

CABLES FOR A MOVING WORLD



**TRATOS[®] RAILWAYS
& MASS TRANSIT**



www.tratos.eu

STANDARDS AND QUALITY SYSTEM

QUALITY SYSTEM

Tratos aim to work closely with customers to find better, more environmentally friendly solutions to their challenges. We are committed to our vision and strategy to serve all our internal and external customers by providing high quality services and products.

Tratos is an established industry leader in the design, manufacture and supply of cables and products and to maintain this leading position we are committed at every level to providing our customers with quality services and products at a competitive price. As a commercial enterprise we are aware of the importance of satisfying our customers and of the financial impact of which nonconformities may have on our profitability. For these reasons we are committed to complying with all customer requirements and specifications both legal and statutory requirements. Our Quality Management System has been audited and approved by two independent, internationally recognised and accepted authorities:

BASEC (UK) and AENOR-IQNET (E), in accordance to ISO 9001:2000 covering the production, purchasing of raw materials design and final test including various document types. The Tratos Quality Management system is under frequent regular surveillance by inspectors working for the Certification Authorities.



ENVIRONMENTAL SYSTEM

Our Environmental Management System has been audited and approved by two independent, internationally recognised and accepted authorities:

BASEC (UK) and AENOR-IQNET (E), in accordance to ISO 14001:2000 covering the production, purchasing of raw materials design and final test including various document types. The Tratos Quality Management system is under frequent, regular surveillance by inspectors working for the Certification Authorities.



CUSTOMERS AND MEMBERSHIPS

OUR CUSTOMERS

Alstom Transport
Ansaldo Breda
Bombardier Transportation
CAF Rail
Ferrovie Dello Stato Italiane
Istanbul Metro
London Docklands Light Railway (TfL)
London Underground (TfL)

Madrid Metro
Milan Metro
Moscow Metro
Renfe
Railway Vehicle Engineering Ltd
Rome Metro
Thales Rail Signalling Solutions

OUR MEMBERSHIPS IN THE RAILWAYS INDUSTRY



TRATOS® RAILWAYS & MASS TRANSIT

Tratos produces a varied cable range specifically for applications in the Railways and Mass Transit Markets:

- **Trackside power** cables including feeder cables
- **Trackside signalling** control and communication cables; including fire performance cables
- **Stations** and **premises** cabling including enhanced fire performance types
- **Railway rolling stock** cabling including pantograph cables
- Tratos are also a leading manufacturer of **flexible cables** for intermodal loading and unloading transfer cranes.

In the last 40 years Tratos has been key in helping to enhance and develop many of the existing **Fire Performance** standards required for cables within the Railways and Mass Transit applications, which in turn has developed new solutions for increased safety and performance.

Tratos has also produced a new generation of cables to improve **security** and to reduce the risk of **copper theft** on the railways.

Thanks to all these continued improvements Tratos is leader of the **Healthy** and **Safety** innovation in Railways and Mass transit applications.





Continued investment and development has ensured Tratos can create a wide spectrum of specialised railways cable solutions: from **Medium voltage & High voltage** cable for connection to substations and switchgear, **Data & Telecommunication** Cable (copper & fibre optic), **Signalling Power & Control** cables, **OLE** cable, **Track Feeder** cable, Station & Premises and **Pantograph & Rolling Stock** cable.

Tratos supplied **Frecciarossa**; the Italian Railways on the project "Alta Velocità", and the 'Rome-Naples' **high-speed train** was inaugurated on schedule thanks to the **fire resistant fibre optic** cable from Tratos. Years of significant investment in equipment, materials and human resources have led to the development of this cable; which has passed the testing requirements of Italferr and IMQ.

