

go with the flow

Blown Fibre Technology



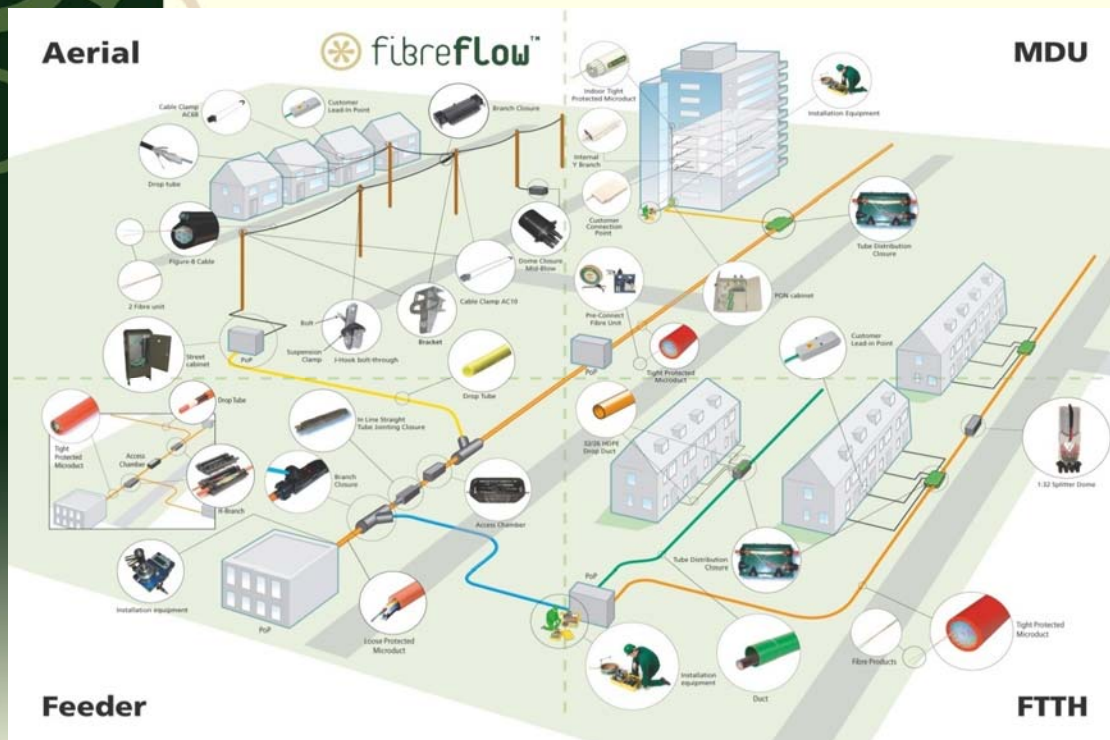
Jason Hanlon
Country Manager Commercial
Emtelle Australia Pty Ltd

- ⊛ **Blown Fibre Concepts**
- ⊛ **Products**
- ⊛ **A Campus Network**
- ⊛ **Blown fibre Projects**

Blown Fibre Concept

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Blown Fibre Solutions for ALL situations

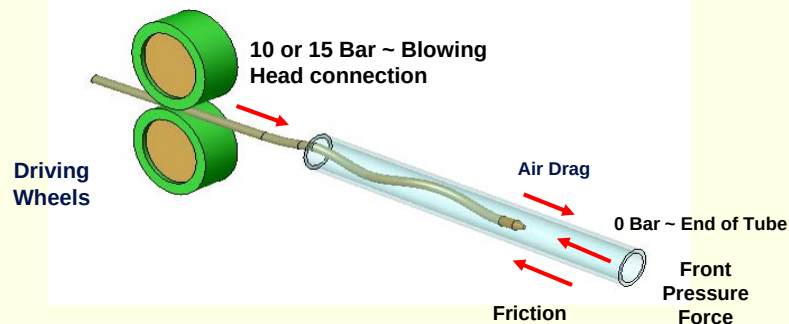


Blowing theory and Horizontal Installation

Fibre unit is installed by a combination of control drive wheels and a steady air flow. The pressure profile along the tube provides air drag to propel the fibre unit to the far (low pressure) end.

Air blowing subjects the fiber unit to almost zero stress, helping to preserve fiber lifetime.

Forces acting on the fibre during installation



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FIBRE UNIT BLOWING EQUIPMENT



- ⊗ Modular System
- ⊗ Quick Build
- ⊗ Rapid Deployment
- ⊗ Stress Free Fibre Installation
- ⊗ Point to Point Reducing Fibre Splices
- ⊗ Futureproof
- ⊗ Lightweight
- ⊗ Easy to Handle
- ⊗ Simple to Use

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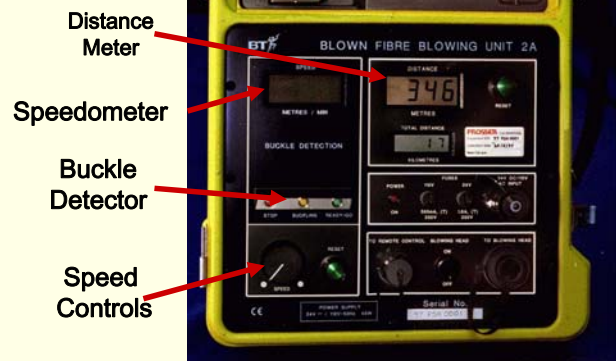
Blowing Unit 2A (Used by BT)

Emtelle supplies & maintains all blowing equipment including blowing head, control box, compressors and all ancillaries.

