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cable



The Copenhagen City Circle Line

Award winning metro with driverless trains

Eupen delivers 30km radiating cable

Customer Alcatel-Lucent Italia

Situation The new metro in Copenhagen was started in 2002 and the first part was finished in 2007. It comprises a 20km metro network of two lines. The second part, called the City Circle line, is planned to be finished until 2020 and will expand the metro by two more lines and 15km length. It will serve 17 stations. This is currently one of the biggest construction projects in Denmark. It was awarded to be the most beautiful underground (by Metrorail meeting in 2008).

The metro is completely built under ground. The trains are provided by Ansaldo and operate without human drivers on board. This requires reliable communication networks and safety installations in order to operate the metro.

One of the communication standards used for safety is TETRA. This type of radio communication provides digital encrypted voice and data communication and is used by authorities such as fire and police departments as well as for the operation of the train network.

Challenges

The challenge is to provide radio communication in the underground in a predictable, safe and reliable way. The metro tunnels not only are confined areas where the propagation of electromagnetic waves is limited, reflected and difficult to predict. The moving trains inside the tunnels are additionally changing the situation by adding attenuation, reflection and even blocking the signal. It is as well not an option to increase the power of radiation in order to achieve better coverage in the tunnels because there are many different radio techniques used which should not interfere each other.

Solution

Radiating cables build the perfect solution for distribution of radio signals along a track in the underground. The electromagnetic field is propagated in a homogeneous way all along the length of the cable which is placed under the ceiling or at the side wall of the tunnel. This solution allows to provide the radio communication exactly where it is needed and not in a random way. The emitted power is not amplified by the cable but it still allows safe and reliable communication.

Eupen delivers 27.5km of 7/8" Radiating Cable with HLFR outer sheath as well as 16km of 1-1/4" Radiating Cable with HLFR outer sheath into this project.

These radiating cables are optimized for the transmission of those frequencies used by TETRA. Imperative for use in this challenging environment, all Eupen Radiating Cables meet the requirements concerning low flammability, no flame propagation, no toxic gas emission and low smoke.

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