MONITORING RAILWAY INFRASTRUCTURE SECURITY

2024

MONITORING RAILWAY
INFRASTRUCTURE SECURITY

The Sensonic Security Application supports railway operators and security managers in protecting critical railway infrastructure components:

- Prevent disruptions to railway operations
- Maintain safety of railway assets and passengers
- Prevent damage or loss of railway property

The Sensonic Solution monitors entire routes for activities that may pose a threat to security. These include human footsteps, digging, or cable tampering. This information helps railway personnel respond to imminent danger. It also enables railway security officers to build intelligence over time regarding trends and patterns of suspicious activities along the railway network.

VIBRATION-BASED INSIGHTS FOR
SECURITY SURVEILLANCE

- 24/7 covert surveillance of rail assets
- Realtime comprehensive monitoring of long and remote areas
- Base security intelligence on activity patterns and trends
- Target preventative security measures effectively based on risk data

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SYSTEM IMPLEMENTATION

24x7 monitoring

Notification of suspicious activity with location

Proactive

Threat patterns are analysed

Reactive

Security personnel take action

Security personnel verify alerts

Security measures are in a targeted manner

SECURITY RESOURCES

DECREASE COMPLEXITY

- One system to covertly monitor multiple threats
- Minimum hardware requirement
- One system monitors up to 80 km of network

INCREASE EFFICIENCY

- Direct security resources in a targeted way
- Prevent incidents with pre-emptive action
- Reduce danger, damage, and downtime

MAXIMUM SAFETY

- Minimise on-track time for security staff
- Maximise safety for train operations

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THREE STEPS TOWARDS
SECURITY

1. IDENTIFY SUSPICIOUS ACTIVITES
Human walking, digging, cable tampering

2. ASSESS AND BUILD RISK-PROFILE
Threat determined using combination of different activities: Type, duration, time and place of activity

3. RESPOND
Review live notifications and action an accurate and appropriate response

SENSONIC SECURITY
DETECTION

CABLE TAMPERING DETECTION

- Copper cable theft is a problem for railway operators and is often associated with fibre damage caused by careless digging
- Identify theft risk to mission-critical copper cables along railway network
- In the event of cable damage, the solution provides the location of the damage/intrusion

IDENTIFYING GROUND DIGGING ACTIVITIES

- Manual digging activities near rail tracks indicate potential risk to railway assets
- Immediately locate damages to fiber-optic cables

TRESPASS DETECTION

- The high sensitivity of our Security solution enables us to detect people walking on or near the fiber
- Technology originates from securing other long linear assets such as borders and pipelines
- No hiding place from covert and tamper proof sensing element.

Risk profiles are customisable to provide the optimal level of protection for individual routes.

TECHNOLOGY

Sensonic pioneers new technologies, making it possible to monitor your entire railway network. From the vibration along your network, we create a digital SonicTwin® and derive highly valuable, actionable information that will take your operations to the next level.

