



Nautilus[®]
System
by HYDROMAX USA



Nautilus System

Innovative, efficient and cost-effective solution for leak and gas pocket detection in large diameter pressure pipelines

Nautilus System:

For leak detection and gas pocket identification in large diameter pressure pipes

The Nautilus System consists of a small diameter sphere that is inserted into the network where it travels freely through the pipeline, driven by the water flow. The sounds generated by a leak, gas pocket or anomaly have unique characteristics. The device captures the sound of these from the inside of the pipeline. Once the sphere is extracted, software developed by our partners, Aganova, processes the compiled information using a mathematical algorithm showing the location of the leaks, gas pockets and anomalies encountered.

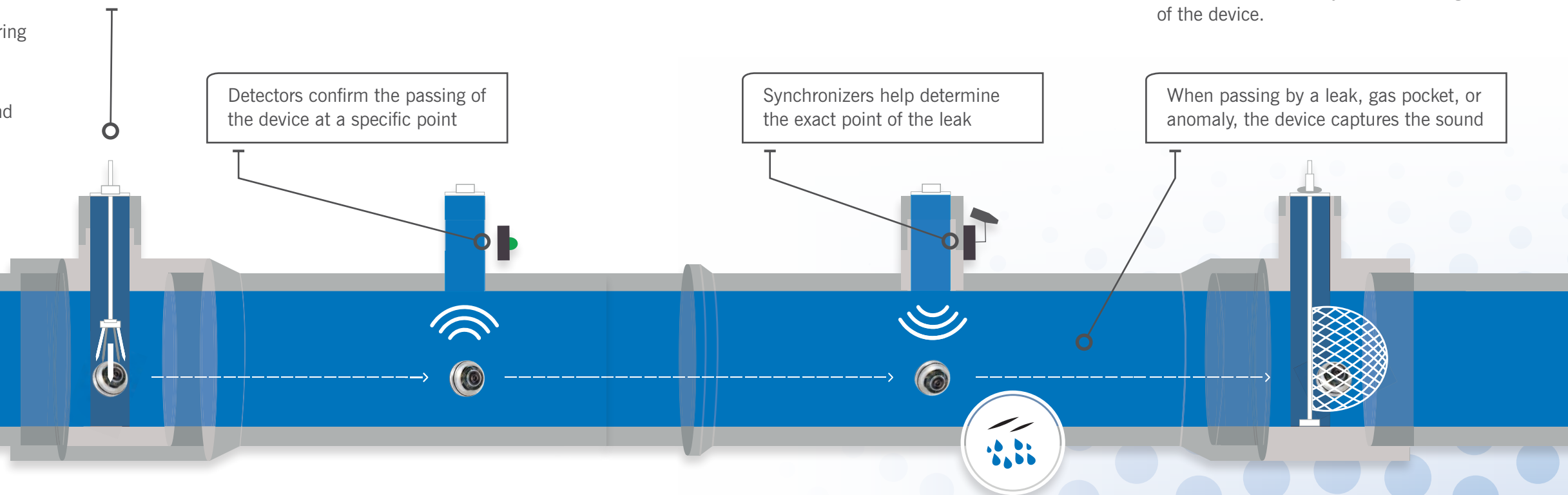
NAUTILUS BENEFITS

- **Fast:** The Nautilus System collects data on up to 22 miles of pipeline in one inspection.
- **Flexible:** Neutral buoyancy allows for operation at lower flows than tools that roll on the bottom of the pipe.
- **Efficient:** Neutral buoyancy allows the device to avoid obstacles like sediment, tuberculation, butterfly valves, etc.
- **Effective:** Detects leaks as small as 0.15 GPM by being up to 50% closer to the leak than tools that roll on the bottom of the pipe.
- **Versatile:** Can be used in all types of pipeline materials at any depth.
- **Easy:** No disruption to pipeline service during deployment.
- **Cost Effective:** The most cost-effective system on the market for leak detection and gas pocket identification in large diameter pipelines.



INSERTION

The device is inserted into the pipeline using an insertion system and a 4" or greater pressure valve. This system is used to assure that insertion is done correctly. The system consists of a number of elements designed to place the device inside the pipeline and to assure that its navigation is controlled.



Nautilus System Uses and Reporting

LEAK DETECTION:

Provides both acoustic verification and a visual spectrum plot of the location of a leak within six-foot accuracy

NETWORK DIAGNOSIS:

Provides important information regarding leaks, gas pockets, and anomalies that facilitate pipeline rehabilitation/replacement decision making

FAILURE PREVENTION:

Identify leaks and gas pockets before potential catastrophic pipeline failures

DELIVERABLES:

The final inspection report provides a range of observations for each identified leak, gas pocket, and anomaly, including but not limited to:

- Acoustic recording supported by visual plot (Colorimetry) of the identified discrepancy
- GPS/GIS deliverable of all findings and all project appurtenances in ESRI-compliant format
- Web-based project management/reporting portal

SYNCHRONIZATION AND PASS DETECTORS

The synchronizers and pass detectors are placed along the pipeline at accessible points such as valves. The synchronizers support the positioning of leaks, gas pockets and anomalies. The pass detectors provide confirmation of the location of the device during testing.

EXTRACTION

The device is captured and extracted at the end of the pipeline with a net, which is also inserted into the pipeline through an existing air valve or tap. The extraction system is extendable and consists of interchangeable elements adapted to the diameter of the pipeline at the point of extraction. This system is equipped with a camera and an alert system indicating the arrival of the device.



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