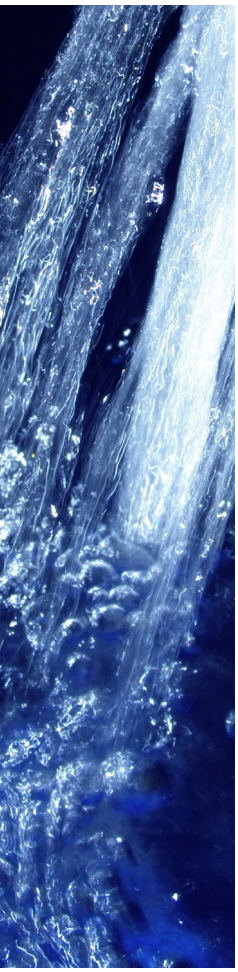
Water leak detection



SEWERIN
Technologies for leak detection.

EURO INDEX

INDEX : Water Leak Detection

1. Electro-acoustic water leak detection

2. Correlators

3. Tracer Gas

4. Noise Loggers

5. Flow Analysis

SEWERIN Technologies for leak detection.

EURO INDEX

Electro-acoustic water leak detection

SEWERIN
Technologies for leak detection.

Stethophon® 04

Compact sound detector for
water leak detection –
Wireless headphones with digital radio

LEAK DETECTION
made in Germany

Applications

- Detecting defects in the plumbing and heating installations of buildings
- Examination of house service lines when the water meter is replaced
- Examination and localisation of damages in compressed air systems
- To be used as a fast leak detector in water networks
- Check on machine bearings

Characteristics

The ***Stethophon® 04*** is a sound detector for recording and amplifying structure-borne oscillations of all kinds. The oscillation sensor provides undistorted sound reproduction even when the noise is barely audible.

Besides the cable headphones, a wireless version is available including ***SDR*** digital radio. The ***S***ewerin ***D***igital ***R***adio (***SDR***) offers a sound transmission quality equal or better than by cable. By going without the cable, the comfort of work is improved considerably. Headphones and detector connect automatically by bidirectional radio link when switched on.

Sewerin Digital Radio works over short distances without any loss. Unlike simple analogue radio transmissions, the completely digital signal processing does not allow to occur acoustic interferences caused by hissing, re-amplifying or others.

The filter function enables the users to listen to the sound at the frequency that best suits their hearing and the particular noise being listened to. The filters make it easier to hear certain noises such as the deep-pitched sounds typical from leaks in plastic pipes and higher frequencies from metallic pipes.

The hearing protection feature automatically ensures that the headphones are muted when loud noises suddenly arise to protect the operator. To help with the leak detection, the ***Stethophon® 04*** not only indicates the noise levels acoustically, but also displays them digitally.

The lowest measured noises of the previous and current locations are numerically displayed and can be compared objectively.

Features

- Wireless headphones using digital signal transmission (***SDR***)
- External ground microphone
- 8 filter levels
- Hearing protection function
- Numerical display of minimum noise level (0 – 1000)
- Minimum operating time 8 hours
- Lightweight packaging, the sound detector only weighs 290 g
- Handy dimensions: just 50 x 228 x 30 mm (W x H x D)

Components

- ***Stethophon® 04***
- Wireless headphones
- Ground microphone
- Probe tip
- Chargers
- Transport bag

Please contact us for a comprehensive quotation, including additional technical specifications and information on accessories.

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SEWERIN
Technologies for leak detection.

AQUAPHON® A 50

The reasonable entry-level model for professional acoustic water leak detection
compact – on-hand – efficient

LEAK DETECTION
made in Germany

AQUAPHON® A 50:
compact – on-hand – efficient

SEWERIN
Technologies for leak detection.

The AQUAPHON® system provides professional, electro-acoustic water leak detection. The A 50 receiver and various microphones make the prelocation and pinpointing of leaks possible. When both microphone and headphones are attached the device boasts impressively high reproduction quality. The display helps by visualising the noises to provide reliable, differentiated evaluations. With a fully charged battery the A 50 receiver is ready for use for an entire work week. Light, handy, small – the receiver is cleverly compact and easy to carry. When the A 50 with SDR radio module (**S**ewerin **D**igital **R**adio) is used and the F8 wireless headphones are connected, there are no cables to affect the sound quality or restrict your movement. Thanks to adjustable filters, frequency ranges can be individually adjusted to your hearing and the impact of interference noise can be minimised. The AQUAPHON® system featuring the A 50 receiver is a reasonable, entry-level system for professional electro-acoustic water leak detection.

Efficient prelocating and pinpointing of leaks

Superior microphone technology ensures excellent sound quality with the UM 50 universal microphone and the TS 50 test rod. The A 50 receiver is ideal for prelocating at fittings and pinpointing on a variety of surfaces – indoors and outdoors. An activation key conveniently starts and stops measurements. The supporting display indicates current and previous minimal levels, both numerically and graphically. It boasts a particularly practical feature: the display is always easy to read thanks to an optimised tilt angle that automatically rotates its view by 180° depending on the carrying position. Volume, filter limits and hearing protection can all be customised for optimal performance.

Maximum carrying convenience, long availability

Practical dimensions and low weight make the compact A 50 receiver perfect for everyday use. As an alternative to the carrying strap, the lightweight receiver can be easily fastened to your belt with a clip: freedom of movement, effortless carrying, no annoying elements! The powerful battery guarantees optimal availability without recharging – for up to one work week.

Advantages of the *AQUAPHON® A 50*

- Especially **efficient solution** for electro-acoustic water leak detection
- **Long availability** – even without recharging – thanks to powerful battery technology
- Extremely **compact, lightweight, handy housing** with belt clip – for convenient, **effortless carrying** and maximum freedom of movement; **ready for use at all times**
- Adjustable filters: **frequency ranges can be individually adjusted to hearing** to reduce interference noise
- Illuminated display with optimised tilt angle and automatically changing display (180° rotation) making it **easy to read** the receiver **regardless of position**
- Two product versions available: with or without SDR radio module
- Added supporting visualisation of noises on the display for **reliable evaluation** of leak noises

Included in delivery

- A 50 receiver with or without SDR radio module
- K3 headphones or F8 wireless headphones
- Carrying strap
- AC/DC adapters
- Microphone equipment and accessories
- Backpack or carrying bag

Optional accessories

- Car adapters
- Comprehensive microphone accessories

Please contact us for a comprehensive quotation, including additional technical specifications and information on accessories.

107483 – 05/16
Subject to technical changes.

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SEWERIN
Technologies for leak detection.

AQUAPHON®

AQUAPHON® A 100 receiver
Electro-acoustic water leak detection

Innovative technologies

The principle

When pressure pipelines leak, water gushes out of the crack into the ground.

The pipe material vibrates at the leakage point. These vibrations are transmitted by the pipe and can also be noticed at distant contact points, e.g. fittings. This is known as structure-borne sound and is made audible by the ***AQUAPHON® A 100***.

The water jet and the pipe in the vicinity of the leak also cause the ground to vibrate. These vibrations are transmitted through the ground to the earth's surface where they manifest themselves as ground noise.

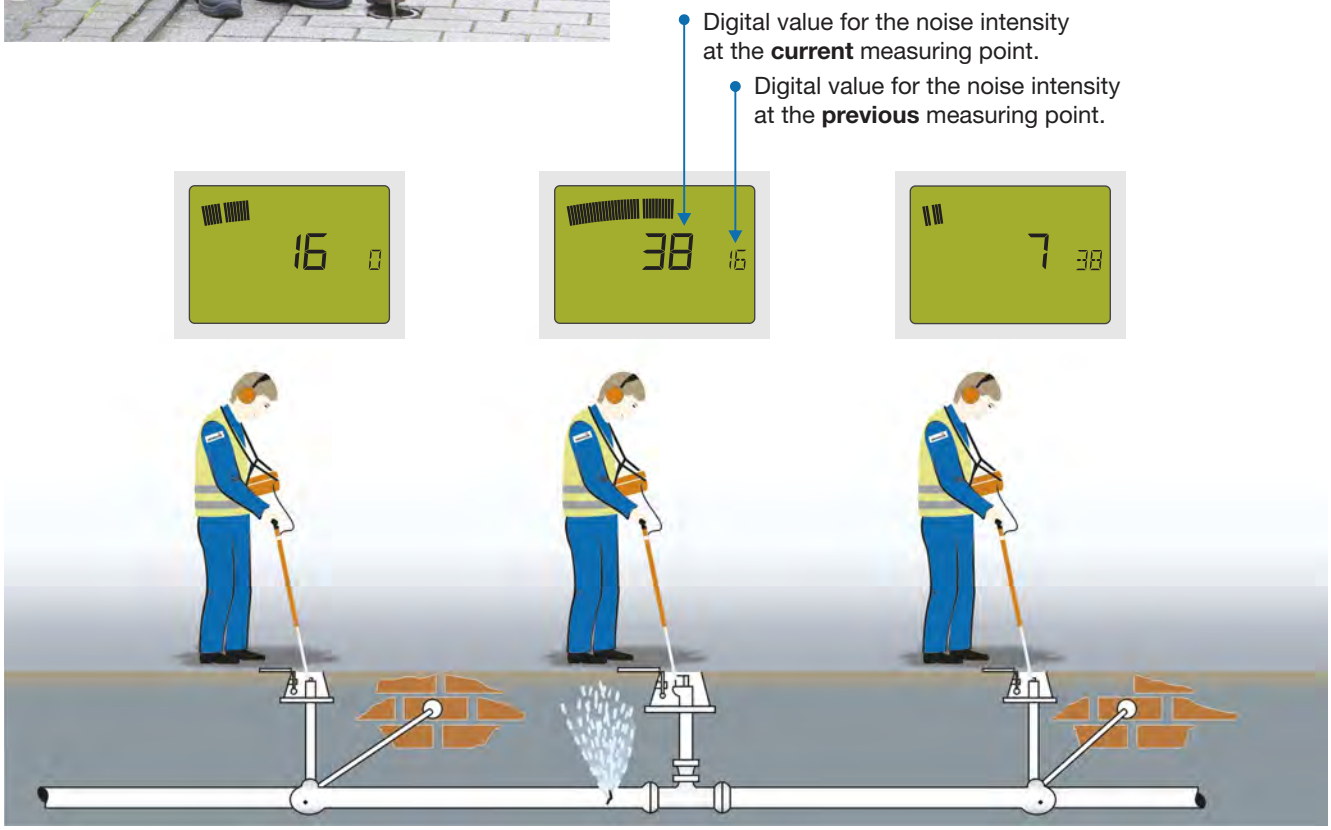
The acoustics

The human ear continues to play a significant role in analysing the incoming noise, despite improved assistance from the display. With relevant experience of different types and sounds, it can distinguish between the noise of a leak and background noise.

The outstanding quality of the sound relayed through the headphones helps the ***AQUAPHON® A 100*** user in this task.

