

OZ Optics Limited

CORPORATE OVERVIEW

FIBER OPTIC SENSORS

January 2011

OZ Optics Limited

Your solution provider for existing and next generation fiber optic components and test equipment...

- Commenced operations in 1985
- Corporate headquarters and manufacturing in Ottawa
- Manufacturing in Ottawa/Canada, Izmir/Turkey and Jiaxing/China
- Over 250 employees – 140 in Ottawa, 60 in Turkey, and 50 in China

OZ Optics Limited

Your solution provider for existing and next generation fiber optic components and test equipment...

- Seven Product Groups
 - Laser-to-Fiber Delivery Systems
 - High Power Fiber Optic Components
 - Polarization Maintaining Products
 - Attenuators
 - Opto-Electronic Packaging
 - Test Equipment
 - Fiber Optic Sensor Systems
- Over 1,000 products
- Deep and broad patent portfolio
- Robust new product development program
- ISO 9001 : 2008 Certified

Management Team

OZ Optics is lead by an experienced team:

- **Ömür Sezerman, Chairman, President & CEO**
 - Founder and CEO since inception (25 years)
- **Garland Best, VP of Components Division**
 - 19 years at OZ Optics
- **Gordon Youle, VP of Test Equipment Division**
 - 12 years at OZ Optics
- **Metin Sezerman, General Manager of OZ Turkey**
 - 10 years at OZ Optics
- **Bing Li, General Manager of OZ Optics China**
 - 5 years at OZ Optics

Addressed Markets

Using our strong direct sales force and distribution network, we address the following markets:

- Telecom/Datacom
- Oil & Gas
- Military & Homeland Security
- Medical & Pharmaceutical
- Industrial
- Educational

Why We Win Business

- Superior Technology
- Innovative Engineering
- Extensive experience in fiber optics (over 25 years)
- Competitive Pricing
- Exceptional Quality & Service
- Global Presence

Global Sales Channel

OZ Optics has resellers and distributors in over 30 Countries and regions including:

Australia

Denmark

Israel

South Korea

Austria

France

Italy

Spain

Benelux Countries

Germany

Japan

Switzerland

Brazil

Greece

Norway

Sweden

Canada

Hong Kong

Poland

Taiwan

China

India

Portugal

Turkey

Czech Republic

Ireland

Singapore

United Kingdom

United States

...sold to over 10,000 customers globally!

Manufacturing Strategy

- Product Design and Engineering in Ottawa
- Subcomponent Parts Manufactured in China and Turkey
- Final Assembly and Quality Assurance in Ottawa
- Components Sourced World-Wide
- Ensure Highest Quality and Lowest Cost

In-house Production Capabilities

- Experienced (over 25 years), well-trained staff
 - Optical, mechanical, electronic & software
- State-of-the-art machine shop – CNC Machines
- Thin Film Coating Facility
- Environmental Test Chambers
- Clean Room Facilities

Facilities

- **Ottawa:**

- 60,000 sq. ft - Manufacturing and R&D Facilities
- 14,000 sq. ft - Sales, Marketing and G&A
- 15,000 sq. ft - Training, and Fitness Facility

- **Izmir, Turkey:**

- 33,000 sq ft Manufacturing Facility
- Located in a Free Trade Zone
- Cost-Effective Manufacturing
- High Quality Labour Pool
- Very Low Tax Rates

- **Jiaxing, China:**

- Over 20,000 sq ft
- Low Cost Manufacturing

- **Sales Offices in Georgia, California and Florida**

PRIVATE AND CONFIDENTIAL



ozOptics
www.ozoptics.com

OZ Optics – Ottawa Campus



OZ Optics – Turkey Campus



PRIVATE AND CONFIDENTIAL

OZ China JiaXing Campus

- ZHEJIANG OZ OPTICS TECHNOLOGIES CO.,LTD China, Jiaxing 314033, 289 Mu Yang Road, Jiaxing Economic Development Zone
- 2000 Square Meters of Manufacture Area
- 100 Square Meters of Clean Room – Class 1000
- 100 Square Meters of ESD Working Area



Industry Standards

- ISO 9001:2008 Certified
- Controlled Goods Directorate Registered
- Telecordia Compliance
- CE Compliance
- RoHS Compliance

Technology

We have accumulated over 25 years of corporate knowledge and experience in the field of fiber optic components and test equipment

- Numerous patents granted and filed
- Advanced proprietary processes
- Extensive library of proven and tested designs
 - Optical, mechanical, electronic & software

