

OZ Optics Limited

FIBER OPTIC FAULT FINDER AND SMART PATCHCORD

June 2016

PRIVATE AND CONFIDENTIAL

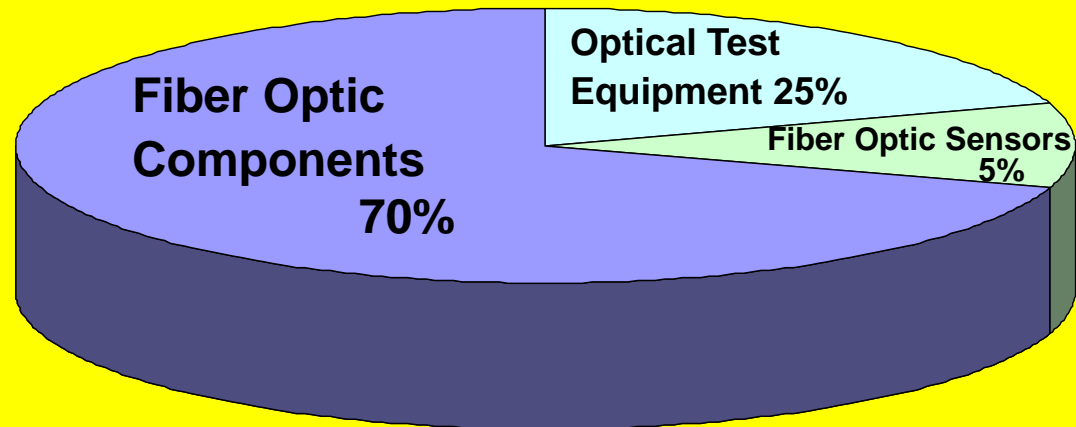
Company Profile

- Company founded in 1985;
- Corporate headquarters located in Ottawa, Canada;
- Manufacturing facility in Ottawa/Canada, Izmir/Turkey, and Jiaxing/China
- 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**
- Sales offices in Canada, USA, Turkey and China



Company Profile

➤ Three Product Groups:



- Over 1,000 products
- Leading Edge R&D

OZ Optics Products



OZ Optics
shop.ozoptics.com
www.ozoptics.com

Global Leader in Fiber Optic Products since 1985

Polarization Maintaining Fiber Optic Components

Patent Numbers: USA 7058275, 7095931, 7295731, China 1672073



Polarization Maintaining Connectors / Patchcords



Polarization Maintaining and Polarizing Splitters / Combiners / Fused Couplers / Switches



All Fiber Manual and Electrically Driven Polarization Controllers / Scramblers



PM Fiber Directional Taps / Power Monitors



Manual / Electrically Controlled PM Fiber Pigtailed Variable Attenuators



Fiber Pigtailed Polarizers



PLC Splitters



PM Fiber Pigtailed Circulators

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High Power Fiber Optic Components

Patent Numbers: Canada 2494133, USA 7058275, 7095931, 7295731, China 1672073



High Power/Temperature Connectors & Patchcords



High Power Isolators



High Power Laser to Fiber Couplers / Collimators / Focusers



High Power Mode Field Adapters



High Power Optical Taps / Power Monitors



CO₂ Cleaning for High Power Components



High Power Splitters / WDM's



Shutters / Receptacles / Sleeve Thru Adapters with Sensors

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Fiber Optic Attenuators for SM, PM, and MM Fibers

<p>Digital Variable Attenuators</p>  <ul style="list-style-type: none"> • 0.008 Resolution, Fast Response • 0.008 to 1000 Extinction Range • 100 Wattage 	<p>Electrically Controlled Variable Attenuators</p>  <ul style="list-style-type: none"> • 0.008 to 100dB Attenuation Range • Up to 2 Watts Power Handling • PC Based, Analog and Digital Control 	<p>MEMS Variable Attenuators</p>  <ul style="list-style-type: none"> • 0.008 to 40dB Attenuation Range • Small Size, Low Cost, Low Power Consumption • Low Wavelength Resonance, Low Crosstalk
<p>SM / PM / MM Fiber Pigtailed Inline Variable Attenuators</p>  <ul style="list-style-type: none"> • 0.008 to 100dB Attenuation Range • 500 to 2W Power, 200 Wavelength Response • 0.008 POC, Novel Termination Specifications 	<p>Single/Multi Channel Miniature Variable Attenuators</p>  <ul style="list-style-type: none"> • Compact, Less Than 5mm Spacing Between Fibers • Optimized for Multiple Fiber Arrays • PC Based, Monolithic 	<p>Reflective Style Variable Attenuators</p>  <ul style="list-style-type: none"> • 0.008 to 60 dB Attenuation Range • 0.01 dB Resolution • 40W, 400W, 400W Backreflection
<p>Air Gap Variable Attenuators</p>  <ul style="list-style-type: none"> • 0.01 to 100dB • 100W Power, 200 Wavelength Response • 0.008 POC, Novel Termination Specifications 	<p>Plug Type Fixed Attenuators</p>  <ul style="list-style-type: none"> • 0.01 to 100dB • 100W Power, 200 Wavelength Response • 0.008 POC, Novel Termination Specifications 	<p>Attenuating Fiber Patchcords</p>  <ul style="list-style-type: none"> • 0.008 to 100dB Attenuation Range • 0.01 dB Resolution • All Fiber Patchcords, Indentless, Low Loss • After 3000 Hours and Intermittent Usage



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Laser & Laser Diode to Fiber Delivery Systems

<p>Laser to Fiber Couplers</p> 	<p>Bare Fiber Adaptors with Magnetic Clips</p> 	<p>Bulkhead Receptacles</p> 
<p>Pigtail/Receptacle Style High/Low Power Collimators/Focusers</p> 	<p>High/Low Power Patchcords</p> 	<p>WDM/RGB Combiners</p> 
<p>OCT Modules and 2 micron Components</p> 	<p>OEM Laser Diode to Fiber Couplers</p> 	<p>Turnkey, Ultra Stable Laser Modules</p> 



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OZ Optics Products



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Fiber Optic Components for Optoelectronic Packaging


