LUNA Sensing Group

# Pipeline monitoring

## Luna provides a flexible fiber-optic sensing solution for pipeline monitoring in Algeria that overcomes power requirement challenges.

**CASE STUDY** **Client location: Algeria**

### 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.

### Solution

Luna 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 solution included five interrogator units, 4-mode leak detection and pig tracking.

### Results

INPROTEC and Luna achieved the intended goal: 24/7 monitoring of the full length of the critical pipeline, with automatic, classified alerts on a user-friendly GUI at both the BRN and MLE sites.

## Background information

The Algerian end user, Sonatrach Agip, built a new 180 km 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 Luna pipeline monitoring system to be installed with connections to the fiber-optic cable in four locations along the pipeline.

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 Luna system is able to use standard telecom-grade fiber-optic cable as the sensing medium and provides critical monitoring for any intentional or unintentional intrusion activity that could result in a leak or explosion.

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

## System deployment

Of the five units required, three needed to be DC-powered, as they are placed in two intermediate locations where power is limited. For this reason, the processing units were also taken out of the field and placed in the two stations at the 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 and provided a clear solution to their power challenges.

## Value creation to client

Luna's technology provides diagnostic monitoring of the pipeline, enhancing the client's awareness of potential threats to the integrity of the site. The ability to automatically classify specific events, such as manual digging, footsteps, vehicles and leaks, minimizes unwanted alerts while providing the operator with enhanced situational awareness of the pipeline.

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.



Figure 1: Installation of the Luna pipeline monitoring equipment inside a passive cooling cabin.

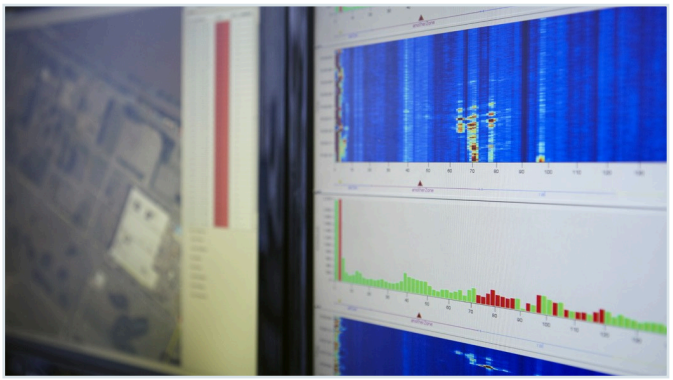


Figure 2: The Luna Pipeline Monitoring System user interface.

# Why Luna Pipeline Monitoring?

## Flexible power acceptance

The system can operate under a combination of both AC and DC power, so it can be deployed along remote pipelines where AC power is not always available.

## High sensitivity monitoring

A 4-mode signal approach to leak detection improves sensitivity and reliability.

## Increased reliability

Algorithm detectors classify activity and reject signals such as animals or severe weather, and a disciplined install process delivers high performance that exceeds client expectations.

## Cross-platform integration

The system integrates with SCADA and other platforms, such as cameras.

## Standard fiber-optic cable

Luna uses a standard single-mode fiber-optic cable which does not need to be attached to the pipe.



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