Atmos Pipe

The Statistical Volume Balance Leak Detection System

For many years pipeline controllers have trusted Atmos Pipe for supreme reliability and ease of alarm and event analysis. Operator confidence and prompt response to Atmos Pipe leak alarms have helped minimize the significant costs of dozens of real pipeline leaks and ruptures.

Why Atmos Pipe is the most reliable

The first statistical volume balance system, Atmos Pipe, has been at the forefront of leak detection technology since 1995. It uses the powerful Sequential Probability Ratio Test (SPRT) with pressure and flows analysis to optimize leak detection. Atmos Pipe assures tuning and optimization for every pipeline to minimize the effect of:
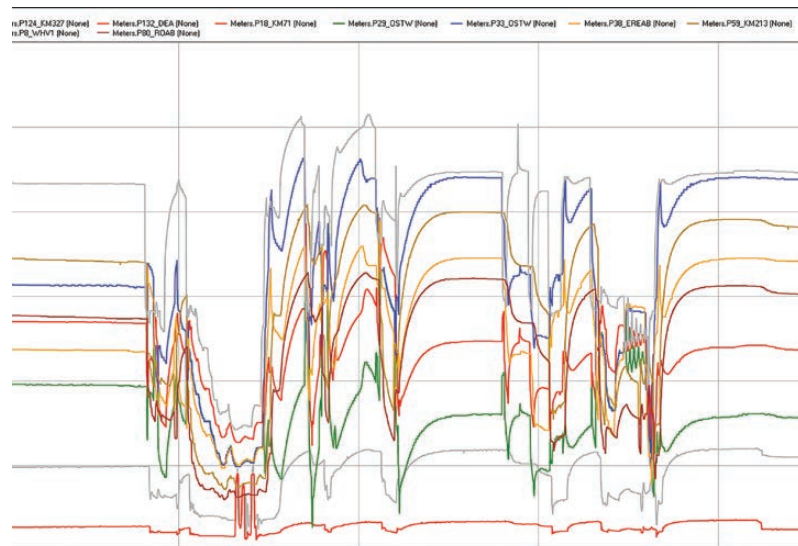
- Instrument faults, including telecommunication failures
- Operational changes from shut-in to startup and flowing
- Fluid property changes
- Seasonal changes or supply and demand variations

Atmos Pipe identifies operational changes in the pipeline and continues to detect small leaks during transients.

Why Atmos Pipe is the best

- Field-proven for over 25 years on more than 900 pipelines, transporting a vast spectrum of gas and liquid products
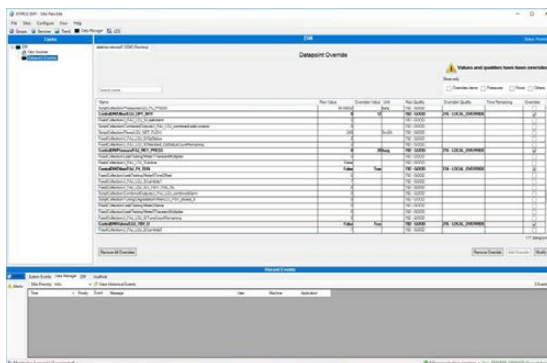
- Very reliable - minimum false alarms
- Trusted most by controllers when they make the tough decisions
- Detects onset and existing leaks
- Deployed in pipelines from 0.25 to 1,190 miles long, and 0.5" to 48" in diameter
- A software solution that only needs flow and pressure data from SCADA or PLC systems
- First choice of most major pipeline operators worldwide (references available upon request)
- Proven to be the most reliable, sensitive and robust solution for complex gathering networks with up to 300 Lease Automated Custody Transfer (LACT) units
- Detects leaks under all operating conditions, maintaining high sensitivity during transient pipeline operations
- Fully compliant with: API 1130, API 1175, API 1155, API 1149, CSA Z662, German Regulations for Pipeline Leak Detection (TRFL), and Shell Pipeline Leak Detection Recommendations (DEP 1.40.60.11Gen)

Atmos Pipe is proven to detect leaks through transient conditions

Additional features for even higher reliability and performance

- Draining and filling module

- Override function (OPC Quality, OPC Values (Continuous or time-based options)

- Additional op status exploiting artificial intelligence

- Improved LDS algorithms

- Advanced leak location algorithms to locate leaks with even more precision

- Improved redundancy (multiple OPC DA and UA sources, SQL Replication, Hot and Cold LDS Standby, Back-up Control Room synchronization)

- Improved System Management Tool screens (PDF viewer to access project documentation, and seamless integration with all Atmos products)

Override function is especially useful when LDS must still operate when stations are down for maintenance

More options for continuous improvement

Purchase additional functionality and complementary leak detection systems that requires no new infrastructure (SMT compatible)

Fast scanning

More precise leak location, as accurate as ±100m with no additional load on telecommunications. Requires the addition of Atmos AWAS high-speed data acquisition units.

Atmos Rupture Detector

Reliably detects ruptures in seconds to minutes anywhere on a pipeline.

SCADA Wave (complementary LDS)

Rarefaction wave leak detection using SCADA pressure data to identify the onset of a leak. Detects smaller leaks and works as a great compliment on pipelines with faulty or inaccurate flow meters. Requires no additional hardware. Designed for long pipeline sections with several dispersed pressure sensors.

