FIBRAIN®

MANUFACTURED AND
DEVELOPED IN POLAND

Perimeter security system

Get to know innovative applications of fiber optic cables

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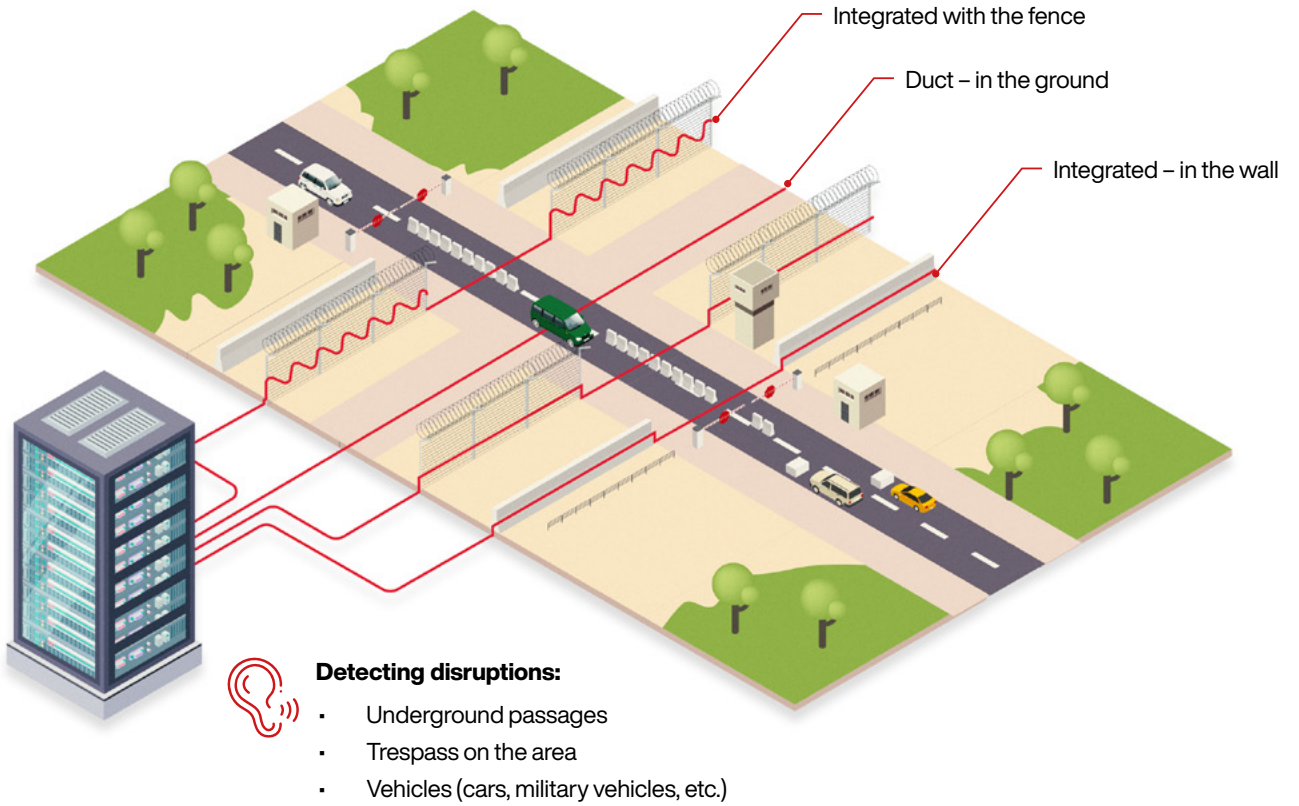
Security systems for facilities and fences can be performed by various methods and solutions. Even though there are many ways to perform such an installation, what is really expected from the system is, first and foremost, **reliability, durability and failure--free operation**. As the only one technology to construct perimeter security systems, which comprises all of them, is fiber optic technology.

The solution using fiber optic cable allows the user to detect violations, burglaries or other damage immediately. Consecuently, they can be easily classified and further steps taken afterwards. The fiber optic perimeter security system is more stable and more accurate than competing solutions (such as piezoelectric or resistance sensors) that do not rely on optical fiber.

bases and national boarders. Any failure to properly secure such facilities may have disastrous consequences that no one wants to bear. Hence, fiber optic solution is clearly the best one.

