OptaSense®
A LUNA company

Case Study

OptaSense Provides Flexible Solution for Pipeline Monitoring in Algeria

Fiber-optic sensing system overcomes power requirement challenges

The Challenge

Pipelines around the world are often installed in remote locations, and in many cases, having a consistent power source can be problematic. Alternating current (AC) power is not always available so solar panels are sometimes used to provide direct current (DC) power along the pipeline. This can present a problem for operators who need to power an intrusion and leak-detection system along the pipeline, particularly if the system is unable to run using only one type of electrical current power.

To meet the challenge presented in these remote environments, OptaSense delivers some of the longest fiber-optic-based pipeline monitoring systems ever deployed and offers reliable, 24/7 trusted detection in real time, with the flexibility to adapt to the operational challenges these projects provide.

The Project

The Algerian end user, Sonatrach Agip, built a new 180km gas pipeline between the Bir Rebaa Nord (BRN) Oil Center (CTH) Gas and the Menzel Lejmet East (MLE) Gas Treatment Plant.

INPROTEC, an Italian-based company, with subsidiary offices in Algeria (INPROTEC Algérie) acting as the main automation supplier for this project, selected the OptaSense pipeline monitoring system to be installed with connections to the fiber-optic cable in four locations along the pipeline.

Problem:

- Extreme environmental conditions
- Remote location requiring multiple power sources
- Lengthy pipeline run

Solution:

- OptaSense Fiber-Optic Monitoring Solution, including:
  - 5 Interrogator Units
  - 4-Mode Leak Detection
  - Pig Tracking

Value Delivered:

- Flexible power acceptance
- High sensitivity monitoring
- Increased reliability
- Cross-platform integration

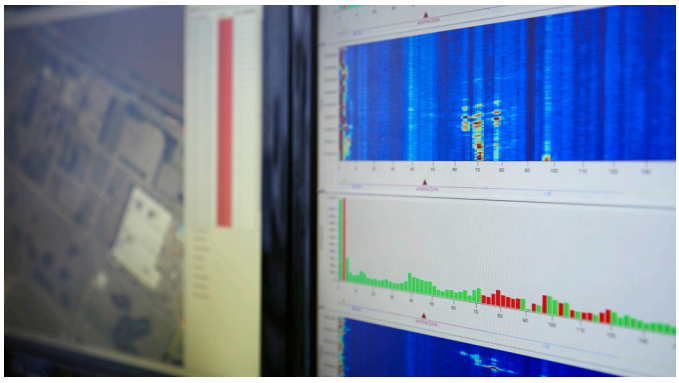
Installation of the OptaSense pipeline monitoring equipment inside a passive cooling cabinet.

When an infrastructure installs fiber-optic cabling for communications, it is becoming rare not to take advantage of the installation to get added value from the cable. The OptaSense system is able to use standard telecom-grade fiber-optic as the sensing medium and provides critical monitoring for any intentional or unintentional intrusion activity that result in a leak or explosion.

System Deployment

The Algeria project presented a unique challenge because of power restrictions along the pipeline. Although a distance of up to 100km can be covered with two interrogator units, the given infrastructure circumstances of the project required five units for covering the 180 km distance of the pipeline.

Of the five units required, three needed to be DC-powered as they are placed in two intermediate locations where the power is limited. For this reason, the processing units were also taken out of the field and placed in the two stations at start and end of the pipeline, which have no power limitations. The flexibility of being able to operate under a combination of both AC and DC power was decisive for the customer provided a clear solution to their power challenges.



The OptaSense Pipeline Monitoring System user-interface screen.

The two companies, INPROTEC and OptaSense, implemented an innovative solution that has allowed them to achieve the intended goal.

The system is virtually infinitely scalable in case expansion is needed in the future, with only additional fiber installation required in the area to be added.

Delivered Value

The aim of the project was to cover the length of the pipeline with a distributed sensor that allows the monitoring of the critical pipeline 24/7, receiving automatic and classified alerts on a user-friendly GUI, installed in both sites, BRN and MLE.

OptaSense's technology provides a diagnostic monitoring of the pipeline enhancing the client's awareness of a potential threat to the integrity of the site. The ability to automatically classify specific events, such as manual digging, footsteps, vehicles, leaks, etc., minimizes unwanted alerts while providing the operator an enhanced situational awareness of the pipeline. In all power settings, the OptaSense pipeline monitoring system has the ability to:

- Use a standard single-mode fibre-optic cable which does not need to be attached to the pipe
- Classify activity with algorithm detectors and reject signals like animals or severe weather
- Use a 4-mode signal approach to leak detection, which improves sensitivity and reliability
- Deliver high-performance that exceeds client expectations, with a disciplined install process
- Integrate to SCADA and other platforms like cameras

For more information, please contact your OptaSense representative or visit www.optasense.com/pipeline-monitoring.

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