Hermetically Sealable Patchcords with Glass or Metal Solder



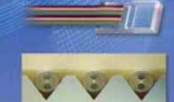
Single Channel



Multi Channel




Metalized Fibers



PM/SM/MM Fiber Pigtailed V-Groove Arrays



Polarization Measurement System for V-Grooves




Tapered / Lensed Fiber Polished / Laser Shaped




Glass Solder Preforms



Fiber Optic Ferrules



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Global Leader in Fiber Optic Products since 1985

Fiber Optic Test Equipment



Polarization Extinction Ratio Measurement Systems



Power Meters with Smart Detector Heads



Broadband Digital Variable Attenuators



Optical Fiber Length Meters



High Power Visual Fault Locators Fiber Optic Stable Sources



Inline Optical Power Monitors/Meters



Laser Diode Sources Single/Multiwavelength



Fiber Optic Smart Patchcords



Fiber Optic Fault Finders



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Product Innovation



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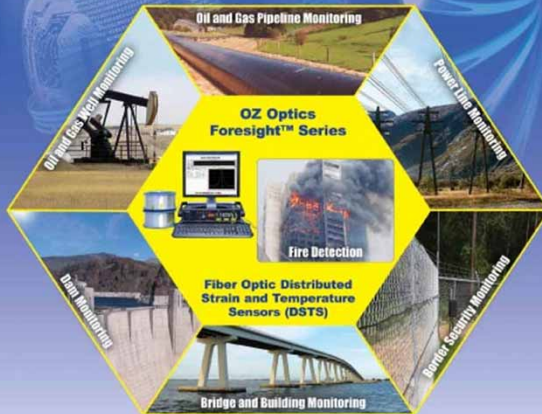


Global Leader in Fiber Optic Products since 1985

Fiber Optic Distributed Strain and Temperature Sensors

USA Patent Numbers: 7499151, 7599047

- BOTDA only, BOTDR only, or both BOTDA and BOTDR modules in one unit
- Simultaneous measurement of strain and temperature
- Fast, dynamic measurement of strain and/or temperature up to 100 km sensing range
- Uses standard telecommunication fiber to minimize costs



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Fiber Optic Fault Finder for Optical Network Safeguard™

- Monitors and reports network health status in real time, 24 hours/day, 365 days/year
- Lowers network operating and maintenance expenses
- Reduces revenue loss due to fiber plant outages
- User friendly interface via various wireless interfaces (Wi-Fi, GPRS), USB, or RS-232
- Reports fault location, giving GPS coordinates with time stamp
- Early alert and outage reports via cellular phone, email, IM, SMS, or text messaging



OZ Guard Automated Test Solution



Remote Monitoring a WDM Network



Remotely Accessible/Wireless Fault Finders



GPS Locator



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Product Innovation



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2 micron Fiber Optic Components for PM and SM Fibers



Fiber Optic Patchcords



Fused Couplers / Taps /
Beam Splitters / Combiners



Fiber Pigtailed
Laser Diode Sources



Pigtail / Receptacle Style
Collimators / Focusers



Polarizers



Manual / Electrically Controlled
Variable Attenuators



Isolators

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Fiber Optic Products for OCT Applications



OCT Modules



Manual / Electrically Controlled
Broadband Variable Attenuators



Manual / Electrically Controlled
Fiber Optic Delay Lines



Manual / Electrically Controlled
Polarization Controllers



Fiber Pigtailed
Broadband SLED Sources



Fiber Collimators / Focusers



Broadband Fused Couplers

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Company Profile

Over 470 employees worldwide:

- 260 in Ottawa and US
- 50 in Turkey
- 160 in China

OZ Canada



OZ China



OZ Turkey

Company Profile

OZ Optics is lead by an experienced team:

- **Ömür Sezerman, Chairman, President & CEO**
 - Founder and CEO since inception (31 years)
- **Zahide Sezerman, VP of Human Resources**
 - With OZ Optics since inception (31 years)
- **Garland Best, VP of Components Division**
 - 24 years at OZ Optics
- **Gordon Youle, VP of Test Equipment Division**
 - 17 years at OZ Optics
- **Martin Powell, Operation Manager**
 - 12 years at OZ Optics
- **Sarah Miller, Controller**
 - 3 years at OZ Optics
- **Metin Sezerman, General Manager of OZ Turkey**
 - 15 years at OZ Optics
- **Bing Li, General Manager of OZ Optics China**
 - 12 years at OZ Optics

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Company Profile

- ISO9001:2008 certified
- Broad patent portfolio
- Advanced proprietary processing technology



Company Profile

- **Using our strong direct sales and distributors, we address the following markets:**



Company Profile

➤ *OZ Optics has resellers and distributors in over 30 Countries & Regions and over 10,000 customers globally:*



Australia



France



Japan



Spain



Austria



Germany



Netherlands



Switzerland



Belgium



Greece



Luxembourg



Sweden



Brazil



Hong Kong



Norway



Taiwan



Canada



India



Poland



Thailand



China



Ireland



Portugal



Turkey



Czech Rep.



Israel



Singapore



United Kingdom



Denmark



Italy



South Korea



United States

In-House Production Capabilities

- Experienced and well-trained staff in following fields:
 - optical, mechanical, electronics & software