The perimeter fiber optic security system consists of several elements. The interrogator – an active device responsible for the light emission and detection as well as signal processing and analysis, located in the control panel together with IT equipment and the emergency power supply system, is the heart of the system. Depending on the selected fiber optic technology, the system can use FBG - Fiber Bragg Grating, speckle pattern monitoring, DAS - Distributed Acoustic Sensing or SBS - Stimulated Brillouin Scattering. Solutions based on FBG Grating generally use point sensors, systems based on intermode interference are usually zonal, while the DAS and SBS solutions are fully distributed, with exceptional spatial resolution. Regardless of the physics and operating principle, in all fiber optic perimeter security systems, a fiber optic cable that acts as a sensor, in addition to the interrogator, is a key element.



Many facilities require a thorough 24/7 security system. Such systems occupy huge areas, and the length of their fences can reach thousands of meters. In such a case, making a decision about which perimeter security system to choose becomes a real challenge. **Power plants, solar farms, residences, warehouses and airports are only some examples of such facilities**. Needless to say that a large surface generates high costs for security, and intruders may seriously harm its safety. Another category of facilities requiring highest-quality security are **prisons, military**

In most cases, zonal systems constitute the optimal compromise between possibilities, costs and the degree of complexity in perimeter security systems. In this case, a cable with multimode optical fiber, plays a sensor role, and the singlemode fiber optic transmission cable connects it with the control panel located away from the fence. FIBRAIN uses NBG interrogators in its perimeter

security systems, namely PeriGuardTM and FiberGuardTM. Interestingly, FIBRAIN is the exclusive distributor of these systems in Poland.

The perimeter security system is divided into zones, which monitor from 2 to 64 fence sections surrounding the guarded facility. Additionally, perhaps even more importantly, each zone is independent, and optical fiber disruptions or damage within one zone do not adversely affect the other measuring sections.

The fiber optic sensor cable receives vibrations of the fence or the ground (resulting, for example, from cutting or digging in the ground). Next the cable leads the signal to the interrogator detector, which analyzes the received signal, and then the software (due to advanced recognition algorithms) informs about the violation.

It is worth emphasizing that the perimeter fiber optic protection system can effectively distinguish between a real violation and a fence movement not caused by intrusion. In practice, gusts of wind, rain, birds or small animals can also set the fence in motion, but naturally, their interference is not a violation that requires reaction. However, an attempt to force, jump over, or damage the fence requires decisive action. In such an event, the system gives a signal that can easily control an external device.

The perimeter fiber optic security system can cooperate with other peripherals such as CCTV cameras, lighting, warning alarms or inform the guard automatically.

Such an extensive system can protect comprehensively, and monitor even very large objects.

All the above-mentioned features make the fiber perimeter security system clearly predominant over other solutions. The fact that the fiber optic cable is the passive technology, is an enormous advantage in itself.

Owing to this, there is no need to power individual sections, and the only place where power is required is a head-office. Piezoelectric, resistance or optoelectronic sensor solutions require multiple power lines to be distributed, which significantly increases installation costs. Fiber optic systems are fully resistant to electromagnetic interference, what makes them an ideal solution for objects that are located in a strong electromagnetic field.

Consequently, it is impossible to eavesdrop this system and break it without damaging a cable physically. Passive fiber optic systems work equally well during day and night, and do not require line of sight. Moreover, fiber optic systems are definitely cheaper to maintain and easy to handle with. Once the installation is ready, it can operate continuously for several decades, and possible damage can be quickly repaired as each project has an adequate supply of sensors together with connecting cables, guaranteeing simple repair.

Undoubtedly, fiber optic technology is extremely prospective as its popularity is constantly growing. This is mainly because of its versatility as fiber optic cables can be also used as security systems of fences, gates, walls or directly buried in the ground to detect violations in places without a fence. This is possible due to the high sensitivity of the optical fibers, thus in combination with the extensive algorithms in the software, a security action, or no action can be promptly taken. A proper selection of sensor cables provides necessary security for the above-mentioned elements of fences. Each cable is produced from the highest quality materials, which guarantee smooth system operation in any weather conditions.

Applications

- PV farms
- Airports
- Military training grounds
- Warehouses
- VIP mansions
- Other high-value facilities

FIBRAIN, as the leading and independent Polish producer of fiber optic technologies and integrator of active solution, offers a top-quality support in designing and maintaing perimeter security systems. Upon customer request, we are ready to support in installing our systems or organizing necessary trainings too. Having installed and performed a wide range of projects in Poland and worldwide, we can easily perform any investment comprehensively. Such a combination of professional service and technical support guarantee failure-free operation for many years.

