Measuring the impact of enforcement on air quality

With there being a clear link between traffic congestion and air pollution, it is now time to take a more holistic approach to maximize the impact of enforcement cameras and air quality initiatives such as clean air/low emission zones.

As the level of urban congestion increases, CCTV cameras have been installed to enforce regulations designed to keep traffic moving and improve safety. Clearly, if the volume of vehicles on our roads continues to rise, congestion will increase resulting in more pollution and a corresponding spike in health issues.

Enforcement cameras can indirectly have a major impact on air quality, by helping to keep traffic moving and reducing problems caused by vehicles idling in queues. They enable authorities to take positive action in enforcing moving traffic contraventions such as box junctions, banned turns, restricted access and bus lanes.

Empowered enforcement

In the UK, to date, it is only local authorities in London and Wales that have assumed responsibility from the police for upholding these particular traffic regulations. However, a recent announcement from the UK government that local authorities outside London will soon be granted the powers to enforce moving traffic contraventions under the Transport Management Act 2004 will provide a level playing field for councils across England. This change will be significant as many local authorities report that the police are no longer carrying out this enforcement due to budget cuts and manpower shortages meaning that drivers that flout the rules of the road are going unpunished.

But how can the impact of such enforcement initiatives be accurately measured in terms of reducing pollution? The answer can be found in a new generation of air-quality monitors that can be integrated with enforcement cameras to cross correlate the impact of improved driver compliance with the improvements in air quality realized as a result. Each outstation device has a sensor providing real-time data on the level of airborne particulates, including nitrogen dioxide and carbon dioxide. Using the latest optical-based technologies and advanced sensor fusion algorithms, the device senses and counts airborne particles from 1-1800μgm^3. To ensure reliable operation, the sensor is based on light scattering and is fully glass sealed, protecting the internal mechanism from detrimental atmospheric effects.

Left: **Videalert's Air Quality Monitor gathers data to help target moving traffic enforcement activities for environmental benefit**

Need to know

Moving traffic contraventions that, if enforced, can help reduce pollution by reducing congestion

- Stopping in box junctions
- Banned turn offences
- Access to restricted areas
- Driving in bus lanes
- Illegal parking
- Stopping in school safety areas

Pollution problems

The health issues caused by pollution were recently highlighted in a report from King's College London which showed that hundreds more children and adults are suffering out-of-hospital cardiac arrests or being sent to hospital following strokes or severe asthma attacks on days when air pollution levels are raised.

Mayor of London, Sadiq Khan said, "London's lethal air is a public health crisis – it leads to thousands of premature deaths in the capital every year, as well as stunting the development of young lungs and increasing cases of respiratory illness."

The new air quality sensors transmit captured data to Videalert's digital video platform which supports multiple traffic, parking, school safety, clean air and crime prevention applications simultaneously. The platform enables this data to be 'visualized' to show the levels of gas and particulate matter at different times, day and night, and will have a significant role to play, particularly when used outside schools as part of a range of measures to protect children's safety and health from pollution caused by excessive vehicle traffic.

In the future this data can also be shared with UTMC style systems to alert drivers, via video message screens, of high pollution levels and, if appropriate, re-route traffic. Data from the sensors can also be blended with enforcement data from CCTV cameras to strengthen and validate the business case for the adoption of moving traffic enforcement restrictions including clean air or low emission zones.

As well as providing councils with real-time insight into the impact of enforcement cameras on improved air quality this holistic approach will also help to win the hearts and minds of drivers who otherwise might feel that they are being used as cash cows to fund local government budget shortfalls.

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