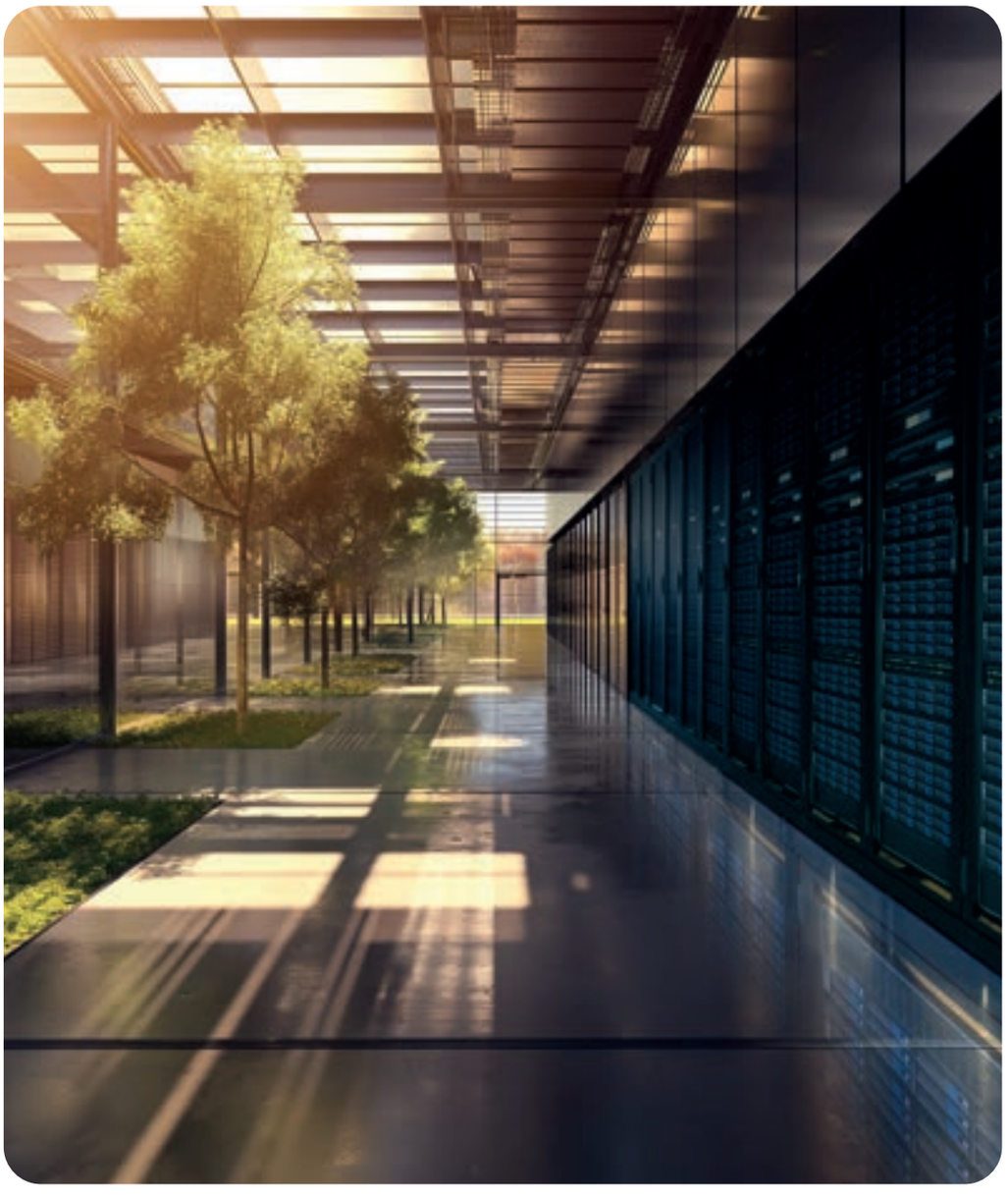
PRYSMIAN SUSTAINABLE DATA CENTRE SOLUTIONS

Everything you need from the world leader
in telecoms and energy innovation



prysmian

The planet's pathways

CONNECT TO LEAD

As the worldwide leader in energy and telecom cable solutions, Prysmian 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 multiple industries with best-in-class products and services, based on state-of-the-art technology.

The challenge and opportunity before us require us to harness the power of human ingenuity to drive new forms of energy and information, to each and every corner of the earth.

At Prysmian we want to lead the energy transition and digital transformation and we are evolving our brand to reflect this ambition.

Through our knowledge, innovation and reach, we connect people and businesses with the energy and information they need.

