

# Guided Wave Monitoring of Buried Pipelines

Case Study 21



## Buried pipelines

Buried pipelines are a common integrity challenge, due to the difficulty of accessing the pipe. Conventional guided wave testing can be used but access remains an issue.

A GUL monitoring system with a permanently installed gPIMS® sensor represents an ideal solution to the challenge of understanding the condition of buried pipeline assets.

The gPIMS® sensor is installed during the excavation of a section of the pipeline, remaining in-situ during backfill. A cable connects the buried sensor to a connection point above-ground.

## Equipment



**USB Field Control  
Unit**



**gPIMS® Ring**

## gPIMS® Monitoring

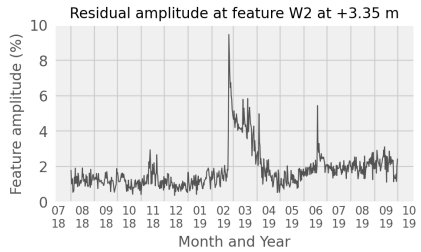
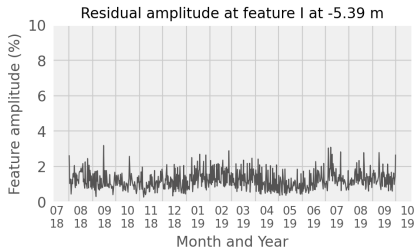
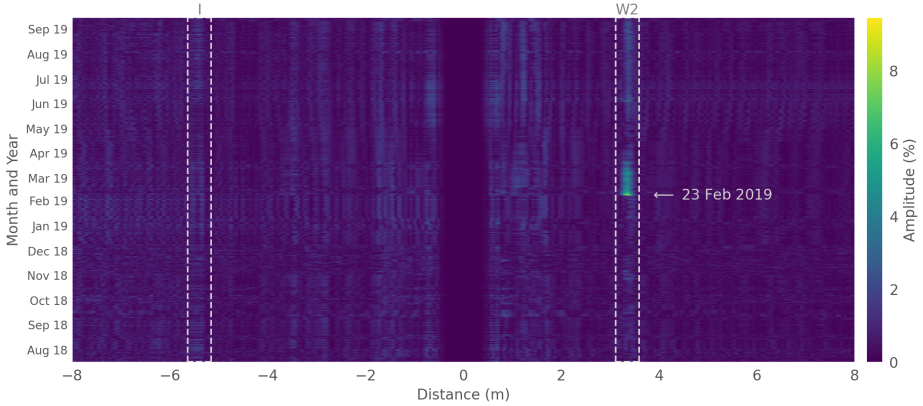
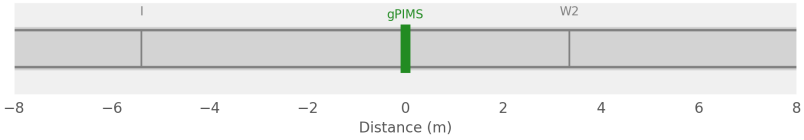
gPIMS® provide two distinct sets of information: wall thickness and area monitoring data.

The thickness of the steel directly under the sensor is measured at 8 circumferential locations allowing the detection of any general corrosion mechanisms.

The area monitoring data monitors for any changes occurring at a distance from the sensor, providing sensitivity to the onset of localised corrosion mechanisms anywhere along the monitored length of the pipe.

This case study describes the results obtained by the GUL Monitoring System installed in the Middle-East region. The system was installed on a buried operational pipeline that was known to be at risk of degradation from a localised corrosion mechanism. This pipe was monitored to ensure the inhibitor dosing was correct and that previously active corrosion was arrested. This case study shows results from the first year of monitoring, using a USB Field Control Unit, automatically collecting data every 14 hours.

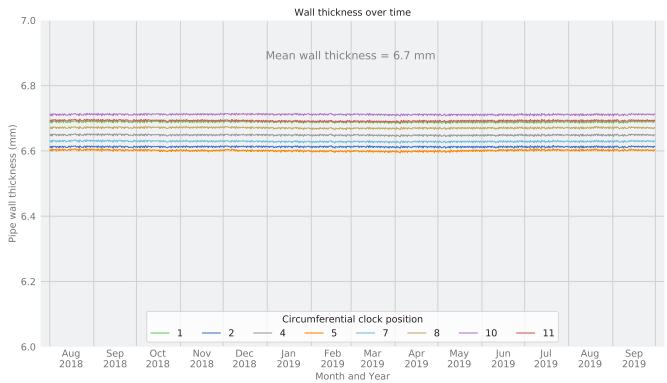
# Monitoring Buried Pipelines



## Monitoring Results

Whilst no localised corrosion mechanisms were detected, the area monitoring results showed signs of sludge build up in the pipe. The sludge indication suddenly disappeared on the 23<sup>rd</sup> February 2019. This correlated well with the timeline for the pipeline cleaning activities.

The wall thickness monitoring results showed very stable readings throughout the one year monitoring period indicating no uniform corrosion mechanisms.



Email : [info@guided-ultrasonics.com](mailto:info@guided-ultrasonics.com)  
 Website : [www.guided-ultrasonics.com](http://www.guided-ultrasonics.com)  
 Tel : +44 845 605 0227

©2023 Guided Ultrasonics Ltd. All rights reserved.  
 2023CaseStudy21\_rev0\_LQ\_Apr/2023

**GUIDED ULTRASONICS LTD.**

Wavemaker House,  
 The Ham, Brentford, TW8 8HQ  
 United Kingdom