

## Application

The railway industry is continuously evolving in terms of new market requirements: increasingly demanding customer expectations, fierce competition and rapid technological changes are the main drivers of the entire Rolling Stock supply chain.

With the goal of maximizing passengers' comfort, operational efficiency, safety and speed, the train manufacturing industry is looking for new solutions in terms of both product and system development. The ever-growing challenge for train manufacturers is to meet all of the above-mentioned market needs.

Enhanced data and power transmission and advanced technology requirements, translate into an increased amount of cabling on the train. This has an impact on all types of rolling stock vehicles and carriages, especially on those for

tramlines, underground and mass transit lines but also on diesel and regional trains.

To meet these requirements Prysmian Group, as the world leader in the energy and telecom cables and systems industry, is called to promote and drive product development and innovation, by minimizing the size and weight of cables and reducing the wall thickness of its insulation and outer sheath, yet maintaining or even enhancing performances.

Prysmian Group offers a full range of products from Medium Voltage to Instrumentation cables, from High Temperature to Thin Wall designs. The materials used have been specially developed to improve electrical, mechanical and thermal properties, fire performance and life expectancy of its products, using advanced technologies such as electron beam irradiation and silane cross-linking.

## Linking global expertise to the wheels of industry

## Rolling Stock Cables

## 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.



## What links global expertise to the wheels of industry?

High-performing cable solutions to keep the wheels of industry turning.

On every continent, in applications that range from rolling stock and vehicles for high-speed trains and urban mass transit lines, to all types of rail transport infrastructure, Prysmian's specialist cable solutions sit at the heart of significant international projects; supporting the work of major customers, with high-performing, durable and safe technology.

As the world leader in cabling, we draw on global expertise and local presence to work in close proximity with our customers, delivering products and service platforms built on easy contact, bespoke solutions and effective supply chain, meeting their specialised requirements, to help them drive the wheels of industry and achieve sustainable growth and profitability.

**Prysmian Group**  
Viale Sarca 222, 20126 Milan, Italy  
Email: [marketing.energy@prysmiangroup.com](mailto:marketing.energy@prysmiangroup.com)  
<http://transportation.prysmiangroup.com>

## Benefits

### > Outstanding and Complete Product Range

All electric and diesel locomotives, carriages, electronic equipment and many other parts of a train can be properly equipped with Prysmian's Rolling Stock cables, including also jumper and composite cables.

Prysmian Group offers an exhaustive product range covering all functionalities (MV/LV, Instrumentation & Control, Video and Data Transmission) and with a proven extended working lifetime, commonly exceeding 30 years.

### > Advanced Technology and Performance

The most advanced and high performing family of technological compounds specially designed by Prysmian's laboratories for the most demanding applications allow:

- bending radius to be up to 3 times the cable outer diameter
- smallest dimensions possible and yet in strict compliance with the existing performance standards
- higher working temperature with scaled-down conductor cross-sections
- higher physical and mechanical resistance exceeding standard requirements (by up to 10 times) for properties such as abrasion, cut-through, notch propagation, repeated bending and vibrations
- easy installation: our technology and designs provide the cables with easy peeling properties and low friction between cables, reducing installation time
- compliance with EMC requirements for the railway environment.

### > Unique Safety in Fire Hazards

Prysmian Group has always focused on ensuring both human and material safety in any working condition. Prysmian's Rolling Stock cable solutions minimize fire hazards related to cables. Self-extinguishing properties, no toxic and corrosive gases released and reduced smoke emission prevent the cables from contributing to the spread of fire and related consequences to people safety and to equipment integrity.

Prysmian's Rolling Stock cables are suitable in the most critical conditions (e.g. tunnels, deep metro lines, etc.) and are fully environmentally friendly (LSOH and recyclable).