Prelocation with a test rod

Metal pipe materials transmit structure-borne sound over particularly long distances. The test rod is ideal for prelocating leaks in these pipeline systems.



Electro-acoustic water leak detection

Location pinpointing with ground microphone

Non-metal pipe materials are less effective at transmitting structure-borne sound than metal ones. Simply checking the pipeline fittings with the test rod does not usually produce satisfactory results. The length of piping between the fittings also has to be examined with the ground microphone.

Using the ground microphone at regular intervals enables the leak to be located with sufficient accuracy for confident excavation. The ***AQUAPHON® A 100*** displays an accurate visual comparison of the noise intensities.

Is the noise getting louder or softer?
The visual display is particularly helpful for novices or those who do not use the system often.

Minimum analogue value for the noise intensity at the current measuring point.

Analogue **value** for the noise intensity at the current measuring point.

The hearing protection function

The ***AQUAPHON® A 100*** fulfils all the current occupational health and safety requirements. Adequate hearing protection is particularly important. In the past an unpleasant and sometimes even dangerous acoustic pressure occurred if the test rod slipped off the contact point, the headphones were activated too early or too late or an object fell to the ground directly beside the ground microphone.

This is a thing of the past now thanks to new technology. The incoming sound signal is continuously monitored. If the noise gets very loud, the sound relayed by the headphones is muffled. If the signals continue to get louder, the headphones are switched off.

The ***AQUAPHON® A 100*** automatically recommences its work once the source of the noise goes quiet. The hearing protection function can be customised to various operational environments and different users.

The filter optimisation function

The ***AQUAPHON® A 100***'s innovative filter optimisation function makes it easier to accurately pinpoint water leakages. This is particularly useful where the ground microphone has identified a leak noise but the exact position of the leak is difficult to determine because of loud ambient influences.

The receiver records a noise sample using the ground microphone and analyses it. It then automatically switches to a suitable frequency range which distinguishes the structure-borne sound from the leak particularly clearly.

Components

1. Ground microphone BO-4 with carrying rod H-4
2. Ground microphone 3P-4
3. Test rod T-4
4. Stereo headphones
5. Charging station HS
6. ***AQUAPHON® A 100***
7. "Triangel" carrying system
8. Microphone EM 30

Ground **microphone BO-4** 1 is ideal for fixed surfaces. The new solid metal soundproofing with separate acoustic centre can be optimally adjusted to the unevenness of the ground thanks to its freedom of movement.

Ground **microphone 3P-4** 2 is used for non-fixed surfaces. A spike can be screwed on for soft ground. The three feet provide stable contact at all times.

Easy to service microphones: The cables on all microphones can be replaced by the user. This guarantees low maintenance and minimal downtime.

Indoor leaks in inaccessible places are detected using the small, handy EM 30 microphone with short probe tip. There is also a magnet, tripod and compact case available specially for indoor use.

AQUAPHON® A 100

AQUAPHON® AF 100
Combi device for electro-acoustic water leak detection and pipeline location

Features

- Automatic microphone recognition, therefore various frequency settings
- Digital signal processor
- Filter optimisation function
- Slider function
- Memory function
- Large illuminated display
- Integrated NiMh rechargeable battery, integrated automatic charging/buffering function, battery status display

Please contact us for a comprehensive quotation, including additional technical specifications and information on accessories.

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102669 – 06/09 – Subject to technical changes.

SEWERIN
Technologies for leak detection.

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SEWERIN
Technologies for leak detection.

AQUAPHON®

Electro-acoustic water leak detection
professional – flexible – intelligent

LEAK DETECTION
made in Germany

AQUAPHON® – professional – flexible – intelligent

Ideal for detecting leaks in water pipe networks

When it comes to detecting leaks in water pipes by electro-acoustic means, the hearing and experience of the user are paramount. The ***AQUAPHON®*** system supports and simplifies this detection process thanks to the outstanding quality of its microphone and measuring technology, intelligent analysis functions and the practical, visual representation of results on the display.

Most reliable leak detection ever

This cutting-edge system offers comfortable, wireless handling, ease of use, versatility and a sturdy, ergonomic design. The ***AQUAPHON®*** system is ideal for both the prelocation and pinpointing of leaks for confident excavation. It is suitable for all your leak detection challenges and will help you locate leaks safely and reliably.

The measurement principle

The water flowing out of the leak in the pipeline causes the pipeline material to vibrate. These vibrations are transmitted throughout the line and can be picked up as structure-borne noise, even at distant contact points such as fittings. The vibrations are also transmitted up through the ground to the surface as ground-borne noise, although this is very muted. The ***AQUAPHON®*** system is your perfect companion for leak detection as it makes the vibrations audible to the human ear and records and visually displays the volume and frequency spectrum.

Prelocating leaks

Place the ***TS 200*** carrying rod with the connected ***TM 200*** touch microphone on fittings along the pipeline and assess the volume. By comparing and determining the values, you can identify which section of the pipeline is most likely to contain the leak.

Pinpointing the leak

Use ground microphone ***BM 200*** (for paved surfaces) or ***BM 230*** (for unpaved surfaces) to analyse the volumes in the identified section pf pipe. To do this, connect carrying rod ***TS 200*** to a ground microphone and move over the pipeline in short intervals. The acoustic signal and visual display of the intensity make it easy to find the maximum. You can now begin to excavate with confidence.

Flexible use

- Thanks to the high protection class (IP67) of the ***AQUAPHON® A 200*** receiver, you'll always be on the safe side, even in extreme environmental conditions. The receiver is impervious to dirt, dust and moisture. The ***TM 200*** touch microphone used for prelocation can even be used continuously under water (IP68).
- The symmetrical housing of the ***AQUAPHON® A 200*** receiver, means that it can be operated by both right-handed and left-handed users with ease.
- You can see everything at a glance: The clear 5.7 inch receiver display shows the current acoustic intensity both in a graph and as a numeric value. Alongside, you can see the previous values for comparison purposes, as well as the current frequency analysis of the noise.
- A full charge of the integrated Li-Ion rechargeable battery in the ***AQUAPHON® A 200*** receiver, ***F6*** wireless headphones and ***TS 200*** carrying rod is enough for a full day's work.
- Work effortlessly and ergonomically. The ***TS 200*** carrying rod with its balanced, ergonomic design fits snugly into your hand. The flexible carrying system for the receiver with two cross belts can be adjusted individually and enables various carrying positions.

Intelligent system in practice

- The ***AQUAPHON®*** system is completely wireless as the ***TS 200*** carrying rod, ***AQUAPHON® A 200*** receiver and ***F6*** wireless headphones communicate by ***S***ewerin ***D***igital ***R***adio (***SDR***). Not only does this allow you incredible freedom of movement, it also offers a much greater sound quality without interference from swinging cables.
- The system is operated without buttons or switches using the sturdy 5.7 inch VGA display with touch screen. It offers excellent readability, even in strong sunshine, and can also be operated with gloves. The display is clear and features large, distinct symbols.
- The ***AQUAPHON® A 200*** receiver guides you through the various applications with instructions, which means that even less experienced and occasional users can operate the device reliably.
- Safety thanks to customisable hearing protection: if there is any sudden loud interference noise, e.g. passing vehicles, or if the microphone slips off the valve rod extension, the signal in the headphones can either be muted or completely switched off. Once the source of interference goes quiet, the hearing protection automatically switches back off again.

Professional technology for challenging tasks

- The high quality piezo microphones with a frequency response specially optimised for leak detection and digital signal processing guarantee excellent acoustic properties. Thanks to the brilliant sound quality and minimisation of sound interference, you can reliably identify and locate leaks, even if the acoustic intensity of the leak is low or there is loud ambient noise.
- At the touch of a button the ***AQUAPHON® A 200*** receiver calculates filters tailored to the current noises and automatically selects suitable frequency ranges. Alternatively, you can manually set filter limits to suit your individual hearing and select frequency ranges that highlight the leak noise. This allows you to concentrate fully on the leak without any sound interference.
- You can record leak noises using the integrated audio player and compare them with each other. Then you can create a noise database to help you analyse leak noises on site, or use this function for training or demonstration purposes.

SEWERIN
Technologies for leak detection.

Components

The ***TS 200*** carrying rod can be connected to three different microphones. Whereas up until now a special test rod and a carrying rod were required for ground microphones, the ***TS 200*** fulfils both functions. It can be connected to the relevant microphones depending on the application. The ***TS 200*** is powered by a high performance rechargeable battery which guarantees reliable operation for a full day's work. It can be charged in less than four hours directly in the system case.

The ***TM 200*** touch microphone was developed especially for prelocation at fittings in the pipe network. Its frequency response means that it can reliably detect both quiet and low noises, usually occurring in plastic pipes, as well as loud, high-pitched leak noises in metal pipes. The probe tip and available extensions in different lengths mean that it can be perfectly adapted to the structural conditions of all pipe networks. To help you correctly place it on the valve rod extensions, even in the darkness of the valve box, the ***TM 200*** has a torch function, which is activated on the ***TS 200*** carrying rod.

The ***BM 200*** ground microphone is ideal for paved surfaces. The very sturdy housing is optimally decoupled from the actual microphone capsule. A lifting mechanism ensures consistently perfect contact with the ground, so that small bumps make no difference.

The ***BM 230*** ground microphone lends itself more to use on unpaved surfaces. Its solid tripod always guarantees a firm base. If the ground is particularly soft, it is possible to screw on a spike to improve the sound transmission even further.

The system case provides ample space to safely hold all the components of the ***AQUAPHON®*** system. The ***TS 200*** carrying rod, the ***AQUAPHON® A 200*** receiver and the ***F6*** wireless headphones can be charged at the same time. Chargers are available for the measuring vehicle as well as for the workshop and office.

Please contact us for a comprehensive quotation, including additional technical specifications and information on accessories.

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SEWERIN
Technologies for leak detection.

AquaTest T10

Robust test rod for electro-acoustic water leak detection outdoors

LEAK DETECTION
made in Germany

The ***AquaTest T10*** is a test rod with innovative technology and ergonomic design. Its strength lies in the prelocation of leaks in water pipe networks. The ***AquaTest T10*** is the first test rod made by SEWERIN for which no additional receiver is required. The headphones are activated not by any common key but by a special sensor area. The noises that are picked up are visualised on a display incorporated in the handle. In the product variant with the ***SDR*** radio module, the test rod can be used with radio headphones. This means no more cables to get in the way.

Principal application – prelocation

The high-quality microphone technology of the ***AquaTest T10*** permits first-class sensitivity in picking up noises. Even smallest leaks are reliably detected by the test rod. In case the test rod is used on objects that lie deeper under the surface, extensions can easily be screwed on between the probe tip and microphone. Individual optimisation of acoustic results is assisted by the option of selecting one of eight different frequency bands. In operation the flow noises at the fittings can be sampled by simply placing a thumb on the sensor area. This avoids the irritation caused by operation noises in the headphones while listening. The ***AquaTest T10*** display shows the current and previous minimum noise levels, as well as the current noise intensity. The minimum noise levels are shown as numeric values; the actual noise intensity is displayed as a bar graph. This gives even less experienced operators visual support whether they are approaching a leak.