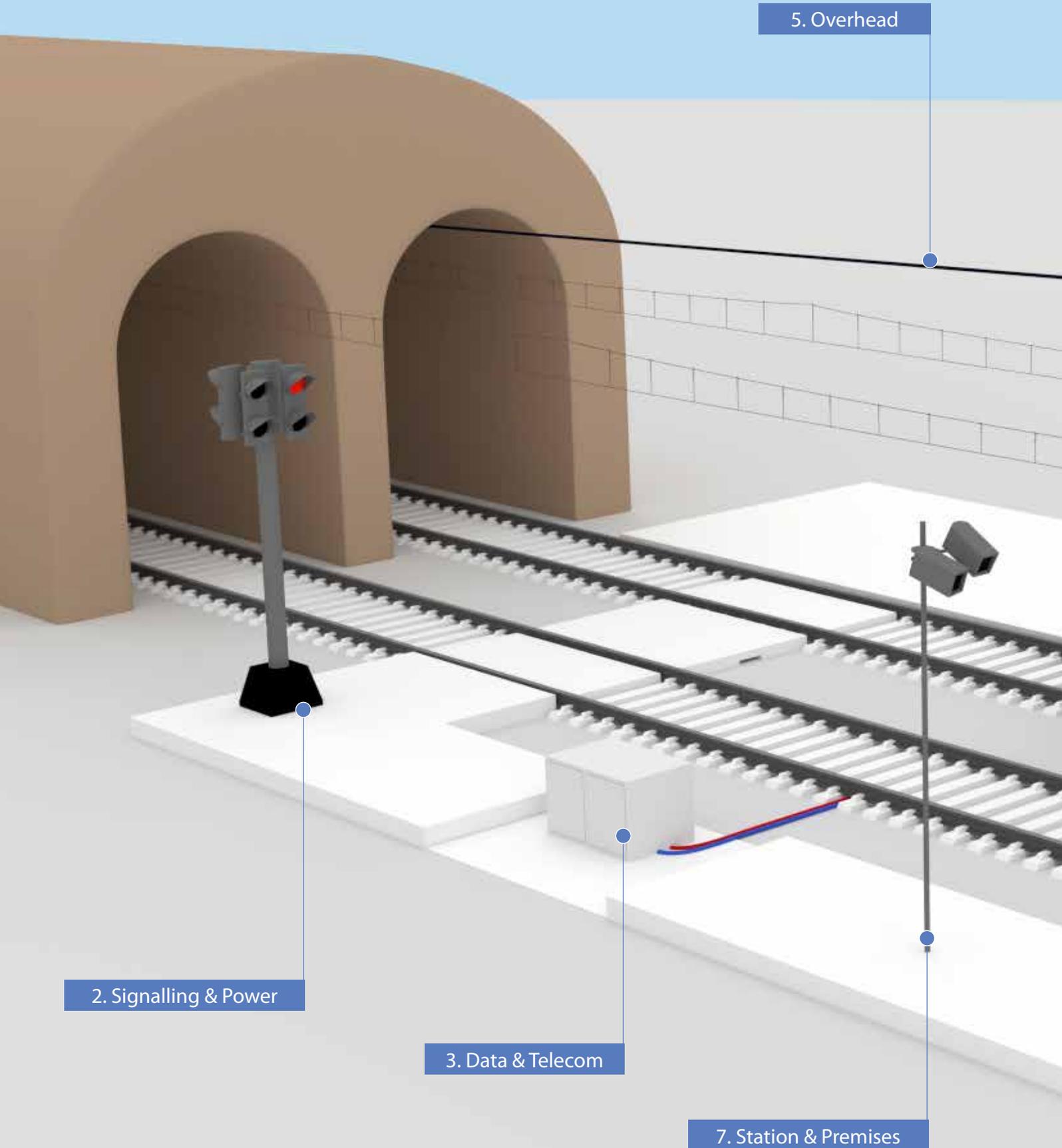
The dynamism and multi-functional capabilities of the fibre optic department, in collaboration with in-house special-compound manufacturer Tramet; have produced a **low smoke, zero halogen optical cable of exceptionally high performance**.

All manufactured Tratos cables correspond to industry specifications and quality standards with bespoke solutions to customer's specific application and approval requirements.

Within five manufacturing facilities in Italy and the UK and worldwide sales offices, Tratos is a leading manufacturer of a new generation of **Enhanced Fire Performance** cables for high-speed rail applications. In 1981 Tratos established in the UK with Tratos Ltd, and in recent years has been investing significantly in new and improved manufacturing and distribution at its facility in North-West England.

