



DISTRIBUTED FIBER OPTIC SENSING

for Underground,
Subsea Cables and
Overhead Lines

**POWER GRID
MONITORING**





Your Trusted Partner

for Power Grid Monitoring

AP Sensing is your global solution provider for **Distributed Temperature Sensing (DTS)**, **Distributed Temperature & Strain Sensing (DTSS)**, and **Distributed Acoustic Sensing (DAS)** in power grids. We offer global sales and service through a network of local offices and highly qualified partners. Our **product quality and reliability are unsurpassed**, bringing you peace of mind and lower cost of ownership. With references in transmission and distribution, land cables, subsea cables, overhead lines and superconductors, we ensure **proper monitoring of your network**.



Quality



Reliability



Performance



The Perfect Fit for You

Our Expertise

We develop our fiber optic sensing solutions based on **the tradition of HP (Hewlett-Packard)**, the world leader in optical testing and measurement for over 40 years. Building on HP/Agilent's processes and knowledge, we have established ourselves as **the leading solution provider for Distributed Fiber Optic Sensing (DFOS)** in a wide range of applications.

AP Sensing's unique technology ensures **gapless and real-time temperature and acoustic measurements along the entire power circuit**. It precisely localizes hot spots and cable faults, computes the actual ampacity, predicts emergency rating hours in advance, and estimates the burial depth of sea cables. With our sensing solutions, you receive **maximum network performance under safe operational conditions**.

With our innovative Code Correlation (DTS) and 2P Squared (DAS) technologies, AP Sensing's fiber optic sensing products are unique and superior in performance and quality. Our solutions measure a true linear and accurate temperature and acoustic profile along your power circuit that works as a perfect base for further computation.

We offer gapless, 24/7 monitoring.



