented and thus unnecessarily long leakage durations avoided.

### Project

Automated water loss management from the public utility company Gleisdorf

### Quantity

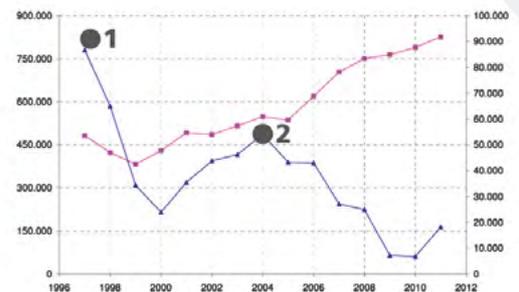
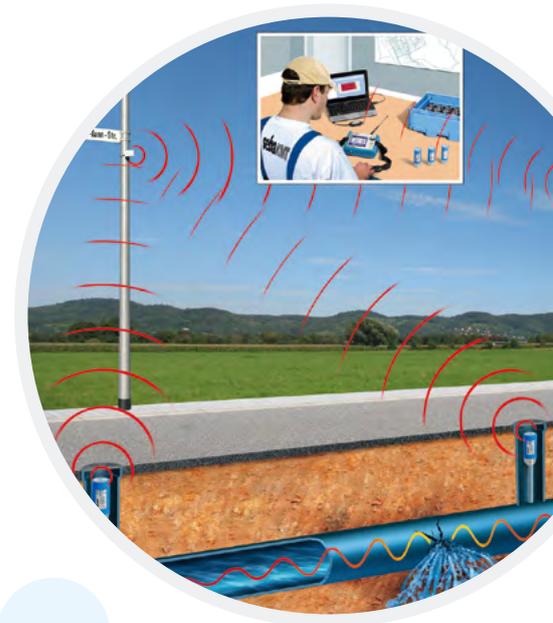
Thus far 156 noise loggers have been installed.

### Period

2004 - today (2012)

### Customer

Public utility company Gleisdorf, Austria



- Wasserverluste
- Wasseraufbringung
- 1 Beginn Wasserverlustmanagement
- 2 Einsatz zusätzlicher Geräuschlogger



# Let your leak detection van guide you to the leaks!

## Leak detection van With incorporated office compartment and wet room

### Description

When on the road, you can be sure that you have all the necessary equipment for managing and maintaining your pipe network at hand with a SebaKMT leak detection van. You can transport high-quality measuring equipment such as correlators, listening equipment, noise loggers, line location equipment, etc. quickly, effectively and correctly.

The van is divided into two sections. The front area accommodates the SebaKMT "Mobile Office". This contains all the main features that you need to work efficiently and in comfort while on the road – from seating, work surfaces & a wardrobe through to drawers and cupboards. An additional battery, both modern and powerful, ensures that all your equipment has an independent power supply. In the rear of the vehicle, the so-called wet room, the emphasis is on safety and ergonomics. This section contains shelving with drawers and cupboards to store equipment and tools securely and accessibly.

### Project

Reducing non-revenue-water in the City of Benguela (Angola) and surrounding areas. Intensive training was carried out in Angola and Germany as capacity development of the local water utility company.

### Quantity

1 van full equipped with leak detection instruments in 2010

### Customer

Empresa de Águas e Saneamento de Benguela,  
Angola





# The challenge of rebuilding the water supply network of Angola's capital

## Leak detection van With incorporated office compartment and wet room

### Description

When on the road, you can be sure that you have all the necessary equipment for managing and maintaining your pipe network at hand with a SebaKMT leak detection van. You can transport high-quality measuring equipment such as correlators, listening equipment, noise loggers, line location equipment, etc. quickly, effectively and correctly.

The van is divided into two sections. The front area accommodates the SebaKMT "Mobile Office". This contains all the main features that you need to work efficiently and in comfort while on the road – from seating, work surfaces & a wardrobe through to drawers and cupboards. An additional battery, both modern and powerful, ensures that all your equipment has an independent power supply. In the rear of the vehicle, the so-called wet room, the emphasis is on safety and ergonomics. This section contains shelving with drawers and cupboards to store equipment and tools securely and accessibly.

### Project

Repairing the water supply network that was severely damaged during the long-lasting civil war. Supplying the latest technology for reducing losses in the water network. Bilateral knowledge transfer for improving the expertise of local non-revenue water engineers.

### Quantity

2 water leak detection vans in 2006

### Customer

Empresa Publica de Aguas de Luanda,  
Angola





# Helping to **restore** the **water supply system** in Northern Iraq

## Leak detection van With incorporated office compartment and wet room

### Description

When on the road, you can be sure that you have all the necessary equipment for managing and maintaining your pipe network at hand with a SebaKMT leak detection van. You can transport high-quality measuring equipment such as correlators, listening equipment, noise loggers, line location equipment, etc. quickly, effectively and correctly.