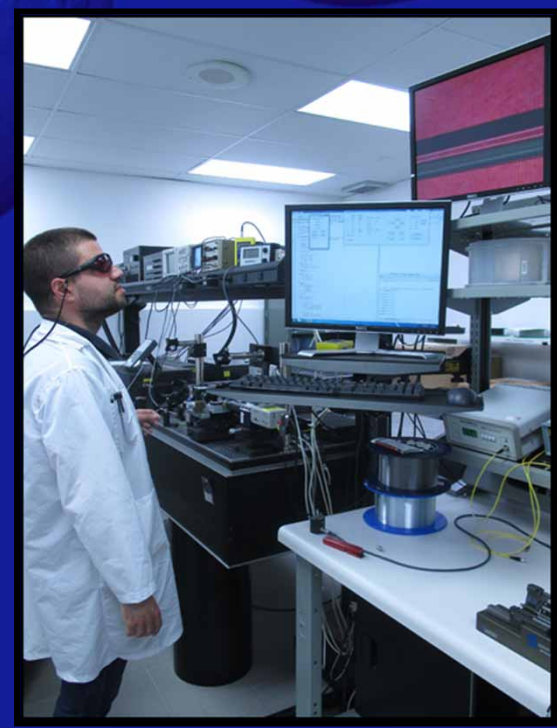
CNC Machine Shop



AR Coating



Femtosecond Laser Lab



Clean Room



Laser Conditioning/Cleaving



Branch Network

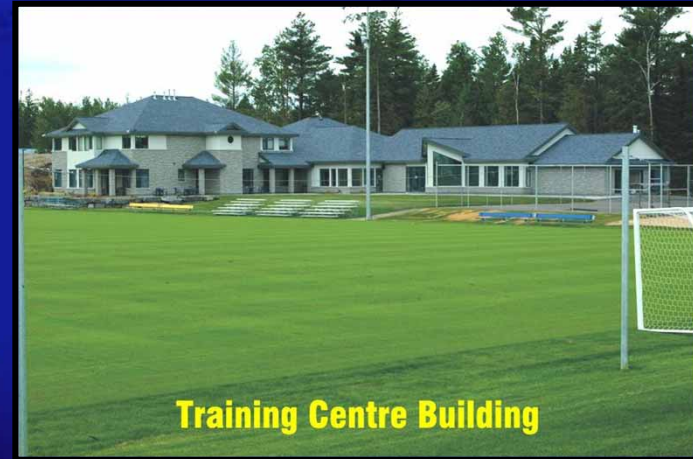


Facility – Ottawa Headquarters

- 60,000 sq ft. – Manufacturing and R&D Facilities
- 15,000 sq ft. – Admin, Sales and Marketing
- 15,000 sq ft. – Training and Fitness Facility
- R&D, Product Design, Engineering, Final Assembly & QA



Facility – Ottawa Headquarters



OZ Optics – Turkey Factory

- Operational since 2000
- 33,000 sq ft. Manufacturing Facility
- Located in Free Trade Zone
- Low Tax Rates
- Sub Component Parts Manufacturing
- Cost Effective Manufacturing
- High Quality Labor



OZ Optics China

- Operational since 2009
- Wholly Foreign Owned Enterprise
- Subcomponent Parts Manufacturing
- Cost Effective Manufacturing
- High Quality Labor
- Extensive Training
(3-6 months in OZ Canada)



PRIVATE AND CONFIDENTIAL

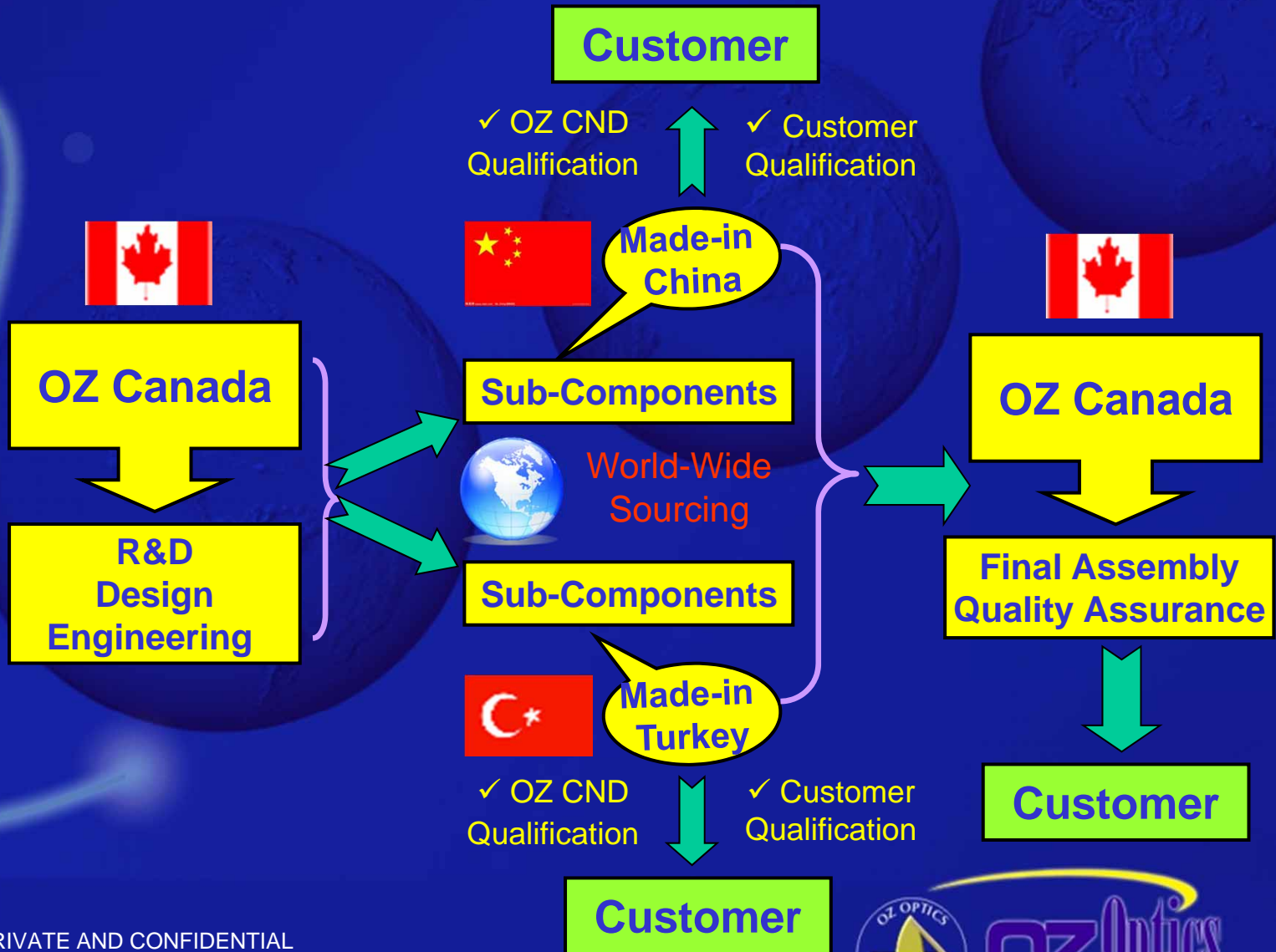
OZ China Facility

Jiaxing, China

- Located in Economic Development Zone
- 500 sq meters – Admin, Sales and Marketing
- 1500 sq meters – Manufacturing Area
 - 100 sq meters – Class 10,000 Clean Room
 - 100 sq meters – ESD Working Area



