

# SUBTERRA:

## SEEING A WELL-KNOWN EUROPEAN COMPANY IN A NEW LIGHT

Peter Vasilyev

**R**adius Systems, part of the POLY-PLASTIC Group, acquired Subterra in June 2013. Subterra is a European leader of trenchless pipeline rehabilitation technologies.

Subterra was founded in 1985 and is uniquely skilled in the design and implementation of inspection and pipeline rehabilitation equipment. Today, Subterra has two workshops in Great Britain with over 30 units of special pipeline rehabilitation equipment.

Subterra's techniques have been used for water and gas pipeline rehabilitation all over the world, including: London, New York, Budapest, Shanghai, and Tokyo. The accumulated length of their restored pipelines exceeds 1000 km.

Subterra designed several pipeline rehabilitation technologies for various uses and, depending on the condition of the pipes, suitable for diameters up to 1800 mm. The most famous of their technologies are:

### Rolldown

This technology was designed for the rehabilitation of deteriorated gas and water pipelines. The PE liner pipe is pushed through roller sets which reduce the pipe diameter concentrically, typically by about 7–10%. The pipe is retained naturally at its reduced diameter for a significant time.



The pipe can be reduced on site during installation or can be prepared in-house beforehand. The liner is installed using the sliplining process, and the reduced diameter pipe is pressurised allowing it to revert to its original size, forming a close fit within the host pipe. The range of pipe diameters is from 100 mm to 500 mm, with nominal pressure up to PN16. Installation of up to 1.5 km in a single insertion is possible.

### Subline

This technology creates a close-fit liner with an existing pipe and relies

on partial structural properties of the host pipe. This method can be used for water and gas pipelines ranging from 75 mm to 1600 mm in diameter. The nominal pressure can be determined according to the pipeline properties.

Applicability of the method and thickness of the liner can be determined using graphs and charts. The SDR of the liner can be calculated using the size of the holes in the existing pipe and its operating pressure.

The PE liner (SDR 26–85 depending on diameter) is pushed through a former which folds it into the 'U'



shape. It is then held in place by PP or PETP strapping. Once installed, the folded liner is pressurised to snap the strapping. The liner reverts to its original size and forms a close-fit within the host pipe. The pipe-forming unit is positioned near the manhole. Long length installation up to 1 km in a single insertion is possible. Standard length is from 200 to 300 metres.

### Subcoil

This is a similar technology to Subline. The pipe is folded into a 'U' shape in-house, strapped using film and delivered to the site. The maximal diameter is limited to 300 mm due to the necessity of coiling it onto the drum. Otherwise, the conditions of use and limitations are similar to Subline.

### FastLine Plus

This is a polyurethane resin spray lining technology. It is used to provide an internal barrier coating or rehabilitation for water pipelines. As a result, the spray lining forms a smooth coating which improves the quality of water, prevents leaching, enhances the hydraulic properties of pipelines and prevents corrosion. The spray lining can be high and low build application. High build applications can overcoat existing holes (no more than 5 mm as a rule). Spray lining is fast-setting and the pipe section can be returned to service just two hours after application. FastLine Plus can be used for all types of pipes (including reinforced concrete) with diameters from 75 mm to 1800 mm. 200 metres can be lined in one pass. A number of pipelines in the Nizhny Novgorod and Lipetsk regions were restored using this technology, including over 600 metres of pipelines from 1400 mm to 1800 mm at the Novolipetsk Steel Mill.