The van is divided into two sections. The front area accommodates the SebaKMT "Mobile Office". This contains all the main features that you need to work efficiently and in comfort while on the road – from seating, work surfaces & a wardrobe through to drawers and cupboards. An additional battery, both modern and powerful, ensures that all your equipment has an independent power supply. In the rear of the vehicle, the so-called wet room, the emphasis is on safety and ergonomics. This section contains shelving with drawers and cupboards to store equipment and tools securely and accessibly.

### Project

Emergency Measures Water Supply and Sanitation in North Iraq (funded by the KfW), 2012

### Quantity

2 leak detection vans with all necessary equipment for water network monitoring and leak detection. 1 service and maintenance van furnished with shelves and storage room for small construction equipment.

### Customer

Development aid project funded by the KfW





## Leakages detected with minimal expense using the starter set

### Sebalog N-3 & Sebalog Corr Noise level logger starter set and multi-correlator

#### Description

While searching for drinking water losses of 20.4 m<sup>3</sup>/day in the upper section of the town of Wächtersbach/Hessen, the powerful duo Sebalog N-3 (noise level logger) and Sebalog Corr (multi-correlator) turned out to be a real stroke of luck.

The noise level loggers as well as the multi-correlators were planted in the zone on valves in the drinking water pipeline for the purposes of measurement so the data recorded could be analysed the following day. By using these devices, approx. 3 km of the pipe network was able to be checked with one measurement.

Using the analysed data, the leakage was able to be clearly isolated to one pipe section. Using the correlation function of the Sebalog Corr sensors, the leak was able to be measured and located with precision.

#### Project

200 days of increased water consumption of 20.4 m<sup>3</sup>/day 850 l/h (that corresponds to a water loss of 4,080 m<sup>3</sup> in this period)

#### Quantity

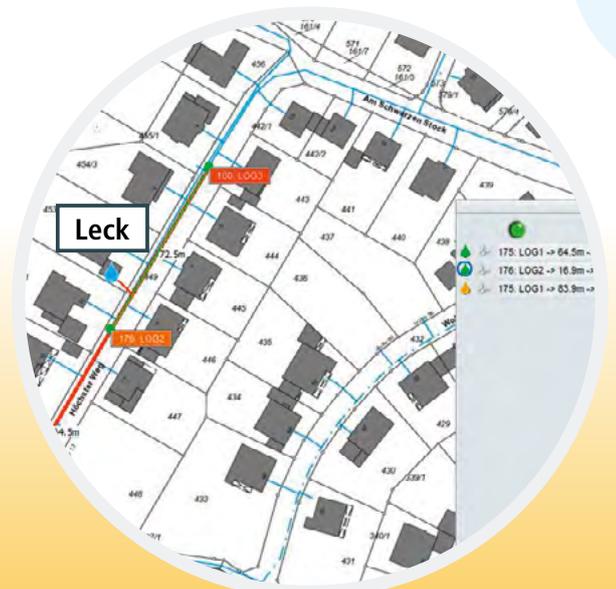
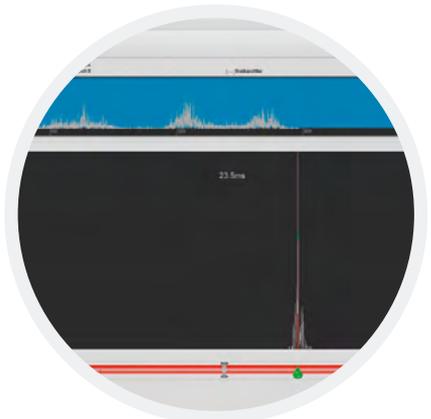
8 Sebalog N-3 units, 3 Sebalog Corr units

#### Period

2013 - brief use

#### Customer

Public utility company Wächtersbach





# Water tank level monitoring

## Sebalog Dx Level, flow & pressure monitoring

### Description

Using a Sebalog Dx data logger allows you to always remain informed about exactly what is going on in your supply network. You can record pressure and flow on up to 4 channels simultaneously, and send the data conveniently and reliably as daily updates to the control centre by GPRS.

Thanks to its small size and robust housing, the Sebalog Dx can be used even under the most adverse conditions. The internal battery, which can supply the logger with power for 5 years under standard conditions, and its extremely large memory for over 1 million measurements give you all the freedom you need for your specific application.

Almost all configuration of the Sebalog Dx settings can be re-programmed remotely. The logger receives the new configuration automatically during communication with GSM, making it unnecessary (to spend time and resources) to re-program the logger on site. In the event of an alarm a trigger causes the logger to temporarily transmit online data via GSM, allowing you to see what happened following the alarm event.

### Project

Remote monitoring of level, flow and pressure. Commenced April 2013, with planned expansion across the water district.

