TECHNOLOGY SHEET

FIBER OPTIC DETECTION SYSTEM

PERIMETER INTRUSION DETECTION BY FIBER OPTIC

Fiber optic detection systems consist of a fiber optic cable, deployed on fence panels or buried, connected to a DAS analyser.

DAS technology (Distributed Acoustic Sensing) allows the measurement of acoustic vibrations within a fiber optic cable using a Rayleigh optical reflectometer. The acoustic processing of thousands of captured sounds detects a deformation in the light traveling through the fiber optic. This deformation is analysed and then transmits an alarm notification according to the predefined settings.

TECHNOLOGICAL FEATURES

- **Simplified installation:** no specific mounting constraints
- **Easy installation and maintenance:** minimal civil engineering required
- **Versatile applications:** installation on fences or buried

OPERATING PRINCIPLE

SORHEA's fiber optic intrusion detection system is based on a **next-generation DAS analyser**. DAS technology (Distributed Acoustic Sensing) secures **long distances** using a single fiber optic cable deployed across the protected site.

This technology enables **real-time detection, geolocation, and activity classification**, optimising the deployment of security personnel.

SORHEA'S FEATURES

- Next-generation **quantitative DAS**
- **Versatile applications** (fence and buried installation)
- **Minimal civil engineering required**
- **Fiber optic immune to electromagnetic environments** (lightning, high-voltage power lines...)
- **Compatible with various environments**

BENEFITS FOR YOU

REDUCED FALSE ALARMS:
precise and reliable detection

A SINGLE SYSTEM FOR FULL PERIMETER COVERAGE:
securing fences and buried access points across the entire perimeter

COST REDUCTION:
optimised installation and maintenance

MULTIPLE APPLICATIONS:
a solution suitable for various sectors and configurations

The system can be installed on fences or buried, providing **discreet and continuous monitoring over long distances:**

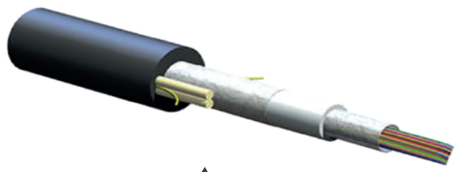
- Up to 80 km (per analyser) for fiber installed on a fence
- Up to 130 km (per analyser) for buried fiber

Quantitative DAS technology transforms a standard telecommunications fiber optic cable into a **virtual network of thousands of « microphones »** positioned at regular intervals, allowing for highly accurate event detection.

The DAS analyser measures variations in backscattered light within the fiber optic cable.

Compared to qualitative systems, **quantitative systems offer greater signal dynamics.**

SORHEA's DAS Analyser

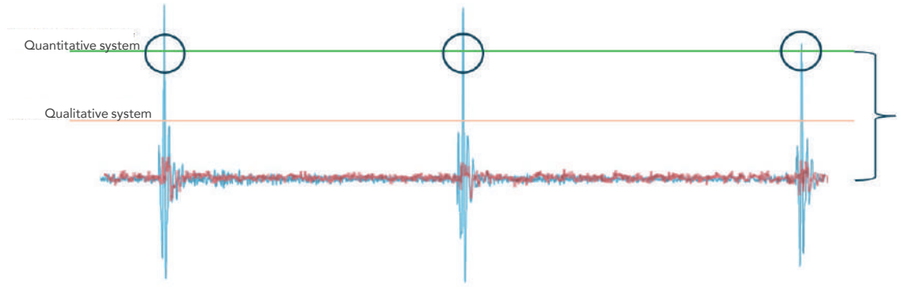


Optical fiber cable

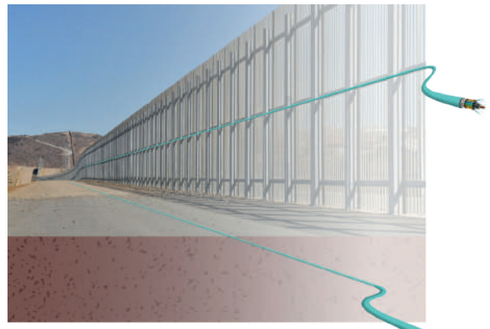
While qualitative systems require lower alert thresholds, leading to more unwanted alarms, **SORHEA's quantitative systems allow for higher thresholds, significantly reducing false alarms.**

The quantitative signal processing diagram below illustrates measurement performance, enabling threshold adjustments to detect only the desired events.

Signal Processing



The greater amplitude of real signals allows thresholds to be set further from background noise.



Fence-Mounted Optical Fiber

Buried Optical Fiber

EXAMPLES OF APPLICATION SECTORS

AIRPORT

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