



Training for Tomorrow's INNOVATION



Fiber Optic Training for In-house Resources



Fiber optics Experts

Eagle Photonics

Breakthrough To Corporate Success is Achieved by Strengthening Bottom Line Resources

Companies engaged in the use of Fiber Optic Technology know that ever stronger business results are tied to the quality of “the human asset”. After all technology is just not the media for success unless and until people are not comfortable to use it. Yet, how can organizations prepare employees to deliver peak performance using Fiber Optics Technology?

Eagle Photonics understands this basic problem and provides altered solutions to companies in the area of Fiber Optics. We strengthen the technical skills, provide theoretical knowledge and see to it that the trainee is empowered with the blend of experience using hands on training.

Does the training make difference? You will see it in the Project results as technicians stretch their abilities, tackle complex technical challenges on field and rectify their habitual mistakes. Even better, you'll see it on the bottomline.

Highlights of Fiber Training

- Customized Training aimed at Technicians. Customized training program for Engineers.
- We do the gape analysis to understand where the skills are lacking and then Customize program accordingly.
- More emphasis is given to practical training.

Why Eagle Photonics

- Eagle photonics is a leading training / service provider for top telecom companies in south asia like Airtel, TATA, Reliance, Dhiraagu, duraline etc.
- It has rich experience of last 7 years on field for laying Fiber Optic Networks like Jointing/Splicing and termination in OFC networks, installation and commissioning of SDH and DWDM equipments.
- With this experience in the field, Eagle Photonics knows what a technician should know and what a manager should see for.
- Our programs are customized as per the hierarchy in the organization since each designation has different objective to achieve.

Tools used for Training

- Animation
- Video
- Pictures & Presentation
- Computer Based Training
- Hands On



We have trained near about 2,000 people in the field of Fiber Optics and have organized more than 100 Corporate Training.

We also customize training program according to customer needs.

Professional Training Program on fundamentals of Fiber Optics

(Fiber Optics, Optical Communication & Networking with hands on Experience)

Duration: 3 Days

Day-1

Overview of Communication Technologies

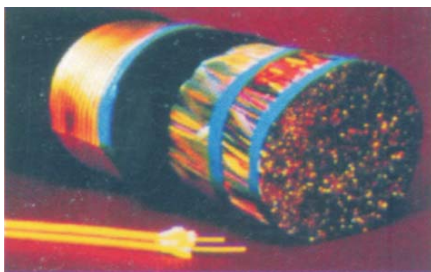
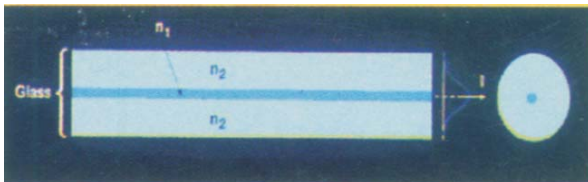
- ◆ Introduction to Fiber Optics
- ◆ Concept of Modes : SMF, MMF
- ◆ Principles of Optical Transmission
- ◆ Concept of Dispersion-Modal, Material, waveguide
- ◆ Different types of Losses – Radiation, scattering
- ◆ Micro-bending & Macro – bending Loss
- ◆ Optical Fiber Cables
- ◆ Overview : Types – OPGW, Corrugated, Aerial, Ribbon, Non-Corrugated, etc

Optical Transmission Link

- ◆ MUXs and OLTEs
- ◆ SDH & PDH
- ◆ Concept of Hierarchy
- ◆ Understand Optical Transmission, laser / detector

Day – 2

- ◆ Splicing & Connectorisation
- ◆ Elements of Fiber optic link
- ◆ FMS, Straight, termination & branch joint closure, DDF, FDF, Branching, Termination, Patch cords, Pigtailed and Cord cables, OFC laying & Networking



- ◆ Precautionary measures to be taken in the field during networking
- ◆ Trenching Direct burial system & Blowing, Demo & hands on Splicing
- ◆ Installation of system
- ◆ Demo of different components & Connectorisation