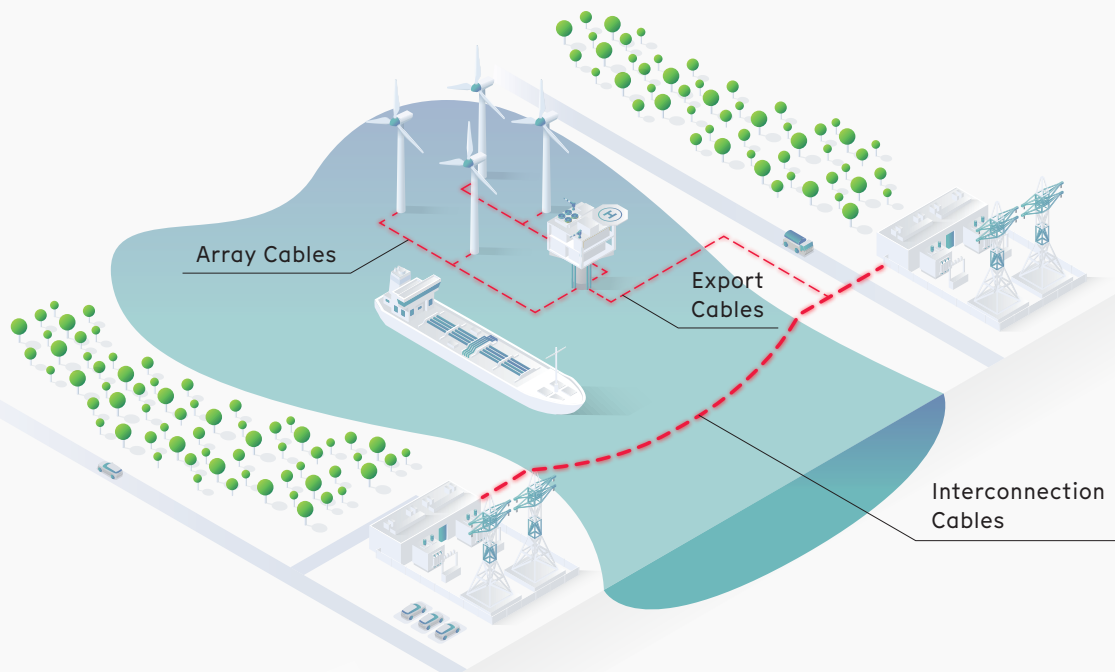
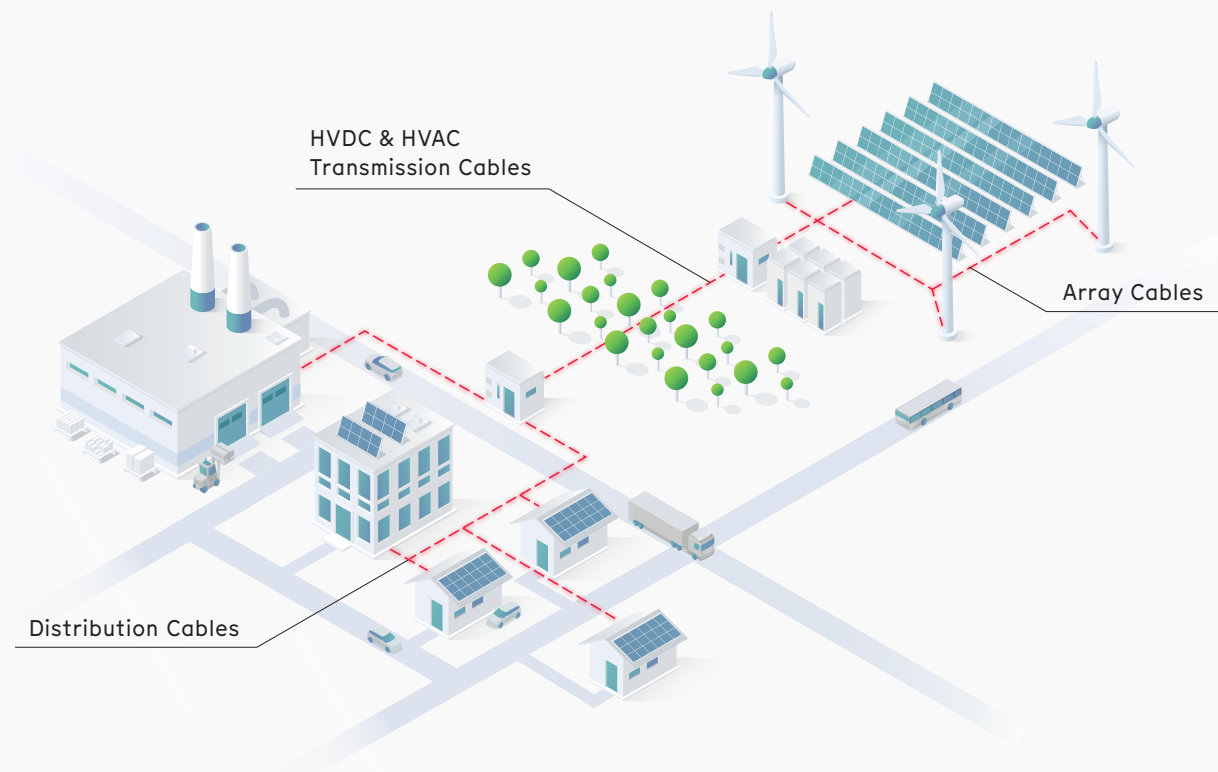
Where to Use Our Solutions