***Tratos manufactures
high performance firesafe cables
for high speed railways***

TRATOS RAILWAYS & MASS TRANSIT CABLES



5. Overhead

2. Signalling & Power

3. Data & Telecom

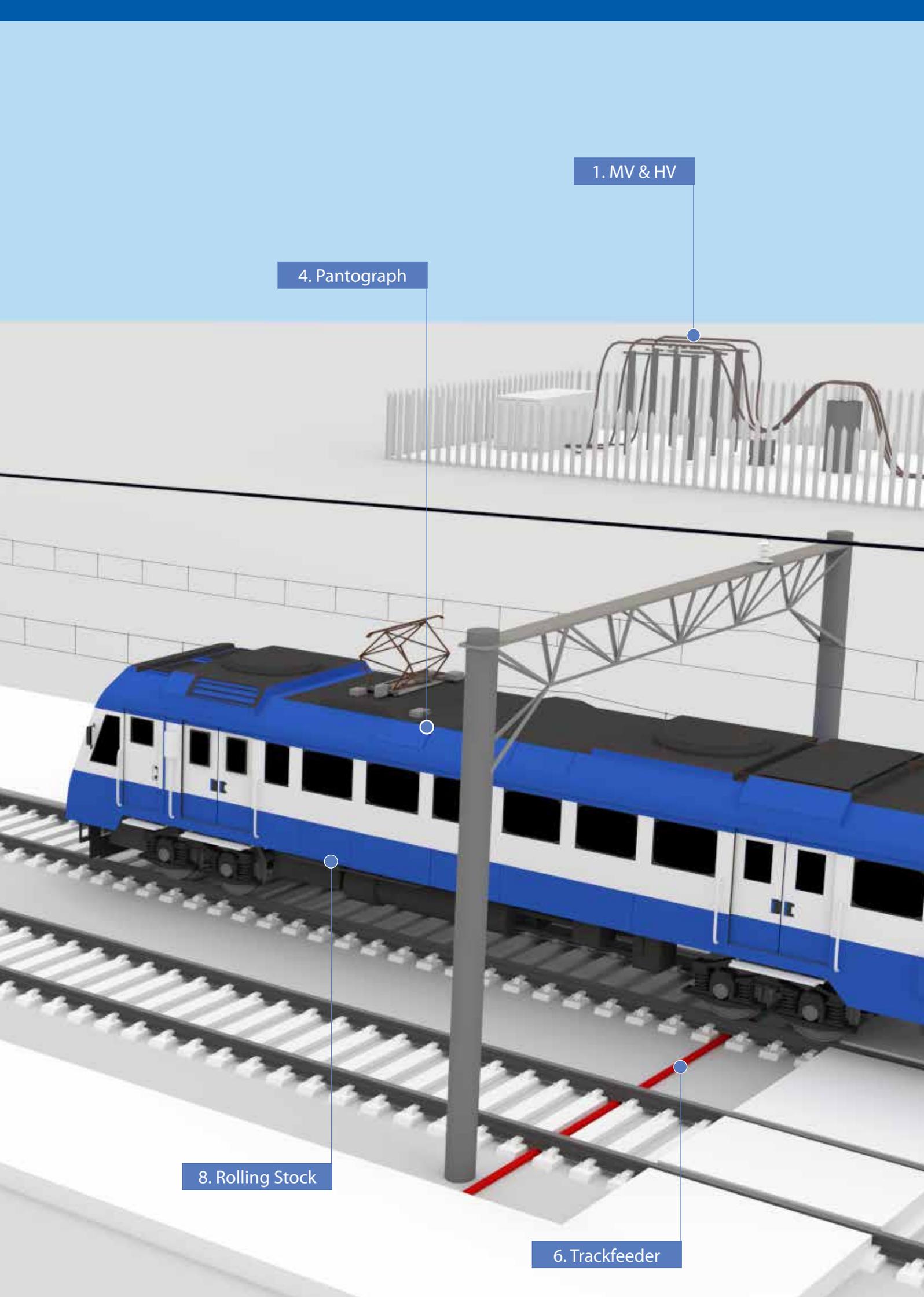
7. Station & Premises

1. MV & HV

4. Pantograph

8. Rolling Stock

6. Trackfeeder



1. MV AND HV CABLE

BENEFITS

Tratos specialise in the Design, Development and Production of MV and HV cables up to 245 kV they have a great many years of experience supplying cables with proven reliability to Power Utility Companies worldwide. Tratos MV and HV cables are distinguished by the use of advanced technology to manufacture cables with increased pliability, decreased weight and increased strength. Tratos MV and HV cables are approved by BASEC.

