

Protect resources,
ensure the added value,
reliability of supply



Intelligent systems for
monitoring and locating leaks
in water pipe networks

sebaKMT

Know how to do it. And what happens next.

SebaKMT's leak detection concept

It is hard to collect spilt water!

– Chinese saying –



The reliable supply of water has a special significance from many points of view, for clean water is not just a valuable economic commodity, it is the most important foodstuff in the world.

Despite resources becoming scarcer, the global demand for water is growing. This means that a more efficient distribution is necessary.

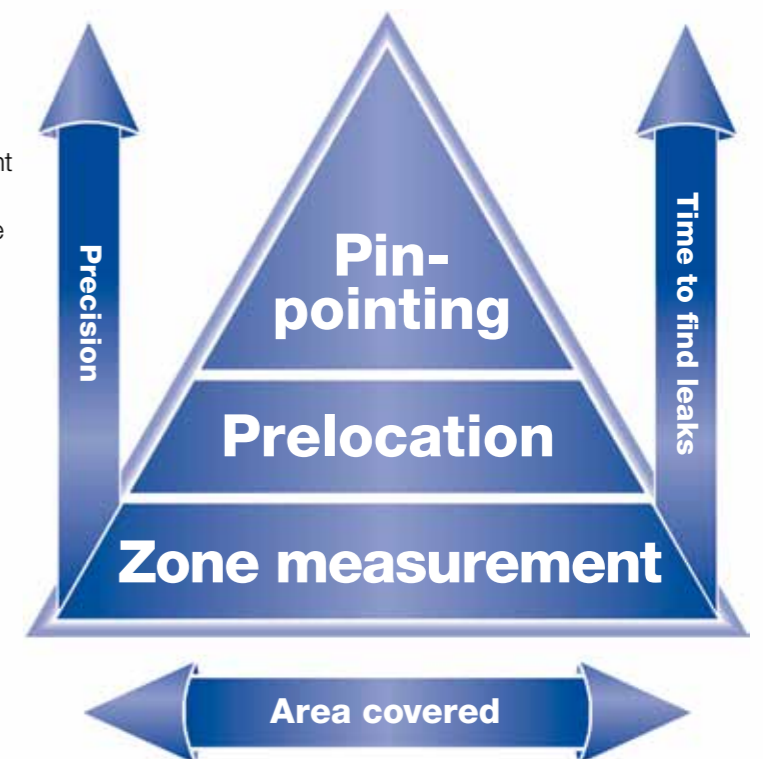
Ensuring that consumers are supplied with clean, healthy water is the main focus of our customers. The quality of the network infrastructure plays an essential role in this. Apart from the financial loss, damage to pipe networks can lead to significant consequential damage as well as introducing impurities into the drinking water.

With SebaKMT's leak detection products you have a complete system for reliable location and thus for efficient repairs.

Straight to the leak.

To be able to make best use of leak detection technology, you need precise information about the pipe network and its components.

- ▶ Division of the pipe network into defined zones
- ▶ Hydraulic pipe network calculations
- ▶ Definition of flow measurement points and dimensioning of the measurement equipment
- ▶ The use of data loggers with optional remote transmission technology for quick access to the data
- ▶ Identification of the zones with the largest water losses
- ▶ The use of prelocation technology in the identified problem zones
- ▶ Location and repair of the leaks
(Possible repeat of the measures)



Zone measurement: the big picture is made up of small parts



Zone measurement

To enable the monitoring of water supply networks, these are divided into defined zones (as internationally specified). This makes it possible to get quick and reliable information about the state of each zone – and in total – to get a clear picture about the entire network. The flows per zone are measured with permanently installed or with mobile flow measurement equipment.

To record the information, these are connected with SebaKMT's robust and long-life data loggers. The data is then simply transmitted, automatically via

GSM/GPRS or by radio to the computer for evaluation.



Sebalog D



UDM 200



Inclusion of the log data in geographic information systems (GIS)



