



Brillouin DSTS System for Utilities Monitoring

OZ Optics ForeSight™ Brillouin DSTS Interrogator

Distributed Strain and Temperature Sensing instrumentation provides an effective means to monitor any combination of distributed temperature, strain, geological shift and intrusion. OZ Optics DSTS ForeSight™ Brillouin OTDA may also be enhanced with a built-in B-OTDR and standard OTDR. This combination allows automated mode switching in case of fiber breakage.

PERFORMANCE MONITORING*

- Heat Detection
- Leak Detection
- Strain Detection
- Security Detection
- Corrosion Detection
- Local and remote control, recording and reporting

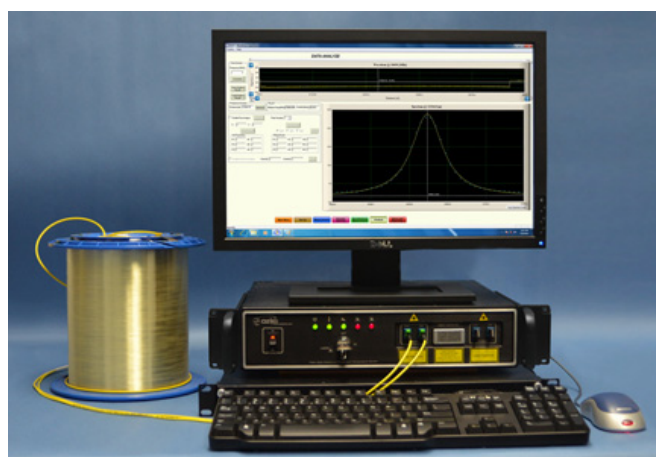
PRECISION

- Real-world performances
- Strain Detection: $\pm 2 \mu\epsilon$
- Temperature: $\pm 0.1^\circ\text{C}$
- 150 km sensing range

SPEED

- Standard Model: 3-7 minutes
- High Speed Model:
 - 15 seconds to 3 minutes,
 - 1 second disaster monitoring

For more information on any of our products or services please visit us on the Web at: www.ozoptics.com



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Solution Requirements

Successful implementation of DSTS systems for each monitoring application will require several elements to work in conjunction with each other:

- Equipment Housing
- Non-condensing humidity facility
- AC Power
- Properly installed single mode fiber.
- Optional: Interfacings to a SCADA or other monitoring system
- Optional: External optical switch to enable multiple fiber monitoring with a single unit.
- Professional installation team

The system's excellent performance and long measurement range makes it very suitable for various utilities markets. Utility applications include:

- Power generation, distribution and transmission.
- Nuclear power plant monitoring, reactor monitoring, and waste storage monitoring.
- Fresh, saline and wastewater pipeline monitoring.
- Monitoring of tailings dams and cooling ponds.
- Monitoring of natural gas pipelines and storage.
- Monitoring of critical infrastructure for all utilities.
- Monitoring of fiber backbone and telephony.

Often the ForeSight™ is selected for the ability to measure one critical aspect, but quickly expands as operators and owners discover what additional areas can be measured as well. Examples of monitoring include:

- Heat and strain measurements in areas with high electromagnetic interference, such as motor generators and High Voltage lines.
- Quality, integrity assurance, and estimated life performance of concrete, metal and storage facilities.
- Monitoring in ionizing radiation environments.
- Security, leak detection, and geo-strain for all pipelines.
- Ice-loading.
- Steam-plant distribution.
- Precursor leaks in tailings dams along with strain changes.

*OZ Optics reserves the right to change any specifications without prior notice.

