

Non Destructive Evaluation (NDE) of Critical Pipes in Power Plants



Pure Technologies (“Pure”) is a global leader in the development and application of state-of-the-art NDE technologies for critical pipes. Ranging from intake and discharge lines to feeder mains and auxiliary networks, all pipes need to operate safely to ensure efficient and optimum production. Our patented and proven pipeline integrity solutions provide power plant operators with the necessary asset management tools to rehabilitate and replace pipes as needed, thereby extending the life cycle of pipelines.

Engineering Services

Pure Technologies offers specialized engineering support in areas related to asset management, primarily in pipeline condition assessment. Our engineering services group provides comprehensive condition assessment information and management solutions for pipelines with a focus on prestressed concrete cylinder pipe (PCCP). Using finite element modeling (FEM), post-inspection failure risk analysis is established to determine the likelihood of failure. Hydraulic transients, sounding & visual, pressure class, pipe diameter, depth of pipe, age, diameter, and pipe material are some of the factors that influence the FEM process.



In-Line Leak Detection

SmartBall® and Sahara® in-line leak detection technologies provide accurate data on location and size of leaks and gas pockets. The technologies utilize acoustic sensors that capture information on the condition of the pipe as it traverses the line. SmartBall is a one-of-a-kind revolutionary leak and gas detection technology. It is a free-swimming instrumented aluminum core encased in a foam shell capable of detecting and accurately locating acoustic activity associated with leaks and pockets of trapped gas in pressurized pipelines 6-inches and larger in diameter. By identifying pipeline leaks, SmartBall is a valuable tool in preventing water loss and preventing damage.



SmartBall is inserted into a pipeline and travels with water flow for up to twelve hours, collecting information associated with leaks and pockets of trapped gas.

The Sahara leak detection system is a tethered tool that accurately detects pipeline leaks and pockets of trapped gas in pipes 4-inches and larger in diameter. Sahara is a critical component of condition assessment and water loss management programs for utilities throughout the world. Sahara inspections are conducted while the main remains in service by inserting a sensor into any tap 2-inches or larger. An optional CCTV camera provides an in-line and real time visual of valve conditions and other pipe features.

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Electromagnetic In-Line Inspection

Pure provides electromagnetic (EM) manned and robotic inspection technology for evaluating the current condition of PCCP (C301) and bar-wrapped (C303) pipe. By identifying distressed pipe sections and specifying information on the number of broken wires in a given pipe, EM tools can provide pipeline owners with the vital knowledge they need to implement maintenance, repair and replacement programs where required. Up to two miles per day can be inspected, and preliminary results can be presented within days of the inspection. This allows power plant operators to repair highly damaged pipes during short shutdown periods without having to remobilize weeks or months later.



Pure also offers solutions for metallic pipe assessment. Magnetic Flux Leakage (MFL) is the most accurate method of inspecting metallic pipes. Pure's extra-high resolution (XHR) in-line MFL is used to scan the full circumference and length of a pipeline. MFL scans the pipe through linings to measure remaining wall thickness and provides depth and location of metal wall loss. If pitting or corrosion is detected, the magnetic field is distorted, and this distortion or 'leakage' can be measured by the sensors. Structural analysis based on the MFL data offers an early indication of failure mechanisms and determines the risk associated with a pipeline. XHR geometry sensors also detect dents, bulges, wrinkles, buckles, and other geometric anomalies.



Robotic Inspection Systems

PureRobotics™ uses powerful modular robotic pipeline inspection systems that can be configured to inspect virtually any pipe application 12-inches and larger. Capable of performing multi-sensor inspections in dry pipe or while submerged, the PureRobotics pipeline inspection system has a range of up to 3 miles (5 kilometers) from a single access point. The inspection system can be equipped with CCTV, sonar, 3D laser profiling and EM condition assessment tools.

Magnetic flux leakage (MFL) is used to detect corrosion and pitting in lined and un-lined metallic pipelines.

SoundPrint® Acoustic Fiber Optic Monitoring

SoundPrint Acoustic Fiber Optic (AFO) is a patented fiber optic monitoring system used to detect and locate wire failures in prestressed concrete cylinder pipe. This technology involves inserting fiber optic cable in a given pipe and connecting it to a data acquisition unit. The system provides real-time 24/7 pipeline monitoring that can identify deteriorating pipe sections and determine the rate of deterioration in PCCP. Providing real-time pipeline condition data is a very cost-effective solution to ensure critical assets are monitored and data can be linked to GIS and/or SCADA system.