

UNIT 1

PASSIVE OPTICAL NETWORKS

This unit develops an in-depth understanding of the recent global deployment of Fibre-To-The-x.

1. Limitations of current copper based architectures used in the “last mile”

- Common Basic Terms
- Limitations of ADSL twisted pair and CATV coaxial cable architectures in the “last mile”
- Main attributes of PONs
- Examples of variations in FTTx architectures

2. PON technologies and architectures

- Explore different technologies available for PONs (APON, BPON, GPON, EPON)
- Examine the main function(s) and identify typical wavelengths of OLT, splitter, ONT, FDH, EDFA
- Understand star, bus and ring PON topologies
- Understand and explain the use of TDMA in PON networks, “ranging” and “time slot granting”

3. Optical loss budgets

- PON recommended fibre and its parameters
- Typical PON connectors types and their losses
- Fundamentals of Wavelength Division Multiplexing
- Use of a WDM coupler in a PON
- Use of attenuators
- Passive Optical Splitters
- Effect on signal loss caused by a cascade of splitters
- Determine PON Optical Loss Budgets
- Corrective measures when out of specification

4. Outside plant installation and testing

- Methods used to install fibre optic cables in PONs
- Optical Distribution Network (ODN)
- ODN hardware
- Optical tests following installation
- Use of test instruments
- Pre Activation Bi-directional Testing
- “Active” Network Testing

UNIT 2

AIR BLOWN FIBRE SYSTEMS

This unit develops an understanding of the methodology and factors to consider when planning, installing and maintaining an air blown fibre system.

1. Blown fibre system components

- Construction of basic fibre element types
- Usages of basic fibre elements
- Typical fibre units and fibre unit counts
- Construction and colour coding of different types of microduct tube assemblies
- Use of sub-ducts, manifolds, chambers and closures
- Health and Safety Issues

2. Installation of microduct network

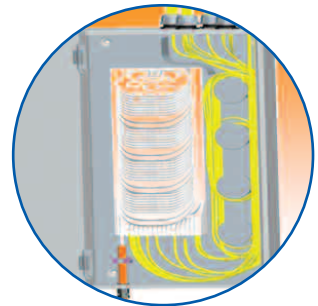
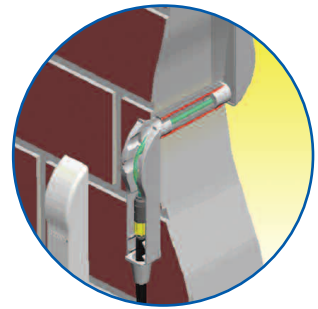
- Installation Methods
- Design Structures
- Minimum bend radii for fibre units, primary tubes and tube bundles
- Factors affecting blowing distances
- Microduct bundle pulling tensions into sub-duct
- Microduct assembly and fibre unit stripping techniques
- Active and passive distribution points
- Health & Safety
- Install microduct network
- Fit suitable enclosures, subscriber’s premises interface, gas & water blocking devices

3. Use and maintenance of blowing equipment

- Blowing equipment items
- Pre-use checks on blowing equipment and compressor
- Fibre blowing techniques
- Ducting and sub-ducting tests using the compressor
- Blow fibre units into installed microduct network
- Maintenance tests on installation equipment

4. Design customised blown fibre networks

- Study recommended planning steps: Customer Requirements; Product Map; Environmental Factors; Nodal Map
- Planning tutorials for FTTH networks
- Plan and design a direct install network



Success stories



STEVEN ARMSTRONG

Ex Royal Irish
Fibre Tech in Northern Ireland



KENNY STEWART

Ex RAF
RoV Pilot/tech for an Aberdeen Company currently working in the Gulf of Mexico

CTTS Ltd
The National Training Centre,
Jubilee Place, Lindum Business Park,
Station Road, North Hykeham,
Lincolnshire LN6 3QX UK
T: +44 (0)1522 880900
F: +44 (0)1522 880901
E: info@cable-training.co.uk
www.cable-training.co.uk