

FlexTube[®]

Business cases

Whitepaper



FlexTube®: Smaller and more flexible

This whitepaper presents two case stories concerning companies who decided to adopt Prysmian's FlexTube® cable technology into their Fibre Optical access network.

TCO Case A - OPEX savings in Moldova

The first example can be found in Moldova. Here, the main alternative telecom operator is deploying a GPON network over a mixed FTTB/FTTH configuration, offering the customer a complete video, data and voice package (Figure 1).

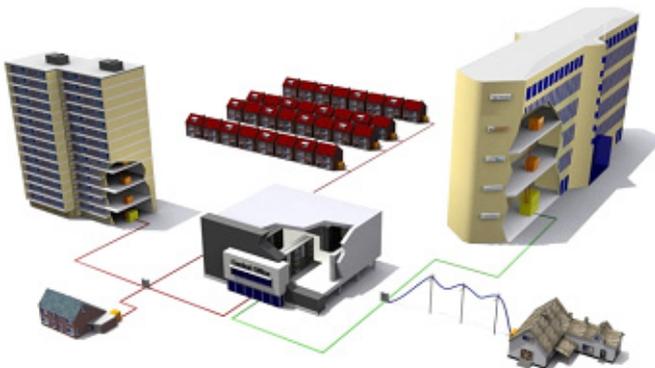


Figure 1: access network layout

Description

The optical network infrastructure is built into rented ducts which belong to a public entity. These ducts are partially occupied by other cables, which significantly reduce available space. The FO cables are installed in the OSP by pulling them into ducts. On the customer side, the drop FO cables are either pulled into ducts or fixed to the wall of the building, as shown in Figure 2.



Figure 2 - Indoor installation

The feeder network is built using mainly 288 FO cables and the distribution part is created with 16

FO cables. The fee which the operator is required to pay for the right of way depends on the cable's external diameter. This ranges from €43/km for cables up to 12 mm OD to more than €50/km for cables from 16 up to 18 mm OD. The existing 288 FO feeder cables installed in the past have an external diameter of between 16 and 17.5 mm.

The main challenge here is to reduce OPEX as much as possible by using cables with a lower OD, but with similar optical and mechanical performance. Prysmian has introduced an innovative solution for customers, based on FlexTube® optical cables, with a vastly reduced diameter and robust mechanical construction.

Two cable designs were proposed: 288 FO for the feeder and 16 FO for the distribution part of the network. Both cable constructions completely satisfy the customer's technical specification and offer the advantage of working with a product which has a small diameter and excellent optical-mechanical performance.

Facts & Figures

Let's have a look at the cables proposed, in particular the 288 FO.

Prysmian 288 FO FlexTube® cable is composed of 24 micro-modules of 12 fibres each. Its outer sheath is made of HDPE. The required mechanical tensile strength is achieved by using dielectric strength reinforcement yarns. The cable's external diameter is less than 10.8 mm. See Figure 3. This smaller cable diameter allows the customer to reduce annual rent costs from €51.30/km to €43.2/km which represents OPEX savings of almost 16%.



Figure 3 - FlexTube® cable

Customer testimonial

"We were looking for a solution that could reduce the operational costs associated with renting the ducts used for network deployment. Prysmian's FlexTube® solution perfectly fits our needs, thanks to the small diameter of the cable and easy handling."

TCO Case B - CAPEX savings in Romania

One of Romania's biggest telecom operators is expanding its GPON access network by adopting an FTTH configuration.

Description

The FO cables exiting the central office are installed in different ways, by pulling or blowing into ducts/microducts, as well as using aerial installation. Part of the network is installed on rented infrastructure. The last meter to the customer is deployed using the operator's own ducts. (See Fig 4.)

