

XSNET SOLUTIONS

The perfect platform for a successful FTTH business case

Linking the future

As the worldwide leader in the cable industry, Prysmian Group believes in the effective, efficient and sustainable supply of energy and information as a primary driver in the development of communities.

With this in mind, we provide major global organisations in many industries with best-in-class cable solutions, based on state-of-the-art technology. Through two renowned commercial brands – Prysmian and Draka – based in almost 100 countries, we’re constantly close to our customers, enabling them to further develop the world’s energy and telecoms infrastructures, and achieve sustainable, profitable growth.

In our energy business, we design, produce, distribute and install cables and systems for the transmission and distribution of power at low, medium, high and extra-high voltage.

In telecoms, the Group is a leading manufacturer of all types of copper and fibre cables, systems and accessories – covering voice, video and data transmission.

Drawing on over 130 years’ experience and continuously investing in R&D, we apply excellence, understanding and integrity to everything we do, meeting and exceeding the precise needs of our customers across all continents, at the same time shaping the evolution of our industry.

Linking communications to communities

As the world’s largest producer of telecoms cables, supporting the infrastructures of many of the world’s leading telecoms operators, Prysmian Group delivers optical fibre and copper cabling solutions that help link communications to communities almost everywhere on earth.

Covering voice, video and data transmission, our suite of telecoms solutions is the outcome of continuous multi-million euro investment in R&D and production in more than 30 facilities based around the world.

One outcome of this is *xsNET* – a complete cabling technology system to meet all of your FTTx requirements.

The *xsNET* family of products and solutions



Value Innovation for your Broadband Network

xsNET
INDOOR SOLUTIONS

xsNET
POP SOLUTIONS

xsNET
OSP SOLUTIONS

xsNET
ENGINEERING SOLUTIONS

QUICKDRAW^{XS}

SIROCCO^{XS}

OASYS

JETNET^{XS}

RETRACTANET^{XS}

VERTICASA^{XS}

VERTV^{XS}

EASENET^{XS}

BENDBRIGHT^{XS}

Supported throughout by *BENDBRIGHT^{XS}* fibre technology





Value Innovation for your Broadband Network

New technology for a changing world

Across the world, economic growth, entertainment, employment, e-learning and e-health depend more and more on fibre networks. Broadband is creating new lifestyle choices and stimulating economies everywhere. Governments and investors are increasingly discovering that access to fast communication networks is vital to homes and businesses in rural and urban communities.

Responding to this demand, Prysmian is introducing new cabling technology that delivers information wherever it's required, connecting communities, countries and continents more closely than ever before.

Fibre optic networks extend right into the end-user's home or business, with data transmission speeds that remain the same, regardless of the distance from the exchange. For new networks, fast and future-proof fibre is the default choice and part-copper ADSL and VDSL networks are increasingly being replaced by fibre.

We've got your network covered

The Telecom Solutions business is part of Prysmian Group, a new company formed following Prysmian's 2011 take-over of cable and cable-systems producer Draka. This merger has created the world's largest supplier of hi-tech cables and systems for the energy and telecommunications industries, with a thorough understanding of global markets. With factories around the world and an excellent logistical distribution network, the Prysmian Group can easily supply products to any location.

Prysmian's *XSNET* is a new concept in the design and implementation of Fibre To The Home networks. With the integrated range of *XSNET* solutions, it's easier than ever to build a business case and to plan, cost and deploy a next-generation network quickly. *XSNET* makes projects simple, transparent and manageable – and deliverable at the lowest possible cost. Straightforward and transparent, *XSNET* adds value for network operators in many different ways.



Meet today's growing demand with proven concepts from Prysmian Group

Complete solution

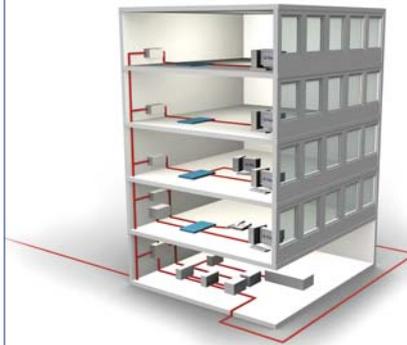
Fibre rollouts can be challenging: high up-front costs, difficult logistics, discussions on whether incumbents, businesses, governments or local authorities should invest.

In cities, population is dense and most buildings are Multi Dwelling Units (MDUs). The challenge is to distribute fibres from the basement or street level up to each individual apartment, whilst causing minimal disruption. In rural regions, on the other hand, properties are far apart and there's often little or no existing infrastructure to work from.

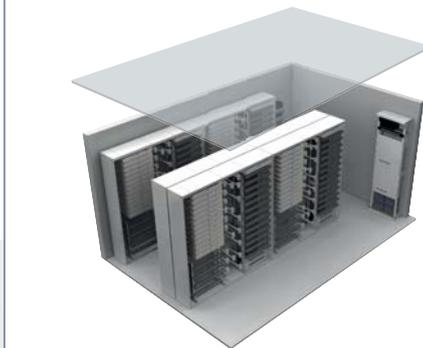
However, all successful FTTx projects have one thing in common: a clear focus on Total Cost of Ownership.

