

Earthquake Monitoring

THE CHALLENGE

Early detection of major earthquakes by seismic monitoring is commonplace. As earthquakes can cause significant damage and fatalities, seismic monitoring is important in assessing, preparing for and mitigating earthquake damage and risks. Seismic activities are yet not fully understood and science strives for new findings. This requires new technology to improve quality and quantity of seismic data.

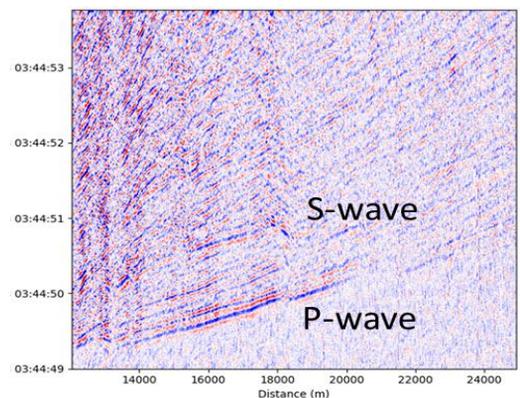
Permanent seismic monitoring typically utilizes seismic stations to transmit data. Seismic stations are equipped with sensors to identify strength and the nature of a seismic event. However, most seismic monitoring stations are sparsely located and expensive to install and maintain. Consequently, sensor density and range are low, and do not accurately cover wider areas. This is especially the case for seabed monitoring, where setting up seismic sensors is costly and space is limited.

AP Sensing's monitoring solution is designed to manage the challenges of conventional methods of seismic monitoring.

THE INNOVATION

AP Sensing's unique Distributed Acoustic Sensing (DAS) technology provides an effective solution for monitoring the ground or seabed for earthquake and ground movement activity. Our DAS technology utilizes optical fibers which are generally installed in power, telecom or even subsea cables. This provides an extensive, already existing backbone of sensors. Installation and maintenance costs for fiber-optic seismic sensors are therefore very low.

The ability of AP Sensing's DAS to accurately measure signals at very low frequencies, 0.01Hz to 100Hz, allows earthquakes to be clearly observed. Additionally, the acoustic measurement is fully distributed over ranges up to 100km.



With a sensor spacing of 10m or less, which would be prohibitively expensive using conventional seismic sensors, large-scale data of seismic activities is produced. This helps generate high quality results that can be used for further studies on earth systems. AP Sensing's DAS technology has demonstrated the suitability to detect even small earthquakes using an existing subsea cable as the sensing element. The first P-wave arrival and subsequent S-wave of the earthquake are clearly visible.

WORLD-CLASS SYSTEMS

AP Sensing's monitoring solution utilizes acoustic measurements from our world-class, phase-based DAS system on standard fiber optic cables. Our unique 2P Squared technology features stable signal linearity and high sensitivity over long distances. Capable of processing the large quantities of data produced by the DAS instrument, smart alarm algorithms detect and automatically classify seismic events and ground activity. The powerful, integrational SmartVision™ management software completes our AP Sensing monitoring solution with an informative GUI, analyzing tools and network capabilities.

RELIABLE & EFFICIENT

AP Sensing's complete solution for earthquake monitoring provides an effective way to reduce the costs of conventional seismic monitoring, while simultaneously monitoring and alleviating the effects of dangerous seismic activity. The use of already-existing fiber optic cables is effective for geological and scientific observational tasks at a previously inaccessible scale and resolution.



WHY AP SENSING?

- Industry-leading monitoring solution comprising DTS, DAS and software that offers excellent performance
- Best measurement results due to unique technologies such as code correlation and 2P Squared
- Industrial quality supported by a complete set of type tests and certifications in compliance with internationally recognized standards
- Project management, commissioning, and post-sales service
- World-class project planning support, and comprehensive data analysis and processing capabilities
- Our experience, network of regional partners and experts, and proven deployment in all regions in the world



Passion for Plants.

For every unit sold, AP Sensing plants 100 trees