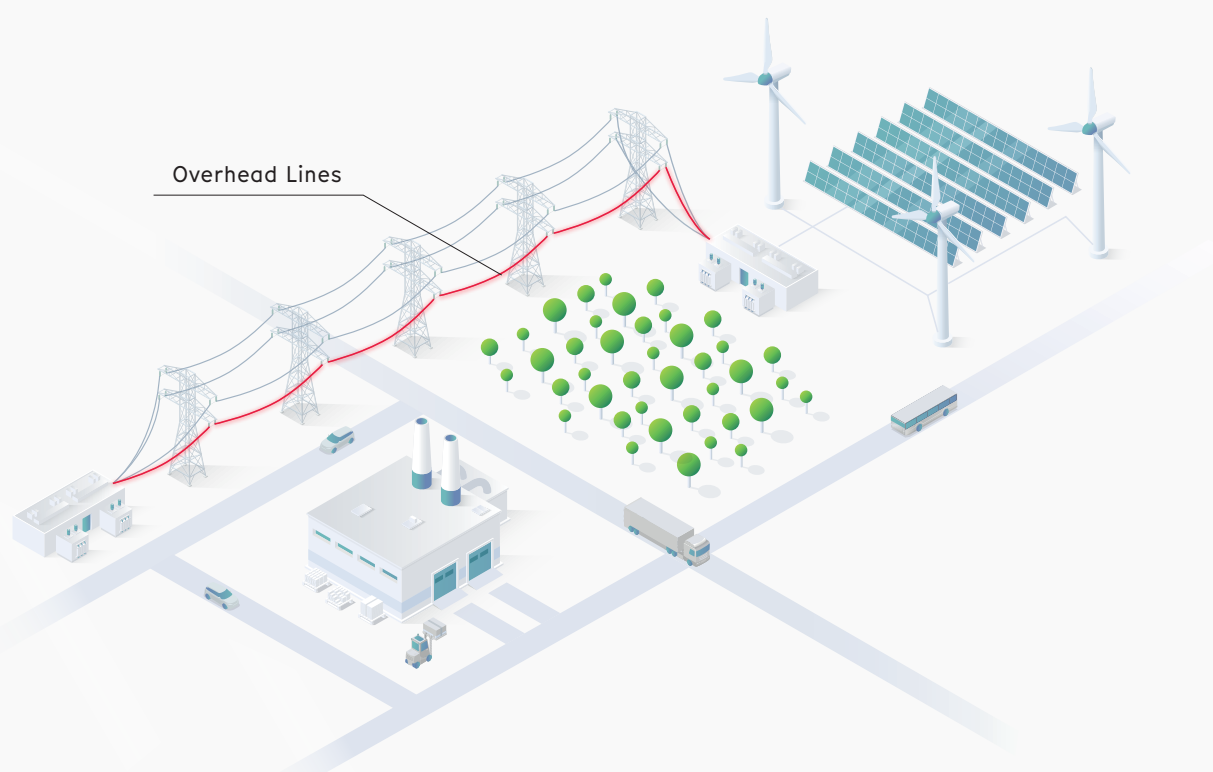
Cables and Connections



Applications

- HVDC/HVAC
- Underground Power Cables
- Export and Array Cables
- Interconnectors
- Joints and Terminations
- Utility Tunnels
- Overhead Lines
- Transformers
- Substation Equipment
- Bus Ducts



