Honeywell | Connected Tunnel Solutions

CASE STUDY

HONEYWELL SUPPLIES SAFETY TECHNOLOGY FOR RESEARCH@ZAB

RESEARCH@ZAB—ZENTRUM AM BERG is a subsurface tunnel research facility by Montanuniversität Leoben, Austria's university for mining, metallurgy and materials. As a project partner, Honeywell has supplied innovative safety technology, incorporating Fire Safety, PA/VA and Video solutions for this one-of-a-kind research center.

CHALLENGE

Research@ZaB—Zentrum am Berg (ZaB) was initiated by Montanuniversität Leoben and serves as one of the leading tunnel research centers in Europe. It is used by public institutions and organizations as well as private companies in a wide range of setups and applications while offering a major advantage: tunnel research projects can be carried out on a 1:1 scale. Test fires, emergency response trainings or product and materials testing can be conducted under real-world conditions without disrupting motorway traffic or railway services. As such, Honeywell had to adhere to an extensive functional specification description including Fire Safety, Public Address, Video Detection and Tunnel Monitoring.

BACKGROUND

Erzberg is one of the biggest iron ore open-pit mines in central Europe with more than 12 million tons of rock mined per year. After centuries of mining, underground operations were stopped in the 1980s at Erzberg. Several of the abandoned tunnels were incorporated into the research facility Research@ZaB – Zentrum am Berg, creating two parallel road tunnels, two parallel rail tunnels and a test tunnel.

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CONNECTED TUNNEL SOLUTIONS BY HONEYWELL

By installing a state-of-the-art and fully integrated safety system, Honeywell provides a safe environment for further education, research and development.

“Zentrum am Berg is an extremely versatile research facility with fully equipped road, rail and test tunnels. From emergency services to military trainings, equipment testing and research on tunnel operation and tunnel maintenance, ZaB is a test bed and excellence center for science, business and emergency services. We are happy to have such a reliable and innovative partner like Honeywell, as we can showcase the very latest in tunnel safety technology, creating a mutual benefit for all parties involved.” Univ.-Prof. Dipl.-Ing. Dr.mont. Robert Galler, Head of Department ZaB – Zentrum am Berg

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FIRE ALARM SOLUTION

The advanced ESSER by Honeywell fire detection and alarm system is ideally suited to the environmentally challenging conditions inside the tunnels. The system includes two DTS (Distributed Temperature Sensing) linear heat detectors of the newest generation with a length of more than 350 m inside the road tunnel and 150 m inside the rail tunnel – each in redundant loop configuration to guarantee reliable operation.

These loops are connected in single-mode configuration by a fiberoptic essernet® network which is also processing signals from point detectors and new VES aspirating smoke detectors. By combining these Honeywell fire detection systems, both fire and smoke can be detected in their very early stages, preventing false alarms even under challenging conditions.

HONEYWELL OFFERS COMPLETE SAFETY SOLUTIONS FOR TUNNELS

Honeywell not only provides Fire Detection and PA/VA Solutions for tunnels. Also Security Solutions like Video and Access Control, gas sensors as well as Emergency Lighting can be offered and delivered from only one supplier. Count on Honeywell.

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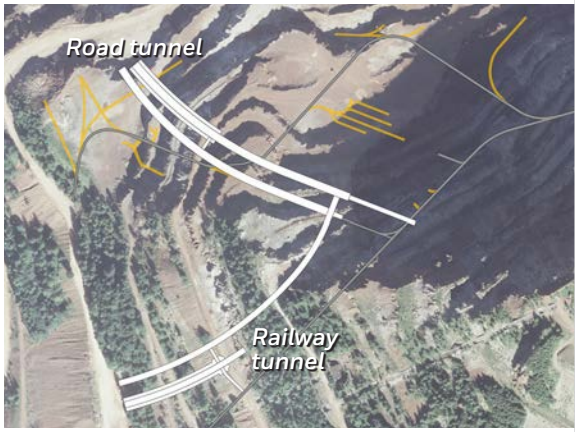
In Zentrum am Berg research, training and testing is possible on a 1:1 scale. Emergency response services can train at very high fire loads, such as truck fires. At the same time, evacuation scenarios, control and signalling systems can be tested under real-world conditions.



In total, Zentrum am Berg offers 4 km of underground testing and training areas.

