

# Rheda-Wiedenbruck, Germany

MUNICIPALITY USES INLINE LEAK DETECTION TECHNOLOGY TO GATHER ACTIONABLE DATA, AVOID COSTLY FAILURES, AND UPDATE ALIGNMENT OF WASTEWATER PRESSURE MAIN

Rheda-Wiedenbruck is a community in the North Rhine-Westphalia state in Germany with a population of nearly 50,000 residents. In early 2019, the municipality identified the HPW Nordring wastewater pipeline for inspection, as the non-redundant line runs through heavily built-up areas without easy access, and the municipality lacked up-to-date drawings on the pipeline alignment. Built nearly 35 years ago during the early stages of trenchless technologies, the high-density polyethylene pipeline had never been inspected, yet functions as an important link in the wastewater transport system for the municipality.

## Challenge

In recent years, **the condition assessment of wastewater mains** has become heavily regulated and required by law. This is in part due to the problem of aging infrastructure, and a stronger political commitment to preserving environmental integrity. A failure to a wastewater pressure main can deliver catastrophic results to the environment and surrounding community.

Gas pockets in sewer mains are of significant concern in metallic pipes as these may cause corrosion and eventual breakdown of the pipe's exposed surface. While corrosion is not a usually a factor in pipelines constructed of polyethylene, gas pockets are of significant concern as the presence of trapped gas can adversely affect pipeline flow, causing pumps to work harder, increasing energy costs for the utility.

Much of Rheda-Wiedenbruck's previous condition assessment work involved pressure testing, an approach that can determine whether a pipeline is losing pressure because of leakage but cannot necessarily pinpoint the location of the leak. Because the HPW Nordring pipeline runs through sensitive areas including a railway underpass and natural reserves, Rheda-Wiedenbruck wished to avoid costly failures and unplanned repairs by gathering actionable data on the condition of the pipeline, addressing potential problems before they might arise.

**They wanted to accurately identify leaks and pockets of trapped gas and take GPS points at select locations to improve their GIS data - all without disrupting service.**



## PROGRAM HIGHLIGHTS

- Inline acoustic inspection identified and located 5 gas pockets in 1.8 kilometers without disruption to service
- Actionable data delivered on the pipeline condition
- Inspection provided GPS pipeline mapping to improve GIS data

## SERVICES PROVIDED

- Condition assessment inspection
- SmartBall™ leak and gas pocket assessment
- Pipeline GPS mapping

PIPE MATERIAL: High-density polyethylene

INSPECTION LENGTH: 1.8 kilometers

DIAMETER: 400 mm

## Solution

In the spring of 2019, Rheda-Wiedenbruck partnered with Xylem for a pilot inspection on 1.8 kilometers of the HPW Nordring wastewater pipeline. Xylem proposed its **SmartBall™** technology, a free-swimming, inline tool that detects acoustic activity associated with leaks and gas pockets in pressurized pipelines. As the SmartBall rolls with the flow of water/wastewater along the bottom of the pipe, it detects each acoustic anomaly. The louder the acoustic sound, the larger the leak or gas pocket. SmartBall can detect leaks as small as 0.01 liters per minute and is much more precise than correlator approaches.

Because Rheda-Wiedenbruck also wished to gain a better understanding of the pipeline's alignment, **SmartBall mapping** capabilities were also used. SmartBall contains gyroscopes that can display directional changes in the pipeline it traverses. Suspected bends in the HPW Nordring pipeline provided geospatial reference points and allowed precise location of anomalies.

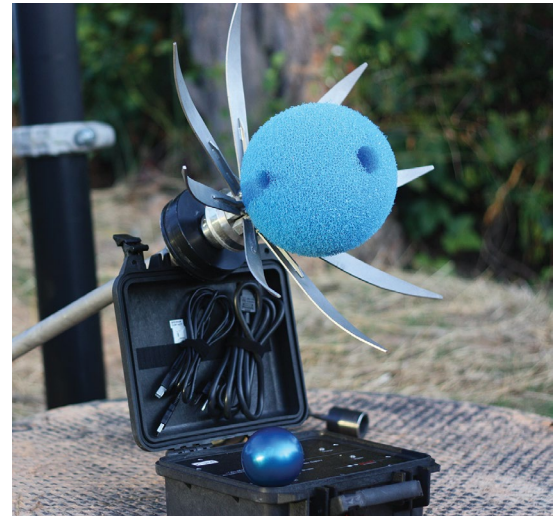
## Outcome

The inspections took place over two days with no impact to daily operations. The acoustic data recorded by the SmartBall tool was analyzed and then cross-referenced with the position data to give a precise location of the detected anomalies. **The SmartBall inspection identified five anomalies associated with gas pockets, which were clearly visible in the data. No leaks were identified.**

Additionally, **the municipality now has directional information on the alignment of the pipeline**, improving existing GIS data and as-built drawings for any future pipeline management.

Based upon the actionable information provided by Xylem, the municipality is better equipped to make the best possible decision on their HPW Nordring pipeline asset.

**That's the power of decision intelligence.**



Xylem's SmartBall platform identifies leaks and gas pockets in transmission pipelines while the line remains in service, minimizing disruption.

**"SmartBall has been a cost-effective tool to assess the condition of a very critical pipeline without causing any impact on our daily operations."**

Ludger Wördemann, Operations Manager at Rheda-Wiedenbrück