INTERFLOW ADVANCES THE INSPECTION OF LARGE DIAMETER PIPELINES

Interflow’s High Definition Profiler is changing the way large diameter pipelines are inspected. The profiler combines advanced laser, sonar and CCTV to provide comprehensive inspection data to determine deterioration over time, while maximising safety by eliminating the need for personnel entry.

Condition assessment is an essential part of a pipeline’s integrity management plan. It is used to not only determine a pipeline’s current condition, but also to project and plan for its maintenance in the future.

Traditionally, large diameter pipelines use condition assessment processes requiring manual entry at low flow or the use of floating CCTV inspection systems that have limited capabilities. Interflow, one of Australia’s leading contractors in the trenchless field, has set new precedents for the inspection of large diameter pipelines using the High Definition (HD) Profiler.

This technologically advanced system allows for the comprehensive inspection and condition assessment of flowing pipelines with a diameter of more than 900 mm, without the need for physical entry.

PUTTING THE PROFILER TO WORK
A typical use for the HD Profiler was the recent inspection of a large sewer main recognised as a critical arterial for Melbourne’s sewer networks. The remote-controlled equipment was lowered into the sewer, where the operator-guided machine floated down the sewer until it reached a downstream manhole where it was recovered.

The multi-sensor scan, produced by the machine, was used to determine the asset’s remaining life, as well as identifying several faults along the sewer that needed repair. The inspection also confirmed that its condition had subsequently deteriorated to a point where the pipeline is now planned for rehabilitation in the coming months.

ADVANCED TECHNOLOGY
To provide comprehensive data to the operator, the HD Profiler uses a combination of technologies that includes laser, sonar and CCTV. The data collected is then used to determine pipeline deterioration over time, providing the actual measurements of the pipeline wall profile and allows engineers to calculate wall losses. This can be used for its determining remaining life.

A continuous scan will also illustrate specific “hot spots” of concern, removing the need to make a general assessment and creating a more efficient process to develop a solution. The sonar scan shows the silt or debris build-up on the bottom of the pipe, information which can be used to determine the amount of clearing time required when planning pipe maintenance and repair.

Using this technology periodically has another advantage: the data gained from successive scans can be used for comparison to determine any trends in the data.

COMPLETE PROFILING
The HD Profiler is a self-contained recording and data storing system and comes with a range of equipment that allows it to complete its inspections. The system can travel between access points up to 3 km apart, collecting information as it goes.

The high-definition video camera is equipped with LED lights for illumination, while a CCTV system is mounted on the back providing additional visual inspection data. A laser profiler mounted to the top projects a 360° ring of light onto the internal pipe surface.

As the laser profiler cannot penetrate the surface of the water, a sonar emitter and receiver at the bottom of the unit records the distance to the solid surface of the pipeline beneath the water. Data loggers record and store the information from the camera, laser and sonar technology, with the capacity to store up to three hours of data.

Not all assets are alike, so depending upon the configuration of the sewer, the unit can also be retrieved via a small winch to return it to the upstream manhole for recovery.

REPORTING
Using proprietary software, the data is analysed and supplied to the operator in two types of reports, a detailed written survey report and a high-resolution multimedia file, which combines the CCTV, laser and sonar footage for a 360° view of the asset.

The reports can be customised to suit the customer’s needs, including elements such as tabulated report overview, a debris graph, a flat graph for radial variances, ovality observations and a DVD of the recorded footage.