For the best results, network design should be approached from the top down and built from the bottom up. Prysmian helps select the most appropriate technology and create a solid business case, and provides tools to design, build, test and maintain the network, right down to creating an accurate Bill of Materials (BoM). Years of practical experience in projects of all sizes, best-in-class fibre cables and a full portfolio of peripherals allow us to get future-proof networks up and running in no time, even when there are sudden changes in plan or customer requirements.

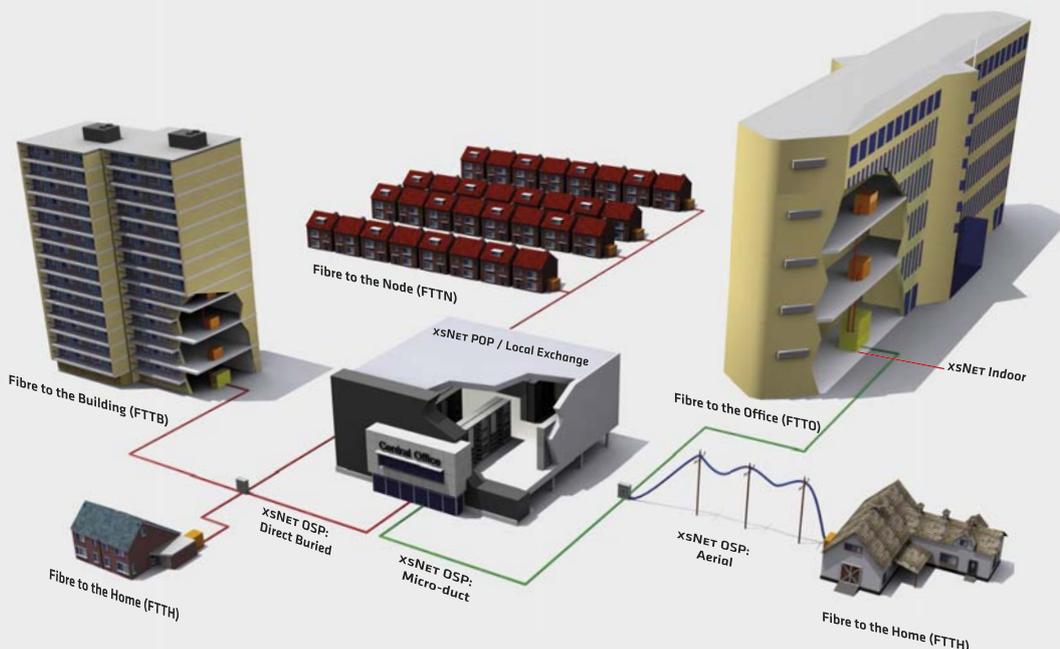
XSNET INDOOR SOLUTIONS for your indoor networks



XSNET POP SOLUTIONS for your Point-of-Presence



XSNET OSP SOLUTIONS for your outside plant or access network





INDOOR SOLUTIONS

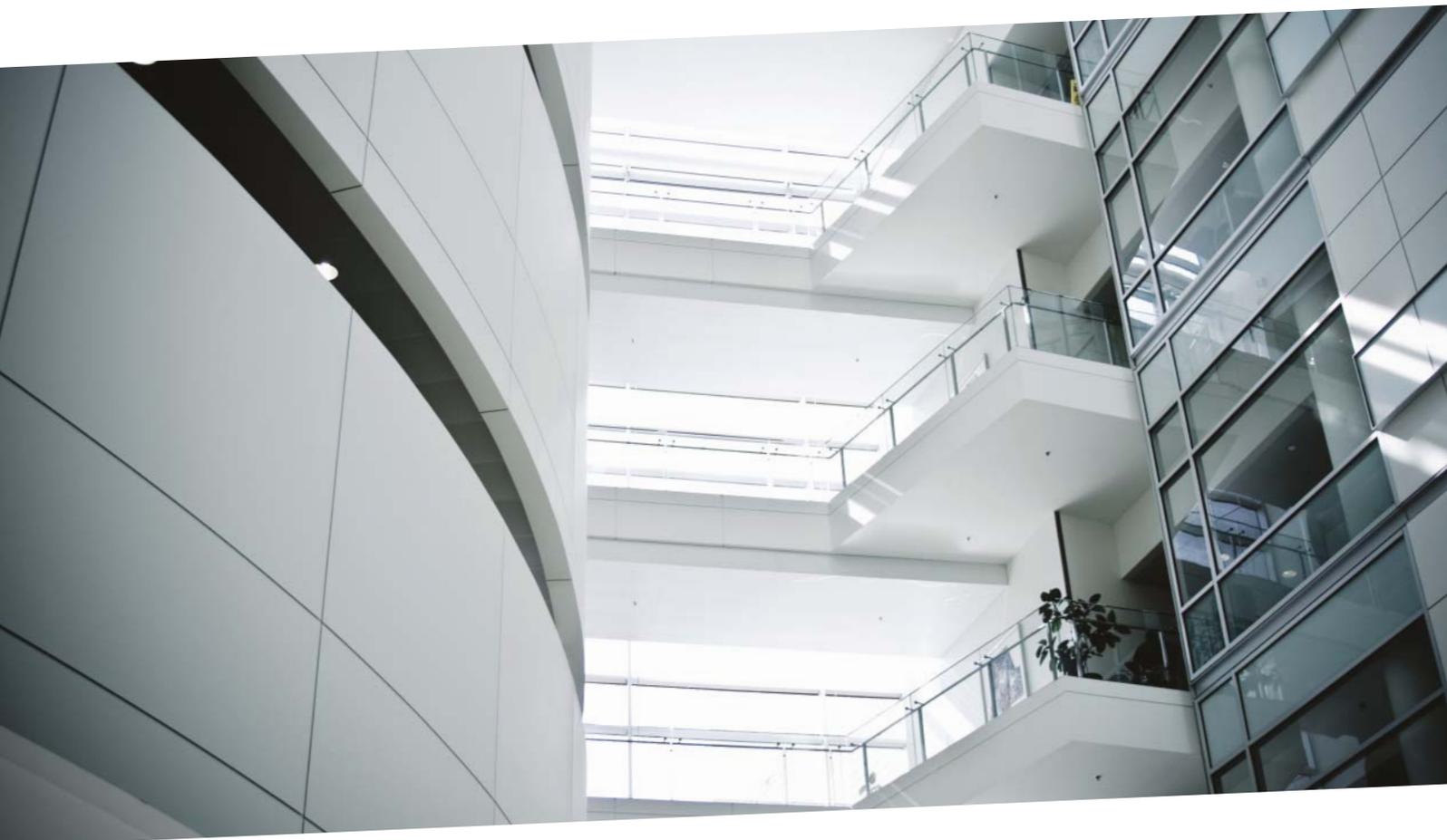
Delivering next-generation fibre throughout every building

