APSENSING.

PIPELINE MONITORING

Distributed Fiber
Optic Sensing for
Leak Detection,
PIG Tracking &
Intrusion Detection

THINKING AHEAD

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Your Trusted Partner

for Pipeline Monitoring

AP Sensing is a trusted partner for water, oil, and gas companies, providing solutions for pipelines and other critical applications. AP Sensing was founded on the **heritage of HP (Hewlett-Packard)**, the market leader in fiber optic testing and measurement for over 40 years. With thousands of installations, our Distributed Fiber Optic Sensing (DFOS) technologies are known for their **outstanding quality**, **reliability,** and **performance.**
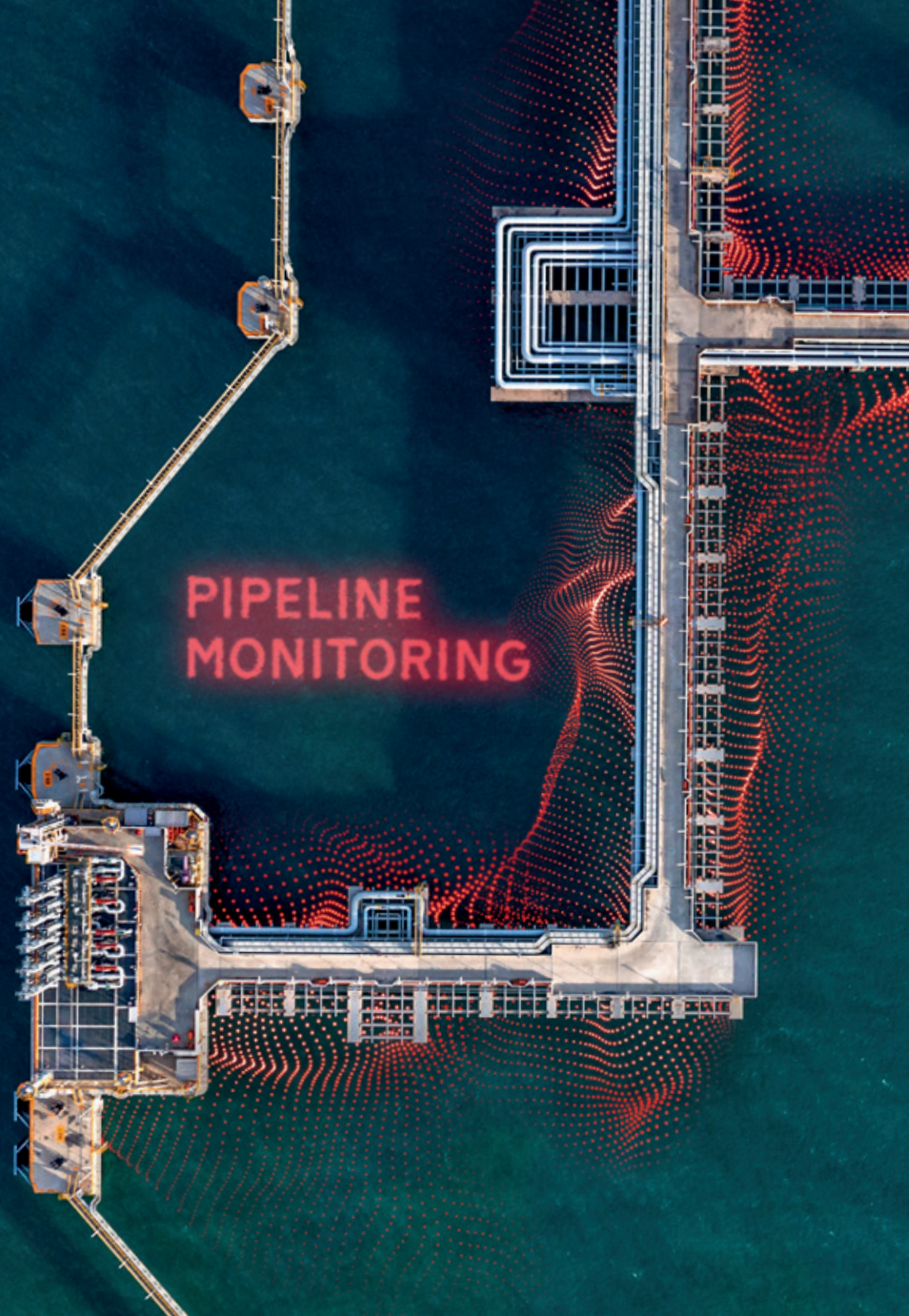
Quality

Reliability

Performance

PIPELINE MONITORING

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Solutions That Fit Your Needs

Our Expertise

With **our expertise in pipeline applications, project management,** and **well-engineered solutions**, we are monitoring prestigious and challenging projects. Our capabilities go beyond fiber optic sensing. With our management software **SmartVision**, we can integrate other sensors and Leak Detection Systems (LDS) such as **Mass Balance**, providing a comprehensive view of critical infrastructure.