Technology

- **OZ Optics was the first to manufacture:**
 - PM Fiber Connectors & Components
 - Visual Fiber Optic Fault Locators
 - Fiber Optic Patchcords With Attenuating Fiber
 - Reduces costs and complexity
 - Eliminates fixed female to male attenuators
 - In-line Power Monitors Based on Innovative Optical Taps With Integrated Photodiodes
 - Wireless Diagnostic Equipment for Monitoring of Optical Fibers
 - Fault Finder and Smart Patchcords
 - Fiber Optic Distributed Strain and Temperature Sensors
 - Sensitive detection of corrosion in large structures
 - Fast and simultaneous measurement of strain and temperature
 - Combined sensor technology and web monitoring

Technology

- Pioneer in Polarization Maintaining (PM) Components
- Leader in Wavelength Flattened, High Power & Low PDL Components
- Leader in High Power Fiber Optic Delivery Systems
- Custom Test Equipment, Including Polarization Test Equipment and FTTH Equipment
- Widest Range in Attenuator Product Offering
- Fiber Optic Distributed Strain and Temperature Sensors for highly accurate and rapid measurement of strain and temperature
- Complete product line for OCT applications

Foresight™ DSTS Wins Silver Award

Silver Level Winner

was issued on June 13, 2007 in the Best of Sensors Expo 2007
which was held in Rosemount, Illinois, USA



Foresight™ DSTS Wins Frost & Sullivan Award

F R O S T & S U L L I V A N

2009

B E S T
P R A C T I C E S
A W A R D

**NORTH AMERICAN FIBER-OPTICS BASED
STRUCTURAL HEALTH MONITORING SYSTEMS
TECHNOLOGY INNOVATION AWARD**

Has Been Granted

USA Patents#:

7499151 on March 3, 2009

and

7599047 on October 6, 2009

Fiber Optic Distributed Strain and Temperature Sensor (DSTS)



Innovative and Complete Solution for Monitoring
Large Structures

Applications



Oil and Gas Pipeline Monitoring



Dam Monitoring



Oil and Gas Well Monitoring



Bridge and Building Monitoring



Power Line Monitoring



Border Security Monitoring

Fiber Optic Distributed Strain and Temperature Sensor (DSTS)



Innovative and Complete Solution for Monitoring Tiny Cracks

The Costs of Catastrophic Failure

- **Example: Druzhba Pipeline July 2006**
- **Small 50 cubic meter leak results in:**
 - Interruption of \$100M/day pipeline
 - Global spike in oil prices
 - Report of environmental catastrophe
 - Months of investigation and ecological monitoring
- **Single point of failure in 3000 km pipeline**