Interior of test van

SebaKMT's product range

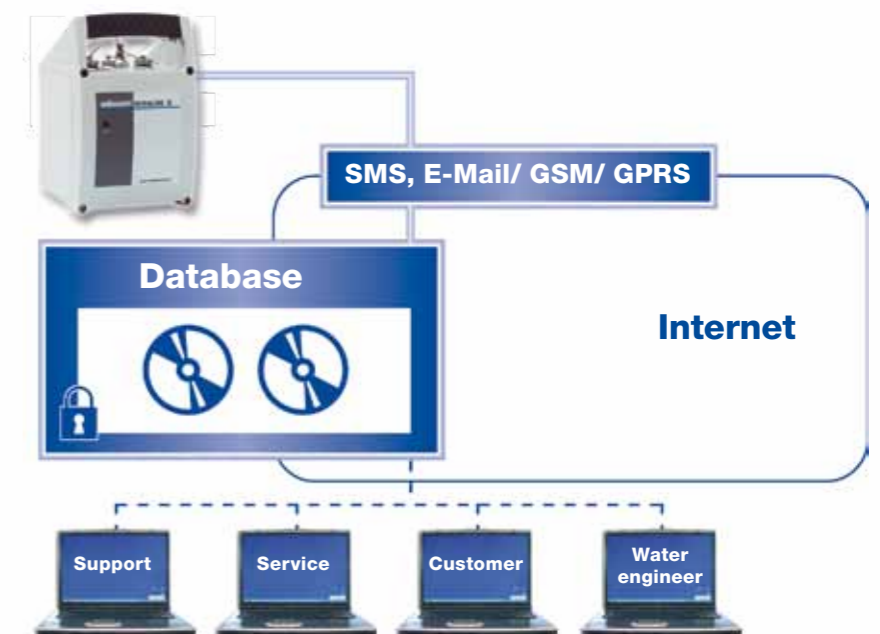
For stationary measurements in zones, we offer both battery and mains-operated data loggers with integrated GPRS, GSM or SMS data transmission, such as in the Sebalog. For the documentation and analysis of data, with SebaKMT you have the choice between PC and web software as a complete package or as an online application.

SebaKMT thus offers integration of your data from single user solutions for a water engineer, right up to Internet-based multi-user concepts for data acquisition and evaluation. Your network is always in sight ...

For temporary measurements in small pipe sections or in areas where a permanent installation is not possible, or uneconomic, SebaKMT's mobile solutions are the best. Mobile ultrasonic test equipment which is robust and easy to use, supplies precise data on flow-rates, without interrupting normal

operation and without introducing sensors into the water.

A mobile flow-rate measurement system on the basis of magnetic-inductive flow-meters can be flexibly and practically integrated into your SebaKMT test van.



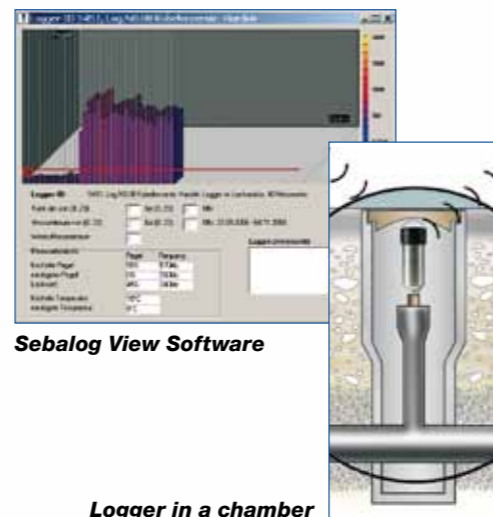
Prelocation: the first step in the direction of the leak

Efficiently repairing leaks starts with the prelocation

The prelocation or circling of the water leak is done by listening to directly accessible contact points, such as hydrants or valves. Prelocating leaks work on the principle of “the louder, the closer” and “the quieter, the further away”. After the zone measurements, with prelocation the possible location of the leak is narrowed down. This enables the leak detection specialists to be used more effectively. Prelocation is done with the assistance of electronic listening equipment e.g. on house connections or with noise loggers. The use of noise loggers is particularly easy and efficient.

The sound and frequency levels are picked up and stored by the loggers at regular intervals, usually during the night. After wirelessly reading out the data, using the Commander, the evaluation is done on the spot on the Commander's display or on a PC in the office with the offline software version. The radio-equipped SebaKMT noise loggers can analyse the sound and frequency with a unique precision. They enable the data collected to be processed for practical use and are designed for permanent operation with all components being very robust.

The Sebalog N noise level logger is also ideally suited for use on plastic pipes. It is doubly reliable, as it uses both the noise level and the frequency for the evaluation.



Sebalog View Software

Logger in a chamber

Strong arguments for permanent monitoring

As SebaKMT loggers support bidirectional communication, they can also accept commands from the central office or from the Commander by radio. This guarantees efficient use of the logger when in permanent operation. The availability of relevant data is a decisive factor for success in the future. The data from the loggers is transmitted via mobile communications directly to the water engineer's PC, to a central data-base, to a company server or to an Internet server. The Internet connection makes access possible from anywhere around the world. By integrating the results of the prelocation into the PC software or into a GIS system, a very clear early-warning system for your pipe

network results. The data measured can be evaluated at your desk and can be controlled by events.



Hydrolux HL 5



Sebalog N



Commander



Pinpointing: aiming for the leak

Three ways to achieve your goal

To locate a leak to the nearest centimetre, SebaKMT offers three quite different technologies. The aim of all of the SebaKMT solutions in this area is to avoid large excavations and the associated effort and to reduce the work to exactly the area where the leak is located.