### Quantity

Two sets with two channel analog input and built-in pressure logging

### Customer

Placer Water District,  
Mindanao, Philippines





## “Our goal is to get water losses permanently under control!”

Klaus Babilon, construction yard manager,  
community of Mömlingen

### Sebalog N-3 network Noise level and frequency logger with remote reading and correlation

#### Description

The community of Mömlingen needs to reduce the high costs of commissioning the tracing of leaks in the drinking water network. The duration of the leaks must also be minimised because preparing drinking water is an expensive process.

With this in mind, a network of 25 Sebalog N-3 loggers was installed at the beginning of March 2013 for trial. After running for 7 weeks and a sudden increase in night-time consumption by 120 m<sup>3</sup>/day for a total pumped quantity of 480 m<sup>3</sup>, two leakages could be detected directly using the remote reading. The correlation function of the network was even able to identify the faulty house connection. It only took 7 days, from the time the leaks began until they were repaired. With the knowledge gathered on how modern leak monitoring can function today, the system was extended to 100 permanently installed network loggers.

#### Project

Early detection of leakages arising in the drinking water network through automated monitoring

#### Quantity

100 loggers installed  
(therefore covering 3/4 of the complete network)  
Objective: Complete coverage in 2014

#### Period

March 2013 - present

#### Customer

Mömlingen community, Miltenberg district (Lower Franconia)





# Excellent work of the leak detection specialists in Dubai

## Correlux P-2 and HL 5000

### Correlator and ground microphone for pinpointing leaks

#### Description

The leak detection team in Dubai have become experts at detecting leaks with SebaKMT equipment. Leaks that are very close to each other are often hard to identify. But using the SebaKMT Correlux P-2 correlator they were able to locate two leaks neighbouring each other. The following excavation work showed how accurately they had pinpointed both leaks.

The correlator Correlux P-2 is used for leak location on pipes for portable water. Water escaping from a leak under pressure creates a noise which travels into both directions of the pipe. This noise is recorded by two sensors attached to the pipe (valves, hydrants), amplified and transmitted to the correlator. The Correlux P-2 compares both signals (correlation) and calculates the exact distance to the leak by use of the signal delay, the sensor distance and the sound velocity.

With the Hydrolux equipment HL 5000 you can find leaks particularly quickly, easily and reliably. The equipment uses modern digital signal processing technology to clearly recognise the leak sound, even when there is a lot of noise in the environment.

#### Project

Leak detection and repair work throughout the city of Dubai

#### Quantity

Complete set of leak detection instruments (correlators, ground microphones, noise loggers etc.)

#### Period

2012 - ongoing





# Singapore's PUB chooses the world leader in fixed network correlating

## Sebalog N-3 Correlating network noise loggers

### Description

After extensive field testing PUB has decided to purchase noise loggers, repeaters and GSM boxes from SebaKMT for 40 separate fixed networks that will be installed throughout Singapore.

Although chamber covers of several centimeter thickness were encountered the powerful Sebalog N3 noise loggers with external antenna were able to transmit measurement data and audio recordings to the repeater network without any problems. A simulated leak during the test installation was perfectly pinpointed using the web-based correlation software of SebaKMT.

The main advantages of the Sebalog N-3 fixed network are:

- » Remote leak monitoring and pinpointing
- » Transmission of acoustic recordings for correlation
- » Advanced web-based evaluation software
- » Adaptable to existing SCADA systems
- » Cascading repeater functionality
- » Interactive pipe mapping tool

### Project

Web-based leak monitoring and pinpointing

### Quantity

40 separate networks

### Period

Starting 2013

### Customer

PUB, Singapore





# Flow measurement – installation of six measuring points **without** interrupting the service

## SebaFlow

### Continuous zone monitoring and flow measurement with ultrasonics

#### Description

SebaFlow enables the continuous flow and zone monitoring of a pipe network section (DMA District Metering Area) through the use of ultrasonics.

Installation is managed without interrupting the water supply by means of attaching sensors to the outside wall of the pipe. SebaFlow is robust and maintenance-free, allowing installation without chamber construction.

The main advantages of the SebaFlow are:

- Maintenance-free flow measurement
- Early leak detection
- Short installation time without supply interruption
- No chamber construction necessary
- Precise measurements even at low flow rates
- Data transmission to the SebaCloud or to the own FTP server
- Battery-operated solution available as an option

#### Quantity

6 SebaFlow units (900 & 600mm ductile iron pipe)

#### Period

November 2016 - ongoing

#### Customer

Aguapen-EP, Ecuador





# Leak found through **precise pinpointing.** **Sustained minimisation** of drinking **water losses.**

## Sebalog N-3 Netzwerk Network of correlating noise loggers

### Description

In December 2015, our Swiss sales partner Riwatec installed noise loggers at the Bern train station to detect leaks in the station's drinking water supply. The loggers send data wirelessly on a daily basis to the GSM box with integrated SIM card. From there, the data is sent to an FTP server which the user can access online in the SebaCloud.