Prysmian Group's *XSNET INDOOR SOLUTIONS*: make seamless connections

With its suite of specialist *XSNET INDOOR SOLUTIONS*, the Prysmian Group is bringing seamless next-generation fibre optic network performance directly into the homes and offices of end users, while keeping investment and operational costs low.

Designed and engineered for all types of buildings, our *XSNET* range provides straightforward, transparent FTTx choices that are complementary to all structure types. With an innovative range of products and techniques employed, we can help you to identify your best options, irrespective of the number of units or floors.

We can provide a solution for every situation; meeting varying project needs with flexibility and ease, showing how best to optimise your budget without sacrificing efficiency; and reducing Total Cost of Ownership.



SIROCCO^{XS}

SIROCCO^{XS}: Flexible, future-proof blown fibre solutions

A blown fibre system that provides a flexible and high speed broadband network within and between buildings.



VERTV^{XS}

VERTV^{XS}: The ultimate solution for TV Broadband cabling

VERTV^{XS} is an optical multi dwelling unit TV cabling solution. The plug and play system consists of patchcords of various lengths and floor boxes for splitting or tap off.



JETNET^{XS}

JETNET^{XS}: The fast track to fibre

Can be installed throughout Multi Dwelling Units (MDUs) or office blocks, reducing the time it takes to install a complex network.



VERTICASA^{XS}

VERTICASA^{XS}: Taking fibre to every floor

The VERTICASA^{XS} system is a complete solution for cabling medium and large-sized apartment buildings or MDUs with breakout units, customer termination boxes and multi-operator MDU distribution boxes.



OAsys

OAsys: Optical connectivity for next generation performance

Prysmian has developed a wide range of products, including wall boxes for fibre entry into a building, distribution boxes, and termination boxes for terminating and presenting shuttered adapters for the final patch cord link to the optical network unit.



BENDBRIGHT^{XS}

BENDBRIGHT^{XS}: Based on the latest fibre technology

BENDBRIGHT^{XS} fibre has the properties that matter in the access network: bend insensitivity, full backward compatibility with all fibre types and support for international standards. BENDBRIGHT^{XS} optical fibre with COLORLOCK^{XS} coating offers optical fibre's vast transmission capacity, with convenient, copper-like handling.



Multiple choices for low-rise, mid-rise and high-rise buildings

Four simple solutions for providing an optical fibre network in the indoor environment. *SIROCCO^{XS}*, *VERTV^{XS}*, *JETNET^{XS}* and *VERTICASA^{XS}*, each providing attractive benefits in terms of speed of network build, splice avoidance, network flexibility and cost effectiveness.

Prysmian *XSNET INDOOR SOLUTIONS* employ *BENDBRIGHT^{XS}* cables with *COLORLOCK^{XS}* coatings, and can be used for both short runs within a premise, long runs throughout a complex, and can even go up the outside of a building. All *XSNET INDOOR SOLUTIONS* cables are flame retardant. This includes the use of a low-smoke, zero-halogen sheath, and a cable construction that provides protection from flame propagation and smoke emission.

JETNET^{XS}: Flexible network design and implementation for a future-proof, scalable network

JETNET^{XS} is used to blow *BENDBRIGHT^{XS}* optical fibre cables into and throughout MDUs or office blocks, reducing the time it takes to install a complex network.