AP Sensing's pipeline monitoring solution provides the capabilities to **monitor the entire downstream process 24/7**. Our monitoring solutions are based on DFOS, which is rapidly becoming the detection method of choice for pipeline protection and leak detection.

With our solution, pipeline operators can convert their existing fiber optic telecommunication cables into sensing cables or install new dedicated cables nearby to protect the pipelines.

Advantages

- DAS and DTS transform telecommunication fiber optic cables into sensing cables monitoring the entire pipeline
- Real-time and accurate data acquisition along the entire optical sensor cable
- The fiber is completely passive, immune to EMI, and non-intrusive
- Long measurement range, virtually maintenance-free for decades
- DAS/DTS technologies are not influenced by the hydraulic conditions of the pipeline such as transients, slack flow or multiphase flow conditions
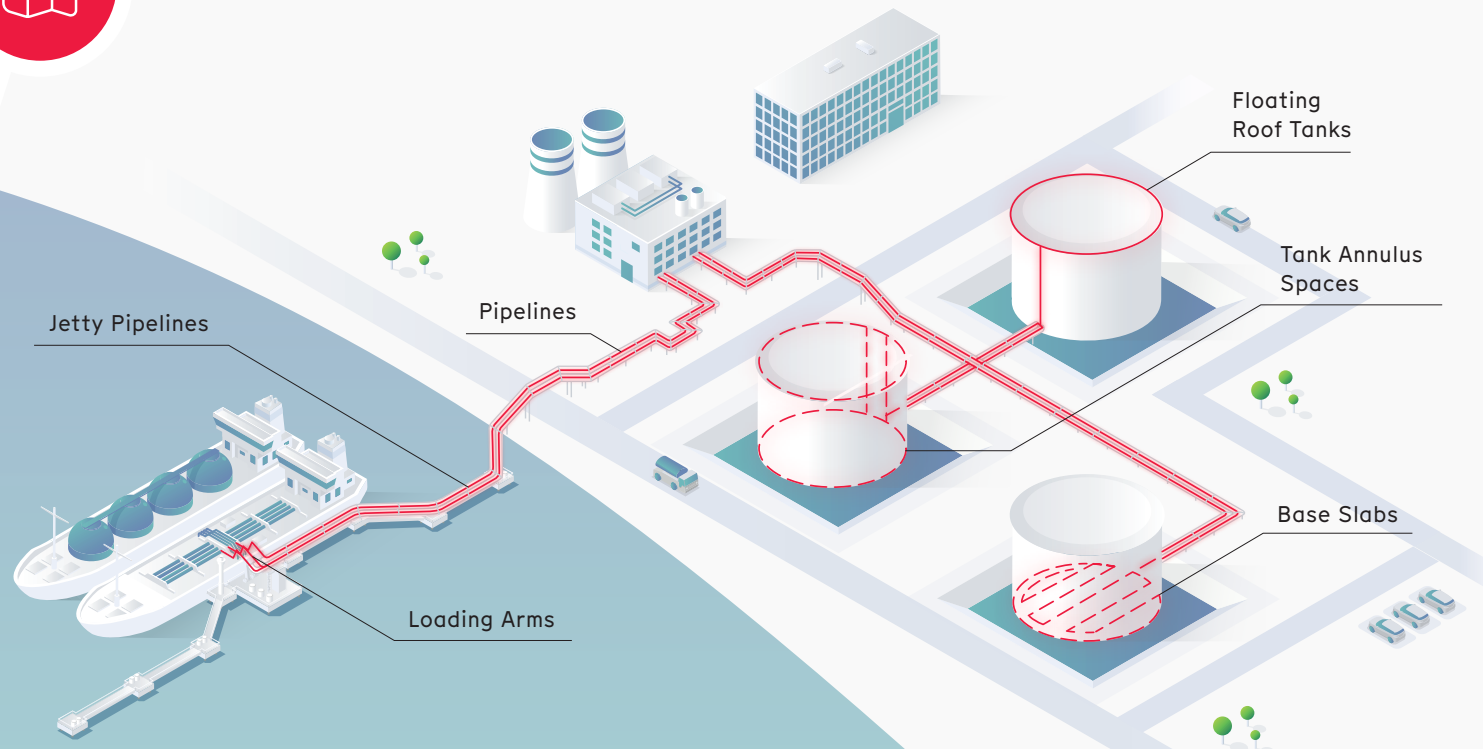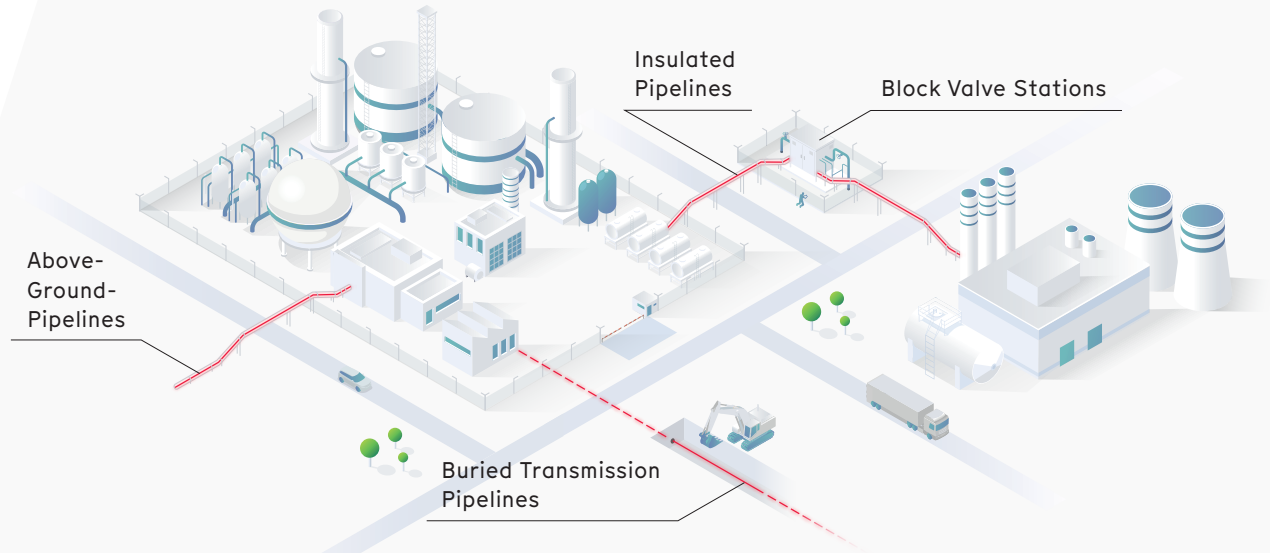
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What Are DFOS Solutions Used for

