

Ammonia Pipeline Monitoring

France

Ammonia is highly toxic, and needs to be carefully monitored when transported as a highly-cooled liquid through pipelines. AP Sensing's fiber-optic based DTS system was selected to monitor an entire network of ammonia pipelines at an animal food supplement plant.

Ajinomoto Eurolysine is the leading European operator for the production of feed-use amino acids. Their production site is located in northern France, where they take delivery of the ammonia via train tanks.

A distribution pipeline network is used on the ammonia campus **to transport the ammonia**. Additional challenges were the large number of **3D bends** throughout the network, and **variations in the pipe diameter between 2 and 4 inches**. To monitor all of the pipelines, a 2-channel AP Sensing DTS (Distributed Temperature Sensing) device is used to monitor the pipeline for fast leak detection.



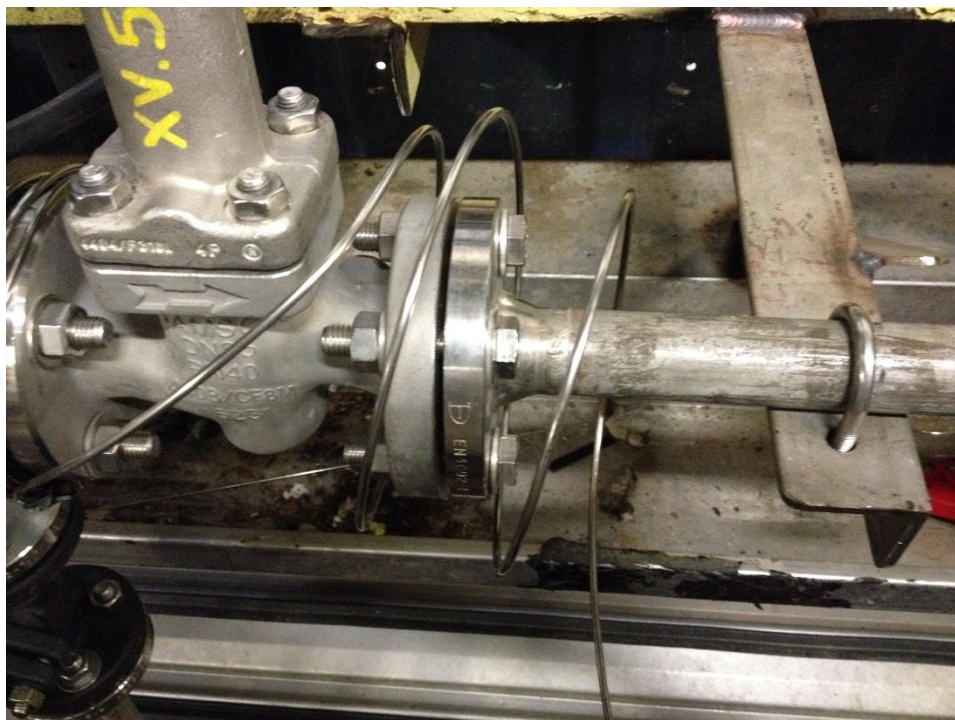
Ammonia pipeline area



*Production site in northern France;
ammonia sphere on the right*

A **sensor cable** with flexible metal inner and outer tubing was selected because of its optimal protection and strength, as well as its fast thermal response time and appropriate **operating temperature range**. The fiber was **retrofitted to the bottom of the insulated pipes**, and placed outside the insulation. Altogether approximately **1200 m of sensor cable** was deployed.

The AP Sensing DTS installation is designed to detect any “cold spot” which would occur if ammonia were leaked anywhere along the pipeline. The liquid ammonia in the pipeline would quickly expand as it turns into gas, quickly lowering the temperature. In case of an alarm condition along the pipeline, valves are closed before and after the leak location to quickly shut off the flow of ammonia. This limits the amount leaked into the environment in case of an accident.



Sensor cable wrapped around a flange for improved leakage detection

The installation was carried out with our expert worldwide partner TopSide, providing valuable experience for fiber retro-fitting, installation planning and execution, splicing, and cable routing.



DTS monitoring of ammonia tanks; the “pipe rack” on the campus

DTS alarms are communicated to the plant’s control system via the internal ModBus TCP interface. No additional PC is required.

A valuable and potentially risky infrastructure is **securely and efficiently monitored for maximum protection.**

