

Distributed Temperature Monitoring in Oil and Gas Exploration



Our impressive track record in various market segments demonstrates high reliability and industrial strength.

The OFDR technology - with its approved optical components from the telecom industry - enables to provide sophisticated fibre optic temperature surveillance at commodity prices.

The applied light source is a modern and durable semiconductor laser diode, instead of a rather complex solid state laser, which powers typically Raman OTDR systems.

The semiconductor laser diode has been critically type tested according the Telcordia GR-468 standard and is fulfilling telecom standards with a medium lifetime of > 25 years. Not only the laser diode has been tested, the entire system was comprehensively evaluated by various independent international bodies (e.g. the Germany VdS, the association of German asset insurers), which includes EMI tests as well as endurance tests at accelerated aging environments.

The LIOS' DTS technology has been successfully proven in critical applications like fire detection in road and rail tunnels and special hazard buildings, power cable and transmission line monitoring, in oil & gas exploration for permanent downhole monitoring and for industrial induction furnaces surveillance, where these systems have been equipped in worldwide projects with more than 1000 permanent installations since 1997.

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LIOS Technology introduces its next generation temperature sensing instrument to the oil and gas industry. The product series OTS60P, OTS80P and OTS100P delivers increased performance and an extended measurement range up to 10 kilometres at a single end multimode fibre.

The applied Optical Frequency Domain Reflectometry (OFDR) principle ensures a temperature survey even over long distances at an appealing spatial resolution of 1 m or even 50 cm to get a more accurate picture of downhole conditions.

The OFDR technology provides an almost invariant spatial resolution along the entire sensor length, which ensures to identify and clearly measure finest thermal variances, even at most remote distances of currently up to 10 km.

This is in contrast to other measurement principles (e.g. laser pulse principle, OTDR), which are sensitive to dispersion effects and therefore affected by a broadened spatial resolution at longer measurement distances; in other words, the hot spot sensitivity of pulse type measurements degrade with a function of distance.

LIOS Technology's distributed temperature sensing systems offer the unique ability to provide a reliable, non-intrusive means of continuous temperature logging of wells, enabling full coverage of complex and multilateral wells with a single optical fibre cable.

- The multi channel capability of the LIOS DTS is perfectly suited for the entire surveillance of multiple wells with a single DTS – up to 8 independent channels per DTS unit are available.
- The flexible database design enables the embedded storage and visualisation of external point- type data, like signals from pressure / temperature gauges.
- The temperature profile data, in any desired form or format, can be transmitted via standard interfaces from the OTS unit as required, and be either displayed or further processed by PC, PLC or SCADA systems. As a result of the increasing demands placed on the ability to network and integrate measuring systems into management systems, LIOS offers network components that summarise OTS data from several OTS units and transport or convert it to the required network standards and protocols like Modbus, DNP3, IEC60870-5 or XML based data interfaces (e.g. international protocol standard POSC for the oil and gas industry www.posc.org).

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Further information about our products and services can be obtained at our internet site www.lios-tech.com

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