Types of Pipeline Protection

Applications

- FOLDS – Fiber optic leak detection system for detection/location of gases, water, liquid hydrocarbons, LNG, LPG, and multiphase pipelines
- Intrusion detection system and third party interference (TPI) prevent damage or theft to the pipeline
- Pipeline rupture and ignition detection
- Temperature monitoring of pipe wall temperature for heated pipelines
- Leak detection and slug tracking of multiphase lines
- PIG tracking

Insulated Pipelines

Block Valve Stations

Above-Ground-Pipelines

Buried Transmission Pipelines

Floating Roof Tanks

Tank Annulus Spaces

Jetty Pipelines

Pipelines

Base Slabs

Loading Arms

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Leak Detection Methods

Reliable Solutions

Our pipeline leak detection systems can be used singularly or in conjunction with internal leak detection methods. **The systems reduce response time** by providing fast leak alarm confirmation, accurately **detecting event locations,** and helping to close false alarms triggered by the internal leak detection system.

Thanks to the distributed measurement and the leading measurement range of AP Sensing's pipeline solution, leaks or intrusion events are precisely **detected and located along pipelines of hundreds of kilometers in length.**

Third-party threats to a pipeline – either accidental or intentional – are detected using distributed acoustic information and **leaks are detected using a unique combination** of distributed acoustic and temperature measurements.