APPLICATIONS

Tratos MV and HV cables are used to connect railway substations to the Distribution Network Operator (DNO).

APPLICABLE STANDARDS

IEC 60502, IEC 60840, BS 6622, NR/PS/ELP/0008



2. SIGNALLING POWER & CONTROL CABLE

BENEFITS

Tratos are an Internationally recognised supplier of LV Power and Control cables for the European Rail Industry, as the manufacturer Tratos has the capability to both produce and control the conformity of the cable to the applicable standard.

APPLICATION

Tratos LV Power and Control cables form the vital link between the trackside power and signalling equipment to the signalling control centre of both high-speed Railway and Mass Transit systems. They are designed to guarantee the maximum level of reliability and security of data transmission. Typical applications include FGT Class II power cable, points heating cables, axle counter cables, data link cables in both Elastomeric (rubber) and Polymeric materials.

APPLICABLE STANDARDS

BR1932, NR/L2/SIG/30060, NR/PS/SIG/00005, NR/SP/ELP/40045, NR/L2/ELP/27408i, LU G7250, LU SE1093



3. DATA & TELECOMMUNICATION CABLE

BENEFITS

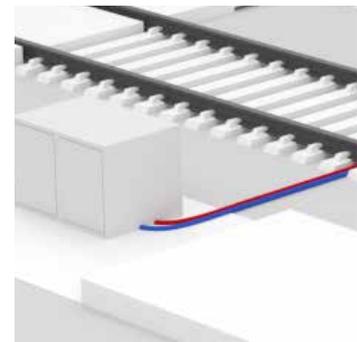
Tratos manufactures an extensive range of both copper and fibre communication & data cables which provide secure, reliable communication and data transfer. Designs are available to suit the most arduous and harshest environments encountered. As the manufacturer Tratos are ideally placed to advise on the benefits of each type to suit a particular application.

APPLICATION

Tratos Data Communication & Telecommunication Cables are used to link signalling and control centres to the railway communications network.

APPLICABLE STANDARDS

LU G7622, LU G7623, LU ST0014-A2, NR/PS/TEL/00014, NR/PS/TEL/00015



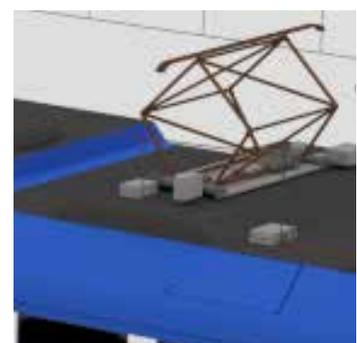
4. PANTOGRAPH POWER CABLE

BENEFITS

The standard range of pantograph cables manufactured by Tratos are rated at 26 kV and 45 kV. The multi-stranded flexible conductors and elastomeric compounds used in the manufacture of these cables ensure that the cables are pliable to ease installation in the reduced spaces commonly found on locomotives and power cars.

APPLICATION

Tratos pantograph cables form part of the essential high voltage connection between the pantograph and transformer on board electric railway locomotives and power cars, designed to have limited bending radii, easy to handle, with resistance to UV and Ozone Tratos pantograph cables withstand the environmental conditions encountered in todays modern rolling stock



5. OVERHEAD LINE EQUIPMENT CABLE

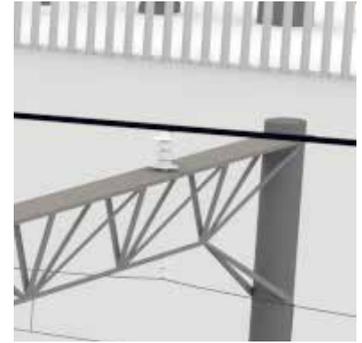
BENEFITS

In addition to conventional aluminium and copper conductor cables, Tratos in collaboration with European railway operators has developed a range of cables for critical installations and to combat the theft of cable using aluminium steel reinforced (ACSR) and thermal aluminium steel reinforced (TACSR) conductors. Tratos now provides a range of options to make cable theft less profitable for the thief and traceability of the stolen cable easier for the police, with the added bonus of deterring metal merchants from receiving what are effectively stolen goods.

