

RAILWAYS

TecniKabel
SPECIAL ELECTRICAL CABLES

SPECIAL CABLES FOR
RAILWAYS
SIGNALING ROLLING STOCK

Tecni Kabel

SPECIAL ELECTRICAL CABLES

TECNIKABEL is a leading company in the special electric cables sector. When it was founded in 1978, immediately established its business approach, giving priority to research and innovation. Where the future is designed, **TECNIKABEL** is out in front:

- ▶ Cooperating with leading companies in the various sectors
- ▶ Aligning with customer requirements
- ▶ Aiming at continuous improvement of quality and reliability targets

At its production plants, **TECNIKABEL** builds cables for a vast range of different applications, from automation to railways, from telecommunications to industrial electronics, from audio video to defense, from offshore to solar, from naval to electro-medical, giving priority to technical support right from the cable design phases.

- ▶ Attentive study of the applications
- ▶ Assessment of the most suitable materials for any type of environment
- ▶ Optimization of product costs

make it possible to propose and implement original solutions able to cater to customers' specific requirements.

Inside each **TECNIKABEL** cable, there is everything that makes the products reliable for any type of voltage required.

Top-class quality is assured by a modern production process in which each stage is fully controlled. The high level expertise of our staff and a company quality system recognized and certified according to **UNI EN ISO 9001:2000** since 1994, through auditing by national (**CISQ** and **IMQ**) and international (**IQNET**) authorities.