Pushing the boundaries of electrification and digitalisation, our cables are powering the circular economy, focusing on what matters most, wherever you are.

We drive new energy and intelligence everywhere.

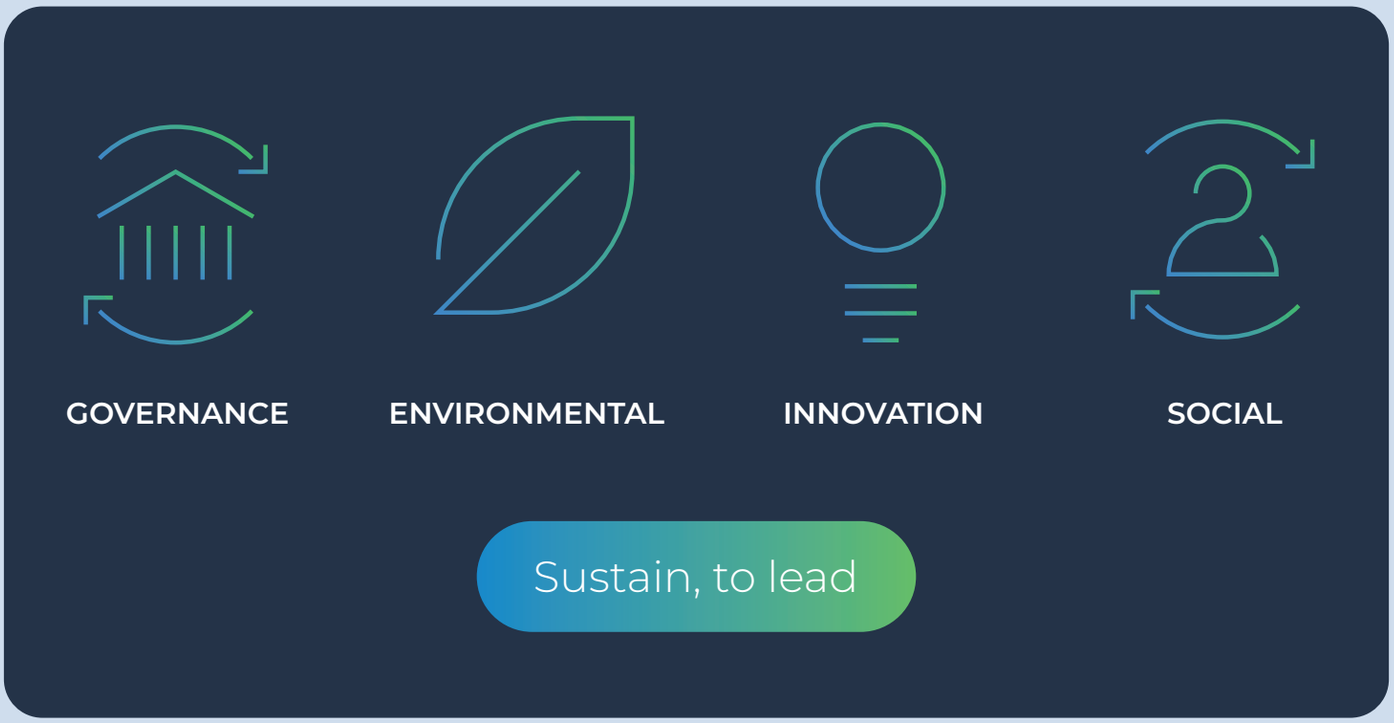
Together, we can lead the shift to a more sustainable way of living, that we and our planet so clearly need.

Together, we can navigate the way forward.

SUSTAINABILITY & LOCAL REGULATIONS

We are the world's largest producer of passive cabling systems, both in the energy and telecoms industries, connecting data centre infrastructures of the world. Prysmian's data centre solutions prioritise sustainability by integrating energy-efficient designs, renewable energy sources, and innovative technologies.

We minimise environmental impact while maximising performance and reliability for data centre operations. As we operate in 60+ countries, we have extensive knowledge on local regulations, cultures, and industry nuances. Prysmian ensures the efficiency of project deployment by providing in-depth knowledge and solutions to navigate complex regulatory landscapes.



AI-DRIVEN SUSTAINABLE FUTURES

Revolutionising data centres for tomorrow

The future applications of AI are poised to be diverse and transformative, impacting various sectors and aspects of our daily lives.

1. HEALTHCARE

AI will revolutionise healthcare by aiding diagnostics, personalised treatment plans, drug discovery, and predictive analytics for disease prevention. It will enable precision medicine through the analysis of individual patient data.