The ready-connect *JETNET^{XS}* indoor solution comes pre-fitted with the required LC ferrule. This connector core is installed during production in a process that includes centre-aligning the fibres and polishing the end-face.

Once the microducts have been installed, the pre-ferruled cable is blown in. Then simply snap on the connector housing to make the connection. The real benefits are:

- Excellent indoor blowing performance
- Pre-ferruled to reduce splicing, faster installation
- Less time spent in customer premises



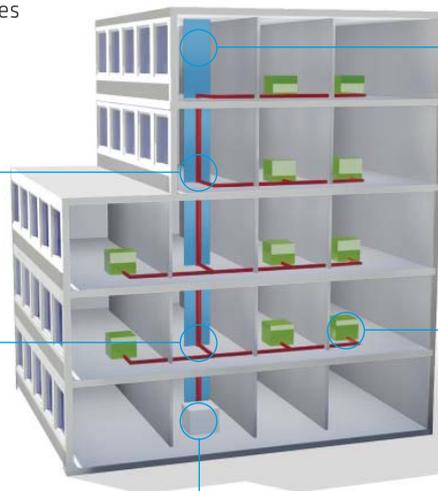
Just blow the pre-ferruled cable and then snap the connector housing to make the connection



JETNET^{XS}
Indoor Microducts



Y-Branch for
Microducts



Riser Shaft



Customer
Termination Box



Indoor
Distribution Box



VERTICASA^{XS}: Innovative, retractable riser cable solution

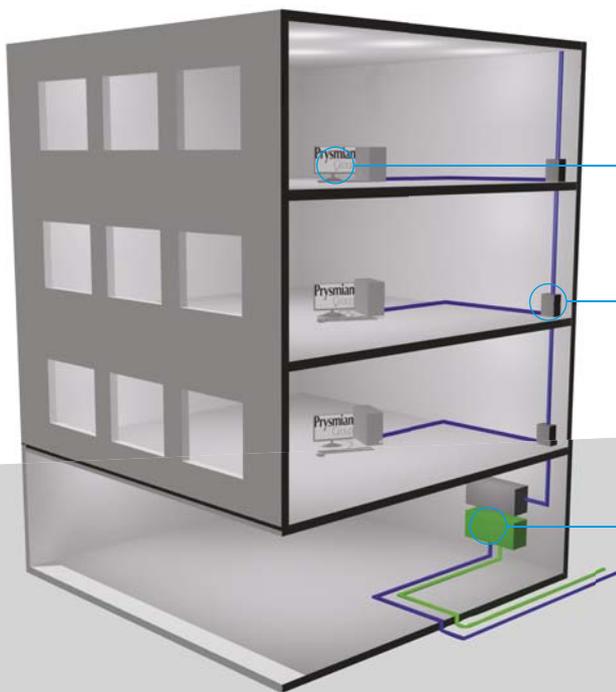
Ideal for mid-sized and high-rise buildings. VERTICASA^{XS} eliminates the need for splicing on each floor, saving time and cutting skilled labour costs. There are up to 48 retractable fibre units in one enhanced strain-resistant riser cable. Retractable fibre modules, with one or more easy-strip buffered fibres, are packaged into a single flame-retardant riser cable. These indoor riser cables contain individual breakout units for robust handling and easy field termination.

- Faster installation
- Reinforced with glass fibre or aramid yarns

This solution with flexible micromodules, containing from 2 -12 optical fibres, providing up to 144 fibre cables, is ideal for low-rise and high-density buildings.

With an embedded VERTICASA^{XS} system, the cable is hidden within the wall and accessed for routing and termination through mini-riser boxes and breakout units inside discrete wall boxes.

With an outdoor VERTICASA^{XS} cable, it forms a tough, tamper-proof and UV-resistant wall mountable solution for whenever it's impossible to enter a building at ground level or via a basement. Easy installation.



UCTB
(Ultra Compact Termination Box)



VERTICASA^{XS} 4 port Breakout Unit



MDU Demarcation Box

SIROCCO^{XS} Flexible, future-proof blown fibre solutions

A blown fibre system that provides a flexible high-speed broadband network within and between buildings.

An ideal solution for all areas SIROCCO^{XS} is a well established system meeting the needs of operators for a flexible system that manages evolving network demands without the necessity for high initial capital expenditure or extensive network planning.

SIROCCO^{XS} allows optical fibre to be deployed on demand from one point in the network to another (internal or external) using compressed air to blow the optical fibre bundles into pre-installed tubes.

VERTV^{XS} The ultimate solution for TV Broadband cabling

VERTV^{XS} is an optical multi dwelling unit TV cabling solution. The plug and play system consists of patchcords of various lengths and floor boxes for splitting or tap off.

It has been designed to make installation simple as no fibre optical experience is required for installation, and no fusion or mechanical splicing is needed. Anyone familiar with copper cables, such as electrical engineers, can easily work with this solution.