Main advantages of fiber optic security systems

- Passive solution
- Intelligent algorithms
- High sensitivity and accuracy
- Minimal number of false alarms
- Adapted to work in dangerous environment
- Automatic
- Unusual durability and long lifetime

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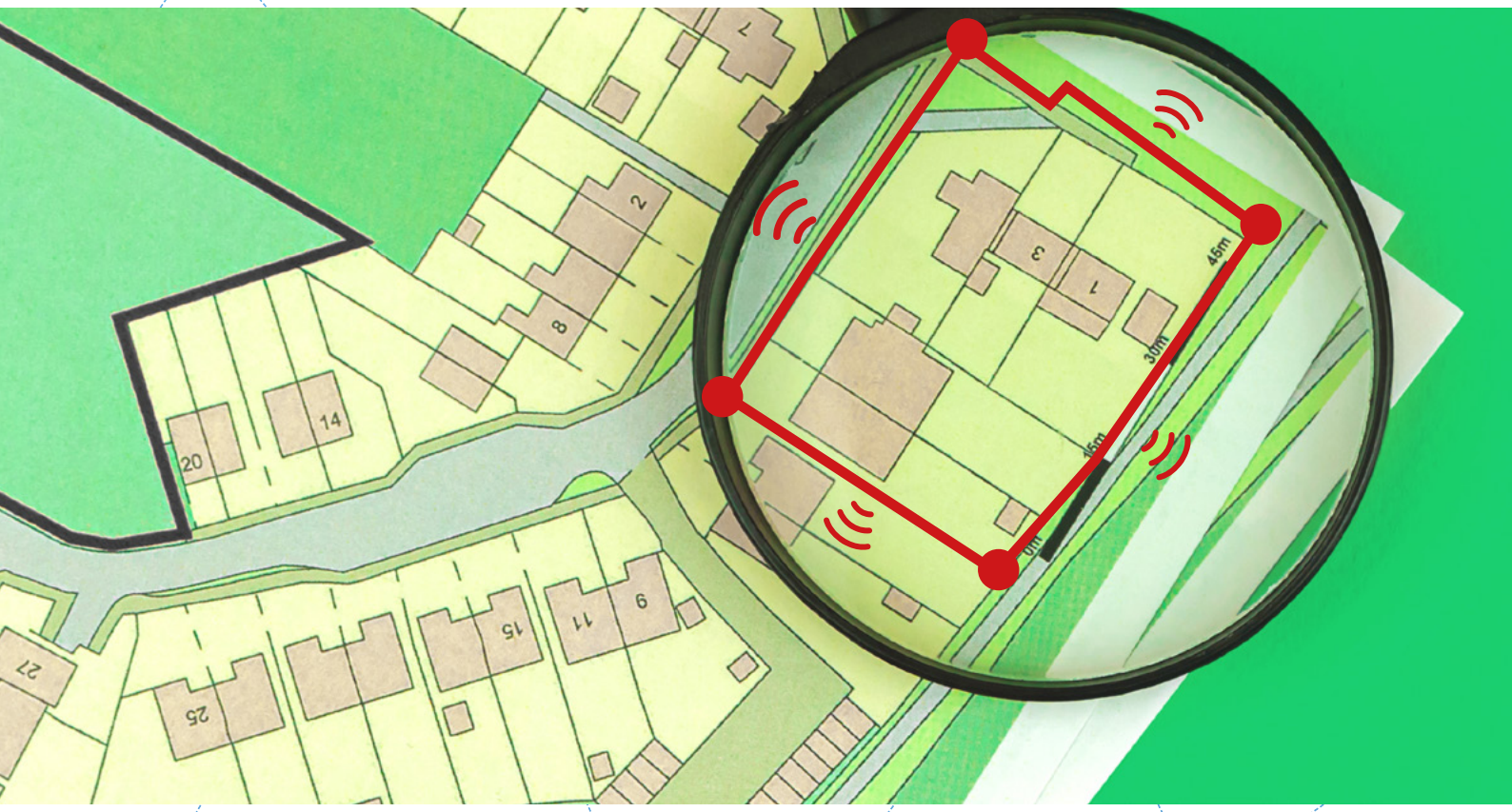
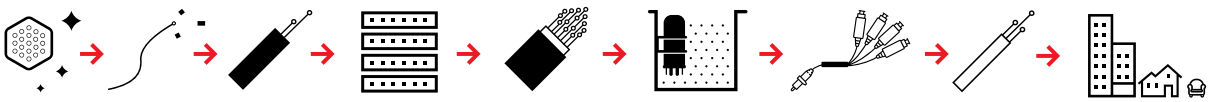


From a single fiber to millions of satisfied customers around the world.



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