APPLICATION

Overhead line equipment cables are a vitally important component in earth bonding systems, they act as the return screening conductor to protect communication and data cables from electrical interference.

APPLICABLE STANDARDS NR/PS/TEL/31102, RFI TE086A, RFI TE087A, LU SE955



6. TRACK FEEDER CABLE

BENEFITS

Tratos have many years of experience supplying flexible cables to withstand the most physically demanding of environments. The range of rubber compounds developed by Tratos resist physical abuse, attacks by fluids and the weather, tough yet flexible, Tratos have used this knowledge and experience in the design and manufacture of their track feeder cables.

APPLICATION

Tratos track feeder cable form part of the essential link between traction substations and the third rail as well as being used to provide an effective earth path for the return current.

APPLICABLE STANDARDS

NR/PS/ELP/21101, LU S1108



7. STATION & PREMISES CABLE

BENEFITS

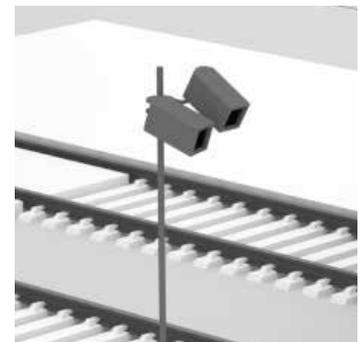
Tratos are able to supply a complete range of Fire Performance cables to meet the most stringent requirements for buildings and underground installations. From armoured power cables through to fibre optic Tratos have a cable to meet all applications. Manufactured using state of the art technology and materials Tratos Firesafe cables are designed for installations where a fire situation may pose a hazard.

APPLICATION

Tratos Firesafe cables are designed to be used for supplying critical power and signals to emergency evacuation systems, public address systems, CCTV security and customer information systems.

APPLICABLE STANDARDS

BS7211, BS7629, BS7846, BS6724 and when required LU 1-085



8. ROLLING STOCK CABLES

BENEFITS

Manufactured by Tratos to be fully compliant with the CENELEC European Standards for railway rolling stock cables, a complete range of cables is manufactured ensuring a "one stop" shop for both builders and operators alike.

APPLICATION

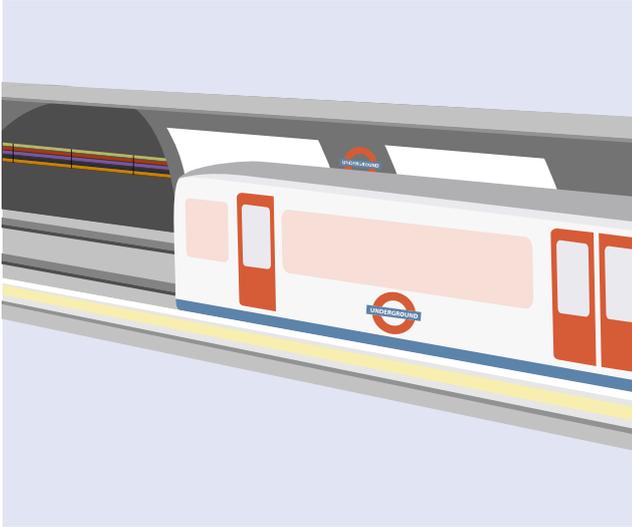
Tratos Rolling stock cables are used extensively to wire Power, Control and Communication circuits and systems in both railway and mass transit rolling stock. Locomotive, power car or passenger carriage in high speed intercity trains, commuter trains, diesel or electric motive power there is a Tratos Rolling Stock cable to suit every application.