Detection and Positioning of a Leak Using SmartAlarm
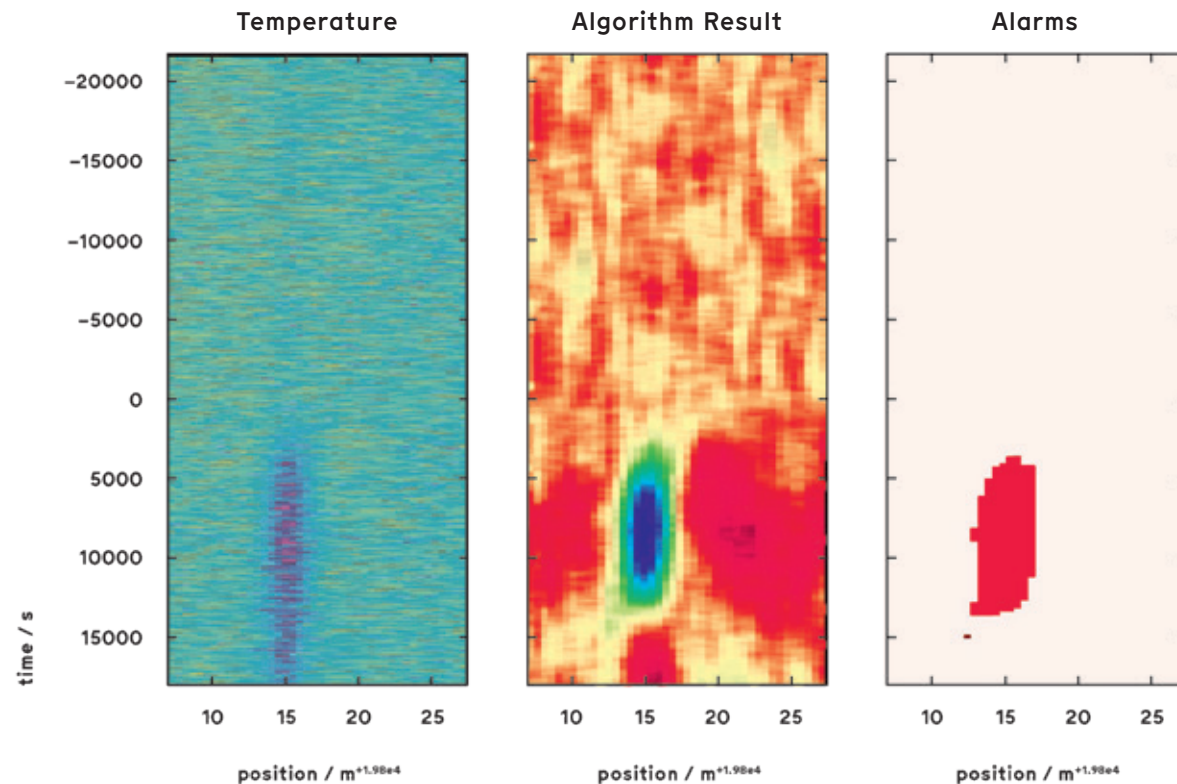
»Knowing the technology and market, it is evident to me that AP Sensing is the forerunner in distributed optic sensing. Their solutions reflect a combination of experience and creativity. Experience comes from their HP heritage, the leader in test and measurement equipment, with decades of experience in developing and manufacturing extremely reliable and high-quality products. The creativity comes from their passion and commitment to solving real customer problems.«

David Orr, Protex Systems

Maximum Safety and Protection

for Your Pipelines

AP Sensing's pipeline monitoring solution is based on three standalone technologies: **Distributed Acoustic Sensing (DAS)**, **Distributed Temperature Sensing (DTS),** and **Distributed Temperature & Strain Sensing (DTSS).** These however can be used together to provide redundancy and fast leak alarm confirmation.

DTS detects **pipeline leaks** by analyzing **temperature variations** on adjacent ground caused by the leak. The pipeline is divided into several zones to ensure **different tunings and alarm thresholds** can be applied.

DAS detects leaks by the **associated noise/ vibration**, and immediate **change in temperature (Distributed Temperature Gradient Sensing, DTGS).** Furthermore, DAS tracks the progress of the position of **PIGs or scrapers** in real time, showing the position of interactions with **welds**, **liquid accumulation, and other restrictions**.

DTSS detects **ground movement** by measuring the **strain** in the fiber optic cable.

**Instrument Features**

DTS – Leak Detection:
- Detects pipeline leaks by analyzing temperature and precisely detecting and localizing any hot spot or cold spot.

DAS – Leak Detection:
- Detects leaks by noise and vibrations generated by the leak
- Detects change in temperature generated by the leak

