Stopped Vehicle Detection Trial on Highways
Case Study - M25 Junctions 5-6, London, United Kingdom

- Improves safety and traffic flow
- Reduces secondary incidents
- Faster incident response
- All weather and light conditions
- Low false alarm rate
- Future-proofed roads

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stopped vehicles represented the fourth-highest risk of a KSI, either as the direct cause or by creating secondary incidents leading to KSIs.

Previously, stationary vehicles were detected either by identifying queues or when reports were received from the police or the public. On average, vehicles were stationary in a live traffic lane for 17 minutes before traffic control centre operators were notified and could initiate incident response measures. During this time, the vehicle – as well as other road users – were exposed to an increased risk of a KSI.

The aim of the project was to mitigate this risk on ALR schemes, particularly during off-peak periods, by reliably detecting stationary vehicles. Radar-based stationary vehicle detection (SVD) technology offered a cost-effective way to enhance safety by improving detection rates and times, as well as reducing response times.

M25 London Orbital Motorway

The M25 encircling London is Europe’s second-longest orbital road at 188km in length. It is also one of the busiest roads in the United Kingdom, serving both Heathrow and Gatwick International Airports, as well as local traffic and freight bound for the Port of Dover.

Highways England is the authority responsible for operating, maintaining and improving England’s motorways and trunk roads, which includes the M25. With the large volumes of traffic and the high-profile transport links that the M25 connects to, it is crucial that the motorway is kept operational 24 hours a day. To cope with this demand, Highways England introduced All Lane Running (ALR) schemes to add additional traffic capacity. In ALR sections, the hard shoulder is converted to a permanent live traffic lane and emergency refuges are added in lieu of a hard shoulder.

A key area of concern for Highways England was the high probability of road users being killed or seriously injured (referred to as a KSI) when vehicles stopped in live lanes on high-speed roads, particularly when traffic flows were low. On ALR motorway sections,
Reducing the risk of secondary incidents

Highways England commissioned a trial of Navtech’s ClearWay solution, located on the M25 between Junctions 5 and 6. Nearly 97% of the site was covered using 27 radars after a thorough site survey established the optimum locations. Once installed, the system was rigorously tested and fine-tuned during commissioning, including on-site testing under traffic management and using live data.

The result verified that the ClearWay system monitors all traffic and alerts the control centre immediately when a rule or behaviour is broken. The radar detected a stationary vehicle and alerted the operator within 12 seconds.

The operator could investigate and verify the alert in approximately one minute, which was a significant decrease from the original 17-minute average using existing processes. Incident response could then be deployed much quicker, reducing road users’ exposure time to increased safety risks.

After demonstrating the value of the system, a pilot scheme was introduced on the M25 between Junctions 23 to 27 in early 2018. Commenting on the value that ClearWay SVD provided on the pilot scheme, the South Mimms Regional Control Centre (RCC) Operation Manager said:

‘SVD made a real positive difference during our incident on the 2nd April. We had a vehicle cross onto the opposite carriageway on the M25 between J24 and J25 causing full closure of the M25. We may not have known anything about this incident until the police interface came through, so the 14 minutes between the initial alert and the police interface being received gave us a much quicker response, and possibly saved a lot of trapped traffic. This is, in my opinion, such a positive outcome from SVD, and a huge success for this project and the team involved.’
About ClearWay

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.

Benefits

- Complete situational awareness
  Real-time location of vehicles and people to coordinate emergency response.
- All weather performance
  High performance even in extreme weather or lighting conditions.
- Early warning system
  Alarms within 10 seconds of a detected event.
- Rules-based software
  Set detection parameters and suppress alarms for specified conditions.
- Future-proofed road network
  Connected corridor features for autonomous vehicles.
- Third-party integration
  Automatically controls multiple cameras and sensors for complete situational awareness.
- Very low false alarm rate
  Finely tuned to provide a maximum of one false alarm per sensor per day.

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