Directly following the installation, three leaks were detected in this way. One of these was a constant 30 l/min "continual leak" that for years had caused visible moisture damage in the underground passageways to the platforms. The leak was able to be precisely located through the services of the Riwatec company. Since this leakage was directly under a track bed at platform 6 and the repairs turned out to be very costly, this line was taken out of service until repaired. For the SBB this was a complete success, since leak localisation is made extremely difficult by the constant background noise.

### Project

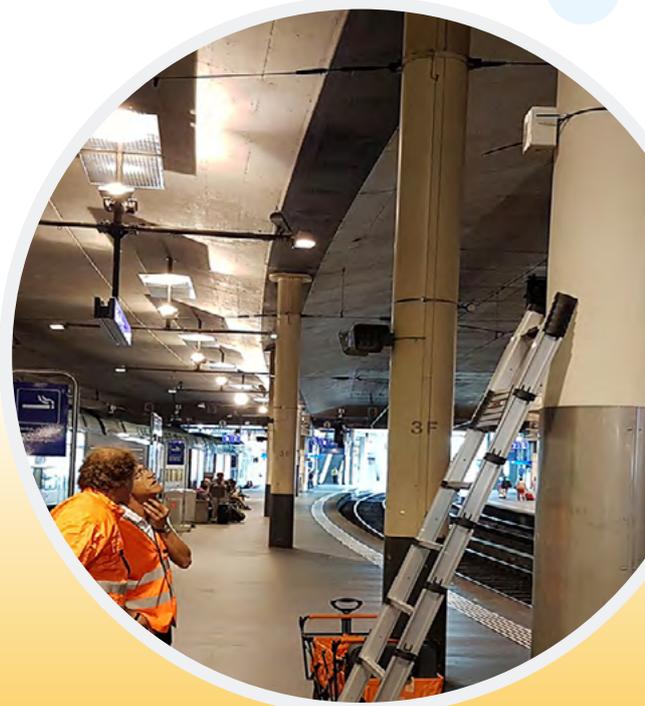
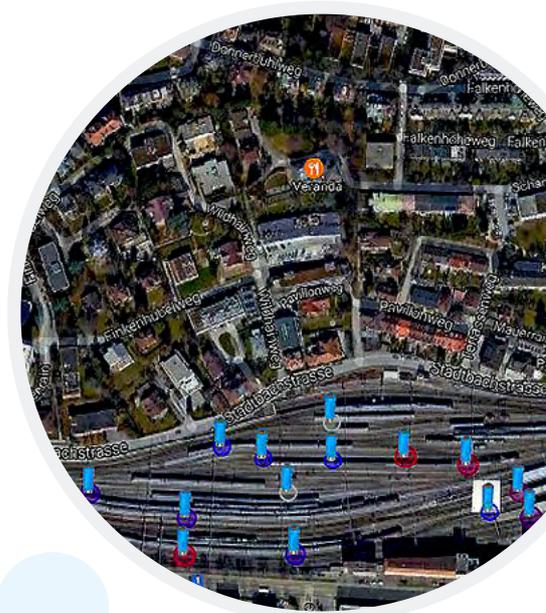
Monitoring the drinking water network of the train station

### Period

From December 2015 to present

### Customer

Schweizerische Bundesbahnen SBB





**“You simply magnetically attach a logger on top of the operating unit, and then close it, and it does its job.”**

Angel Bustamante,  
water systems division manager for EPWater

## Sebalog N-3 Netzwerk Smart network noise loggers

### Description

El Paso Water is on the hunt – for leaks. Since 2004, EPWater has purchased and installed thousands of sensors to track down leaks and make repairs before a main break can occur. With more than 2,600 miles of water distribution lines, the sensors, known as loggers, have proven to be a valuable asset in maintaining lines and improving the reliability of water service. In the past four years, EPWater saved an estimated 183 million gallons of water thanks to the technology.

“We have 12,000 of these loggers that are deployed around the city,” said Angel Bustamante, water systems division manager for EPWater. “In the street there are a series of valve boxes that can be opened; you simply magnetically attach a logger on top of the operating unit, and then close it, and it does its job.” The waterproof loggers are programmed to “listen” for frequencies and decibels specific to leaks in all types of water lines.

The contractor will investigate further with headphones and a well-practiced ear to confirm the leak at the site. “It sounds a little bit between a mix of a humming noise and a running water kind of noise,” explained Bustamante.