Manufacturing Strategy



Industry Standards

All products manufactured are in strict accordance with international industry standards:

➤ *Telecordia Compliance*



➤ *CE Compliance*



➤ *RoHS Compliance*



➤ *ISO 9001:2008 Certified (China, Turkey and Canada)*

➤ *Controlled Goods Directorate Registered*

Core Competencies

- 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
- Complete product line for OCT applications & 2 Micron

Leading Technology

- **High Power Isolators**
 - power handling > 50W
 - low loss, low cost turnkey solution



High Power Free Space and Pigtailed Isolators

- **Pioneer in Polarization Maintaining (PM) Components**
 - wavelength flattened
 - high power & low PDL
 - PM test equipment



Polarization Maintaining Patchcords

Distributed Strain and Temperature Sensors



- **Fiber Optic Sensor**
 - fast and simultaneous measurement of strain & temp
 - large structure health monitoring

High Power Collimators/Focusers



- **Leader in High Power Fiber Optic Delivery Systems**
 - specializes in custom design



OUR VISION

- Be the preferred Supplier of choice
- Capture and expand market share
- Maximize shareholder value

OUR MISSION

- To become the leading provider of innovative optical products to telecom and non-telecom sectors

OUR CORE VALUES

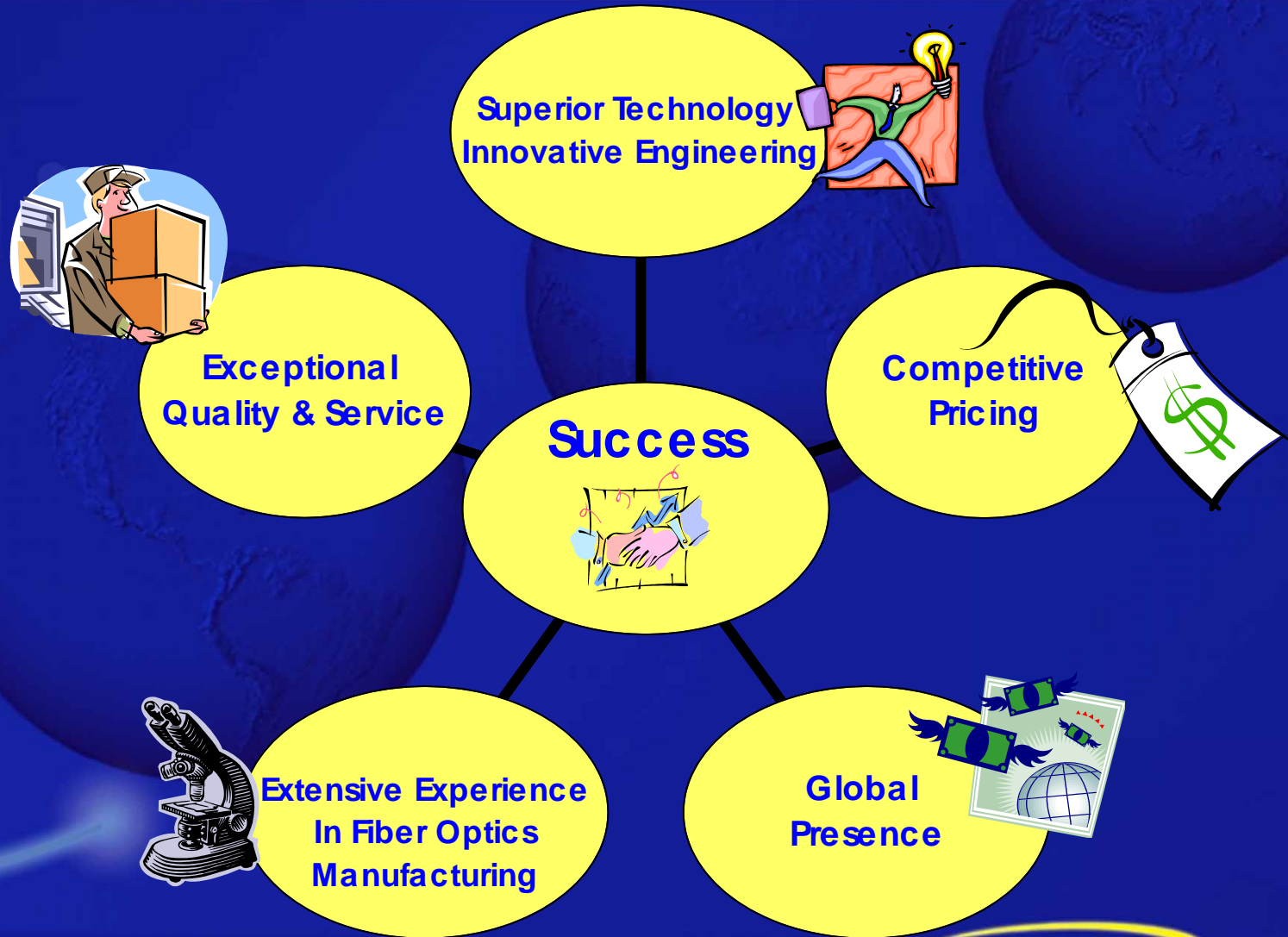
- Leadership
- Teamwork
- Boldness
- Commitment
- Innovation
- Rewards

OUR QUALITY POLICY

- Provide our Customers with a competitive advantage, leveraging performance, price and delivery, through a continuous process of Quality advancement in all areas of our Company
- Communicate effectively to our Customers, Suppliers and Shareholders our commitment to Quality and continuous improvement
- Promote opportunities of professional development for all members of our Company through education, training and personal challenge

Ömür Sezerman
President

Competitive Advantage



Smart Patchcord

Embedded intelligence providing in-line optical monitoring, with remote reporting capability



Smart Patchcord

- **Applications:**

- Optical ultra long haul
- Long haul
- Metro transport
- Fiber broadband access networks

Wireless Fiber™

OZ Wireless Fiber™ - a Smart Patchcord with a wireless communication interface.