Additional applications – pinpointing leaks and acoustic pipe location

Prelocated leaks can also be pinpointed with the ***AquaTest T10***. For this, the probe tip is replaced with a tripod. This picks up the noise of the leak at the surface. If a pipe is set into vibration, e.g. using the knocker or stopper of the ***COMBIPHON***® system, the position of the pipe can be located using the ***AquaTest T10***. This involves systematically testing the surface in short steps. The volume increases in approach to the vibrating pipeline. The noise is loudest directly above the pipe.

Features

- Innovative combination of electronic amplifier and test rod without interfering cables
- Ergonomic design ensures non-tiring operation
- Robust construction for use outdoors
- Built-in rechargeable batteries
- Outstanding noise quality, using high-performance microphone technology
- Meaningful visualisation of the noises in the display, to support the operator
- No irritating operating noises in the headphones, thanks to the new type of sensor area
- Individual adjustment of the filter bands and volume / hearing protection setting for optimum noise recognition
- Two product variants are available – with or without the ***SDR*** radio module

Delivery contents

- ***AquaTest T10***
- Headphones
- Probe tip
- Chargers
- Transport bag

Optional accessories

- Tripod
- Extensions for the probe tip

Please contact us for a comprehensive quotation, including additional technical specifications and information on accessories.

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RLWA-BI 01042011 GB

Correlators

SEWERIN
Technologies for leak detection.

SeCorr® 08

Correlator for the computer-assisted detection of leaks

LEAK DETECTION
made in Germany

SeCorr® 08

The handy and lightweight correlator for effortless work and listening to signals on the receiver – suitable for use in all weather.

What is correlation?

Correlation is computer-assisted leak detection in underground pressure line systems. Leak sites emit a noise which is carried along the pipe material. This noise reaches two fittings (valves, hydrants, home shut-off valves etc.) at different times. The time lag depends on the distance of the leak from the two contact points.

Highly sensitive microphones record the incoming noises on the fittings and radio transmitters transmit these noises to the receiver where the run time difference of the signals is determined.

The exact position of the leak is then calculated from the information about the material, the diameter and the length of the measuring section.

Why correlation?

Unlike electro-acoustic leak detection in water pipes, correlators work independently of the volume of the leak noises. This means that the intensity of the ambient noise barely affects the measuring procedure.

Successful correlation is therefore even possible during the day on busy roads when electro-acoustic measurement is not an option.

Even factors such as laying depth, surface, type of ground or ambient interference, for example wind or rain, do not affect the accuracy of the measuring result.

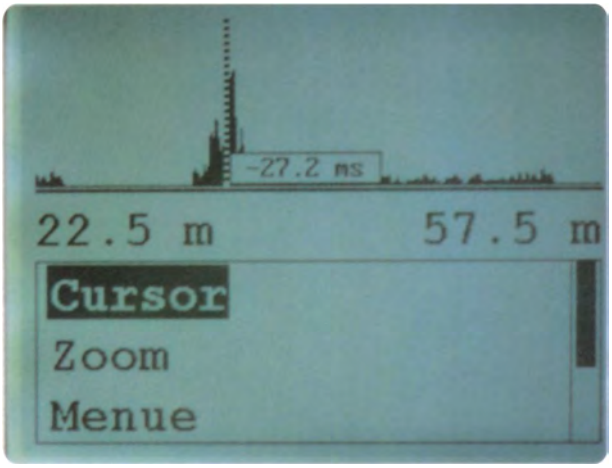
Nor do the hearing and experience of the user determine the success of the leak detection operation. The technical possibilities of the user-friendly correlator alone determine the quality of the measuring result.

SeCorr® 08 receiver

Features

- Lightweight, ergonomic handling
- Easy to use thanks to rotary pulse encoder and film keypad
- Can be switched to single-channel radio if a transmitter fails
- Coherence analysis with frequency recommendation for optimal filter setting – ensures clear illustration of the leak position
- Radio reception over more than 2.000 m per channel
- Measuring assistant for everyday situations
- High-resolution graphic display
- PC communication software for printing out and recording measurements
- High-performance transmission path (500 mW) with optimal selectivity

SeCorr® 08



High-resolution graphic display showing a correlation

Signal processing and transmission

- Quick and easy to use
- Select measuring point and position of transmitter
- Switch on ***RT 06*** transmitter by connecting microphone
- High-performance transmission paths with 500 mW transmitting power
- Simple radio operation even if line-of-sight is obstructed
- Frequency filter for effective adjustment for measurements on plastic piping

Signal recording

The highly sensitive ***EM 30*** piezo microphone reliably records noises in a frequency range of roughly 1 to 10,000 Hz. Various adapters enable optimal connection to the measuring points.

The hydrophone does not record the sound from the pipe material, but instead directly from the water column. This considerably improves the leak coverage, especially when correlating plastic piping. It also makes it possible to successfully detect leaks over hundreds of meters.

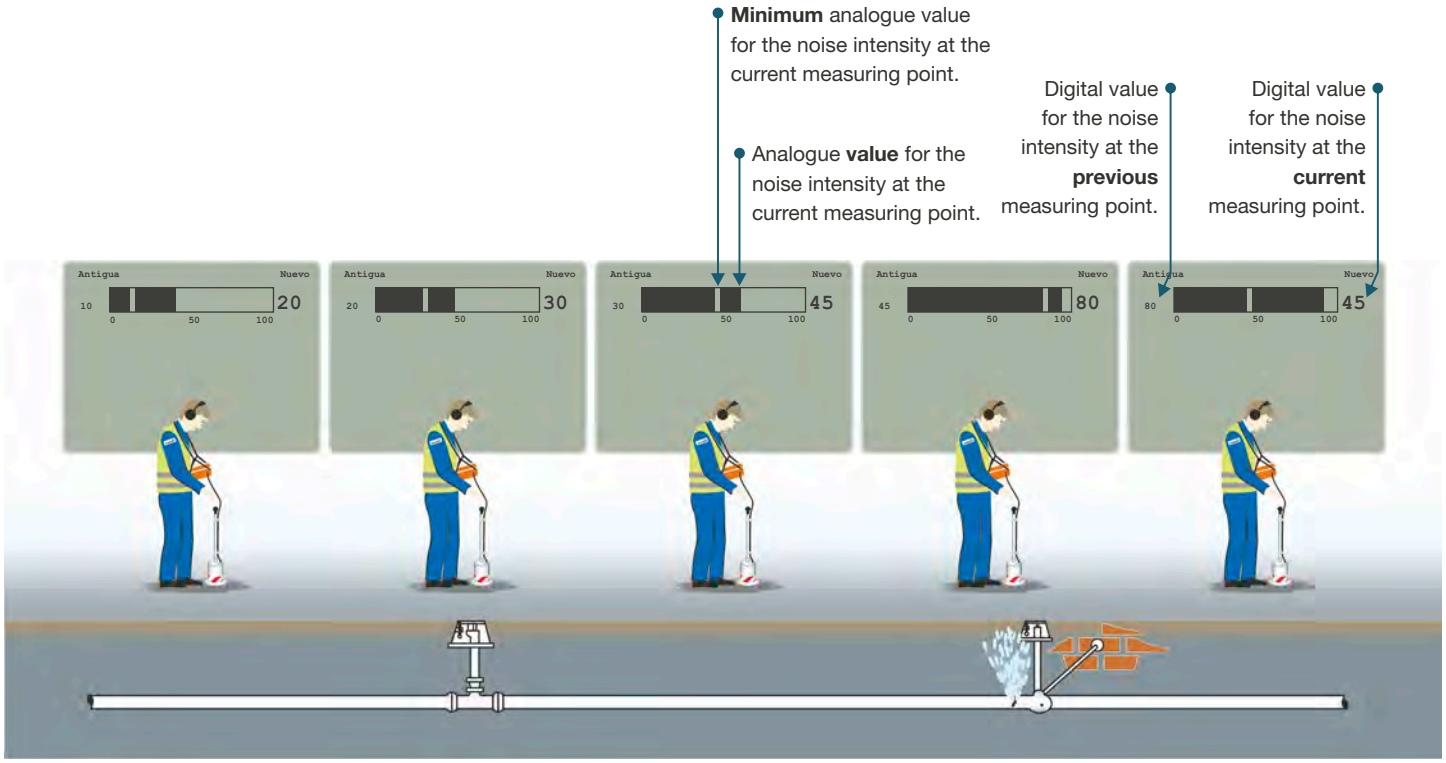
SEWERIN
Technologies for leak detection.

Pinpointing with ground microphone

Using the ground microphone at regular intervals enables the leak to be located with sufficient accuracy for confident excavation. The ***SeCorrPhon AC 06*** displays a precise optical comparison of the noise intensities.

Is the noise getting louder or softer?

The visual display is particularly helpful for novices or those who do not use the system often.



System case

The robust rolling hard-top case can hold the ***SeCorrPhon AC 06*** receiver, the ***RT 06*** radio transmitter, microphones for electro-acoustic water leak detection and other accessories.

The equipment can be charged in the closed case so that it is always ready for use.

Please contact us for a comprehensive quotation, including additional technical specifications and information on accessories.

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SEWERIN
Technologies for leak detection.

System case

This sturdy hard-top case offers space for all the system's components. The receiver and the two transmitters can be charged at the same time inside the closed case.

Connection and signal transmission

The ***EM 30*** piezo microphone is connected magnetically to the valve of an underground hydrant. Radio transmitter ***RT 06*** transmits the noise recordings to the ***SeCorr® 08*** receiver.

Please contact us for a comprehensive quotation, including additional technical specifications and information on accessories.

