



Emergency Response during Tunnel Construction

Linking RFID Access Control and Emergency Alarms to TETRA Radios

The Norra Länken project in Stockholm was designed to reduce the volume of traffic and noise pollution from the roads surrounding the Swedish capital.

Trafikverket, the company responsible for the project, proposed that a large percentage of the traffic was directed through tunnels under the city.

To achieve the highest level of employee safety during the construction of the tunnel network, Vägverket selected a combined safety solution from IDENTEC SOLUTIONS and ZONITH.

Combined Elements of Safety

The Tunnel Safety Solution uses RFID tags to monitor employees entering and existing sections of a tunnel. This enables safety staff to know how many people are in a tunnel section at any time.

A TETRA radio system was deployed to support secure voice and data traffic. TETRA radios are used to display employee numbers in each location and to receive technical and critical alarm information via text messaging.

The panic button on the TETRA radio and wall mounted alarm points using the ZONITH RTCU, enable any employee to activate emergency evacuation alarms from anywhere within a tunnel.

By combining the TETRA and RFID access systems, safety staff are instantly notified via text message about the number of people in a tunnel when an emergency alarm is activated.

The solution also uses ZONITH software to centralise all technical and critical safety alarms. The software automatically dispatches information to the available resources using TETRA radios via text message. This ensures that immediate action can be taken and delays in construction are minimised.



Construction workers entering and exiting the tunnel are automatically registered using RFID tags. If an evacuation alarm is triggered safety staff are immediately notified about how many people are in the tunnel on TETRA radios.

Solution Features

- ▶ All construction workers and staff are individually identified using RFID tags.
- ▶ RFID readers are located at entrance and exit point to the tunnels.
- ▶ All voice and data traffic is transmitted using secure TETRA communications.
- ▶ Alarms are immediately dispatched in clear text to on-duty staff .
- ▶ During an evacuation managers are kept informed via text about the number of people inside each tunnel.
- ▶ In emergencies only sections of tunnel need to be closed avoiding downtime and project delays.

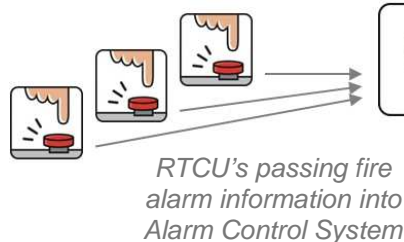
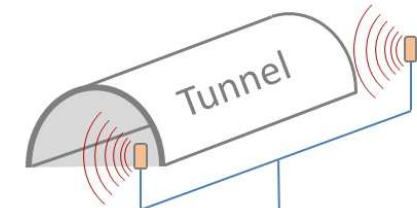
The Total Tunnel Safety Solution

The ZONITH Alarm Control System is installed on a server above ground. It links to remotely located RTCU units via TETRA. Each RTCU is connected via I/O inputs to fire sensors, technical alarms and evacuation panic alarm buttons.

If an alarm is raised the RTCU immediately notifies the ZONITH Alarm Control System, which instantly selects the on duty safety staff from a preconfigured schedule list.

Staff are immediately notified with the exact emergency alarm details on their radios. Management teams can then decide whether to initiate an evacuation of the tunnel or sections of tunnel.

IDENTEC SOLUTIONS software feeding RFID tag information directly into Alarm Control System



12-07-10, 19:44
Staff remaining in
Tunnel: 2



12-07-10, 19:21
Fire Alarm!
Tunnel Segment 11



Instant text message notification with detailed alarm information



The Swedish transport administration Trafikverket is responsible for the public road transport infrastructure in Sweden. Trafikverket aim to provide a road transport system that is delivered to the highest standards possible and is economically efficient. Trafikverket are committed to providing safe, environmentally friendly roads that contribute to regional balance. Trafikverket manages more than 100,000 kilometres of roads throughout Sweden.

"With our RFID access control system linked to the alarm and communication system, we're always aware of the safety level in the tunnels. Instant emergency alarm information is key to us. With this solution we automatically get updates in clear text on our radios and can react quickly to any emergency situation"

Roger Zell, Security Manager at Norra Länken