OZ Optics Foresight™ DSTS Benefits

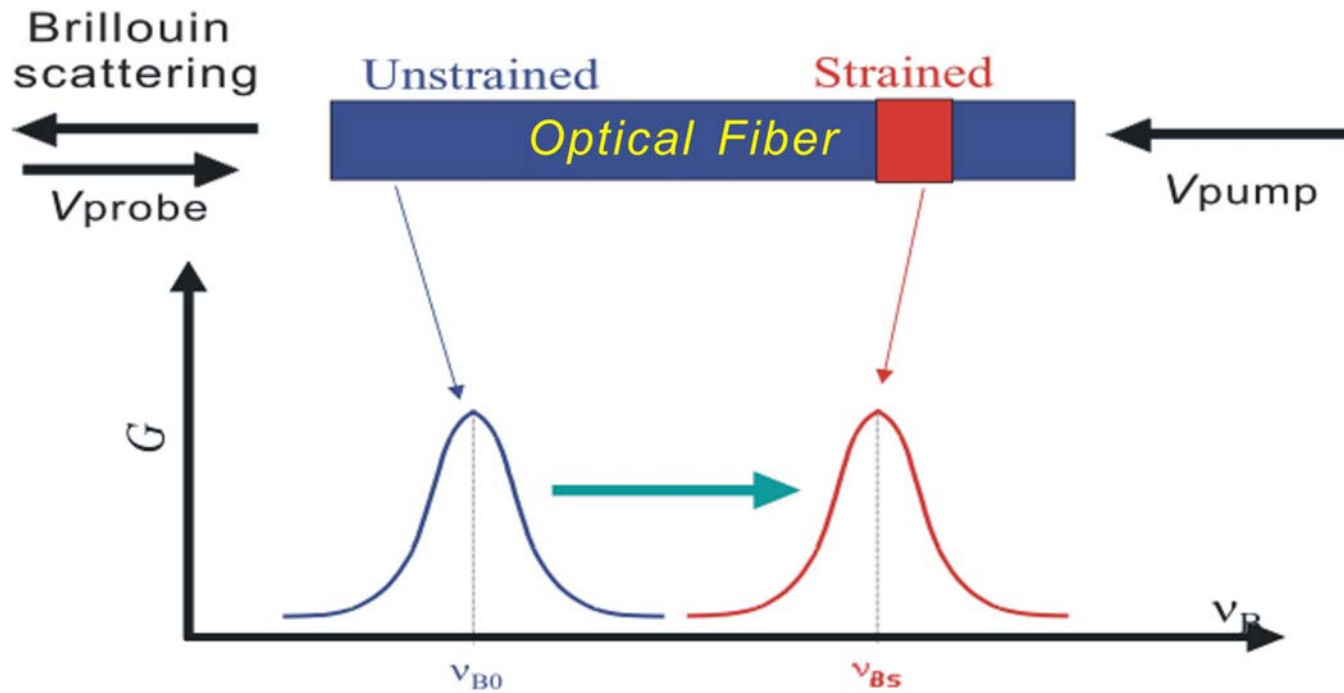
Total System Solution Provides

- **Reduced Operating Expenses**
 - Centralized monitoring
- **Reduced Danger of Catastrophic Failure**
 - Real-time continuous monitoring
 - Corrosion and leak detection
- **Optimized Field Engineering Resources**
 - Automated dispatch with GPS coordinates

OZ Optics Foresight™ DSTS Features

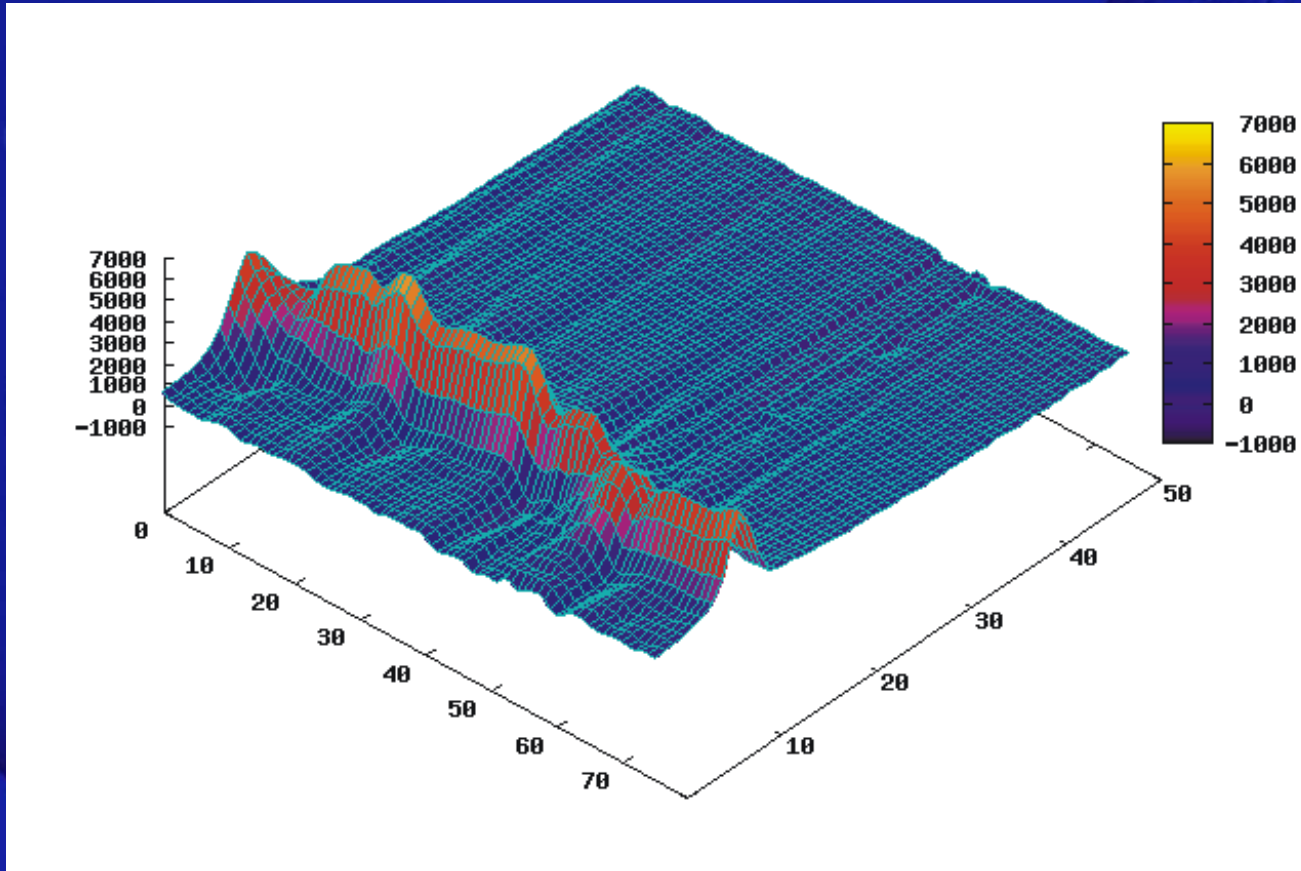
- **Temperature and strain in a single telecom fiber**
- **High resolution over lengths up to 40 km/sensor**
- **Sends time and location stamped alerts**
- **Escalates alarms until problem solved**

