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Image: Eurotunnel

Eurotunnel Chooses AP Sensing for Fire Detection

France/United Kingdom

Project Overview

Eurotunnel, the operator of the Channel Tunnel, has taken a significant step forward in improving passenger safety. To enhance fire detection capabilities, Eurotunnel implemented SAFE stations - firefighting stations equipped with fixed, fire fighting systems. At the core of this safety initiative is AP Sensing's Fiber Optic Linear Heat Detection system, which detects fires with precision.

The Channel Tunnel, connecting the United Kingdom and France, spans 38 kilometers, making it the longest undersea tunnel in the world. It serves high-speed Eurostar passenger trains, Eurotunnel Shuttle vehicle transport, and international freight trains, facilitating the travel of millions of passengers and significant freight commerce since its opening in 1994.

Challenge

While safety has been a priority since the Channel Tunnel's inception, a major fire incident in September 2008 revealed areas for improvement. The fire occurred on a Eurotunnel Shuttle train carrying trucks, approximately 11 kilometers from the French exit. Although the initial detection and fire response were effective, the incident resulted in extensive infrastructure damage, reputational challenges, and significant business losses. In response, Eurotunnel conducted a comprehensive review to identify ways to minimize the impact of similar incidents in the future.

Solution

Eurotunnel designed and implemented SAFE stations equipped with AP Sensing's state-of-the-art Fiber Optic Linear Heat Detection system, the Linear Heat

Background

- The Channel Tunnel connects the UK and France over 38 kilometers
- A 2008 fire incident exposed the need for improved fire safety
- Eurotunnel reviewed solutions to enhance detection and supression systems

Solution & Benefits

- SAFE stations use AP Sensing's Linear Heat Detection System for precise fire monitoring
- Integrated fire suppression ensures targeted, real-time control
- Enhanced safety, reliable containment and improved rescue access

Figure 1: One of the two railway control centres (RCC), which monitor more than 36,000 different sensors installed in the tunnels. (Image: Eurotunnel)

Series. The solution features four SAFE stations, each 900 meters long, strategically positioned to manage fire events effectively. The system provides precise fire detection, pinpointing the exact fire location even in the presence of high air currents, while its dynamic monitoring capabilities deliver real-time data on fire movement, size, intensity, and direction as the situation unfolds. Integrated with Fogtec's high-pressure water mist system, it enables targeted and accurate fire suppression. Additionally, the Linear Heat Series offers exceptional durability, withstanding extreme temperatures while ensuring reliable data transmission throughout fire incidents.

Testing

AP Sensing's Linear Heat Detection System delivered exceptional results during full-scale live tests conducted in Spain in April 2010. The tests simulated fires ranging from 100 to 150 MW, equivalent to a blaze involving approximately 40 cars. The results were extremely convincing: they demonstrate the efficacy of the concept to contain a fire and limit or even halt its propagation. The system offers many benefits including fast activation and intelligent control to keep the fire contained. This allows easy access for the rescue service and enables effective fire fighting. The "SAFE" concept of smart interaction between AP Sensing's fire monitoring system and fire fighting systems is an important milestone, taking road and rail tunnel safety to a new level.

Conclusion

Eurotunnel's adoption of AP Sensing's Linear Heat Series marks a major milestone in tunnel safety. The successful integration of smart fire monitoring systems with advanced fire suppression technology has established a new standard for rail and road tunnel safety. By combining precision, durability, and intelligent control, this solution significantly reduces fire risks and ensures passenger and infrastructure safety in one of the world's most critical transportation corridors.

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