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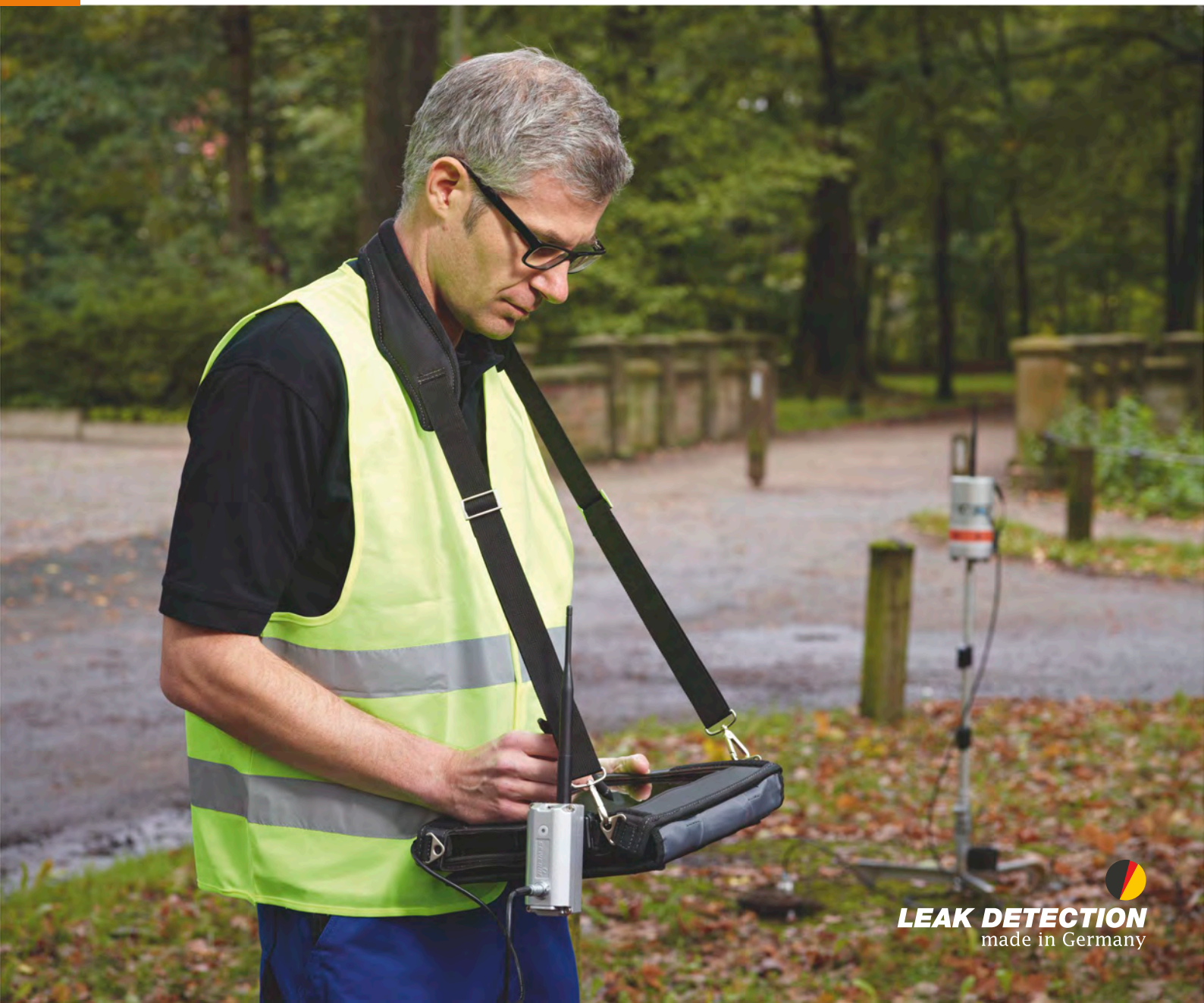
SEWERIN
Technologies for leak detection.

SeCorr® 300

Professional PC correlation
Perfect results thanks to fully digital technology



SeCorr® 300

The principle

SEWERIN has a long tradition of producing systems for locating damages in pipe networks by way of correlation. The ***SeCorr® 300*** is a system of unprecedented quality to complement the existing product range.

The fully digital signal processing and transmission by and large eliminates the interference which so often causes problems in conventional correlators.

The digital radio eradicates the notorious hissing in transmission paths. Even the narrow bandwidth of analogue modules no longer poses a restriction.

The noises recorded from the leak are already digitised in the microphone thus eliminating feedback via the cables. This produces significant advantages, particularly in plastic pipes, where the noise emitted from the leak is, as a rule, very poorly transmitted and thus very quiet.

The result is improved leak coverage in non-metallic pipes, which is increasingly used nowadays in water pipe networks.

Notebooks and desktop PCs can be used to analyse the measurements, as can Tablet PCs or field notebooks, for example, which have been specially designed for use in adverse conditions.

Thanks to the USB standard, the system can be easily connected to the computers.

Provided the computer is state-of-the-art, the ***SeCorr® 300*** system offers the user every possibility to produce optimal results, even under difficult conditions where conventional correlators would reach their limits.

The transmitter unit

Radio transmitter ***RT 300*** is mounted on a tripod for correlating and can thus achieve a transmission range of up to 1000 metres. If the radio transmitter's range is not enough for successful correlation, the noise is stored in the transmitter memory for 40 minutes. It is then transmitted to the receiver later, as soon as the radio connection is re-established.

Thanks to a microphone holder on the tripod, the transmitter unit can easily be carried in one piece to the site.

The user can listen to the current noise through headphones, allowing him not only to assess the volume of the noise, but also filter it. Using the filter it is easy to estimate in which frequency range the noise is loudest.

The devices are marked with a luminous strip making them easy to distinguish and highly visible. LEDs right around the housing ensure safety when performing correlation measurements at night.

The rechargeable batteries provided have such a large capacity that systematic correlation well over a normal working day is no problem.

Once the measurement process is complete, the whole transmitter unit can be transported in the vehicle. Alternatively, the transmitter unit can be dismantled, the tripod folded down and all parts put back in the case.

SeCorr® 300

The radio receiver

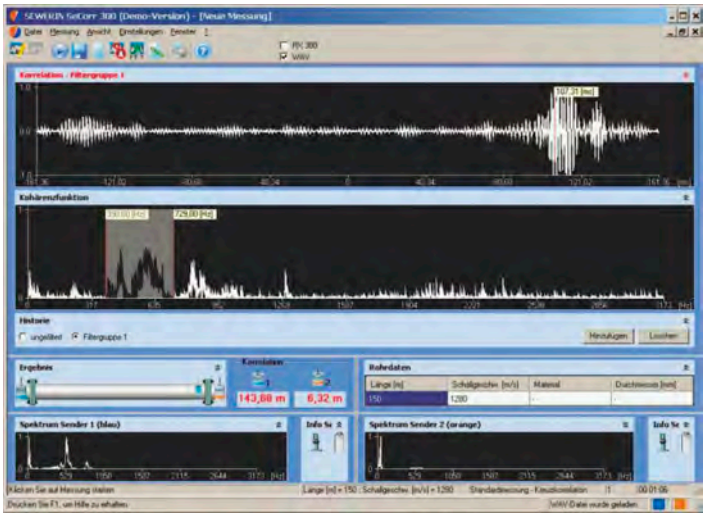
The ***RX 300*** receiver receives signals from the transmitter and relays them to the PC via a USB cable. The cable can be connected to any computer with a USB port.

The ***RX 300*** features a rubberised magnet for use with a measuring vehicle. This holds the receiver on the roof of the vehicle without damaging the paintwork – no need therefore for the time-consuming installation of a roof antenna.

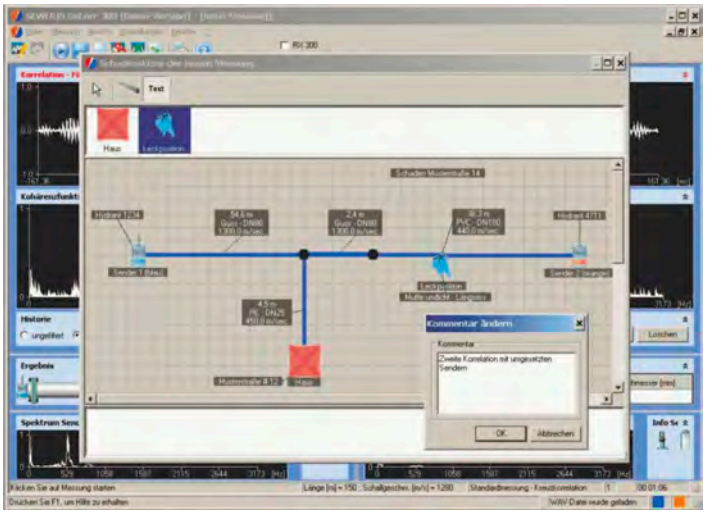
An LED control continually indicates the status of the ***RX 300***.

The software – Overview of basic functions

- Database-based software, no more cumbersome searching through folders for file names, all measurements at a glance
- Can also be run on 64-bit operating systems thanks to .net, future-proof
- Mode of curve of correlatable, synchronous data on a time axis with free selection of correlation section; loud areas and areas with interference can thus be reliably identified and hidden (e.g. times with noises of consumption)
- Original noises can be recorded; there is the option of creating a noise archive for comparison purposes
- Filters of up to 10 bands in up to 5 filter groups; the results of various, arbitrary filter settings can be compared
- Input up to 5 different pipe sections and up to 3 freely definable extra materials; optimal flexibility as opposed to fixed standards for correlation professionals
- Easy drawing of damage sketches to supplement measurement reports; optimal documentation for service companies



Correlation result after filtering



Sample fault sketch

SEWERIN
Technologies for leak detection.

Notebook case

- System case
- Notebook
- Notebook´s accessories
- Compartment to optionally accommodate ***RX 300***

Transport case

- System case
- Tripod
- Chargers
- Microphone ***EM 300***
- Radio transmitter ***RT 300***
- Receiver ***RX 300***

Hydrophone case

- System case
- 2 hydrophones ***HY 300***
- 2 connection cables
- 2 adapters for connecting the hydrophones to DIN underground fire hydrants
- Turning tool

Please contact us for a comprehensive quotation, including additional technical specifications and information on accessories.

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SEWERIN
Technologies for leak detection.

SeCorrPhon AC 06

Combined correlator and electro-acoustic water leak detector

LEAK DETECTION
made in Germany

SeCorrPhon AC 06

Basic principles of acoustic water leak detection

When pressure pipelines leak, water gushes out of the crack into the ground.

The pipe material vibrates at the leakage point. These vibrations are transmitted by the pipe and can even be noticed at distant contact points, for example fittings.

The water jet and the pipe in the vicinity of the leak also cause the ground to vibrate. These vibrations are transmitted through the ground to the earth's surface where they manifest themselves as ground noise.

Why correlation?

Unlike electro-acoustic leak detection in water pipes, correlators work independently of the volume of the leak noises. This means that the intensity of the ambient noise barely affects the measuring procedure.

Successful correlation is therefore even possible during the day on busy roads when electro-acoustic measurement is not an option.

Even factors such as laying depth, surface, type of ground or ambient interference, for example wind or rain, do not affect the accuracy of the measuring result.

Nor do the hearing and experience of the user determine the success of the leak detection operation. The technical possibilities of the user-friendly correlator alone determine the quality of the measuring result.

What is correlation?

Correlation is computer-assisted leak detection in underground pressure line systems. Leak sites emit a noise which is carried along the pipe material. This noise reaches two fittings (valves, hydrants, home shut-off valves etc.) at different times. The time lag depends on the distance of the leak from the two contact points.

