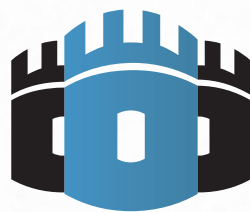


**EXPERTS IN TRENCHLESS  
TECHNOLOGY  
WITH OVER 20 YEARS  
EXPERIENCE...**



**Keep**

Trenchless Technology



Trenchless Technology

# GUARANTEEING EFFICIENT AND SUCCESSFUL REPAIR OR INSTALLATION

## ABOUT THE COMPANY

Since its formation, Keep Trenchless Technology has been providing a range of trenchless technology services to water and waste industries as well as corporate customers.

Working throughout the UK, the Company specialises in UV cured pipe installation, CCTV surveys, lateral cutting, and mechanical cutting for concrete/grout/roots and other difficult obstruction removal including intruding connections.

UV cured liners have been installed nationally for the sewerage industry, and the success of this is clear by looking at the list of clients that encompasses Northumbrian Water, Yorkshire Water, Thames Water, Severn Trent, Guernsey Water, Scottish Water and many more.

Northumbrian Water has been a valued customer during this time, and in the last five years, has seen more than 10km of liner installed each year.



## BENEFITS OF UV CURED LINERS

Trenchless technology offers important benefits for companies and utilities providers and with more than 20 years of experience, the team at Keep Trenchless Technology is ideally placed to help organisations reap the rewards of such advantages.

The conventional way of repairing pipes can be disruptive and time consuming, all of which holds up production.

The Company's experience is crucial because its trenchless technology can be used to counter these issues by repairing pipes at the same time as guaranteeing the minimum amount of disruption. The technology also helps to eliminate any halts in production.



There is also a real commitment to provide customers with the best possible service and the team of specialists have years of experience. In addition, the fleet of vans have the capacity to monitor and record pipe repair at every step of the way.

Aligned to this are the UV cured liners that are manufactured to the most stringent standards by Berolina that can cure the lining at speeds of up to one metre each minute.



Because these are manufactured by Berolina, materials made by a fibreglass that is corrosion-resistant is used; this unique wall structure is decisive for the outstanding quality and versatile application of the Berolina liner.

With five layers of resin-saturated fibreglass complexes and/or polyester webs, the liners are stretchable, and can be optimally adjusted to circular or oval profiles in diameters of 150mm to 1500mm, which can also be used with cross-section or profile passages without any problems.

The energy flux is optimised because of the continuous fibre orientation in the perimeter direction.

The best mechanical values are produced in this Keep Trenchless Technology product because of the fibreglass reinforcement, meaning no more than slight wall thicknesses are necessary and therefore, cross-section leakage is reduced to a minimum after pipe sanitation.

The advantage of the UV cured lining provided is it allows liner replacement to be expected before curing.

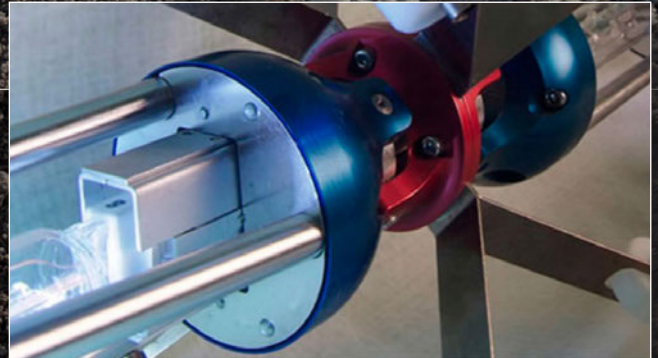
The curing process is recorded at every stage and reports are instantly generated. Just as important is the fact that only one site visit is necessary, which again minimises disruption.

## KOMATSU PIPELINE REHABILITATION

As well as the work carried out for the many water organisations, the Company also has a number of commercial clients who have benefited from trenchless projects.

One such development was undertaken in County Durham where work was carried out on pipeline rehabilitation for Komatsu.

Keep Trenchless Technology was called upon for the project in Birtley because the sewer system there for Komatsu's European manufacturing plant for the production of crawler hydraulic excavators showed the pitch fibre pipe network needed to be replaced.

