



LNG MONITORING

Fiber-Optic Leakage Detection System



AP Sensing: Your trusted partner for LNG Monitoring

AP Sensing is your **global DTS solution provider for your LNG regasification or liquefaction plant**. We provide global sales and service through a network of local offices and highly qualified partners. Our product quality and reliability are unsurpassed, which brings you peace of mind and lower cost of ownership. **With our experienced engineering team and global references, we are your ideal partner** to design, commission, and maintain a highly reliable asset protection solution.

The heart of our DTS solution is based on **key technologies developed by HP/Agilent Technologies**, the world leader in optical test and measurement for over 25 years.

Building on HP/Agilent's processes and knowledge, we have established ourselves as **the leading solution provider for distributed optical sensing in a wide range of applications**.

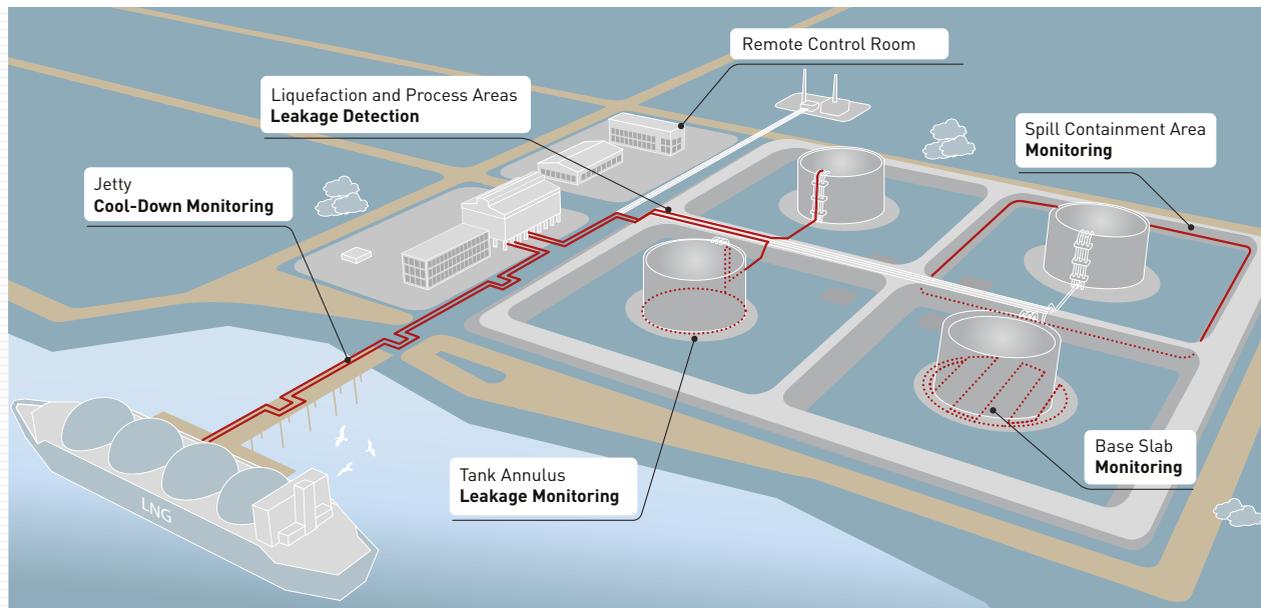


Leading the Way with Passion.

Our expertise: The perfect fit for you

Fiber-optic DTS technology is uniquely suited to a variety of monitoring tasks within an LNG facility and is recommended for spillage detection in section 13.4 of EN 1473:2007-06. By making use of optical sensing probes, our system is non-corrosive and intrinsically safe. It **accurately measures temperature over large distances** every minute, and is suitable for operation in cryogenic conditions.

AP Sensing understands your challenges and requirements. **We are committed to defining well-designed solutions** that meet your safety requirements, whether you require ATEX Zone 0 compliance or need to be SIL-2 rated.



