

LEAKALERT®

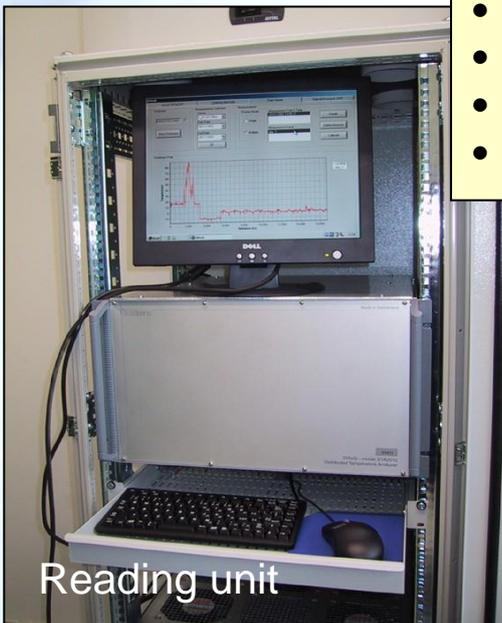
Pipeline leak detection with Distributed Temperature Sensing (DTS)



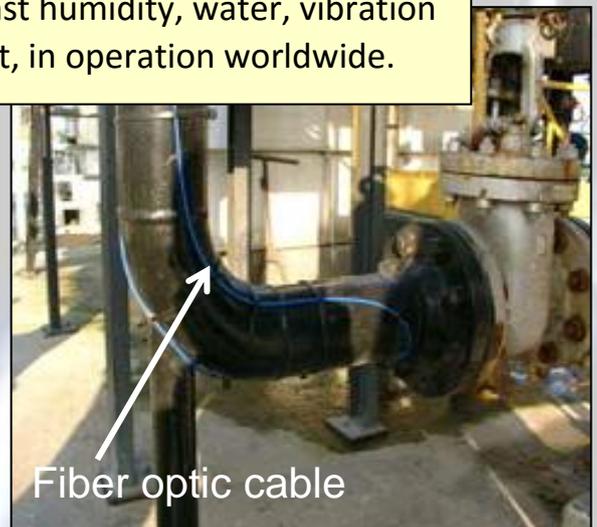
Fiber optic cable



- For above ground and buried pipelines
- Distances up to 50kms served by single reading unit
- For liquid and gas pipelines
- Temperature resolution 0,1° C
- Spatial resolution 1,00m
- Response time 10 seconds
- Continuous monitoring 24/7
- Simple installation and operation
- Suitable for hazardous areas
- Immune to electromagnetic induction
- Resistant against humidity, water, vibration
- Proven concept, in operation worldwide.



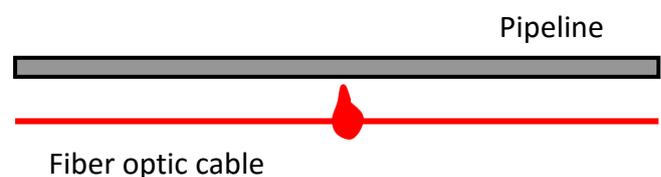
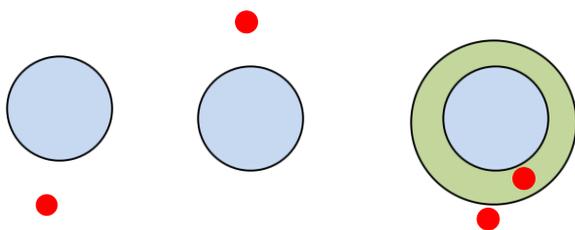
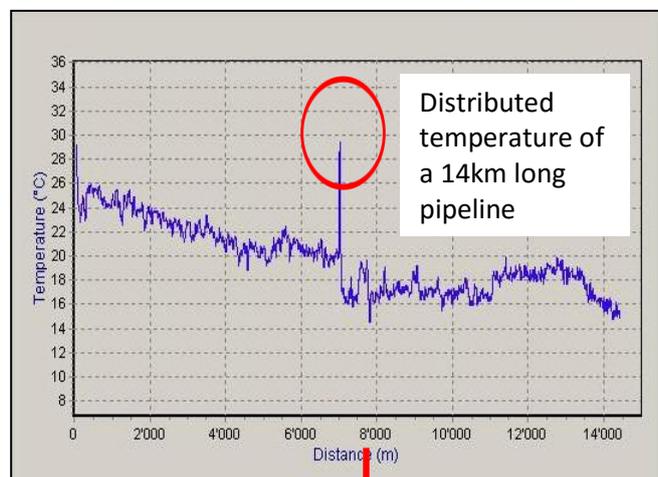
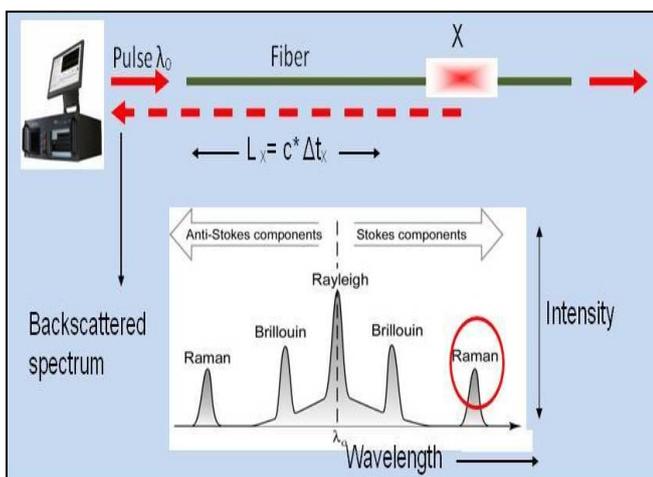
Reading unit



Fiber optic cable

OPERATING PRINCIPLE

A reading unit constantly launches a high frequency light pulse of one specific wave length through an optical fiber. The major part of the light exits the fiber at the far end. A small part of the light however is backscattered to the reading unit. This backscattering occurs at every point along the fiber. As a result of photo-acoustic phenomena the backscattered spectrum does not only show the original frequency of the light that is launched into the fiber but contains two additional frequencies: the so-called Brillouin and Raman frequencies. The latter is utilised in DTS: there is a defined relation between the intensity of the Raman frequency and the temperature of the fiber. Measuring the Raman frequency at length intervals of e.g. 1,00m results in the distributed temperature over the length of the fiber and thus of the pipeline to which the fiber is connected or of the medium (soil or air) in which the fiber is embedded. The location of each measurement results from measuring the time that has lapsed between launching of the pulse and receipt of the backscattered light (Radar principle – the speed of light is constant).



For liquids the detection cable generally is installed underneath the pipeline. An initiating leak is detected and located by a small change in temperature. A leak in a gas pipeline (LPG, LNG, Ammonia etc) will manifest itself by a local drop in temperature due to the expansion of the gas. Then the fiber optic cable generally runs above the pipeline. In case of a thermally insulated pipeline the fiber cable can be contained within the insulation or be attached to the outside of the insulation jacket.



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