Force main Multi-Sensor Inspections Using Video and Integrated Leak Detection

Multi-sensor inspections (MSI) was first pioneered in Canada by combining CCTV, Sonar, 3D Laser, Distance and Temperature and Gas measurements on a robotic platform to gather as much condition data as possible recognizing the costly and difficult conditions for deployments in live flow wastewater pipelines. Municipalities continue to use the multiple sources of pipe operating data in condition assessments as the first line of a triage type of inspection technology priority. With the advancement of an autonomous multi-sensor transport device developed by MTA Messtechnik GmbH, and the European Pipeline Center, there now exists a means to conduct a multi-sensor inspection (MSI).

This presentation examines the benefits and applications of performing a cable-less multi-sensor measurement survey in pressure pipes, including force mains. This battery powered, untethered in-pipe condition assessment device floats with the pipeline fluid, providing continuously data from inside a pipe from an insertion point to an extraction point, not limited by tether length or vertical and horizontal bends during live flow operations. The cylindrical design of this technology which enables stable tracking and not tumbling deployments, allows an assembly of accepted pipe inspection sensor technologies to be synchronized and correlated. The option of matching inspection tool size to pipe size ensures quality video and data collection. With the advancement of the autonomous multi-sensor transport device, there now exists a means to conduct a MSI for pressure pipes, including force mains, and a cost-effective solution to pipeline owners by minimizing deployments and yet collecting numerous types of valuable data for condition based asset management.

Numerous US case studies will reveal how operating conditions of force mains, such as turbidity and irregular flows, have been successfully addressed with this technology.