Blowing Head 2A

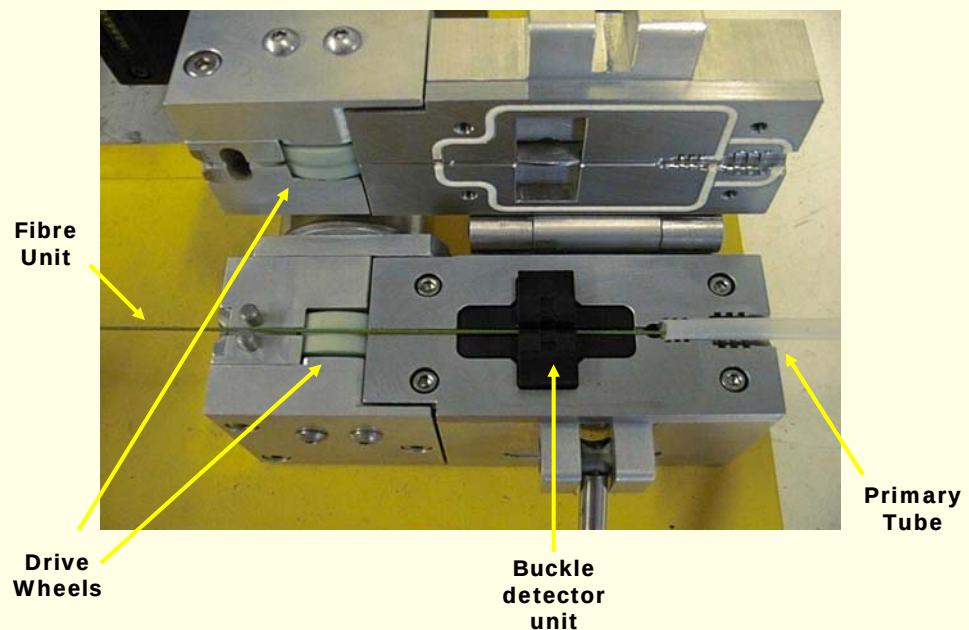


Control Box



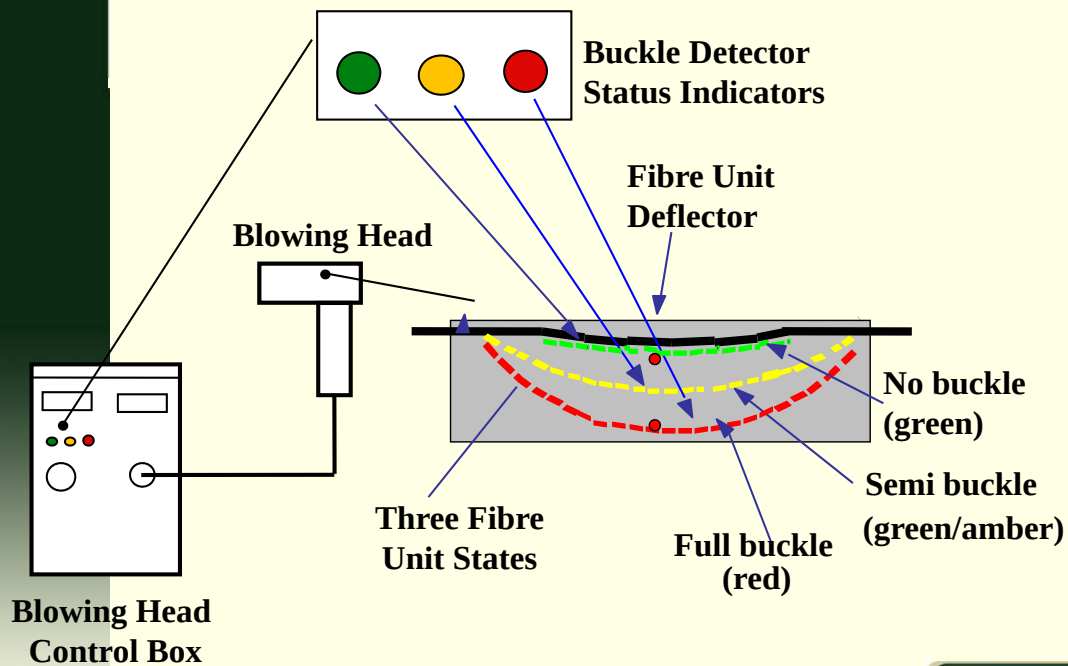
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Fibre Blowing Head



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Buckle Detector Operation



How far can you Blow?