### Project

Monitoring the water supply network of El Paso, TX (USA)

### Quantity

12,000 Sebalog N-3 noise loggers (2014 to present)

### Customer

El Paso Water





# Water loss reduction at the City of Clyde, Kansas, USA

## HL 7000-US-Pro

### Electro-acoustic leak detection

#### Description

The City of Clyde, Kansas, contacted Kansas Rural Water Association (KRWA) Circuit Rider Greg Metz requesting assistance for a leak investigation. Greg Metz made himself available the same day on site. The City of Clyde is located in Clay County in north-central Kansas.

The City uses groundwater as the main source of water supply. The water plant provides continuous disinfection. City operators had noticed an excessive amount of water coming out of a storm drain into a creek and the usage at the water plant had significantly increased the day before.

Circuit Rider Greg Metz was able to utilize Kansas Rural Water Association equipment (SebaKMT HL 7000 ground mic) to identify a leak sound on a four-inch main just up the street from the storm drain. Greg returned the next day and with the help of the SebaKMT P-1 / HL 6000 pinpointing correlator and the wind protected ground mic HL 7000, he was able to pinpoint the leak within 1 inch. The leak was estimated to be more than 20 gallons per minute of lost drinking water.

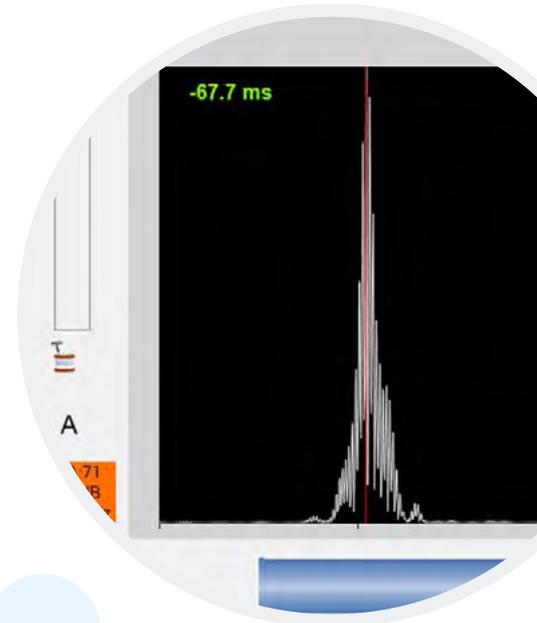
Following the repair of the leak, the discharge from the storm drain discontinued. The cost of drinking water is approximately \$2.00 per 1,000 gallons (production cost). The daily loss was more than 20,000 gallons. The annual cost of the leakage would be approximately \$20,000. The loss of water revenue is much higher. The KRWA helps cities with less than 10,000 people to keep their water supply under control.

#### Project

Water loss reduction of City of Clyde, Kansas (USA)

#### Customer

KRWA





Project story

# Savings of \$36,558 already in the first year through the use of the **SebaKMT technology**

## HL 7000 & HL 50-BT Advanced and efficient leak locating

### Description

In June 2019, Erwin Utilities purchased the latest SebaKMT leak detection equipment. They began using the equipment and have located and repaired 39 water main breaks since that time. The utility's AWWA M36 water audits show that real losses added up to 135.691 MG in FY19, just prior to the implementation of SebaKMT leak detection equipment. In FY20, the utility was able to reduce real water losses to 79.333 MG, a savings of 56.361 MG for the Fiscal Year.

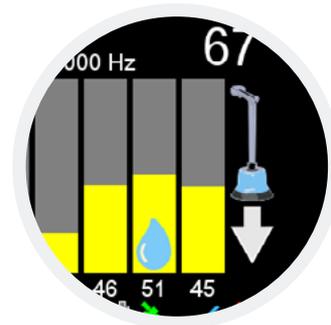
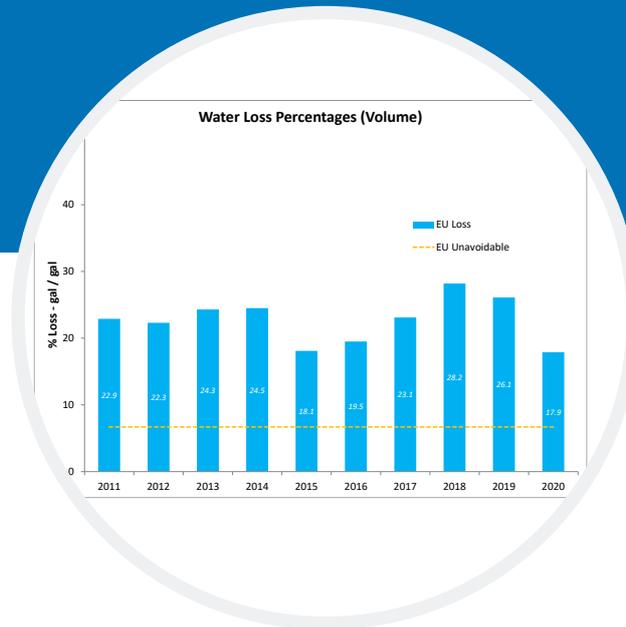
According to the water audit which uses variable production costs, the utility achieved savings of \$36,558 using SebaKMT's state of the art leak detection gear to reduce real losses. Erwin Utilities is in the process of implementing an Automated Meter Infrastructure (AMI) system with a SebaKMT fixed base leak detection system (Leak Spy). The remote monitoring acoustic system will help the utility to reduce real water losses further with less manpower. Jim Divido with SebaKMT trained the utility personnel and located 5 main line leaks during the demonstration and training period. The customer service, training and personal attention that SebaKMT has provided to help Erwin Utilities improve their water loss reduction program has been second to none.