2. AUTONOMOUS VEHICLES

The future of transportation will see AI driving advancements in autonomous vehicles. AI algorithms will enhance safety, navigation, and decision-making in self-driving cars, leading to more efficient and safer transportation systems.

3. SMART CITIES

AI technologies will be pivotal in creating smarter and more sustainable cities. Applications range from optimising traffic flow and energy usage to managing waste, enhancing public safety, and improving overall urban planning and resource allocation.

4. EDUCATION

AI-powered personalised learning experiences will cater to individual student needs, offering adaptive curriculum recommendations and intelligent tutoring systems.

5. MANUFACTURING

AI-driven robots and automation will revolutionise manufacturing, enabling greater precision, efficiency, and flexibility in the production process.

RESHAPING THE DATA CENTRE

AI's demand for immense computational power has driven data centres to evolve rapidly. Traditional data centre designs are being reshaped to accommodate the specific requirements of AI-driven workloads. High-performance computing, crucial for AI tasks like deep learning and neural network training, necessitates specialized hardware such as Graphics Processing Units (GPUs) and Tensor Processing Units (TPUs) that are optimised for parallel processing.

Consequently, data centres are transitioning towards GPU-accelerated architectures and deploying dedicated hardware to support AI-driven applications, enabling faster and more efficient processing of complex datasets.

A SUSTAINABLE SHIFT

Data centres are placing an increased emphasis on sustainability and energy efficiency as key pillars of their design and operations. With growing environmental concerns and the rising energy demand of these facilities, the focus is shifting toward minimising the carbon footprint and optimising resource consumption.

To achieve sustainability, data centres are adopting innovative strategies such as employing renewable energy sources like solar or wind power, implementing advanced cooling technologies (liquid cooling), and optimising server efficiency.

YOUR DATA CENTRE CHALLENGES – SOLVED

We focus our efforts on developing state-of-the-art and sustainable solutions to alleviate ever-increasing bandwidth concerns.

DOWNTIME THREATS

Downtime is a major issue not only for data centre operators, but for business owners also. And, according to technical data centre managers, the main causes of this downtime are low-quality and unreliable cables, or lengthy cable installation times.

SCALING CHALLENGES

Scalability is vital to accommodate next-generation applications. However, data centre operators often struggle to provide sufficient infrastructure to facilitate more demanding IT requirements.

SPACE RESTRICTIONS

Operators must accommodate the increasingly high volumes of fibre running in and out of their data centres, but often they must work with restrictive legacy infrastructures such as fibre raceways, ducts and manholes, to name a few.

COMPLETE SOLUTIONS FROM PRYSMIAN

The need for speed and density

The modern data centre differs from a traditional data centre in terms of its infrastructure capabilities, primarily due to the drastic hardware transformations required to meet AI demands, the explosive growth in speeds and data computing, and the need for highly reliable and super low latency networks.

A TRANSITION TO HIGHER SPEEDS

AI workloads generate and process massive amounts of data. As a result, there is a shift towards implementing high radix switches capable of driving 800 G port speeds and beyond, which in turn are supporting the evolution of higher density optical transceivers, smaller connectors and smaller and denser cables.

AN INCREASED DEPLOYMENT OF FIBRE

Optical fibres will be the only enabler of this rapid shift in bandwidth and speeds to support AI/ML applications. As such, we'll witness a rise in the deployment of bend-insensitive single mode and multimode fibres.

AN EMPHASIS ON HIGH-DENSITY CONNECTIVITY

AI data centres are optimising space utilisation by employing high-density fibre optic solutions, such as multi-fibre termination push-on (MTP) / multi-fibre push-on (MPO) connectors, very small form factors (VSFFs), and high-density patch panels.