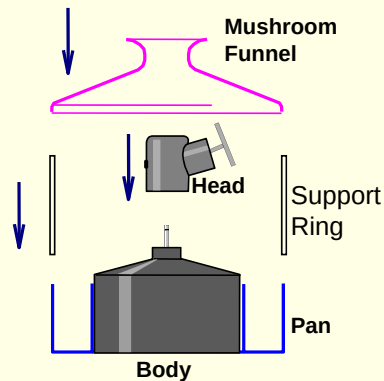
Blowing Distance (Mts)

Fibre Count	<u>2 core</u>	<u>4 core</u>	<u>8 core</u>	<u>12 core</u>
Tube Size				
3/2.1mm	400	400		
5/3.5mm	1500	1200	1000	1000
8/6mm			1500	1500

The above distances are route and air pressure dependant

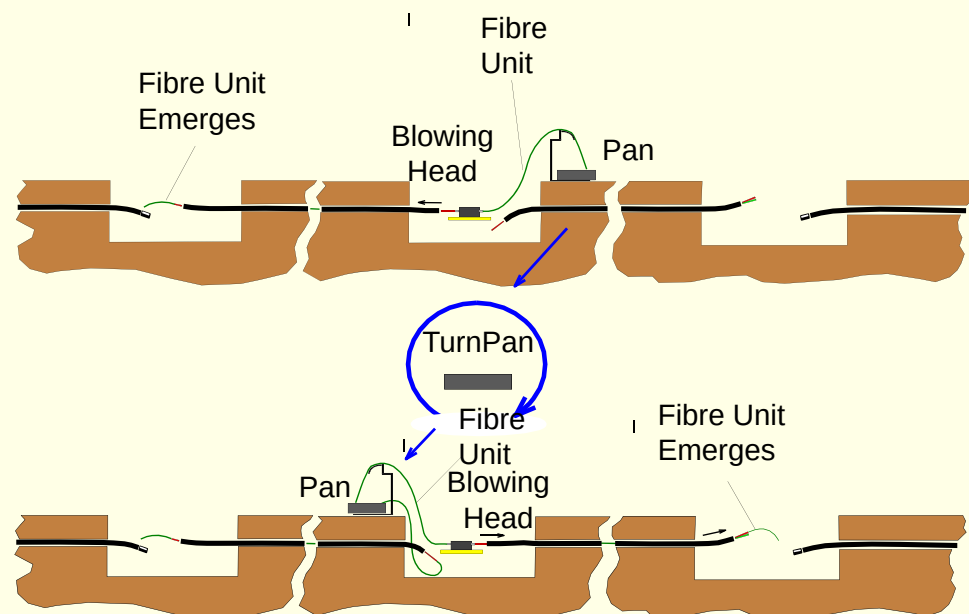
Fibre Unit coiling

Coils the excess fibre unit into a fibre pan, in such a way that it can be re-blown to further distance.



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Extra distance - Centre or Onward Blowing



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Blown Fibre Product Range

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Fibre Unit Types & Properties

Available in Singlemode G652D & G657
and Multimode OM1, 2, 3 & 4.
Also hybrid fibre units (SM & MM)

Typical properties for SM, max. Attenuation 0.35dB/km at
1310nm and 0.25dB/km at 1550nm

Typical properties for MM, max.
Attenuation 0.35dB/km at 850nm
and 1.0dB/km at 1310dB/km

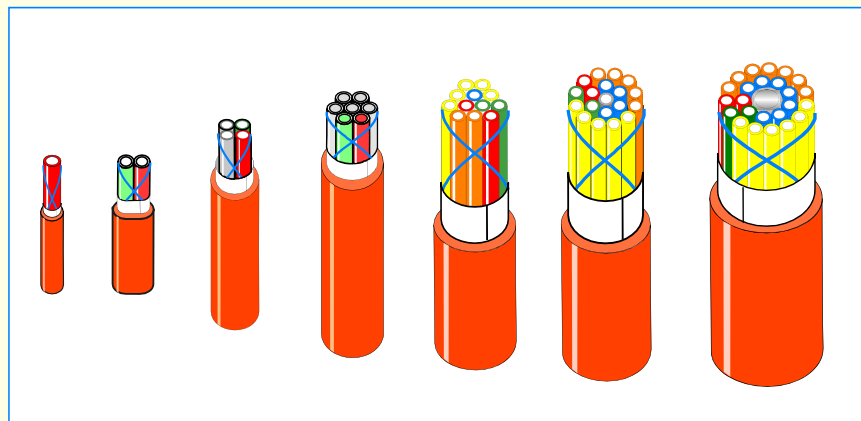


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Tube bundle range includes:

Tube sizes: 3/2.1mm 5/3.5mm 8/6mm

DI, DB, DBT, DBR, DBRT, SWA, LFH & Aerial Fig 8



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Internal Microduct (LFH)

