

Lining of Pressure Sewers: Evaluating One of the New Frontiers of Trenchless Technology



IKT Compare: testing lining systems for the trenchless rehabilitation of pressure sewers

Our latest **IKT Compare technology evaluation** is examining the **performance of lining systems** for the trenchless rehabilitation of **pressure sewers**. The aim is to **support sewer network operators** in the selection of suitable systems and to provide them with certainty when developing tender documents, overseeing installation, accepting the work, and monitoring quality. There is still the opportunity for sewer network owners from other countries to **join a partner project** to contribute to and benefit from this research.

The issues with pressure sewers

For the past couple of decades sewer network owners and suppliers of liner technologies have been focused on addressing the rehabilitation of gravity sewers. For **pressure sewers** the focus has been on **dig down and repair** or **excavate and replace**. Pressure sewers are made from a range of materials, many are approaching the **end of their service life** or developing faults and there is an **increasing requirement for rehabilitation**, repair or replacement.

Trenchless rehabilitation techniques are usually the solution of choice for repairing damaged sewers, as they minimise disruption in the road and have economic and environmental **advantages** over open cut methods. However, sewer network operators cite a range of **difficult issues** for pressure sewers that limit the application and performance of trenchless solutions, such as lack of access points (for inspection or repair), bends up to 90°, unknown pipe layouts, and small nominal diameters in some cases.

Although the **first rehabilitation techniques for sewage pressure pipes** are now being offered on the market, sewer network owners have realised there is a considerable **need to investigate** their applicability and limitations. On the one hand, there is a **lack of neutral and independent information** on installation requirements, application range, performance and application limits of the available processes and products. On the other hand, there is currently very **little experience** to draw on when considering **rehabilitation measures for pressure sewers**.



Investigation the applicability and limitations of the first rehabilitation techniques for pressure sewer pipes

For the **planning process** there is a particular need to understand how to select remediation techniques tailored to the specific application, and for the **installation** there are issues of implementing **quality assurance** and for flood protection during installation.

Achieving the objectives

The objective will be achieved through **comparative evaluation** of the techniques available in the market. Working with the **project steering group of sewer network operators**, the typical damage scenarios encountered with pressure sewer pipes are being defined and a testing concept developed.

What is available?

A **market review** of available technologies, products and suppliers is being undertaken and, from this, the project steering group will be selecting **eight products for evaluation** that are representative of the available technologies. This review is also considering the current status of applicable standards and regulations.

Evaluation

1:1 scale laboratory testing is being devised that will result in test rigs being installed in **IKT's large-scale test facility** comprising pumped pressure pipes in which typical damage scenarios have been created.

The selected rehab products will be installed and tested under **identical conditions** which will include assessing their ability to withstand the typical pressure changes experienced in live pressure sewers. To support the laboratory evaluation, **in-situ evaluation** will be undertaken on the same techniques installed in sewer pressure pipes at the network operators' sites. In addition to their performance the quality assurance provisions for the products will be evaluated.

IKT Compare tests



On-site installation conditions simulated in IKT's large-scale test facility – here with manholes to test and compare rehabilitation methods

IKT's comparative product testing projects test products and methods to the limit under laboratory and practical conditions. Every product test is supported by a group of network operators. The members of these groups – referred to as “steering committees” – benefit directly from insights into

the testing and methodological procedures and from technical exchange with other network operators.

Test subject matter, procedures and criteria are defined by the respective steering committee. Decisions concerning the final evaluations are also taken jointly by the network operators in these supervisory bodies. This ensures that the tests are performed on a strong practical basis, impartially, and without any influence from commercial interests.

The aim

The results provide the network operators with well-founded, dependable information on the strengths and weaknesses of the products and procedures available on the market. This then enables them to base their purchasing decisions on solid facts, rather than solely on the manufacturers' advertising. IKT's product tests at the same time provide the various suppliers with indications for the improvement of the products and procedures tested, and thus also for the strengthening of their market position. Ultimately, these are all benefits for the entire industry.

Find out more:

[IKT Compare](#)

[IKT Compare project results](#)



IKT has done research on inspection and condition-surveying of pressure sewer

lines. Now the focus is on rehabilitation.

Whilst, for practical reasons, the **1:1 scale testing** will be undertaken on pipes between DN100 and DN400, the project will also be assessing in the field the rehabilitation of pressure pipes