Day – 3

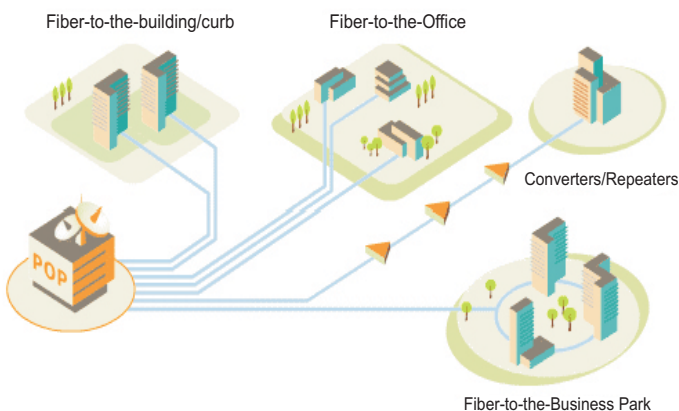
- ◆ Test & Measurements
- ◆ Loss - dB/dBm
- ◆ Db
- ◆ Splice & Link Loss
- ◆ Power & Laser Source test
- ◆ Fundamentals of OTDR, Link Loss Budget
- ◆ Other test – Mechanical, waterproof etc
- ◆ OTDR, Laser & Power meter
- ◆ Demo & Hands on
- ◆ New Trends
- ◆ Different types of Optical Fiber
- ◆ G652 – G655, NZ-DSF, Leaf fiber and PM fiber
- ◆ Concept of DWDM
- ◆ Components of DWDM
- ◆ Fiber Bragg Grating, EDFA, ADM
- ◆ Importance of PMD & its measurement

Call us: 91 80 231 132 41/ 42

Professional Training program on SDH/SONET

Duration : 2 Days

- ◆ Multiplexing techniques- TDM & FDM
- ◆ Primary & Higher order multiplexing
- ◆ Optical Transmission link
 - MUXs
 - OLTEs
 - SDH & PDH
 - Concept of Hierarchy
- ◆ Understand Optical Transmission
- ◆ Line Terminating Equipment
- ◆ Layered Structure
- ◆ PDH Muxes- 34Mbps/ 140Mbps
- ◆ Optical Line Terminal Equipment(OLTE)
- ◆ Limitations of PDH
- ◆ Synchronous and Asynchronous systems
- ◆ Requirement of synchronous systems
- ◆ Typical Example of SDH system(STM-1, STM-4, STM-16, STM-64) with reference to the product
- ◆ Configuration of SDH equipment(TM, ADM & REG)
- ◆ Functions of TM, ADM & REG
- ◆ Pros and Cons of TM over ADM(P2P, Linear & Ring)
- ◆ SDH multiplexing structure(STM-1 frame structure)
- ◆ Function of SDH Overhead bytes
- ◆ Protection Schemes(Unit, Path & Ring)
- ◆ SDH Alarms
- ◆ SDH Testing
- ◆ Hands - On STM-4, STM-1
- ◆ Hands -On NMS, NES using Ring & Linear Network
- ◆ Hands - On SDH Testers(ANT-20se, ONT-50, Tektronix 2400A, HP-37717A)
- ◆ Hands - On Alarm Testing & Performance Testing
- ◆ EoS (GFP, VCAT, LCAS)
- ◆ Ethernet Alarms



Professional Training Program On FTTH

Duration : 2 Days

Access Network Technology

- ◆ Basics of PON
- ◆ Advances in PON
- ◆ Advantages of PON Cost/Service

Standards & Protocols for Access Network

- ◆ IEEE 803.3ah/ITU-T G.894.2
- ◆ APON, BPON, EPON & GPON Ethernet in First Mile, GPON
- ◆ Comparison and Advantages of each System