XSNET **POP SOLUTIONS**

Integrated approach for fast, tailor-made Points-of-Presence

Prysmian Group's ultimate 'one-stop-POP-shop'

Create a Point-of-Presence or Local Exchange with Prysmian's comprehensive portfolio

A fully integrated range of connectivity equipment provides all you need to build or adapt low-maintenance FTTH networks quickly and cost-effectively. Prefabricated XSNET exchanges, manufactured to DIN specifications from pre-stressed, pre-armoured concrete, can be transported to the site for installation and simply swung into place. Ideal wherever network design calls for a building where none is present.

Prysmian OAsys connectivity products guarantee a high level of quality and consistency and simplify the installation of active modules and the patching of CATV, voice and data services. With minimal effort, any network design, regardless of complexity or size, can be put together from scratch, updated or reconfigured.

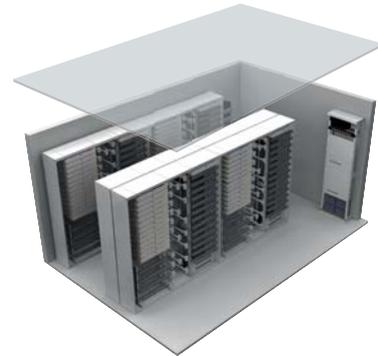
Features and Benefits

- One-stop-shop; all products within the POP are part of an integrated solution
- Plug-and-Play
- Pre-fabricated
- Civil works are integrated, inconvenience to the public is reduced
- Cut down installation time on-site
- Cable installation can start right after placing the POP
- Installation risks are reduced significantly



XSNET POP SOLUTION: a fast, fully integrated concept

Prysmian offers a wide range of standard racks suitable for POP applications in local exchange, central hub, data centre and office environments. These include traditional 19" / ETSI racks, together with a range of complementary rack mounted products, as well as more unique solutions that address specific needs and demands, from minimised space to maximised capacity. Our *OAsys* brochure provides all of the details of our full connectivity product range.



The *OAsys* RS3000 series

Our flagship portfolio minimises the required floor space. High quality patch adapters maintain the highest possible optical budget levels throughout the network. The RS3000 rack is supplied with side panels and transparent doors. A range of cable anchor brackets can be installed and mandrels are supplied to manage and store patchcords. The rack is supplied with 19" mounting rails, which can accommodate SRS3000 shelves and sub-racks or other 19" rack mounted products.

Shelves & Sub-Racks

The RS3000 series rack system offers a wide range of optional shelves and sub-racks that provide operators with considerable features and benefits. These can manage up to 2160 fibres in a 47U rack using SC or LC connectors.

The SRS3000 shelves are available as 1U Splice & Patch modules, Patch Only modules, Splice Only modules, Patchcord Storage and Connectorised Splitter modules or up to 3U in a variety of configurations as sub-racks.

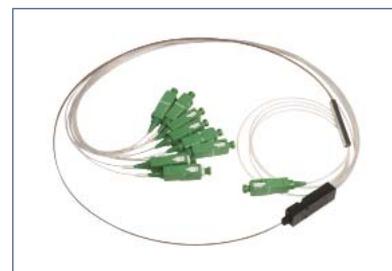
These will also fit other 19"/ETSI racks while Prysmian Group also supplies specific shelves for its full portfolio of rack solutions.

Patchcords & Pigtails

Patchcords are frequently disconnected and reconnected. Bend-insensitivity brings huge benefits in this area, reducing risks across the network. Prysmian's *BENDBRIGHT^{XS}* portfolio can be supplied with SC, LC, FC and E2000 connectors, meeting international IEC-60874 standards. Prysmian also supplies all types of cross connection fibres, patchcords & pigtails. These may be based on bend insensitive *BENDBRIGHT^{XS}* singlemode fibres, meeting ITU-T G657.A2/B2 requirements, singlemode fibres, or multimode fibres including bend-insensitive OM3/4-*BENDBRIGHT^{XS}* fibres.

Optical Splitter, key for GPoN FTTx networks

Depending on topology, an FTTx Passive Optical Network may contain one splitter or several cascaded splitters. These can be placed in the Point-of-Presence or at one of the outdoor or indoor distribution points. Prysmian provides a selection of cost-effective, high-quality splitter devices for Point-to-Multipoint (P2MP) networks. Standard FBT splitters or high-performance PLC splitter modules come in an ultra-compact package. The PLC splitter modules are offered with 1xN up to 64 channel, 2xN up to 32 channel and 6x1x2 or 6x2x2 channel configurations. PLC splitters are equipped with either G652D or *BENDBRIGHT^{XS}* fibre (G657.A2/B2).





Pysmian's Rack Systems

Optical fibre racks

- RS3000 Rack
 - Modular Main Rack
 - 19"/ETSI Rack
 - OCR (Optical Consolidation Rack)
 - Generic Rack 3A
 - Mini Rack
- Rack mounted products (splice & patch shelves)
- Patchcords & pigtails
- Splitter portfolio
- Fibre management systems



XSNET *OSP SOLUTIONS*

Future-proofed solutions from exchange to doorstep

Prysmian Group's *XSNET OSP SOLUTIONS*: total flexibility with no compromises on quality!