CASE STUDY

FlexES

FlexES Control is the innovative Fire Alarm Control Panel (FACP) / Control and Indicating Equipment (CIE) with integrated, EN 54, VdS and FM approved emergency redundancy. The power supply of FlexES Control is particularly well protected against failure. It is designed to handle three different power sources in a loop. If one power supply module fails or a phase fault occurs, the remaining two power supplies ensure uninterrupted operation. The heavy-duty trays can be removed during maintenance and support easy service work.

Whilst the dependability and failure safety of Honeywell components is essential for maintaining the highest levels of safety in tunnel operation with minimal cost and effort for maintenance, the flexibility and cutting-edge technology of Honeywell's solutions is ideally suited for testing new safety scenarios and research in future technologies at Zentrum am Berg.

FlexES Control as 19" rack version provides the highest flexibility for industrial applications through professional cable routing, offering various options for cabling.

PUBLIC ADDRESS & VOICE ALARM (PA/VA)

The PA/VA system inside Zentrum am Berg's tunnels is realized with the Digital Output Module (DOM) from the VARIODYN D1 range which is EN54 certified and features multicasting and integrated power amplifiers. For display and operation, the Ethernet Touchscreen Call Station (ETCS) offers a 7" touchscreen with a user-friendly interface. All system information of the public address system is transmitted to the central control via OPC UA.

The speaker loops can be configured independently and divided into three sections at Zentrum am Berg. If it is necessary for operation, the system can be expanded as required to add electro-acoustic emergency warning systems to other areas of the facility. All power amplifiers are permanently monitored and can be replaced dynamically. All loudspeaker lines are permanently monitored for short circuit, ground fault, and failure as well as impedance deviation. Faulty loudspeaker zones are separated in a non-reacting manner.

For display and operation, the Ethernet Touchscreen Call Station (ETCS) offers a 7" touchscreen with a user-friendly interface.

CASE STUDY

ALARM & VIDEO MANAGEMENT SYSTEM

Honeywell's PC-based hazard management system WINMAG is a key element of the alarm and video management system, WINMAG's graphical user interface allows users to quickly localize hazards even in complex system environments with minimal training requirements, saving valuable time in incident response.

The software solution offers native integration of Honeywell systems such as fire detection systems, video surveillance, access control, burglar alarm and also third-party applications, thanks to open technology connectivity such as BACnet or via API connectors. In this way, complex systems can be managed via a unified user interface.

Thanks to its modular und scalable design, WINMAG allows full integration of Honeywell's server-based video management system MaxPro. In a tunnel environment like Zentrum am Berg, this video analytics product suite enables enhanced security and surveillance by automatically monitoring video for specific vehicles, objects or people and their associated behavior.
As the research facility is used for a wide variety of different applications from safety and maintenance training and testing to security exercises, highest possible flexibility and functionality is a fundamental requirement fulfilled by Honeywell's solution. By providing real-time alarms and detection of abnormal behavior without human supervision, MaxPro further contributes to the system's efficiency, both in terms of cost saving and safety requirements.

RESULTS

By supplying high quality fire safety and PA/VA technology as well as video and alarm management systems, Honeywell played an important role in the development of this unique tunnel research facility. While the collaboration allows Honeywell to access the latest in tunnel engineering, research and training, the site can be used by Honeywell for product demos, testing and training purposes and is hosting trade shows and industry conferences, boosting Honeywell's competitive edge.

"Thanks to careful development of relationships with Montanuniversität Leoben and its planning offices as well as Graz University of Technology, Honeywell gained access to this one-of-a-kind project with valuable strategic partners. We are glad to have such a good collaboration with ZaB and are proud to be part of this unique project."

Manuel Maleschitz, Sales Manager Austria, Honeywell Fire and PA/VA Solutions

In cooperation with

MONTAN UNIVERSITÄT LEOBEN ZaB ZENTRUM am BERG

Honeywell

Honeywell's new HCPB302 network camera features a stainless steel housing to provide maximum protection against deterioration.

Honeywell's HDZ302LIW IP camera is ideally suited to operation in tunnel environments thanks to its excellent low-light performance, crisp video image and rugged design.

Honeywell's MAXPRO VMS (video management system) controls multiple sources of video subsystems to collect, manage and present video in a clear and concise user interface.

With MAXPRO VMS R600 release, a brand new Security Console web client is introduced, offering intuitive map navigation across sites, buildings and floors, and camera live view pop-up, instant playback and alarm indication on maps,

For more information

To learn more about Honeywell products and solutions, visit www.hls-austria.com or contact your Honeywell Account Manager or System Integrator.

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