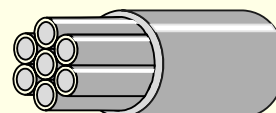
SINGLE 3.5mm PRIMARY TUBE



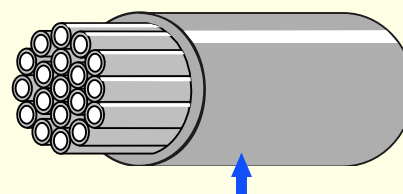
4 x 3.5mm PRIMARY TUBES



7 x 3.5mm PRIMARY TUBES



19 x 3.5mm PRIMARY TUBES



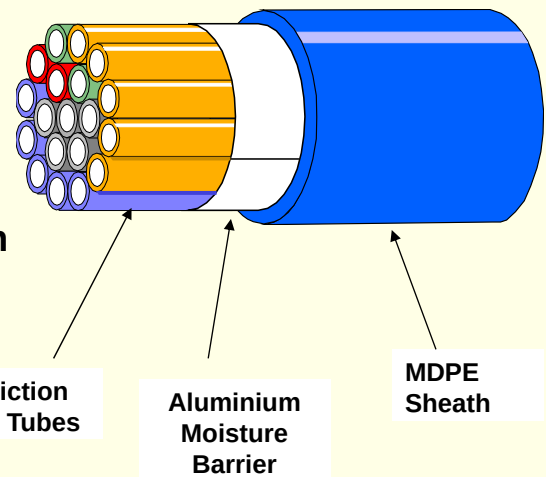
ZERO HALOGEN
FLAME RETARDANT
POLYETHYLENE

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Direct Install (DI - MDPE)

General Purpose cable, for use in buildings, under floors, risers in ceilings or external in conduits or ducts.

- 5mm or 8mm primary tubes
- Rip Cord
- Aluminium Moisture Barrier
- Flexible MDPE Outer Sheath

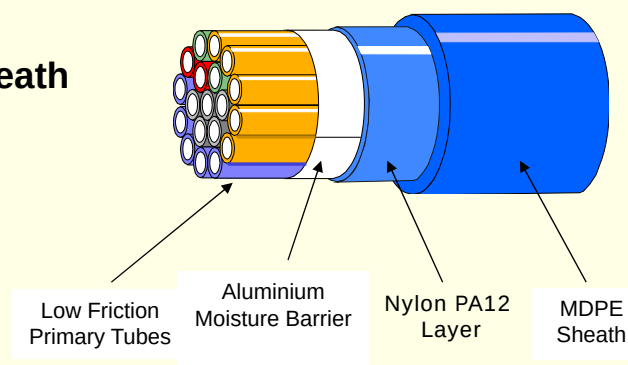


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Direct Bury (DBT)

Heavy Duty Termite Resistant cable for direct burial applications.

- 5mm or 8mm primary tubes
- Aluminium or metal free Moisture Barrier
- PA 12 (termite) Layer
- Tough HDPE Outer Sheath

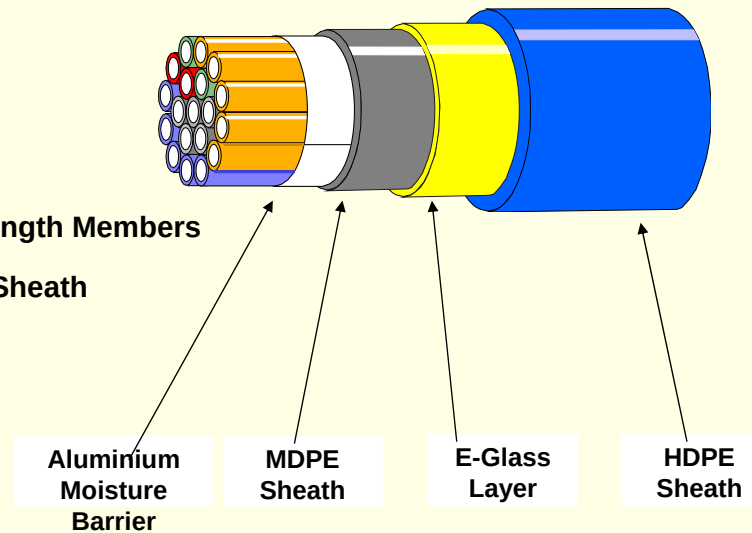


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Direct Bury Reinforced (DBR & DBRT)

Heavy Duty Reinforced micro duct, for use in direct burial Applications.