- Holistic 24/7 view of all entire routes
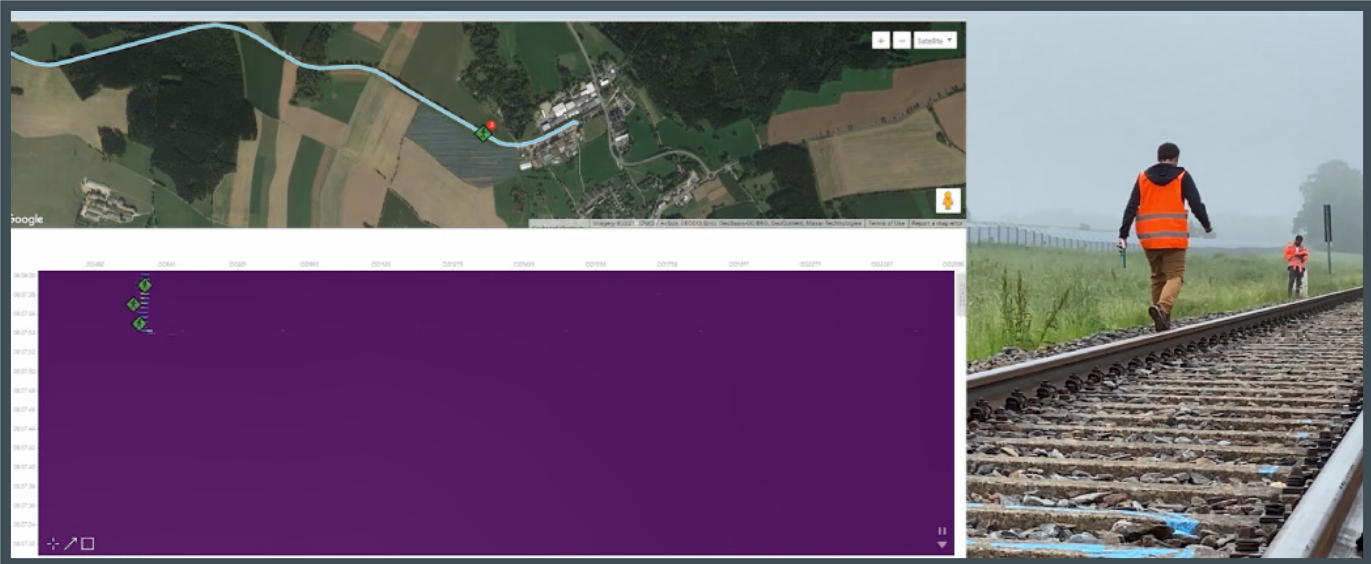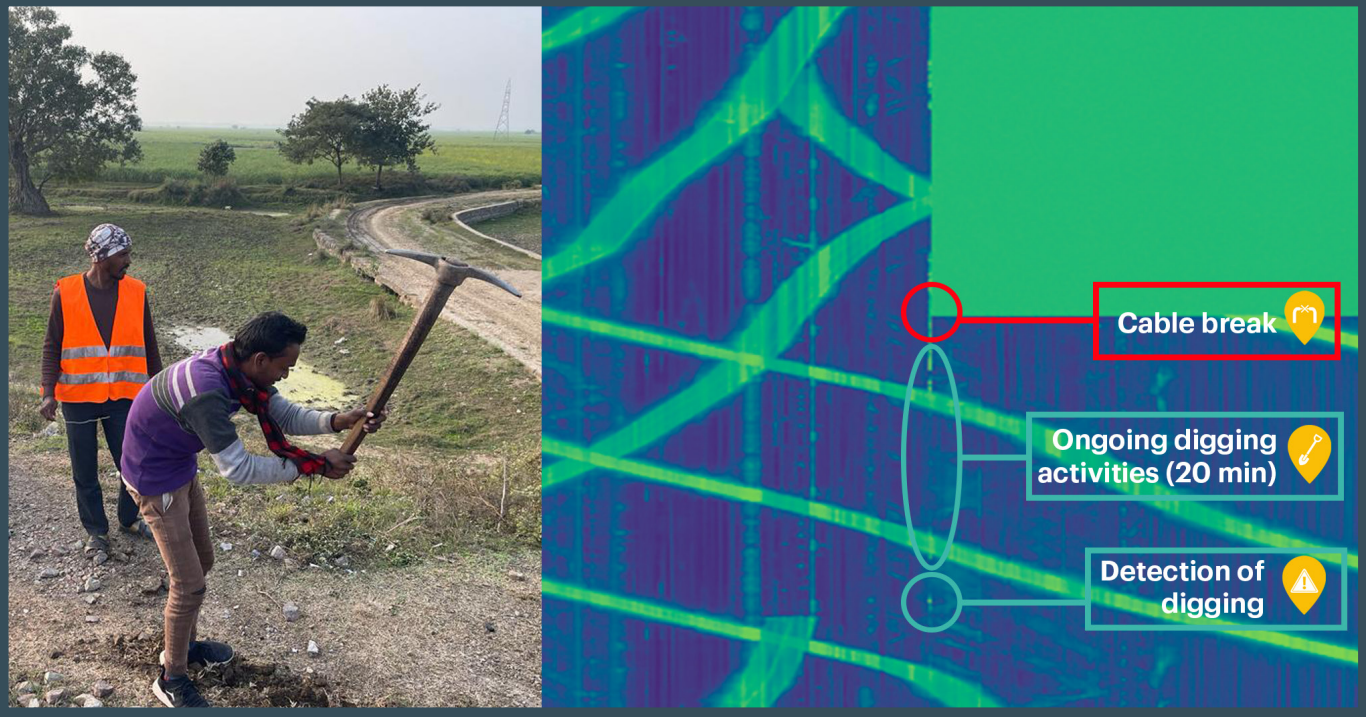- Generate real-time alerts and monitor developing situations

The Sensonic Solution's capability to achieve this is rooted in the use of Fiber Optic Sensing (FOS).

