

Sterlite's FOC enable communication signal integrity in Delhi Metro



(118 mi) with 142 stations of which 35 are underground. The metro system has an average daily ridership of 1.5 million commuters. One of the challenges was to incorporate optical fiber cables for all its communication needs.

The Requirement

The Delhi Metro has sophisticated communication needs for its traction system, signaling system, communication system and automatic fare collection system. These include:

(A) Traction system:

- SCADA Monitoring

(B) Singnaling system:

- Computer based Centralized Train Operation and Management
- ATC and Line Side LED Signals
- ATP with Train Descriptor
- Traffic Control at OCC and Station Control Room

Sterlite's fiber optic cables enable communication signal integrity in Delhi Metro's Mass Rapid Transit System

The Delhi Metro is one of India's few success stories on the mass rapid transport front. Started in 2002, it now has a total length of 110 km. Happily, the success of the Delhi Metro has garnered more support for mass transit systems across the country.

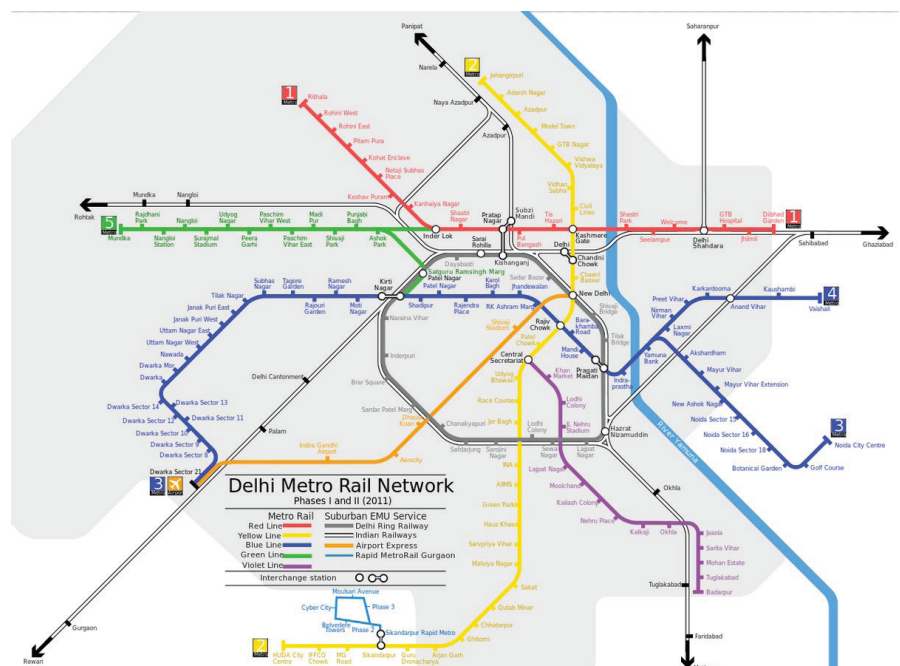
Noida in the National Capital Region (NCR) of India, being built and operated by the Delhi Metro Rail Corporation Limited (DMRC). The network consists of six lines with a total length of about 190 kilometers

The Project

The Government of India and the Government of Delhi set up a JV company named Delhi Metro Rail Corporation Ltd (DMRC) under the Companies Act, 1956, to construct a Mass Rapid Transit System (MRTS) in Delhi. This Metro system is designed to be integrated with other means of mass transit and will alleviate traffic congestion on national highways, thereby reducing the number of accidents and increasing public safety.

The Challenge

The Delhi Metro is a rapid transit system serving Delhi, Gurgaon and



(C) Communication system:

- Optical fiber based transmission media
- Digital trunk radio technology (TETRA Standards) communication between Motorman, central
- Mobile radio communication
- Telephone exchange
- Passenger announcement system from stations and OCC
- Centralized clock system
- CCTV for surveillance

(D) Automatic fare collection:

- Fare media: Contactless smart token
- Gates: Computer controlled retractable flap type automatic gates
- Ticket office machine (TOM/EFO): Manned ticket office machine
- Ticket reader and portable ticket decoder
- Passenger operated machine / ticket vending machine.

The Solution

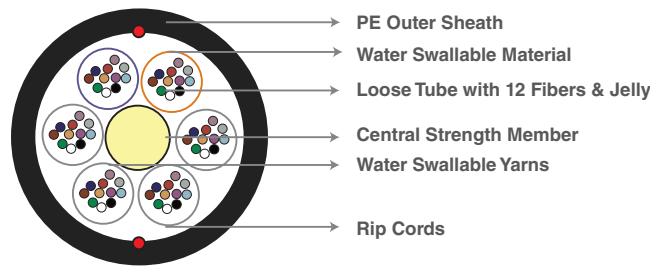
196 km of Sterlite's 24 Fibre Jelly Filled Armoured Double Sheath Optical Fibre Cable that enabled communication signal integrity

Applications

Direct buried installations including:

- CATV
- Traffic Signal System
- Campus Cabling
- Utility Communication System
- Telephone Systems

The cable was produced with 2-12 high performance single mode or multimode optical fibers placed in gel-filled buffer tubes. The color-coded buffer tubes were then stranded around a central member (dielectric or metal) using the reverse oscillating lay (ROL) stranding technique. Water



blocking threads and tape were added to eliminate water ingress and migration. Alternatively, the core could have been flooded with water blocking gel for protection against water penetration.

Peripheral strength members were also included to provide appropriate pulling tension performance. Ripcord (s) were added below the polyethylene jacket and corrugated steel tape (rodent protection) for ease of armor and sheath removal.

- ROL stranding provides mid-span access capability
- Composite cables available
- Corrugated steel tape provides excellent rodent/rough terrain protection
- Double sheath construction gives robustness for direct burial installation.
- Meets IEC 60794, EN 187000, EIA TIA and ITU T International standards

Conclusion

The Delhi Metro is being built in phases. Phase I completed 65.11 km (40.46 mi) of route length. Phase II of the network comprises 128 km (80 mi) of route length and 79 stations. Phases III (112 km) and IV (108.5 km) are planned to be completed by 2015 and 2021 respectively, with the network spanning 413 km (257 mi) by then.

The Sterlite Advantage

Global experience Sterlite has a significant experience in implementation of projects for Government incumbents, utilities and enterprises.

End-to-end project implementation

Sterlite ensures complete control over the value chain and delivers end-to-end project management services.

Qualified and experience talent pool

Sterlite has a qualified talent pool, experienced in network design, project management, network implementation and network maintenance.

Credible partners

Sterlite has partnered with reputed project management companies and Original Equipment Manufacturers (OEMs), to ensure that the delivery of the project is streamlined.

Solution development for newer applications

Sterlite continues to enhance its portfolio taking into account the bandwidth needs evolving from client applications.

Local Support

With offices in 10 countries, Sterlite always has a relationship manager who is a mere phone call away, to understand your growth aspirations and to explore areas where it add value to your business.

About Sterlite Technologies

Sterlite Technologies is a leading global provider of transmission solutions for the power and telecom industries. Equipped with a product portfolio that includes power conductors, optical fibers, telecommunication cables and a comprehensive telecom systems / solutions portfolio, Sterlite's vision is to 'Connect every home on the planet'. Sterlite is also system projects, pan-India.