Network Topology

- ◆ Tree
- ◆ CWDM
- ◆ Ring

Carrier Class Redundancy

- ◆ Tree Topology Protection
- ◆ Ring Topology Protection

Protection System Architecture

- ◆ Protection Switching Control
- ◆ Automatic Interface Selection
- ◆ Alarms Reporting
- ◆ Gigabit-Ethernet Protection Passive Spanning Tree

Link Budget, Reach & Split Ratio

- ◆ Wavelength Plans
- ◆ Optical Components Parameters
- ◆ Link Budget : Downstreams & Upstream
- ◆ Associated Distances & Split Ratio

PON Services

- ◆ VOIP & TDM based Voice Services
- ◆ Data Services
- ◆ VLANs
- ◆ Video Services

Various kinds of Fiber & Technology Used For FTTH

- ◆ Bend insensitive Fiber G652D, G655 Standard for CWDM & DWDM Networks
- ◆ Micro Cables & Blown Fiber
- ◆ Network Construction Practices / Methodology for Inside Premise Fiber Cabling
- ◆ Laying of Cables inside the Building
- ◆ Bends and various Accessories for in building work
- ◆ Market Trend for FTTH World wide!!!!!!!

Professional Training Program On DWDM

Duration : 3 Days



Day – 1

Fundamentals of Fiber Optics

- ◆ Concept of modes
- ◆ Loss
- ◆ Dispersion
- ◆ Windows for Telecommunication
- ◆ Types of fibers
- ◆ Fundamentals of optical communication
- ◆ Basic Concepts, Sources / detector
- ◆ Multiplexing Technologies – (TDM & FDM)
- ◆ Optical Communication: Components & Systems

OLTE, PDH & SDH, MUX, Regenerators

- ◆ SDH – Add/drop & Cross – Connect
- ◆ TDM: Advances & Limitations

Concept of DWDM

- ◆ WDM, CWDM & DWDM
- ◆ Systems for DWDM Networks
- ◆ Elements of WDM link
- ◆ Regenerators
- ◆ Optical amplifiers
- ◆ Optical Add/drop MUX
- ◆ Optical Cross – Connect
- ◆ 3R

Day – 2

Components for DWDM

- ◆ Optical Amplifiers
- ◆ SOA & doped fiber Amplifiers
- ◆ EDFA
- ◆ Raman Amplifiers
- ◆ Optical active components
- ◆ Transmitters & receivers
- ◆ Optical passive components
- ◆ MUX / DEMUX
- ◆ Isolators
- ◆ Circulators

Day – 3

- ◆ Attenuators
- ◆ Fiber Bragg grating
- ◆ Different types of fibers : DSF, NZDSF, DCI
- ◆ Polarization Maintaining fiber
- ◆ DWDM – Test & Measurements
- ◆ Polarization Mode dispersion (PMD)
- ◆ Chromatic dispersion
- ◆ Non-linearity
- ◆ BER – Measurement techniques

Fundamentals of Optical Networking & General idea about networks

- ◆ Data & Voice, LAN WAN & MAN
- ◆ Point to point Star ring & Mesh
- ◆ Concept of layers – OSI Model, DWDM in OSI layer
- ◆ Optical layers – IP, SONET & ATM Over DWDM
- ◆ Optical network planning.
- ◆ Use of Simulation Software.
- ◆ Case Studies of Design.
- ◆ DWDM Network Design & Importance of Design.
- ◆ Use of Simulation Software

Advances in DWDM

- ◆ Technologies to achieve high speed – TDM +WDM latest experiments in DWDM
- ◆ Standards for DWDM – ITU-T Grid, C&L bands
- ◆ Futuristic Components for DWDM
- ◆ Tunable laser, Multi frequency lasers, wavelength converters, MEMS Switch
- ◆ Tunable filters, Transponder, AWG
- ◆ Futuristic Technologies
- ◆ Data-IP over DWDM, Forward Error Correction (FEC), Digital Wrapper
- ◆ Multi Protocol Label Switching (MPLS), Soliton Propagation



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Professional Training Program on Splicing, OTDR & Connectorization

