Geophysical Research Abstracts
Vol. 20, EGU2018-2861, 2018
EGU General Assembly 2018

Pipe Penetrating Radar: Selected Case Studies on the In-pipe Application of GPR

Csaba Ékes
SewerVUE Technology Corp., Canada (info@sewervue.com)

Pipe Penetrating Radar (PPR) is the underground application of GPR. PPR is a non-destructive testing method that can detect defects and cavities inside and outside mainline diameter, non-metallic pipes. PPR's chief advantage is the ability to accurately map pipe wall thickness and deterioration. Through repeated inspections, a model of the remaining useful life of the pipe can be developed. PPR is a proprietary technology of SewerVUE Technology. Presented here are two case studies of PPR inspections performed by SewerVUE.

A newly developed robot, the Asbestos Cement Pipe Scanner (ACPS), was deployed in Surrey, British Columbia, Canada. The ACPS is an ROV designed to conduct PPR surveys of 200-300 mm pipes made of asbestos cement (AC), or other non-ferrous material. It was used to inspect the Harbourgreene Line, a 250 mm AC sewer main. Analysis of the PPR data revealed localized wall thinning, and provided critical information to the utility owners and engineers.

The 4th Generation Surveyor is a tracked multi-sensor inspection robot, which includes PPR and LiDAR equipment, as well as a CCTV camera. The Surveyor was deployed on a project in Melbourne, Australia. In total, SewerVUE scanned 3521 meters of pipe near the Aspendale area. This involved the surveying of various sizes of reinforced concrete pipe (RCP), including 572 meters of 600mm RCP, 1297 meters of 750mm RCP, and 1165 meters of 950mm RCP. Additionally, 487 meters of 1050mm brick lined pipe was surveyed. Data collection took place over the course of 4 days. The goal of the deployment was to accurately measure the remaining wall thickness of the pipe, as well as to detect any voids developing on the outside of the pipe. This was accomplished by the simultaneous usage of PPR, CCTV, and LiDAR. This combination of data revealed critical quantitative information on deformations that will aid the owners to decide on the next steps necessary to maintain the pipe.

PPR technology, combined with CCTV and LiDAR, is a cost-effective, non-destructive pipe condition assessment method. The data provided can be used to accurately estimate the remaining lifetime of a pipeline and refine the timing of repairs, ultimately resulting in more efficient asset management.