### Project

Leak detection and repair work throughout the city

### Customer

Erwin Utilities





## Professional reduction of water losses in the county Miami-Dade, Florida

### Sebalog N-3 & GT-3-S GPS synchronized remote monitoring

#### Description

In 2019 the Miami-Dade Water Department began using the GT-3-S network for water conservation efforts. SebaKMT provided the water department with a solution for heavily trafficked corridors throughout Miami-Dade County. The GT-3-S network was immediately received with high marks. Very much like the Sebalog N-3 network it also provided accurate leak data via the SebaCloud platform. A significant reduction in deployment time was readily apparent due to the ease of installation of the Sebalog N-3 + GT-3-S network. Sound files were clear and audible.

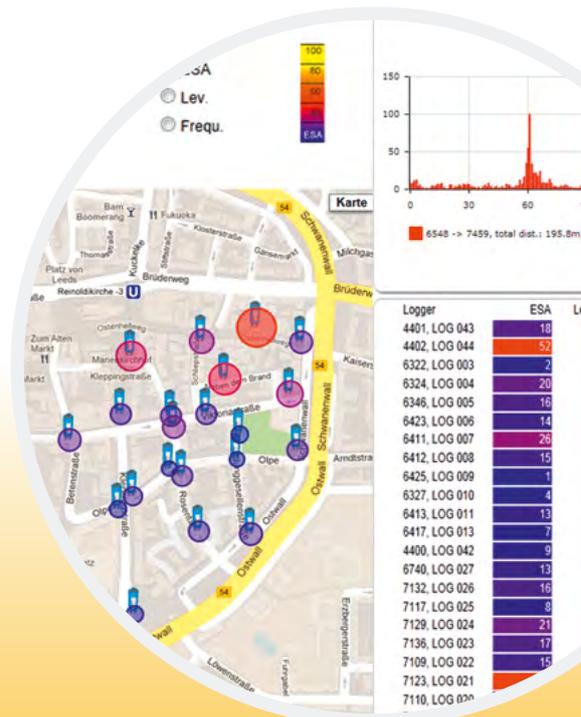
Another excellent feature of the GT-3-S is the integrated GPS. It allows for options such as theft protection to help track unauthorized movement of devices. SebaKMT has engineered a quality product in the GT-3-S that provides clients with the ease of on-site troubleshooting of the GT-3-S transceiver and therefore prolonging the life of the remote network and its components. SebaKMT continues to provide accurate, efficient and technologically advanced solutions for any department that is aggressively engaged in water conservation efforts. The Miami-Dade Water Department has been deploying the Sebalog N-3 + GT-3-S network since beginning of 2019.

#### Quantity

370 N-3 Logger und 370 GT-3-S Transmitter

#### Customer

Miami-Dade





# Remote monitoring of leakages even in heavily trafficked areas

## Sebalog N-3 Netzwerk Permanent remote monitoring

### Description

In 2015 The Miami-Dade Water Department was in search of remote leak monitoring solutions for their water distribution system in heavily trafficked areas.

The department was introduced to the Sebalog N-3 remote monitoring system that could be deployed throughout the water network. While piloting the product, the system provided crucial and time saving information for areas with heavy traffic within Miami-Dade.

Since then operators were able to monitor areas via the user-friendly SebaCloud platform. Setup and installation were manageable. Miami-Dade was pleased with the systems performance and its ability to meticulously provide leakage data. Sound files were clear and audible.

