

INGU Case study

Pipers® leak detection in high consequence areas

The leakage of oil and gas pipelines may cause significant safety accidents, environmental damage, and economic losses. Monitoring for leaks in high consequence areas is of the utmost importance and when a leak is discovered, expedited repair is essential.

For our client, a refinery in Brazil and a pioneer in the efficient production of fuels, the last mile means successfully transferring oil resources from arriving tankers to its modern port facility. Any delay in offloading the product due to leaks in the transport pipeline would cost nearly \$25,000 per day. To ensure the integrity of the pipeline, the client keeps it pressurized with sea water in between ship arrival.

Our client has Pipers® in stock allowing for an immediate response when a leak is suspected. Since the first inspection in 2020, 9 leaks have been identified, all reported within 48 hours and with a location accuracy better than 1 meter.



Pipeline specifications

Pipeline length	6,026 meters
Pipeline diameter	Multi-diameter (16, 20, and 22 inch)
Pipeline material	Carbon steel
Fluid	Sea water
Location	Brazil

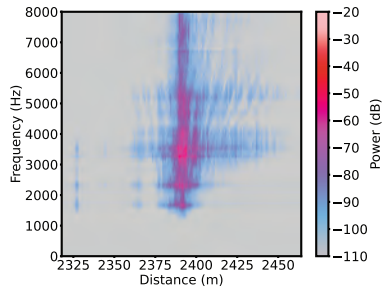
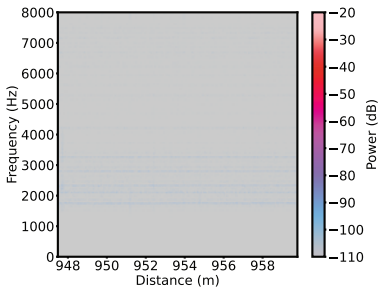
Measurement method

While moving through a pipeline, Pipers® continuously record the relatively quiet flow noise. When passing a leak, the audio level significantly increases above the noise level allowing for the reliable and accurate detection of leaks.

Analysis results

The graph on the left-hand side below shows the reference spectrogram, i.e. the typical sound in a pipeline in the absence of a leak. The graph on the right-hand side below shows the spectrogram around a confirmed leak.

As the Piper approaches the leak location, the sound amplitude increases reaching a maximum before decreasing as the Piper moves downstream away from the leak. This results in the symmetrical signature that extends into the higher frequency domain near its center.



To find out if the Pipers® inline inspection solution is right for you, visit ingu.com or email us at info@ingu.com.



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