Keeping operations safe and secure

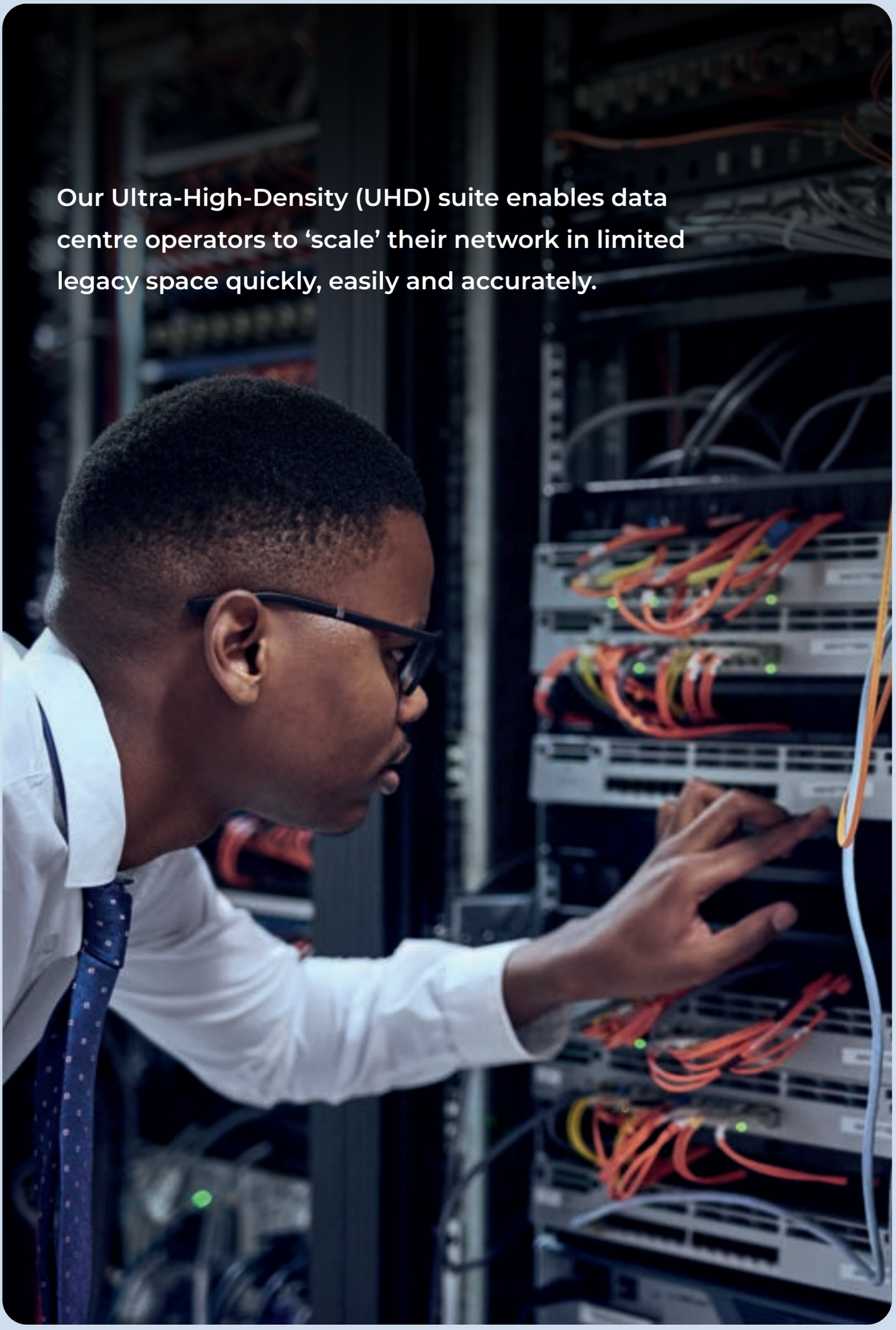
For data centres to maintain safe, reliable, and efficient operations, it is essential to adhere to cable standards and regulations. Compliance ensures that cables used within the data centre environment meet specified safety standards, performance requirements, and industry best practices, contributing to a secure and robust infrastructure.