Fiber-optic advantages

Accurate measurements not compromised by corrosive atmospheres or EMI

Real-time temperature data along the entire passive optical sensor cable

Long measurement reach, virtually maintenance-free for decades

Easily installed in difficult access areas

Instrument can be located in a remote control room for safety compliance

Application areas

Cool-down monitoring on the jetty

Leakage detection in liquefaction and process areas

Leakage monitoring in tank annulus

Monitoring of spill containment area

Base slab monitoring

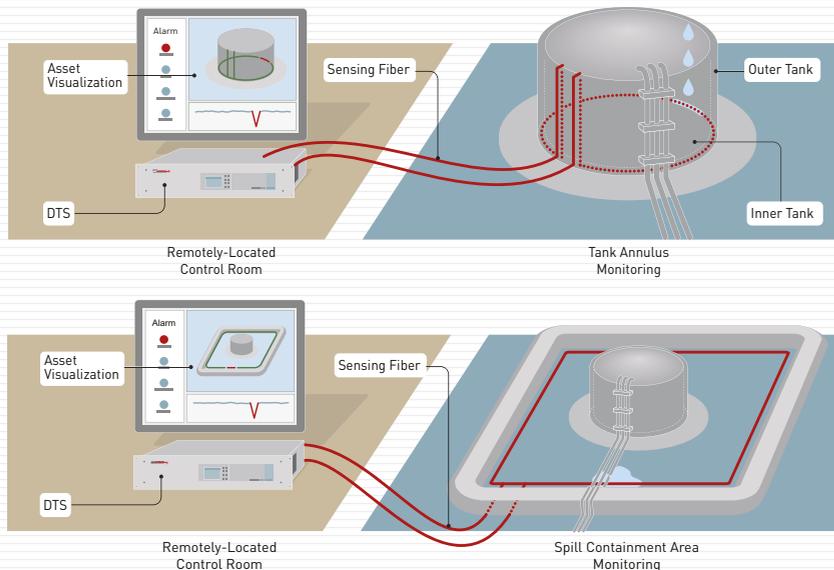
Tank leak detection and spill containment areas

The DTS system locates leaks in the internal tank. The sensor fiber is deployed in the annulus **between the two tank walls** during tank construction. If a leak occurs, cryogenic fluid comes in contact with the sensing fiber lying in the annulus space. Due to the low temperature of the fluid, **the DTS system rapidly identifies even very small leaks.**

Cryogenic fluid is also quickly detected by routing DTS sensor cable **around the perimeter of the spill containment areas.** When leaking material reaches the containment areas, the temperature decreases, triggering an alarm. The system reports the precise alarm location.

“The SIL-2 (Safety Integrity Level) rating and ATEX Zone 0 certificate that AP Sensing has achieved gives us the confidence that their solution is going to work as planned, day in and day out, in high-risk environments. Operators sleep better at night knowing that the assets are protected and security standards are met.”

Dr. Stephan Grosswig, GESO



Ease of integration and site overview

AP Sensing's DTS solution can be **fully integrated into the site monitoring and control system**. This becomes important when the DTS is located some distance away from the main control room, for example, an ATEX wall-mounted device located near a tank, or a rack-based system in the jetty control room. Our integrated asset visualization software, **SmartVision**, gives your operators the **complete plant overview, 24/7**.

It's no accident that **we have the industry's lowest failure rate**. Apart from over 25 years of HP/Agilent's optical test leadership, we are passionate about continuously improving our DTS solutions to help you meet your day-to-day challenges.



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

Instrument features

- ATEX certification down to Zone 0
- SIL-2 assessed by TÜV recognized consultants
- Proven field reliability with industry's lowest maintenance and warranty costs
- Highest reliability throughout the entire operating temperature range
- Lowest laser output power – inherently safe in case of fiber breaks
- Wide range of industry standard communication protocols

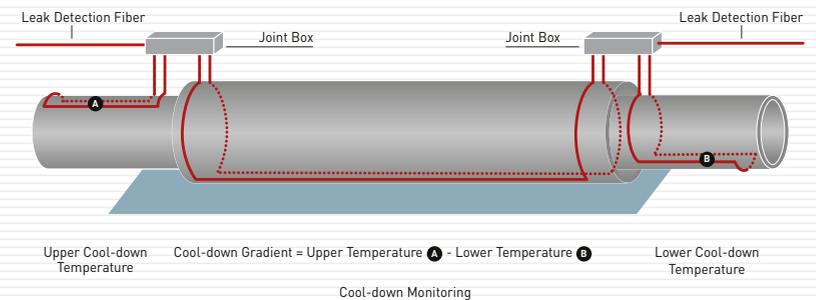
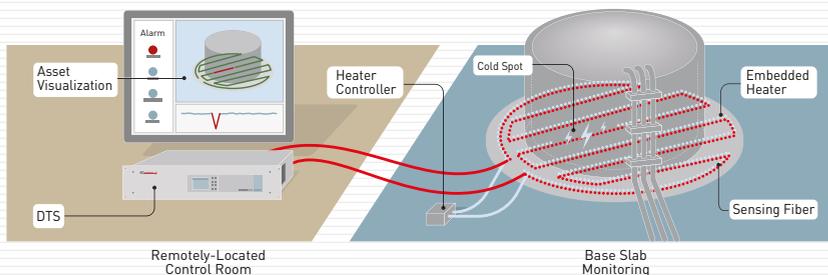
Base slab and pipeline monitoring