2 – Days Training Program Designed for Technicians

Fundamentals of Fiber Optics

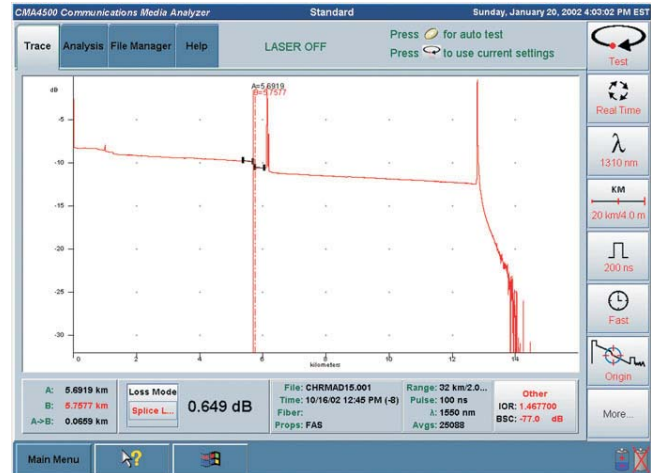
- ◆ Concept of modes
- ◆ Loss
- ◆ Dispersion
- ◆ Windows for Optical communication
- ◆ Types of fibers (Single mode, Multi mode, Step & Graded index fiber)

Optical Fiber Cables Overview

- ◆ Duct, Direct Buried, Aerial
- ◆ Premise Cable, Corrugated & Noncorrugated Cables
- ◆ Color codes for fibers

Different Techniques for Joining of Fibers

- ◆ V.Groove jointing, Connectorisation, Mechanical splicing, Fusion Splicing.
- ◆ Connectorization FC,SC,ST,MC,MT – RJ,MU,FDDI etc, Connector ferrule
- ◆ Adapters,Connector termination process, Insertion loss, Back reflection / return loss
- ◆ Factors affecting IL & BR.PC,SPC, UP/MPC and APC
- ◆ Factors affecting connector performance, Fusion splicing
- ◆ Preparation of fiber for fusion splicing, precautions to be taken
- ◆ Elements of Fiber Optic link, FMS – Wall mounted / Rack mounted



- ◆ Routing of optical fiber through FMS
- ◆ Straight Joint
- ◆ Termination & branch joint closure
- ◆ DDF, FDF fiber patch panel
- ◆ Branching Universal /branch joint box
- ◆ Termination joint box
- ◆ Variable attenuator patch cords, pigtailed and cord cables

Demonstration of different Components & Connectorization

- ◆ Demonstration & hands on of Splicing
- ◆ OFC Laying & Networking
- ◆ Loss :dB, Splice & Link Loss, Fundamentals of OTDR
- ◆ Link Loss Budget

OTDR specifications

- ◆ Dynamic Range
- ◆ Dead Zone
- ◆ Resolution
- ◆ Accuracy
- ◆ Wavelength

Demonstration & hands on experience of OTDR, Laser, Powermeter etc

Executive Training program on Optical Networking

(Fiber Optics, SDH & DWDM with hands-on)

5 – Days Training Program designed for Executives

Day 1

- ◆ Introduction to Fiber Optics
- ◆ Why Fiber Optic Communication?
- ◆ Concept of Modes.
- ◆ Types of Fibers-SMF, MMF
- ◆ Different types of Losses-Radiation, Scattering, Micro-bending Loss
- ◆ Concept of Dispersion-Modal, Material, Wave-guide Dispersion
- ◆ Types of Single mode fibers G652, G653, G655 etc.
- ◆ Optical Fiber Cables
 - Overview
 - Types-Duct, Direct buried,OPGW, Corrugated, Aerial, Ribbon, Non-Corrugated etc
- ◆ Different Techniques for Joining fibers
- ◆ Splicing - Mechanical & Fusion.