PRODUCT LINES



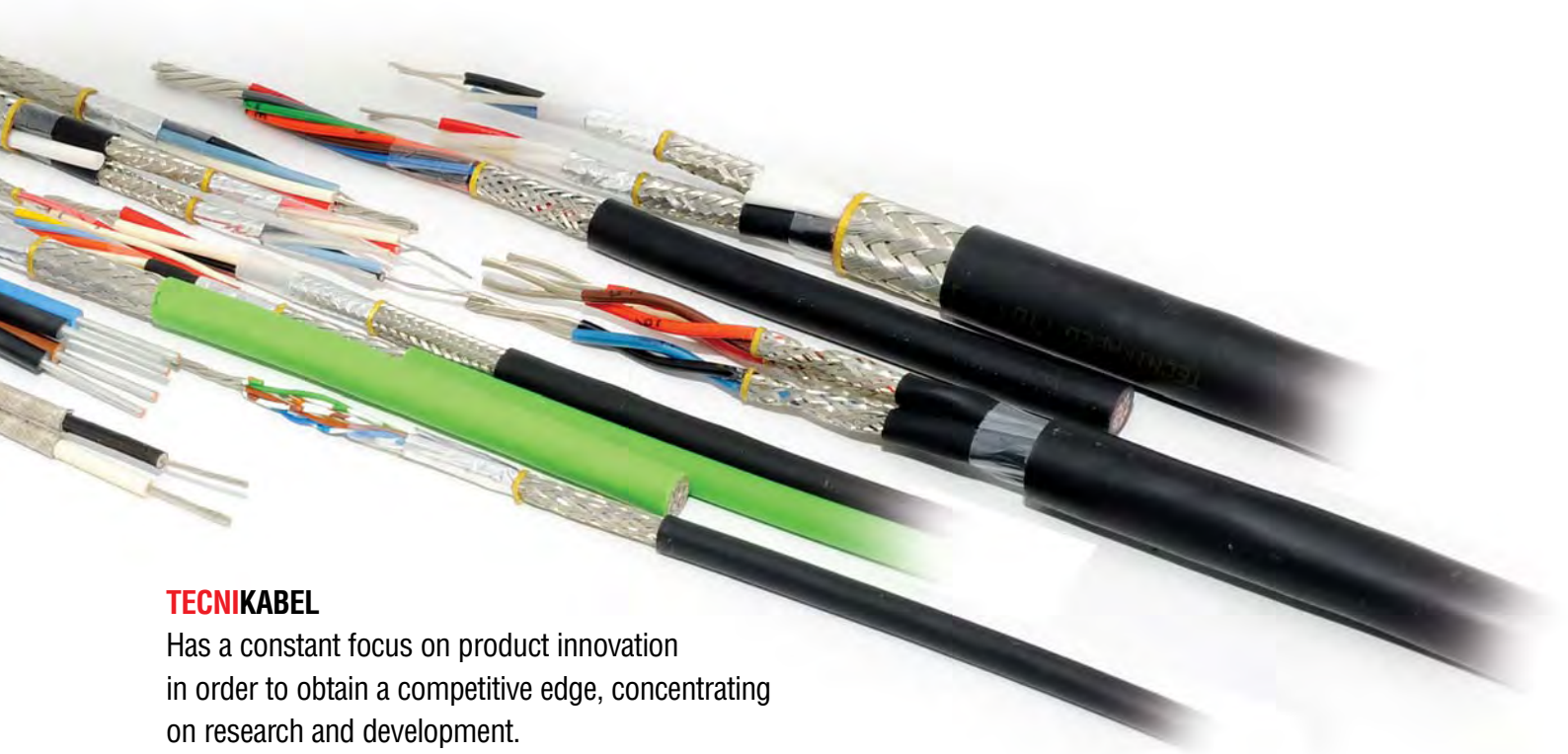
POWER

CONTROL

SIGNALING

TELECOMMUNICATIONS

SPECIAL CABLES FOR
RAILWAYS
 SIGNALING ROLLING STOCK



TECNIKABEL

Has a constant focus on product innovation in order to obtain a competitive edge, concentrating on research and development.

A TECHNICAL HEART BEATS AT OUR COMPANY

PRODUCTION

Constantly-updated production systems, accurate operating procedures and expert operators who promote efficient, flexible production. In 30 years of business, we have manufactured more than 22,000 different types of cables.

FINAL INSPECTIONS

At the end of the production processes, each cable is inspected to verify its electrical performances and complete compliance with the buyer's specifications.

LABORATORY TESTS

We carry out extremely stringent tests on our cables, simulating critical conditions of use. In addition to the classical tests required by current regulations, we have constructed special machinery for various types of mechanical and electrical tests.

RESEARCH AND DEVELOPMENT INTO MATERIALS

Our thirty years' experience has encouraged us towards a continuous search for new materials in order to optimize performance, costs and to achieve the standards required by our customers.

TECNIKABEL has always dedicated particular attention to quality and to customer service, starting from the initial phases of the sale.

Over the years, leading sector associations such as UL and CSA have recognized the quality and performance of our cables, issuing **more than 600 approvals**.

Also in the railway sector, our cables have received the most important approvals issued by companies such as: RFI, TRENITALIA, ANSALDO STS, ANSALDOBREDA ALSTOM, FIREMA, THALES, MERMEC, GE TRANSPORTATION PESA



RAILWAYS

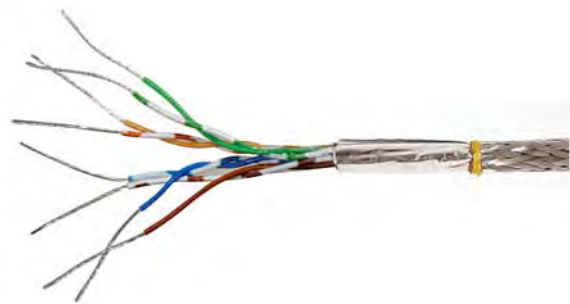
Tecni Kabel
SPECIAL ELECTRICAL CABLES

Railways networks are a strategic factor in Europe and all over the world in rebalancing the transportation, offering fast, safe travel for passengers and goods in full respect of the environment, of the territory and preservation of energy.

Ever more frequently, the concept of “**sustainable mobility**” is required to provide a solution to the increase in the density of the population who travel for reasons off work in urban and suburban areas. This environment comprises trolleybuses, trams, conventional subways and automatic underground transport systems.

Medium- and long-distance high speed trains is another **fast-developing** sector. Considerable worldwide expansion of passenger and goods transport is forecast in the next few years.