Working Principle — BOTDA




$$\nu_B = \nu_{B0} + C_T (T - T_0) + C_\epsilon (\epsilon - \epsilon_0)$$

OZ Software Translates Raw Data...



...Into Service Calls

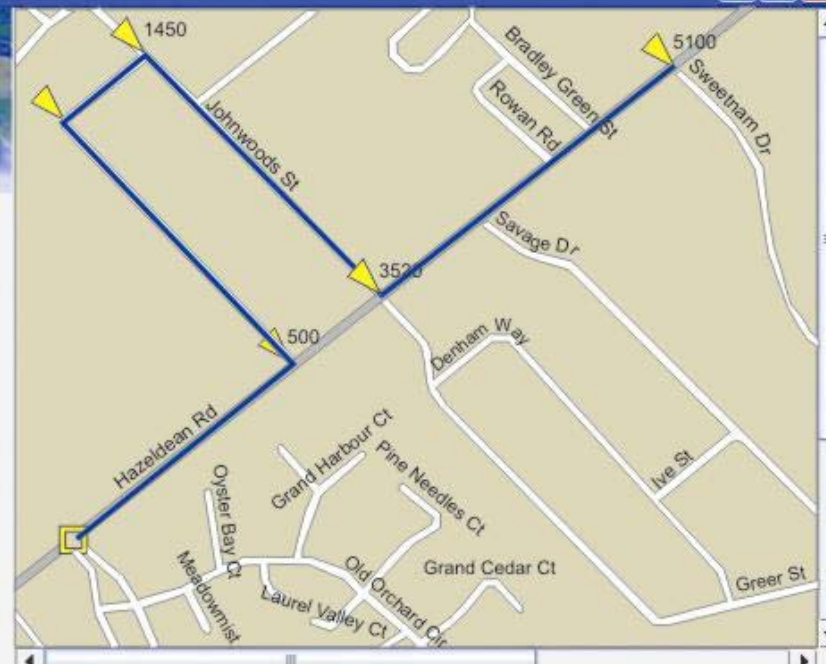
Distributed Strain and Temperature Sensors



Repair Archive Tree

- DSTS ID:1002
 - 06-16 13:23 ID:103 - 1416M - R
 - 06-16 13:24 ID:104 - 3420M - R
 - 06-06 11:40 ID:101 - 1329M - R
 - 06-06 11:45 ID:102 - 2762M - R

