

## DOSAB Telecom Infrastructure Security

Case Study

### Project Description

The Demirtaş Organized Industrial Zone (DOSAB) in Bursa is one of Turkey's leading organized industrial regions, known for its infrastructure and production capacity. The industrial activities that began with the establishment of the Turkish Automobile Factory (TOFAŞ) in 1971, evolved into an organized structure with the official foundation of DOSAB in 1990. As of 2023, the region hosts 573 active companies and provides employment for 44,000 people, spread across an area of 491 hectares, and continues to deliver uninterrupted service to the industry through infrastructure investments.

However, the region's telecom infrastructure has faced issues, particularly with fiber optic cable breaks caused by unauthorized excavation activities. This situation has led to financial losses for businesses in the region, prompting the need for an innovative security system to better protect the infrastructure.

In this context, a solution was provided by implementing a Fiber Optic Based Acoustic Sensor System (FOTAS) to secure the telecom infrastructure of the region.

### Problem Identification

DOSAB management reported frequent fiber optic cable breaks caused by unauthorized excavation activities, which resulted in significant financial losses for businesses in the region. The excavation works and other infrastructure activities carried out in the area had put the fiber optic cables at critical risk.

### FOTAS Implementation Stages

#### Infrastructure Arrangements:

- The fiber optic cables of the telecom infrastructure were arranged to cover the region with two separate lines.
- Additional points and connections for the fiber optic cables were optimized.

#### FOTAS System Installation:

- FOTAS devices were installed along two lines of 16 km and 26 km, covering the region.
- After installation, GPS calibrations were completed, and the system was activated.

### Challenges and Solutions

#### False Alarm Issue

- **Challenge:** The heavy press machines in the metal factories and the industrial mobility in the region generated excavation-like effects, leading to false alarms.
- **Solution:** To address this, a machine learning model was trained using the data collected from the region. The model analyzed the sources of alarms more effectively, reducing the number of false alarms. Additionally, the "show only critical alarms" feature in the FOTAS system was activated. This ensured that only alarms continuing for a prolonged period were displayed on the interface, speeding up the resolution process.

### Results and Benefits

With the deployment of the FOTAS system, fiber optic cable breaks caused by excavation activities were completely eliminated. The following benefits were achieved:

- **Reduction of Financial Losses:** Businesses in the region were able to avoid production disruptions caused by telecom infrastructure outages.
- **Effective Alarm Management:** The reduction in false alarms increased the operational efficiency of system operators.
- **Long-Term Security:** The AI-supported learning system allowed for faster detection of threats to the infrastructure.