Reliability and safety are fundamental factors of the quality of any product and the railway cables sector is certainly no exception to this rule.



TECHIKABEL (TS) - ITALY

SPECIAL CABLES FOR
RAILWAYS
SIGNALING ROLLING STOCK

rolling STOCK

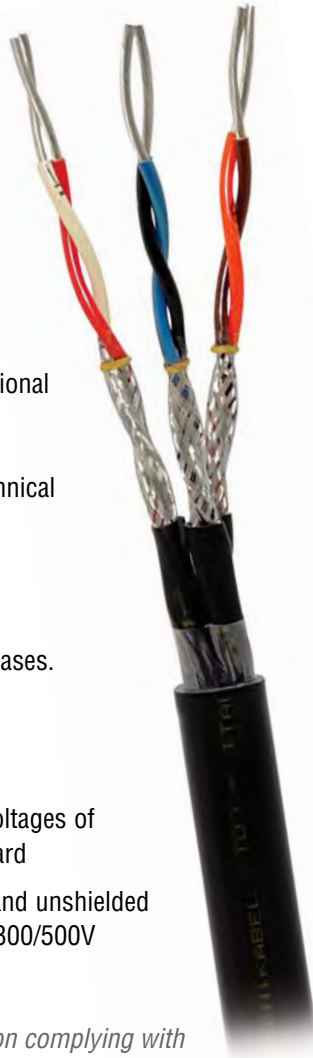
TECNIKABEL produces a vast range of cables for the “rolling stock” sector in compliance with national and international standards and regulations. The cables are available in a standard configuration and according to the technical specifications of the buyer. Particular attention is dedicated to the behavior of cables having special fire performance characteristics and low emission of toxic fumes and gases.

Miniaturized cables

- ▶ Single-core cable unsheathed for voltages of 300/500V to the **EN 50306-2** standard
- ▶ Multi-core and multi-pair shielded and unshielded cables, with sheath for voltages of 300/500V to the **EN 50306-4** standard

Available also fire resistant construction complying with EN 50200 standard.

The cables of this type are available for all levels of risk. They are used for wiring inside equipment or for fixed installations with regard to control and signaling system circuits.



Power and control cables

- ▶ Single-core cables unsheathed for voltages of 0.6/1 kV complying with **EN 50264-2-1**
- ▶ Single-core cables unsheathed for voltages of 1.8/3 kV complying with **EN 50264-2-1**
- ▶ Single-core cables sheathed for voltages of 1.8/3 kV complying with **EN 50264-2-1**
- ▶ Single-core cables sheathed for voltages of 3.6/6 kV complying with **EN 50264-2-1**
- ▶ Multi-core shielded and unshielded cables with sheath for voltages of 300/500 V and 0.6/1 kV complying with **EN 50264-2-2**

Reduced dimensions power and control cables

- ▶ Single-core cables unsheathed for voltages of 0.6/1 kV complying with **EN 50264-3-1**
- ▶ Single-core cables unsheathed for voltages of 1.8/3 kV complying with **EN 50264-3-1**
- ▶ Single-core cables sheathed for voltages of 1.8/3 kV complying with **EN 50264-3-1**
- ▶ Single-core cables sheathed for voltages of 3.6/6 kV complying with **EN 50264-3-1**
- ▶ Multi-core shielded and unshielded cables with sheath for voltages of 300/500 V and 0.6/1 kV complying with **EN 50264-3-2**