Connect
Settings
Exit
Clear DB

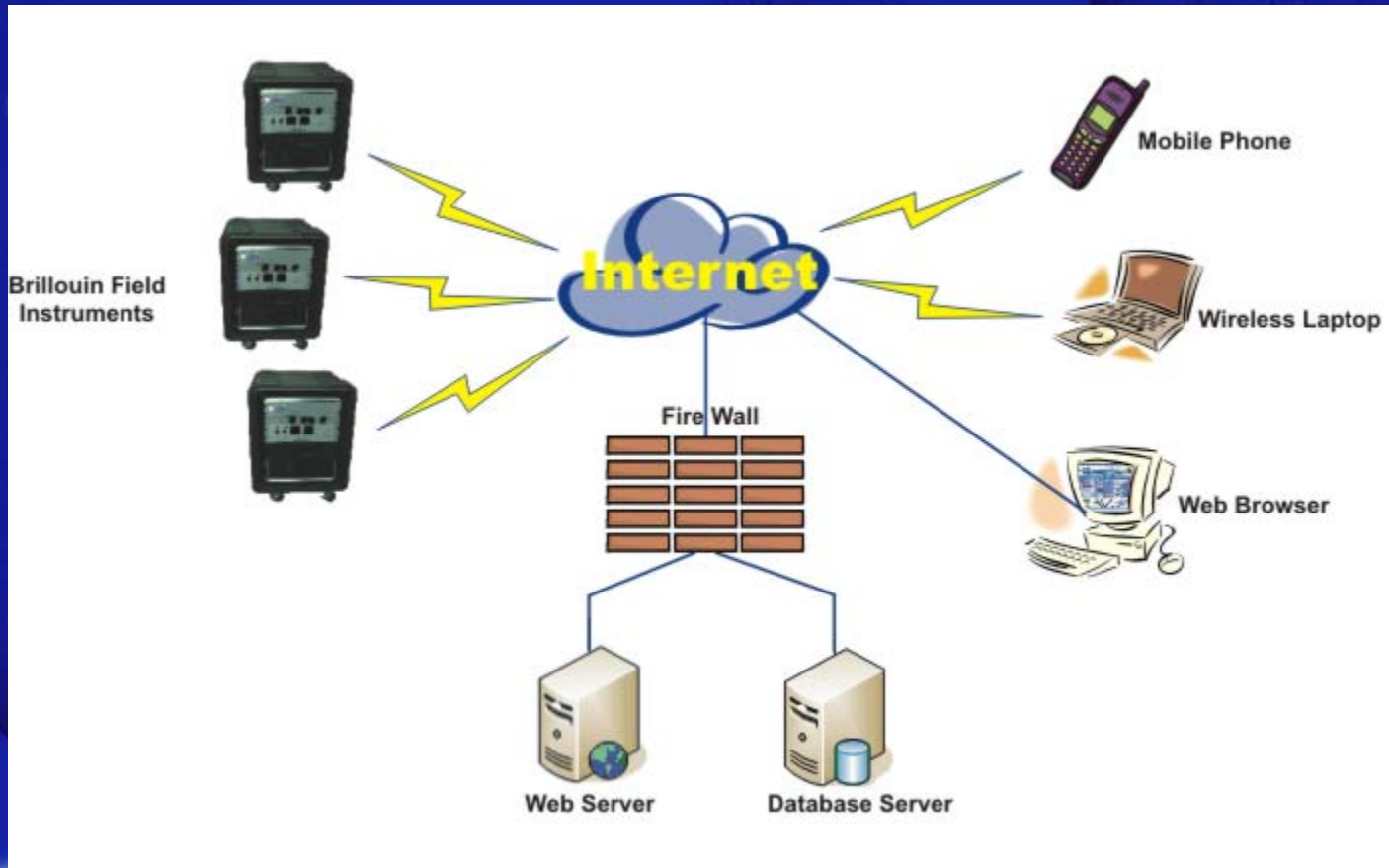


Repairs Bulletin Board

Event		Status			Repair		
Repair ID	Ocurrence Time	Detail	Action	Elapsed	Person	Time	Report
103	06-16 13:23	DSTS:1002 - 1416m - R	Sent 4 service calls	0h-02':50"			
104	06-16 13:24	DSTS:1002 - 3420m - R	Sent 2 service calls	0h-01':55"			

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OZ Monitoring System Architecture



Field-Ready Package



Rack Mountable Package



Quantifiable Value Proposition (QVP)

- **Example 1: Druzhba Pipeline**
- **10 hour service interruption = \$43M**
- **Clean-up, repair & site surveys = \$3M**
- **Fines and penalties (Unknown)**
- **Brillouin installation < \$2/meter**
- **Single 50 cubic meter spill costs much more than sensor installation.**

QVP Continued

- **Example 2: Nigerian Pipeline July 2006**
- **Accidental leak**
- **180,000 barrels / day shutdown**
- **$180,000 * \$74 = \13M per day**
- **10-day shutdown = \$130M**
- **Brillouin operation \ll \$1/m/year**
- **Single production shutdown far exceeds lifetime sensor operating costs.**

Getting Started with DSTS

- **Review OZ Optics reference material**
- **Contact OZ with your needs**
- **Consult with OZ on system design**
- **Request customized QVP estimate**
- **Receive OZ system quotation**

The OZ Optics Commitment

OZ Optics is committed to providing a complete solution, lab evaluation, and field trial to meet your structural health monitoring requirements.

OZ Optics Limited

Your solution provider for existing and next generation fiber optic components, test equipment, and sensor systems...

For sales information please contact us at:

613-831-0981 x 3370 or 1-800-361-5415

or email us at:

Sales@ozoptics.com