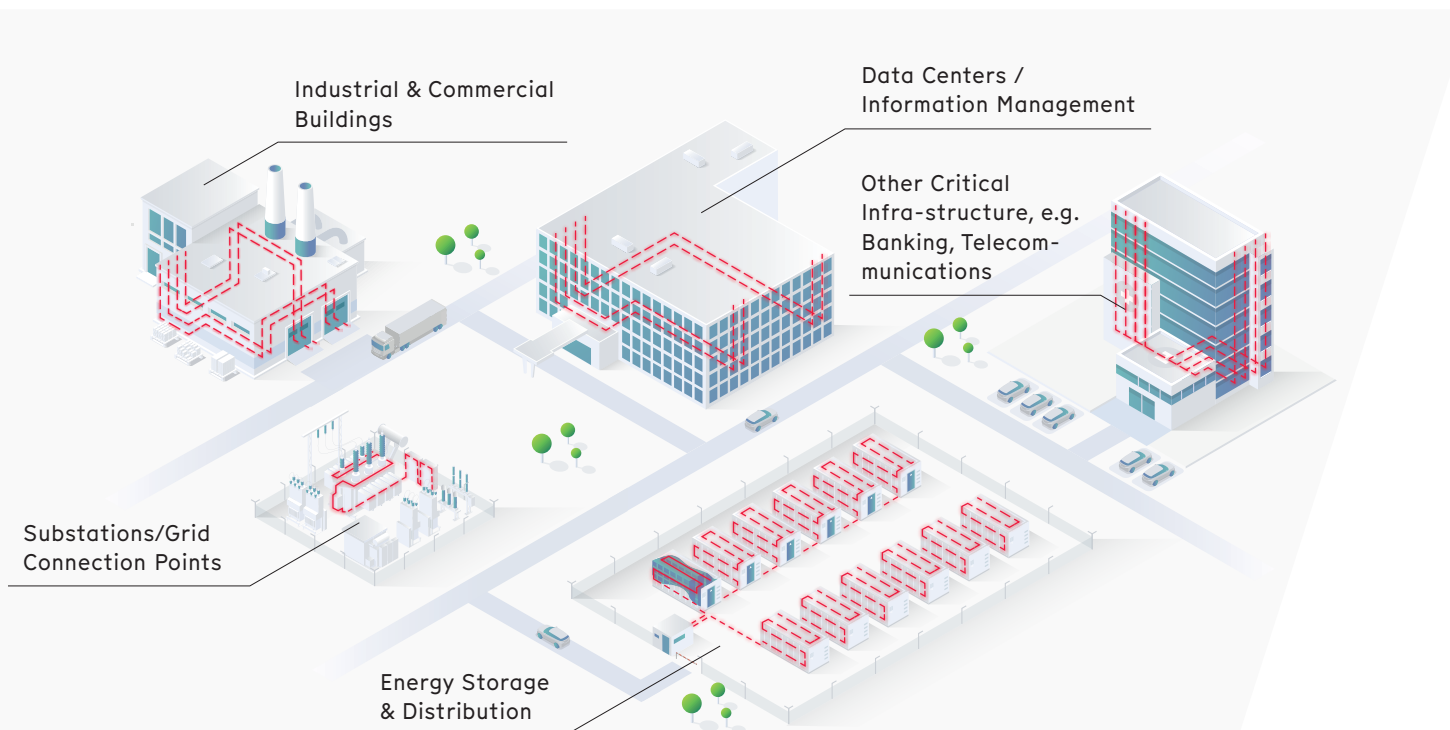


Overhead Lines



Advantages

- Distributed temperature and acoustic/ vibration measurements along the entire circuit, providing thousands of data points
- Accurate measurements, unaffected by strain or EMI
- Perfect base for computing precise power ratings (RTTR), burial depths of subsea cables (DoBS), and machine-learning event detection
- Precise detection and classification of critical events such as thermal overload, Third Party Interferences (digging, anchoring) and cable faults



Industrial & Commercial Buildings

Data Centers / Information Management

Other Critical Infra-structure, e.g. Banking, Telecommunications

Substations/Grid Connection Points

Energy Storage & Distribution

»AP Sensing's support team has been a fantastic resource for us over the years. They have helped us with system development and implementation planning, and they are always quick to respond to our technical queries with competent advice and helpful tips.«

Geoff Harris, Ausgrid





Maximum Safety and Protection

for Your Assets

AP Sensing's cable monitoring system gives you the ideal solution to monitor and protect your power infrastructure.

Operate your network at the highest possible **safe ampacity level** by using steady-state and transient thermal analyses. Compare current loads with estimates made during the planning stage and learn how much you can safely increase the steady-state load. **The system computes all data you need** to plan for peak loads and emergencies including the burial depth of sea cables enabling the **indication of critical sections of exposed cables**.

Based on AP Sensing's deep application knowledge, intelligent event detection is built in. Highly advanced machine learning algorithms accurately classify third party interference (TPI) ensuring reliable **alarming of potential threats to the integrity** of the cable and overhead lines. Faults are detected and localized within seconds, which **significantly reduces repair and outage time**.

»For me, AP Sensing is the forerunner in distributed optical temperature sensing. You can see in their solutions a combination of experience and creativity – an intuitive design that works just as you'd expect, yet they aren't afraid to think outside the box or provide a customized solution. They carry on their HP heritage and continue to develop and advance while remaining true to their core values of quality and reliability.«

Roberto Gaspari, Nexans



**QUALITY AND
INNOVATION
LEADERSHIP**

AP Sensing's Leadership

in Quality and Innovation

AP Sensing has **the industry's lowest failure rate**. Aside from over 40 years of optical test leadership, we are passionate about continuously improving our fiber optic solutions to help you address your day-to-day challenges.