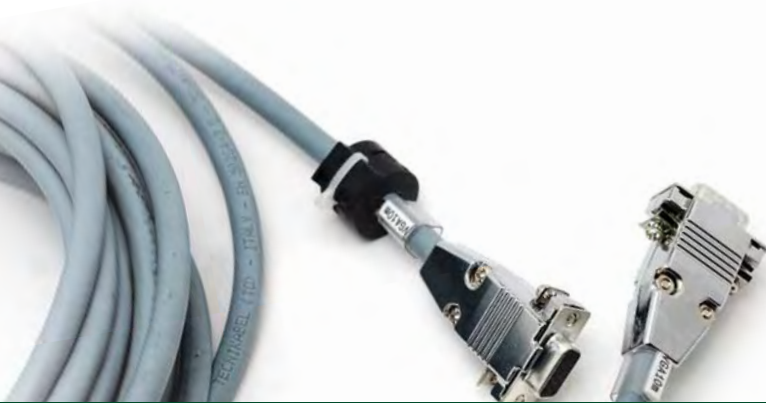
The cables of this type are available for all levels of risks and also in a fire-resistant version, complying with EN 50200 and EN 50362. The cables are suitable for use in emergency, lighting, communications circuits and in particular intervention devices.



Special signaling cables

- ▶ **MVB** cable for controlled impedance serial connection
- ▶ **MVB fire-resistant cable complying with EN 50200** for controlled impedance serial connection
- ▶ **WTB** cable for controlled impedance serial connection
- ▶ **WTB fire-resistant cable complying with EN 50200** for controlled impedance serial connection
- ▶ **RS 485** cable for serial connection
- ▶ **CAN BUS** for serial connection
- ▶ **LOUD** speaker 110 Ohm
- ▶ **Flexible** coax RG59-75 Ohm, coax RG213/U-50 Ohm, coax RG223/U-50 Ohm
- ▶ **ETHERNET** cables, **100 Ohm Category 5-E and Category 7**
- ▶ **Single core** WIRE-WRAP
- ▶ **Single and multi-core** high insulation twisted cables
- ▶ **VGA system** cables and video-surveillance kit
- ▶ Cables and kits for **complete connection of sleeping-car utilities**: Optical and acoustic fire-prevention, house phone, sound diffusion, video-surveillance and fire detectors.

As a high standard of safety is essential in the railway industry, the cables supplied must minimize risks for persons; **the European Standard EN 50264** regulates the construction of cables for this application.



- ▶ **EN 50264-2-1:**
"Railway applications - Railway rolling stock power and control cables having special fire performance - Cables with crosslinked elastomeric insulation - Single core cables"
- ▶ **EN 50264-2-2:**
"Railway applications - Railway rolling stock power and control cables having special fire performance - Cables with crosslinked elastomeric insulation - Multicore cables"
- ▶ **EN 50264-3-1:**
"Railway applications - Railway rolling stock power and control cables having special fire performance - Cables with crosslinked elastomeric insulation with reduced dimensions - Single core cables"
- ▶ **EN 50264-3-2:**
"Railway applications - Railway rolling stock power and control cables having special fire performance - Cables with crosslinked elastomeric insulation with reduced dimensions - Multicore cables"
- ▶ **EN 50306-2:**
"Railway applications - Railway rolling stock cables having special fire performance - thin wall - Single core cables"
- ▶ **EN 50306-4:**
"Railway applications - Railway rolling stock cables having special fire performance - thin wall - Multicore and multipair cables standard wall sheathed"



railway SIGNALING



- ▶ **Electric cables** for fixed laying in the internal circuits of modular technology signaling and safety systems
- ▶ Armored and unarmored **electric cables** for the external circuits of signaling and safety systems, fire-retardant and with reduced emission of fumes, toxic and corrosive gases - operating voltage 450/750V
- ▶ **Electric cables** for fixed laying for the automatic block powering, fire-retardant and with reduced emission of fumes, toxic and corrosive gases - operating voltage 2.3/3 kV
- ▶ **Electric cables** for fixed laying in the internal circuits of signaling and safety systems, fire-retardant and with reduced emission of fumes, toxic and corrosive gases