Provides network health monitoring independent from the communications channel(s) under test.

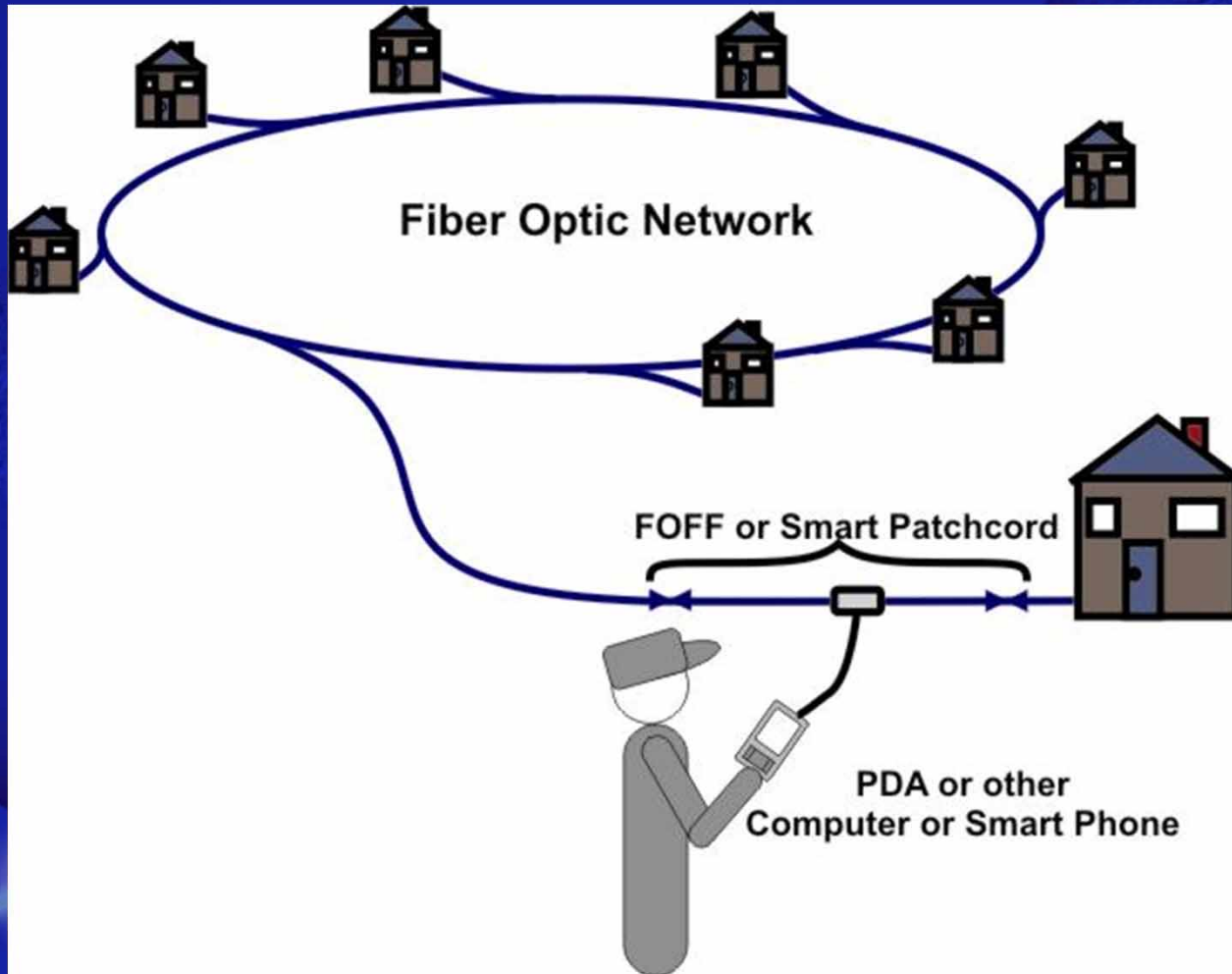
Compatible with OZ-Guard™ Solution

Wireless Fiber™

- One-time permanent installation
- Low cost solution
- Full-time availability
- Remote access to power-level readings
- Accelerates measurement-taking
- No direct physical connection required
- Reduces debugging costs
- Eliminates connection repeatability problems