Cumulative Volume Balance (complementary LDS)

Line balance and over/short calculations. Configurable averaging periods, each with a specific leak volume.

API/CSA Certification testing and operator training

Atmos Test Service

Re-run historical leak data to confirm the current leak detection system performance or train pipeline controllers. Atmos Test works offline independent of the live LDS. A convenient pre-configured trend displays the results in the LDS Test Summary. The Atmos Test Service generates a test certificate detailing the actual leak properties and the current performance of the LDS for comparison.

Use Test Service in fast-speed mode to replay months of data in minutes or in real-time for operator training sessions.

Test certificate documents LDS testing per API recommendations
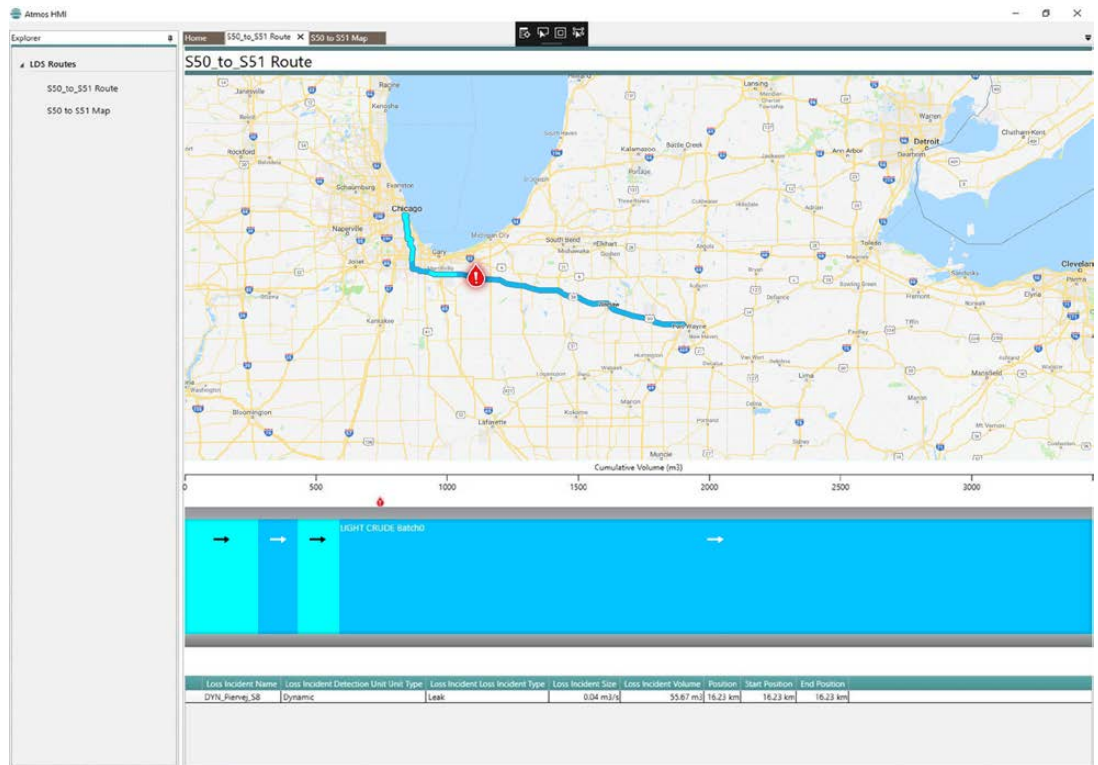
Live Leak Test

Superimposes a leak signature on the live incoming pipeline data to verify the performance of the live leak detection system.

Atmos GUI / HMI

Engineers and end-users find this flexible HMI easy to configure. Configurations update quickly and effortlessly. The comprehensive maps zoom to scale and report the estimated leak location in real-time.

Theft detection LDU

Specially designed to find the start and the finish of a "theft" event, i.e., the opening and closing of a valve to remove product from a pipeline. Many pipeline operators did not realize they had product theft until they detected it with the theft detection LDU or Theft Net Service.

Example of Atmos Pipe leak detection GUI

Key features with all options enabled

- High reliability - minimum false alarms

- Pipeline controllers trust this system and quickly make the correct call

- Even faster detection of onset and existing leaks

- Leak location accuracy as good as ±100m (with fast scanning option)

- Leak detection size as accurate as 0.25% of flow with high-quality instrumentation

- Draining and filling module to reduce the prospect of false alarms during pipeline filling or draining

- Complementary LDS methods to comply with API recommendations

Sensors used

- Pressure sensors at each end and, optionally, at intermediate pump and valve stations

- Flow meters at supply and delivery points

Data source

- Atmos Pipe: SCADA, DCS, PLC, or RTU

- Atmos Pipe with Fast Scan: PLC or Atmos Wave data acquisition unit (AWAS), using OPC UA

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About Atmos International

Founded in 1995, Atmos International provides pipeline leak and theft detection, simulation technology, instrumentation and engineering services to the energy, water and associated industries. Atmos is the first choice of most pipeline companies worldwide, and is extensively used by major operators like Shell, BP, ExxonMobil, Petrobras, Enbridge and Total. With associated offices in the USA, China, Russia, Singapore, Indonesia, Colombia, Ecuador, Peru and Costa Rica, and local agents in 28 countries, our multi-cultural and multilingual team is dedicated to effective global support for the lifetime of our products all over the world.

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