

## Buried Pipe Inspection Services

### Background

Maintenance of underground piping systems has been an ongoing concern of industrial and power generation facilities; recently, this concern has grown increasingly important mainly driven by greater energy needs, aging infrastructure, tighter industry standards and ever-increasing regulatory requirements. Underground piping transporting petroleum products, industrial process fluids and water used in the operation of power plants (both nuclear and fossil), oil and gas facilities, and applicable industrial and governmental processes are of the most interest and receive higher levels of scrutiny.

The potential environmental impact from leaking underground piping, especially in nuclear plants with the potential for tritium contamination of groundwater, has created demand for a more thorough and comprehensive inspection process.

Underground piping is subject to damage from several sources, including:

- Metal loss – pitting, corrosion and erosion effects
- Third-party damage – dents, fractures and latent defects



### Identifying threats to critical pipeline assets

Ensuring piping system integrity in modern plants has never been more critical to improving operational reliability and reducing financial risks.



In the past, industry relied on the established process of PIG inspection (piping inspection gauge, also called Smart Pig or In-line Inspection) of buried pipe systems and random examination of excavated pipe to evaluate system conditions. The PIG tool is a “passive device” however, meaning that the mechanism requires either the piped medium to move the tool or the tool is pulled through the piping system by a tether. The passive device thus adds complexities to the workscope, which usually translates into limited inspection capabilities and added expense.

GE’s Buried Pipe Inspection Service offers industry an intelligent alternative. By using state-of-the-art, self-propelled robotic equipment that is capable of navigating complex underground piping systems, GE is able to explore and examine complete piping systems (filled, partially-filled, or empty) that in the past would have required costly excavation efforts. GE collects and interprets real-time data to assess the integrity of the pipeline and make educated suggestions on proactive steps to prevent failures and help ensure continuous service.

GE is committed to the highest standards in safety and quality, with a dedicated focus on testing and continuous improvement.



## Key features

### Robotic capabilities

Our flexible, self-propelled robots, designed specifically for pipeline inspection, can travel up to 1000 ft., in liquid filled, partially filled and empty pipes. The robot is:

- Deployable through removed pipe sections or through disassembled piping valves, in some cases
- Capable of examining vertical sections under certain configurations
- Able to traverse pipe sections with a small or changing diameter (from 6 to 30 in.) with 1.5 dia. bends
- Equipped with a camera to provide a visual overview

### Sensor technology

GE's Underground Pipe Inspection service provides customers with increased level of inspection data to assist in evaluating the integrity of their buried pipes. By offering both SLOFECT™ electromagnetic and ultrasonic inspection technologies, customers are afforded accurate empirical data significantly greater (80% or more) than current random sampling. Our ultrasonic solution is applicable to both stainless and carbon steel pipe, while the SLOFEC electromagnetic solution can be applied to both carbon steel and cast iron (wall thickness discernible up to 18 mm with up to 10 mm coating) and provides detection and mapping of both internal and external corrosion while minimizing the need for extensive pipe cleaning.

### Proven expertise

GE integrates best practices and knowledge gained from years of testing experience to deliver pipeline inspection services that are comprehensive, extensive, insightful and relevant.

## Benefits

### Comprehensive solution

GE combines the latest in nondestructive testing technologies with our unique, flexible robotic delivery system and highly trained field services technicians to provide our customers with a comprehensive, high-resolution, high-defect discrimination inspection for their underground pipe challenges. The inspection results and accompanying report are based on empirical data for retention or dissemination as required by regulatory agencies.

### Cost savings

- GE's Buried Pipe Inspection reduces project costs and collateral damage to other buried piping systems by eliminating most pipe-excavation activities
- Reduce expensive forced outages through the inspection and related preventative maintenance of your plant's underground piping systems
- GE's solution enables the inspection of substantially larger sections of piping for a fraction of the cost (and risk) associated with performing multiple excavations
- By requiring only a single point of access, fewer expensive pipe modifications, such as manifolding, are required

### Flexibility

Our solution is applicable to a wide range of underground piping system designs. Some notable features that demonstrate the flexibility of our offering include:

- Requires only a single point of pipe ingress and egress
- Usable in pipes with diameters ranging from 6 to 30 in.
- Able to inspect vertical sections of piping with the UT robots
- Applicable in stainless and carbon steel piping systems
- Self-propelled robot performs inspections without tethering or a motion medium (typically, compressed nitrogen or water)
- Able to inspect filled, partially filled or empty piping systems without compromising accuracy

### Confidence

GE's knowledgeable field services staff leverages their experience and multi-industry best practices to deliver comprehensive inspections, yielding the most transparent picture possible of the piping systems' current condition.

### Safety

- Protect your plant, your people, the environment and your reputation by performing underground pipe inspections that help to prevent hazardous consequences
- GE's Buried Pipe Inspection service minimizes injuries associated with heavy excavation

For more information, contact your local GE Energy office, call 1-888-GE4-SERV or 540-378-3280, or visit [www.geindustrial.com/services](http://www.geindustrial.com/services)