The DTS monitors the entire pad area and heating system in real time, down to one-half meter spatial resolution. The **sensor cable is deployed in the heating element conduit within the pad, and provides temperature data every half meter** along its path. In addition to the monitoring functionality, the temperature data also minimizes the power consumption. By identifying hot and cold spots, heating efficiency is improved.

From the jetty to the process areas and on to the tanks: The AP Sensing DTS solution provides thermal gradient information during cool-down – ensuring that pipe stress is kept within specified limits. It also **identifies pipe leak points and possible insulation problems that cannot be seen by a visual examination.**

“Knowing the technology and market, it is evident to me that AP Sensing is the forerunner in distributed optical sensing. Their solutions reflect a combination of experience and creativity. Experience comes from their HP/Agilent 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.”

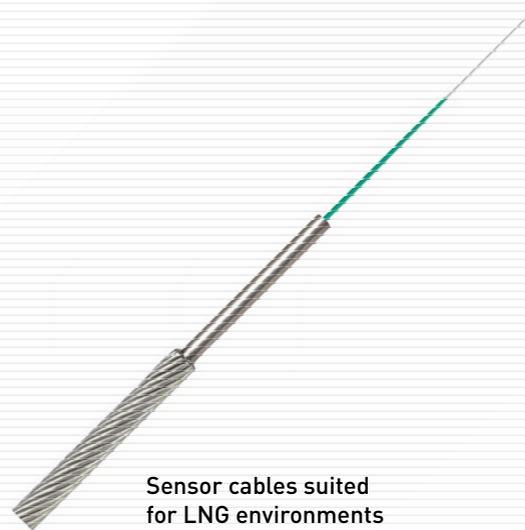
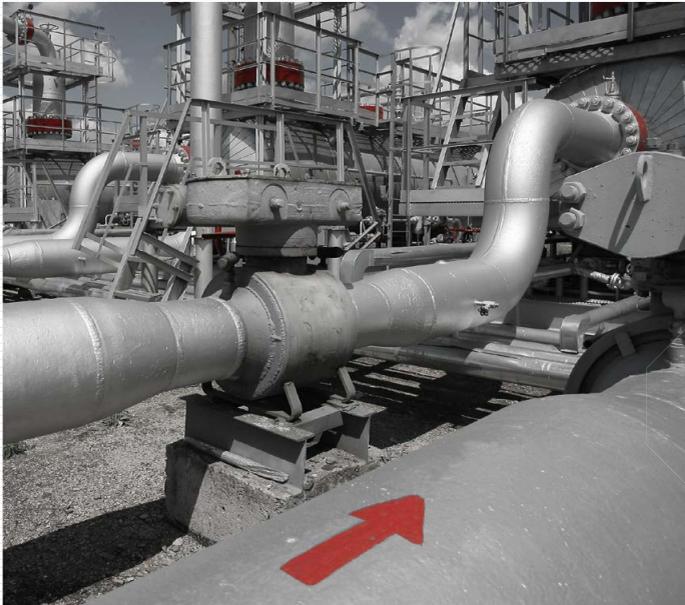
David Orr, Protex Systems



Your complete solution provider

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

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 onsite service but also hotline support, maintenance, and training. Whatever is needed – our team of experts is happy to assist you.



Sensor cables suited for LNG environments

Why choose AP Sensing?

Best measurement performance due to unique code correlation technology

No drift, no recalibration thanks to patented single-receiver design

Low-power laser for safe use and longest product life (MTBF is 33 years)

Sensor cables that fit your needs, including steel sheathing and operating ranges from -196 °C to +300 °C

Market's most complete set of test reports and certifications

Support for project planning, design, and installation

Project management and commissioning

A worldwide network of regional partners and experts

Our mission is to ensure your success

Drawing on our HP/Agilent heritage in optical test, we have established ourselves as **the leading solution provider for distributed optical sensing.**

We remain committed to delivering **well-designed, comprehensive solutions** to our customers.

We have worldwide offices with **highly-qualified and motivated employees, and a network of expert regional partners.**

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 to all relevant security standards, and ensures environmental and employee safety.

Contact us for more information!

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