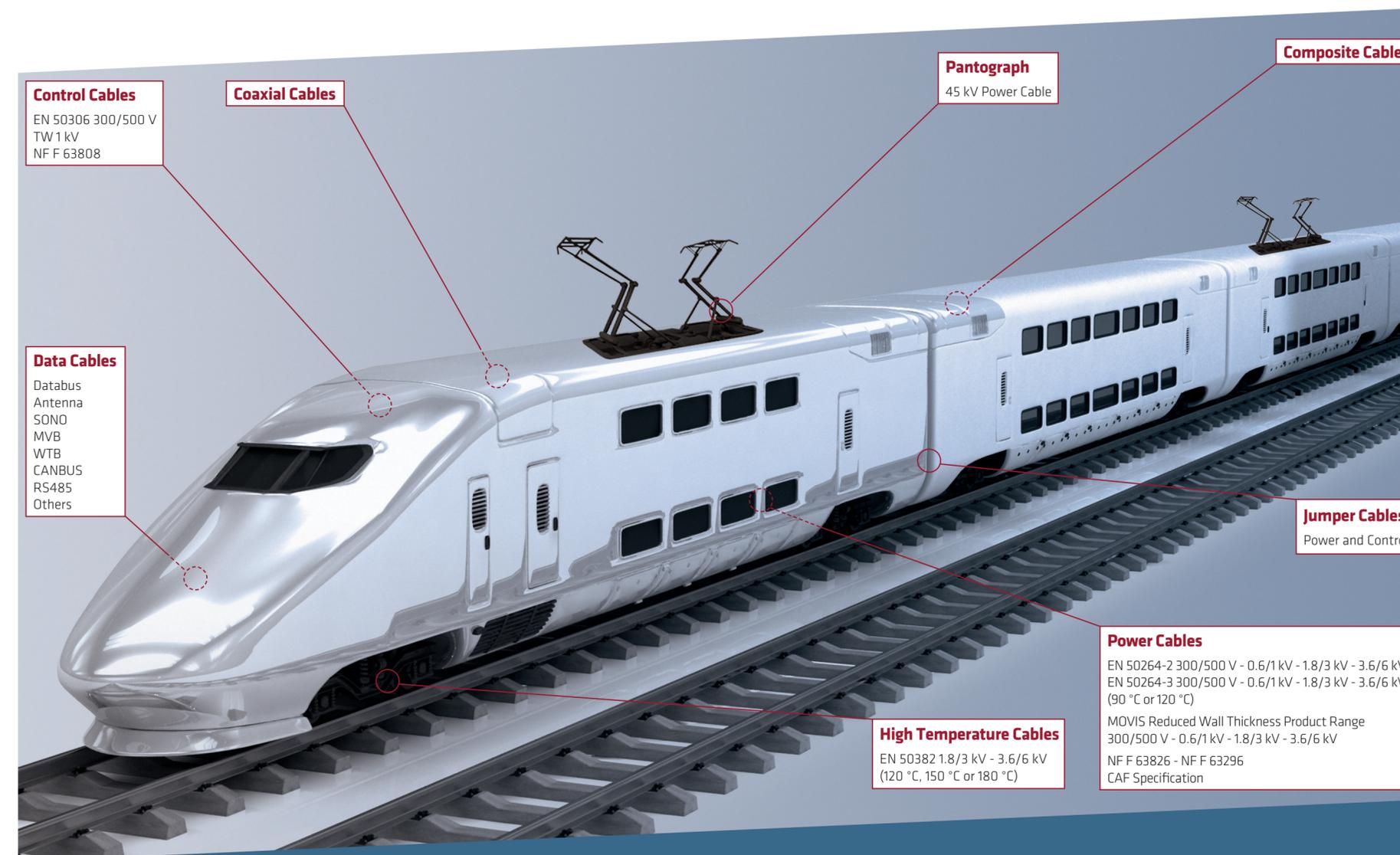
### > Tailor-Made Solutions

Cables in trains must be resistant to a wide range of conditions, e.g. resistant to high speed objects and particles, cleaning fluids, fuel, oils, hydraulic circuit fluids, greases, etc., as well as harsh environmental conditions (extreme low/hot temperatures, salts, mud, UV irradiation, etc.).

Any other special customer issue can be addressed by Prysmian's technical specialists and technicians thanks to extended technological capabilities to manufacture a broad range of specifically developed compounds and cable designs e.g. formulation, compounding and manufacturing cables according to customer needs.

Additionally, Prysmian can also provide harnessing solutions specifically tailored to customers' needs.

## Cable families at a glance



#### Control Cables

EN 50306 300/500 V  
TW 1 kV  
NF F 63808

#### Coaxial Cables

#### Data Cables

Databus  
Antenna  
SONO  
MVB  
WTB  
CANBUS  
RS485  
Others

#### Pantograph

45 kV Power Cable

#### Composite Cables

#### Jumper Cables

Power and Control

#### Power Cables

EN 50264-2 300/500 V - 0.6/1 kV - 1.8/3 kV - 3.6/6 kV  
EN 50264-3 300/500 V - 0.6/1 kV - 1.8/3 kV - 3.6/6 kV  
(90 °C or 120 °C)

MOVIS Reduced Wall Thickness Product Range  
300/500 V - 0.6/1 kV - 1.8/3 kV - 3.6/6 kV

NF F 63826 - NF F 63296  
CAF Specification

#### High Temperature Cables

EN 50382 1.8/3 kV - 3.6/6 kV  
(120 °C, 150 °C or 180 °C)

## An outstanding track record

Among our main projects:

TALGO:	High speed trains for Medina-Mecca
SIEMENS:	Desiro Austria
ALSTOM:	NTV/Italo high speed, Shanghai metro line 364, Citadis Tramways, Coradia regional trains, Régiolis regional trains, RGV 2N2 high speed trains
ANSALDO BREDA:	Taipei metro, Metro Expo Milano, Vivalto
BOMBARDIER:	NAT (Nouvelle Automotrice Transilien) - Paris suburban train, Régio2N regional trains
Groupement Alstom-Bombardier:	MI09 line A (RER)
CAF:	Metro Belo Horizonte, Metro Sao Paulo L5, Metro Roma, Tramway Birmingham, Tramway Cuiaba, Tramway Sidney
CSR Zhuzhou:	New trains for Ankara Project (Turkey) and Ningbo Line 2 (China)



### TECHNERGY Integrated Cabling Solutions™



Prysmian's TECHNERGY Integrated Cabling Solutions™ is one of the world's most comprehensive and technologically advanced answers to industry, infrastructure, contractors and OEM's specific requirements.

TECHNERGY Integrated Cabling Solutions™ are designed and structured into different product lines. Each one of these offer tailored designs and added value solutions to the most diverse functional and environmental requirements in various fields including trains and transportation infrastructures.