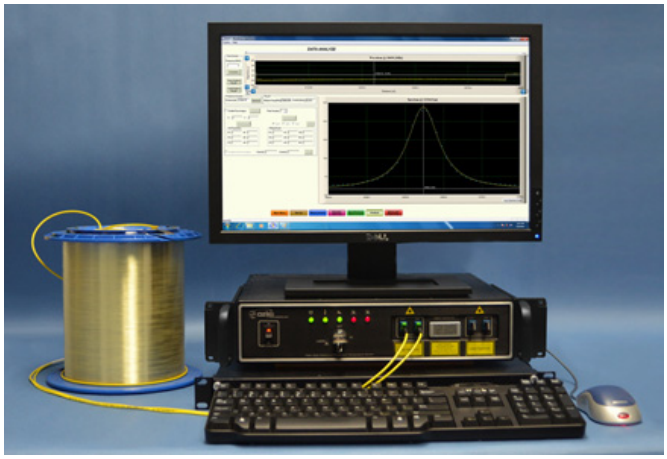
Application Note: 0012

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.



OZ Optics ForeSight™ Brillouin DSTS

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

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: ±2 με**
- **Temperature: ± 0.1°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

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.

Brillouin DSTS System for Utilities Monitoring

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

Measurement speed depends on the application. Disaster monitoring provides one secc 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 sw OZ Optics and are controlled via the interface of the DSTS System. A simplified version Brillouin based Distributed Temperature Sensor (B-DTS). Contact OZ Optics for more in

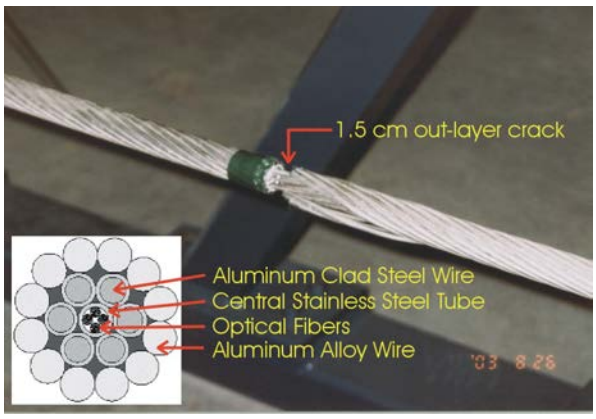
Some existing applications are well suited for Brillouin measurement: Power plant integr OPGW line monitoring, corrosion of key infrastructure and pipes, natural gas line monito places where public safety is a concern. The DSTS also provides a means to monitor fo with corrosion.

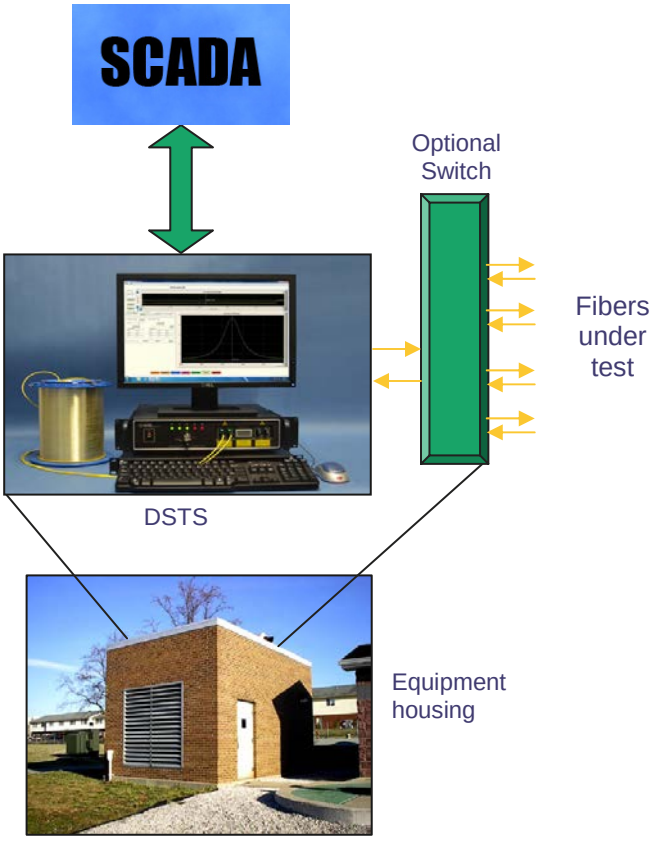
nd reports based upon the user's setup. No additional field
cquisition (SCADA) system via Remote Database Access

ond measurement speed; whereas accurate measurements
o three minutes.

