

Detecting incidents in all-weathers on Sweden's E4

Case study - E4 Motorway, Sweden

The Swedish Transport Administration, Trafikverket, selected ClearWay to automatically detect incidents on a critical stretch of the E4 motorway. A radar-based solution, it is unaffected by the extreme weather conditions experienced on Sweden's highways.



The Challenge

Keeping Urban Traffic Flowing

E4 Motorway

Trafikverket is the Swedish authority responsible for building, maintaining and securing the national roads and railways. The extreme environment in Sweden during the winter months poses an issue for Trafikverket. The difficult driving conditions experienced on Sweden's highways result in a higher than expected number of slow or stopped vehicles. Rain, snow and fog impact driving conditions leading to a greater number of vehicle collisions.

Trafikverket relied on either operators spotting incidents through CCTV or waiting for an incident to be reported by phone. Clearly this wasn't an effective way to detect all incidents quickly and it didn't provide the operators with either enough information or time to deal with situations before they escalated.

Trafikverket needed a system that continuously monitored activity on highways, providing automatic incident detection (AID) and stopped vehicle

detection (SVD). It was critical that events such as slow or stopped vehicles, pedestrians and debris were detected quickly and automatically. A sensor that provided full lane coverage with a long detection range was optimal as this would increase the ability of the operator to manage potential situations, ultimately increasing the safety of road users.

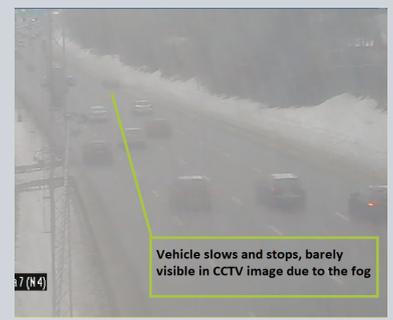
Another requirement was that the system was cost-effective with little or no maintenance, and that its performance should not be limited by environmental conditions or age. A system that needs fewer sensors but provides wider coverage decreases the lifetime costs of ownership as less equipment needs to be installed and maintained.



ClearWay detects a stopped vehicle. The radar software generates an alarm and directs the camera to the incident. The poor weather reduces the image quality, however, the radar still detects the event.



Radar detects a stopped vehicle during heavy traffic. The nearest camera is redirected to provide a visual giving the operator more information about the event



The radar detects a stopped vehicle in thick fog. The camera is unable to provide a clear picture due to the fog however, ClearWay's performance is unaffected.

The Solution

Complete Automatic Incident Detection

High performance in all weather and light conditions

After a successful preliminary test, Navtech Radar installed several sensors to cover a critical stretch of the E4 motorway. Radar is a line of sight system so the locations were chosen to ensure the best coverage of all lanes whilst minimising the number of sensors needed. Several cameras were configured to work alongside the radar to provide a video image for the detected incidents.

Project costs were reduced as the sensors were installed on existing infrastructure and connected to existing IP systems. The overall installation proved to be successful and efficient.

ClearWay intelligent rules-based software provided the operator with a schematic view of the highway on a SCADA screen. The system integrates with existing video cameras and automatically directs the nearest camera to provide a visual of the incident. Given the extreme weather in Sweden, Trafikverket looked for a solution where performance would not be affected by conditions such as snow and fog. Knowing that video analytics are hindered by adverse weather and light conditions, Trafikverket chose ClearWay. The solution is able to provide detailed information and exact location of events to emergency services, dealing more efficiently with the event in any weather and light conditions.



All Weather Solution

Reliable detection

ClearWay's performance remains unaffected by changes in weather conditions.



Low false Alarm

High accuracy

ClearWay has an unrivalled low false alarm rate of less than one per day.



Fast Detection

Intelligent analysis

ClearWay's radar sensors scan up to 1000m radius four times each second, raising incident alarms in less than 10 seconds of the event.



Summary

ClearWay is an integral component of a smart highway solution, providing accurate and reliable vehicle tracking and incident detection for roads, bridges and tunnels. Improved traffic flow, reduced congestion, and enhanced safety result from implementing this award-winning solution on existing highways.

Our patented radar technology provides superior detection with high accuracy and low false alarm rates. The high-frequency 77GHz signal can penetrate extreme

conditions such as fog, rain, spray, snow, darkness or smoke without any loss of performance, so incident response can be deployed in any situation. A fast response time increases motorist safety not only by responding to the initial incident but also by reducing the likelihood of a secondary incident occurring.

The intuitive, rule-based software enables incidents to be defined using a wide variety of parameters, allowing traffic control staff to focus on key areas of concern.

Detection can also be suppressed for maintenance activities or during peak times to avoid wasting staff time on false alarms.

In addition to stationary vehicle detection, ClearWay can also be used for collecting traffic data such as average speeds and vehicle counts for an integrated solution to highways monitoring. And as autonomous vehicles become the norm, ClearWay can also be used as a connected corridor, future-proofing the highways network.

Navtech Radar Limited

Home Farm, Ardington, Wantage,
Oxfordshire, UK, OX12 8PD

📞 +44(0)1235 832419

✉️ sales@navtechradar.com

navtechradar.com