We have achieved

Water utilities

Yorkshire Water.
Wakefield, UK

JD7 Pipescan+ condition assessment system

In-flow inspection of corroded rising sewer main

- JD7 Pipescan+ identifies corroded sewer for Yorkshire Water
- In-flow inspection saves pipe from likely failure
- Technology works successfully in hostile sewer environment

A severely corroded rising sewer main, which had lost two-thirds of its wall thickness in places, was detected for Yorkshire Water by JD7 using its Pipescan+ technology.

JD7, part of the Aquam group, was able to survey the 254mm-diameter pipe without disrupting the sewage flow, finding many places where the pipe wall had only 2mm remaining of its original 7mm thickness. This meant the water company could intervene in a timely way, saving the pipe from probable failure.

Rising sewer problem

The project in Kenmore Road, Wakefield, exemplifies use of JD7 advanced inspection technology on a rising sewer main, a pipeline used to pump sewage under pressure to a higher location. A growing issue within sewer rising mains is corrosion and erosion on the invert - the lower part of the pipe into which the liquid sinks - eventually leading to bursts.

JD7's general manager Dale Hartley says, "Corrosion and erosion is caused by grit and debris falling to the invert when the pumps are shut off. When the pumps restart, this is then pushed along the bottom causing wear to the pipe wall or lining.

3D display view showing minimum wall thickness plotted in segments along the length of the pipe

> "JD7's role was to determine if the technology would work in the sewer environment and to what extent the pipe had been degraded. Problems encountered with this type of inspection include a high, fast moving solid content, which can and does obstruct survey distance, visibility and can impede performance creating blockages.
>
> Dale Hartley
> General Manager, JD7

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Traditional methods of inspecting a sewer rising main usually involve an external ultrasonic scan, in isolated exposed areas, often reacting to a burst or leak. This provides only a very localised result around the small area of pipeline exposed or scanned.

This information can also be comparatively unrefined, providing only an approximate snapshot of wall thickness and estimated remaining service life for a very small area of the pipe. This is highly unlikely to be representative of the entire pipeline and does little to predict a possible recurrence.

By inserting PipeScan+ technology into and along the live main, JD7 can obtain and provide more accurate, higher resolution pipe-wall data over a greater distance of the pipeline. This comprehensive information enables the utility to take informed investment decisions about whether the pipe requires maintenance or replacement.

Rising sewer mains form only a small proportion of the pipelines JD7 has tackled. More normally, the company would be asked to assess a potable water main using a tri-sensor survey such as the Investigator (pipelines <300mm) or the LDS1000, offering a survey distance of up to 1km in large diameter trunk mains.

This innovative, but proven technology provides a sophisticated way to inspect live mains though existing fittings & fixtures. Surveying live mains (water, sewer or other) without interruption to supply is a key driver for the UK water sector.

Informed decisions

Hartley says, "The results provided the client with a greater level of confidence to make a decision on whether to replace the pipeline or not. Most sewer rising mains in the UK are now reaching 50 years old, and many of them are starting to leak.

"Under current environmental guidelines, a fine for a single sewer leak can reach more than £1 million. JD7's technology provides the best way for utilities to get the most information about pipeline condition.

> "Even if the utility takes the decision not to replace the main, being able to demonstrate that they took best available steps to assess the condition can demonstrate responsibility and help mitigate the size of the fines.
>
> Dale Hartley
> General Manager, JD7

Pipescan+ inspection technology

PipeScan+ condition assessment system comprises an internal ultrasonic manipulator incorporating focused ultrasonic probes, a high-resolution camera system and 512Hz sonde for tracing.

PipeScan+ allows pipe infrastructure of all materials to be scanned whilst remaining in service, allowing a full dimensional survey to be achieved including multiple wall and lining thickness measurements and corrosion and flaw identification.

The system allows accurate calculation of remaining life expectancy of the pipework as thousands of measurements can be acquired in minutes. PipeScan+ is configured onto a 100m semi-flexible umbilical line, offering assessment over 100m lengths.

PipeScan+ is unmatched with regards to the quality and detail of data captured from the technology and - unlike magnetic flux leakage tools - PipeScan+ not only gives average wall thickness readings, but also fully detailed structural assessments. Access into live pressurised pipework is possible and auto-controlled using a portable electronic drive system, which controls the feeding and pullback of the scanner in a controlled manner.

Our highly experienced staff are ready to help, call:
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