



DEHN protects.

New Gotthard railway tunnel

Customer

Alpiq Burkhalter Technik AG
(ABAG)

Burkhalter Technics AG, Zürich

Alpiq InTec Ost AG, Sprei-
tenbach

Elektro-Bau AG, Rothrist

Project

Sector

Railway

Application

Internal lightning protection
for the power supply of
ventilation, communication,
lighting and safety systems
in the entire tunnel

Hardware

far more than 700
DEHNbloc® M 1 255 FM and
DEHNguard® M TNS 275 FM
24 DEHNventil® M TNS 255 FM

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AlpTransit Gotthard

Some years ago, the Lötschberg railway tunnel in Switzerland has been completed and equipped with arresters from DEHN. Since this route is very busy, other tunnels became necessary. The AlpTransit Gotthard will be a future-oriented transalpine railway route with the Gotthard tunnel being the heart. With its 57 km, it is the world's longest tunnel and will be completed at the end of 2016. Located in the heart of Europe, this tunnel will considerably improve travel and transport possibilities.

The AlpTransit Gotthard will be the most important transit route for the North-South connection through Switzerland. This route is seamlessly integrated in Europe's growing high-speed railway network and its availability is thus of great importance to all of Europe.

Challenge

A reliable power supply system that even withstands the effects of lightning currents and overvoltages is indispensable for the safe operation of the tunnel since this system stretches through the entire tunnel deeply into the mountain. The complete 50 Hz power supply system is protected from the main distribution boards over the sub-distribution board to the 176 crossways. Due to the high quality demands, the decision was made in favour of energy coordinated arresters from DEHN.

Solution

All power supply systems for communication, lighting, control, safety systems such as axis counters, points indication signals and the radio signal ETCS (European Train Control System) are integrated in the protection concept. The protected power supply system has an availability of 99.999996 % and approximately corresponds to TIER classification 4.

The modular DEHNbloc M arresters with their RADAX FLOW spark gap technology used to protect the power supply system against partial lightning currents make an important contribution to system availability. Due to the unique follow current limitation, even 32 A gL/gG fuses do not trip up to short-circuit currents of 50 kA_{rms}. Energy coordination with downstream DEHNguard arresters is ensured without additional cable lengths. All arresters of the Red/Line family also feature a remote signalling output to signal the control room that the arresters are operational. The top-quality arresters from DEHN thus ensure safe operation of one of Europe's most important transit routes.



Photo: © AlpTransit Gotthard AG



Benefits of the DEHN solution

- ➔ Spark-gap-based arresters with wave breaker function for a maximum discharge capacity and optimised protection of terminal equipment
- ➔ Safe energy coordination without additional cable lengths
- ➔ Radax Flow follow current limitation releases the fuses of the system
- ➔ Extremely high discharge capacity
- ➔ Continuous monitoring of the operating state of the arresters