Highly sensitive microphones record the incoming noises on the fittings and a radio transmitter transmits these noises to the receiver where the run time difference of the signals is determined.

The exact position of the leak is then calculated from the information about the material, the diameter and the length of the measuring section.

What is electro-acoustic water leak detection?

Firstly, the test rod is used to listen to suspected leak noises on accessible fittings (slide gates, hydrants, home shut-off valves etc.). This prelocation step isolates the area to be examined more closely. The ground microphone is then used to listen to the surface of the section of pipe and determine the exact location of the leak. The human ear still plays an important part in analysing the noise as it can compare and analyse the volume and sound.

Why two processes?

Each process has its limits and weaknesses. Cleverly combining all the advantages maximises the certainty of determining the exact location of the leak.

SEWERIN's *SeCorrPhon AC 06* makes use of both methods at the same time.

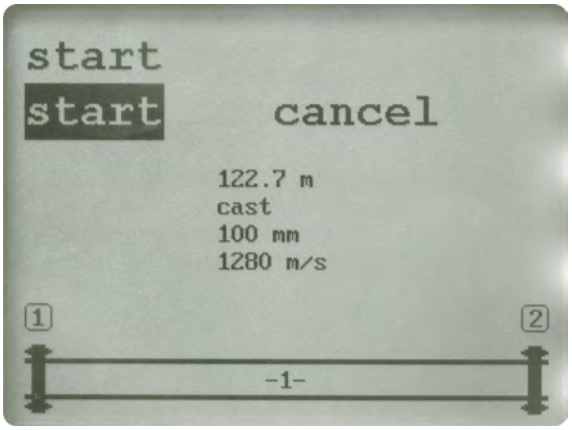
Radio transmitter *RT 06*

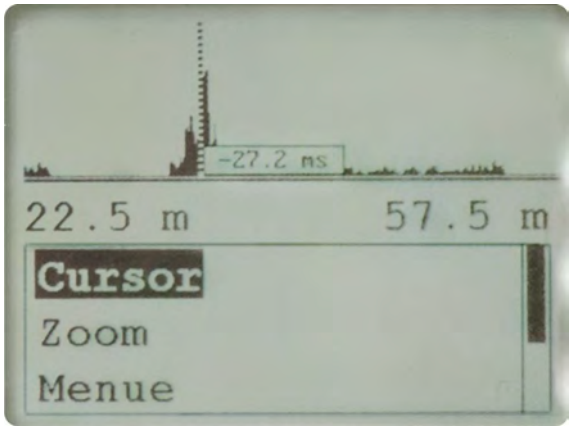
- Quick and easy to use
  - Select measuring point and position of transmitter
  - Switch on RT 06 transmitter by connecting microphone
- High-performance transmission paths with 500 mW transmitting power
- Simple radio operation even if line-of-sight is obstructed
- Frequency filter for effective adjustment for measurements on plastic piping

SeCorrPhon AC 06

SeCorrPhon AC 06 as a correlator

- Lightweight, ergonomic handling
- Easy to use thanks to rotary pulse encoder and film keypad
- Can be switched to single-channel radio if a transmitter fails
- Coherence analysis with frequency recommendation for optimal filter setting – ensures clear illustration of the leak position
- Radio reception over more than 2.000 m per channel
- Measuring assistant for everyday situations
- High-resolution graphic display
- PC communication software for printing out and recording measurements
- High-performance transmission path (500 mW) with optimal selectivity

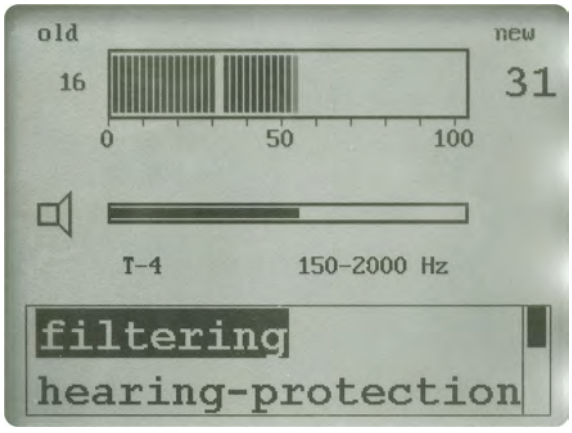




Correlation displays

SeCorrPhon AC 06 as an electro-acoustic water leak detector

- Socket for direct microphone input
- Excellent sound thanks to powerful digital signal processor
- Listening with on-screen support: minimum sound level display, memory function
- Hearing protection function
- Variable filter setting
- Automatic microphone recognition (ground microphones, test rod or handy microphone for buildings)
- Port for PC communication



Electro-acoustic water leak detection

Strategies for reducing water losses with the example of Peru

Water shortage in Peru

At first glance a water shortage in Peru seems absurd: The landscape of this South American country is characterised by wide rivers, lush rain forests, varied vegetation and sizeable glaciers. As we see it, this means: water in abundance.

So what is a company like Sewerin, which is in the business of tracking down leaks in water pipes, doing in Peru?

A scenario from 2084:

You live in a European industrialised country and need water – not a problem as things look today. But by 2084 you might find yourself waiting with your little water canister at the end of a queue by a tanker that supplies your part of town with drinking water. If you arrive too late, you'll go thirsty. Water has meanwhile become so expensive that it has to be rationed within each family: The strongest first, and the weakest last of all? Is something like this imaginable?

A scenario from 2014:

While the big hotel chains in cities like Lima can easily provide their guests with drinking and service water, most people in Peru cannot afford running water. Over 50% of the population is not connected to the public drinking water network, and the water supply, if available, is also subject to time restrictions in many places.

Many people get their water from rivers or irrigation canals. They are putting themselves at risk from serious diseases or even cholera epidemics. They lack a continuous and safe water supply, with the situation being exacerbated by significant water loss due to crumbling pipes and illegal water extraction.

The reduction in such water losses by the water companies is restricted, as is the case in many developing countries, to just minimising the extent of the damage.

A closer look reveals what is going on: Despite adequate natural resources there actually is a **water shortage in Peru**. This has a lasting effect on the social and industrial development of the country. Are there any solutions here?

Upholding its tradition as a company with an awareness of its responsibility, Sewerin develops technologies and strategies aimed at securing for Peru a long-term supply of drinking water.

"The reduction in water losses by the relevant bodies in Peru is currently restricted to just minimising the extent of the damage."

Situation

The high level of drinking water losses in Peru is first and foremost due to leaking pipes and the existence of illegal house service connections. The supply of water is subject to severe restrictions in many parts of the country. Often water is only available for 6 – 12 hours a day. The use of contaminated water from rivers and canals makes people ill.

And the weak water pressure in the largely defective pipes allows dirty water to be drawn back in, so worsening the risk to public health. Leaking pipes and increasing levels of illegal water extraction are a further burden on the already precarious financial situation of the utility companies. There is no money for the necessary investments.

"One of Sewerin's corporate objectives is to come up with long-term solutions that impact over wide areas and can be developed hand in hand with the population with lasting effect."

Training centres

The technical equipment and skills required to locate and repair leaks or track down illegal service connections are mostly completely out of date or lacking altogether. This means that at present damage limitation is the only option. By setting up training centres in 5 of Peru's cities the plan is for selected water supply companies to significantly reduce drinking water losses and bring about lasting improvement with the help of modern technology.

The water companies of the cities Tarapoto and Piura have been chosen for the first phase of training as both sites suffer from above-average losses of water. In Tarapoto leaking pipes deprive suppliers of 40% of water while in Piura they account for a loss of 55% of the drinking water in the network.

"It is through Sewerin's support that the inhabitants notice and appreciate the work of the water supply companies."

Technologies

Sewerin offers the latest technologies for training. Its employees offer instruction on how to use ground microphones like the AQUAPHON® A 100, the SeCorr® 08 correlator for computer-assisted detection of leaks and the FERROTEC®, a magnetometer for locating hidden objects such as valve boxes. The specific problems of each site are taken into consideration here. Details about the scope and content of qualification measures including the local circumstances are worked out jointly with all parties involved. In the long term it is hoped that these bodies will be able to come up with solutions to problems by themselves and act as a training centre for other water supply companies.

Training is however not just limited to technical details, but also teaches the importance of PR work, designed to indicate that the local company is showing initiative and so ensuring a safe and continuous water supply on a long-term basis.

"Thanks to Sewerin's strategies for water leak detection between May 2010 and December 2012 over 900 leaks were pinpointed and repaired in Tarapoto alone."

Successes

These projects have been made possible by a Public Private Partnership (PPP) carried out in cooperation with GIZ, a federal enterprise for international cooperation based in Germany. This will run for a term of 3 years. Its success proves that everyone is on the right track. The companies taking part in the training programmes have been able to reduce the level of water losses by 10% in a very short period of time.

Thanks to sophisticated technology, motivated training partners and expert educational assistance they have taken their first successful steps down the path to their declared goal: To force down the rate of losses to below 20% and to ensure that Peru can exploit and preserve its precious resource of water on a long-term basis.

07/2014

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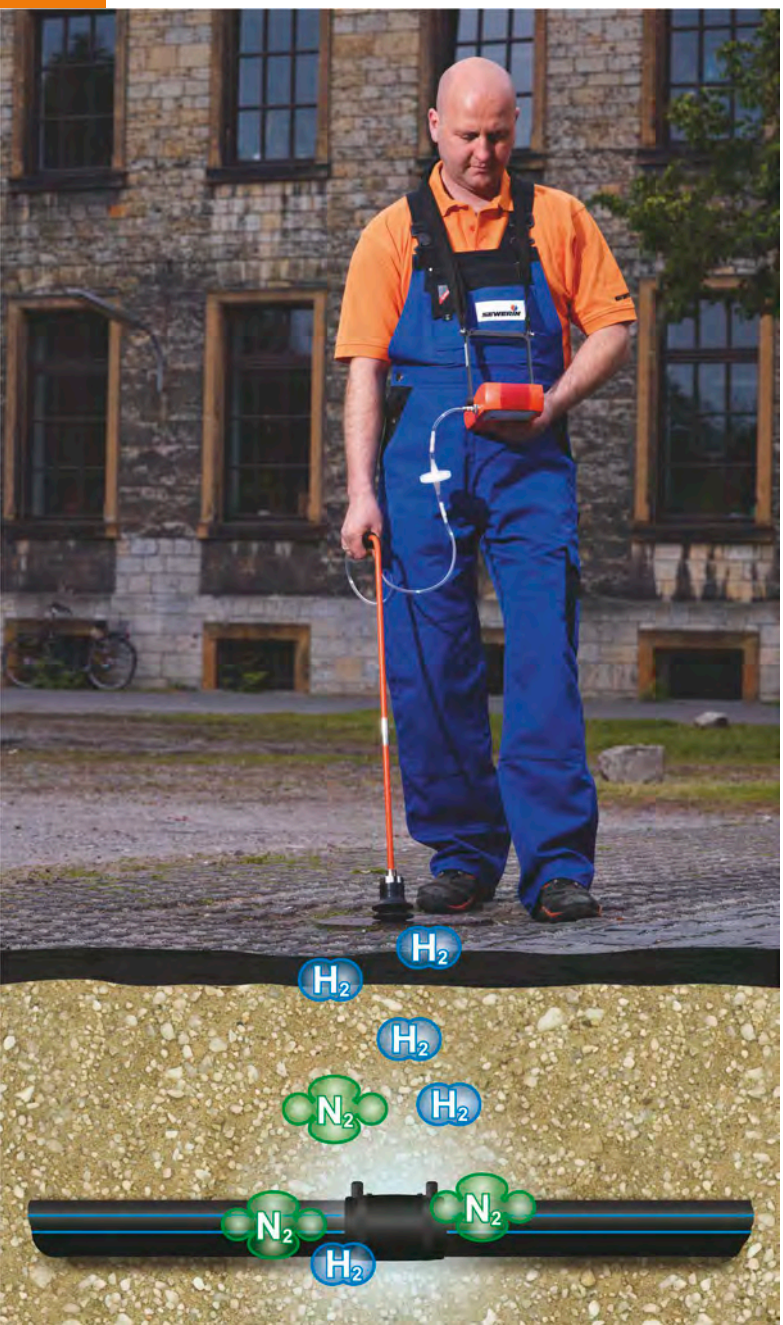
Tracer Gas

SEWERIN
Technologies for leak detection.