- 5mm or 8mm primary tubes
- Rip Cord
- Moisture Barrier
- MDPE Sheath
- E-Glass Tensile Strength Members
- Tough HDPE Outer Sheath

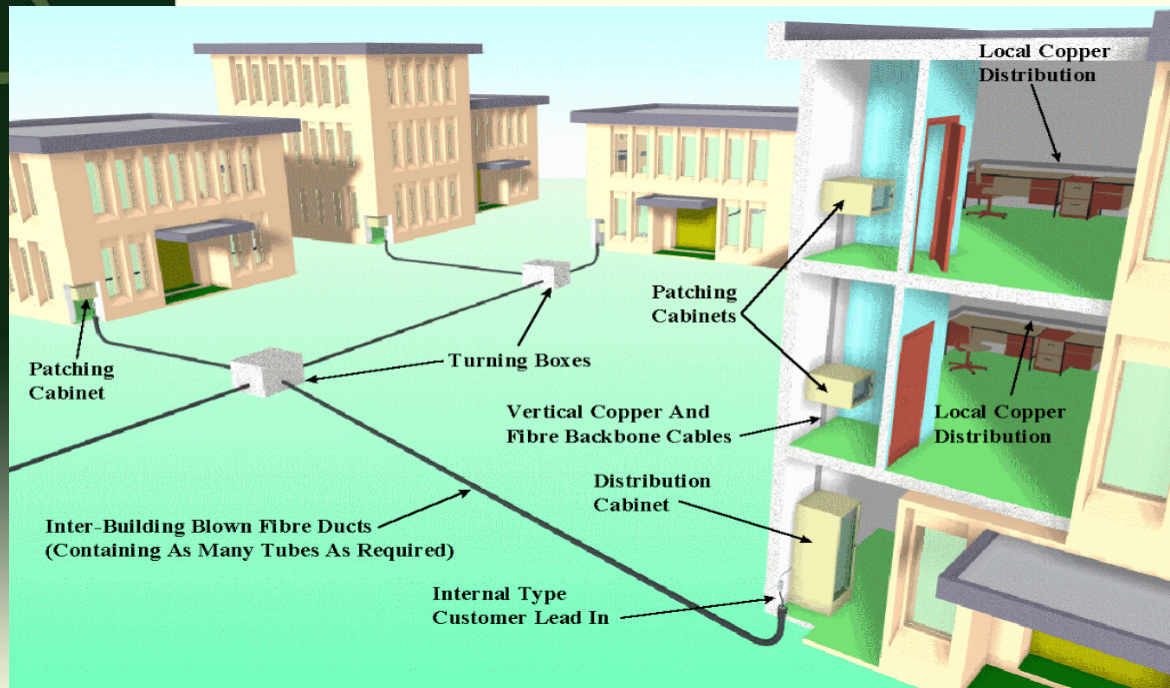


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Campus network example

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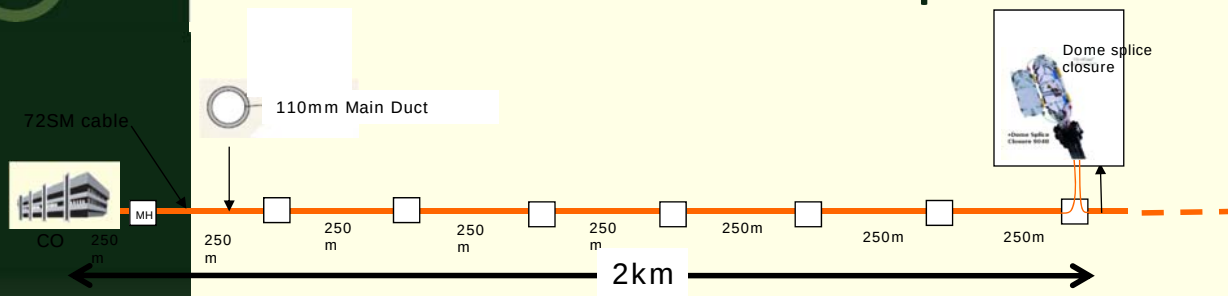
LAN Network In Campus



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Minicable solution for Backbone

Backhaul Network Civil engineering consideration

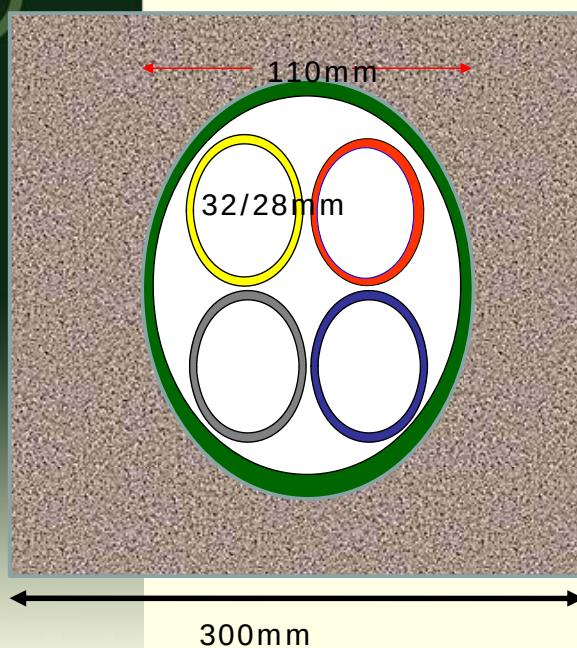
Conventional Method – Pits & Pipe Solution



Note:

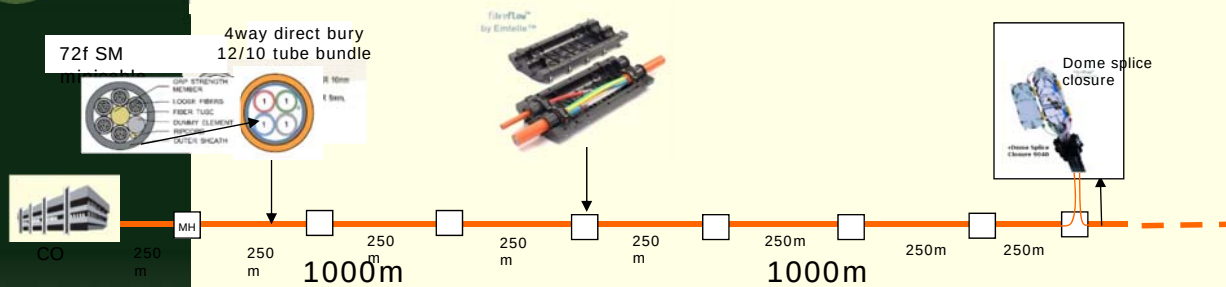
1. Traditional 110mm duct and sub-duct needs at least a 300mm wide trench
2. Pits or Manholes are required every 200-250m
3. Additionally 110mm Main duct with 3 x 40mm sub-ducts allows only 3 cables to be pulled in.

Direct bury Microduct with Minicable solution



OSP Backbone

Solution – Minicable

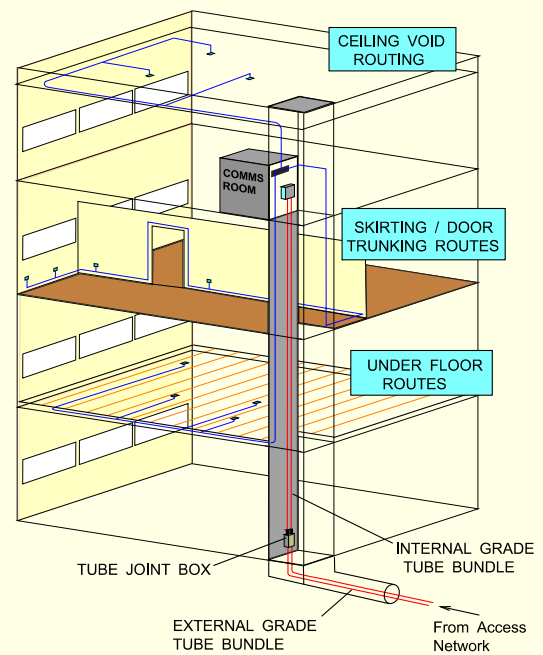


Benefits of using the blown fibre solution:

1. Smaller trench because direct bury tube bundle is much smaller – 100mm vs 300mm (min)
2. Longer Pits/Manhole distances, every 1000m or even more if terrain permits
3. Four (4) 12/10 tube which allow 4 minicables to be deployed by blowing, fibre count 24-144f compared to 3 by conventional method
4. Blowing distance can be up to 4Km with water jetting.
5. In a reduced space greater capacity is created so the unit cost of placement is greatly reduced
6. Cost savings of at least 35% are estimated.

In Building

- External cable to internal cable without fibre splicing
- Space saving Single step riser backbone deployment
- One time repair of fire breaks
- Interfloor LAN capability
- SM or MM fibre type route
- FTDD capability



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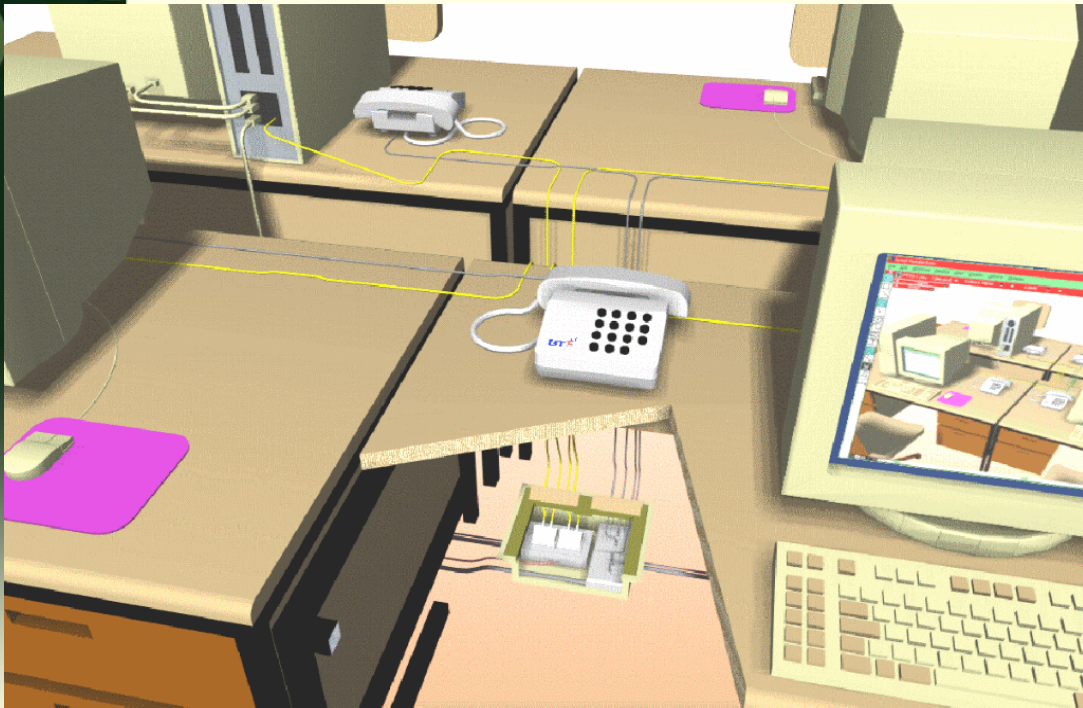
Indoor Tube branch off closure



