



Application Report

Light behind the tunnel

Partner MB Systembau AG
Area Transport and traffic technology

Transport and traffic technology

Facility availability

High-current switching

Alerting

At 16.9 km long, the Gotthard road tunnel is the fourth longest road tunnel in the world and the longest road tunnel in the Alps. It was opened in 1980 after ten years of construction and has been the most important Swiss corridor through the Alps ever since.

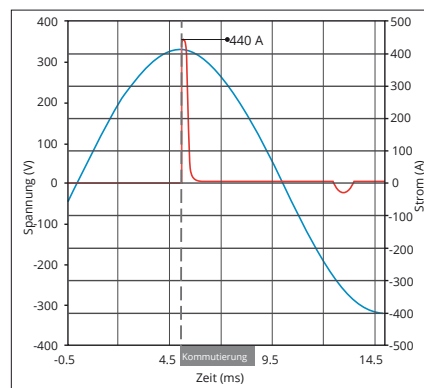
More than 17,000 vehicles pass through the Gotthard tunnel every day. Hardly any motorists are aware of how much technical effort goes into providing them with a safe journey. The tunnel is illuminated, the exhaust fumes are extracted, and the signals are working. These conditions can be provided because at regular intervals to the left and right of the carriageway are cavities in which switchgears for monitoring and control are placed. If all these switchgears were lined up, the result would be a 1.4 km long line!

Initial situation

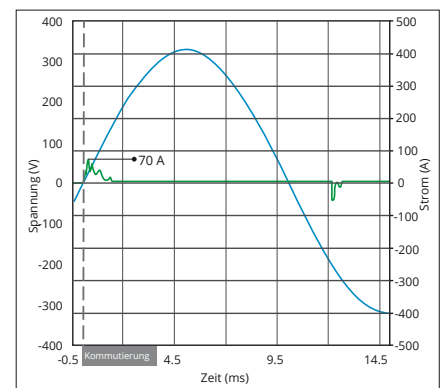
After 40 years of operation, the electrical installations no longer correspond to the state of the art and must be replaced at the request of the Federal Roads Office. In this way, the safety of the existing tunnel is to be guaranteed during the construction period of the second tunnel and for the next 30 years.

Challenge

The Federal Roads Office (FEDRO) places extremely high demands on the operating and safety systems in tunnel constructions, which is even more demanding for the replacement of the switchgear and the building services systems in the Gotthard tunnel, because it is being carried out during ongoing operation. Most of the control panels, such as the traffic control system, are redundant. All the manufacturing, conversion, and replacement procedures for all the operating and safety systems in question are defined in an implementation specification. The interfaces to other sections, time sequences, down to the individual cable, individual power relays are planned.



Switching capacitive loads with a standard relay and an inrush current of approx. 22A per control device.



Switching capacitive loads with CHI14, inrush current of approx. 3.5A per control device.

Each individual component has its importance and makes its contribution to the overall concept of safety in tunnel systems.

Mandate

MB Systembau AG has been awarded the contract to renew part of the operational safety systems and the building services - in this case the lighting - in the operations and maintenance centres behind the main tunnel. The lighting concept for the caverns has been completely revised and all existing lamps are to be replaced by LED lamps. The reasons for this choice are the longevity of the lamps and their low energy consumption. Modern light sources with control devices generate current peaks when switched on that can be up to 250 times higher than the rated current. To break these peaks, power relays with appropriate contact technology are needed. MB Systembau AG has chosen the power relays of the CHI34 series from ComatReleco to handle this task. These can switch inrush currents of up to 800 A at a rated current of 16 A and ensure the smooth functioning of modern light sources.



CHI34 power relays

Partner

MB Systembau AG from Emmenbrücke is an independent manufacturer of high-quality switchgears, panels, switchgear combinations (BKP 231/SGK), control systems and services. For 73 years, the company has been providing professional installations, maintenance, and services domestic and abroad, meeting national and international standards in terms of safety and functionality.



ComatReleco Products in use

- CHI34 power relays
- Industrial relays, installation contactors