APPLICABLE STANDARDS

EN 50264 (all parts), EN 50343, EN 50382



LUL / METRO



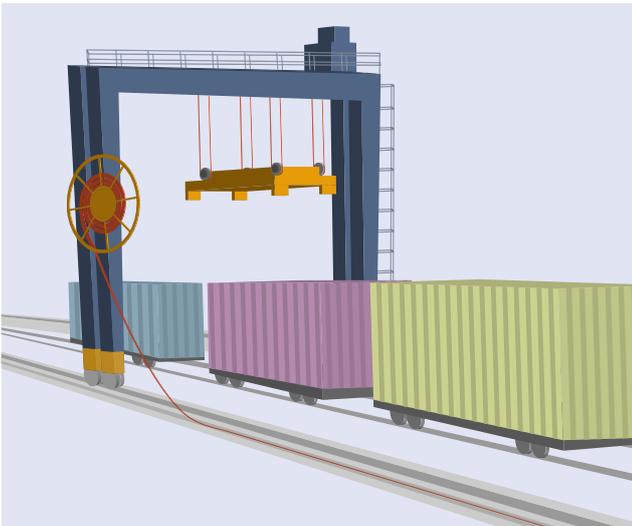
BENEFITS

Tratos have many years of experience supplying cables to light rail, large city metro and urban transit systems. Tratos manufacture an extensive range of cables with superior fire performance properties as used and installed by the Docklands Light Railway (TfL) and London Underground (TfL) and rail metro systems.

APPLICABLE STANDARDS

- London Underground engineering E4156 A3
- London Underground 1-085 A3 fire safety performance of materials
- BS6853
- EN45545-2

INTERMODAL CABLES



BENEFITS

Tratos have gained Worldwide recognition for the quality, operating performance and reliability of the crane cables that they manufacture. Tratos intermodal cables like all of the crane cables they manufacture and supply, enjoy unique design features and employ specially developed compounds to ensure a long and trouble free life.

APPLICATION

Tratos can supply round or flat crane cables to match the operating mode of every type of crane, reeling, festooning, coiling or pendant applications.

APPLICABLE STANDARDS

DIN VDE 0250 Part 813

***New generation
of enhanced fire resistant cables
for high speed rail applications
and for traditional railways.***

Platform	Destination	Train Type	Time	Operator
1701	London St Pancras	High Speed 1	17:05	Virgin
1702	London St Pancras	High Speed 1	17:10	Virgin
1703	London St Pancras	High Speed 1	17:15	Virgin
1704	London St Pancras	High Speed 1	17:20	Virgin
1705	London St Pancras	High Speed 1	17:25	Virgin
1706	London St Pancras	High Speed 1	17:30	Virgin
1707	London St Pancras	High Speed 1	17:35	Virgin
1708	London St Pancras	High Speed 1	17:40	Virgin
1709	London St Pancras	High Speed 1	17:45	Virgin
1710	London St Pancras	High Speed 1	17:50	Virgin
1711	London St Pancras	High Speed 1	17:55	Virgin
1712	London St Pancras	High Speed 1	18:00	Virgin
1713	London St Pancras	High Speed 1	18:05	Virgin
1714	London St Pancras	High Speed 1	18:10	Virgin
1715	London St Pancras	High Speed 1	18:15	Virgin
1716	London St Pancras	High Speed 1	18:20	Virgin
1717	London St Pancras	High Speed 1	18:25	Virgin
1718	London St Pancras	High Speed 1	18:30	Virgin
1719	London St Pancras	High Speed 1	18:35	Virgin
1720	London St Pancras	High Speed 1	18:40	Virgin

Platform	Destination	Time	Operator
1701	London St Pancras	17:05	Virgin
1702	London St Pancras	17:10	Virgin
1703	London St Pancras	17:15	Virgin
1704	London St Pancras	17:20	Virgin
1705	London St Pancras	17:25	Virgin
1706	London St Pancras	17:30	Virgin
1707	London St Pancras	17:35	Virgin
1708	London St Pancras	17:40	Virgin
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1713	London St Pancras	18:05	Virgin
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1715	London St Pancras	18:15	Virgin
1716	London St Pancras	18:20	Virgin
1717	London St Pancras	18:25	Virgin
1718	London St Pancras	18:30	Virgin
1719	London St Pancras	18:35	Virgin
1720	London St Pancras	18:40	Virgin

17:16





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