DAS – Third Party Intrusion:
- Detects manual or mechanical digging, construction work and pipeline drilling
- Detects dropped objects, anchor drop/drag, fishing trawl gear impact, and dredging works
- **DAS - Real-Time PIG Tracking**
- **DAS - Flow Assurances**
- **DTSS - Ground Movement Monitoring**
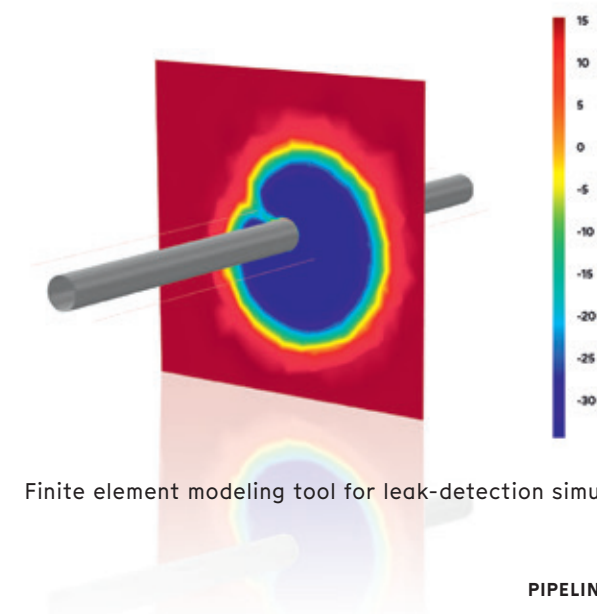
Finite element modeling tool for leak-detection simulation

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Reducing Response Time

## Through Excellent Data Presentation & Management

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, DTSS, CCTV, and other sensors** into a single platform. Superior event visualization **reduces the time** needed to reach informed decisions and further reduces response times by providing **accurate locations**.

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 **interfacing with SCADA/DCS** systems.

Our proprietary **SmartAlarm technology** offers unique methods and algorithms to detect even small leaks. SmartAlarm **analyzes patterns** providing fast and dependable event classification and alarming.

SmartVision Features

- Integrated management solution
- Asset visualization for complete plant overview 24/7
- Reporting and analysis capabilities
- Alarm management
- Central database
- Easy integration into control and management systems

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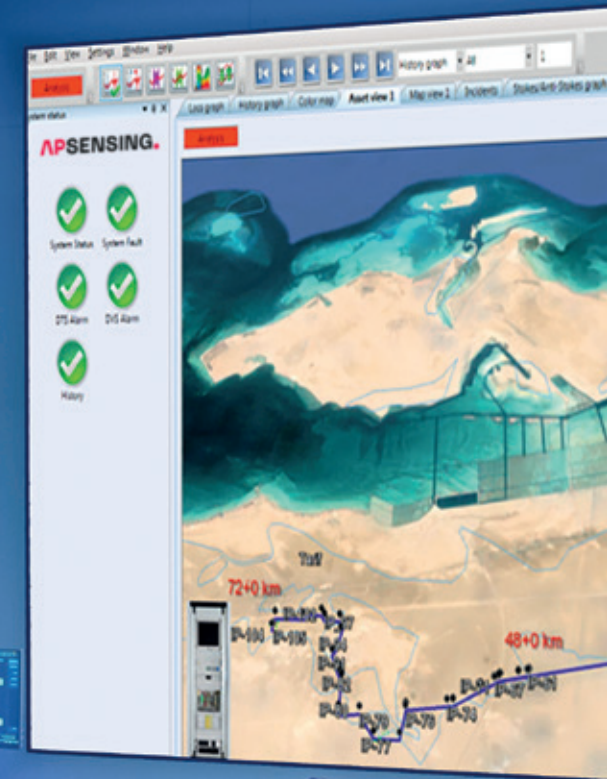
Your Complete Solution Provider

Your Best Choice

AP Sensing is your **long-term partner** for pipeline monitoring. **We listen to your challenges and strive to provide the best DFOS solution for your pipeline project.** Our complete offering fits your pipeline monitoring demands and protects your valuable assets.

AP Sensing provides a **complete turn-key package** that includes: a system design built around proven components; customized software function and graphics as required; project management and engineering; installation and commissioning plus through-life support.

Our **international project teams** consist of multidisciplinary, highly skilled, and passionate engineers and field support who combine their experience and expertise to deliver on our commitments.

Temperature

Acoustic

Temperature and Strain

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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

WORKING TOGETHER

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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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- Notable **responsibility** & sustainable **approach**
- Innovative & comprehensive **solutions**
- **Extensive expertise** in DFOS
- The industry's most complete set of **tests & certifications**
- **Key enabler** to protect lives & the environment
- **Agile approach** to customers' needs
- Dedicated & **passionate employees**
- **HP** (Hewlett-Packard) **heritage**
- Intelligent **alarm management software & AI**
- **Highest quality** & longest product life
- **Asset protection** in the most challenging environments
- Numerous **successful projects** worldwide
- **Global leader** with regional partners

Partner

c(UL)us LISTED

IEC

IECEx

Ex

CERTIFIED IQNet MANAGEMENT SYSTEM

ilac-MRA

made in Germany

Passion for Plants.
For every unit sold, AP Sensing plants 100 trees.