



# Monitoring of Heat Tracing Pipeline Systems

## THE CHALLENGE

Crude oil or chemicals such as sulfur or phenol are solid or have very low viscosity at room temperature and must be heated into a liquid state for transportation. Pipeline transportation is a reliable solution that decreases transportation costs and various operational hazards that would accompany shipping chemicals via road or rail.

With the pipeline transport, there is always the risk of freezing due to a potential failure of the auxiliary heating or defects of the thermal insulation. Temperature monitoring enables operators to locate cold spots within the pipeline that require more power consumption to heat. If power is not maintained to heat up cold spots, the liquid could solidify at points along the pipeline. This increases pipeline susceptibility and the possibility of rupturing. The pipeline also cannot be overheated, as this turns the chemicals within it into gases that will evaporate and pose a hazard.

A ruptured or damaged pipeline comes with enormous costs and implications including impacts on human safety, the environment, company reputation, monetary costs and lost production time. AP Sensing offers a solution to monitor the temperature of heated pipelines so that issues can be understood and addressed immediately.

## THE INNOVATION

AP Sensing's Distributed Temperature Sensing (DTS) uses a fiber optic cable to monitor the temperature along the entire length of a pipeline and identifies temperature anomalies and issues within it. The specially designed sensor cable is adaptable to very high temperatures of up to 300°C and is designed to require less maintenance after installation than alternative solutions.

Additionally, by enabling the process control of active heating pipelines, flow assurance is maintained, which optimizes energy usage.



**SmartVision™ temperature profile**



## WORLD-CLASS SYSTEMS

Thanks to our patented code-correlation technique, AP Sensing's monitoring solution includes a modern, high performance RAMAN DTS system. Our DTS solution utilizes a fiber optic cable installed within a duct attached to the pipeline, similar to the 'skin effect' heating cable. The permanent temperature monitoring via this fiber optic cable is used to supervise the pipeline heat tracing system and maintain pre-defined temperatures along the entire length of the pipeline.

AP Sensing's system is well-suited to the harsh environments, extreme temperatures and uneven terrain that can affect heated pipelines. The system is well-protected from damage, corrosion and contamination. A dual-ended configuration is used automatically handle changes of the attenuation ratio when the temperature of the pipeline changes and stress to the fiber may occur, as the dual-ended measurement configuration of our DTS systems calibrates this parameter automatically.

In addition, smart alarm algorithms detect and automatically classify events. The powerful, integrational SmartVision™ management software completes our AP Sensing monitoring solution. SmartVision™ provides multi-user and multi-device visualization and data storage capabilities. The clear graphical interface indicates cable and temperature conditions, and issues alarms if pre-defined conditions are exceeded in any zone.



## RELIABLE & EFFICIENT

AP Sensing's comprehensive fiber optic monitoring solution enhances the performance of your pipeline and optimizes energy usage by maintaining flow assurance. We detect, classify and locate pipeline weaknesses in order to ensure pipeline integrity and provide peace of mind for pipeline operators.



*Sulfur pipeline utilizing AP Sensing monitoring solution*

## WHY AP SENSING?

- Industry-leading monitoring solution that offers fast response times, excellent accuracy and low maintenance
- Most reliable detection results due to unique technologies such as code correlation
- No drift and no recalibration thanks to patented single-receiver design and inherent strain insensitivity (no strain cross-talk)
- Industrial quality supported by a complete set of type tests and certifications in compliance with internationally recognized standards
- Project management, commissioning, and post-sales service; world-class support for project planning, design and installation
- Network of regional partners and experts, and proven deployment in all regions in the world



Passion for Plants.

For every unit sold, AP Sensing plants 100 trees