APSENSING.

Safeguarding of Critical Infrastructure

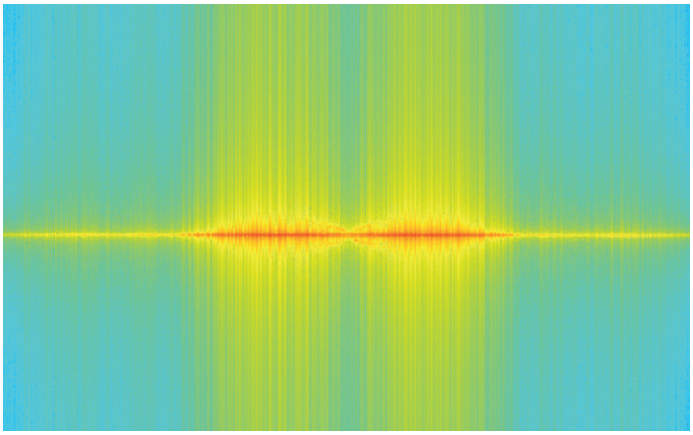
The Challenge

In a globalized and interconnected world, the growth and prosperity of societies is based on the availability and functioning of infrastructure. Recent events have clearly shown how vulnerable our infrastructure is to acts of sabotage. In a tense world, targeted and malicious attacks on critical communication, railway, and energy supply infrastructures is no longer a theory. Comprehensive and careful preparation to defend against such attacks is the strategic duty of every operator. The challenge is monitoring the infrastructure with its tens of thousands of kilometers in length.

The Innovation

In the human body, the nervous system transmits signals between the brain and the body, making it possible to feel pain or touch. Similar to this, Distributed Fiber Optic Sensing uses a single optical fiber that runs parallel to the infrastructure and helps to detect, locate, and identify attacks on pipelines, power cables, railways, or telecommunications infrastructure.

The detection and localization of unusual activity is conducted in real time, enabling immediate countermeasures and helping to prevent major damage and identify the possible perpetrator. The data collected and stored by AP Sensing's Distributed Acoustic Sensing (DAS) solutions can also contribute significantly to the investigation of acts of sabotage. With AP Sensing's DAS solutions, the movement of objects such as cars, ships and even people can be tracked and made visible. Excavation activities such as tunnelling, shoveling, dredging, and opening shafts are recorded, classified, and localized in real time. Thus, AP Sensing's DAS solutions can help provide situational awareness and safeguard subsea and terrestrial networks.



Anchor drop recorded via a submarine cable using DAS

The Solution

AP Sensing's 2P Squared DAS is a true phase-based DAS, which enables quantitative measurements of vibration, acoustics, and temperature changes over extended distances along a simple fiber optic sensor cable. Our DAS technology acts like a chain of thousands of microphones with a range of up to 150 km. Every acoustic event is localized and analyzed in real time with the precision of a few meters. Based on highly specialized algorithms, the system decides whether the event poses a threat to the asset.

AP Sensing's intrusion detection software uses machine learning and artificial intelligence (AI) techniques to process the input from our DAS instruments. AI provides the ability to detect intrusions by analyzing the effects that intrusions – such as tunnelling, shoveling, digging, vehicle and vessel movements – have on the environment, as well as acoustic signals and vibrations alongside other patterns.

Reliable & Effective

AP Sensing's complete monitoring solutions for critical infrastructure provide an effective way to mitigate operational risks caused by malicious attacks. Detection and precise localization of intrusion events in real time enables the rapid identification of the attacker and the immediate mobilization of countermeasures. AP Sensing's Distributed Fiber Optic Sensing solutions are used by over 600 customers in 70 countries and more than 5000 installed systems already protect vital elements of modern infrastructure.

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Passion for Plants.
For every unit sold, AP Sensing plants 100 trees.

Location and visualization of cable theft using AP Sensing's SmartVision software

Why AP Sensing?

- Industry-leading monitoring solution comprised of cutting-edge fiber optic hardware and state-of-the-art AI algorithms for excellent performance.
- Best measurement results due to unique technologies such as 2P Squared Distributed Acoustic Sensing and our code-correlated Distributed Temperature Sensing technology.
- Long range monitoring of up to 150 km, pinpointing all acoustic and vibrational events along a simple, optical fiber in real time.
- Detection and classification of different events such as digging, shoveling and tunneling. Tracking of persons, vehicles, trains and vessels.
- Experienced and leading global supplier of monitoring systems for power cables, pipelines and traffic infrastructure.
- Designed, engineered & made in Germany.

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