- Flame retardant ABS
- Multiple branch capability
- Use in riser, ceiling, underfloor
- Space saving

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Fibre To The Desk



MDF Patch



- All tubes can be terminated to the patch panel, fibre blown direct to frame or onto the splice tray

1U Fibre Splicing & Patch Panel



**Can accommodate up to 48 fibres if used with MTRJ,
Or 24 fibres if used with ST or SC**

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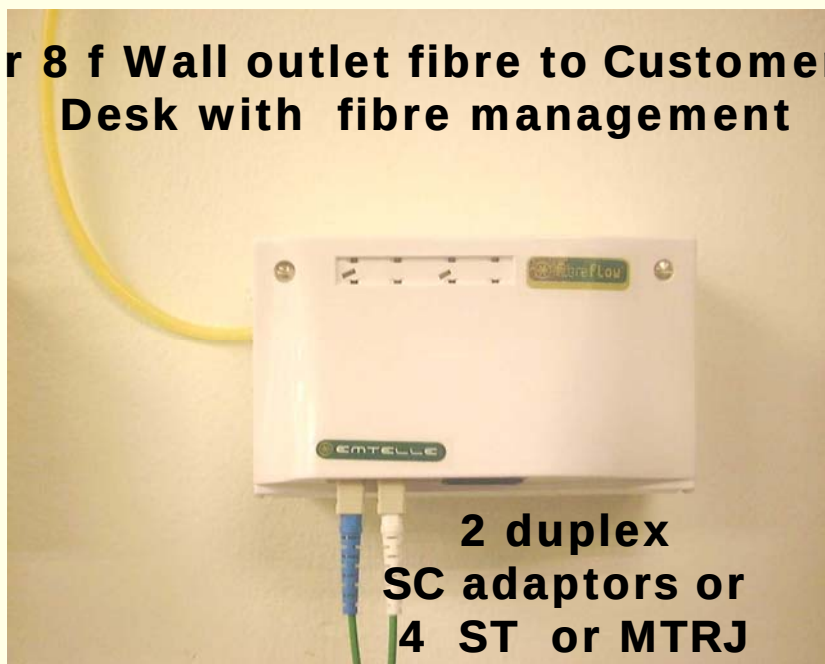
Tube Management box