FIRE SAFETY RATINGS

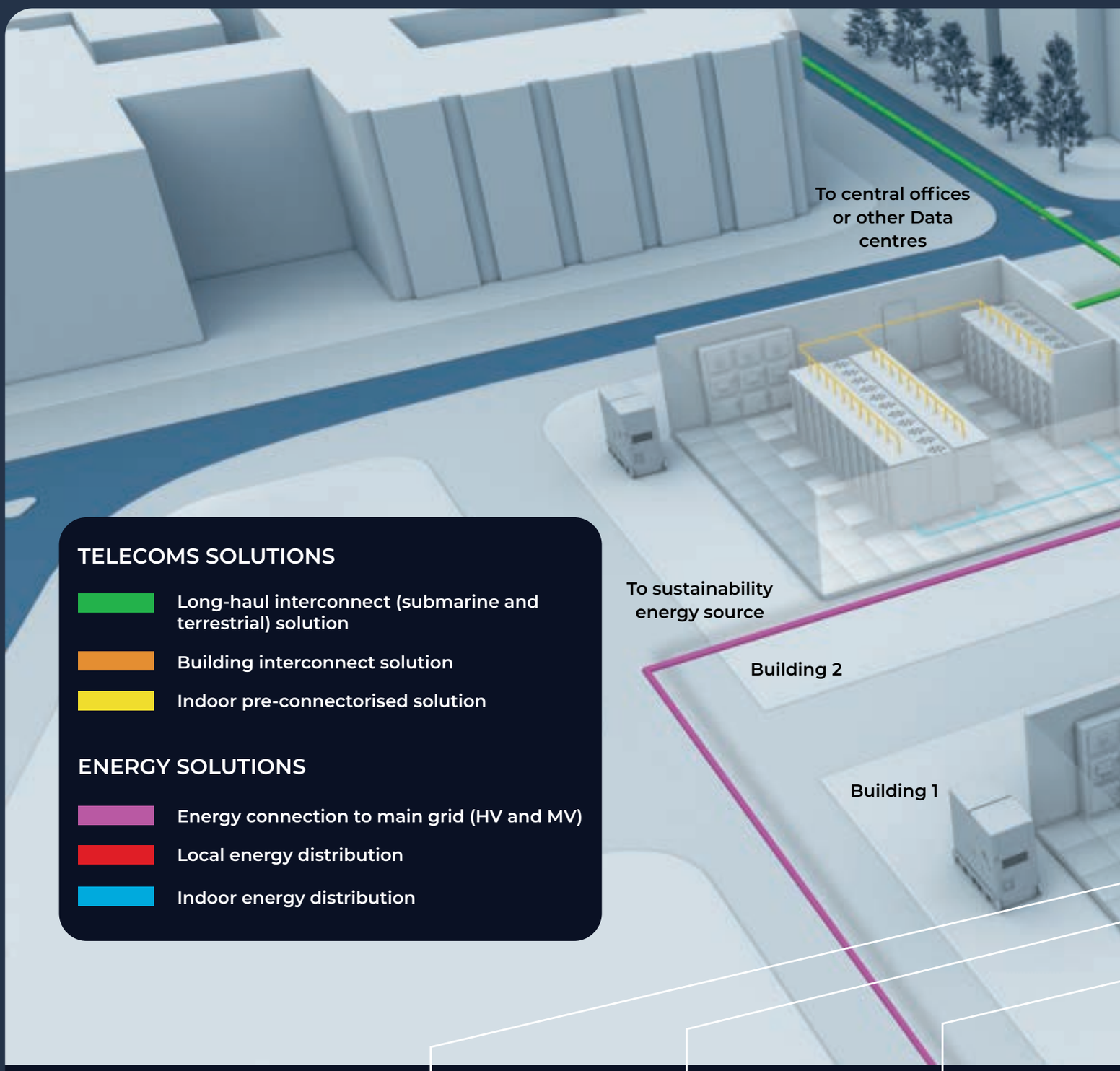
In data centres, where numerous cables are densely packed, CPR-rated cables play a crucial role in reducing the risk of fire spread and minimising potential hazards. Prysmian has unrivalled expertise when it comes to CPR and Plenum ratings, helping you ensure the fire safety performance of your cables.

INTERNATIONAL REQUIREMENTS

For operators, navigating cable regulations and CPR ratings requires knowledge of various cable classes, performance characteristics, and fire reaction properties indicated by different CPR classes. We help data centre operators across Europe navigate complex tasks, meeting the specific regulations of their region and demands of their required application.


Our Ultra-High-Density (UHD) suite enables data centre operators to ‘scale’ their network in limited legacy space quickly, easily and accurately.

Data centre campus



TELECOMS SOLUTIONS

- Long-haul interconnect (submarine and terrestrial) solution
- Building interconnect solution
- Indoor pre-connectorised solution

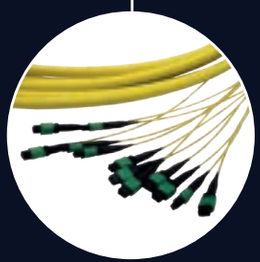
ENERGY SOLUTIONS

- Energy connection to main grid (HV and MV)
- Local energy distribution
- Indoor energy distribution