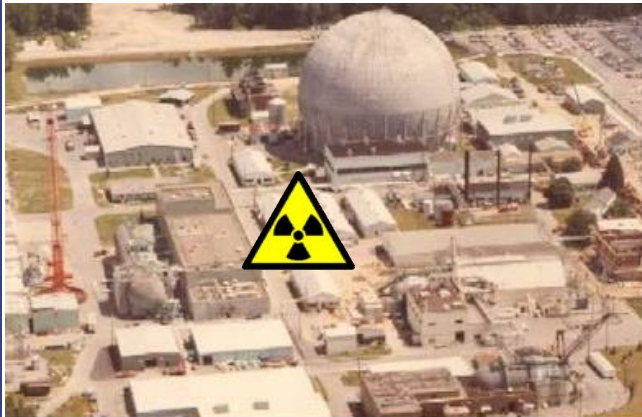
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The OZ Optics ForeSight™ DSTS interrogates, measures, logs, and generates alarms and calibration is necessary. It is capable of interfacing to a Supervisory Control And Data Acquisition (SCADA) (RDA). Communication interfaces on the DSTS include Ethernet, USB and RS232.

Measurement speed depends on the application. Disaster monitoring provides one second results and depend on set-up. The high speed model produces accurate results in fifteen seconds to

An optional internal switch allows dual channel monitoring. Additional external optical switches are available from OZ Optics and are controlled via the interface of the DSTS System. A simplified version of the system is the Brillouin based Distributed Temperature Sensor (B-DTS). Contact OZ Optics for more information.

Some existing applications are well suited for Brillouin measurement: Power plant integrity monitoring, OPGW line monitoring, corrosion of key infrastructure and pipes, natural gas line monitoring in places where public safety is a concern. The DSTS also provides a means to monitor for leaks and with corrosion.

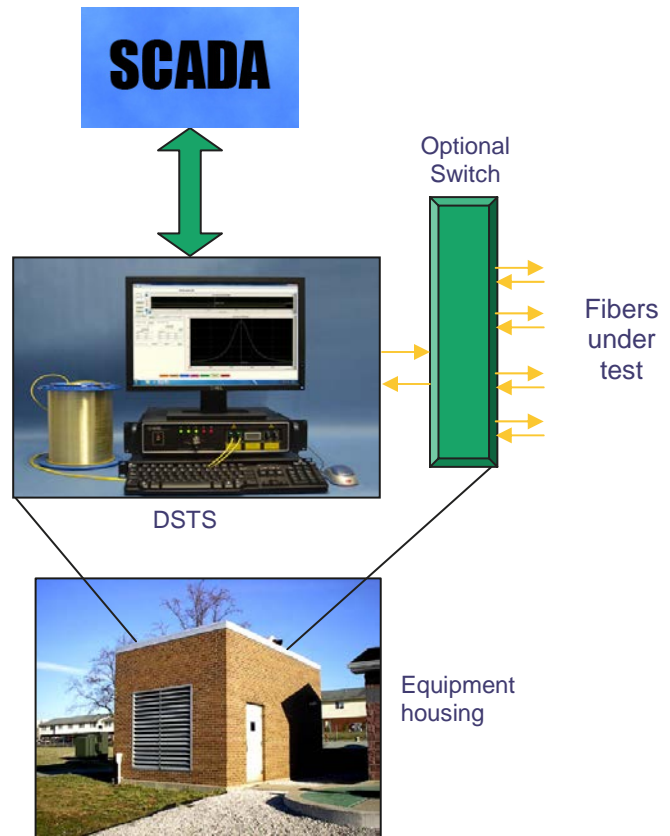


and reports based upon the user's setup. No additional field acquisition (SCADA) system via Remote Database Access

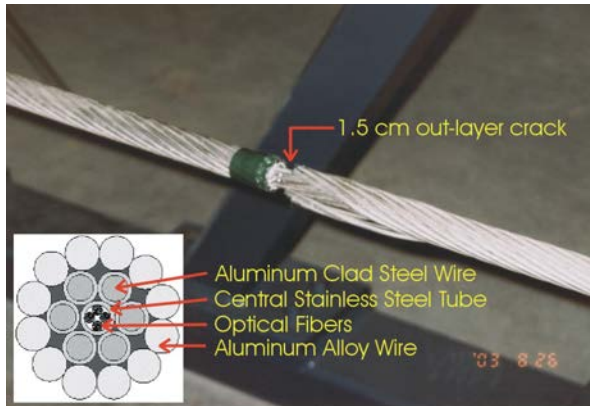
and measurement speed; whereas accurate measurements to three minutes.

switches for multiple channel monitoring are available from of the award winning ForeSight™ is now available as a information.

ity at all levels (including radiological), power transmission, rring, water line monitoring, steam plant distribution and all r intrusion, attempted theft, and slow changes associated



Typical layout and interface of the DSTS.



