

A Pilot in Northern China: Case Study

Satellite Leak Detection Technology For Water Utilities

Background

Water loss control is now a high priority for water utilities in China following a new mandate that took effect on January 1, 2022 to reduce non-revenue water (NRW) to 9% across the country by 2025. Therefore, water utilities have taken the initiative to seek and adopt various technologies to improve the efficiency of traditional boots-on-the-ground leak detection teams.

Key facts

This case study analyzes the results and value proposition of ASTERRA (previously known as Utilis) satellite leak detection technology in a metroplian city in northern China, with 10% unaccounted for real and apparent water losses.



10 M
Population



15400KM
Pipeline Length



3M M³
Water production/day



Recover (drinking water)



Northern China



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SUMMARY

The pilot was performed between October 7, 2021 and November 17, 2021. It took 40 days to cover a 500 square kilometer district area with a total 8000km pipe network. The utility recognized the benefits of the satellite leak detection service and can demonstrate a very high leak-found rate in comparison to traditional field inspection methods.

TECHNICAL EFFICACY

One satellite survey and the subsequent field inspection program were executed in a 40 day period. The overall results are shown below. These outcomes result in a performance metric of 4.5 previously unreported leaks being found per crew day, almost 5 times more compared to the traditional field inspection methods.

	Unreported Leaks*	Crew Days	Unreported leaks/day
Traditional	237	260	0.91
ASTERRA	180	40	4.5

*Unreported leaks often do not surface but are detectable using traditional acoustic equipment.
Source: Tardelli Filho 2004

RESULT ANALYSIS

1

The 180 unreported leaks were non-surfacing leaks. The utility excavated and repaired 30 leaks which were located in main and transmission pipes (17 DN200, 5 DN300, 5 DN400, 2 DN500 and 1 DN600)

2

The biggest unreported leakage flow rate was 62.5 cubic meters/hour; the smallest unreported leakage flow rate was 0.2 cubic meters/hour.

3

Identified signs of meter tampering and also found background leaks in unusual or inaccessible locations such as pipe bridges and underwater pipes

4

Leaks detected across all asset types (mains, customer, ferrule, valve, hydrant, etc) and across all types of pipe materials (PE, PVC PPR, ABS and metal)