

Distributed Temperature Monitoring of Energy Transmission Systems



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 electrical power 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, which suits the needs of the electrical asset operators.

The OFDR technology provides an almost invariant spatial resolution along the entire sensor length, which ensures to identify and clearly measure atypical hotspots (e.g. at cable joints) at early stages, 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.

Increase grid security and prolong the working life of your facilities by a complete network monitoring solution based on distributed temperature measurement.

- The multi channel capability of the LIOS DTS is perfectly suited for the entire surveillance of a 3 phase cable system or a 2 x 3 phase double cable system – up to 8 independent channels per DTS unit are available.
- The powerful Ethernet TCP/IP interface simplifies links to network structures significantly.
- A direct link to SCADA and other overall management systems is ensured by well tested protocol conversion to industry standard protocols, like DNP3 or IEC 60870-5.
- Distributed temperature sensing is a powerful tool that allows to accurately rate the cables based on actual field conditions. It is especially valuable for dynamic rating, since the accuracy of the temperature modelling can be coupled with the monitoring and the predictive functions of the dynamic rating system. LIOS provides an integrated Real Time Thermal Rating (RTTR) evaluation via a well defined interface between its DTS data visualisation software and CYMCAP, a cable ampacity program based on IEC standardised methods, developed and commercialised by CYME, Canada.

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

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