Prysmian's *XSNET OSP SOLUTIONS* cover the entire path from local exchange to the doorstep. With our software tools and services, and decades of experience in deploying cost-effective networks around the globe, we're committed to giving you expert advice on maximising performance and minimising cost.

Our rigorous approach guarantees every cable and connector installs and performs as specified, and our pairing of superior connectivity products with top-of-the-line cables means you can reduce labour and overall cost of ownership – without ever sacrificing efficiency.



XSNET OSP SOLUTIONS: cut the cost of your outside plant network

By definition, the section of network addressed by *XSNET OSP SOLUTIONS*, from the local exchange to the doorstep, is likely to generate the highest costs but also the potential for the greatest savings by utilising the most suitable products and installation techniques.

Duct and microduct solutions

SIROCCO^{XS}: This blown fibre system covers the last mile of high-speed broadband networks from the local exchange to the end-user's home or business.

JETNET^{XS}: Loose microduct solution allows different sets of microducts to be blown into a protective duct.

EASENET^{XS}: Direct buried ducting system with bundles of thick-walled microducts, with no need for an outer protective duct, providing significant ease-of-use and cost benefits, mainly at the customer end of the access network.

QUICKDRAW^{XS}: A pre-connectorised cable system used to provide the final drop between an access ring and the customer premises.

Direct buried solutions

Prysmian Group's multiple state-of-the-art cabling technologies provide the best direct buried cable solution for every application.

RETRACTANET^{XS}: Direct buried underground drop system based on **BENDBRIGHT^{XS}** technology significantly reduces the cost of deploying an OSP network, wherever digging is the only option.

Sewer and Right of Way solutions

Cables are specially designed to withstand the extreme environment of a sewer system, a popular new Right of Way (RoW) into the customer premises.

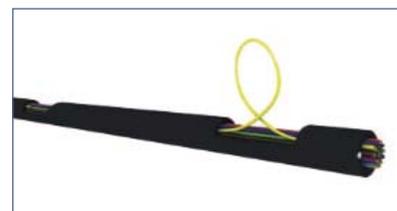
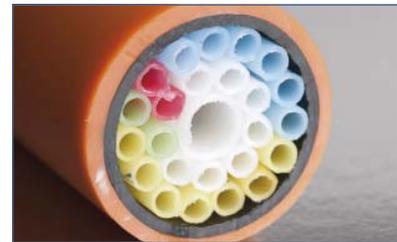
OAsys OSP

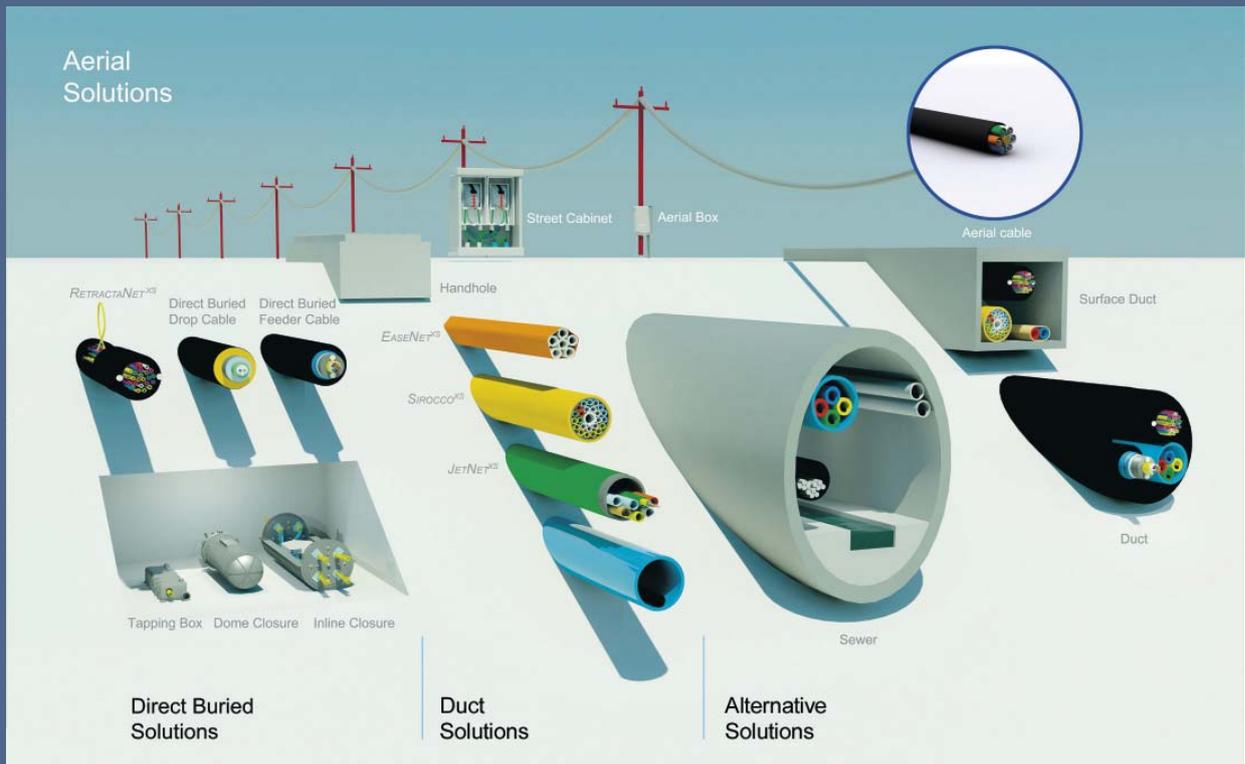
Prysmian *OAsys* OSP connectivity products range from street and in-field cabinets, direct buried joint closures (loop, in-line or dome types) to aerial closures. There's an extensive splitter portfolio for GPoN, GEPoN, or any other Point-to-Multipoint (P2MP) network.

