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# LOGSTOR Detect

## Digital surveillance of pre-insulated district heating pipe systems

Kingspan | LOGSTOR

# LOGSTOR Detect proactive surveillance and troubleshooting

- Central surveillance of district heating pipe systems
- Generation of dynamic reports on the condition of the pipe network
- Precise location of faults
- Display of even minor irregularities provides the basis for preventative maintenance
- Reveals leaky joints, excavation damage (3rd party), leaking steel welding, installation errors and other problems with quality when the pipe network is commissioned
- Faults can be registered before the warranty period expires
- Minimises repair costs
- Makes full use of the skills of specialist technicians
- Frees up resources at the heating plants
- Secure the expected service life of the pipe network

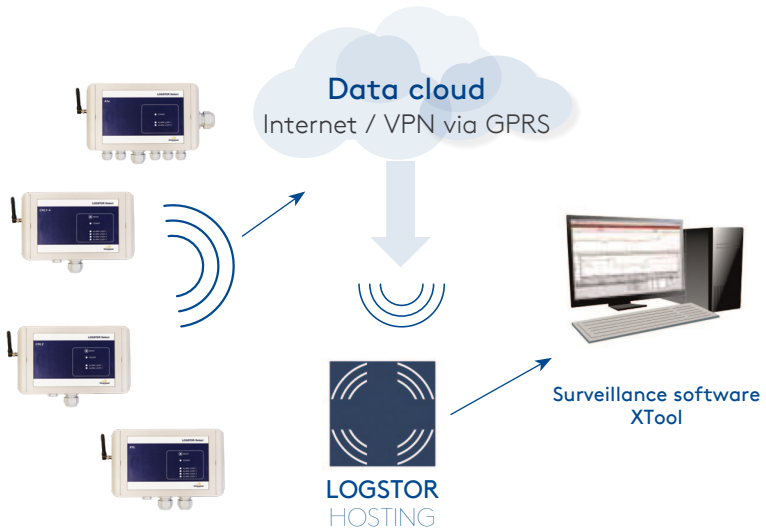
**Proactive surveillance ensures long service life and secures supply assurance in any district heating network. When a digital and GPRS-based surveillance program is installed, all information concerning the condition of the pipe network can be sent via a wireless connection from the surveillance units to a central computer. Here, the information is analysed immediately and alarms can then be issued by e-mail or SMS if necessary. This makes it possible to take action before damage occurs.**

**With a new hosting solution, LOGSTOR can handle this surveillance of the district heating plants' and energy companies' pipe networks, with subsequent reporting on its condition, recommendations for necessary actions, support for analysis and reports, and ongoing upgrading of the system.**

LOGSTOR Detect is a complete concept for the surveillance of pipe networks, for the collection and interpretation of information about the condition of same, and for analysis of which maintenance operations need to be implemented to prevent acute damage.

The concept includes the option of a hosting service comprising a passwordprotected database for the relevant programs, along with accumulated history, guaranteed data security and backup, ongoing program updates and more. It is a service for the monitoring and interpretation of data, which can be used with or without assistance from LOGSTOR.

The LOGSTOR Detect concept is based on units and XTool software from Wideco Sweden AB, which we consider to be the best products for this assignment, and which are also compatible with previously delivered surveillance systems.




XTool compares the incoming impedance and resistance measurements with the predefined reference curves, and detects even the smallest irregularities in the pipe network. This makes it possible to plan maintenance procedures before any damage worsens. XTool can compare incoming impedance measurements and resistance measurements simultaneously, opening the door to a unique analysis tool.

# Surveillance software – XTool

## Surveillance software – XTool

XTool is the graphic surveillance program that makes proactive surveillance possible. It handles constant communication concerning the condition of the pipe network between the surveillance units and a central database server (SQL). Communication is run through wireless transmission (GPRS), via a LAN or by fibre-optic cable.

XTool collects the information from the monitoring units and prepares a graphic presentation that makes it simple and straightforward to trace the condition of the pipe network and the development of any irregularities. The accumulated history is stored in the database, partly as documentation and partly for subsequent follow-up.

XTool is also a valuable documentation system. XTool can import surveillance diagrams, measuring reports and pictures together with GPS-positions of the surveillance units.

Furthermore, with XTool the supervisors at the heating plants can generate dynamic reports on the condition of their pipe networks.

The XTool surveillance software handles communication to a central computer unit and the production of a graphic representation of the data received from the surveillance detectors.

XTool is also a valuable documentation system.

The surveillance unit X1L is used for resistance measurements. It can transmit both visual and acoustic signals if the detection level is exceeded.

## How it works

The heating plants can choose between more or less advanced surveillance systems for pre-insulated pipe networks. A precondition for them all is that the pipes be delivered with two uninsulated 1.5 mm2 copper wires embedded in the insulation material.

## Measurement principles and units

LOGSTOR Detect handles both resistance and impedance measurement.

## Resistance measurement

Resistance measurement is based on ohmic resistance and is an efficient method for detecting and reporting moisture penetrating the system from the outside or leaking out from the service pipe. The various versions of the surveillance unit X1L are used for resistance measurement. These sensors feature relay outputs for transmitting the measurement signal, if appropriate, and can be used in conjunction with XTool surveillance software.

## Impedance measurement

Impedance measurement is based on a built-in TDR impulse reflectometer. When the pipe network is commissioned, this unit generates an initial curve that is used as reference for subsequent comparisons and for troubleshooting on the basis of predefined criteria. Any change outside the threshold values triggers an alarm, and a display presents the measured values of the fault. This makes it simple to perform closely targeted maintenance.

As the method is not based on ohmic resistance, it is equally sensitive to moisture with high and low conductivity, and it is recommended in particular for installations that use very pure water (low conductivity <10 µS).

The surveillance unit X6 is used for this method and combined with the XTool communication system for analysis and evaluation of the measurement reports.

All detectors feature a built-in function that checks whether the surveillance system is intact. A signal is triggered if the electrical circuit is broken – on account of a break in the alarm wire, for example

The surveillance unit X6 is used for resistance and impedance measurements. It can display the exact distance to a potential fault, and a curve of the current process is generated and can be sent to the surveillance computer.

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