riser base mounting



Wall Outlet

4 or 8 f Wall outlet fibre to Customer or Desk with fibre management

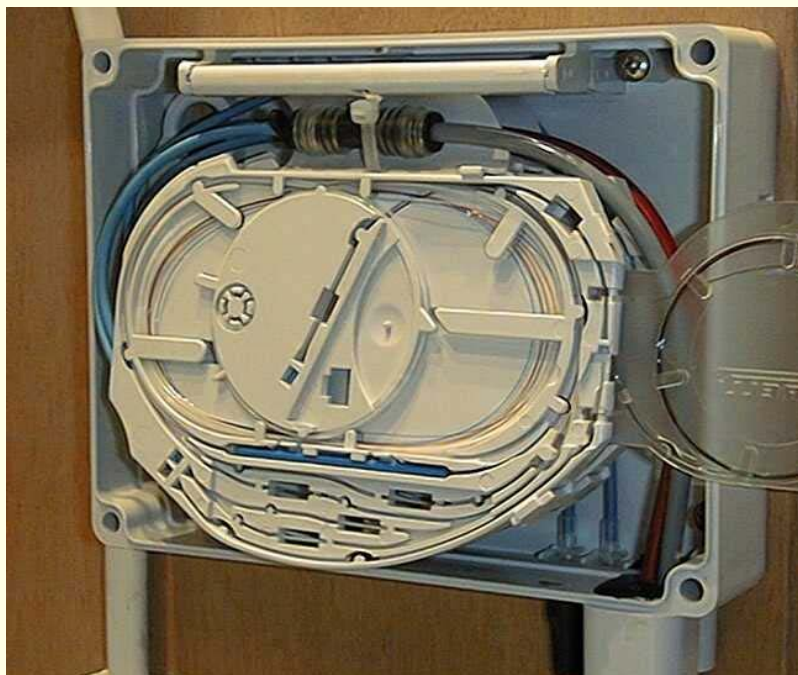


2 duplex
SC adaptors or
4 ST or MTRJ

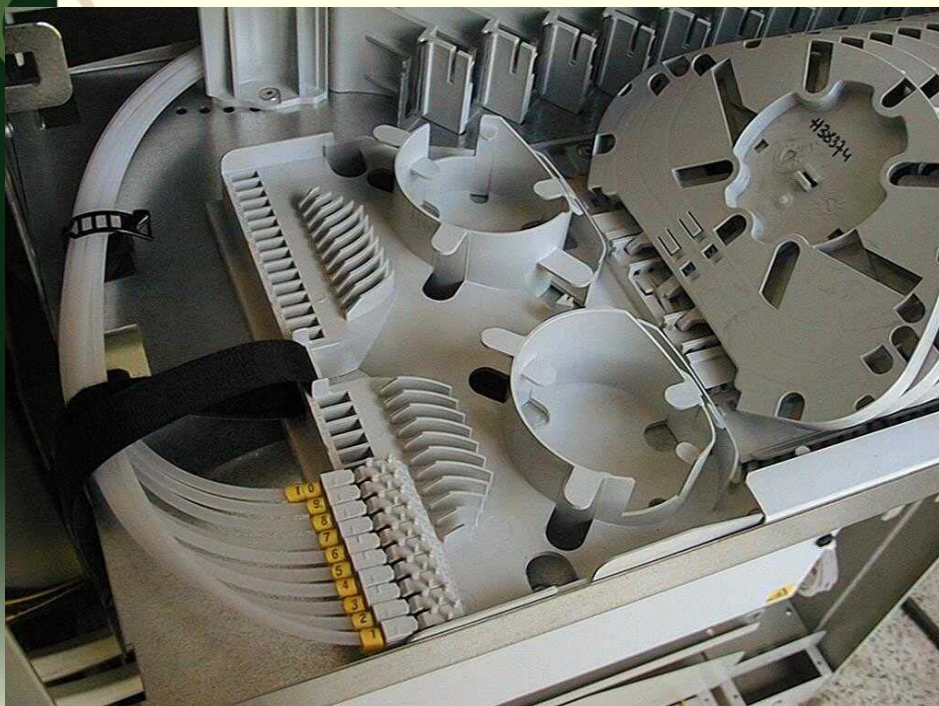
Fibre Termination Inside Customer Premises



Fibre Splice Trays



Rack Containing 19 Splice Trays



The Benefits of Blown fibre

- Reduced long term costs - fibre on demand
- Reduces / eliminates splicing along the route
- Less manpower to install fibre units
- Eliminates dead fibre – fibre runs mostly pt - pt
- Simpler network planning- easy tube branch off capability
- Easy quick fibre upgrades in the future
- Fibre blows in at speeds upto 50mts p/min – 500mts 10mins– route dependant

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Projects

Global Project references

In Building

- more than 1000 Commercial Buildings in Singapore
- AMP Buildings throughout Australia
- Canary Wharf, London
- ABSA Bank, Pretoria, South Africa

- International Finance Centre, Dubai, UAE
- Auckland Sky Tower, New Zealand
- Commercial Buildings, Taiwan
- Dubai Financial Centre

Campus / Business Park

- Changi Airport (Terminal 2 upgrade, New Terminal 3), Singapore
- Dublin Airport, Ireland
- Johannesburg International Airport, South Africa
- Manchester University, England
- Balsburg Building Zurich Airport, Switzerland

- Kuala Lumpur International Airport, Malaysia
- Medunsa University, South Africa
- San Antonio, Texas, USA
- Dover Air Force Base, USA
- Dunedin University, New Zealand
- Perwaja Steel Industrial Complex, Malaysia

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Fibre-to-the-Home

- Nuenen, Netherlands
- Binningup, Australia
- Remote Communities, Sweden
- Hillsboro, Oregon, USA
- Syd Energi, Denmark
- Tre-for Bredbaand, Denmark
- Energi Midt, Denmark
- Gothenburg, Sweden
- Kalgoorlie, Australia
- Södertälje, Sweden
- Eindhoven, Netherlands
- Örnsköldsvik, Sweden

- Monterrey, Mexico
- Enschede, Netherlands
- Delft, Netherlands
- Squire Creek, USA
- Leonie Hill, Singapore
- El Rio, Arizona, USA
- Lulea, Sweden
- Chunghwa Telecom, Taiwan
- Hau Hin, Thailand
- Maldives
- High Rise Apartments, Taiwan

Fibre-to-the-Curb / (City)

- Greece Olympic Games, Athens
- Lenowisco, USA
- Christchurch City Council, New Zealand

Long Distance

- Janaf, Croatia
- Mandurah Rail, Australia
- Gateway Upgrade Project, Brisbane, Australia

Military

Type 45 Destroyer, Royal Navy
Army and Air Force Bases, Australia

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