

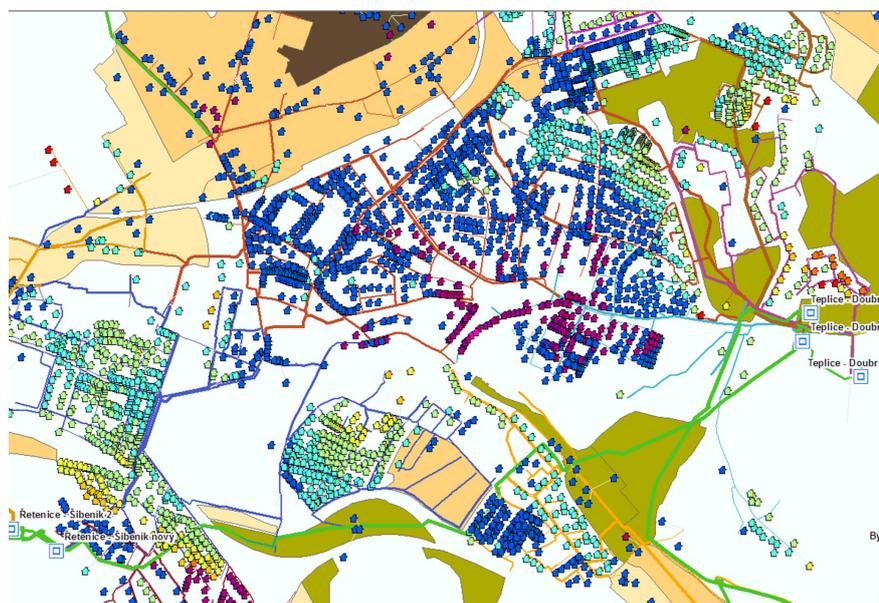
Successful water management in Teplice, CZ

More than just plugging the holes



The city of Teplice was losing a lot of water – and, as a consequence, also money. DHI identified the weak spots in their water distribution system, developed a network repair strategy and set the system up for the future city development, thereby providing an optimal solution for both the local infrastructure owner and the system operator.

Water is one of the main attractions of Teplice – after all it is famous for its spas, which have already been visited by Beethoven and Goethe and continue to attract numerous visitors. Nevertheless, Teplice's water supply system was in very bad shape – suffering from high levels of leakage of up to 40% and an unbalanced flow and pressure distribution due to poor network zoning. At the same time, a significant increase of the water supply capacity was demanded by the city's expansion and development plan.



Water distribution network of Teplice. The color of the houses symbol represents the pressure of water at that location. This is used to understand the pressure distribution. (red= low, purple= high)

Mapping the problems—developing the right strategy

DHI has the knowledge, experience and necessary tools to solve all of Teplice's water network problems at a single blow. Applying its state-of-the-art MIKE URBAN software, the sectors with high water losses were identified. The water distribution network was separated into so-called district meter areas (DMAs). A DMA is a defined area in the distribution network where the quantities of water entering and leaving the area can be precisely metered, e.g. by closing and opening valves. Thereby, priority areas for leakage repair works can be easily identified. Moreover, the use of DMAs allowed balancing and stabilizing the flow distribution.

SUMMARY

Client

SVS a.s. (the infrastructure owner) and SCVK a.s. (the operator)

Challenge

High level of leakage and malfunctioning water supply system, especially challenged by the city's expansion

Solution

Systematic management of non-revenue water (NRW) and the water supply system; Implementation of a novel Leakage Monitor

Value

- Reduction of 43% of total leakage in 6 months
- Return on Investment (ROI) of 1 year
- Better management of the local water system
- More satisfied customers

Location/Country

City of Teplice, Czech Republic

Client testimonial

“ We appreciate the massive decrease of the leakage level along with the pressure optimization reached by the effective network zoning design. The most important factor for us is a long-term stability of the leakage level, supported and maintained by DHI's Leakage Monitor. The project itself was paid-off by early savings from the water production reduction.

Karel Eminger,
SCVK a.s., Regional Dispatching
Centre Manager



Schematic drawing of different aspects of Teplice's water system management covered by DHI's approach to reduce losses and set up a functioning and sustainable network.

A unique feature: The Leakage Monitor

Completing the solution, DHI developed a novel software module for the city of Teplice, the Leakage Monitor. „DHI's Leakage Monitor is a unique software tool that was partly developed within this project”, project director Zdenek Svitak explains. “It reduces leakage on a long-term basis. The system is managed sustainably by gathering data from the SCADA system and optimizing leakage management, pipe failure detection and the associated network repair strategies. While the Leakage Monitor was designed for the Teplice project, it will surely also serve many of DHI's future clients well.”

It's effective, and it's already paying off

Naturally, such a fundamental overhaul of a city's water supply system necessitates some investment. For Teplice, the total investment into the new pipes design covered by particular investors was 2.4 million EUR. A further investment of 0.45 million EUR was proposed to optimize the water distribution system as part of the future city development plan.

Luckily, the pay-off of these investments is obvious in the short- as well as the long-term. Both clients benefit from significant financial savings: The infrastructure owner gains from the long term investment strategy optimization. The operator, apart immediate financial savings from NRW decrease, benefits from a better system operation in terms of flow and pressure condition and lower failure rate. Moreover, operating staff has a functional software tool at hand for active leakage management and to help them making decision in leakage detection activities.

Teplice's formerly high operating costs, resulting in higher water prices, have decreased. An economic

evaluation of the immediate effects shows a reduction of total leakage of 43% in six months and a Return on Investment (ROI) of only one year. The decreased leakage level is now stable, proving the functional design of the sectored water distribution network. The newly designed DMAs together with the proposed pressure optimization make traditional pipe failure and leak detection methods much more effective.



DHI's Leakage Monitor supplies Teplice with a long-term strategy to reduce leakage and improve network condition.

Teplice is the oldest spa in Bohemia and one of the oldest in Europe. As early as 2000 years ago, inhabitants and transients appreciated the hot mineral springs in the region. Celtic and Roman coins serve as witnesses of this early use. The coins were supposedly thrown into the water as a sacrifice to the gods of water and to thank for the recovery of the bathers. We can't tell whether the gods appreciated the donation. However, thanks to DHI, a lot less money needs to be thrown into the gutter these days to keep Teplice's waters flowing.