Day 2

- ◆ Connectorisation - Techniques, Pros/Cons
- ◆ Types of connectors - FC/PC, SC, ST, MW, Biconic, E-2000 etc
- ◆ Elements of Fiber Optic Link
 - FMS, straight, DDF, FDF, Branching Termination, Patch cords & Pigtaills
- ◆ Demo & Hands-on of Splicing
- ◆ Installation of systems
- ◆ Demo of different elements of Fiber Optic link.

Day 3

- ◆ Test & Measurement
 - Loss-dB/dBm, Splice & Link loss
 - Fundamentals of OTDR
 - Power, Laser source test
 - Link loss budget
 - Demo & Hands on of OTDR
- ◆ Overview of Communication
- ◆ Laser & Detectors
- ◆ Multiplexing techniques- TDM & FDM
- ◆ Primary & Higher order multiplexing
- ◆ Optical Transmission link
 - MUXs
 - OLTEs
 - SDH & PDH
 - Concept of Hierarchy
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- ◆ PDH Muxes- 34Mbps/ 140Mbps
- ◆ Optical Line Terminal Equipment(OLTE)
- ◆ Limitations of PDH

Day 4

- ◆ Synchronous and Asynchronous systems
- ◆ Requirement of synchronous systems
- ◆ Typical Example of SDH system(STM-1, STM-4, STM-16, STM-64) with reference to the product
- ◆ Configuration of SDH equipment(TM, ADM & REG)
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- ◆ SDH multiplexing structure(STM-1 frame structure)
- ◆ Function of SDH Overhead bytes
- ◆ Protection Schemes(Unit, Path & Ring)

- ◆ Alarms & Synchronization
- ◆ SDH Testing
- ◆ Hands - On STM-4, STM-1
- ◆ Hands -On NMS, NES using Ring & Linear Network
- ◆ Hands - On SDH Testers(ANT-20se, ONT-50, Tektronix 2400A, HP-37717A)
- ◆ Hands - On Alarm Testing & Performance Testing

Day 5

- ◆ Concept of DWDM & its Fundamentals
 - " WDM, CWDM, DWDM
- ◆ Systems for DWDM Networks.
- ◆ Elements of WDM Link, Regenerator, Optical Amplifiers, Optical Add-Drop Mux, Optical cross Connect
- ◆ Optical Amplifiers
- ◆ Components for DWDM
- ◆ DWDM Test & Measurement
- ◆ DWDM Network Design
- ◆ Advances in DWDM Networking
- ◆ Technologies to achieve High Speed TDM+WDM latest Experiments in DWDM Standards for DWDM ITU-T Grid, C&L bands
- ◆ Futuristic components for DWDM
 - Tunable Lasers, Multi Frequency Lasers, Wavelength Converters, MEMS Switch, Tunable Filters, Transponders, AWG
- ◆ Futuristic Technologies
 - Data-IP over DWDM, Forward Error Correction, Digital Wrapper, Multi Protocol Label Switching(MPLS), Soliton Propagation.

WIDE SPREAD

- Training information has been widely spread and we also have a yahoo group formed for announcements and updates on Syllabus and New Schedules of Training.
- So far training conducted at :

INDIA

- Delhi
- Bangalore
- Hyderabad
- Chennai
- Nagpur
- Goa
- Mumbai

ABROAD

- Male (Maldives)
- Dhaka
- Riyadh
- Jeddah
- Khamis Mushait
- Dammam

- 2000+ people have been trained by Eagle Photonics.

PARTIAL CLIENTELE LIST OF CUSTOMIZED TRAINING PROGRAM

- Hughes Telecom
- Wipro Technologies Ltd:
- TATA Teleservices Ltd:
- Bharti Telesonic Ltd
- TVS Net:
- Duraline India Pvt. Ltd
- DHIRAAGU, Maldives:
- Saudi BELL, Saudi Arabia
- Grameenphone, Bangladesh
- Banglalink, Bangladesh
- Airtel

Eagle Photonics has been taken over by Fiber Optika Technologies Pvt. Ltd. and is now ready for upcoming technology challenges.



Fiber optics Experts

Eagle Photonics

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