VARIOTEC® 460 Tracergas

The specialist for leak detection with tracer gas and hydrogen



VARIOTEC® 460 Tracergas

Rely on precision and safety

The ***VARIOTEC® 460 Tracergas*** was developed especially for leak detection on underground pipes by using tracer gas. It is characterised by an outstanding price to performance ratio.

Precise: The extraordinarily low cross sensitivity of the gas-sensitive semiconductor (SC) with regard to moisture and methane ensures an absolutely sure result and a resolution down to 0.1 ppm H_2.

Functional: Thanks to an innovative operating concept, a large display and simple menu structure, device operators can quickly get reliable results.

Efficient: In combination with the bell probe D80 you can achieve outstanding reaction times.

Flexible: The expanded measuring range of the thermal-conductivity sensor, up to 100 % vol. H_2 easily allows for further measuring tasks.

Integrated: Save your measurements and transmit the results using the USB interface on the computer.

Mobile: The 4 AA-size rechargeable batteries can be charged in just 3 hours and the operating time is at least 8 hours. As an alternative, you can use disposable batteries.

Reliable: Sewerin measuring devices are well known for their quality and durability.

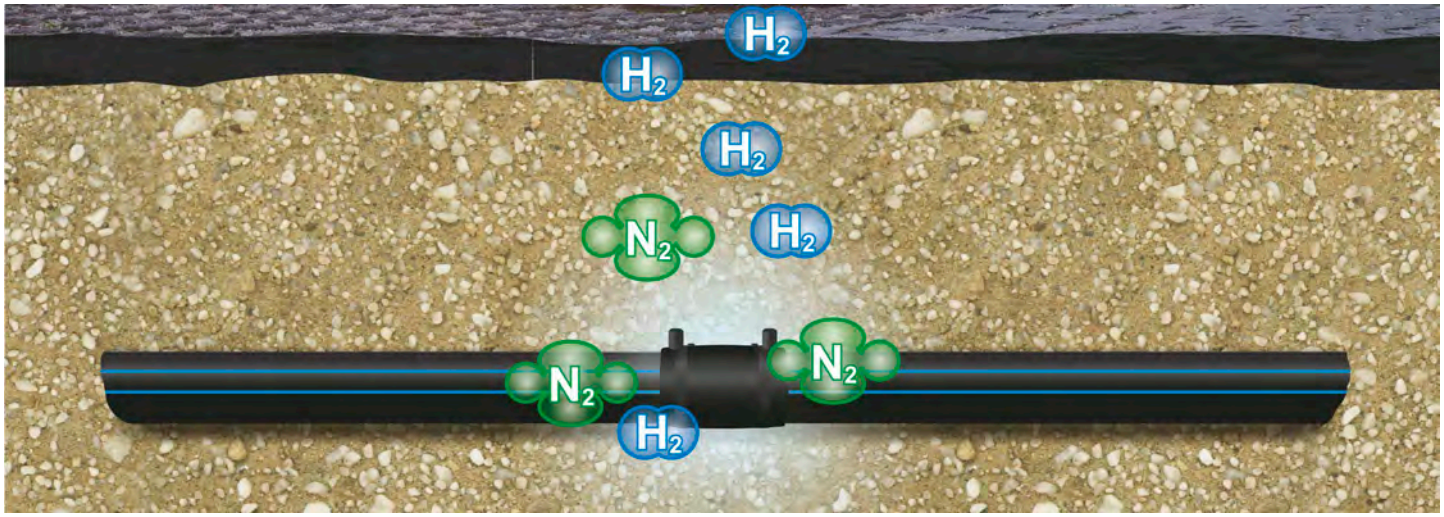
A tried and tested method

Using tracer gas is a tried and tested method of pinpointing leaks. It can be used in gas and water distribution networks, pipelines in buildings, heating systems, pressurised communication cables, gas-filled high voltage power lines and landfill sites sealed with double membrane layers. It can also be used to test for leaks in industrial products such as pipes, pumps, engine blocks and airfoils.

Detecting gas leaks by tracer gas involves feeding a mixture of 95% nitrogen (carrier gas) and 5% hydrogen into the pipelines or other equipment/products being tested. The hydrogen escapes through the leak and is detected by the highly sensitive, specialised sensor.

The low amount of hydrogen (just 5%) means that this method is safe: the gas is incombustible as per ISO 10156 thanks to the use of nitrogen as the carrier gas. It is non-toxic, and therefore also permitted for use in drinking water networks, as well as non-corrosive.

Tracer gas is cheap and easy to obtain from technical gas or welding gas dealers. It is also environmentally-neutral and permeates all cover layers such as asphalt, concrete and other seal coats. Tracer gas always looks for the shortest route from the leak to the surface.



VARIOTEC® 460 Tracergas

Inspection above ground

With the ***VARIOTEC® 460 Tracergas*** and a bell or carpet probe you can measure the smallest concentrations of gas above a gas pipe laid in the ground, so you can reliably determine the discharge location above a leak on gas or water pipe lines.

Inspections in houses

Detect the smallest traces of gas in buildings and pinpoint the source of the gas, e.g. for leaks in internal, covered pipe systems.

Measuring in bar holes

In combination with a localisation probe you can measure the gas concentration in the ground. In this way, you can exactly pinpoint the suspected leak site.

Gas measurement

Ensure that the lines are either completely filled with or completely emptied of gas when commissioning or decommissioning hydrogen pipelines.

SEWERIN
Technologies for leak detection.

Applications

Application	Measuring range (H_2)	Sensors
Inspection above ground	0.0 ppm – 5 % vol.	Gas-sensitive semiconductor Thermal conductivity sensor
Measuring in bar holes	0.0 % vol. – 100 % vol.	Thermal conductivity sensor
House	0.0 ppm – 5 % vol.	Gas-sensitive semiconductor Thermal conductivity sensor
Gas measuring	0.0 % vol. – 100 % vol.	Thermal conductivity sensor

Technical data

Dimensions (W × D × H):	approx. 148 × 57 × 205 mm
Weight:	approx. 1000 g
Protection rating:	IP54
Certificate:	TÜV 07 ATEX 553353 X II2G Ex d e ib IIB T4 Gb Basic device without leather bag for: CH_4, C_3H_8, C_4H_{10}, tracer gas with max. 5 % H_2 in N_2 II2G Ex d e ib IIC T4 Gb Basic device with leather bag for: CH_4, C_3H_8, C_4H_{10}, tracer gas, H_2
Charging voltage:	12 V DC (max. 1 A)
Operating temperature:	-20 °C – +40 °C
Storage temperature:	-25 °C – +60 °C
Atmospheric pressure:	800 – 1100 hPa
Humidity:	5 – 90 % r.h., non-condensing
Interface:	USB
Memory:	8 MB
Display:	320 × 240 pixels

Accessories that add value

- Bell probe D80, carpet probe, localisation probe
- Carrying case
- Test gas generator PGG H_2 for producing small amounts of hydrogen for function control of the “Inspection above-ground” and “House” application ranges.

Please contact us for a comprehensive quotation, including additional technical specifications and information on accessories.

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SEWERIN
Technologies for leak detection.

SNOOPER mini

Versatile gas leak detector
for easy and efficent operation

LEAK DETECTION
made in Germany

Device functionality

SEWERIN's ***SNOOPER mini*** is a sturdy gas leak detector for inspecting accessible gas lines. Overall, gas leak detectors have a decisive advantage over the leak detection sprays that are still commonly used, in that they not only indicate the presence of a leak, but also the concentration at the leak site.

Furthermore, when inspecting older internal home installations, using a gas leak detector is more effective: with leak detection spray there is a risk that the leak site may be accidentally sealed when the hemp sealant becomes wet and thus missed. The damaged spot reli-ably detected using a gas leak detector is permanently eliminated following repair.

The ***SNOOPER mini*** is available with sensors for methane and propane and the ***SNOOPER mini H_2*** model also features a hydrogen sensor, which increases the versatility of the ***SNOOPER mini***.

The ***SNOOPER mini*** can easily detect leaks in water pipes and can be used to test for leaks in pipes, valves and other industrial products with the tracer gas technique.

The increased use of LPG/natural gas vehicles means that obstructed gas lines need to be inspected for leaks, both when being initially fitted and during ongoing technical maintenance. Once again here the ***SNOOPER mini*** is the versatile device for professionals.

The following models are available:

SNOOPER mini with methane, propane or hydrogen sensor: flexible swan neck (length 22 cm)

SNOOPER mini hand probe with methane sensor: hand probe (spiral cord, handle, flexible swan neck).

Features:

- Replaceable sensor filter
- Very fast start-up time
- Audible signal: concentration-dependent and deactivation option
- Illuminated liquid crystal display
- Low interference from other gases and moisture
- Sturdy housing

Measuring ranges / sensors

Indication of measured values in	Limits		Resolution
ppm	0 – 100 ppm		5 ppm
ppm	> 100 – 2,000 ppm		50 ppm
Percent by volume (1 Vol.-% ≙ 10,000 ppm)	CH_4, C_3H_8:	0.2 – 2.2 Vol.-%	0.2 Vol.-%
	H_2:	0.2 – 1.0 Vol.-%	

Components

- ***SNOOPER mini***
- Carrying case
- Charging equipment
- Test sets
- Test gases

Please contact us for a comprehensive quotation, including additional technical specifications and information on accessories.

