Solution
- Tunnel Security Remote Monitoring

At a Glance

Highways and railways in mountainous areas go through tunnels very often. For safety concerns, tunnels not only have to provide systems like fire protection, ventilation, traffic guidance, communications and lighting, but also are able to send real-time tunnel monitoring data or messages automatically to networking personnel in the remote-control center so that immediate actions can be taken when systems are broken or accidents occur in the tunnel.

CTC Union's "Tunnel Control" solution incorporates various devices that play different roles in layered tunnel control systems so as to ensure reliable services and minimized risk of potential accidents such as fire. For example, the use of bypass switch in a ring topology can provide redundant connections even when power failure occurs in a node. Furthermore, integrated EMS system automatically collects real-time data or messages sent from the devices placed in the tunnel to networking personnel who supervise and monitor tunnel traffic safety in the remote-control center.

With the adoption of total "Tunnel Control" solutions, the connections are always-on while transmitting data, and the optical connections make the transmission more secure over longer distances. Last but not the least, future maintenance or upgrades are more convenient and easier with point-and-click Web configuration pages.

Challenges

・The devices placed in tunnels may operate in harsh environments.

・In tunnel scenario, reliability and uninterrupted delivery of services is essential.

・The personnel who are in charge of tunnel safety in the remote-control center must take immediate actions when accidents occur.

CTC Union's Solution

CTC Union, one of the leading providers with abundant experience in providing network solutions, offers a comprehensive range of networking devices targeted at applications with rigorous safety standards. Our solutions are designed to enhance safety standards and integrate operational information into a centralized management system for future analysis or planning. Major features of the proposed network devices that are crucial to building up a tunnel control system are as follows:

・Network devices of tunnel control system are all IP products that are easy to connect to other devices and easy to upgrade for future network expansion planning.

・Network devices of IBP series provide signal bypass function when one of the node's power fails in daisy chain or ring topology.

・Network devices of IBP series support ring topology for redundant purposes.

| EN62368-1 | EN50121-4 | EN61000-2 EN61000-4 | µ-Ring | Bypass | Web Management |
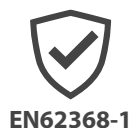
Application

In the tunnel application depicted below, IBP-202 Bypass switches connect to PLC controllers that control tunnel ventilation system. Moreover, several IBP-202 Bypass switches in the same tunnel are also connected in a ring topology manner for redundancy purposes. When transmitting data back to the remote-control center, IGS-804SM Ethernet switch is responsible for long distance transmission via fiber optic cables.

For monitoring personnel who are in the remote-control center, the SmartView™ WEB EMS can help collect data or messages from devices in the remote tunnel. By analyzing these collected data, the monitoring personnel can adjust the settings of devices based on real needs avoiding waste of energy during vacancy periods.
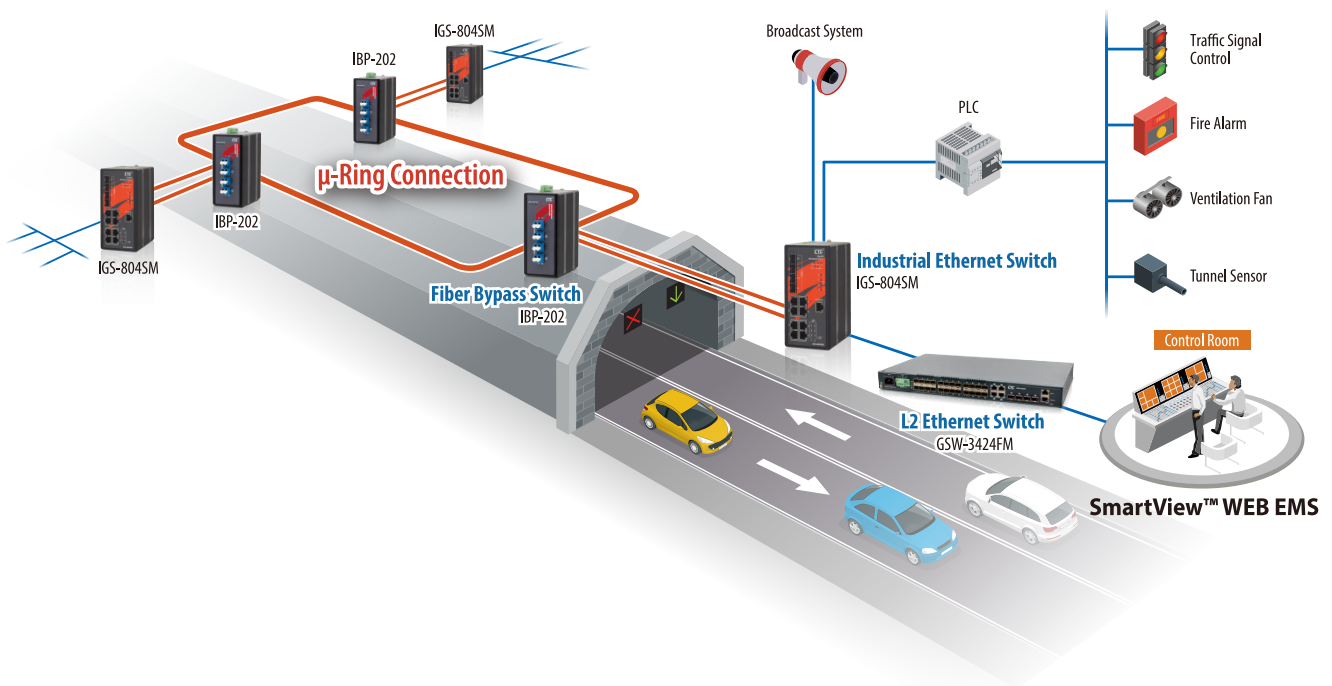
Related Products

Industrial GbE Managed Switches
IGS-1604XSM & IGS-804SM

Optical Fiber Bypass Switch
IBP-202

L2 Ethernet Switch
GSW-3424FM

SmartView™ WEB EMS
Element Management System

‧ The specification and pictures are subject to change without notice.