comat RELECO

Application Report

Stoos - record-breaking funicular

Partner Stoosbahnen AG
Area Railway technology

Railway technology

Monitor

Alert

Control

Partner

Stoosbahnen AG manages a tourism company with a development role on the Stoos. Located in the heart of original Switzerland at 1,300 metres above sea level, the Stoos is a charming all-year-round leisure area. The Schwyz-Stoos line takes you to the Stoos in only a few minutes and with a new world record: The funicular railway from Schwyz is the steepest in the world.

ComatReleco Products in use

- CMS-10R Messaging System

People have the desire to escape from hectic everyday life and seek peace and balance in the mountains. The Stoos region meets this need as the leisure idyll of Central Switzerland and has positioned itself in such a way that those seeking relaxation can be transported comfortably and quickly to the car-free high plateau.

The new futuristic-looking Schwyz-Stoos funicular has been in operation since 2017. With a gradient of 47.73° (110%), it is the steepest in the world and overcomes the height difference of almost 744 m and a length of around 1740 m in less than 6 minutes. Some of the passengers look almost in awe at the steep tracks and numerous pulleys and hope that the rope will hold reliably during their journey.

Technology and safety - a rope team

The worried passenger on the funicular could sit back and relax if he knew just how strict the safety regulations and monitoring modalities are regarding the hauling rope.

The cable loop of the funicular is electrically insulated along the entire route and is capacitively raised to a voltage of a few millivolts with a cable capacitor in the valley station. This voltage is checked in the mountain station. If the rope were to derail, it would touch the earth and the voltage would be dissipated. The monitoring system would detect the voltage drop and stop the cableway immediately.

The voltage value on the rope is affected by the weather. Fluctuations in humidity, rainwater and snow change the reference value of the voltage. Additional control currents compensate for these fluctuations so that safety monitoring is ensured, and the track can be operated in compliance with safety requirements even in bad weather.

The ComatReleco Messaging System (CMS-10R) provides the maintenance staff with the analogue values of the correction signals in real time. The messages of the monitoring results are transmitted to the technicians' mobile phones. The messaging system gives them access to the controls and, in addition to the alarm, they can also call up real-time data and intervene at any time.

The water supply at the mountain restaurant Klingenstock perfectly works thanks to the CMS-10R.

One messaging system - many possible applications

The simplicity of the solution has excited the employees of Stoosbahnen and they have found other areas of application where the ComatReleco messaging system simplifies their duties:

- In the collection and transmission of fault messages in real time from the pump controls for the infrastructure water supplies on the Fronalpstock and Klingenstock summits.
- For dry-running protection of the summit water reservoirs.
- For monitoring the operating times of the water pumps. Above-average operating times of the pumps have drawn attention and several leaks have already been located.

The electrical voltage of the funicular's hauling rope is measured at the valley station and compared with that of the mountain station. Deviations in the voltage stop the funicular.

Thanks to the CMS messaging system, the infrastructures of an extensive area can be centrally monitored and maintained promptly in the event of an emergency.

ComatReleco AG | Bernstrasse 4 | 3076 Worb | Switzerland
Phone +41 31 838 55 77 | Fax +41 31 838 55 99
info@comatreleco.com | comatreleco.com | WorldofRelays.com

Stoos-Muotatal Tourismus GmbH | Grundstrasse 232 | 6430 Schwyz
Phone +41 41 818 08 08
info@stoos-muotatal.ch | www.stoos.ch/