Remote Monitoring for WDM Networks

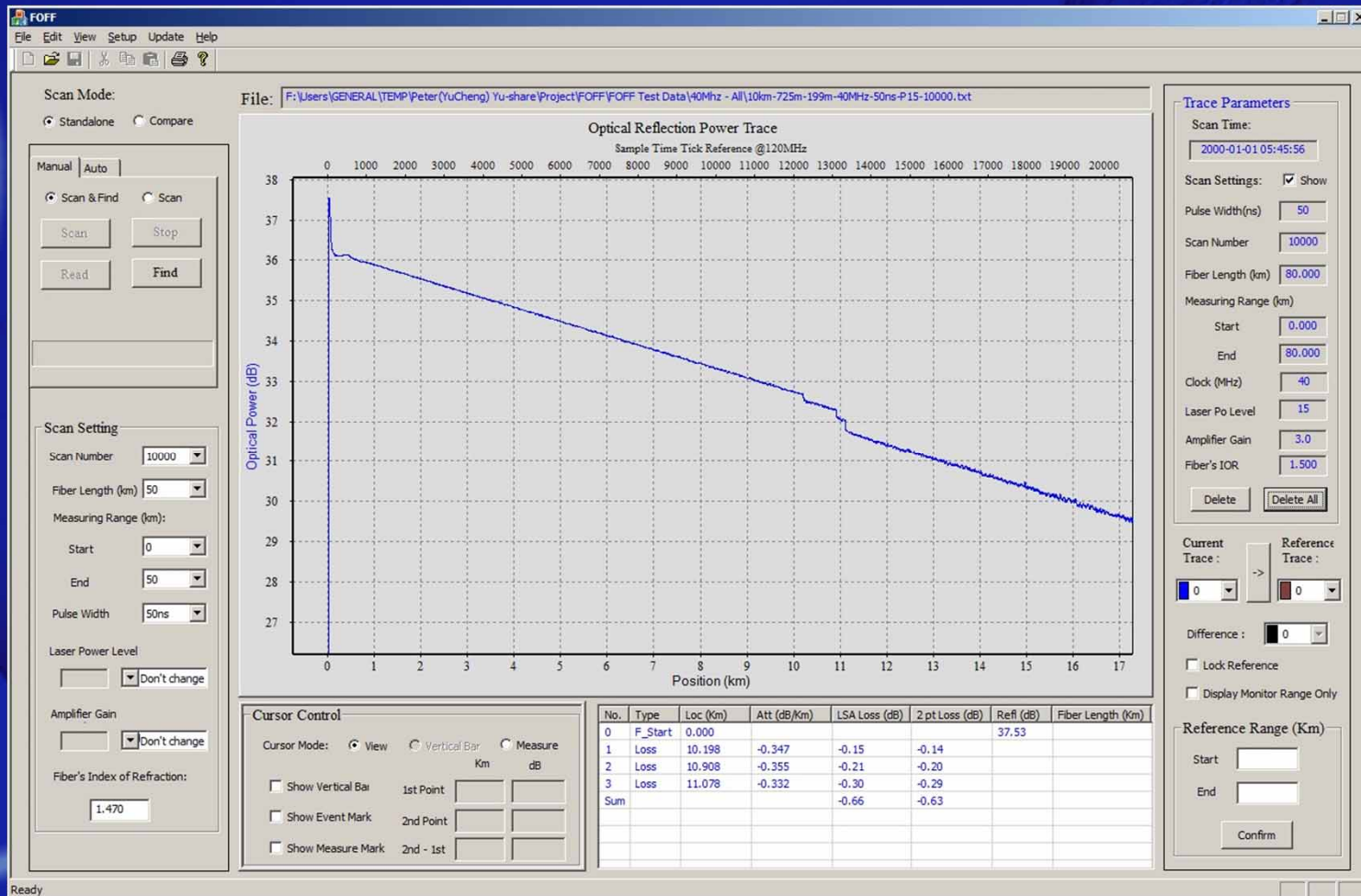


OZ-Guard™ Fiber Optic Fault Finder

The OZ-Guard™ Fault Finder provides continuous real-time fiber optic health monitoring for your network.



Fault Finder Application Software



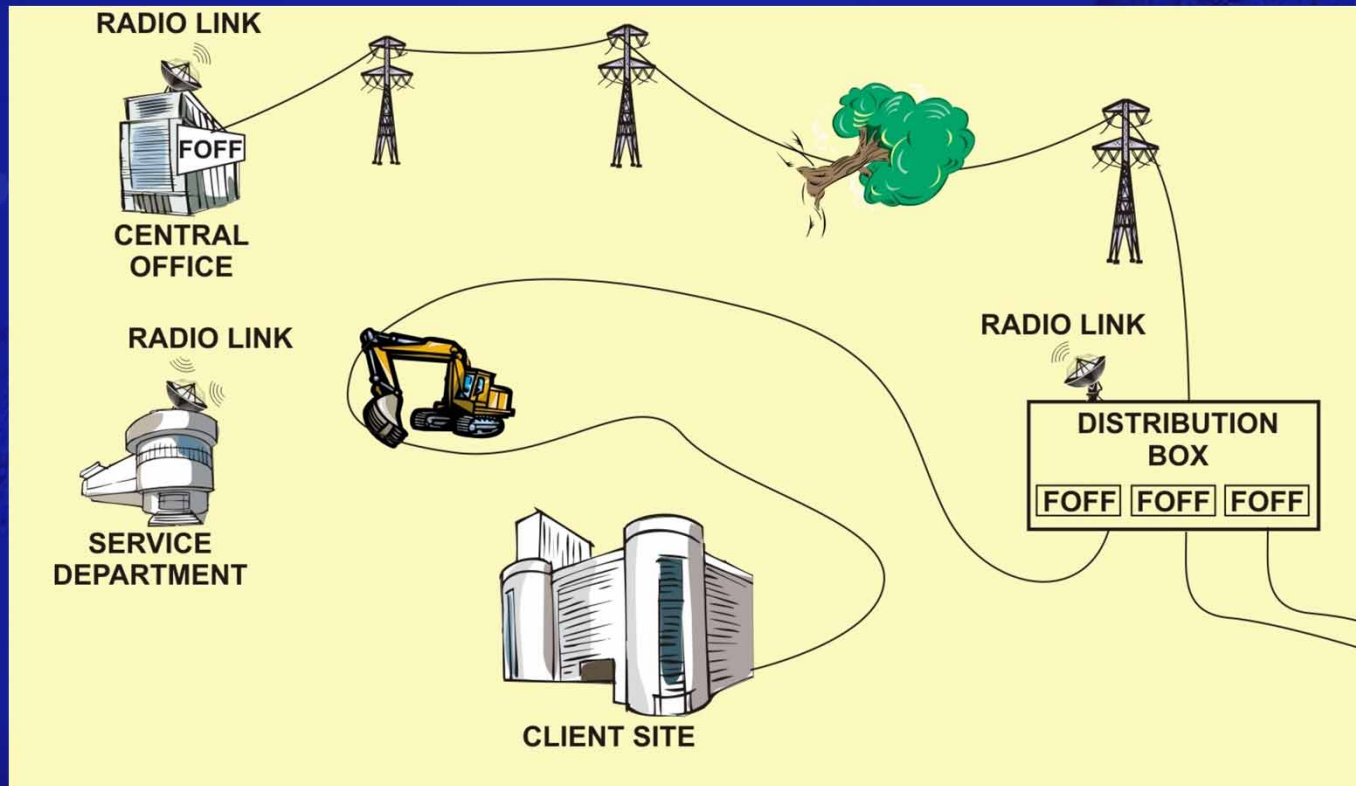
OZ-Guard™ Fault Finder

Product Features:

- Automatic determination of faults
- Fault alerts send via email, SMS and IM
- Priced for compatibility with permanent installation

Allows field engineers to focus on more complex issues and effecting new installations

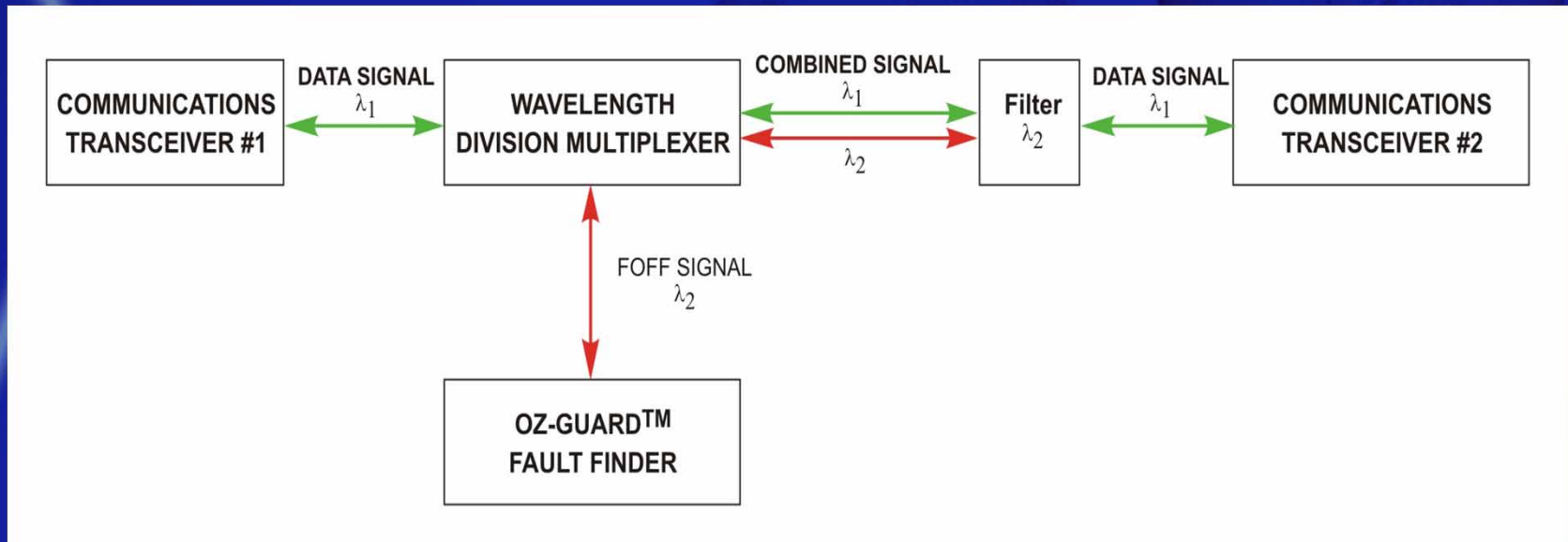
OZ Guard™ Fault Finder System



Remote monitoring of a WDM network

A Fault Finder cannot “see” beyond a splitter or filter, but due to the low cost and remote monitoring, individual Fault Finders can be used on each leg of the network.


OZ Guard™ Fault Finder System



Combining data and FOFF signals together.

GPS Locator

Fiber Optic Fault Finder



Repair Archive Tree

- FOFF 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

All Repairs (4 repair/s)

Repairs Bulletin Board							
Event			Status		Repair		
Repair ID	Occurrence Time	Detail	Action	Elapsed	Person	Time	Report
103	06-16 13:23	FOFF:1002 - 1416m - R	Sent 4 service call/s	0h-02':50"			
104	06-16 13:24	FOFF:1002 - 3420m - R	Sent 2 service call/s	0h-01':55"			

Copyright© OZ Optics Limited 1985-2006 All Rights Reserved v1.01.14 Current FOFF Id: 1002 Automatic mode

OZ-Guard™ Key Features

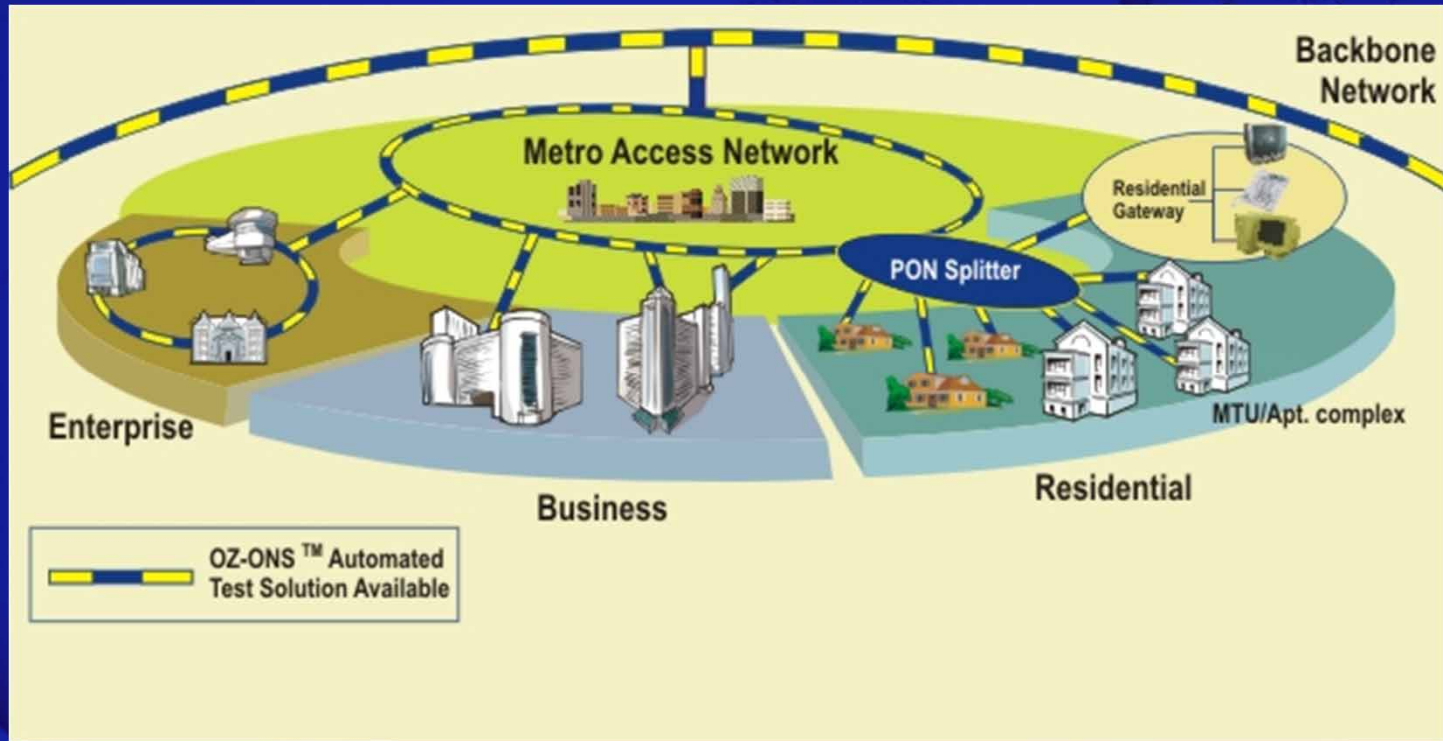
- **Monitor fiber optic health via power & OTDR data**
- **Transforms data into actionable information**
- **Sends time and location stamped alerts**
- **Escalates alarms until problem solved**