HL 10

Pinpointing with ground microphones

By listening to the pipe area identified by prelocation with an electroacoustic listening device, it is possible to find the leak location via the maximum noise level.

The results from the piezo-electric microphones of the Hydrolux series that SebaKMT uses are so precise that, together with the audiovisual confirmation of the leak, the leak location can be identified without doubt. Outstanding characteristics make ground microphones your first choice:



Hydrolux HL 5000

The DSA technology (Double Segment Analysis) developed by SebaKMT enables leak locations to be seen and heard, the noise logger functions confirm the location and the integrated line location mode simplifies the location of non-metallic lines with the help of a RSP 3.

Pinpointing with correlators

Using the correlation process, leaks can also be very precisely located, if loud acoustic interference is a problem, or if the inaccessibility of the pipe network makes location via ground noise impossible. Correlation is currently the most objective leak location process. To do this, two sensors are placed on the pipe or on a suitable contact point and the measurement results are evaluated in a central computing unit. Naturally the pipes remain in normal operation with this measurement process too.

Pinpointing with trace gas

To locate a leak using trace gas technology, first of all a non-flammable and non-toxic mixture of hydrogen and nitrogen is introduced into the affected section of pipe. The gas escaping from the leak rises to the surface and is then precisely located with gas detector.

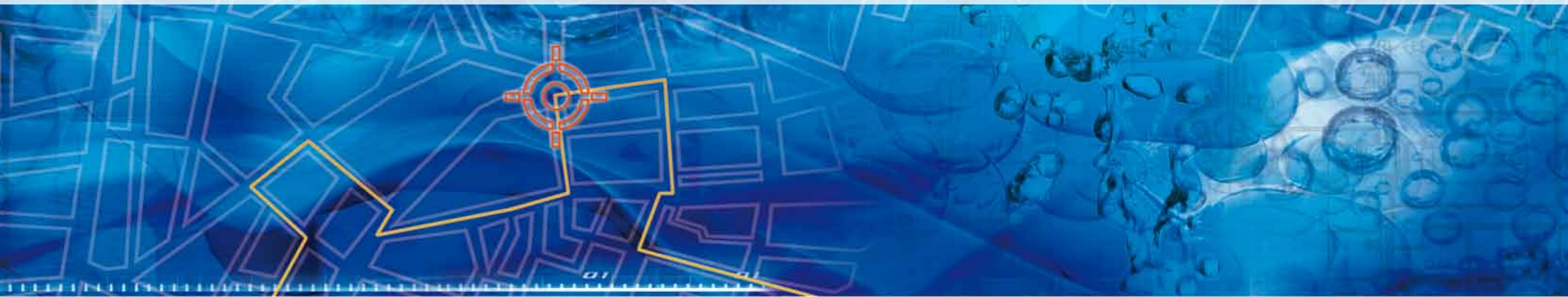


Correlux P-1



Correlux P-200

Locating pipes and objects – precise for all materials



If you are looking for a leak,
you have to know where the pipes are

Location of metallic pipes

The position and course of metallic pipes can be simply, quickly and reliably located using electromagnetic fields. These are received and located by a hand-held device. In this way, both naturally present fields can be measured as well as those which are induced with special frequency generators. The complete course of pipes can be exactly traced and precise depth measurements can be made.

Location of non-metallic pipes

There are two processes available for the location of non-metallic pipes, depending on the requirements. With the acoustic method, portable equipment produces a sound signal which can be detected and followed by ground microphones. Alternatively, equipment can be used which issues sound pulses into the column of water. Non-metallic pipes can also be located with electromagnetic fields.

To do this, conducting systems such as fibreglass stiffened cables or pigs can be introduced into the pipes and then located.



GOK 50



RSP 3

CCTV inspection systems

The use of sewer pipeline cameras is becoming increasingly important for the protection of our water resources. The vCam belongs to the new generation of sewer pipeline camera inspection systems by Vivax. The vCam models were developed in cooperation with our customers, who use these products every day.



vCam

Location of objects such as valve rods and caps

If hydrants, valves and other metallic objects can no longer be found, special location equipment for valve rods and caps are used. The metallic objects hidden in the soil are found easily and reliably.



vLocPro

Ferromagnetic location equipment presents the most reliable location method, as non-ferrous metal is not detected.



Easyloc



Reliable:

Worldwide, we are the leading company for the development and manufacture of measurement equipment for diagnosis of the state of a network and for fault location. Our sectors of the market include electricity supply networks as well as communications and pipe networks.

High performance:

We concentrate on four areas: diagnosis of the state of a network, cable fault location, leak detection and line location. We are thus in the position to offer high performance in each of these areas.

Available:

SebaKMT has representatives in 130 countries worldwide, with excellently trained staff and the most modern technology. With that we have the most comprehensive service and consulting network in the industry. Wherever your international activities may lead you, we look forward to speaking to you.

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