Quality and performance are the drivers of our innovation. Unique technologies such as the single receiver design, Code Correlation Concept, 2P Squared Technology, and Variable Timing Technology (VTT) enable us to offer you distributed fiber optic sensing solutions with **world-leading precision** and range as well as **long-term measurement stability**.

All instruments run on **proven operating systems**, which are extremely stable and secure. For example, our DTS runs on VxWorks, which is designed for mission-critical applications and used in the aviation and space industry.



Certifications

We comply with industry standards including ISO 9001, ISO 14001, ISO 45001, and ISO 27001 for cyber security.



Confident Asset Management and Network Planning Insight

AP Sensing's SmartVision management suite shows the **condition of your circuits** at a glance controlled by an easy-to-use graphical interface. It seamlessly integrates many DAS, DTS, CCTV, and other sensors such as fiber-based Current Monitoring (FbCM) as well as current sensors into a single platform.

SmartVision provides a clear overview with an **integrated map, asset view, waterfall diagrams, and several analysis functions**. A modern client-server architecture allows installation on virtualized IT networks and offers a comprehensive range of protocols for integration into SCADA systems.

Our proprietary **SmartAlarm** technology offers **unique methods and algorithms** to detect small **hotspots**, even under transients. SmartAlarm **analyzes acoustic patterns**, providing fast and dependable event classification and alarming.





SmartVision Features

- Fully integrated management solution (DTS, DTSS, DAS, RTTR)
- Asset visualization, reporting and analysis capabilities
- Alarm management with machine-learning algorithms
- Central database and networking that runs on virtualized IT networks
- Computing of ampacity (actual and predicted) and burial depth of subsea cables (DoBS)

Your Complete Solution Provider

Your Best Choice

AP Sensing is your long-term partner. We listen to your challenges and strive to provide the best-distributed fiber optic solution for your power application. Our comprehensive solutions meet your monitoring demands and protect your valuable assets.

AP Sensing's instruments use a **low-power laser** to ensure a maximum lifetime and safe handling under all conditions. These instruments have undergone **extensive testing and obtained the certifications required to meet** the demands of your industry.

AP Sensing's support philosophy does not end with the commissioning – it goes far beyond. Our experienced support and engineering team can **help you with the design, installation, and project management**. This includes not only on-site service but also **hotline support, maintenance, and training**. Whatever is needed – our team of experts is happy to assist you.





Temperature



Acoustic



Temperature and Strain



Features

- World-leading measurement ranges
- Provides true linear and highly accurate measurement profiles
- Capable of measuring on SM and MM fibers
- Seamless integration due to variety of interfaces and protocols



Examples of Installation Models



Our Mission

To Ensure Your Success



Why Choose AP Sensing?

- Industry-leading DFOS technology and solution
- Experienced, dedicated team for engineering and project management
- Range of certified sensor cables to fit every need
- Intelligent alarm management software: SmartVision
- Easy integration through flexible protocols and interfaces
- Industry's most comprehensive list of certifications and product tests
- Highest quality and longest product life
- World-class service, support and training
- Global presence with expert regional partners



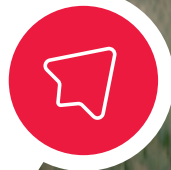
Supportive



Global



Competent



AP Sensing

Who We Are

Drawing on our HP (Hewlett-Packard) heritage in optical testing, we have established ourselves as the **leading solution provider for Distributed Fiber Optic Sensing (DFOS)**.

We are committed to delivering **well-designed, comprehensive, solutions** to our customers. Our global team of **highly qualified employees and regional partners** is passionate in supporting our customers.

Our motto 'Thinking Ahead' expresses our **passion and willingness** to be prepared for **excellent project execution and smooth operation**.

At AP Sensing we recognize that we can only be successful when our customers and partners are successful. Therefore, we take a **respectful and proactive role** in all our commitments.

With the industry's most complete set of tests and certifications, **AP Sensing helps you comply with relevant security standards** and ensures environmental and employee safety.





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