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

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

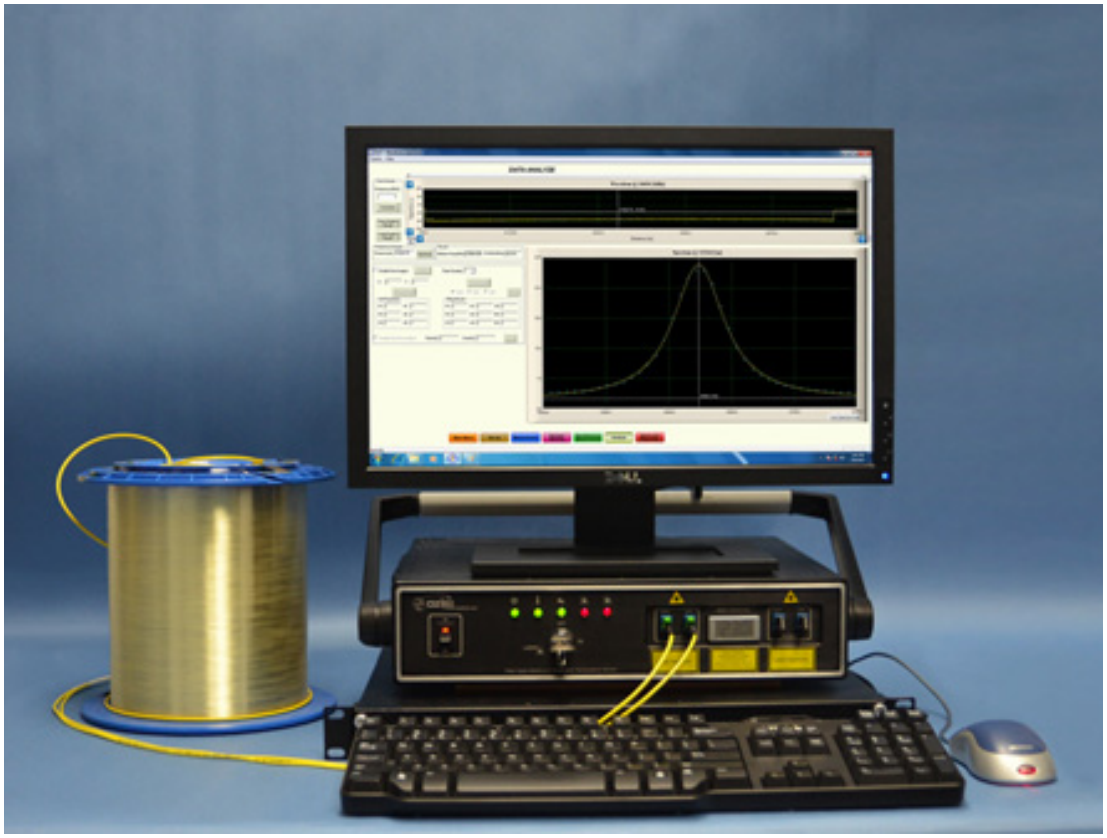




Typical layout and interface of the DSTS.

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: ±2με and ±0.1°C.
Superior resolution: 0.1με 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°C even with 90% non-condensing humidity.



OZ Optics LIMITED
www.ozoptics.com
Global Leader in Fiber Optic Products Since 1985
219 Westbrook Rd., Ottawa, Ontario, CANADA, K0A 1L0 E-mail: sales@ozoptics.com
Tel: +1-613-831-0981 Fax: +1-613-836-5089 Toll Free: +1-800-361-5415