FlexTube: New buffering technology offers designs similar to standard loose tube cables, but much smaller and more flexible. This offers additional benefits during installation, such as finger access to the fibres.

Aerial solutions

ADSS and Figure-8: All standard cable designs are available in the Prysmian Group – metallic designs (Figure-8) and dielectric designs like ADSS.





OSP cable solutions

Aerial Solutions

- Figure-8
- ADSS
- Lashed
- OPGW

Direct Buried Cable Solutions

- RETRACTANET^{XS}
- Steel Wire Armoured
- Steel Tape Armoured

Duct Solutions

- EASENET^{XS}
- JETNET^{XS}
- SIROCCO^{XS}
- QUICKDRAW^{XS}

Alternative Right of Way

- Sewers
- Gas / Water Pipes
- Subways / Tunnels
- Micro-trenching



XSNET OSP SOLUTIONS: making optical fibre access and breakout easy

Our XSNET OSP SOLUTIONS provide straightforward, transparent technology for every kind of climate, topography, infrastructure, and municipal regulation. Whether your goal is 100% penetration or gradual deployment, we can help you optimise your OPEX and CAPEX – without sacrificing efficiency.

All modes of OSP deployment are supported, including ducts, microducts, direct buried cables, aerial, and alternative RoW. Prysmian offers a solution for every project. Our OASys brochure provides all of the details of our full connectivity product range.



Compact Joint

For connecting optical fibre cables together at cable element level.



ESDF4 In-line Joint

Underground joint suitable for direct burial and underground chamber applications. Total capacity of 72 fibres.



Compact Single Circuit Joint

For splicing up to 96 fibres (4 fibres per tray), available with 6 circular ports or 1 oval port and 4 circular ports.



Modular Joint (MJS)

Accommodates wide variety of cables such as (central) loose tube, ribbon and blown fibre for track, spur and loop access applications.



Fibre Distribution Hub – FDH

For use within FTTH PONs to manage distribution and customer drops. Will accept splitter shelves accommodating pre-connectorised splitter modules up to 1x64.



Tube Distribution Closure

A direct buried in-line sealed closure rated to IP68 for multiple spur-off from blown fibre or cable.





ENGINEERING SOLUTIONS

From winning business case to top-notch network

Thinking of building a network? Let Prysmian Group lend a hand.

Relying on over 30 years' experience in broadband network design, Prysmian's *XSNET* engineering and consultancy team can help you cut the cost of planning, designing, optimising, costing and implementing a superfast broadband network. Our engineering services combine extensive knowledge and advanced software tools to design, engineer and optimise your passive optical fibre networks.

Each Fibre To The Home (FTTH) project is unique, depending on geography, legacy network, national and local regulation and countless factors. These variables are largely interconnected: improving on one could mean compromising on another. Prysmian brings in-depth understanding of the key considerations, proven experience of real-world fibre installations and best practices in making smart technology choices and mixing cabling solutions.

Prysmian's design and planning tools remove the guesswork out of material requirements, eliminating the need to redo preliminary drawings and cost calculations when a project gets the go ahead.

Four stages before building an FTTH network

Typically, there are four stages involved in building your own network:

1. Someone takes the initiative, contacting the local authorities and forming a community group.
2. Define the geographical area, gather evidence of demand, form partnerships and explore technology options and legal structures.
3. Form a company and write a business plan, consult potential suppliers, define service templates and identify funding and investment.
4. Invite tenders to build the network, appoint suppliers and market the new service.



Full range of services

- **Network definition, general technical business case**
 - Topology choice (P2P or P2MP) or a mix of legacy/new build
 - Technology choice (PoN or Ethernet)
 - Number of homes (Multi Dwelling Units (MDUs), single dwelling, etc.)
 - Alternative Rights of Way (RoW)
 - FTTH in MDUs (e.g. flats)
- **Financial scenario planning based on detailed**
 - Bill of Quantities (BoQ)
 - Bill of Materials (BoM)
 - Bill of Labour (BoL)
- **Detailed network engineering, including as-built documentation (BoQ, BoM, BoL) and:**
 - Splicing schemes
 - Duct-labelling plans
 - Connection lists for distribution points
 - Drawings for implementing and/or permitting
 - Drawings for household connections

How may we help you?

For the best results, network design should be approached from the top down and built from the bottom up. Prysmian helps select the most appropriate technology and create a solid business case.

Advise on the technology options

Prysmian can help define the technical requirements for any project, based on the topology of the area and number of end-users to be connected.