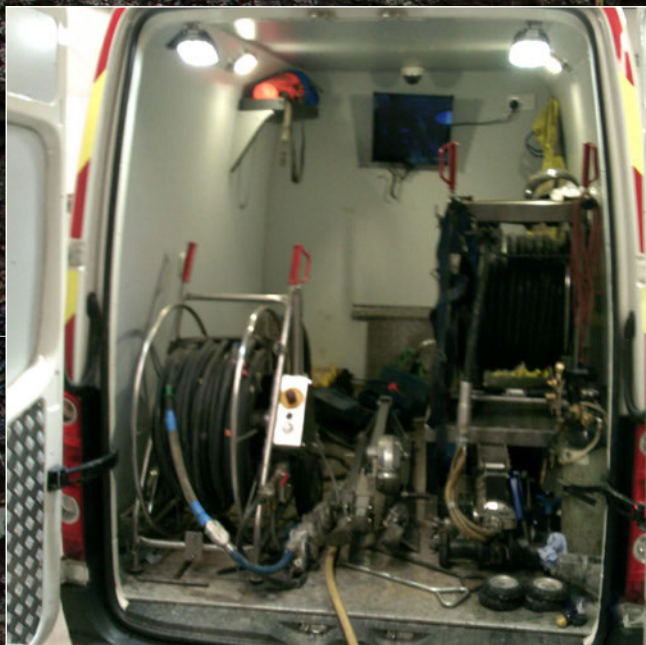


The Company undertook a CCTV survey on behalf of Komatsu and the results showed that the pitch fibre pipes, first installed in the 1960s, were deformed, had holes in the pipe wall and in one place, was closed with hardly any room to manoeuvre through it.

Finding a solution to this damage was made more difficult because of the limited access in terms of timescale and space in order to place equipment, owing to Komatsu's production schedules.

Options considered included cutting the pipeline open to carry out the repair work, but this was rejected because it would have slowed down the production schedule due to the failed pipe being located in the centre of the main production area.





Excavation would have been required, which would have made the project duration longer, and with three major surrounding walls around the designated work area, any traditional method of work was fraught with danger.

Therefore, it was decided the best way to rehabilitate the pipe was to undertake re-rounding work followed by insertion of a structural lining.

Traditional work would have taken 18 weeks to complete, whereas trenchless technology could ensure the project was completed within a week.

Accordingly, the UV cured options were investigated and the Berolina liner system was chosen.

This is where the fibre fabrics overlapping are effective. They are staggered, which means the Berolina liner can be installed in one piece even where there is a crossover, and with no hindrance on elasticity, it easily adjusts to local conditions.

The UV cure resin is injected into the liners at the factory so that when they arrive on site, they are ready for installation.

As a proven product of Keep Trenchless Technology, the Berolina liner has undergone a significant amount of testing to ensure it is fit for purpose. This WRc-approved system has also undergone and passed stringent tests to ensure the pipe is at its tightest level so it won't leak, while making sure infiltration is prevented.

Work on the pipeline rehabilitation took just seven days, with 18 individual lining set ups having to be achieved in that time while also working around other contractors.

During one of these set ups, the extent of the problem Komatsu had been facing became

clear because a huge section of pipe was almost completely closed up.

The tight timescale on the project meant the Company's only option was to attempt installation even though this made a successful outcome uncertain.

But the expertise meant that the deformed section of pipe was reached, though a hole was then found in the host pipe.

In response, Keep Trenchless Technology managed to pass a line through the defect and a pre-liner was pulled into place over the hole before it was lined with the intended reinforced liner.

Lining was successful on this set-up, as well as the other 17 that had to be undertaken.

Paul Collins is the Building Maintenance Manager at Komatsu and he praised the 'groundbreaking technology' and the advantages it has brought.

He said: *"We selected Keep Trenchless Technology Ltd to carry out this repair due to the location*

*of the drain and the amazing groundbreaking technology offered. The professional approach was second to none and a full survey and repair method was fully communicated.*

*"What could have been very disruptive to our production turned out to be a quick and simple repair with zero effect to our busy production schedule.*

*"Since the repair, we have used the liner method many times to maintain and repair our waste framework. The advantages of using such a repair are numerous; the fact there is very little disruption to the repair vicinity and no environmental impacts compared to other repair methods are just a few."*





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