Chemical pipelines

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The chemical industry faces many challenges, not only in processing hazardous materials but also during transport and storage of the same

Chemicals range from industrial chemicals to petrochemicals such as oil, natural gas, and pesticides. Transporting flammable, reactive, and potentially lethal chemicals is not only difficult but has the most significant impact should something go wrong.

The nature of the hazardous materials means that safety is at the forefront of the logistics, particularly in places of high consequence. There have been two recent train accidents in the US, one resulting in 47 deaths, and both causing massive, fiery explosions. This has put the transportation of toxic chemicals by railroad under scrutiny. Transporting via pipelines is probably the safest option, however it is still a huge responsibility to ensure the safety of people and the protection of environment in the event of a spill. Potentially large spills from the pipelines can be avoided with an effective leak detection system. It is worth the effort to install an advanced leak detection system (LDS) that can recognize a leak early and thus minimize the damage to people, environment, property and the reputation of the pipeline owner or operator.

Atmos solutions are effective in all pipeline locations:

- Subsea
- Over land
- Close to communities
- High consequence areas (HCA)

Atmos products available for the chemical industry
Leak Detection

A reliable and effective leak detection solution is invaluable to the chemical industry to help prevent damage to people, property and the environment, identify possible thefts and help prevent reputational damage due to a spill.

Atmos Pipe

Atmos Pipe employs Atmos' unique statistical volume balance method to provide an extremely reliable leak detection system that can detect both the onset and existing leaks.

Atmos Pipe has the ability to identify operational changes in the pipeline and can detect leaks during transient operations. Data validation algorithms and filtering techniques are employed to improve data quality. Flow measurement errors are also learned to assist in the provision of reliable and sensitive leak detection.

Atmos Wave

Atmos Wave detects the rarefaction wave caused by a leak in a pipeline. When a leak occurs, a rarefaction wave travels in both directions along a pipeline. Using fast response pressure sensors Atmos Wave filters the pressure signals to find those with the frequency and magnitude of a leak. The time at which the pressure signal reaches each pressure sensor is used to determine the location of the leak extremely accurately.
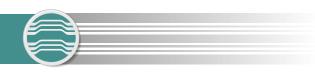
Atmos Wave Flow

Atmos' newest LDS uses elements from both mass balance and rarefaction wave methods. The sophisticated system uses a multi-element model to reduce uncertainty and improve performance. This provides accurate leak detection and location in a significantly faster time

Atmos SMT

A system that monitors the status of Atmos' application software to ensure they are functioning correctly while running in the background. This provides piece of mind without the need for human intervention.interdum massa volutpat.

Atmos products available for the chemical industry
Simulation

Pipeline operators need to respond quickly to ongoing changes in supply and demand. Under emergency situations their actions can be critical to the safe operation of the pipeline. The simulation suite can help them run the pipelines safely and cost effectively at all times.

Atmos SIM Online

Atmos SIM Online models the pipeline using real time data from DCS and SCADA systems. It allows the operators to monitor areas where there is limited or no instrumentation, such as at mixing and tie-in points.

Forecasting modules allow the operators to view the forecasted behavior in the pipeline and assess the safety of the schedule. 'Lookahead modelling' shows what will happen if the pipeline continues to operate in its current state. 'Predictive modelling' shows the pipeline's behavior in a variety of future scenarios that can be configured, saved and used again. Alarms can be configured for a variety of set thresholds to determine if the current schedule is likely to violate safe operating conditions.

Atmos SIM Offline

Atmos SIM Offline works independently of any real pipeline control systems and is the ideal tool for design, equipment sizing and locating, operational tuning, capacity planning and training.

During tuning operations, the tuning assistant automates the tuning process by calculating specified parameters to achieve the correct hydraulic behavior. This ensures the model's accuracy without the need of intensive tuning performed by the user. The configured model may also be used for online hydraulic simulations if required.

Atmos Surge Analysis

As an additional module to Atmos SIM Offline, Surge Analysis automates some of the analysis procedures and produces a detailed surge analysis report. This would normally be a huge task for a pipeline operator. It conforms to the US Department of Transport (DOT) requirements, identifying locations where the pipeline is most likely to rupture and which operating conditions would be considered safe.

Atmos Trainer

Different options of Atmos Trainers are available to suit each operator's requirements. Atmos offers everything from a standard Atmos GUI connected to Atmos SIM Offline to a bespoke trainer fully replicating the SCADA system in line with actual pipeline operations. The latter may even include simulations of emergencies outside the pipeline, such as fire alarms, earthquakes or electrical failures.

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Atmos International (Atmos) provides pipeline leak detection and simulation technology to the oil, gas, water, and associated industries. The company was founded in 1995 in the UK by the inventor of the statistical pipeline leak detection system – Atmos Pipe, now one of a suite of leak and theft detection solutions from Atmos. These technologies are implemented on hundreds of pipelines in over 50 countries, including major oil and gas companies such as Shell, BP, ExxonMobil, and Total.

With associated offices in the USA, China, Russia, Singapore and Costa Rica, and local agents in 28 countries, the multi-cultural and multilingual team can provide effective support all over the world.

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