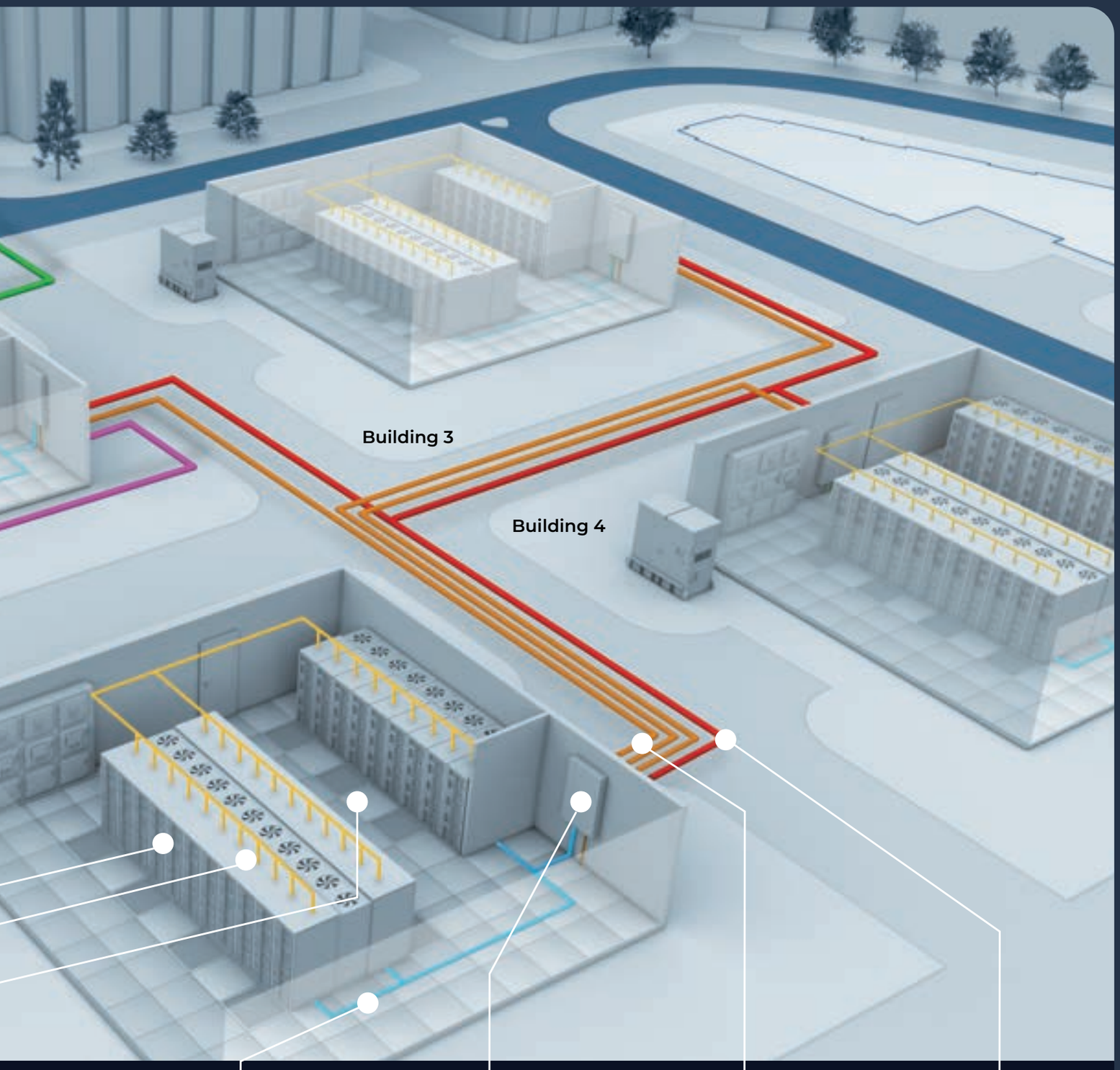
UHD connectivity

Prysmian's UHD distribution solution

Pre-Connectorised UC Connect



Trunking solutions



Prysmian
Energy LV

Cable monitoring
technology

FlexRibbon™

Prysmian Energy MV
+ Prysmian Electronics

INTERCONNECTING DATA CENTRES WITH ULTRA-HIGH-DENSITY (UHD) SOLUTIONS

UHD FlexRibbon™ fibre cable

OVERVIEW

Data centre operators need high density. So, they must bundle as much fibre as possible into the smallest possible cable, to fit into their existing duct infrastructure.

Originally developed for our hyperscale data centre customers, Prysmian's UHD cables – featuring FlexRibbon™ technology – are designed to maximise fibre density and duct space utilisation, and will support major large-scale data centres worldwide.

FlexRibbon™ is compatible with existing splicing technology (200-250 µm fibre splicing).