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Noise Loggers

SEWERIN
Technologies for leak detection.

SePem®

Noise loggers for monitoring
water pipe networks
sturdy – convenient – reliable

LEAK DETECTION
made in Germany

SePem® – sturdy – convenient – reliable

Detect water losses early

Leaks in water pipe networks can result in significant water losses. Thanks to systematic monitoring of the network with ***SePem***® data loggers, you can reliably identify existing leaks and catch new ones early on – much faster than with conventional methods.

Systematic leak detection

The ***SePem***® system comprises the ***SePem® 01 Master*** receiver as well as any number of data loggers; the ***SePem® 100s*** are preferable for mobile use whereas the ***SePem® 150s*** are designed for permanent use. They are magnetically attached to valve rod extensions, or to hydrants or other fittings in the pipe network. The microphone integrated in the logger converts the structure-borne noise in the line to a sound signal. This is cyclically recorded during times of low consumption – usually during the night between approx. 2:00 am and 4:00 am, when there is very little sound interference in the surrounding area, if any. On a leak-free line the noise level measured during this time is virtually zero. If there is a leak in the pipeline, the noise logger will measure values much different to zero, thus indicating a leak.

SePem® 100:
data loggers for mobile use

The ***SePem® 100*** data loggers with integrated aerial are perfect for mobile use in the water pipe network. They are placed on fittings at measuring points in a specified section of network and record the level for a programmable period of time during the night – usually half an hour. The loggers are collected in the next day. The measurement data is transmitted to the ***SePem® 01 Master*** by radio. Noticeably high measurement values indicating a leak are immediately flagged up by an audible signal. This is a reliable way of detecting existing leaks. The data loggers are then successively inserted in other sections of the network until the whole network has been checked.

SePem® 150:
safety through permanent monitoring

The ***SePem® 150*** data loggers are designed for the stationary monitoring of water supply networks. They have an external aerial and are permanently fixed to fittings. The ***SePem® 150s*** record the minimum level every night for a programmable period of time, for example half an hour. The locations are periodically patrolled, for instance daily or weekly, when the noise loggers send their data telegrams to the ***SePem® 01 Master***. Unlike the mobile application, there is no comparison of the absolute levels of two measuring points, but rather a relative change in the level at a measuring point means that a new leak can be very quickly identified.

Sturdy technology you can rely on

- The data loggers feature the high protection class IP68. The housing is made of stainless steel and a special, tried and tested plastic, which is also used, for example, in the housing of pumps used in sewage treatment. This makes the ***SePem® 100*** and ***SePem® 150*** totally waterproof and dustproof, resistant to all corrosion and other stresses and suitable for use in all environments.
- With a battery life of many years, the ***SePem® 100s*** and ***SePem® 150s*** are operational for a long time and are equipped for any task.

Reliable and efficient

- The ***SePem® 100*** and ***SePem® 150*** data loggers feature highly sensitive Piezo microphones, which are specially optimised for leak detection and can pick up noises over very large distances.
- The data can be read out easily by bidirectional radio. In the case of the permanently installed ***SePem® 150*** loggers, you do not need to open the covers; simply drive by with the ***SePem® 01 Master*** to record the data.
- As well as the minimum level, the transmitted telegram contains the width and frequency of the noise and is clearly displayed on the ***SePem® 01 Master*** screen. There are additional options for verifying the measurement results, for example by precluding sound interference such as rain, traffic, power lines etc.
- During the patrol, a full data set containing the plot of the last measurement can also be retrieved at the touch of a button from every ***SePem® 150*** logger in addition to the data telegram. Again, it is not necessary to open the manhole cover to obtain all of this data. A brief pause within the radio range of the ***SePem® 150*** is sufficient.

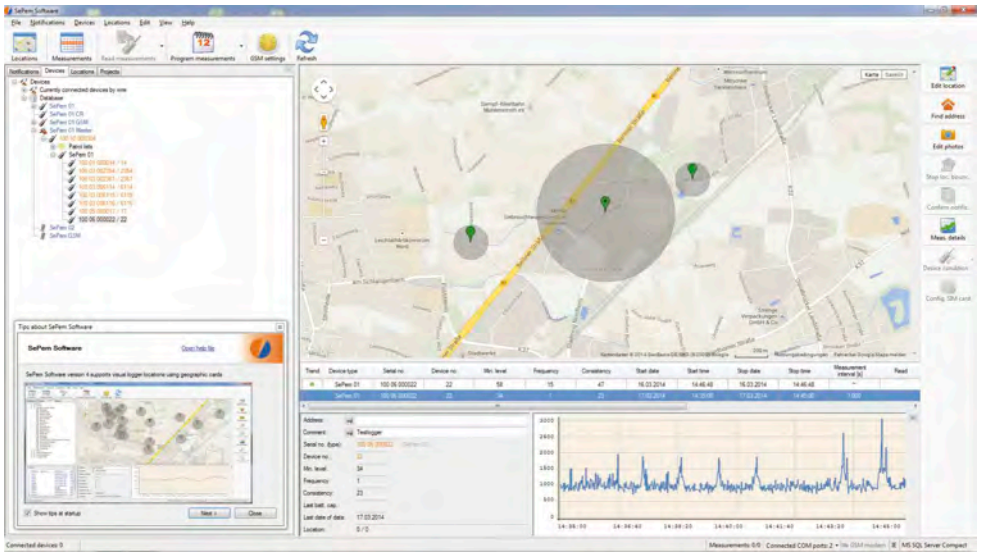
Convenient to use

- The online measurement function allows you to take current measurements on site which can be displayed on the ***SePem® 01 Master***. For example, this means that you can check the suitability of measuring points during the day at the time of installation before the actual measurement at night or determine appropriate installation intervals. Or you can verify the plausibility of measurement data collected overnight directly on site.
- The measuring times and periods of radio activity are freely programmable.
- The ***SePem® 01 Master***, with its simple and intuitive menu navigation, provides fast and reliable results and can also be reliably operated by less experienced users.

SePem® software for easy evaluation

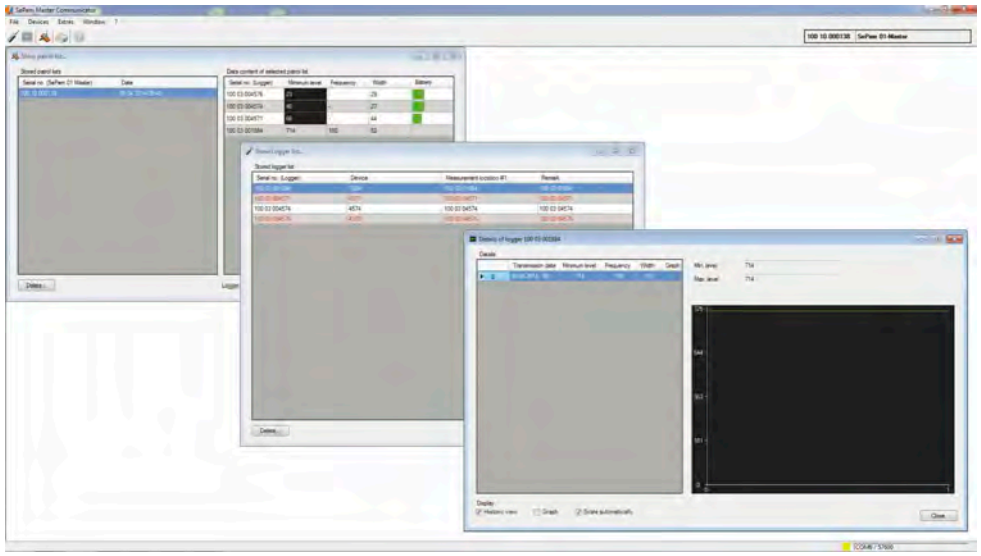
The ***SePem® software*** is a convenient tool for evaluating data. The data from the ***SePem®*** noise loggers is transmitted from the ***SePem® 01 Master*** to PC by USB. The loggers can then be dragged & dropped into position on a map if the PC is connected to the internet. All the measurements recorded are then assigned to this measuring point.

There are many functions available to professionally display the requirements both at mobile and stationary applications. In the absence of an internet connection, the measurement data is displayed in the usual way in a table in the Explorer view.



SePem® Master Communicator for data backup and visualisation

The ***SePem® Master Communicator*** software is freeware, which allows you to display the data managed on the ***SePem® 01 Master*** directly on a PC. The patrol lists are transmitted directly after connection and saved in a database. In logger lists you can directly access and easily manage measurements from the individual ***SePem®*** noise loggers.



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SEWERIN
Technologies for leak detection.

SePem® 01 GSM

Highly-sensitive noise logger
for the stationary monitoring of
water supply networks and **GSM** module
for data transmission

LEAK DETECTION
made in Germany

The advantages

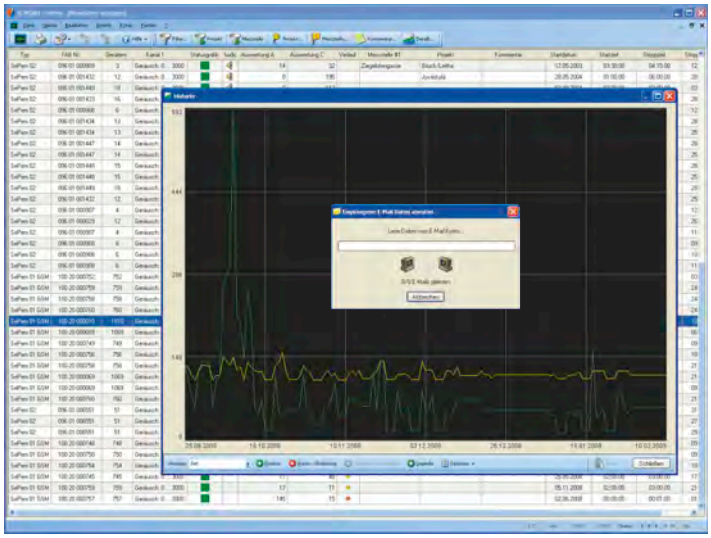
- Leaks are detected very soon after they occur – saves costs by reducing the duration of leaks
- No extra time involved in patrolling the measurement locations
- Flexible programming of measurements and data transmission – can be optimally adapted to local conditions and different types of network
- Minimal maintenance required for loggers

The ***SePem® 01 GSM*** logger is specially designed for installation in valves and fire hydrants with its compact shape.

Hydrants can be used as stationary measuring points, however, thanks to the compact height of the ***SePem® 01 GSM*** when fitted horizontally, it can also be installed in valves.

The logger records noise over a user-defined measurement time. The measurement results are either sent directly by text message to a PC or by text message as an email. The data can then be downloaded via an email gateway at the user's office using the ***SePem®*** software.

A touch of the button is all it takes – no more time-consuming patrols of measuring points.



