

IOT - INTERNET OF THINGS

Fiber Optic Monitoring System.



Ensure the continuity of your operations with a robust, real-time fiber optic monitoring system.

We help those responsible for **Integrity, Maintenance and Operations**, in the **Oil & Gas** and **Mining** sectors to monitor and detect changes in temperature, deformations and vibrations that may affect the integrity of their assets and facilities.

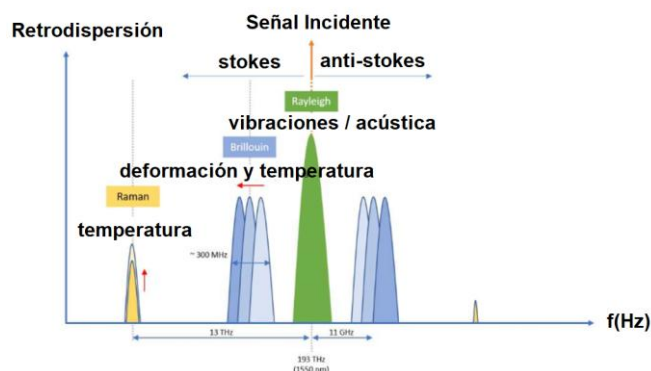
Through this system, you will have information about your assets, in real time and remotely. In this way, it will increase safety and operational continuity while ensuring the safety of people and the environment.



FIBER OPTIC MONITORING.

Principles of Distributed Fiber Optic Sensing

The laser light transmitted inside the optical fiber undergoes reflections, variations in amplitude and phase, as well as changes in polarization when an external disturbance is applied at some point in the optical fiber. Our fiber optic monitoring system uses these properties to monitor changes in temperature, deformation, and vibrations that may affect assets and facilities.

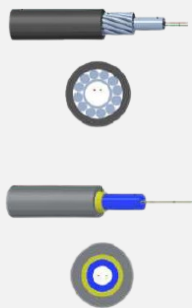


DTS and DAS Monitoring

System Implementation Modalities

Our fiber optic monitoring systems consist of four components, fiber optic system, interrogators, mounting system, and display peripherals

Optical Fibers



Different types of optical fibers selected according to the parameter to be monitored and the environment where they will be installed.

Interrogators



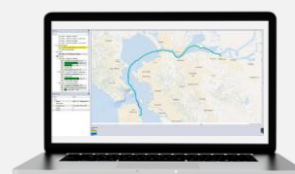
Specific interrogation equipment for strain and temperature measurement (DSS/DTS) and vibration (DAS/DVS) with a variety of channels, resolutions and ranges

Assembly



Possibility of mounting on both fixed and portable 19" rack systems. Self-contained, uninterruptible feeding systems

Visualization



Charon software for data acquisition, processing, analysis and visualization. Connectivity with SCADAs and IoT systems.



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The Interrogators



LIOS
Luna Innovations

It uses the BOTD-R (Brillouin Optical Time Domain Reflectometry) technique for measurement by spontaneous dispersion, thus requiring the connection of a single end of the fiber to be measured.

Sensing range: 5 Km.

Channels: 4.

Fiber type: Single mode 9/125.

Wavelength: 1550 nm.

Sampling interval: 0.25 m.

Communication interfaces: 2 x Ethernet, USB.

Communication protocols: ModBus TCP, DNP3, IEC60870, IEC61850

Luna Innovations' Optasense equipment for vibration monitoring.

Sensing range: 10 Km.

Channels: 1.

Fiber type: Single mode 9/125.

Wavelength: 1550 nm.

Sampling interval: 0.25 m.

Communication interfaces: 1 x Ethernet.



OPTASENSE
Luna Innovations

Multiple applications in the Oil&Gas industry



Activity Detection

By offering real-time monitoring of long assets, such as fences and borders. It allows you to accurately detect, classify, and locate a range of activities, including people, vehicle movement, low-flying aircraft, and more.



Intrusion Monitoring

By offering third-party right-of-way and intrusion monitoring, operators are alerted to potentially hazardous activities occurring within the pipeline corridor, such as excavations, movement of vehicles, and other large machinery, before contact is made with the pipeline.



Leak Detection

By integrating leak detection, you will not only improve incident reduction, but also increase the effectiveness of response mechanisms by ensuring that manual pipeline inspection is focused on areas of real activity.



Proximity Activities

By recording all activity in the vicinity of a pipeline before and after a large-scale widespread disturbance, such as an earthquake or earthquake, engineers can understand the resulting damage and whether the integrity of assets has been compromised.



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