CURRENTLY AVAILABLE IN THE FOLLOWING FIBRE COUNTS

864

1,728

3,456

6,912

MassLink and FlexRibbon™ technology provide an ultra-compact outside-plant cable design.*

Legacy solutions

200 µm Fibre optic

200 µm

200 µm Fibre optic

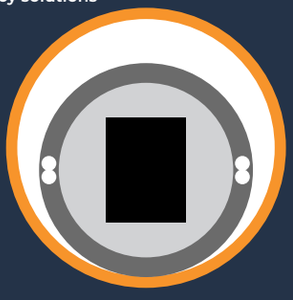
– Supporting bandwidth growth and efficient usage of space for AI applications

– BBXS 200 µm enables cable densification and miniaturisation.

Legacy solutions

FlexRibbon™

1.25-inch duct



864f

1728f

1728 250 µm Fibre

– A 21% smaller diameter (38% volume reduction) over traditional ribbon designs

– Contains 1,728 bend-insensitive fibres

– Small enough to fit into 31.75 mm/1.25-inch duct

– Ribbons can be rolled up and packed together in small diameter 288-fibre subunits.

Legacy solutions

FlexRibbon™

1.5-inch duct

1728f

3456f

3456 200 µm Fibre

– Contains 3,456 bend-insensitive fibres

– Small enough to fit into 38.1 mm/1.5-inch duct

– Ribbons can be rolled up and packed together in small diameter 216-fibre subunits

– Enables high packing density while delivering advantages of mass fusion splicing.

FlexRibbon™

2-inch duct

6912f

6912 200 µm Fibre

– Contains 6,912 bend-insensitive fibres

– Small enough to fit into 50.8 mm/2-inch duct

– Ribbons can be rolled up and packed together in small diameter 288-fibre subunits

– Enables high packing density while delivering advantages of mass fusion splicing.

*Ultra-compact indoor and indoor-outdoor versions are available, contact your sales representative for more information

HIGH DENSITY CONNECTIVITY

Overview

The need for bandwidth has pushed data centre operators to deploy hundreds and thousands of fibres. This makes managing cables very difficult. Installation takes time, and scaling up and down can be particularly challenging.

Prysmian's High-Density (HD) Fibre Panel has been developed in our high-tech connectivity R&D centre, specifically for high-density fibre installations in hyperscale and carrier-based fibre networks.

It's easily deployed in multiple applications: hyperscale cloud, multi-tenant data centres, central offices, edge data centres, CATV headend and enterprise.

Features

INSTALLATION TIME

– Tested with data centre installer partners and experts
– Can reduce operational error and installation time by almost 30%.*

ULTRA-HIGH-DENSITY

– Available in 1U, 2U, and 4U fibre footprints
– 144 to 576 in relative port counts, primarily using standard LC connectors
– Multi-fibre push on (MPO) and other speciality connectors are also available to raise the densities in line with the demands of specific fibre network operators in each market segment.

MODULAR AND FLEXIBLE

– The panel's cassette-based design enables flexibility and modularity
– Managed fibre count can be raised to up to 432 fibres per unit using high-density MPO connectors and trunks.

*Compared with typical HD panels

Pre-connectorised solutions

In modern data centres where bandwidth is hungrier than ever before, performance just isn't enough. Equally, data centre operators need to meet revenue and reliability benchmarks, while keeping an eye on the long-term migration path.

Prysmian offers a complete portfolio of uniquely designed pre-connectorised solutions for copper and fibre, ranging from small accessories like keystone jacks, through a selection of cable patch cords and trunk cables, to panel and management systems.

Our multimode and single-mode assemblies guarantee performance, are factory tested and come with a complete test protocol.

Features

MODULAR

Our pre-connectorised modular cabling system deploys quickly and easily to meet performance demand.

A WIDE RANGE OF CABLE SOLUTIONS

– A complete line of fibre cable assemblies: pigtails, simplex and duplex patch cords, MPO and complex cable assemblies, and more
– All are factory-connectorised for use in a variety of data centre applications.

Available in fibre types OM1, OM2, OM3, OM4, OS2 and connector types available include: SC-SC, SC-FC, SC-ST, FC-FC, FC-ST, ST-ST, LC-LC, LC-SC, LC-FC, and LC-ST.

Today's data centres are under increasing pressure to stay up to date with network speeds and connectivity density for their customers. To support speeds of 400 Gbps, 800 Gbps and beyond, adopting very small form factor (VSFF) connectors is key.

VSFF connectors are not new in the market, but their standard adoption for new, small duplex versions (SN and MDC) has enabled more widespread use in physical plants. New versions that manage 16 f in a very small footprint compared to legacy multi-fibre push-on (MPO) connectors are also becoming necessary to increase and manage density requirements and emerging network speeds.