Global Leader in Fiber Optic Products Since 1985

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Brillouin DSTS System for Utilities Monitoring

High performance: Measurement of both strain and temperature via three different methods including our patented simultaneous mode.

Longest Range: Measure along the entire length of 100 km fibers. Longer ranges available.

Excellent Spatial Resolution: As good as 10 cm.

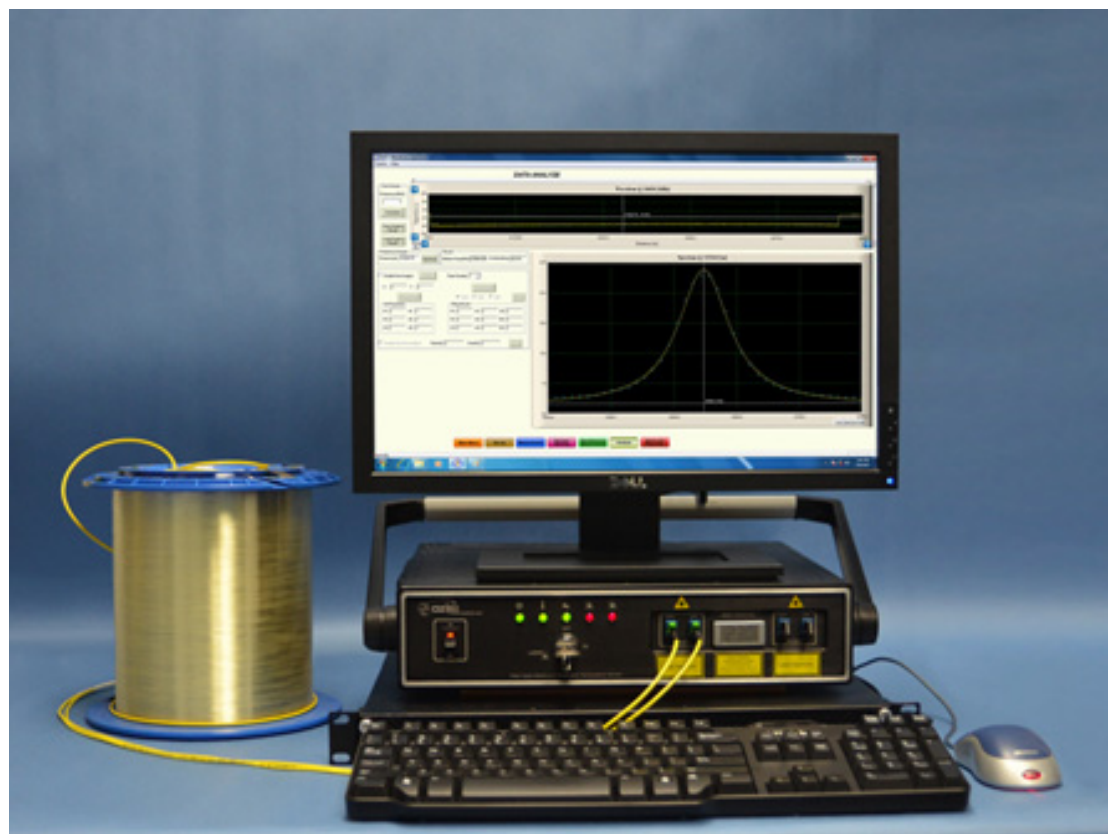
Excellent detection: Crack detected as small as 40 microns.

Superior precision: $\pm 2\mu\epsilon$ and $\pm 0.1^\circ\text{C}$.

Superior resolution: $0.1\mu\epsilon$ and 0.005°C .

Industry leading affordability: as low as \$60,000 for a single unit. Contact OZ Optics for volume discounts.

Reliable design: Solid state memory and thermally stable optical components assures highly reliable operation in temperatures from 0°C to $+40^\circ\text{C}$ even with 90% non-condensing humidity.



OZ Optics

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