- ▶ **Electric cables** for fixed laying in the internal circuits of modular technology signaling and safety systems, fire-retardant and with reduced emission of fumes, toxic and corrosive gases
- ▶ **Electric cables** for fixed laying for lighting and motion, fire-retardant and with reduced emission of fumes, toxic and corrosive gases. Nominal voltage 0.6/1kV
- ▶ **Electric cables** for fixed laying for emergency and safety systems, fire-resistant and with reduced emission of fumes, toxic and corrosive gases. Nominal voltage 0.6/1 kV
- ▶ 4 x 7/10 pair **telecommunications cables** with corrugated steel armor bonded to the external sheath (H9)
- ▶ Imbalance detection **cable with polyethylene insulation** with two individual shielded pairs protected lengthwise with double-plated aluminium strip and bonded to the intermediate polyethylene sheath with coil of galvanized steel wires with **PVC** external sheath
- ▶ Imbalance detection **cable with polyethylene insulation** with two individual shielded pairs protected lengthwise with double-plated aluminum strip and bonded to the intermediate polyethylene sheath with coil of galvanized steel wires with **PVC** external sheath
- ▶ 16mm² dropper for overhead railway electric traction line hangers 3 kV d.c. and 25 kV a.c.
- ▶ SCMT cables for BOA-Encoder connection up to 1 km, 3 km and 5 km.
- ▶ Hybrid CDB/AF cables steel/copper alloy
- ▶ 380 V power cables for RED systems
- ▶ POC, PPD, PPS connections cables

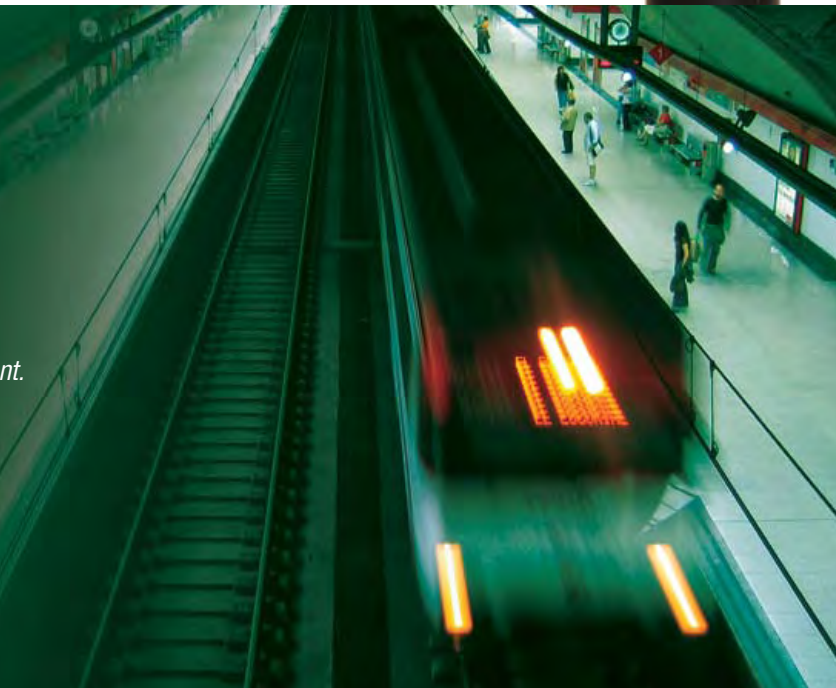


Some cables of this type are installed along the railway embankment (ballast) for the following systems:

- ▶ signaling,
- ▶ safety,
- ▶ powering of automatic block,
- ▶ powering of lighting and motive force
- ▶ telecommunications

or where emergency functioning of the equipment is required. Others are used for internal wiring and powering of the equipment.

TECHNIKABEL is specialized in the family of halogen-free, fire-retardant cables with reduced emission of toxic fumes and gases; these cables are usually installed in tunnels or places where there is a risk for persons and/or for the equipment installed.





AGENT/DEALER:

Tecni Kabel
SPECIAL ELECTRICAL CABLES

TECNIKABEL srl

TORINO: Via Brandizzo, 243 - 10088 Volpiano (TO) - Tel. +39 011 9951997 - Fax +39 011 9953062

ROMA: Via Casali delle Cornacchiole, 154 - 00178 Roma - Tel. +39 06 50992552 - Fax +39 06 50514022

email: webstaff@technikabel.it - www.technikabel.it

ENG