

INDUSTRIAL ASSET MONITORING WITH FIBER OPTIC SENSORS

PROCESS CONTROL

SKIN TEMPERATURE MONITORING

DEFORMATION MONITORING

PIPE LEAK DETECTION

INTRUSION DETECTION



SKIN TEMPERATURE MONITORING / HOT SPOT DETECTION

A grid of continuous fiber optic cable is mounted on the full outer surface of a process vessel. The cable is connected to a DTS (Distributed Temperature Sensing) unit that constantly launches a light pulse through the fiber and analyses the backscattered spectrum. This produces the truly distributed temperature profile over the full grid and thus over the vessel's skin, resulting in immediate detection and location of possible hotspots. The cable used is suitable for operating at temperatures up to 650°C. To install the system welding on the vessel is not required.

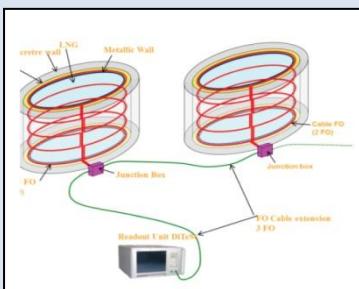
Pipeline Leak Detection

A leak in a pipeline causes a local temperature change in its surrounding (soil or air) due to the temperature of the liquid or expansion of the gas. A DTS unit connected to a fiber cable running along or attached to the pipeline detects this temperature change and locates it with an accuracy of 0,50 to 1,00m over distances up to 50kms. As its temperature measurement resolution is as small as 0,1°C the system detects and locates a tiny leak in the earliest possible stage.



STRUCTURAL MONITORING

Structural monitoring not only allows the owner to monitor the structural integrity of his asset but can also be a useful tool for Condition Based Maintenance (CBM). Inventec offers a wide array of fiber optic sensors, ranging from various types of spot sensors to monitor local material stresses to DSS (Distributed Strain Sensing) systems to permanently monitor the distributed strain and deformation with a reading every 0,50 to 1,00m over distances up to 20kms. Application include tanks, pipelines, quay walls, jetties, bridges, support structures and even soil deformations.



INTRUSION DETECTION - DAS: DISTRIBUTED ACOUSTIC SENSING

Traditional systems such as CCTV or IR often do not provide optimal protection against undesired access to large perimeter areas. DAS monitors every meter of the perimeter 24 hours per day / 365 days a year on a real-time basis. The underground fiber cable is invisible and undetectable. The system identifies a large variety of activities such as footsteps, type of vehicle, climbing or cutting a fence and on top of that indicates the direction in which the activity is developing.



WHY FIBER OPTIC SENSORS?

- Extremely accurate, durable and reliable.
- Immune to electromagnetic induction.
- Insensitive to humidity, water, vibrations.
- No drift, recalibration never required.
- Small size, will fit anywhere.
- Multiple sensors or distributed sensing via a single connector.
- Intrinsically safe, suitable for hazardous areas.
- Operating temperature up to 650°C.

INVENTEC specialises in Structural Health Monitoring. We provide the full package including system engineering, installation and start-up and, if desired by our client, the data processing and management via our Livesense web platform.