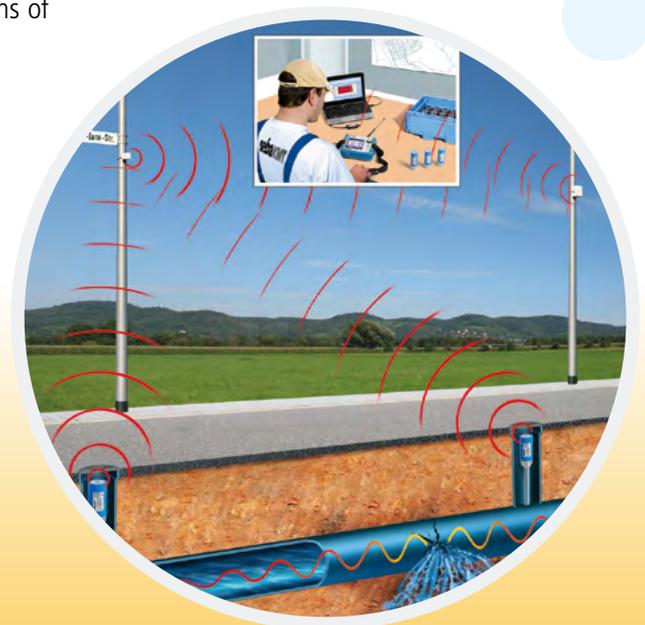
The installed leak monitoring system Sebalog N3 provided leak data that would have gone undiscovered otherwise and saved millions of gallons of water. This system was deployed for 4 years.

### Quantity

180 Sebalog N-3 + 220 Repeater + 6 GSM boxes

### Customer

Miami-Dade





## Total financial benefit of \$68.7 million

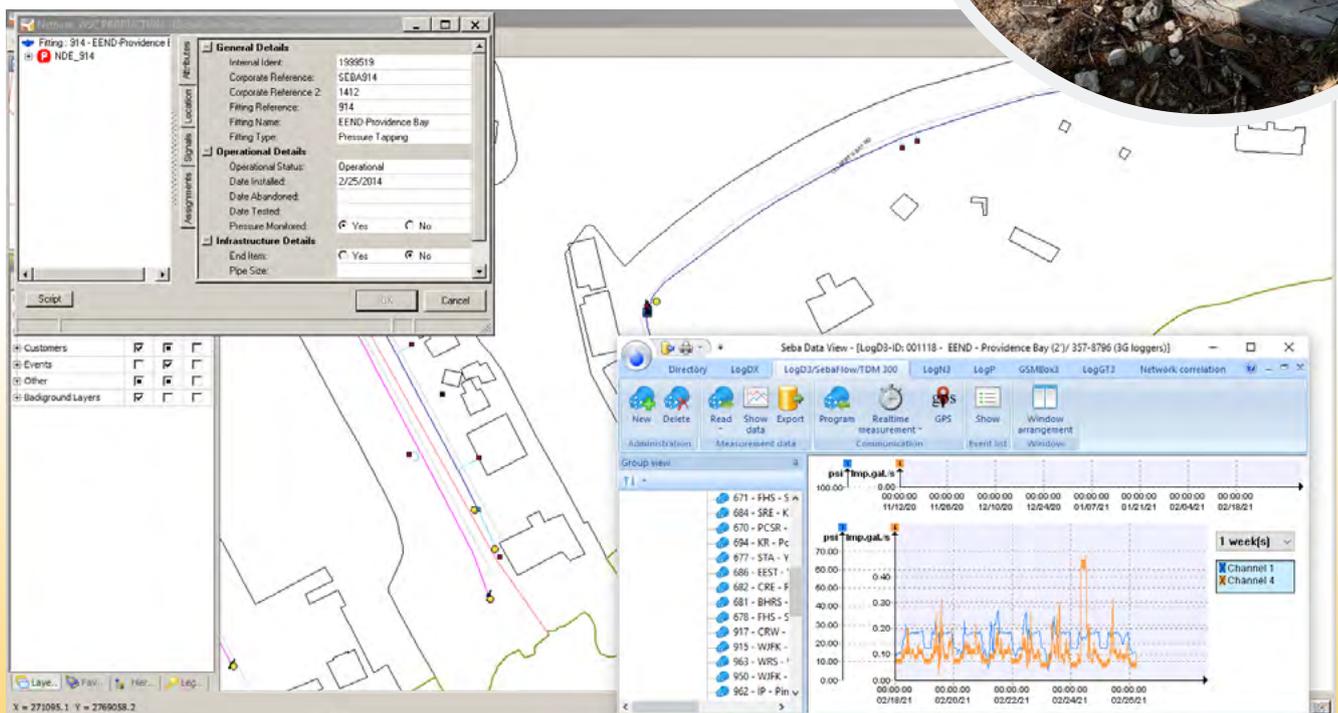
### Sebalog Dx / D-3 Flow and pressure logger with GPRS

#### Description

In 2012, The Bahamas Water & Sewerage Corporation (WSC) has contracted Miya to conduct a 10-year NRW reduction project. As a part of this contract, Miya Bahamas was required to reduce Non-Revenue Water (NRW) in the New Providence distribution system from 6.87 MIGD (Million Imperial Gallons per Day) to an annual average of 2.5 MIGD by year 5 and to 2 MIGD by year 7.

