LEAKAGE MONITOR

Tool for reduction and optimization of non-revenue water

Leakage Monitor is a software and implementation for complex data collection, leakage and NRW evaluation in district metering areas (DMAs) working as utility information system. The methodology used is compliant with IWA methodology.

Leakage Monitor assists managers with technical and financial water leakage level optimization, decision making in regard to active leakage control, network repairs, pressure optimization, and identifying leaks before they become a threat or potentially a pipe burst.

OVERVIEW

- Automatic data collection and processing
- Overview reports for **fast identification of critical DMAs with highest saving potential**
- Tools for **detailed leakage analysis** in the individual DMAs
- Automatic assessment of **economical level of leakage** enables leakage maintenance at low and **economically optimal level**
- **Direct use of GSM/GPRS, LTE** data enables faster and low-cost establishing of DMAs
- Easy access to data via **Web client** and their editation

IMPORTANT INFORMATIONS

ADVANTAGES

- Automatic data collection and processing
- Overview reports
- Fast identification of critical DMAs
- Detailed leakage analysis
- Automatic assessment of economical level of leakage
- Easy access to data via Web client
- Faster and low-cost establishing of DMAs

DATA COLLECTION

- Pre-defined analysis accomplishment
- Automatic outputs at chosen time
- Evaluation of leakage based on SCADA
- Results stored in a central database
- The results could be checked by the Leakage Monitor user interface

WEB APPLICATION

- Without the need to install the program
- Data visualization and editing
- Simple but strong and user-friendly environment
- Organized time-series, maps and charts
- Minimal training required for efficient work

FLOW MEASUREMENT VIA NFM 600

- Flow measurement via NivuFlow Mobile 600
- Close connection to Leakage Monitor application
- High flexibility
- Low installation costs
- Extremely long battery life
- Easy DMAs establishment
- The transit time method principle

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DATA COLLECTION AND EVALUATION PRINCIPLES

Leakage monitor runs all analysis and prepares all outputs automatically at chosen time (i.e. 5 AM). Evaluation of leakage in DMAs is based on analyses of measurement data by the SCADA system as well as from GSM/GPRS devices. The night inflow is summarized from all inflow/outflow sensors and used for evaluation of leakage. The consumption of big night customers as well as night consumption of other customers are considered.

Inputs and results are stored in a central database. The results of the evaluation can be checked by the Leakage Monitor user interface from any place in the utility intranet. The Leakage monitor generates automatically daily reports and prepares map outputs. The operator can either get the reports from a central data store via intranet or can generate personalized reports and maps locally.

What the Client says: *"We appreciate massive decrease in the level of leakage together with the pressure optimization due to effective network zoning design. Important factor for us is a proven long term leakage level stability, supported and maintained by the Leakage Monitor application. The project itself was pay off by a consequence of early savings comes from water production reduction."* Says Karel Eminger, SCVK a.s., Regional dispatching centre manager

ASSESSMENT OF ECONOMICAL LEVEL OF LEAKAGE

The Economical level of leakage in a DMA is calculated automatically based on the balance between possible cost savings on leaking water and costs of leakage reduction works. The evaluation of the possible cost savings on leaking water considers actual level of leakage in a supply zone, level of leakage which is possible to achieve after leakage reduction actions, marginal price of leaking water and dynamics of the leakage growth.

The costs of leakage reduction works is calculated based on evaluation of unit price of the typical leakage detection actions and the extent of such actions needed in a supply zone. All economic indicators are presented in a complex but simple outputs and serve for effective planning of leakage detection works.
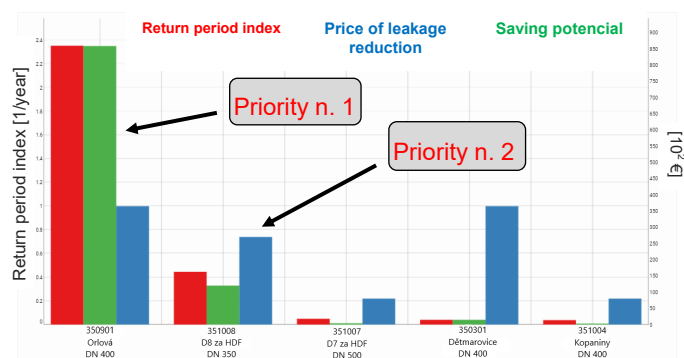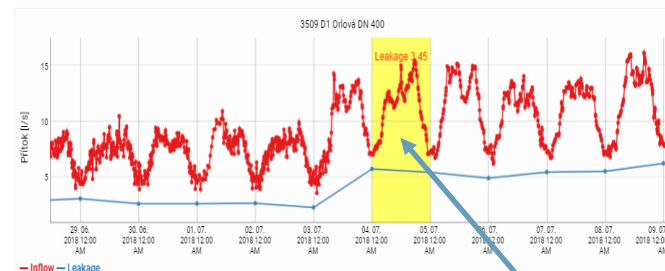

Example output of the economical level of leakage evaluation. © DHI

ADVANCED LEAKAGE AND NRW EVALUATION FUNCTIONS

The Leakage Monitor automatically observes the change of leakage level in DMAs and based on sensitivity parameters indicates new leakages. The system differentiates short time oscillations and real leakage events. All the events are stored in the Leakage Monitor database and appropriately reported.

The Leakage Monitor automatically evaluates comprehensive set of leakage and NRW key performance indicators such as NRW and leakage %, unit leakage per network length and per service connection, ILI (Infrastructure Leakage Index), etc.

The view of leakage in the chart. © DHI

Well-aranged table of recognized events for chosen districts. © DHI

WEB APPLICATION

The Leakage Monitor Web Client is connected to the same database stored on a clients server as Leakage Monitor Desktop Client. It allows data visualization and editing via web interface without the need to install the program.

The application is optimized to allow simple but strong and user-friendly environment for visualizing data in maps, time series, charts, and tables with the ability to import data. The application allows the user to access and import reports created and stored on the server. A great advantage of the application is the possibility of visualization the Leakage Monitor data for all levels of district meter areas, comparison of the key indicators across the districts and an overview of the economic evaluation of the districts. Last but not least, the operator has comprehensive information about event occurrences and sensor fails that can be easily displayed and manage. Leakage Monitor Web Client is easy to use and only minimal training is required for efficient work.

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