

Sensron Fibre Optic Sensing Solution

Perimeter Intrusion Detection System (PIDS)



Protecting **Perimeter Infrastructure** and **High-value Assets** is the need of the hour

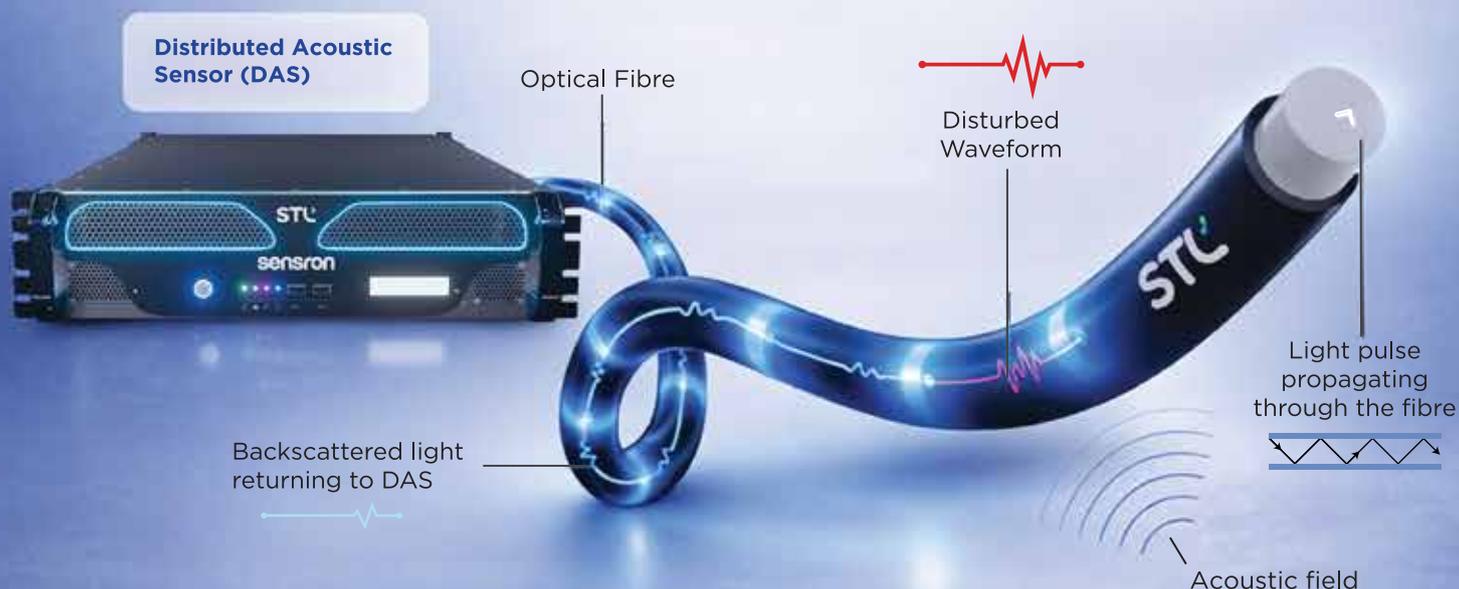
A growing number of high-value assets deployed for multiple industries are often not adequately protected against crime or infiltration. Detecting and deterring criminal activities such as theft, and trespassing requires continuous monitoring and surveillance. Any failure in providing protection and security over stretches of thousands of kilometers is not physically possible 24X7. One single breach could lead to a major repercussion. Technological innovation has led to the development of solutions for intrusion detection and securing high-value assets and critical infrastructure.

Optical fibre has sparked widespread interest due to its unique ability to function as a sensor. It has the capability to provide high-precision fault detection, high performance, and protection of data networks. It enables improved system uptime and availability by monitoring and anticipating accidental damage due to digging or other intrusive human activity. Fibre Optic Sensing Solution helps in Asset, Perimeter, and Network monitoring which are critical functions for securing infrastructure. It offers a wide range of benefits for companies of all sizes.

