

Pipeline Inspection of Critical 20-year-old Mine Discharge Water Pipelines in Environmentally Sensitive Area

Challenge

Pipeline integrity is critical to a mine's ability to maximize production, reliability and sustainability. In the U.S., mines operate under strict Environmental Protection Agency (EPA) regulations; as such, pipelines must be carefully monitored and maintained. The cutting, drilling and washing involved in the mining process all contribute to mine discharge water containing high levels of metals. As a result, mine operators are required by the EPA to inspect mine water lines once they have reached a certain age. Any contravention of environmental legislation can result in fines or having to shut down operations until repairs are fixed. Proactive, planned investigations for leaks in pipeline networks ensures that production can continue unimpeded and that the mine is operating in a sustainable manner and not harming the local environment.

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In Colorado, Xylem was commissioned to inspect two parallel HDPE lines used to transport heavy metal-laden mine discharge water from deep underground to a settling pond almost three miles away. The pipelines travel through environmentally sensitive habitats and along a creek as they transport the hazardous water. This was the first inspection of the 12-inch and 14-inch diameter mine discharge pipes since they were laid 20 years ago.



Xylem's innovative SmartBall solution - a free-swimming inline leak, gas pocket and mapping inspection platform - is readied for deployment.

PROJECT HIGHLIGHTS:

- SmartBall detected a medium-sized leak in one mine discharge water pipeline
- Confirmation of containment in the second mine discharge water pipeline
- No disruption to operations during the two-day long inspection

SOLUTION:

Xylem's innovative SmartBall solution - a free-swimming inline leak, gas pocket and mapping inspection platform.

Solution

Xylem deployed an innovative, free-swimming inline leak, gas pocket and mapping inspection platform used for water and wastewater pipeline inspections. Xylem's SmartBall® platform is particularly helpful for operators dealing with leaks/potential leaks and a lack of information about the alignment or condition of buried pipelines. The SmartBall platform can inspect long pipelines in a single deployment without disruption to regular pipeline service, identifying areas in need of repair to prevent further losses. Very small leaks and gas pockets are uncovered using a highly sensitive acoustic sensor while the tool is actively tracked and located from above ground locations as it traverses the pipeline. For a comprehensive pipeline condition assessment, SmartBall inspection results can be combined with transient pressure monitoring to identify harmful surge events, wall assessment to identify wall thinning, and engineering services to perform a structural analysis and remaining useful life evaluation.

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The two pipelines at the mine site do not flow full under normal operation and discharge at atmospheric pressure. Valves were installed at the end of each pipeline to increase the pressure in the pipelines and create conditions necessary for acoustic leak detection.

Result

A two-day inspection using the SmartBall Platform revealed a medium-size leak in one pipe in the vicinity of a nearby creek which could then be addressed through a targeted repairs program. The client was so impressed with the technology that they accelerated their timeline for further routine pipe inspections. The client commented on the team's preparedness, timely performance and ability to follow strict onsite safety requirements.



SmartBall is inserted into the pipelines through existing pipeline features. A two-day pipeline inspection revealed a medium-size leak in one pipe in the vicinity of a nearby creek.



Mine discharge water pipelines crossing a creek in an environmentally sensitive area.



Retrieval of SmartBall tool at the pipeline discharge.