- Turns existing fiber optic cables into a multitude of vibration sensors along its length
- No plethora of new trackside sensors to install, power and maintain
- One Sensonic sensing unit can cover over 80km of track
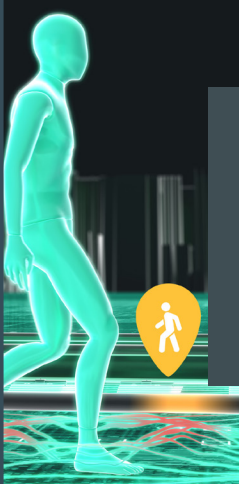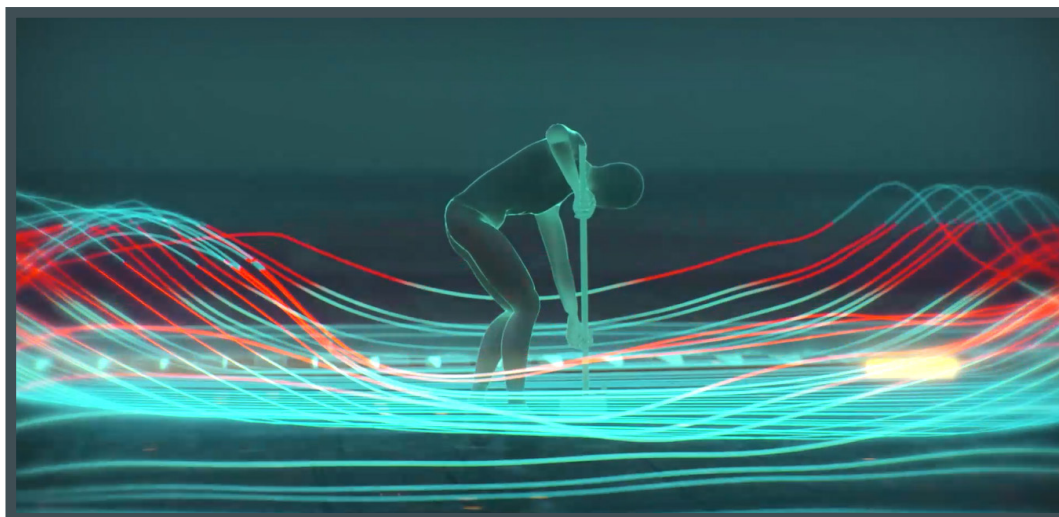- Simple and quick rollout: just power, internet and fiber optic cables are needed

Optical Fibre

Scatter Site

Backscatter

Light Pulse

Altered Backscatter
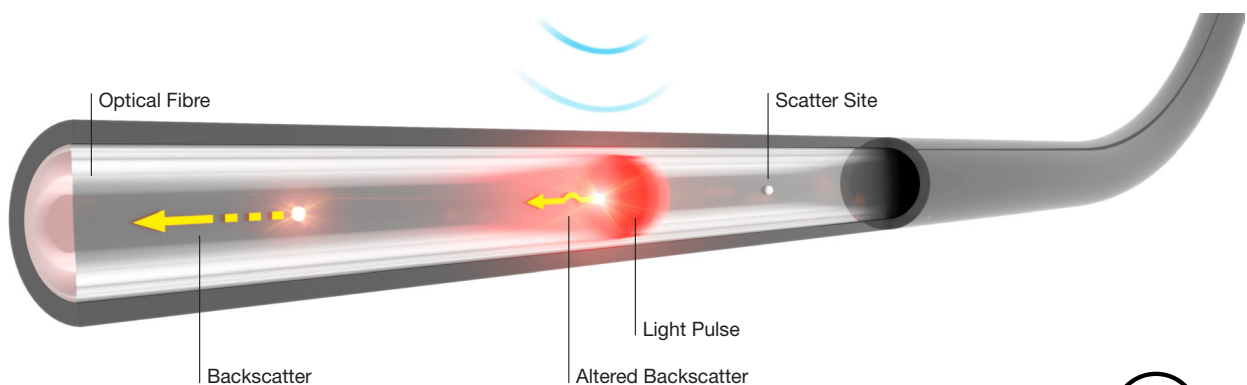
WATCH VIDEO

APPLICATIONS IN ACTION

Cable break

Ongoing digging activities (20 min)

Detection of digging

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WATCH
VIDEO

VISIT
WEBSITE

Protecting critical railway infrastructure: challenges, solutions, potentials.

2023

sensonic
Enabling better decisions.

DOWNLOAD
WHITEPAPER

WHO ARE WE?

Revolutionising how better decisions are made.

Sensonic is a deep-tech company with locations in India, Austria, the United Kingdom, the USA, the United Arab Emirates, and Brazil. We enable our clients to monitor entire track and fibre optic networks 24/7. We generate a digital SonicTwin® of vibrations along the network using fiber optic sensing. From this, we derive valuable information, using intelligent algorithms trained by latest AI and machine learning approaches. We reveal a previously unattainable depth of insight on various topics, such as track condition, security intrusion by people or animals and safety critical events like landslides or rock falls to avoid accidents. This holistic view revolutionises the way decisions can be made and allows railways to take operations to the next level.

United Kingdom
+44 1276 534753

Austria
+43 7712 352000

United States
+1 (856) 448 5482

India
+91 80 4943 3100

Brazil
+55 11 93710 3701

Dubai
+971 56 6777884

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