Safety through video surveillance in the world's longest tunnel.

Video surveillance could save lives in the Gotthard Base Tunnel.

Organization:
Swiss Federal Railways (SBB)

Location:
Switzerland

Industry segment:
Transportation

Application:
Safety and security

Axis partner:
Securiton AG

Mission

After about 17 years of construction, the Gotthard Base Tunnel was completed and incorporated into the scheduled services of SBB in December 2016. At 57 kilometers, it is the longest railway tunnel in the world. The two railway tunnels that make up the tunnel system are about 40 meters apart and are connected by transverse tunnels every 325 meters.

Solution

A video system monitors strategically important locations in the interior of the tunnel, and helps to maintain a lifesaving overview in case of emergency. Two multifunction stations serve as critical points in the tunnel system, and to keep an eye on them at all times they are under complete video surveillance.

Securiton AG installed 160 Axis cameras for this purpose. The cameras have a particularly durable protective housing to withstand the changing weather conditions, high air pressure, and vibrations in the tunnel, not to mention the effects of the trains as they thunder past at 200 km/h.

Result

SBB already operates a similar video platform at all Swiss railway stations under the name "Multi Media Rail City" (MMRC), a platform that has proven its value. With the video surveillance system used in the Gotthard Base Tunnel, SBB is now putting trust in this proven solution in all of Switzerland.

AXIS
COMMUNICATIONS

"The Gotthard Base Tunnel presented us with significantly more complex challenges since the lighting conditions and local weather conditions caused great problems for conventional cameras. We therefore chose Axis, whose cameras are specifically designed for such conditions."

Thomas Adler, Business Development Manager for Video Security at Securiton AG.

In the summer of 2016, SBB officially opened the completed Gotthard Base Tunnel in Switzerland. After 17 years of construction and additional months of test operation, SBB Swiss Federal Railways was finally able to incorporate the longest railway tunnel in the world into its scheduled services in December 2016. The new Gotthard Base Tunnel system consists of two 57 km long single-track tunnels, from Erstfeld in the canton of Uri to Bodio in the canton of Tessin.

To make it possible for construction of the two tunnels to take place at multiple points at the same time, several access tunnels were created in Amsteg, Sedrun and Faido. The two railway tunnels are about 40 meters apart and are connected by transverse tunnels every 325 meters. With all of the connecting and access tunnels and shafts, the entire tunnel system measures over 152 kilometers.

The two multifunction stations in Faido and Sedrun divide the two tunnels into three roughly equal sections. The two strategically important locations have emergency stop stations and two track change points each. These allow the train to switch from one tunnel to the other as needed. The exhaust air system and numerous technical systems for railway operations are also found here.

A video system from Axis partner Securiton monitors relevant locations in the interior of the tunnel, and helps to maintain a lifesaving overview in case of emergency.

Securiton AG installed 160 Axis cameras in total – 48 AXIS Q1604-VE Network Cameras in the travel areas and the two emergency stop stations, Sedrun and Faido, plus 112 AXIS P3384-V Network Cameras in the side tunnels.

The cameras have a particularly durable protective housing to withstand the changing weather conditions, high air pressure, and vibrations in the tunnel, not to mention the effects of the trains as they thunder past at 200 km/h. The high-resolution cameras with WDR (Wide Dynamic Range) also adapt to the different lighting conditions and thus always deliver crisp and optimally illuminated images. All products used are networks cameras that use PoE (Power-over-Ethernet) to draw power via Ethernet cable and therefore do not require any additional power cables or power supply units. Thanks to the high image resolution, the cameras deliver the best possible image quality. To meet the highest security requirements, the video streams and image data are processed and evaluated on two geographically separated video management systems.

The two multifunction stations also play an extremely important role in the emergency response concept of tunnel operator SBB. If there is an emergency, such as a fire, the train can stop at this station to allow the train passengers to make their way to the other track of the system via an evacuation side tunnel. From there, an evacuation train can take them out of the tunnel.

SBB had already been operating a video platform from Securiton at all stations under the name "Multi Media Rail City" (MMRC). With the video surveillance system being used in the Gotthard Base Tunnel, they now rely on the proven solution in all of Switzerland.

For more information on Axis solutions, visit www.axis.com/transportation
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