Prysmian is looking ahead, with new developments in fibre panels. Using these VSFF connectors – SN and MDC for front interface, and high-density trunking for rear interface with 16 f ribbon trunks and 16f VSFF connectors – we're able to support changing density needs. To help minimise the number of immediate changes needed in physical plants, legacy MPO for rear interface is also available.

PRYSMIAN ENERGY CABLES

For the sustainable data centres of tomorrow

Data centre operators need a reliable supply of energy, so high quality energy cables are a must to ensure business reliability.

The Prysmian product portfolio includes:

HIGH AND MEDIUM-VOLTAGE CABLE SYSTEMS

Through both air and ground (including all conceivable network components) for connecting industrial buildings and/or residential construction to the main distribution network. And turnkey solutions for high-voltage systems.

LOW-VOLTAGE CABLE SYSTEMS

For power distribution and cabling to buildings. Prysmian's low and medium-voltage cables, building wires, low-fire-hazard cables, fire-resistant cables, instrumentation and control cables, and accessories play a pivotal role in managing and distributing power and signals throughout infrastructures like data centres.

Our products meet local standards and are available for each territory and region. And our local team will support you in any logistics and project management issues.

HV

HIGH-VOLTAGE ENERGY SYSTEMS

A full range with several insulation sheath types and conductor sections available, up to 380 kV for power distribution and connection to the main grid. Cables are provided with joints and terminations to complete the systems.

MV

MEDIUM-VOLTAGE CABLES

A full range, with several insulation sheath types available, up to 20 kV for power distribution in and around data centre buildings.

LV

LOW-VOLTAGE ENERGY CABLES

A full range of standard PVC cables up to 1 kV for lighting, heating, air conditioning, and more. Fully conforming to international and local standards.

LOW-VOLTAGE FIRE-RESISTANT CABLES

Up to 1 kV, these low fire-hazard cables decrease flammability, prevent fire propagation and heat release, and dramatically reduce the emission of smoke and hazardous, acidic and irritant gases to protect servers and switches.

LOW-VOLTAGE FLEXIBLE CABLES

A family of copper wire reticulated elastomer cables provide outstanding protection, flexibility and durability.

LOW-VOLTAGE FIRE-RESISTANT CABLES

Especially appropriate for the data centre environment, fire-resistant cables ensure the integrity and continued operation of vital circuits during firefighting.

ASSET MONITORING SYSTEM (PRY-CAM)

PRY-CAM

For data-driven power

The reliability of the power supply coming from power distribution grids and equipment is key for data centres, where a blackout or malfunctioning of the power supply may be highly disruptive and pose serious consequences. In the US, economy losses due to power outages are estimated to be $150 bn a year.

Average cost of 1 hour outage by industry

Industry	Amount (USD)
Cellular communications	50,000
Telephone ticket sales	72,000
Airline booking system	90,000
Semiconductor manufacturer	2,000,000
Credit card operation	2,580,000
Brokerage operation	6,480,000

PRY-CAM is a breakthrough technology that allows **online, accurate and reliable measurements of key parameters, and the diagnosis and localisation of defects – remotely,** to support our customers facing the growing complexity, reliability, safety and continuity challenges of power supply to their equipment.

The data that we can gather are manifold: conditions of use, malfunctioning, overheating. All in real time and with no specific expertise needed. In this way, PRY-CAM can help increase the uptime and safety of electrical systems, enhance asset longevity and significantly reduce maintenance costs and risks by harnessing the extraordinary possibilities of data gathering and the Internet of Things. It is faster, more data driven and more effective than ever before.

The PRY-CAM family features a range of cutting-edge products covering the key aspects of condition assessment and monitoring of electrical systems and equipment. It is suitable for any electrical equipment from 3 kV to 600 kV, including cables, joints, terminations, switchgear, transformers, electrical machines, etc.

PRY-CAM SYSTEM integrated combined monitoring solutions consist of one or more PRY-CAM products that enable the continuous monitoring – either permanent or temporary – of key parameters (partial discharge, temperature, humidity, etc.) remotely.

It is based on a fixed, reliable, experienced and highly advanced platform architecture. Each has the flexibility to adapt to customers' SCADA protocols and can be configured based on customers' specific requirements – from parameters to be monitored to fulfil specific maintenance and asset management strategies, to visual graphic interfaces.

Thanks to a private cloud-based system built around our technologies, today PRY-CAM relies on a database that hosts more than three million measurements that had never before been classified and stored, allowing effective maintenance strategies for electrical assets, and learning for continuous improvement.

Discover more at www.pry-cam.com

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www.prysmian.com

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