A RAPID SOLUTION TO OVERFLOW ISSUES

Modern life is all about moving forward quickly and technology that can keep pace, while maintaining quality is becoming increasingly important. In the pipeline inspection industry, SL-RAT is acoustic inspection technology that is able to do just that, offering results in under three minutes.

The Sewer Line Rapid Assessment Tool (SL-RAT) – manufactured by InfoSense and distributed in Australia by Austeck – is a portable on-site assessment tool that relies on acoustic assessment methods, rather than traditional visual inspection, to assess blockages in small diameter gravity sewers and provide information to operators within minutes.

Unlike traditional CCTV inspection systems, SL-RAT is installed above the entrance to the pipe segment, where its transmitter – the TX unit – sends an acoustic tonal pulse down into the asset. The receiver – or RX unit – comprises a microphone and signal processing system that 'listens' to the acoustic signal and interprets the blockage data.

It then produces an assessment of the blockage conditions, assigning it a score on a scale of 0 to 10, with a score of 10 indicating the line is absolutely clear and a score of 0 indicating a complete blockage.

A

B

A: Two inspection specialists with the system.
B: The SL-RAT being lowered into a manhole.

ADVANTAGES

In addition to the speed of the assessment, SL-RAT has no flow contact, which can result in lower operating costs when compared to traditional CCTV technologies. It also allows wastewater operators to use less resources to implement a condition-based maintenance strategy, which monitors the current conditions of an asset to predict when future inspection and maintenance should be scheduled. SL-RAT components are equipped with GPS, as well as the ability for the TX and RX units to communicate using a radio frequency. This allows the system to provide class data labelling, data registration and test validation services.

TRIALS

Austeck initially introduced SL-RAT to the Australasian market in 2014, with Sydney Water undertaking trials of the technology in 2015 as part of an effort to use innovative technology to achieve more valuable solutions when optimising asset programs for wastewater networks.

According to a paper by Sydney Water's Steve Barclay and Virginia Cheng, during the trial more than 90 pipes previously identified due to poor past choke performance in the utility's yearlong cyclic cleaning program were assessed. A total length of 4,462 m was inspected, comprising 150 mm and 225 mm diameter pipes.

The trial provided some interesting results, showing that almost 60 per cent of the pipes in the Sydney Water's cyclic cleaning program did not require further cleaning. The implications of this are significant: considering the utility's network of more than

24,000 km of sewer pipes, the technology would allow for the prioritisation of blocked segments over already clear pipes, resulting in better service to customers and increased environmental protection.

Results from the trial also showed that SL-RAT's scoring system aligns closely with the Conduit Inspection Reporting Code of Australia, as well as the GPS resulting in more than 80 per cent accuracy to 10 m.

The report – which lead to the implementation of SL-RAT – concluded that the current process of cleaning and performing subsequent CCTV inspection could be upgraded, instead using SL-RAT to identify whether or not a pipe needs cleaning.

"We are continuing to successfully use SL-RAT to manage maintenance programs in our wastewater systems," says Mr Barclay.

NEW ZEALAND

Over the past few years, there has been a steady increase in the number of sewer overflow incidents in Taupo, New Zealand, which has caused concerns for public health, water quality, businesses and the reputation of the district.

"In order to address these issues, Taupo District Council developed the sewer overflow reduction strategy, employing the latest technology to quickly reduce the risk of an overflow occurring and to provide vital asset data," says Taupo District Council 3 Waters Network Engineer Graeme Jackson.

Mr Jackson says the system was chosen as the ideal technology to achieve the strategy, identified after a review of the available industry technologies.

"SL-RAT was selected due to it being a quick and cost-effective way to identify problems within the pipework. The information gained from the device would then drive where cleaning and CCTV work needs to take place," he says.

"By using this strategy, there is a significant cost and time saving over traditional methods and the asset data gained by using SL-RAT is a valuable tool for reducing sewer overflows."

SL-RAT is now an integral part of the overflow reduction strategy, already contributing to the resolution of current issues on the sewer network.

"SL-RAT has proved to be a robust, quick and easy to use product," says Mr Jackson.

"We have been able to address the immediate issues with our sewer network and significantly reduced the number of sewer overflows, with the added bonus of collecting excellent asset data. Our strategy is to continue to use the device and survey our entire network, both wastewater and stormwater, over the coming years.

"The information collected from SL-RAT survey work has helped to develop maintenance schedules and planned asset renewals. As most good engineers know: knowledge empowers good decision making. Quite simply, SL-RAT device assists with gathering the knowledge to make good decisions." **T**

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