



Brillouin DSTS System for quality inspection/working status monitoring of FO cable/power cable carrying optical fibers

PERFORMANCE MONITORING

Strain Detection
Recording and reporting

PRECISION

Real-world performance
Strain Detection: $\pm 10 \mu\epsilon$
Temperature: $\pm 0.5^\circ\text{C}$
100 km sensing range

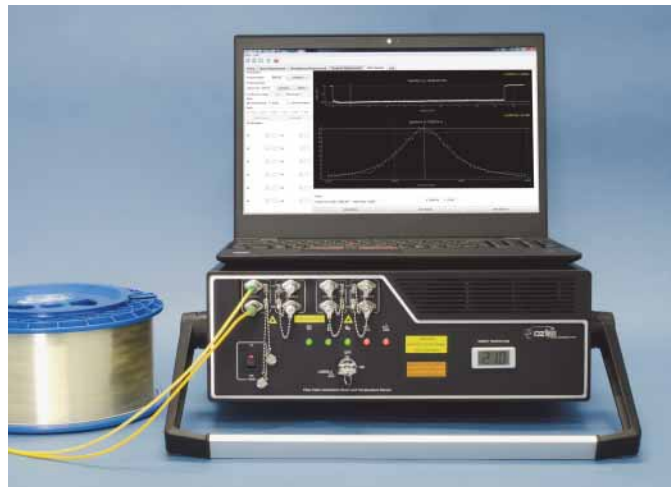
SPEED

Standard model:
3–7 minutes
High-speed model:
15 seconds to 3 minutes

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OZ Optics ForeSight™ Brillouin DSTS Interrogator

Distributed Strain and Temperature Sensing (DSTS) systems provide an effective way to monitor the quality or working status of fiber optic cables or power cables carrying optical fibers. A strain profile along the length of the cable can be provided by the ForeSight™ DSTS, which helps the manufacturer or operations company to better understand the status of the fiber optic cable or power cable.



OZ Optics ForeSight™ Brillouin DSTS

Solution Requirements

Equipment Housing
Non-condensing humidity facility
AC Power

Currently, Optical Time Domain Reflectometers are widely used for inspection or monitoring of the working status of fiber optic cables. In many cases, this method is adequate. However, for high-end products such as submarine communication cables, submarine power cables, special purpose fiber optic cables, or fiber optic cables that are more than 20 years old, optical time domain reflectometry is insufficient because it cannot detect changes to strain. To evaluate these types of fibers, distributed Brillouin technology is a better choice.

Historically, Brillouin sensors were excessively costly and inaccurate. The OZ Optics ForeSight™ Brillouin DSTS system changes that. With multiple measurement modes, the localized strain can be determined along the entire length of the fiber. OZ Optics' DSTS technology has been used by many world-class fiber optic and power cable manufacturers to monitor the quality and working status of their products.

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In January of 2012, Vattenfall's 300 MW, 100 turbine Thanet offshore wind farm had to run at half capacity because two of its export cables developed faults. In one case, the cable was bent to a sharp angle, which led to costly repairs.

To provide an early warning to similar faults like this, measuring changes to the strain while the cable is operating can be very beneficial. Distributed Brillouin technology is a suitable tool in this application.

The OZ Optics ForeSight™ DSTS system measures, logs, and generates alarms and reports based upon initial setup conditions. Unlike other electrical measurement instruments, recalibration is not necessary during its operating lifetime. It is capable of interfacing via a Remote Access Database (RDA) to a Supervisory Control And Data Acquisition (SCADA) system.

The standard OZ Optics DSTS comes with two channels. Four internal channels is optional. Additional channels can be added using an external optical switch, which can be controlled via the interface of the DSTS system. Virtually any number of channels can be provided.