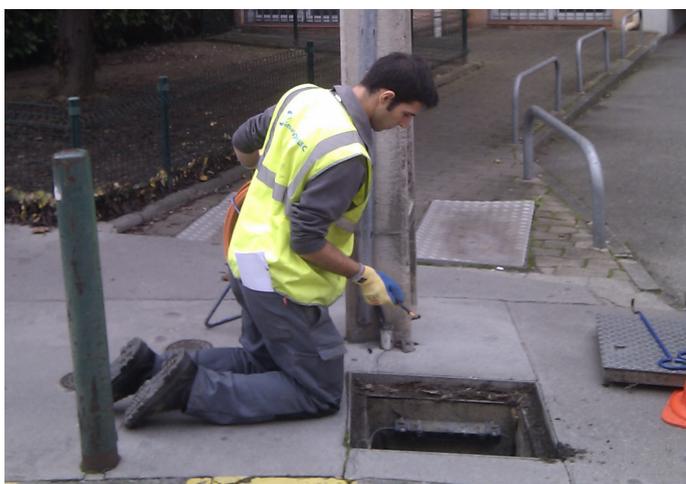


Figure 4 - OSP installation into duct infrastructure

The feeder part of the network is made using 96 FO cables which, in most cases, are blown into micro-ducts which are installed into existing ducts wherever available space is critical.

The distribution network is made using 48 FO and 24 FO cables.

The customer wanted to optimize the network reducing CAPEX starting from the feeder part. The main challenge, in this instance, was to improve the duct utilization by using cables of reduced external diameter, maximizing the blowing distance and making access easier.

Prysmian proposed a cable with a strongly reduced diameter, based on FlexTube® technology, for blown installation.

Facts & Figures

The Prysmian 96 FO FlexTube® cable is composed of 8 micro-modules of 12 fibres each. Its outer sheath is made of HDPE containing two reinforced plastic rods (GRP), specially designed to achieve the required Tensile Strength. The external diameter is less than 7 mm. This small external diameter makes possible to blow the cable into 8 mm (inner diameter) micro-ducts, achieving distances of more than 1 km. Also, the space in the main duct is optimized.

Another advantage of using FlexTube® technology is the easy and fast mid-span and cable-end access. In this case that represented savings of 20% when compared to other cable constructions.

The excellent temperature performance of the micro-modules (express modules in mid-span access) and the fact there is no risk of kinking makes it possible to use smaller splice closures (see Figure 5) reducing connectivity costs by more than 15%

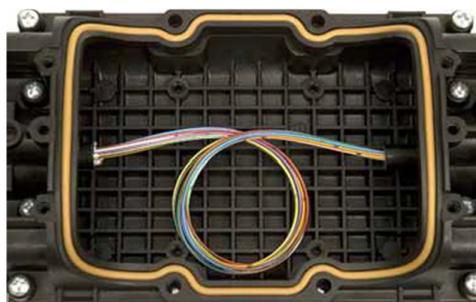


Figure 5 - Optical closure

Customer testimonial

"We selected Prysmian's solution based on the unique technical advantages it provided, such as greater blowing distance, larger number of fibres per module, the fact that Flextube can easily be stripped and the small and flexible tubes that make it possible to use smaller boxes and make better use of ducts. These parameters helped us deploy our fibre optic infrastructure faster and with less human error."

Figure 6



Linking communications to communities

Conclusions

As we can see here FlexTube® presents different benefits for operators versus other cable designs but also and particularly long term reliability.

On top of that, when associated with BendBright^{XS} fibres (G.657.A2) FlexTube® cables present the best future proof solution particularly when 1625 nm performances are or will be requested. This is the new trend in FTTH networks that enables the operator to achieve higher bandwidth by using new fibre technologies.

Other advantages of FlexTube® are OPEX and CAPEX savings reducing the TCO (Total Cost of Ownership). As can be seen in Fig. 7 on the right, in the case of Moldova OPEX savings were up to 16%.

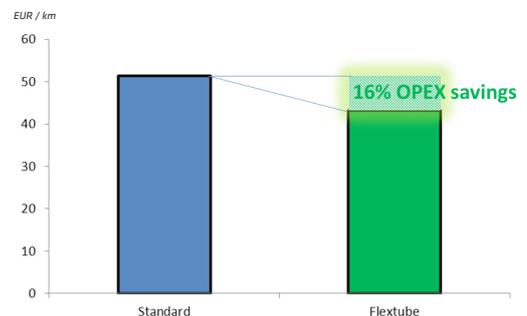


Figure 7: OPEX savings of FlexTube® cables in TCO Case A: Moldova.

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