Infrastructure Cable Monitoring - Offshore

Monitor Subsea Cables in Real-Time
With the LiveDETECT® cable monitoring technology you can reduce your risk by gaining instantaneous visibility of the integrity and security of your entire cable network.

Whether protecting against copper cable theft, data interception, trawling activity, or locating cable fatigue and break down – optimise your network with Fotech’s infrastructure monitoring technology.

Our solutions deliver the information you want to know, and only report on integrity issues and actual threats to your cable infrastructure.
A Smarter, Faster Way to Monitor Cable Networks

With LiveDETECT®’s advanced system, you can explore your cable network, enhance your understanding of activities as they happen, and gather intelligence on prolonged or historical events across your cable network.

Features:
- Make fast and well-informed decisions with confidence, preventing criminal activity, malicious attacks, or accidental damage
- Detect and locate cable arcing and break down events at the earliest possible stage
The Benefits of Automated Cable Integrity Monitoring

The LiveDETECT® platform harnesses advanced artificial intelligence and edge computing to detect, classify and raise an alarm on security and integrity events.

The system is designed with the end-user in mind, giving you confidence that background noise and ‘non-threat’ activity is filtered out. The LiveDETECT system adapts its response for high-risk and low-risk zones and therefore delivers the most advanced cable integrity monitoring technology.
As the demand for green energy continues to grow, offshore energy operators have an expanding network of subsea power cables to monitor and maintain.

With cable outages disappointing customers and costing operators a great deal of time and money, preventing cable failures, and quickly identifying and planning for the repair of damage is vital.
Monitor Subsea Cables in Real Time

With Fotech’s smart cable monitoring solution, you can monitor your subsea cables in real-time and effectively target repair operations and pre-emptive maintenance. Using optical fibres, you can monitor subsea cables automatically, 24/7, giving you enhanced and continuous visibility of integrity issues across your subsea cable network.
The Fibre is the Sensor

Fotech’s Distributed Acoustic Sensor (DAS) technology converts one of the optical fibres already present in most offshore cables into a state-of-the-art sensor which can detect vibrations along its length.

Events such as cable motion in the water, insulation breakdown, trawling activity and anchor strikes all generate strain, or vibrations with distinct characteristics. Fotech’s smart cable monitoring solution monitors this strain or vibrations. Each is analysed by cutting-edge software to provide continuous and accurate real-time information along your cables. Fotech’s DAS solution monitors these vibrations and trawling activity, which are analysed by cutting-edge software to provide continuous and accurate real-time information along your cables, using advanced artificial intelligence (AI) to alert you to potential risks to your cable or inform maintenance needs.
Fotech’s Smart Cable Monitoring Solution Delivers Key Monitoring Applications:

Cable Exposure:
Identify the vibrations and strain in the cable associated with loss of burial, allowing reburial of the cable before damage occurs.

Cable Arcing:
Identify insulation breakdown by detecting the initial impulse and subsequent shock waves travelling along the cable, and plan repair.

Cable Strikes:
Detect activities such as anchor strikes / drag and trawlers in the vicinity, cross-referencing with ship location data to alert the vessels and avoid further damage. Identify any damage caused by strikes, take steps to repair, and potentially seek compensation from responsible parties.

Cable Maintenance:
Identify problems that periodic inspection may miss. Direct remotely operated underwater vehicles (ROVs) or divers with precision to targeted areas.

Cable Abrasion Detection:
Locate areas where the cable is moving against the seabed or submerged structure causing damage to the cable jacket which eventually leads to failure.
Fotech’s DAS Technology will Enable you to Prevent Costly Downtime with the Ability to Prevent or Quickly Repair Damage to your Cables.

Cable downtime is costly but finding the areas of risk or damage over many kilometres of cable is a challenge.

Fotech’s smart cable monitoring solution allows you to confidently monitor your cables in real time and detect potential problem areas to within a few metres.

Fotech’s powerful software and advanced AI technology filters out the background noise and ensures that you are alerted to the events along the cable that matter.

Maintaining cables is itself a complicated and costly project. Due to the changing nature of the subsea environment, periodic ROV passes or bathometric surveys can miss potential problems. DAS’s continuous monitoring can give you an early warning to these problems, allowing you to target your maintenance programme and reduce costs.
Case Study - Detecting and Locating Cable Faults

Recently, offshore cable operators identified a fault in their cable infrastructure for an offshore windfarm. Seeking to expedite mitigation and their repair activities the operator employed Fotech’s distributed acoustic sensing (DAS) technology, Helios® DAS, to identify the fault and pinpoint its location.

The Helios DAS technology was connected to an optical fibre integrated inside the three-core subsea power cable, converting it into a highly sensitive acoustic and vibration sensor.

A series of 3kV ‘flashover’ tests were carried out in seven and ten second intervals to locate the fault on the cable. Even though the response from the flashover tests were very weak the Helios DAS clearly identified each response and pinpointed the fault to 43,044.4m down the optical fibre.

To correlate the location on the fibre with the geospatial location on the sea bed, a basic spatial calibration exercise was conducted – the dropping of a two-metric-ton anchor at a 10m offset from the cable, close to the area of the fault. These impacts were detected by the Helios DAS and the impact locations used to correlate with GPS data.
This rapid and targeted approach enabled the divers to target the fault location and begin preparations for their repair activities. Once they had exposed the cable around the fault location by water jetting, they began a ‘tapping’ exercise on the cable to generate an acoustic signal. With the resulting ‘DAS locations’ the diver was directed along the cable to the exact location where the ‘tapping’ corresponded with the fault. The diver then marked the cable for cutting and repair.

While exposing the subsea cable, the divers quickly identified that there were no visible signs of flashover damage to the outside of the cable – demonstrating the need for invaluable information provided by the Helios® DAS and ability to detect the unique vibrations caused by the internal breakdown of the cable.

By pinpointing the fault’s location to <1m, the operator was able to minimise the section for cutting to only 3.5m in length – allowing the cable to be repaired more quickly with only one joint and sufficient slack in the cable to avoid the need for a new cable section to be added.

The repair works were carried out just in time – the weather deteriorated immediately after the repair work had been completed. If conventional fault finding and repair techniques had been employed, requiring a much longer time widow, the repairs would have been postponed, on this occasion, for at least another month. As a result of Fotech’s Helios DAS technology, millions of pounds in lost productivity, repair and downtime were saved.
Key Benefits

- Continuous visibility of your cables 24/7, 365 days a year – no gaps in sensing.
- Accurate alerts on risks to your cables in real time, enabling you to prevent damage or quickly plan repairs.
- Advanced AI technology delivering automated alerts on integrity issues to within a few metres.
- Simple to install and low maintenance to run, saving both time and money.
- Be confident knowing your cables are monitored by a robust, reliable, and proven technology.

Features

- Monitoring often achieved with a land-based system.
- Ability to review data over time, gathering intelligence on long term trends and the overall risk profile.
Get in Touch

Fotech has been a trusted partner to our customers for more than 10 years.

Serving a range of sectors and customers worldwide, we’ve helped optimise many different business processes, shaped decision making, reduce costs, and solved conventional challenges.

We’re excited to answer your questions or share how we’ve helped solve problems similar to yours.

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