Download measurement data at the touch of a button

The software

The ***SePem®*** software can be used to manage both the ***SePem® 01 GSM*** loggers as well as the established ***SePem® 02*** models. It offers the user extensive functions for carrying out diverse measuring tasks professionally. All the main functions are easily accessible.

Please contact us for a comprehensive quotation, including additional technical specifications and information on accessories.

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RLWA-BI 010302015 GB

Flow Analysis

SEWERIN
Technologies for leak detection.

Mini-ZA

Mobile measuring system for quantifying water losses and water used for firefighting

LEAK DETECTION
made in Germany

The ***Mini-ZA*** is a compact and portable measuring system for determining water loss by way of flow analysis. It also offers an easy way of measuring the amount of firefighting water used at hydrants. The main components of the measuring system are an MIF (magnetic inductive flowmeter) and a pressure sensor. All parts are integrated in a sturdy outdoor case. Thanks to the state-of-the-art MIF technology, flow-calming sections are a thing of the past, and the size of the ***Mini-ZA*** has been significantly reduced.

The measurement results are recorded using software which offers a wide range of options for precise documentation.

The ***Mini-ZA*** can be powered either by an energy station or via a vehicle socket.

The ***Mini-ZA*** fulfils all the requirements of professionals using measuring systems in the field: the system is robust, compact and is quick to use on site.

Reducing water losses

Flow analyses are an integral part of maintenance strategies and provide important information for assessing the state of the network. Flow analysis can be used to establish the leak tightness of sections of the pipe network and quantify how much water is being lost.

For example, flow analysis can be used to quickly and precisely determine the overnight minimum consumption of a measuring area. The consumption value measured serves as a basis for subsequent monitoring activities. The calculated values are used to examine and assess the leak tightness of the section of pipe network. Information about possible water loss can help systematically locate the area of the leak, which can then be pinpointed exactly, for example, using correlators or electroacoustic leak detectors.

Ensuring a water supply for firefighting

Water is often taken from the public drinking water network via hydrants for firefighting. Faulty hydrants can impede firefighting efforts and thus pose a risk to life and property. Guaranteeing fire control is essential for the safety of the community. There is, therefore, a legal requirement to regularly check that hydrants are in good working order and to verify how much water is used for firefighting. The ***Mini-ZA*** offers a fast and reliable means of doing this.

Features

- Non-material-specific procedure – suitable for all pipe systems
- High precision measuring technology – precise analysis of even the tiniest leaks
- Compact design – quick and versatile
- Available in three sizes – for flow rates up to 200 m³/h

Pack contents

- ***Mini-ZA*** (DN 25, DN 50, DN 80)
- Intermediate unit VOE ZA
- ZA software

Optional accessories

- Energy station 12 V
- Car adapter 12 V

Please contact us for a comprehensive quotation, including additional technical specifications and information on accessories.

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RLWA-BI 01032013 GB

Product information

SeFlow 400

*Portable ultrasonic flowmeter **SeFlow 400***

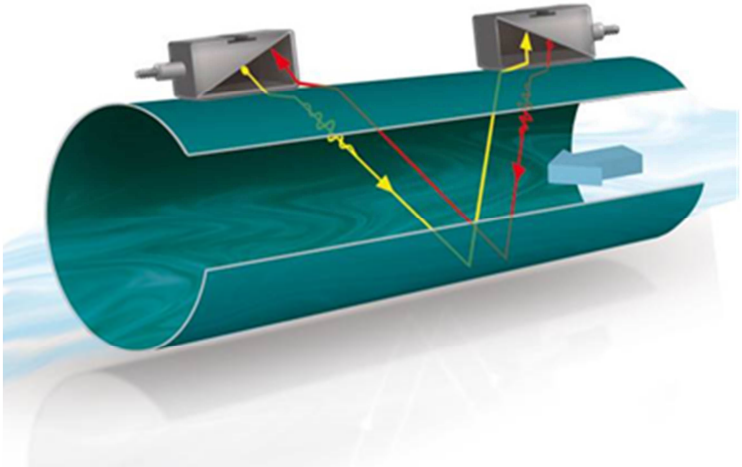
The ***SeFlow 400*** is Sewerin's newest single channel portable flowmeter for measuring flow in municipal & industrial water and wastewater networks.
The ***SeFlow 400*** offers long term stable and precise bidirectional flow measurements in remote areas.
Thanks to its matched transducer pairs, sophisticated internal signal processing and highly stable zero point the ***SeFlow 400*** can identify even the lowest flow rates, making it **the ideal measurement tool for all leak detection, service and maintenance activities**, for long and short term monitoring, data logging and meter verification.

Measurement is made from the outside of the pipe without any need for contact with the water column; there is **no need to cut into the piping system or to interrupt the water supply.**

Principle of operation

Two ultrasonic probes are placed on the surface of the pipe.
The distance between the sensors is determined by the electronics as a function of the input data (diameter, thickness, pipe material, fluid to be measured).

For flow measurement, one ultrasonic pulse is emitted in the direction of flow and another in the opposite direction. The sensors are used alternately as transmitter and receiver.
The transit time of the signals transmitted in the direction of flow is shorter than that of the signals transmitted in the opposite direction. The difference, (Δt) of the transit times is measured which provides the velocity of the flow. Knowing the pipe section, the raw flow can then automatically calculated.



Applications

- Measurement of consumption profiles on drinking water distribution networks
- Water loss balancing / **Leak detection** / measurement of night flows
- Verifying meters accuracy
- Monitoring during pumping tests or when carrying out step tests

Advantages

- Non-invasive flow measurement - No process shut downs or supply interruption.
- High precision bidirectional measurements with very high dynamic range (from 0.01 to 25 m/s)
    - Accuracy of 1.2 % of reading ± 0.01 m/s for water.
- Measurement ready in less than 5 minutes (stainless steel fastening system ”Fit & Forget”
- Rugged water-tight transducers (IP68) and central processing unit IP67
- Ultra-powerful and paired transducers: makes measurements possible in difficult conditions where other flow meters can fail
- No drift over time, no recalibration required
- User-friendly menu navigation - specifically adapted to the needs of the water industry
- For nominal diameters of 40 to 4,700 mm
- Independent of pipe material and manufactured quality
- Digital signal processor (DSP) and signal processing ensure stable and reliable results even under difficult measurement conditions
- High measuring accuracy, even at low flow velocities
- The ***SeFlow 400*** data logs readings. The measurement data can be transmitted to a PC via the serial interface with dedicated software.
- Powered by internal rechargeable battery; 30 hours.
- Long term measuring up to one week possible with optional additional battery
- Easily transportable, all components supplied in a backpack.

3 sets available:

Measuring Set	For Pipes with a Nominal Diameter (mm) of	Transducer Frequency (MHz)
SeFlow 400 – A	40 – 1,100	2.0
SeFlow 400 – B	100 – 2,300	1.0
SeFlow 400 – C	200 – 4,700	0.5

Scope of delivery:

- The flowmeter in IP67 case
    - Integrated Lithium ion battery with charger
- A data transfer kit and software
- A pair of IP68 flow transducers with a tube of coupling gel
- 2x 2 meters chains & 2x 5 meters straps
- Backpack and measuring tape
- User manual in English

EURO-INDEX
Service

Onderhoud en kalibratie van meetinstrumenten

De Nederlandse vestiging van EURO-INDEX beschikt over een bijzonder modern service- en kalibratie-laboratorium. Hier worden de meetinstrumenten uit het assortiment preventief onderhouden, gerepareerd, gekalibreerd en indien nodig gejusteerd. Het service- en kalibratielaboratorium van EURO-INDEX is verdeeld in verschillende disciplines, gebaseerd op het soort meetinstrument en de gemeten grootheden.

- Druk
- Gasanalyse
- Temperatuur (inclusief infrarood temperatuurmeting en thermografie)
- Elektrische grootheden
- Gasdetectie
- Luchtsnelheid en luchthoeveelheid

Waarom een kalibratiecertificaat?

Een kalibratiecertificaat vermeldt hoeveel een meetinstrument afwijkt ten opzichte van onze, naar (inter)nationale standaarden herleidbare, kalibratiemiddelen. Bij de meetresultaten op het certificaat wordt tevens vermeld of het meetinstrument voldoet aan de specificaties die door de fabrikant zijn opgegeven.

Zonder kalibratiecertificaat kunt u er vanuit gaan dat de meter voldoet aan de fabrieksspecificaties, maar aantonen kunt u dit niet. Een testcertificaat van de fabrikant is te beknopt om de lineairiteit aan te tonen en is niet geregistreerd op naam (wat wel degelijk een vereiste is).

KWS®

KWS® is een uniek servicesysteem voor uw meetinstrumenten met periodiek onderhoud en kalibratie. Veel zaken worden voor u geregeld, zodat u zonder zorgen gebruik kunt maken van uw meetinstrumenten.

- De prijs staat vast voor de levensduur van het instrument (mits de KWS® behandeling volgens herkalibratieadvies periodiek wordt uitgevoerd in het EURO-INDEX kalibratielaboratorium)
- Geen arbeidsloon bij de KWS® behandeling
- Kalibratie voor justage (voorkalibratie) indien mogelijk
- Indien nodig justage en (na)kalibratie
- Reparatie en preventief onderhoud
- Gratis oproep met het advies voor herkalibratie
- Controle op functionaliteit van het instrument
- Vijf jaar historie voor alle gegevens
- 10% korting op onderdelen
- Serienummerregistratie
- Franco retourlevering

RvA accreditatie

Het kalibratielaboratorium van EURO-INDEX beschikt sinds 21 augustus 1997 over een RvA accreditatie naar NEN-EN-ISO/IEC 17025. Deze accreditatie geldt voor verschillende grootheden, zoals gespecificeerd in de scope bij accreditatienummer K105 op www.rva.nl. Test- en meetinstrumenten voor grootheden die deel uitmaken van de gespecificeerde scope, kunnen worden voorzien van een RvA kalibratiecertificaat. De metingen worden uitgevoerd met standaarden waarvan de herleidbaarheid naar (inter)nationale standaarden, ten overstaan van de Raad voor Accreditatie, is aangetoond.

In het Multilateral Agreement zijn de meeste Europese landen overeengekomen elkaars accreditaties te accepteren. Hierdoor is een RvA kalibratiecertificaat internationaal geaccepteerd. Bovendien wordt op een RvA kalibratiecertificaat de meetonzekerheid van de gerapporteerde meetresultaten vermeld.

Verhuur van meetinstrumenten

EURO-INDEX biedt een assortiment meetinstrumenten te huur aan. Na deskundig advies van onze productspecialisten, wordt bepaald welk instrument u nodig heeft voor uw specifieke werkzaamheden. De instrumenten worden compleet met accessoires geleverd, inclusief herleidbaar kalibratiecertificaat.

Wijzigingen voorbehouden EURO-INDEX® VL 15001

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