

CEMENTYS



Asset Integrity Monitoring

Our Know-How:

Asset Integrity Monitoring
Infrastructure Aging Expertise
Risk Based Inspection
Service Life Extension

Your Critical Assets:

Large Civil Structures and Infrastructures
Military and Nuclear Facilities
Oil & Gas Assets
Water and Power Utility Networks

Cementys, Your Leader in Optical Fiber technology for AIM



Our activities and services :

Our activities are focused on our core knowledge and experience, we offer products and turnkey solutions for your monitoring requirement. We provide a complete service including studies, implementation, installation, commissioning, operation and maintenance of all our systems. Those input are extremely important to update efficiently your maintenance plans and plan the IRM operations.

Our scope of services :

- Monitoring
- Data collection
- Data Processing
- Data Management
- Compare to original
- Compliance vs standards
- Interpretation
- Reporting
- Recommendation

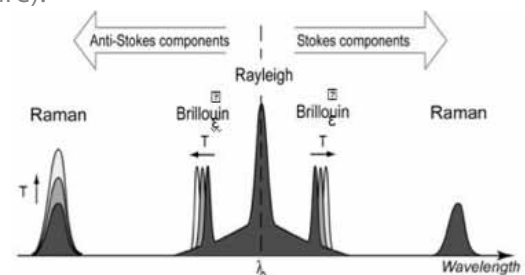
Our Fiber Optic Technology :

Fiber Bragg Grating (FBG)

A Bragg grating is an optical filter which reflects specific wavelength transmitted through the fiber. The Bragg grating reacts to the strain and temperature by modifying the wavelength reflected, which allows us to measure them. This sensor is used to measure local strain with very high sensibility but must compensated in temperature.

Distributed Temperature Sensor (DTS) & Distributed Strain and Temperature Sensor (DSTS)

Distributed Temperature Sensing systems use a passive optical fiber cable as sensing element. Based on the Raman (DTS) and Brillouin (DSTS) scattering, the optical fiber itself acts as a sensor. A monochromatic light is propagated through the fiber. The light is back-scattered to the transmission end. The signal shape is influenced by the Raman effect (temperature) and the Brillouin scattering (strain and temperature).



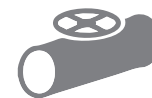
In the following pages you will find the applications :



Offshore
structure



LNG



Line



Downhole

Offshore Structure

System for fixed platform, FPSO, Spar, semi-submersible, TLPs and buoys.



Why using Optical Fiber for your offshore structure ?

- EM Immune & ATEX zone 0 compliant
- No drift – long term data
- Field proven
- Cost effective

Structure integrity monitoring solution

This is a cost-effective solution using fiber Bragg grating (FBG) sensor to measure the strain and acceleration response of platforms/FPSOs to the wave motion.

Our FBG sensor can be used to confirm structural integrity after events such as hurricanes or a prolonged operation time (ageing monitoring).



Load mooring Monitoring solution

The FBG measures the tension for the mooring lines of the vessel or buoy (CALM, SPM) to prevent their failure. The FBG sensor allows real-time monitoring even for remote structure. Those passive sensors requires low power.



LNG



Containment integrity monitoring solutions

System for LNG and LPG carriers, floating storage regasification units (FSRUs) and floating storage units (FSUs) and LNG tanks.

Why using Optical Fiber for your LNG facilities ?

- EM Immune & ATEX zone 0 compliant
- No drift – long term data
- Large operating temperatures : -180°C to 150°C (Cryogenic compliant)
- Distributed measurement

Tank monitoring

Using DTS system, it is possible to detect leak in short time. Safety and alert management are improved. This system accurately measures over long distance and is perfectly suited to be used in cryogenic temperature.



Due to the important temperature difference between the inside and the outside of the tank, a potential leak is easily and quickly identified.

DTS can be used to monitor the heating system on the base slab and ensure its efficiency.

The sensors are placed far away from the tank and the base slab which makes it compliant with the highest safety requirement.

As well, Cementys can provide on custom sensor to monitor the structural integrity of the walls (displacement sensor, inclinometer, extensometer) qualified to low temperature (-60°C).



Pipeline Monitoring

System can be implemented to measure pipeline cool down during LNG carrier load out. Gradient temperature can be provided close to real-time to monitor the pipeline behavior. Using the same system, leak spot can be detected and insulation problems identified.

Cementys DTS system is easily installable on operating facilities.



Line



Lines integrity management solutions

System for Onshore pipeline, Umbilicals, Risers and Flowlines (URF), Mooring chain.

Why using Optical Fiber for your offshore / onshore lines ?

- EM Immune & ATEX zone 0 compliant
- No drift – long term data
- High strain and temperature resolution
- Distributed measurement

Key advantages to optical fiber lies in improved accuracy, reliability, multi-plexing capability, immunity to electro-magnetic interference, and long-distance signal transmission capability.

Those capabilities make optical fiber sensor perfectly suited for line integrity monitoring.

Umbilicals, Riser and Flowlines (URF) Monitoring :

URF can withstand high loads at installation and during service life operation. Specifically, Riser are subject to Vortex Induced Vibration (VIV), due the ocean current flow.

On the touch-down zone, the riser endures high mechanical stress that can be easily measured using Cementys DSTS solution. VIVs can be monitored using this technology.

Our DSTS solution allows our client to prevent fatigue failure and increase service life, while avoiding hydrocarbon spillage. Real-time measurement directly transmitted to the control room creates a high level of fatigue monitoring. Leakage are easily monitored and alarm can be set up to inform the operator.

Cementys DTS and DSTS solutions are easily installable and deployable on operating and new lines.

Mooring chain

Mooring chain withstand very high loads distributed all along the chain. Cementys DSTS solution monitor the strain all along the chain to prevent any failure to occur.

Onshore pipeline Monitoring



Onshore pipeline are monitored to follow any leakage or crack due to external event (construction work, theft). Fiber optic is a cost effective and reliable system that can be implemented on very long distance.

This solution will help you keep your pipeline safe from environmental and malicious damage. Our solution comprises a warning system to inform the user in the event of a leak.

Downhole

Downhole monitoring solutions



Why using Optical Fiber for Downhole monitoring ?

- EM Immune & ATEX zone 0 compliant
- No drift – long term data
- High strain and temperature resolution
- Distributed measurement over long distance
- HT/HP compliant (up to 250°C, 200 bars)

Oil reservoir are harsh environment. Equipment downhole require to withstand high temperature, pressure, moisture and corrosion. Breakdowns can cause delays and cost hundreds of thousands of dollars.

Optical fiber is perfectly suited for this demanding application. While withstanding HT/HP, FO provided accurate data, while not drifting in time. No maintenance is required for those passive sensors.

Cementys solutions for downhole are DTS and DSTS to measure strain and temperature from the wellhead to the bottom of the production casing. From those information, Cementys allows to know, for example, the cement-to-casing bonding integrity, or in-situ cement integrity leak.

The temperature and strain readings allow our client to enhance their oil and gas recovery, manage their reservoir, and check the integrity of the casing and completion.

The data are transmitted in real-time though the fiber optic. The sensors provide a valuable source of information for the reservoir and production engineer to manage efficiently the well.



They trust us:



ExxonMobil

FMC Technologies



HALLIBURTON



Reliance
Industries Limited



SHAWCOR

SPIECAPAG
ENTREPOSE



STRESS
ENGINEERING
SERVICES INC.

subsea 7

Technip



TRACTEBEL
ENGIE

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