deWaLoP Partner

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deWaLoP
Developing Water Loss Prevention
Rehabilitation of grey cast-iron, fibre cement and concrete pipes by means of a robot

Water losses of drinking water supply systems are unavoidable. For many years, Vienna Water has been employing trenchless and open-cut methods to renew and rehabilitate pipes in order to minimise losses. Various approaches are applied for this purpose.

A new method for pipe connection rehabilitation was developed in the context of the deWaLoP project. Vienna Water, the Water Association of Northern Burgenland and the Bratislava Water Company as potential users joined forces with two institutes of Vienna University of Technology to develop a remote-controlled robot with imaging techniques for pipe section inspection to ensure the trenchless rehabilitation of leaking pipe connections. Towards this goal, a specially developed sealing material suitable for use with drinking water is introduced into the socket gap.

The robot is specifically planned and built by the Institute of Automation and Control of Vienna University of Technology to allow for the introduction of the sealing material, which was tested and declared suitable for the use with drinking water by the Institute of Material Science and Technology.

Early warning system

The issue of water losses is dealt with at several levels in the context of the project at hand. For this purpose, an early warning system based on real-time calculations was likewise developed in the course of the deWaLoP project. The early warning system is tested in pilot areas. Tests of methods and equipment for leakage location serve to complement measures for the avoidance and reduction of water losses.

More accurate determination of water losses by means of a water balancing model

The pipe network of Bratislava, which is markedly more extensive than the Viennese one, is managed by the Bratislava Water Company (BVS), which in addition to the city of Bratislava also supplies 116 municipalities in the environs with drinking water. Strategic pipe network renewal, which is rendered more difficult by this situation, is to be advanced by means of a water balancing model to be developed in the context of the deWaLoP project in order to enable BVS to meet EU requirements for water loss reduction as soon as possible.

This water balancing model allows for the identification of leaking, defective sections and for the determination of the cause of these losses. To be able to analyse the water losses in detail, it is necessary to conduct through-flow analyses and to provide suitable measuring points with appropriate equipment. The development of the model as well as the definition of suitable measuring points and their provision with equipment are supported by STU and moreover draw on the experience of the Austrian partners.

Socket rehabilitation of grey cast-iron pipes (Vienna)
- Testing of potential sealing systems
- Development of a remote-controlled robot
- Development of a sealing material suitable for use with drinking water
- Water balancing model (Bratislava)
- Safeguarding of data transmission from measuring zones
- Development of a water balancing model including risk assessment
- Definition of conditions for the creation of the hydraulic model in Bratislava

Field test (Vienna, Bratislava)
- Know-how exchange and study visit
- Test at construction site with the sealing material
- Tests at construction site with the robot developed for the project

Socket rehabilitation of fibre cement and concrete pipes (Vienna, Burgenland)
- Series of tests of the sealing material for its suitability for fibre cement and concrete pipes
- Development of new tools and applications for the robot
- Material tests of the sealing material for potential impacts on

Methods for the establishment of an early warning system (Burgenland, Bratislava, Vienna)
- Development of an early warning system based on real-time calculations and a plan of measures to deal with unavoidable damage
- Pilot tests for the implementation of the early warning system
- Tests of methods and equipment for leakage location