Optical Network Safeguard

The OZ-Guard™ Total System Solution

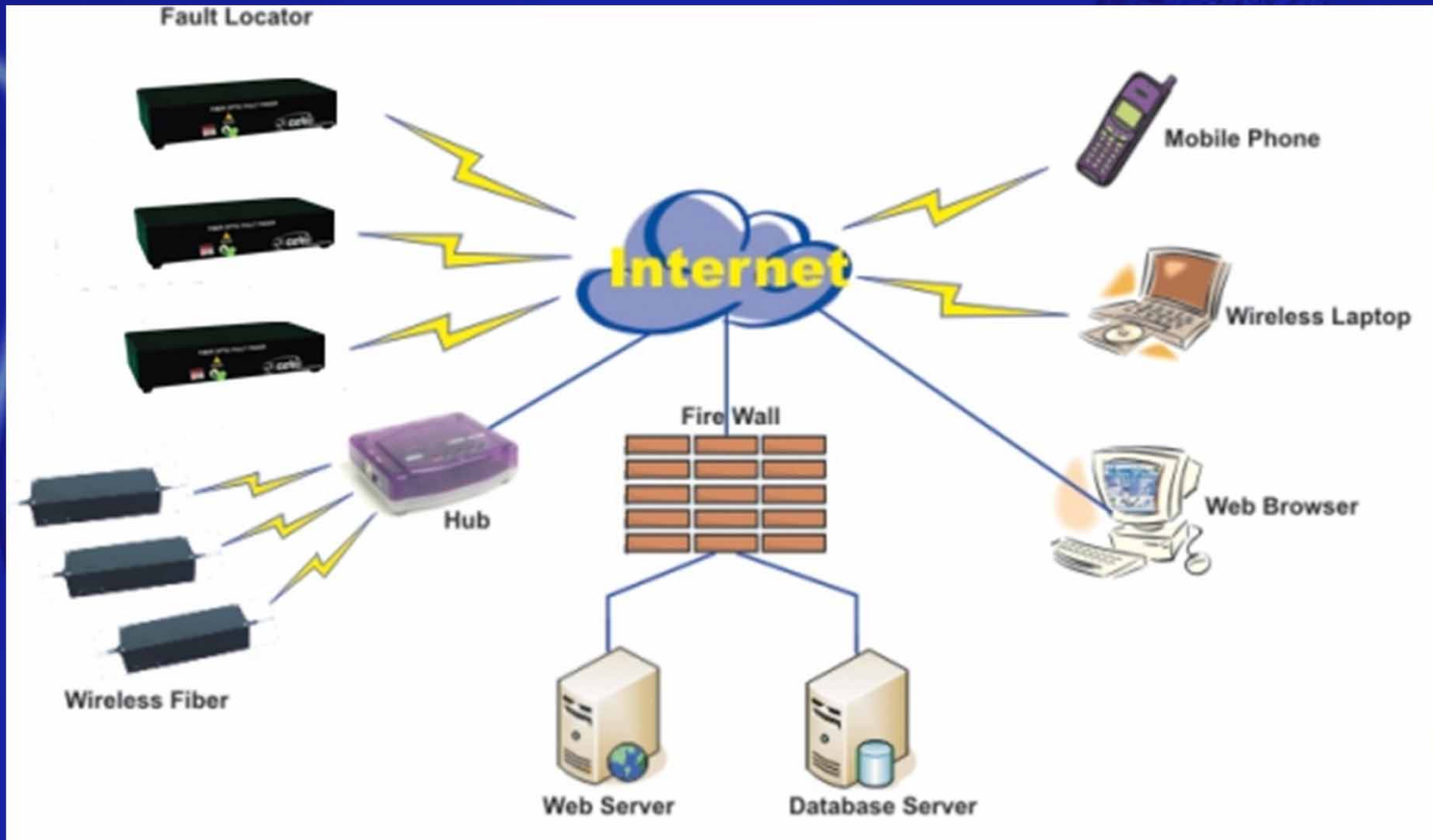
- **Reduces network operating expenses**
 - minimize field repairs
- **Improving network availability**
 - immediate notification of faults, reduce downtime
- **Optimizes field engineering resources**
 - Automates routine maintenance

Fiber Optic Fault-Finder for Optical Network Safeguard™



Innovative and Complete Solution for Fiber Network Health Monitoring

OZ-Guard™ System Architecture



The OZ Optics Commitment

Fiber Optic Network Operators can rest assured that OZ Optics is committed to providing a complete solution, lab evaluations, and field trials to meet the requirements of their specific network

OZ Optics

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

Please Contact Our Sales Dept:

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Toll Free: 1-800-361-5415

Email: sales@ozoptics.com.

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Thank You for Choosing OZ!