STL's **Fibre Optic Sensing (FOS)** Solution

STL delivers a fully integrated and networked sensing solution based on Distributed Acoustic Sensor (DAS) coupled with an AI-enabled smart alarm system that helps to detect, inform, and defend with actionable insights. A DAS interrogator converts standard communications single mode fibre into thousands of extremely sensitive acoustic and vibration sensors. It senses the vibrations from various events around it, which could be several meters away.

As the data is processed in real-time, advanced signal processing and AI algorithms in our sensing solution recognize the unique pattern of each type of event. The events are detected, classified, and reported to the users through a GUI with actionable insights. The system can then show the users the precise locations and durations of the events and enable the user to make a timely and appropriate response.



Building Blocks of STL's

DAS Interrogator

Sends thousands of short pulses of light along the fibre every second and observes the backscattered light disturbed by the vibrations surrounding the optical fibre

Deep Learning algorithm that detect and classify events based on the unique signature

Event Detection and Classification

Pre-Processing Module

Converts huge data received from the DAS interrogator into meaningful data for easy visualization and processing

Stores event-related information

Data Storage

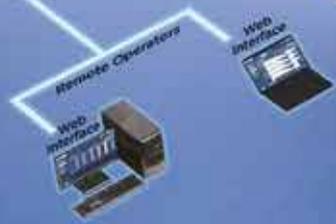
Graphical User Interface

Web-based user interface to monitor events – type, location and time, configure zones, control user access, configure various parameters & settings, etc

Enables integrations with other applications

API

The Concept of Fibre Optic Distributed Acoustic Sensing



Features of FOS Solution



Advanced AI/ML-algorithm-based solution



Single channel capacity (range*-40+ km) 6



Capable of detecting and locating Fibre Cut



Higher probability of detection



Buried and fence deployment



Dual channel DAS (range*-80+ km)



PIDS events

- a. Manual Digging
- b. Mechanized Digging(Excavator)
- c. Fence climbing
- d. Fence cutting
- e. Wall break



Software Features



Web based graphical user interface



Role Based Access Control (RBAC)



System configuration and calibrations



Centralized Monitoring solution



Historical logs of events and status



Zone configuration



Alarm Acknowledgment



User Comment



Geo Mapping and Custom Marker



Zone Creation



Live and Historic Waterfall



Live and Historic Alerts



Auto-Startup & Remote Diagnostic



Realtime Dual channel Monitoring



Event Audio and Spectrogram



API Integration



Remote Updates & Configuration back-up



User Specific Access



Online Maps with customized resolution



Fine tuning and ML Configuration



Alarm Report Generation (CSV, PDF, Excel)



Event Types

Our Smart Fibre Optic Sensing Solution prevents **intrusion activities** due to intentional or accidental fibre cuts. The system is tunable and machine learning algorithms are trained to detect different use cases. The solution is trained to detect and classify multiple events such as:

Underground Deployment

Human Walking



Vehicle Movement



Digging Activity



Fibre Cut



Flap Monitoring



Fence Climbing



Fence Cutting



Fibre Break



Wall Break



Overground Deployment



STL FOS Advantage



Long range distributed monitoring



Passive Optical Fiber sensor



Make-in-india solution



Integration with 3rd Party Applications



Works with SM dark fibre



Real time alert and warning



Customization for new events and Applications



One stop DAS solution provider DAS, Fiber, Software



In-House Support



Better management of OpEx/CapEx





About STL - A leading optical and digital solutions company

STL is a leading global optical and digital solutions company providing advanced offerings to build 5G, Rural, FTTx, Enterprise and Data Centre networks. The company, driven by its purpose of 'Transforming Billions of Lives by Connecting the World', designs and manufactures in 4 continents with customers in more than 100 countries. Telecom operators, cloud companies, citizen networks, and large enterprises recognize and rely on STL for advanced capabilities in Optical Connectivity, Global Services, and Digital and Technology solutions to build ubiquitous and future-ready digital networks. STL's business goals are driven by customer-centricity, R&D and sustainability. Championing sustainable manufacturing, the company has committed to achieve Net Zero emissions by 2030. With top talent from 30+ nationalities, STL has earned numerous 'Great Place to Work' awards and been voted as the 'Best Organisation for Women'.

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