Railway Security Solution

Fiber-optic monitoring system

Preventing trespass, vandalism and theft is one of the most important safety priorities for railway owners and operators. Incidents of trespass and vandalism on the railway pose a risk to life as well as consequential repair bills, operational delays and reputational damage. Metal theft presents a significant problem in many countries as organised thieves target signaling cables and other high-value metals to sell for scrap. Replacing stolen cables means increased operational costs and often results in lengthy delays for passengers and freight.

Providing adequate security against these threats is challenging. Conventional approaches to security such as CCTV, physical barriers, signage and security patrols are effective as localised solutions but often impractical and too costly to deploy over the entire network. This can mean that considerable sections of the rail network remain unmonitored and unprotected, leaving them vulnerable to attack. Furthermore, without a route-wide picture of third party activity near the track existing security measures cannot be deployed in the most effective or efficient manner.

The OptaSense® Railway Security Solution converts a standard single mode telecommunication fiber-optic cable into an array of distributed sensors. These sensors allow railway owners and operators to gain an understanding of what is happening across the entire length of their critical infrastructure, enabling them to deter hostile activity and reduce damaging incidents and increase the effectiveness of their security measures.
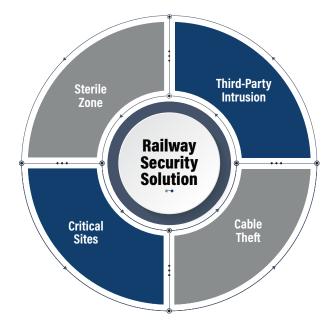
The OptaSense® Railway Security Solution:

- Improves surveillance of the entire route

- Reveals activity 'hot spots' to improve focus of complementary security measures

- Provides configurable outputs to suit operational requirements

- Delivers incident location accuracy to within 10 metres

- Offers economical route coverage - a single trackside installation can cover up to 100km

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Railway Security Applications

The OptaSense Railway Security Solution can deliver several security application options.

- **Third-party Intrusion:** direct buried or troughed optical fiber providing a corridor of protection for the detection, location and classification of typical third-party activities associated with trespass and intrusion
- **Sterile Zone:** fence-mounted optical fiber providing complete protection against intrusion and other threats in or near restricted areas
- **Critical Sites:** dedicated fiber-optic spurs can be monitored, providing detection capability around critical sites such as sidings, humping yards, storage facilities etc
- **Cable Theft:** troughed optical fiber co-located with copper cables provides detection and classification of typical activities associated with theft, e.g., trough lid removal, cable interference, cutting, pulling, etc.

The availability of these options is dependent on the optical fiber deployment method. OptaSense can advise the required deployment method and precise performance expectations for a specific location and railway security use-case.

Operational Value

Providing adequate security across a rail network requires a combination of security measures. Conventional approaches to security are most suited to tackling threats at a local level and their overall effectiveness will be limited unless they are focused on the highest priority areas.

The OptaSense Railway Security Solution delivers a comprehensive picture of detectable activity near the track and helps to pinpoint the priority "hot spots." where activity is high and special attention may be required. Adopting a pragmatic approach to alarm, notification and activity report delivery enables railway owners and operators to gain this insight without any unnecessary impact on normal train operations.

The solution provides:

- Continuous monitoring of trackside activity
- Pragmatic information delivery which supports operations
- Real time alarms for hostile or dangerous activity requiring immediate attention
- Notifications for suspicious activity requiring investigations
- Summary reports for security planning purposes

To learn how the OptaSense Railway Security Solution can help improve your security across your network, contact an OptaSense representative.

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