Advanced Pipeline Security with FOTAS
Case Study

Project Context

A 32 km long critical pipeline faced security challenges due to the limitations of the existing Fiber Optic Distributed Acoustic Sensing (DAS) system. This outdated system generated a high number of false alarms (1,000–2,000 per day), leading to alarm fatigue and potential security breaches. Additionally, the device had been out of service for a long time and was no longer operational. Users encountered several support difficulties due to the system's issues:

- Communication challenges with foreign companies led to language barriers and miscommunication, preventing effective support.
- High costs made international support services economically unfeasible.
- Frequent system failures resulted in high repair costs, putting users in a difficult position.
- With the closure of the original manufacturers, technical support was no longer available.

Deployment

FOTAS was installed and commissioned for the 32 km pipeline. The key steps in this process were as follows:

Installation and Scanning

- A scanning process was initiated along the 32 km pipeline. The initial scan through the fiber optic cable detected signals and provided coverage up to 24 km.

Fault Detection and Repair

- **Fiber Break at 24 km:** The FOTAS system detected a fiber break at the 24 km mark and alerted the user. This issue was excavated and repaired.

  Fiber Break at 28 km: After repairing the 24 km break, a second fiber break was detected at the 28 km mark. This was also reported to the user and successfully repaired.

Calibration and Optimization

- Once all repairs were completed, calibration and optimization processes were carried out on the FOTAS system, ensuring optimal performance.

Results

Smooth Operation of the Pipeline

- After calibration and optimization, the FOTAS device started functioning seamlessly.

User Satisfaction

- Users reported being highly satisfied with the system's high performance and accurate pipeline monitoring.

Alarm Control

- FOTAS eliminated the false alarm issues of the previous system by using advanced algorithms that detect only real threats, minimizing alarm fatigue.

Added Value Provided by FOTAS

- **Precise Detection:** FOTAS detected fiber breaks with meter-level accuracy and provided instant alerts.
- **Local Support:** As a locally manufactured product with domestic technical support, users could receive rapid assistance whenever needed.
- **Cost-Effective Solution:** Installation and repair costs were kept low, providing users with an economical solution.
- **Long-Term Use:** With high performance and a robust structure, the FOTAS system ensures reliable operation for many years.

Conclusion

This case study demonstrates how effective and reliable FOTAS is for pipeline security and monitoring. Thanks to user satisfaction, technical success, and accurate alarm detection, the 32 km pipeline is now monitored more securely and efficiently.