Recommend deployment options: Right of Way (RoW)

We also explore and compare available deployment options, such as cable blowing (jetting) in microducts, direct burial or aerial deployment and create a detailed proposal.

Create a detailed network design

By automating, sequencing and simplifying components and processes, XSNET design and planning software helps analyse and visualise scenarios easily and quickly – information needed to support financial business case scenario planning.

Using site survey findings, initial estimations of BoQ, BoL and BoM can be enhanced as part of a highly detailed design (issues such as the accessibility of existing ducts and poles will then be taken into account).



Optimise your network to cut costs

By using state-of-the-art network optimisation software we are able to cut the cost of an average FTTH network design by 20%, compared to stopping work at the detailed design stage. Network optimisation reduces material and labour requirements by identifying the most cost effective cable routing, the best spot to place a POP, network splitters (in case of P2MP), distribution points, or optimise cable sizes. For example, reducing the number of times a cable crosses a road.

Build a winning business case

Relying on Prysmian's XSNET ENGINEERING SOLUTIONS is the quick and easy way to build a solid business case for the topology and deployment options for your network and to be certain of investing in a robust, future-proof, cost efficient, high performance network.



On-line references

'FTTH Business Guide' issued by the Fibre to the Home Council Europe:

<http://www.ftthcouncil.eu/EN/home/form-business-guide>

'Beyond Broadband' report issued by INCA, the UK Independent Network Cooperation Association:

<http://www.inca.coop/projects/beyond-broadband>

One-stop-shopping with Prysmian's comprehensive integrated *xsNET* portfolio

From concept to design, development, building and maintenance of networks for crowded cities or rural regions, with Prysmian's integrated *xsNET* solution you have everything covered. Deploying a future-proof FTTx network is all about achieving the highest network reliability and customer satisfaction, whilst making the most of available resources and keeping costs low. Prysmian's fully integrated range of connectivity products provides all you need to build or adapt each segment of a low-maintenance FTTx network quickly and cost-effectively.

Our integrated *xsNET* range offers high grade optical fibre cables, carefully matched and easy-to-handle connectivity components and a choice of ducting solutions for indoor networks, outside plant networks and POP. And there's more: flexible design software and engineering advice based on three decades of broadband network design. With minimal effort, any network design, regardless of complexity or size, can be put together from scratch, updated or reconfigured.

Prysmian Group's fibre optic and connectivity products

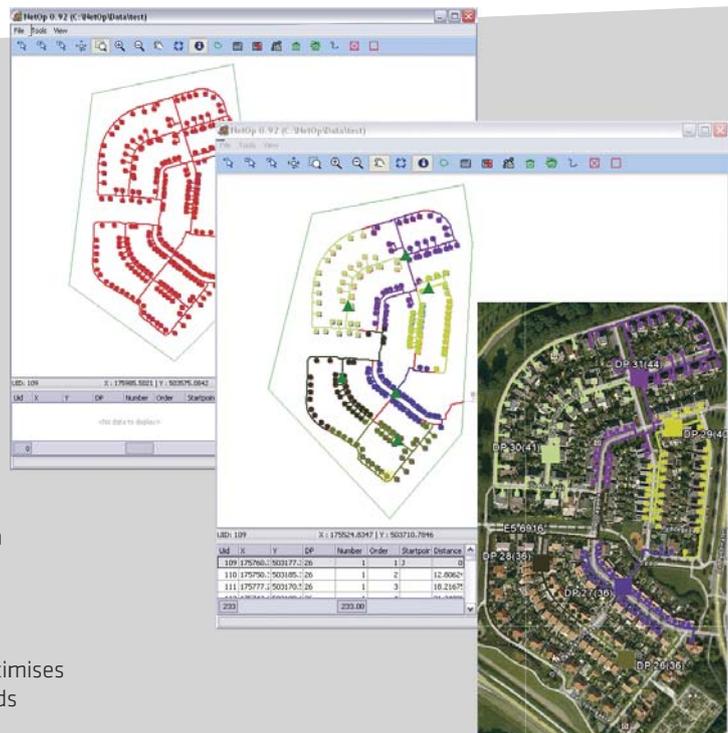
- Combined portfolio brings down the cost of FTTx
- Reach every community with an extensive portfolio of cable, connectivity and deployment technologies



Value Innovation for your Broadband Network

Integrated *xsNET* concept

- Each standardised *xsNET* solution integrates seamlessly with the rest of the portfolio
- Each *xsNET* solution contains everything required to build a specific part of the network
- Operators can make service choices now, but also accommodate future upgrades and expansion
- Reduces the need for skilled labour
- Excellent logistical support
- Proprietary design software maps, configures, optimises and calculates costs of network concepts in seconds
- Changes and variations are easy to implement whilst designing and even after installation
- Expert engineering and consultancy services, plus professional support for building a winning business case



Linking communications to communities

Prysmian Group, members of:



Prysmian Group
Viale Sarca 222
20126 Milan
Italy

Email: telecom@prysmiangroup.com
Tel: +39 02 6449 3500
www.prysmiangroup.com



Prysmian
Group