The island of New Providence, on which this program is centered, accounts for approximately 70% of the population of The Bahamas (351,000 inhabitants). Over 90% of the drinking water supplied to the island comes from reverse osmosis plants, which yields a comparatively expensive product.

*Further details on the next page...*



## Description

The NRW reduction levels achieved between 2012 and 2017 were significant and constitute the single most important accomplishment of the program. They reflect the overall success of the NRW reduction strategy. In 2019, the NRW level was reduced to 2.00 MIGD, once average water pressure and the impacts of delays on leak repairs were taken into consideration.

The key elements of the strategy were proactive leak detection, in which was largely used tool HL5000 from SebaKMT, rapid repairs, use of adequate materials, pressure management, selective replacement of network elements, disconnection of inactive service lines, large customer metering and asset maintenance. Other essential components were hydraulic modeling, system optimization, GIS updating, SCADA, and the use of data management hardware and software by the deployment of hundreds of data loggers' types LOGDX/LOGD3 from SebaKMT to collect hydraulic parameters on a daily basis.

The economic impact of the NRW reduction program is significant. Annual cost savings were calculated as a result of a reduction of the system input volume purchased and the increases in revenues compared with the baseline. At the end of 2018, the cost savings due to reductions in system input volumes had already amounted to US\$31.5 million, based on marginal production costs of US\$8.18 /1,000 gallons. The increase in revenue, compared to the baseline, amounted to US\$37.2 million. Thus, MIYA estimates that the total financial benefits added to US\$68.7 million by 2018.

*Report by courtesy of Mario Tavera,  
Project Manager, Miya-Bahamas*

## Project

10-year Non-Revenue Water (NRW) reduction project

## Quantity

100+ Sebalog Dx/D-3 plus HL 5000

## Customer

miya Bahamas





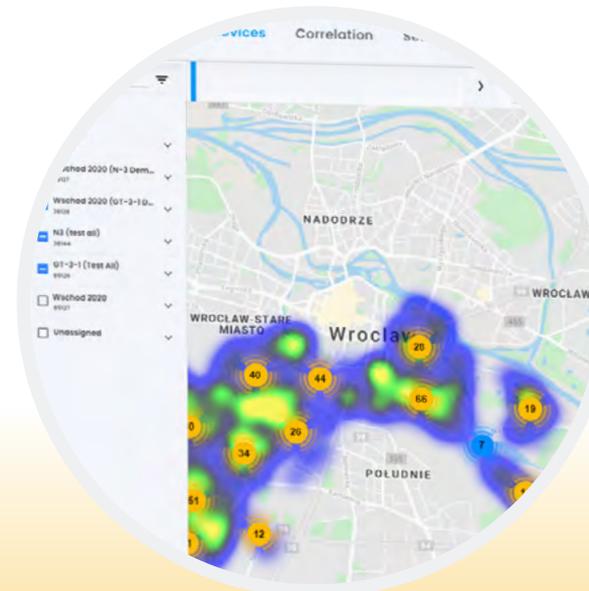
# Permanent remote monitoring in the city of Wrocław

## Sebalog N-3 & GT-3-1 Permanent remote monitoring

### Description

In 2016 the public water company MPWiK Wrocław wanted to reduce the high costs of commissioning the tracing of leaks in the drinking water network. The duration of the leaks must also be minimised because preparing drinking water is an expensive process. After a thorough study of the various options MPWiK have chosen Sebalog N-3 noise loggers, because it is a very efficient leak detection system. It is easy to install and will considerably help them reduce their running costs. In December 2016, they installed the first 200 N-3 noise level loggers with 200 GSM Transmitter GT3 in its water pipe network, in Wrocław City Center.

A simulated leak during the test installation was perfectly pinpointed using the web-based software of SebaKMT SebaCloud. The loggers send data wirelessly on a daily basis to an FTP server, that the user can access online in the SebaCloud. Followed by the next badge of 220 N-3 and 220 GT-3 in 2017 Wrocław expanded their permanent monitoring system with SebaKMT noise loggers and 3G transmitters. Although chamber covers of several centimeter thickness were encountered the powerful Sebalog N-3 noise loggers with external antenna were able to transmit measurement data and audio recordings to the SebaCloud network without any problems. With the knowledge gathered on how modern leak monitoring can function today, the system was extended by additional 100 GT-3 and 100 N-3 in 2018. MPWiK received with the same badge the successor of the GT-3 the GT-3-1 4G transmitter which was mainly designed on their needs. Their permanent remote network has therefore been extended by 210 GT-3-1 4G transmitters and 210 N-3 noise loggers during 2018. In 2019 it was enlarged by 300 GT-3-1 transmitters plus N-3 noise loggers as well as with further 210 GT-3-1 plus the same amount of N-3 noise loggers.



### Customer

MPWiK Wrocław

