zenitel
because communication is critical

CASE STUDY
Road Tunnels

Image source:
Regierungspräsidium Freiburg

Market Segment:
Road Tunnels

Country of installation:
Germany

Year of Installation:
2021

End Customer:
Hornberg Tunnel

System Integrator:
Scanvest

Solution:
Emergency communication

Key Products:
TCIS-2
ICX-500
VS Recorder 2.0

Key Technology:
ONVIF & SCADA Integration
Ambient Noise Reduction
95 dB with Automatic Volume Control

Scanvest led a successful upgrade of the Hornberg Tunnel

Zenitel's Center of Excellence, Scanvest, led a successful upgrade of the Hornberg Tunnel, Germany.

TheEnd Customer

Going into operations about 20 years ago, the tunnel emergency call system in the Hornberg Tunnel was groundbreaking. It was the first tunnel project in Germany to be equipped with VoIP.

The system, with 15 emergency call stations and two routers, has performed very well in the almost 2-km-long road tunnel. However, even the most robust call station needs an upgrade at some point and that is when Scanvest was commissioned to replace all of the stations.

The Requirement

It was important to the tunnel operator to maintain the existing infrastructure of the entire system and the usual processes as much as possible. The focus was on replacing the call stations with current models that meet the same high requirements for durability and robustness. This replacement was to be cost effective and with minimal closure time for the tunnel. Overall, the renewed system needed to continue to meet RABT 2004/54/EC safety standards.

The Solution

There are 15 emergency call stations in the tunnel, which are connected to two routers in the two operating buildings. The routers in the north and south buildings automatically forward incoming emergency calls to

the control center via public telephone network. In the event of a failure of the public telephone network, emergency calls can also be received directly in the respective building, or the tunnel stations can be called directly. The conditions in tunnels are harsh and place high demands on the hardware. Twenty years ago, vandal-resistant, wall-mount stations with high mechanical strength and a weatherproof design were used in the Hornberg Tunnel. Together with a fiber-optic switch, they were encased in a robust, wall-mounted housing with a door.

Since the existing infrastructure, including the wall-mounted enclosures, was to be maintained as much as possible, Scanvest decided to use Zenitel's Turbine stations. Due to their extremely robust construction, flexible connection options, and exceptional audio quality, they are ideally suited for use in tunnels. To fit into the existing wall housings, the Zenitel Turbine stations were integrated into an individually manufactured aluminum plate. The panel was painted in the matching RAL color, and the Turbine station was foiled accordingly.

The operators of the Hornberg Tunnel saw the advantages of the Zenitel technology from the beginning, which includes increased system cybersecurity. The safety-relevant features are the same today as they were back then, including:

- Acoustic function test: The call station self-tests its audio functions at regular intervals. For this purpose, an acoustic signal is emitted via loudspeaker and received by the microphone. If an error occurs, it is reported to one of the control panels.
- Test of the network connection: The call station acts independently and tests its connection to the control panel at individually defined intervals. If a fault occurs, it is transmitted to one of the control panels via a floating contact.
- Remote configuration and maintenance: Another great advantage of IP is the possibility of remote system access. This means that configuration, maintenance, and troubleshooting can be carried out at short notice and with a minimum amount of manpower.

The Result

"We are still proud of the fact that 20 years ago, the first Voice over IP (VoIP) tunnel emergency call in Germany was implemented in the Hornberg Tunnel," says Georg Armbruster of the tunnel operations control center in Haslach. "When it became clear that the system would have to be renewed, it was very important to us to maintain the existing infrastructure as much as possible. Scanvest found a very well thought-out, pragmatic solution for our requirements. Even better, the voice quality has improved with the new call stations. We are completely satisfied with the solution and the system is doing its job as reliably as ever."

Why **Zenitel?**

Zenitel is well positioned to drive the future of intelligent critical-communication solutions. Through our portfolio of IP products & solutions, with built-in intelligence and a focus on cybersecurity, we provide organizations with superior, scalable security and flexibility. Zenitel is the proven, preferred choice for environments requiring crystal-clear audio to ensure the protection of human life, property, assets and the management of critical activities.
With interoperability at all levels, we seamlessly integrate with access control, video management and security platforms.